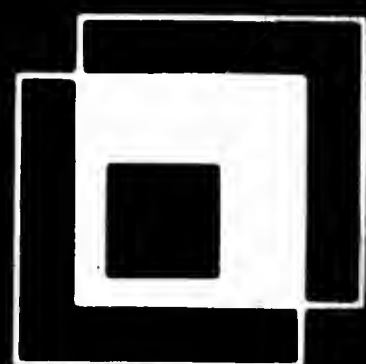


**U.S.  
OFFICIAL GAZETTE  
UNITED STATES  
PATENT OFFICE**

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**BELL & HOWELL**

**JLN**



# OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 7, 1971

Volume 893

Number 1

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## PATENT OFFICE NOTICES

### PATENTS AND TRADEMARKS

#### Relief in Cases Affected by the Postal Emergency of March 1970

On June 30, 1971, President Nixon signed into law Public Law 92-34.

Public Law 92-34 requires claims for the benefit of an earlier filing date (Section 1.) and requests for such other relief as may be appropriate (Sec. 2.) to be filed in the Patent Office within 6 months after enactment, that is by December 30, 1971. Failure to file a statement within the noted period will result in loss of right to take advantage of the benefits of the law. Further explanation or evidence may be required at a subsequent time. Public Law 92-34 provides relief only for situations caused by the postal emergency which began on March 18, 1970, and ended on or about March 30, 1970, and for which there is no remedy under existing law.

The following explanation is designed to serve as a guide for persons desiring relief under the law.

The verified statement required to be filed under sections 1 and 2 of the law may be by any of the following:

- Applicant(s) for patent or trademark registration;
- Patentee(s) or trademark registrant;
- Owner(s) of record.

In cases involving plural inventors, statements made under (a) or (b) must be signed by all inventors.

The verified statement must specify the particular earlier date of receipt in the Patent Office to which the applicant, patentee or trademark registrant, or owner of record believes his application, fee or other paper would be entitled except for the delay caused by the postal emergency of March, 1970. The statement must be verified, that is, in the form of an oath or declaration. (37 CFR 1.68 (Patent Rule 68) and 2.20 (Trademark Rule 2.20).)

Evidence will not normally be required or considered by the Patent Office regarding a claimed filing date of March 18, 1970, or later, in applications actually filed before June 1, 1970. Claims for earlier filing dates in cases actually filed after June 1, 1970, or claiming a date prior to March 18, 1970, will be considered prima facie unreasonable unless an acceptable explanation of the basis for the claim is filed in the Patent Office with the claim or within 1 month or such longer time as may be prescribed by the Commissioner. Any claim not accepted by the Patent Office because it is obviously defective on its face or unreasonable may be subjected to further review by petition to the Commissioner.

The statement should adequately identify the involved application, patent, or trademark registration by including the name of the applicant, patentee or registrant, title of the invention or an identification of the mark, serial number, filing date, group art unit number and any other identifying data such as status of the case (e.g., awaiting first action, amendment, brief, etc.). Acceptable statements will be acknowledged, made of record and retained in the Patent Office files.

When practical, earlier filing dates accorded under this law, as well as the originally granted filing dates, will be identified on ensuing patents and trademark registrations. These dates will also be included in the OFFICIAL GAZETTE in connection with patents, trademark registrations and trademarks published for opposition. In other cases, such as applications in issue prior to filing of a claim, the patent or trademark registration number and claimed filing dates will be published in the OFFICIAL GAZETTE after December 30, 1971.

Patents issued with earlier filing dates afforded by this law will not be effective as prior art as of such earlier filing dates under subsection 102(e) of title 35 of the United States Code.

In a pending patent application in which a claim for an earlier filing date has been acknowledged under this law, applicants need not file a Rule 131 affidavit to overcome a reference having an effective filing date between the "earlier" and the actual filing date of the application. Intervening references of this type will be cited but not applied by the examiner. Although a statement claiming an earlier date is accepted by the Patent Office, the claimed earlier date may be called into question in subsequent inter partes proceedings in the Patent Office or

in the courts. In these proceedings, the applicant or owner may be required to present further evidence establishing the filing date to which the application is entitled. In such cases a definite determination shall be made as to whether the applicant is entitled to the earlier date under the law.

In cases where a patent application or an application for registration or late renewal of a trademark is determined to have become abandoned for failure to meet a statutory time limit because of the postal emergency, the application will automatically be restored to pending status by the acceptance of the request, and prosecution or other processing of the application will be resumed. Similarly, if a trademark registration is determined to have been cancelled for failure to meet the statutory time limit within which to file the affidavit required under section 8 of the Trademark Act (15 U.S.C. 1058a) because of the said emergency, the order for cancellation will be rescinded.

As explained in the notice of January 28, 1971 (882 O.G. 1342), applicants who may be entitled to earlier filing dates should note that a change in their U.S. filing date might, in turn, alter the date of expiration of the 6- and 12-month periods for filing applications abroad under provisions of the Paris Convention for the Protection of Industrial Property.

WILLIAM E. SCHUYLER, JR.,  
Commissioner of Patents.

Dated: July 14, 1971.

JAMES H. WAKELIN, JR.,  
Assistant Secretary for Science  
and Technology.

[FR Doc. 71-10469; Filed 7-22-71; 8:52 am]

36 F.R. 13694; July 23, 1971

#### ABBREVIATED FIRST ACTION TRIAL PROGRAM Request for Comments

The Abbreviated First Action Program, announced in the OFFICIAL GAZETTE of February 2, 1971 (883 O.G. 2), using form PO-1142 has been in operation for over nine months. Considerable experience with the use of this form should now be available throughout the patent profession. It is recognized that though the use of this form may not be an ideal form of communication, the increased burdens on the examination and processing of patent applications have necessitated the development of more efficient methods of expediting the prosecution.

Comments, criticisms, and suggestions concerning the Abbreviated First Action Program are invited. It is requested that the opinions expressed be made in the light of current conditions under which the Office must operate and be based on actual experience with the program. In order to adequately determine the quality and value of this program all views, both favorable and unfavorable, are earnestly solicited. Any critical comments should be supported wherever practical by reference to specific cases.

Letters written in response to this request should be sent as soon as possible to the Commissioner of Patents, Washington, D.C. 20231, Attn: Assistant Commissioner R. A. Wahl.

FRANK H. BRONAUGH,  
Deputy Assistant Commissioner.

Nov. 10, 1971.

#### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,817,195, L. P. Curtin, CLEANING METAL SURFACES; 2,846,342, same, BONDING COATS FOR METAL; 2,901,383, same, MICRO-CRYSTALLINE BONDING COATS FOR METAL, filed Feb. 4, 1969, D.C.N.J. (Newark) Doc. 125-69, Robert E. Gaynor and Joseph Stevens v. Diamond Alkali Company and Diamond Shamrock Corp. Stipulation and order of dismissal, June 24, 1971.

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3

2,829,877, G. C. Davis, Jr., REFRACTORY; 2,915,893, E. D. Wilkins, METAL CLAD REFRACTORY BRICK, filed May 4, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1087-JWC, Kaiser Aluminum & Chemical Corp. v. International Minerals & Chemical Corp. and Interpace Corp.

2,846,342. (See 2,817,195.)

2,896,857, G. R. Tompkins, WASHING APPARATUS, filed Sept. 30, 1968, D.C., N.D. Tex. (Lubbock), Doc. CA-5-535, Malsbury Manufacturing Company et al. v. Orbit Car-Wash, Inc. et al. Consent judgment, patent valid and defendants permanently enjoined, Jan. 14, 1971.

2,901,385. (See 2,817,195.)

2,915,893. (See 2,829,877.)

2,920,977, B. F. Adams, CELLULAR SURFACE COVERINGS HAVING AN EMBOSSED APPEARANCE, filed May 11, 1971, D.C.N.J. (Camden), Doc. C-673-71, Armstrong Cork Company v. Mannington Mills, Inc.

3,119,501, J. H. Lemelson, AUTOMATIC WAREHOUSING SYSTEM; 3,139,994, A. R. Chasar, MECHANICAL LOAD HANDLING TRANSFER AND STORAGE EQUIPMENT, filed Dec. 1, 1964, D.C., W.D.N.Y. (Buffalo), Doc. C-11-210, The Triax Company v. Hartman Metals Fabricators, Inc. Decision dismissing Plaintiff's Complaint, June 16, 1971.

3,139,994. (See 3,119,501.)

3,146,290, D. M. Park, ELECTRONIC MUSIC CIRCUIT; 3,383,452, Park and Campbell, MUSICAL INSTRUMENT; Re. 26,521, D. M. Park, AUTOMATIC REPETITIVE RHYTHM INSTRUMENT TIMING CIRCUITRY, filed May 23, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1122, The Seeburg Corporation of Delaware v. Lyon & Healy, Inc. Order cause removed from the active calendar with leave to reinstate before June 4, 1971. By agreement, it is ordered that ruling on pending motions is deferred, Mar. 5, 1971.

3,173,165, P. L. Speight, APPARATUS FOR APPLYING DETERGENT TO RUGS AND THE LIKE, filed May 28, 1971, D.C., S.D. Ohio (Columbus), Doc. 71-136, Ballantyne Manufacturing Company v. Federated Department Stores, Inc.

3,262,378. (See 3,453,939.)

3,266,477, A. B. Shiles, SELF-CLEANING COOKING APPARATUS, filed May 20, 1970, D.C., E.D. Tenn. (Chattanooga), Doc. 5904, E. I. du Pont de Nemours & Company v. Magic Chef, SCM, and Raider. Issues compromised by parties and settled out of court, Feb. 8, 1971.

3,325,097, A. Slutsky, TAXI METERS AND A CONTROL SYSTEM FOR TAXI METERS, filed June 24, 1971, D.C., S.D.N.Y., Doc. 71-C-2811, Abraham Slutsky v. Efficient Instruments Corp.

3,387,673, N.C. Jeckel, UNIFORMLY CORRUGATED PROSTHESIS AND PROCESS OF MAKING SAME, filed June 2, 1969, D.C.N.J. (Newark), Doc. 622-69, United States Catheter & Instrument Corp. v. Meadox Medical, Incorporated. Consent judgment for permanent injunction, June 30, 1971.

3,370,223, A. Senetec, AUTOMATIC VOLTAGE REGULATOR, filed June 22, 1971, D.C.N.H. (Concord), Doc. 3353, The Superior Electric Company v. Raytheon Company.

3,372,493, L. Birch, ANTIQUED PAINTING ON WOOD AND BY-THE-NUMBER SYSTEM OF MAKING THE SAME, filed Mar. 12, 1968, D.C., S.D.N.Y., Doc. 68-C-1048, Aralon Manufacturing Corp. v. Friends Industries, Inc. Stipulation and order of dismissal, June 28, 1971.

3,377,770, D. R. Rorer, SKIN-PACKAGING APPARATUS, filed Mar. 5, 1969, D.C., N.D. Ohio (Cleveland), Doc. C69-169, American Packaging Corp. v. Stone Container Corporation. Consent order, complaint and counterclaims dismissed, July 23, 1971.

3,383,452. (See 3,146,290.)

3,397,260, B. A. Lamberton, METHOD FOR ENCASING RIGID MEMBERS WITH CONCRETE, filed July 20, 1971, D.C., N.D. Calif. (Los Angeles), Doc. 71-1385, Construction Techniques, Inc. et al. v. Tri-Way Contractors, Inc. et al.

3,424,479, Ditson and Cantrel, COUPLING AND ROD SYSTEM FOR ROCK DRILLS, filed July 9, 1971, D.C., S.D. Fla. (Miami), Doc. 71-1074-C-PF, Ingersoll-Rand Co., etc. v. Brunner & Lay, Inc., etc.

3,425,435, R. Garabello, ROTARY OSCILLATING PISTON PUMP ADDITIVE INJECTION DEVICE FOR FLUID DELIVERY SYSTEM, filed July 6, 1971, D.C.N.J. (Newark), Doc. 992-71, Metropolitan Petroleum Petrochemicals Co., Inc. v. Actna Chemical Corp.

3,437,059, Stonier and James, DECORATIVE POLE ASSEMBLY, filed July 14, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1720, Russ Stonier, Inc. v. Allied National Products, Inc.

3,453,939, Poltitz, Schrimper and Fairchild, BITUMINOUS PAYER; 3,262,378, Schrimper and Page, ADJUSTABLE STRIKE-OFF PLATE FOR FINISHING MACHINES, filed May 20, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1233, Iowa Mfg. Co. of Cedar Rapids v. Barber-Greene Co. Same, filed July 14, 1971, D.C., E.D. Ill. (Danville), Doc. CV 71-124-D, Iowa Manufacturing Company of Cedar Rapids v. Blair-Knox Construction Equipment Inc.

3,459,302, D. S. Ross, APPARATUS AND METHOD OF FILTERING SOLIDS FROM A LIQUID EFFLUENT, filed June 28, 1971, D.C., S.D. Ohio (Cincinnati), Doc. S031, Hydro-Clear Corporation v. Pollution Control, Inc.

3,476,143, R. L. Kaster, PIVOTING DISC HEART VALVE, filed Dec. 1, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70-2693-F, Washington Scientific Industries, Inc. and The Regents of the University of Minnesota v. Shiley Laboratories, Inc.

3,517,390, L. Whitehead, HIGH POWER ACOUSTIC RADIATOR, filed Feb. 16, 1971, D.C., E.D. La. (New Orleans), Doc. CA 71-452, Layne Whitehead v. Shell Oil Company.

3,535,407, J. W. Pike, METHOD OF AUTOCLAVING BUILDING BLOCKS, filed Feb. 20, 1967, D.C., W.D.N.Y. (Buffalo), Doc. C-1967-76, Struthers Scientific and International Corporation v. John A. Lo Buglio, doing business as Lo Buglio Block Company. (Amended complaint, July 16, 1971.)

3,536,144, Hood and Osburn, ARTICULATED WHEELED FRAME FOR AGRICULTURAL IMPLEMENTS, filed July 15, 1971, D.C., W.D. Okla. (Oklahoma City), Doc. 71-446-C, Blackwell Steel Products, Inc. v. Medford Steel Products, Inc.

3,540,229, P. H. Bunten, AIR COOLING APPARATUS, filed July 27, 1971, D.C., S.D. Fla. (Miami), Doc. 71-1154-C-TC, Paul H. Bunten et al. v. Weathermatic Corp.

3,553,691, J. W. Lassiter, LONG RANGE POSITION DETERMINATION SYSTEM, filed July 12, 1971, D.C., S.D. Tex. (Houston), Doc. 71-H-765, James W. Lassiter, Lab Navigation Co., Navigation Management, Inc. v. Decca Survey Systems, Inc. et al.

3,556,391, D. W. Kosterka, PHONOGRAPH RECORD ALBUM PACKAGE, filed Jan. 19, 1971, D.C., S.D.N.Y., Doc. 71-C-2816, Album Graphics, Inc. et al. v. Ivy Hill Lithograph Corp.

3,574,391, S. D. Doboze, VEHICLE GATE HINGE CONSTRUCTION, filed July 14, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71-695, Scranton Truck Body Equipment Co. v. Stephen D. Doboze and J. J. Turner, Inc.

Re. 25,626, Yeo and Wald, AIR-HEATING GAS BURNER, filed Jan. 23, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c132, Mazon Premix Burner Company, Inc. v. Eclipse Fuel Engineering Company and Morrill and Loeller, Inc. Judgment, plaintiff owner of patent and is infringed, July 2, 1971.

Re. 26,580, J. A. Currier, METHODS AND MACHINES FOR STOCKING PRODUCTION; Re. 26,581, same KNITTED PRODUCTS, filed July 9, 1971, D.C., M.D.N.C. (Greensboro), Doc. C-154-G-71, Scott & Williams, Inc. v. Billi America, Inc. et al.

Re. 26,521. (See 3,146,290.)

Re. 26,581. (See Re. 26,580.)

Re. 26,724, R. L. Paquin, REFRIGERATED TUMBLER, filed July 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1583, Glacier Ware, Inc. v. Jet-X-Corp and Goldblatt Bros.

Re. 26,871, Morkoski, Clendenin and Corwith, MATERIAL CHOPPING AND COMMUNUTING DEVICE, filed July 14, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71-C-365, International Harvester Company v. Gehl Company.

Re. 26,977, J. P. Peretia, SWIMMING POOL CONSTRUCTION, filed June 29, 1971, D.C.R.I. (Providence), Doc. 4653, Weatherking Products, Inc. v. Hallmark Pools of New England, Inc.



## Certificates of Correction for the Week of Dec. 7, 1971

3,317,379	3,571,680	3,580,354	3,585,690
3,380,933	3,571,766	3,580,966	3,585,744
3,471,895	3,571,862	3,580,987	3,586,052
3,505,319	3,572,037	3,581,169	3,586,073
3,515,081	3,572,318	3,581,277	3,587,082
3,522,416	3,572,811	3,581,535	3,587,178
3,529,396	3,573,268	3,581,830	3,587,593
3,531,348	3,573,384	3,581,983	3,588,047
3,533,942	3,573,570	3,582,148	3,588,446
3,544,322	3,573,784	3,582,751	3,588,604
3,545,512	3,573,807	3,582,904	3,589,339
3,548,049	3,573,900	3,582,933	3,589,788
3,549,342	3,574,347	3,583,128	3,590,786
3,549,435	3,574,539	3,583,157	3,591,645
3,551,422	3,574,816	3,583,319	3,591,733
3,555,350	3,575,441	3,583,354	3,592,048
3,557,177	3,576,271	3,583,359	3,592,722
3,558,274	3,576,538	3,583,789	3,592,752
3,558,761	3,576,928	3,583,882	3,592,770
3,560,149	3,576,979	3,584,207	3,592,901
3,562,644	3,577,271	3,584,450	3,592,906
3,563,025	3,577,895	3,584,483	3,593,128
3,563,510	3,577,587	3,584,652	3,594,117
3,565,241	3,578,310	3,584,671	3,594,142
3,566,075	3,579,224	3,585,057	3,594,395
3,567,017	3,579,443	3,585,290	3,595,890
3,567,737	3,579,460	3,585,492	
3,569,920	3,579,636	3,585,515	
3,571,635	3,579,761	3,585,645	

## Patents Available for Licensing or Sale

- D. 218,959. WATER SKI ROPE HOLDER. Kenneth L. Hess, 6763 Ferrier Court, Sacramento, Calif., 95822.
- 3,225,761. FATIGUE SUPPORT. Robert Swensen, 120 Polcianna Drive, Martinez, Ga., 30907.
- 3,286,749. FASTENER TOOL WITH FASTENER ENGAGING MEANS. Howard K. Learned, 3825 N. Hillside, Wichita, Kans., 67219.
- 3,455,301. MALE GENITAL APPLIANCE. Bruce P. Clark, 133 17th St., Oakland, Calif., 94612.
- 3,577,580. SELF-CLEANABLE HAIRBRUSH. Robert B. Rand, P.O. Box 2461, Charleston, W. Va.
- 3,586,053. SINGLE CONTROL FAUCET. Ernest C. Brown, 2383 Zollinger Road, Columbus, Ohio., 43221.
- 3,588,815. TIRE PRESSURE WARNING DEVICE. Mrs. Clyde Koonce, 803 W. 67th St., Odessa, Tex., 79760.
- 3,595,248. CLEANSING DEVICE. Earl Wright, Creative Products, Inc., P.O. Box 51, Decatur, Ill., 62525.
- 3,605,744. INJECTION APPARATUS AND METHOD OF INJECTING. Edward M. Dwyer, 56 Church St., Plymouth, Pa., 18651.
- 3,606,141. VISUAL SIGNAL FOR RURAL MAILBOXES. Floyd R. Taylor, 3346 1/2 Walnut Ave., Carmichael, Calif., 95608.
- 3,618,279. BUILDING BLOCK. True F. Sease, R.R. 3, Airhill Road, Brookville, Ohio, 45309.

The following 2 patents are offered by: O. C. Forehand, 104 E. Pope St., Box 428, Sylvester, Ga., 31791.

3,249,325. MISSILE GUIDANCE SYSTEM.

3,597,840. SAFETY RAZOR.

General Motors Corporation is prepared to grant non-exclusive license under the following patent upon reasonable terms.

Application for license may be addressed to the Director, Patent Section, General Motors Bldg., 3044 W. Grant Blvd., Detroit, Mich., 48202.

3,466,737. BRAZING OF TITANIUM.

The following 4 patents are offered by the Kennecott Copper Corporation.

Inquiries concerning licenses for the patents may be addressed to: Lowell H. McCarter, Ledgemont Laboratory, Kennecott Copper Corp., 128 Spring St., Lexington, Mass., 02173.

3,504,178. METHOD AND APPARATUS FOR CRYSTALLOGRAPHIC ORIENTATION AND MEASUREMENT.

- 3,588,933. METHOD AND APPARATUS FOR SIMULTANEOUSLY UPSET FORMING BOTH ENDS OF A DUCTILE MATERIAL ROD BLANK OR THE LIKE.
- 3,610,204. APPARATUS FOR ACCRETING MOLTEN COPPER ON A MOVING CORE MEMBER.
- 3,616,340. REFINING OF LIQUID COPPER.

General Electric Company is prepared to grant non-exclusive licenses under the following 42 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 2 patents may be addressed to: Patent Counsel, Visual Communication Products Operation, General Electric Company, Waynesboro, Va., 22980.

3,586,764. T.V. CAMERA SYSTEM EMPLOYING A LUMINANCE PICKUP TUBE AND A COLOR PICKUP TUBE FOR MULTIPLEXED RED AND BLUE SIGNALS.

3,590,207. METHOD OF JOINING WIRES OF DIFFERENT DIAMETERS.

Applications for licensing under the following 4 patents may be addressed to: General Electric Company, Ordnance Department, 100 Plastics Ave., Pittsfield, Mass., 01201. Attention: J. F. McDevitt, Patent Counsel.

3,156,539. SUPERCONDUCTIVE MATERIALS.

3,165,403. SUPERCONDUCTIVE MATERIALS.

3,169,859. SUPERCONDUCTIVE MATERIALS.

3,291,758. SUPERCONDUCTIVE MATERIALS.

Applications for license under the following 16 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,364,588. CLOTHES TREATING MACHINE WITH AUTOMATIC UNLOADING MEANS.

3,373,501. PROCESS OF DRYING FABRICS IN A ROTATABLE RECEPTACLE.

3,381,389. DRYER CONTROL.

3,394,466. ELECTRONIC DRYNESS CONTROL.

3,430,223. SIGNAL MEANS FOR AUTOMATIC WASHING MACHINE CONTROLLED BY TIMER DEVICE.

3,464,225. ELECTRONIC TEMPERATURE REGULATION SYSTEM USING SOLID STATE DEVICES AND POINT CONTACT SENSORS.

3,466,902. FLUID NOZZLE.

3,487,345. ELECTRONIC TEMPERATURE REGULATION SYSTEM USING SOLID STATE DEVICES AND POINT CONTACT SENSORS.

3,534,306. SOLID STATE TEMPERATURE SENSOR.

3,537,475. VALVE ASSEMBLY.

3,568,789. NOISE BAFFLING METHOD AND APPARATUS FOR A WASHING APPLIANCE.

3,590,605. SIGNAL AND CONTROL FOR WASHING MACHINES.

3,594,058. RACK ASSEMBLY FOR FRONT-LOADING DISH-WASHER.

3,595,028. CONTROL MEANS FOR AIR-CONDITIONING SYSTEM.

3,596,834. SELF-REVERSING SPRAY ARM ASSEMBLY FOR A WASHING APPLIANCE.

3,600,902. ADJUSTABLE AGITATOR FOR FABRIC CLEANING MACHINES.

Applications for license under the following 22 patents may be addressed to: Patent Counsel, Transportation Systems Business Division, General Electric Company, Legal Department, Bldg. 20-2, 2901 E. Lake Road, Erie, Pa., 16501.

3,450,873. RAIL VEHICLE DETECTION SYSTEM.

3,450,874. RAILWAY TRACK CIRCUIT.

3,450,875. RAIL VEHICLE CONTROL SYSTEM.

3,450,943. OVERSPEED CHECKING CIRCUIT.

3,450,944. INTEGRITY CHECKING CIRCUIT FOR TRAIN CONTROL SYSTEM.

3,457,487. STATIC FIELD SHUNT CONTACTOR CONTROL.

3,458,731. PRECISION TIMING PULSE GENERATOR.

3,459,937. SELF-CHECKING SYSTEM FOR A VEHICLE SEPARATION SYSTEM.

3,466,524. SPEED TAPER BRAKE MODULATION SYSTEM.

3,466,651. SIGNALLING SYSTEM.

- 3,468,389. PROPULSION UNITS FOR USE WITH ELECTRIC DRIVE VEHICLES.
- 3,476,932. RAIL VEHICLE LOCATION AND CONTROL SYSTEM.
- 3,479,502. RAIL VEHICLE DETECTION SYSTEM.
- 3,479,527. MINIMUM QUANTITY SELECTOR WITH FAIL-SAFE OVERRIDE.
- 3,489,892. TERMINATION CIRCUIT FOR RAIL VEHICLE DETECTION SYSTEM.
- 3,490,042. DIRECT CURRENT MEASURING REACTANCE ARRANGEMENT.
- 3,495,092. FAIL SAFE VOLTAGE-TO-CURRENT TRANSFORMING CIRCUIT.
- 3,500,190. VEHICLE VELOCITY MEASURING SYSTEM EMPLOYING ADJUSTABLE WIDTH PULSE GENERATING SYSTEM.
- 3,515,970. MOTOR CONTROL SYSTEM USING CURRENT DIVERTER.
- 3,525,027. REGULATED DYNAMIC BRAKING CIRCUIT.
- 3,546,593. RECEIVER FOR FREQUENCY MODULATED RADIO-FREQUENCY SIGNALS.
- 3,562,515. TAPERED BRAKING RATE FOR TRACTION.
- 3,564,438. SIGNAL TRANSLATING CIRCUIT HAVING FIRST AND SECOND PAIRS OF SEMICONDUCTOR DEVICES WITH MATCHING CONDUCTION CHARACTERISTICS.
- 3,565,702. DEPOSITING SUCCESSIVE EPITAXIAL SEMICONDUCTIVE LAYERS FROM THE LIQUID PHASE.
- 3,566,013. OPTICAL REDUCTION OF LUMINANCE TO CHROMINANCE CROSSTALK IN COLOR TELEVISION CAMERAS.
- 3,566,016. COLOR TELEVISION CAMERA ENCODING SYSTEM.
- 3,566,017. TELEVISION COLOR DIFFERENCE SIGNAL ENCODING SYSTEM.
- 3,566,018. COLOR TELEVISION SIGNAL GENERATING SYSTEM.
- 3,566,084. DISCONTINUITY DETECTOR.
- 3,566,110. ELECTROSTATIC CHARGING APPARATUS WITH MEANS TO BLOW ELECTROSTATIC CHARGE ONTO A PHOTOCONDUCTIVE SURFACE.
- 3,566,172. LIGHT DEFLECTION SYSTEM.
- 3,566,246. CURRENT REGULATOR UTILIZING A FLOATING REFERENCE VOLTAGE SUPPLY.
- 3,566,295. SERVO SYSTEM INCLUDING DIFFERENTIAL AND UNBALANCE AMPLIFIERS.
- 3,566,321. ADHESIVE MOUNTING MEANS FOR A CATHODE RAY TUBE-YOKE COMBINATION.
- 3,566,357. MULTI-PROCESSOR MULTI-PROGRAMMED COMPUTER SYSTEM.
- 3,567,862. MONITORING OF PAL SIGNAL WAVEFORMS.
- 3,567,998. CORNER EDGE CONNECTOR FOR PRINTED CIRCUIT BOARDS.
- 3,568,174. COMPENSATED READBACK CIRCUIT.
- 3,568,178. ELECTRONIC PHOTOCOMPOSITION SYSTEM.
- 3,568,761. SEMICONDUCTOR MOUNTING ADAPTER.
- 3,568,762. HEAT PIPE.
- 3,568,907. REDUCTION OF TAPE STICKTION.
- 3,569,613. COLOR SUBCARRIER OSCILLATORS.
- 3,569,620. AUTOMATIC VIDEO SIGNAL GAIN CONTROLLING APPARATUS.
- 3,569,637. GAS ENVIRONMENT FOR RECORDER-REPRODUCER SYSTEMS.
- 3,569,740. SIGNAL TRANSLATING SYSTEM PROVIDING AMPLIFICATION AND LIMITING.
- 3,569,773. AUTOMATIC RETURN-TO-CENTER DEFLECTION CIRCUIT.
- 3,569,798. DOUBLE HEAT SINK SEMICONDUCTOR DEVICE.
- 3,569,867. TEMPERATURE-COMPENSATED FREQUENCY-VOLTAGE LINEARIZING CIRCUIT.
- 3,569,868. NONRECIPROCAL MICROWAVE DEVICES USING A SEMICONDUCTOR ELEMENT.
- 3,569,870. FEED SYSTEM.
- 3,570,622. SPEED CONTROL FOR MOTOR VEHICLES.
- 3,571,743. PHASE LOCK LOOP.
- 3,572,551. APPARATUS FOR MONITORING AND CONTROLLING THE CONCENTRATION OF TONER IN A DEVELOPER MIX.
- 3,572,672. VACUUM EVAPORATION APPARATUS.
- 3,572,922. APPARATUS FOR DEVELOPING ELECTROSTATIC IMAGES.
- 3,572,941. PHOTOCHROMIC DEVICE BASED UPON PHOTON ABSORPTION.
- 3,573,176. SELECTIVE ANODIZATION APPARATUS AND PROCESS.
- 3,573,354. COLOR KILLER AND A. C. C. CIRCUITS.
- 3,573,365. VIDEO MUTING CIRCUITS.
- 3,573,488. ELECTRICAL SYSTEM AND LSI STANDARD CELLS.
- 3,573,492. NOISE IMMUNITY CIRCUIT.
- 3,573,498. COUNTER OR SHIFT REGISTER STAGE HAVING BOTH STATIC AND DYNAMIC STORAGE CIRCUITS.
- 3,573,631. OSCILLATOR CIRCUIT WITH SERIES RESONANT COUPLING TO MIXER.
- 3,573,645. PHASE SPLITTING AMPLIFIER.
- 3,573,785. STROBOSCOPIC DISPLAY APPARATUS.
- 3,573,786. COMPENSATION CIRCUIT FOR ELECTRONIC PHOTOCOMPOSITION SYSTEM.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 261 patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036.

D. 219,886. TELEVISION RECEIVER OR SIMILAR ARTICLE.

D. 221,951. KEYBOARD FOR A COMPUTER OR SIMILAR ARTICLE.

Re. 27,072. INTEGRAL PULSE SWITCHING SYSTEMS.

Re. 27,134. KEYED BURST SEPARATOR.

3,560,275. FABRICATING SEMICONDUCTOR DEVICES.

3,560,357. ELECTROETCHING OF A CONDUCTIVE FILM ON AN INSULATING SUBSTRATE.

3,560,779. SHADOW MASK TYPE COLOR PICTURE TUBE WITH A FINE MESH FLEXIBLE PARTICLE SHIELD BETWEEN THE GUN AND TARGET PORTIONS.

3,560,789. GASEOUS ELECTRIC DISCHARGE TUBE INCLUDING A PLURALITY OF PUNCTURABLE GAS STORAGE CELLS.

3,560,842. SOLID STATE REGULATED POWER SUPPLY FOR INTERMITTENT LOADS WITH PLURAL CHARGING PATHS FOR A CAPACITOR.

3,560,865. DIRECT COUPLED AM DETECTOR.

3,560,887. DIRECTIONAL FILTER COMPRISING A RESONANT LOOP COUPLED TO A TRANSMISSION LINE PAIR.

3,560,893. SURFACE STRIP TRANSMISSION LINE AND MICROWAVE DEVICES USING SAME.

3,560,976. FEED SYSTEM.

3,562,404. SEMICONDUCTOR DEVICE.

3,562,555. MEMORY PROTECTION CIRCUIT.

3,562,559. P-MOS MULTIVIBRATOR.

3,562,665. MICROWAVE OSCILLATOR INCLUDING TWO BULK NEGATIVE RESISTANCE DEVICES IN A THREE-TERMINAL CAVITY.

3,562,669. FEEDBACK TYPE OSCILLATOR WITH INPUT STABILIZING MEANS.

3,562,709. CORRECTION OF BLOCK ERRORS IN A TRANSMISSION OF DATA.

3,562,714. TRANSCENDENTAL FUNCTION GENERATOR.

3,564,108. COAXIAL TRANSMISSION LINE.

3,564,125. TELEVISION INTEGRATED I.F. AMPLIFIER CIRCUITS.

3,564,130. ELECTRONIC PHOTOCOPY SYSTEM.

3,564,131. SPATIALLY MODULATED HALFTONE DOT IMAGE GENERATION SYSTEM.

3,564,135. INTEGRATED DISPLAY PANEL UTILIZING FIELD EFFECT TRANSISTORS.

3,564,141. SYNC REGENERATOR.

3,564,158. TAPE LIFTER.

3,564,325. DISPLAY DEVICE INCLUDING A POINT IMAGE.

3,564,436. HIGH INPUT IMPEDANCE AMPLIFIER.



- 3,573,832. UHF TELEVISION ANTENNA.
- 3,574,613. METHOD OF ELECTROSTATIC RECORDING ON A THERMOPLASTIC RECORDING ELEMENT.
- 3,574,664. ROOM TEMPERATURE ELECTROLESS NICKEL PLATING BATH.
- 3,575,491. DECREASING RESPONSE TIME OF LIQUID CRYSTALS.
- 3,575,492. TURN-OFF METHOD AND CIRCUIT FOR LIQUID CRYSTAL DISPLAY ELEMENT.
- 3,575,493. FAST SELF-QUENCHING OF DYNAMIC SCATTERING IN LIQUID CRYSTAL DEVICES.
- 3,575,555. SPEECH SYNTHESIZER PROVIDING SMOOTH TRANSITION BETWEEN ADJACENT PHONEMES.
- 3,575,608. CIRCUIT FOR DETECTING A CHANGE IN VOLTAGE LEVEL IN EITHER SENSE.
- 3,575,612. FET CONTROL SYSTEM EMPLOYING A STORAGE CAPACITOR AND SWITCHING TUBE MEANS.
- 3,575,617. FIELD EFFECT TRANSISTOR, CONTENT ADDRESSABLE MEMORY CELL.
- 3,575,627. CATHODE RAY TUBE WITH SCREEN COMPRISING LASER CRYSTALS.
- 3,575,743. METHOD OF MAKING A PHOSPHORUS GLASS PASSIVATED TRANSISTOR.
- 3,576,364. COLOR ADVERTISING DISPLAY EMPLOYING LIQUID CRYSTAL.
- 3,576,390. APPARATUS FOR GENERATING TEST SIGNALS USEFUL IN MEASURING TELEVISION TRANSMISSION PERFORMANCE WITHOUT AFFECTING RECEIVER SYNCHRONIZATION.
- 3,576,391. TELEVISION SYSTEM FOR TRANSMITTING AUXILIARY INFORMATION DURING THE VERTICAL BLANKING INTERVAL.
- 3,576,392. SEMICONDUCTOR VIDICON TARGET HAVING ELECTRONICALLY ALTERABLE LIGHT RESPONSE CHARACTERISTICS.
- 3,576,448. CIRCUIT PRODUCING OUTPUT PULSE OF POLARITY DEPENDENT ON RELATIVE TIMES OF OCCURRENCE OF INPUT PULSES.
- 3,576,461. CONSTANT VELOCITY VECTOR GENERATOR.
- 3,576,494. DIGITAL COMPUTER CONTROLLED TEST SYSTEM.
- 3,576,542. PRIORITY CIRCUIT.
- 3,576,546. PHOTOCHROMIC-PHOTOCONDUCTIVE MEMORY.
- 3,576,551. REPAIR OF THIN-FILM STRUCTURE SUCH AS CRYOELECTRIC MEMORY.
- 3,577,008. AUTOMATIC FREQUENCY CONTROL APPARATUS.
- 3,577,065. SWITCHING REGULATOR HAVING A DIODE CONNECTED TO AN INTERMEDIATE TAP OF A CHOKE.
- 3,577,087. SEQUENCE 'AND' GATE WITH RESETTING MEANS.
- 3,577,166. CMOS DYNAMIC BINARY COUNTER.
- 3,577,167. INTEGRATED CIRCUIT BIASING ARRANGEMENTS.
- 3,577,174. CIRCUIT FOR STARTING AND MAINTAINING A DISCHARGE THROUGH A GAS DISCHARGE TUBE.
- 3,577,181. TRANSISTOR PACKAGE FOR MICROWAVE STRIPLINE CIRCUITS.
- 3,578,836. RETRIEVAL OF HOLOGRAPHICALLY RECORDED DATA.
- 3,578,899. AUTOMATIC CHROMA CONTROL CIRCUIT.
- 3,578,900. VIDEO AMPLIFIER CIRCUIT.
- 3,578,901. VIDEO AMPLIFIER FOR DRIVING A DELAY LINE BETWEEN GROUNDED COLLECTOR AND GROUNDED BASE STAGES.
- 3,578,902. APPARATUS FOR SYNCHRONIZED GENERATION OF A SIGNAL FROM A COMPOSITE COLOR VIDEO SIGNAL SUBJECTED TO SIGNAL PERTURBATIONS.
- 3,578,903. CONTROL CIRCUITS FOR PREVENTING KINESCOPE COLOR SATURATION DURING BLOOMING.
- 3,578,989. PULSE WIDTH STABILIZED MONOSTABLE MULTIVIBRATOR.
- 3,579,057. METHOD OF MAKING A SEMICONDUCTOR ARTICLE AND THE ARTICLE PRODUCED THEREBY.
- 3,579,095. CIRCUITS USING TRANSISTORS TO PROVIDE VARIABLE PHASE SHIFT.
- 3,579,112. AUTOMATIC GAIN CONTROL SYSTEMS.
- 3,579,133. SIGNAL TRANSLATING STAGE.
- 3,579,144. RELAXATION OSCILLATOR GATED BY TRANSISTOR SWITCH.
- 3,579,160. BUSH BUTTON MECHANISM.
- 3,579,189. COUPLING AND DRIVING CIRCUIT FOR MATRIX ARRAY.
- 3,579,206. LOW INDUCTANCE INTERCONNECTION OF A CRYOELECTRIC MEMORY SYSTEM.
- 3,579,225. LIGHT PROBE CIRCUIT FOR PERSISTENT SCREEN DISPLAY SYSTEM.
- 3,579,267. DECIMAL TO BINARY CONVERSION.
- 3,579,332. SINGLE CRYSTAL ZINC OXIDE AND AN ELECTROPHOTOGRAPHIC PLATE MADE THEREFROM.
- 3,579,375. METHOD OF MAKING OHMIC CONTACT TO SEMICONDUCTOR DEVICES.
- 3,580,995. CONSTANT SIZED HALFTONE DOT IMAGE GENERATOR.
- 3,581,002. DISPLAY DEVICE FOR PROVIDING GRATI- CULES OF VARIOUS CONFIGURATIONS.
- 3,581,162. OPTICAL SEMICONDUCTOR DEVICE.
- 3,581,244. AUTOMATIC IMPEDANCE MATCHING CIR- CUI TS FOR VARIABLE FREQUENCY SOURCE.
- 3,582,202. PROJECTION OF COLOR-CODED B AND W TRANSPARENCIES.
- 3,582,389. METHOD FOR METALLIZING PHOSPHOR SCREENS.
- 3,582,390. METHOD OF METALLIZING PHOSPHOR SCREENS USING AN AQUEOUS EMULSION CONTAINING HYDROGEN PEROXIDE.
- 3,582,394. METHOD OF COATING WIDE-ANGLE CATH- ODE RAY PICTURE TUBE ENVELOPES.
- 3,582,408. MAGNETOSTRICTIVE ELEMENT.
- 3,582,544. TEST SIGNAL GENERATOR FOR PRODUCING TEST PATTERNS FOR A TELEVISION RE- CEIVER.
- 3,582,545. AUTOMATIC BLACK LEVEL VIDEO SIGNAL CLIPPING AND CLAMPING SYSTEM.
- 3,582,727. HIGH VOLTAGE INTEGRATED CIRCUIT IN- CLUDING AN INVERSION CHANNEL.
- 3,582,760. FREQUENCY MULTIPLIER.
- 3,582,831. LOW RELUCTANCE RESONANT STRUCTURE IN WAVEGUIDE FOR ISOLATING D.C. MAG- NETIC FIELDS.
- 3,582,907. LIGHT APERTURE MATRIX.
- 3,583,250. TRANSMISSION INCLUDING TOOTHED BELT AND PARTIALLY TOOTHED PULLEY.
- 3,584,147. CROSSTALK REDUCTION IN FILM PLAYER.
- 3,584,148. CONTINUOUS MOTION APPARATUS FOR TV FILM SCANNING.
- 3,584,149. REGISTRATION APPARATUS FOR TELEVI- SION FILM PROJECTION SYSTEM.
- 3,584,240. TRIGGER PULSE CIRCUITS.
- 3,584,650. REED ARMATURE VALVES FOR CONTROL- LING FLUID FLOW.
- 3,585,113. PROCESS FOR FABRICATING REPLICATING MASTERS.
- 3,585,284. COLORED LIGHT ENCODING FILTER.
- 3,585,290. CODING ARRANGEMENTS FOR MULTI- PLEXED MESSAGES.
- 3,585,295. VIDEO AMPLIFIER.
- 3,585,312. SIGNAL TRANSMISSION IN RECORDER SYS- TEMS WITH IMPEDANCE TRANSFORMA- TION.
- 3,585,430. GALLIUM ARSENIDE PHOSPHIDE CAMERA TUBE TARGET HAVING A SEMI-INSULAT- ING LAYER ON THE SCANNED SURFACE.
- 3,585,431. SHADOW-MASK CATHODE RAY TUBE IN- CLUDING A MASKING MEMBER COMPRIS- ING A SKIRT HAVING INDENTATIONS AND PROJECTIONS.
- 3,585,460. MINIATURE CERAMIC CAPACITOR AND METHOD OF MANUFACTURE.
- 3,585,465. MICROWAVE POWER TRANSISTOR WITH A BASE REGION HAVING LOW-AND-HIGH CONDUCTIVITY PORTIONS.
- 3,585,596. DIGITAL SIGNALLING SYSTEM.
- 3,585,952. SELF RIGHTING VESSEL.

- 3,586,356. CLAMP ASSEMBLY.
- 3,586,359. STRUCTURAL CORNER.
- 3,586,755. TEST SIGNAL GENERATOR.
- 3,586,769. VIDEO TAPE REPRODUCER SYSTEM HAVING AUTOMATIC STANDARD SELECTION.
- 3,586,917. SEMICONDUCTOR HYBRID POWER MODULE PACKAGE.
- 3,586,925. GALLIUM ARSENIDE DIODES AND ARRAY OF DIODES.
- 3,586,946. SERVO SYSTEM.
- 3,586,999. FIELD-EXCITED SEMICONDUCTOR LASER WHICH USES A UNIFORMLY DOPED SINGLE CRYSTAL.
- 3,587,043. CHARACTER PARITY SYNCHRONIZER.
- 3,587,087. DIGITAL COMPANDING LOOP FOR MONOBIT ENCODER/DECODER.
- 3,587,110. CORPORATE-NETWORK PRINTED ANTENNA SYSTEM.
- 3,587,148. METHOD OF ASSEMBLY OF ELECTRON TUBES.
- 3,587,521. APPARATUS FOR MONITORING AND CON- TROLLING THE CONCENTRATION OF POW- DER PARTICLES IN A MIXTURE OF POW- DER AND MAGNETIC PARTICLES.
- 3,588,224. ADJUSTABLE BANDWIDTH OPTICAL FILTER.
- 3,588,225. ELECTRO-OPTIC DEVICES FOR PORTRAYING CLOSED IMAGES.
- 3,588,325. COLORED LIGHT TRANSMISSION COMPEN- SATING ENCODING FILTER.
- 3,588,326. LENS ARRAY IMAGING SYSTEM FOR A COLOR ENCODING CAMERA.
- 3,588,338. GAMMA CORRECTION AND SHADING MODU- LATION CIRCUITRY FOR A TELEVISION CAMERA.
- 3,588,351. TELEVISION BLANKING AND SYNCHRONIZ- ING SIGNAL GENERATOR.
- 3,588,353. SPEECH SYNTHESIZER UTILIZING TIME- WISE TRUNCATION OF ADJACENT PHO- NEMES TO PROVIDE SMOOTH FORMANT TRANSITION.
- 3,588,363. WORD RECOGNITION SYSTEM FOR VOICE CONTROLLER.
- 3,588,439. HIGH RESOLUTION LASER ENGRAVING AP- PARATUS.
- 3,588,449. ELECTRONIC CHECK CASHING SYSTEM.
- 3,588,545. J-K' FLIP-FLOP USING DIRECT COUPLED GATES.
- 3,588,551. ADAPTIVE RESONANT FILTER.
- 3,588,566. ELECTROMAGNETIC DEFLECTION YOKE HAVING BYPASSED WINDING TURNS.
- 3,588,568. RECTANGULAR SHADOW MASK TYPE COLOR PICTURE TUBE WITH BARREL SHAPED MASK FRAME.
- 3,588,575. HIGH VOLTAGE ELECTRON DISCHARGE TUBE.
- 3,588,635. INTEGRATED CIRCUIT.
- 3,588,735. UHF OR L BAND NON-FREE-RUNNING AVALANCHE DIODE POWER AMPLIFYING FRE- QUENCY SYNCHRONIZED OSCILLATOR.
- 3,588,771. METHOD AND APPARATUS FOR MANUFAC- TURING MAGNETIC RECORDING TAPE.
- 3,590,275. CONTROL CIRCUITS.
- 3,590,308. HIGH VOLTAGE ELECTRON DISCHARGE TUBE HAVING ANODE TARGET.
- 3,591,108. CONTROL SYSTEM FOR SPINNING BODIES.
- 3,591,274. PROJECTION OF COLOR-CODED B AND W TRANSPARENCIES.
- 3,591,855. COMPLEMENTARY FIELD-EFFECT TRAN- SISTOR BUFFER CIRCUIT.
- 3,592,112. PHOTOGRAPHIC PRINTING OF CATHODE RAY TUBE SCREEN STRUCTURE.
- 3,592,528. PHOTOCHROMIC DISPLAY DEVICE.
- 3,593,041. DIFFERENTIAL PHASE DISTORTION COM- PENSATOR FOR COLOR TELEVISION EQUIPMENT.
- 3,593,054. IMAGE DEVICE HAVING 100 ANGSTROM BANDWIDTH PHOSPHOR EMISSIVE IN BLUE REGION.
- 3,593,193. HIGH POWER AVALANCHE DIODE MICRO- WAVE OSCILLATORS HAVING OUTPUT FREQUENCY ABOVE DIODE TRANSIT TIME FREQUENCY.
- 3,594,495. RADIO FACSIMILE POSTAL SYSTEM.
- 3,594,520. AGITATION SWITCH.
- 3,594,602. DISPLAY DEVICE INCLUDING RESILIENT MOUNTING MEANS.
- 3,594,640. CIRCUIT AND METHOD FOR MEASURING THE AMPLIFICATION FACTOR OF AN IN- CIRCUIT OR OUT-OF-CIRCUIT TRANSISTOR.
- 3,594,666. GYROMAGNETIC NOTCH FILTER.
- 3,594,897. METHOD OF CONSTRUCTING A MAGNETIC CORE MEMORY PLANE.
- 3,595,505. ROTATABLE SHAFT.
- 3,595,804. METHOD FOR PREPARING ZINC AND ZINC- CADMIUM SULFIDE PHOSPHORS.
- 3,595,993. NOISE CANCELLING CIRCUITS.
- 3,596,136. OPTICAL SEMICONDUCTOR DEVICE WITH GLASS DOME.
- 3,596,208. SAWTOOTH FREQUENCY MODULATION SYS- TEM INCLUDING A WAVESHAPING FRE- QUENCY MULTIPLIER CHAIN.
- 3,597,044. ELECTRO-OPTIC LIGHT MODULATOR.
- 3,597,639. PHASE SHIFT CIRCUITS.
- 3,597,658. HIGH CURRENT SEMICONDUCTOR DEVICE EMPLOYING A ZINC-COATED ALUMINUM SUBSTRATE.
- 3,598,646. METHOD FOR PREPARING OXIDE-COATED CATHODES.
- 3,598,750. PHOTOCHROMIC IMAGE DEVICE.
- 3,598,911. CIRCULATING MEMORY-REFRESHED DIS- PLAY SYSTEM.
- 3,598,978. OBJECT POSITIONING SYSTEM AND METH- OD.
- 3,599,092. KINESCOPE SIMULATOR USED IN CHECKING AN AUTOMATIC TESTING SYSTEM.
- 3,599,093. APPARATUS INCLUDING A WIRE TIPPED PROBE FOR TESTING SEMICONDUCTOR WAFERS.
- 3,599,146. MEMORY ADDRESSING FAILURE DETEC- TION.
- 3,599,184. STORAGE CIRCUIT.
- 3,599,192. TRANSDUCER SUPPORTING ARRANGEMENT FOR DISK MEMORY.
- 3,600,061. ELECTRO-OPTIC DEVICE HAVING GROOVES IN THE SUPPORT PLATES TO CONFIN E A LIQUID CRYSTAL BY MEANS OF SUR- FACE TENSION.
- 3,600,083. ELECTROSTATIC PRINTING SYSTEM EM- PLOYING A REPLACEABLE CARTRIDGE TO PROVIDE A SUPPLY OF A RECORDING ELE- MENT AND PROCESSING MEANS THERE- FOR.
- 3,600,089. FILM MERGING UNIT.
- 3,600,246. METHOD OF MAKING LAMINATED SEMI- CONDUCTOR DEVICES.
- 3,600,511. APPARATUS FOR CONTROLLING THE OPER- ATING POTENTIAL OF A VIDICON.
- 3,600,513. PROCESS FOR RAPID RECORDING OF PO- LYGONAL IMAGES.
- 3,600,561. DECADE COUNTER EMPLOYING LOGIC CIR- CUI TS.
- 3,600,635. PROTECTION CIRCUIT INCLUDING A THY- RISTOR AND A THREE TERMINAL DEVICE.
- 3,600,646. POWER TRANSISTOR.
- 3,600,649. HIGH POWER AVALANCHE DIODE.
- 3,600,699. FREQUENCY SYNTHESIZER HAVING A PLU- RALITY OF CASCADED PHASE LOCKED LOOPS.
- 3,601,465. HOLOGRAPHIC STORAGE AND RETRIEVAL OF INFORMATION.
- 3,601,529. COLOR TELEVISION SIGNAL-GENERATING APPARATUS.
- 3,601,647. HIGH POWER ELECTRON DISCHARGE DE- VICE HAVING ANODE WITH IMPROVED HEAT DISSIPATION CAPABILITY.
- 3,601,812. MEMORY SYSTEM.
- 3,602,570. APPARATUS FOR MAKING ANNULAR HOLO- GRAMS.
- 3,602,773. AC OVERCURRENT PROTECTION CIRCUIT.
- 3,602,780. RADIAL HIGH FREQUENCY POWER TRAN- SISTOR EMPLOYING PERIPHERAL EMIT- TER CONTACT RING AND HIGH CURRENT BASE CONTACT LAYER.



3,602,821.	NOISE IMMUNE PURE CARRIER DETECTOR CIRCUIT.	3,605,074.	ELECTRICAL CONNECTOR ASSEMBLY HAVING COOLING CAPABILITY.
3,602,822.	TELEVISION ELECTRONIC CONTROL CIRCUIT FOR CHANNEL SELECTIONS.	3,605,977.	THREE-AXIS DRIVE SYSTEM.
3,602,823.	ELECTRONIC SWITCHING OF TUNED CIRCUITS.	3,606,523.	FLUID VARIABLE LIGHT DEFLECTOR.
3,602,839.	INVERTER INCLUDING COMPLEMENTARY TRANSISTORS.	3,606,677.	MULTILAYER CIRCUIT BOARD TECHNIQUES.
3,603,732.	INSTANT-ON CIRCUITRY FOR SOLID STATE TELEVISION RECEIVERS.	3,609,004.	LIGHT DEFLECTION SYSTEM.
3,603,962.	COLOR DISPLAY FOR COMPUTER TERMINAL.	3,609,009.	BINARY LIGHT BEAM DEFLECTOR USING ACOUSTIC WAVES.
3,603,984.	PANEL STRUCTURE FOR MATRIX ADDRESSED DISPLAYS.	3,609,222.	ELECTRO-OPTICAL IMAGE FORMING SYSTEM.
3,604,080.	METHOD FOR MAKING AN ELECTRON-TUBE GRID ASSEMBLY.	3,609,224.	COLOR TELEVISION VIDEO SIGNAL PROCESSING APPARATUS.
3,604,504.	FLEXIBLE HEAT PIPE.	3,609,408.	CLOCK PULSE GENERATOR.
3,604,842.	AUTOMATIC CHROMA CONTROL CIRCUITS.	3,609,444.	CONSTANT TIME STROKE GENERATOR.
3,604,843.	AMPLIFIER CIRCUITS.	3,609,446.	POWER SUPPLY UTILIZING A DIODE AND CAPACITOR VOLTAGE MULTIPLIER FOR TRACKING FOCUSING AND ULTOR VOLTAGES.
3,604,987.	RADIATION-SENSING DEVICE COMPRISING AN ARRAY OF PHOTODIODES AND SWITCHING DEVICES IN A BODY OF SEMI-CONDUCTOR MATERIAL.	3,609,460.	POWER TRANSISTOR HAVING BALLASTED EMITTER FINGERS INTERDIGITATED WITH BASE FINGERS.
		3,609,687.	PATTERN RECOGNIZER.

## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner

F. H. BRONAUGH, Deputy Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 16, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pre-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-11-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-11-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-01-70
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-16-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar; Underwater Signaling; Directional Radio; Torpedoes; Seismic Exploring; Radio-Active Batteries; Nuclear Reactors; Powder Metallurgy; Rocket Fuels; Radio-Active Material.	5-21-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-23-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	9-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	10-12-70
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	8-07-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-20-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-19-70

Expiration of patents: The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 263. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 161.

Patents..... Numbers 2,695,998 to 2,698,433, inclusive.  
Plant Patents..... Numbers 1,328 to 1,338, inclusive.

# PATENTS

GRANTED DECEMBER 7, 1971

## GENERAL AND MECHANICAL

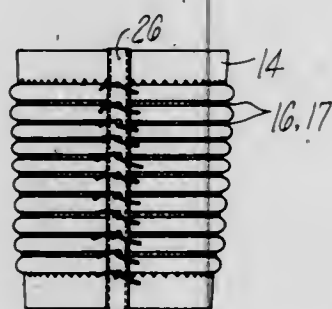
3,624,839

### METHOD OF FORMING A ROOT CORD RESTRAINED CONVOLUTE SECTION

Michael A. Marroni, Jr., Westogue, Conn., and John J. Korabowski, Springfield, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration  
Filed Dec. 20, 1968, Ser. No. 785,615  
Int. Cl. A62b 17/00

U.S. Cl. 2-2.1

2 Claims



Root cords utilized to constrain restraint fabric so as to form convolutes in a pressurized suit are slidably disposed on the fabric, thereby permitting fabrication of root restrained fabric suit sections from sheets of fabric, and also permitting adjustability of root diameters to vary the sizes of suits, and to accommodate minor tailored changes to improve comfort and mobility when the suit is being worn. cords are restrained by stitching and cloth tunnels.

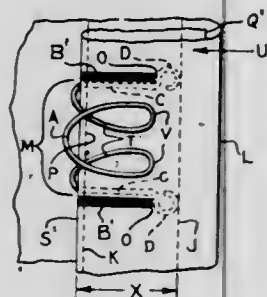
3,624,840

### GARMENT FASTENER

Raymond T. Kahn, 1551 N. Rural St., Indianapolis, Ind. 46201  
Filed Jan. 29, 1970, Ser. No. 6,810  
Int. Cl. A41b 1/10

U.S. Cl. 2-128

6 Claims



A fastener intended to replace button-type fasteners employed at intervals on a hem in the form of a resilient member such as wire or the like which includes a loop-type tongue with transfer leads extending from the tongue into mounting wings for mounting the fastener on a hem with the tongue adapted to engage an overlapping hem to retain the hems in overlapping position.

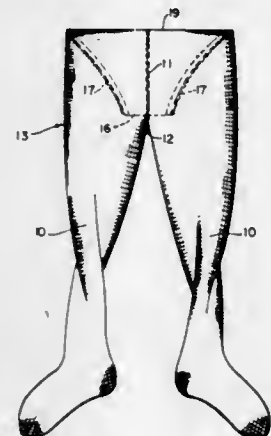
3,624,841

### CONTINUOUSLY PRODUCED PANTY HOSE WITH ATTACHED PANTY

Gerald Lewis, Riverdale, N.Y., assignor to Joseph Bancroft & Sons Company, New York, N.Y.  
Filed Nov. 25, 1969, Ser. No. 879,724  
Int. Cl. A41b 9/04

U.S. Cl. 2-224 R

8 Claims



Bikini-type panty hose with attached panty and a method for producing such panty hose, wherein the panty portion is formed from the panty hose garment itself. The bikini-type panty hose is made by appropriately scalloping opposite upper corners of a panty hose garment to create leg openings and a panty crotch portion, sewing the leg openings and crotch portion and inverting the upper portion along a predetermined line to form a panty. Elasticized material is attached at the waist and leg openings.

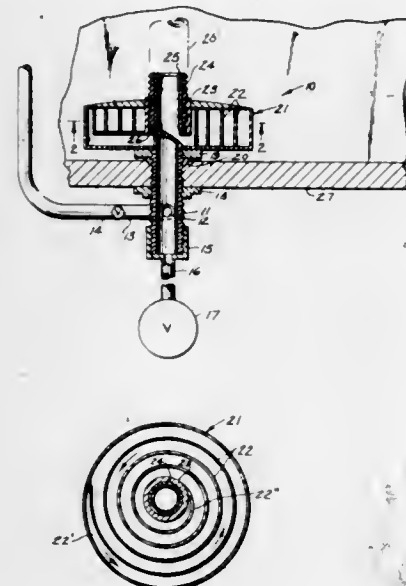
3,624,842

### ANTI-SWEAT ATTACHMENT FOR TOILETS

Clarence B. Harrison, 6148 E. Court St., Davison, Mich. 48422  
Filed May 18, 1970, Ser. No. 38,333  
Int. Cl. A47k 17/00; E03d 1/20

U.S. Cl. 4-1

5 Claims



A device for preventing the sweating of toilet tanks and the like. This device includes a spiral convoluted chamber

DECEMBER 7, 1971

GENERAL AND MECHANICAL

11

for mixing hot water with the cold water in the toilet tank closet. The device is of such construction as to be adaptable for the interior or exterior of the toilet tank closet.

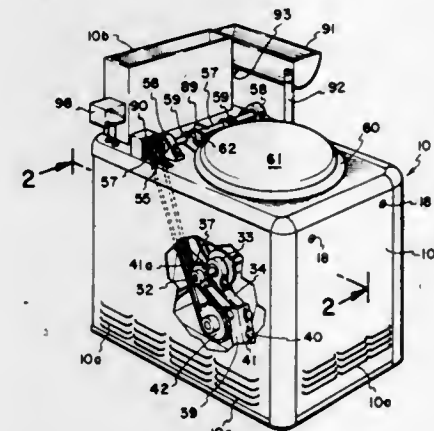
3,624,843

### COMBUSTION TOILET

Charles M. Andrus, Salt Lake City, Utah, assignor to Universal Development Company  
Filed Aug. 25, 1966, Ser. No. 575,074  
Int. Cl. A47k 11/02

U.S. Cl. 4-131

24 Claims



A combustion toilet having a housing with a toilet seat thereon. Rotating pockets arranged to be rotated from a waste receiving position beneath the toilet seat to a position wherein the pockets form part of a combustion chamber, a burner in the combustion chamber arranged to subject the interiors of the pockets to a cleanout flame when the pockets form part of the combustion chamber and a vent through which gaseous products of combustion are released from the combustion chamber. Rotation of the pockets and operation of the burner are responsive to movement of the associated toilet lid.

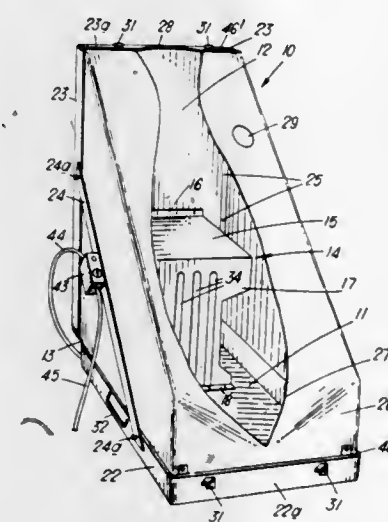
3,624,844

### STEAM OR VAPOUR BATH

Wallace Samuel Sharps, Penn, near High Wycombe, Buckinghamshire, England, assignor to Medexport Limited, London, England  
Filed Dec. 2, 1969, Ser. No. 881,552  
Claims priority, application Great Britain, Dec. 3, 1968, 57,378/68  
Int. Cl. A61n 33/06

U.S. Cl. 4-160

5 Claims



A steam or vapour bath comprises a cabinet within which a person may be seated, the cabinet including a base pivotally connected to a wall, said base and said wall being adapted to be moved relative to each other between, and to be retained in, an operative position in which the

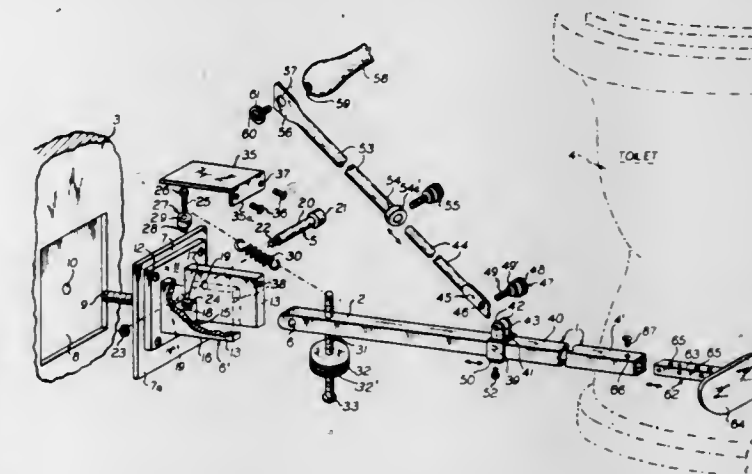
wall is substantially perpendicular to the base, and an inoperative position in which said wall is disposed adjacent and substantially parallel to the base. A seat is provided which is mounted within the cabinet and is pivotally connected thereto in such a way as to be moved between operative and inoperative positions when the base and wall are similarly so moved, the seat having a portion which, in the operative position, extends substantially perpendicular to said wall.

3,624,845

OTTO VORGANG, 68 W. 70th St., New York, N.Y. 10023  
Filed Mar. 16, 1970, Ser. No. 19,797  
Int. Cl. E03d 5/00

U.S. Cl. 4-249

22 Claims



A foot operated toilet flush, comprising a housing adapted to be mounted on a wall adjacent to but spaced from the floor, a substantially horizontally extending one-arm lever pivotally mounted at one end to the housing so as to pivot in substantially a vertical plane, at least one upwardly extending arm operatively connected to the lever and adapted to be secured at its upper portion to a toilet flush arm, and means disposed within said housing for biasing the lever into the substantially horizontally extending position, constituting an inoperative rest position.

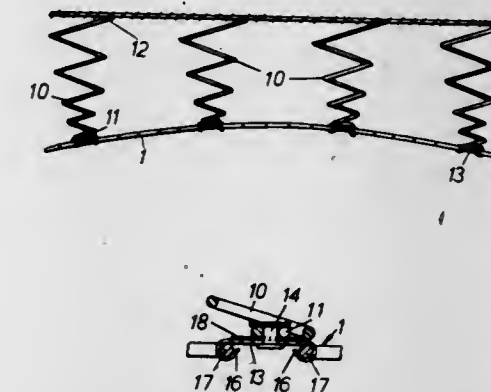
3,624,846

### SPRING UNITS

Ignacz Rub, 38 Park Drive, Golders Green, London, NW. 11, England  
Filed Feb. 25, 1970, Ser. No. 14,175  
Claims priority, application Great Britain, Feb. 26, 1969, 10,403/69  
Int. Cl. A47c 23/04, 25/00

U.S. Cl. 5-259

5 Claims



A spring unit comprising a spring layer formed from one or more serpentine-shaped springs and a second spring layer formed from coiled springs which are connected to the serpentine-shaped springs.



3,624,847

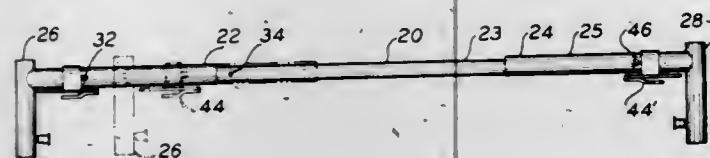
**ADJUSTABLE BED RAIL UNIT**

Charles E. Murcott, Huntington, and Arthur Salerno, Bay Shore, N.Y., assignors to Lumex, Inc., Bay Shore, N.Y.  
Filed Apr. 30, 1969, Ser. No. 820,441

Int. Cl. A47c 21/00

U.S. Cl. 5-331

8 Claims



A guard rail unit for hospital beds or the like including an adjustable spring-loaded frame assembly for mounting on differently sized bed frames. The frame assembly includes a guide and clamping device for quick assembly and release from the bed.

3,624,848

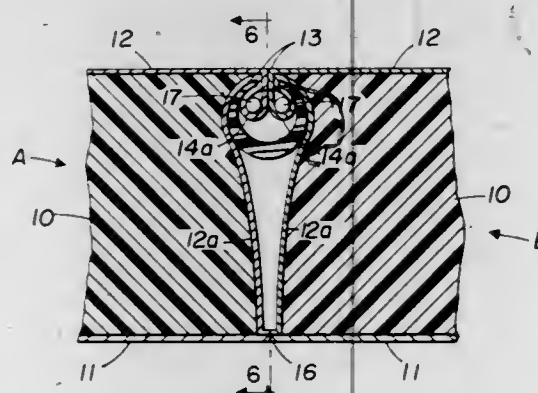
**CONNECTABLE FLOOR MATS FOR GYMNASTIC AND ATHLETIC PURPOSES**

George P. Nissen, Cedar Rapids, Iowa, assignor to Nissen Corporation, Cedar Rapids, Iowa  
Filed Jan. 23, 1969, Ser. No. 793,353

Int. Cl. A47g 9/00

U.S. Cl. 5-344

26 Claims



Gymnastic and athletic floor mats are disclosed composed of a succession of abutting rectangular mat sections, each individual section consisting of shock absorbing filler material enclosed by flexible sheet covers and permanently jointed to its neighbor by the top covers only of the two. Two or more such mats, each having several such sections, may be quickly and easily removably connected together, both end-to-end and/or side-to-side, to form large expanses of relatively unbroken mat top surface. The latter is accomplished by joining the top covers only of the respective individual abutting sections of the component mats by removable slotted tubular connectors, generally C-shaped in cross section, which engage and embrace projections formed along the edges of the respective abutting top covers, the connectors being disposed between the abutting side walls of the respective connected mat sections. The connector between each pair of such sections is readily slipped on or off endwise thereof when one component mat is flopped over onto another.

The foregoing connectors are preferably employed in combination with one or more such component mats in which the lengths of the individual sections of each component mat are a function of their thickness such that each component mat can be "roll-folded" up into a single, compact stack for ready transport and storage without the need first to separate it into its individual sections or groups of sections. One or more such mats are then removably joined to each other, end-to-end and/or side-to-side, by the aforesaid connectors in order to permit a wide range of mat sizes and shapes to be assembled from a few

basic "roll-foldable" mats. The removably joined mats can be "roll-folded" together as one mat as well as individually "roll-folded" when disconnected.

3,624,849

**DEVICE FOR LOCATING A SUBMERGED ITEM**

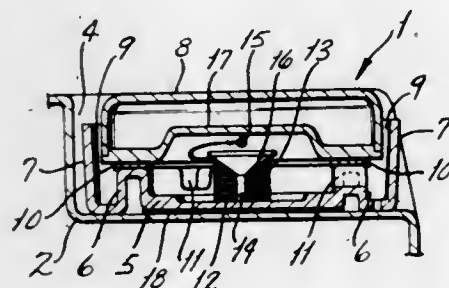
Elmer F. Brannaker, 811 Brookvale Terrace,  
Manchester, Mo. 63011

Filed Nov. 6, 1969, Ser. No. 874,487

Int. Cl. B63c 7/26

U.S. Cl. 9-9

4 Claims



A device for indicating the location of submerged items which includes a base member that is generally formed having a spool means mounted centrally to it, with the sides of said base member projecting upwardly coextensive with the spool means so as to provide for its shelter, a float connects by means of a soluble glue and/or an intermediate porous member to the base member, and a length of line is normally wound around said spool connecting to said base member at one end, with the other end of said line attaching to the float; when the item to which this device connects becomes submerged in water the soluble glue rapidly dissolves allowing for the float to elevate to the surface, thereby indicating the location of the submerged item. In other embodiments, the base member is formed having a clip-like arrangement for mounting of the device to, as for example, a fishing rod, while in another embodiment the spool and float may be connected inwardly of a series of cavities provided in the end of a handle portion of a fishing rod, and function similarly to the device previously described to indicate the location of the rod in the event that it is lost in any depth of water.

3,624,850

**BUILDING BLOCK SWEEP AND PALLET SCRAPER**

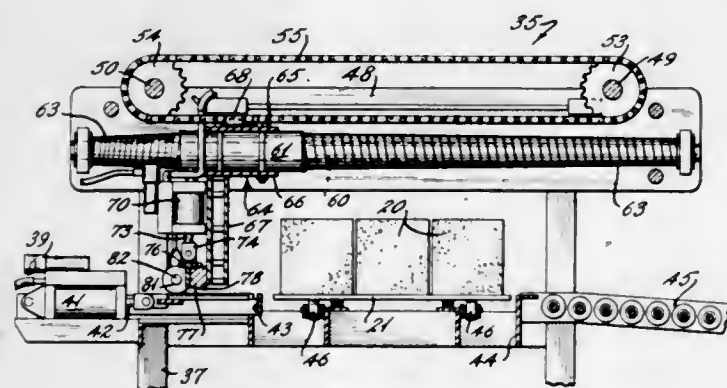
Richard C. Thompson, Chesapeake, Va., assignor to Southern Block and Pipe Corporation, Norfolk, Va.

Filed Dec. 1, 1969, Ser. No. 881,042

Int. Cl. B65g 69/00

U.S. Cl. 15-4

10 Claims



Apparatus for removing articles from pallets on which they have been formed while in a plastic state and have

hardened, and for simultaneously scraping the pallets to remove unwanted residue and place the pallets in condition to receive other articles to be formed.

3,624,851

**PROGRAMMED CAR WASHING APPARATUS**

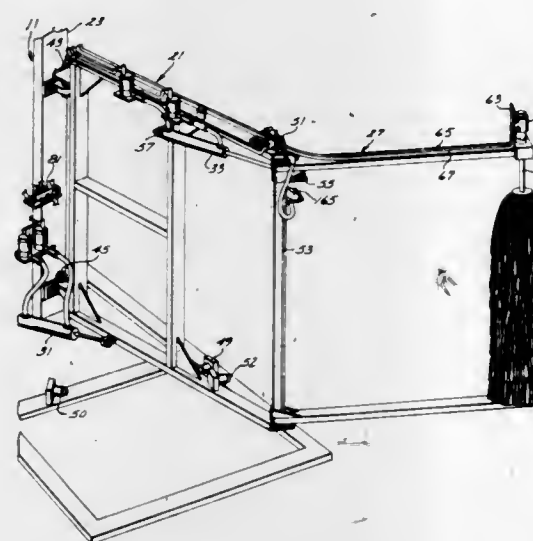
Ivan J. Barber, 559 Evans Ave.,  
Toronto 14, Ontario, Canada

Filed Nov. 5, 1968, Ser. No. 773,526

Int. Cl. B60s 3/06

U.S. Cl. 15-21 D

10 Claims



A car washing apparatus comprising a primary arm pivotally supported at one side of a path of a car to be washed and normally projecting rearwardly along said path. A secondary arm is pivotally supported on one end from the free end of the primary arm and normally projects transversely of the car path to mount a rotary brush on its free end for normal disposition centrally in said path. A first hydraulic-pneumatic cylinder urges the secondary arm to its unfolded position relative to said primary arm and a second hydraulic pneumatic cylinder controls the primary arm. When a forwardly moving car contacts the brush, the primary arm will be retracted to pull the brush across the front of the car and the forwardly moving car will fold the secondary arm on the primary arm. When the brush reaches the front corner of said car, the first cylinder will continue to urge the secondary arm to its unfolded position thus moving the brush rearwardly along said one side. Immediately after the brush clears the front corner of the car, the pressure to the second cylinder will be switched to extend the primary arm and hold the brush against the side of the car until the rear corner thereof is reached, at which time the brush will be moved across the rear of the car.

3,624,852

**MODULE CAR WASH**

Daniel C. Hanna, 16325 SE. Cherry Court,  
Milwaukie, Oreg. 97222

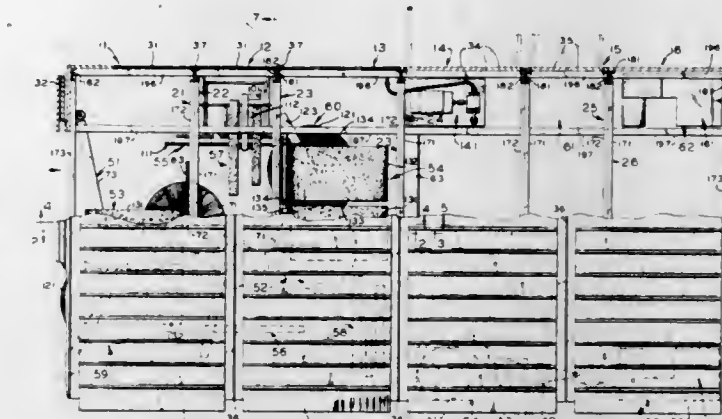
Continuation of application Ser. No. 826,067, May 12, 1969, which is a continuation of application Ser. No. 642,935, June 1, 1967. This application June 15, 1970, Ser. No. 48,876

Int. Cl. B60s 3/06

U.S. Cl. 15-21 D

21 Claims

A plurality of separate, arched frames carry siding sections on the sides thereof and carry car brushing, spraying and drying mechanisms to form modules which can be shipped separately. The frames can be assembled in side-by-side arrangement to form both the sidewalls and framing of a building as well as the support of the car brushing, spraying and drying mechanisms. Roof sections placed on the assembled frames complete the build-



equipment in less than eight hours, and enables the building to be very compact.

3,624,853

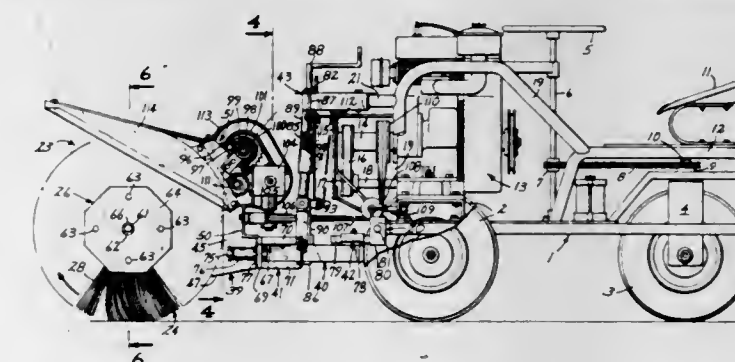
**ROTARY SWEEPER**

Orlando W. Kromer, Mound, Minn. 55364  
Filed Nov. 16, 1970, Ser. No. 89,876

Int. Cl. E01h 1/02

U.S. Cl. 15-82

8 Claims



A pair of axially aligned cylindrical brooms having inner ends each mounted on an opposite end of a rotary shaft for common rotation therewith, and supporting structure and a rotary power transmission element for the shaft disposed between the inner ends of the brooms, the shaft providing the sole support for at least one of the brooms from the supporting structure, whereby the outer end of at least one of the brooms is unobstructed.

3,624,854

**CAR WASHER**

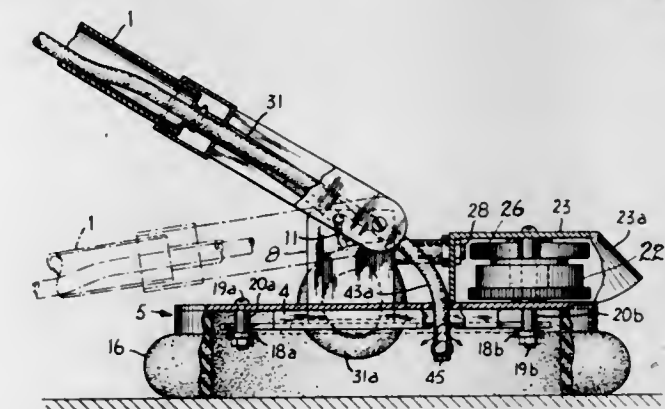
Edward W. Strong, Setauket, N.Y.  
(Curtis Road, Boxford, Mass. 01921)

Filed Aug. 26, 1969, Ser. No. 853,128

Int. Cl. B60s 3/04

U.S. Cl. 15-97

17 Claims



A car washer comprises a foam ring carried by a base plate mounted for oscillation at the end of a long tubular



handle. The base plate and foam ring are oscillated by eccentric weights rotated by vane wheels driven by wash water supplied through the handle. A detergent-water mixture is also supplied through the handle and is discharged inside the ring to wash the surface area engaged by the oscillating foam ring. The water which drives the vane wheels is discharged against the car surface outside the ring to rinse an area previously washed.

3,624,855

# CARPET AND FLOOR SWEEPER HAVING ADJUSTABLE HANDLE

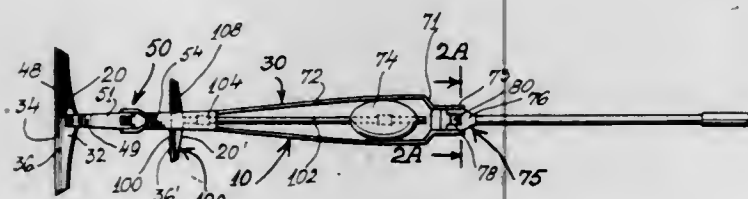
Leonard Shaw, 358 Montgomery St.,  
Brooklyn, N.Y. 11225

Filed Mar. 4, 1970, Ser. No. 16,483

Int. Cl. A471 13/12; B25g 1/06

U.S. Cl. 15—118

9 Claims



A carpet and floor sweeper has a sweeping head, shaft and handle joined by detent joints for setting the head and handle at various angles to the shaft. The sweeping head has a flexible blade with serrated edge for combing a carpet and collecting debris. The head is pivotally joined to a hinge member of the joint at the shaft. An attachment for sweeping a hard, smooth floor can be engaged on the blade of the sweeping head. The attachment is a slotted bar with a felt blade extending outwardly of one edge. A direct pusher-puller implement having a short handle and short blade with serrated edge is detachably carried by the shaft of the sweeper.

3,624,856

# APPLICATOR FOR USE IN SPREADING A SHAVING MATERIAL OR THE LIKE DISPENSED FROM A CONTAINER

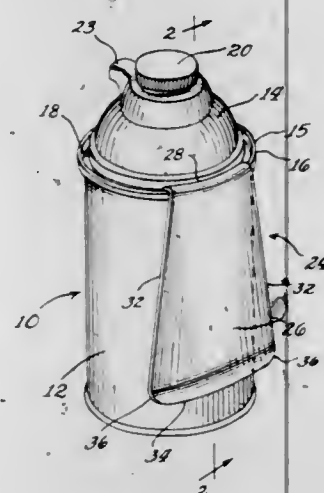
William C. Bailey, 6704 N. Rockwell St.,  
Chicago, Ill. 60645

Filed Dec. 4, 1969, Ser. No. 882,225

Int. Cl. A45d 27/02

U.S. Cl. 15—210

6 Claims



An applicator which has means formed at its upper end to permit it to be readily hung on an aerosol con-

tainer and supported thereby and which when removed therefrom is used to spread the shaving material or the like dispensed from the aerosol container.

3,624,857

# HEADLIGHT CLEANERS FOR VEHICLES

Walter Holzer, Meersburg, Germany, assignor to  
Holzer Patent AG, Zug, Switzerland

Filed Feb. 9, 1970, Ser. No. 9,719

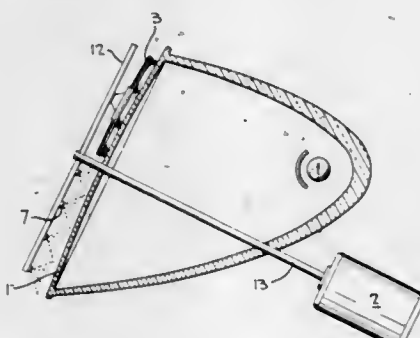
Claims priority, application Germany, Feb. 14, 1969,

P 19 07 601.8

Int. Cl. B60s 1/48

U.S. Cl. 15—250.04

5 Claims



Apparatus for wiping the inclined cover plate of a parabolic headlight enclosure is mounted to a rotatable shaft, which extends perpendicularly through the cover plate and through the headlight enclosure and is also inclined to the light optical axis so that interference of the shaft with the light projected from a light source mounted at the geometrical focus of the headlight enclosure is reduced.

3,624,858

# CLEANING APPARATUS

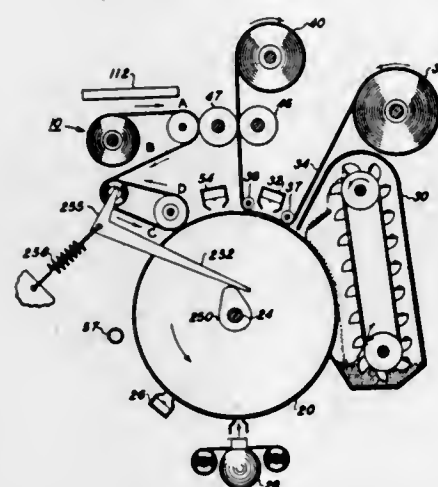
John A. Dimond, Pittsford, and Armistead Wharton,  
Henrietta, N.Y., assignors to Xerox Corporation,  
Rochester, N.Y.

Original application June 20, 1962, Ser. No. 647,411, now  
Patent No. 3,526,457, dated Sept. 1, 1970. Divided  
and this application Nov. 5, 1969, Ser. No. 871,251

Int. Cl. G03g 15/00; A471 13/40

U.S. Cl. 15—256.5

2 Claims



Apparatus for cleaning the surface on which electrostatic latent images are formed and developed. A web of fibrous material is advanced in constant linear increments into rubbing contact with the surface to be cleaned. A combination of loops in the web path enables cleaning two surfaces simultaneously utilizing both sides of the web.

3,624,859

# SCREENING MEANS FOR CLEANING OR OTHER TREATMENT OF ARTICLES PERMEABLE TO AIR

Carl Tage E. Folke, Hagersten, Sweden, assignor to  
AB Vibrasug, Johanneshov, Sweden

Filed Feb. 20, 1970, Ser. No. 13,090

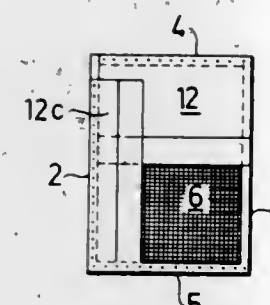
Claims priority, application Sweden, Apr. 9, 1969,

5,004/69

Int. Cl. A471 5/38

U.S. Cl. 15—307

1 Claim



The present invention relates to means for cleaning or other treatment of articles permeable to air, such as carpets, rugs, bedding, articles of clothing and the like, by directing a flow of air through the goods spread out on a support frame or a bottom permeable to air. This support frame or bottom covers a polygonal, preferably rectangular or square opening communicating with a chamber through which air is flowing. Such a treatment may serve various purposes. Usually it is used to remove dust and/or to disinfect the goods. In the latter case the air serves as carrier for disinfectant which is finely distributed therein. According to the invention there is provided at least one masking sheet or web of at least substantially air-tight material tightly attached along one side edge to said support frame on bottom along one side of said opening, a bar extending along the opposite edge of said material so as to permit the masking sheet or web to be folded around said bar over said support frame or bottom to and from said attached side edge.

3,624,860

# DOCTORS FOR PAPERMAKING MACHINES

Roger Anthony Grimston, Hemel Hempstead, and Alan  
Alfred Miles, Stoneleigh, England, assignors to Vickers  
Limited, London, England

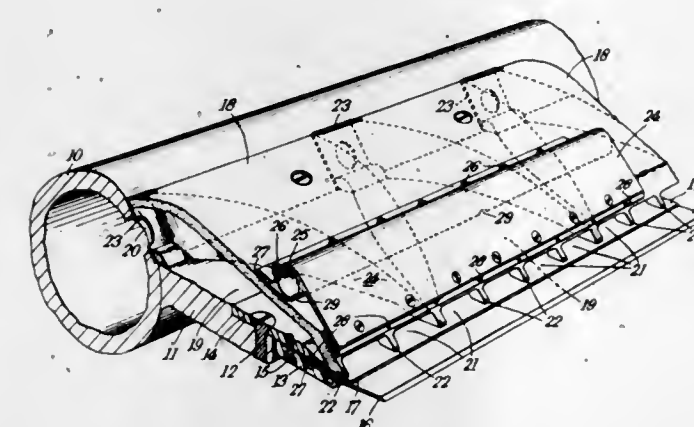
Filed Sept. 26, 1969, Ser. No. 861,410

Claims priority, application Great Britain, Oct. 1, 1968,  
46,589/68

Int. Cl. B31f 1/14; D21g 3/00

U.S. Cl. 15—308

3 Claims



The invention provides a doctor for doctoring a roll of a papermaking machine, in which the support for the doctor blade includes a suction duct extending for the

full length of the blade, contiguous suction nozzles extending forwardly from the suction duct to apply uniform suction to the blade, the nozzles providing a continuous wall extending rearwardly at a gradual inclination from the side of the blade remote from the roll, and an air blast duct mounted on the wall and having air blast nozzles situated between the suction nozzles and operative to discharge intermittently a substantially uniform flow of air towards the blade for the purpose of dislodging fuzz from the portions of the wall between the suction nozzles.

3,624,861

# RUG SCRUBBER

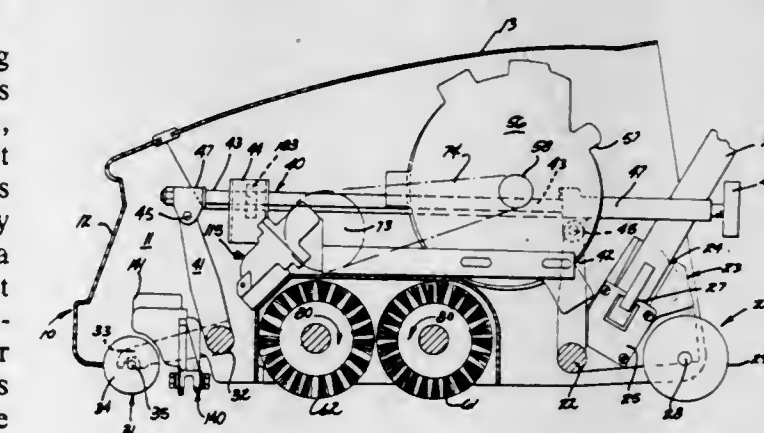
Frederick E. Freiheit, Muskegon, Mich., assignor to  
Clarke Floor Machine Division, Studebaker Corpora-  
tion, Muskegon, Mich.

Continuation of application Ser. No. 660,289, Aug. 14,  
1967. This application Oct. 10, 1969, Ser. No. 866,147

Int. Cl. A471 11/30

U.S. Cl. 15—320

5 Claims



A portable rug scrubbing unit having scrubbing, foam generating and vacuuming assemblies incorporated directly therein. The driving motor has an elongated shaft upon which are mounted a vacuum impeller assembly, a pressure impeller assembly and a pulley for driving the cylindrical scrubbing brushes. The brushes rotate in opposite directions via a gear train and by selectively shifting the handle, the operator may shift the weight of the device from one to the other of the brushes, thus tending to move the machine rearwardly or forwardly. Liquid detergent is supplied to a former assembly located adjacent the brushes. The foamer assembly mixes prescribed amounts of detergent and air causing it to emit therefrom onto the brushes in the form of dry foam which, when worked into the carpet by the scrubbers, suspends dirt and other foreign particles therein. The vacuum squeegee is positioned forwardly of the brushes, permitting the operator to scrub during forward motion of the machine and vacuum finally during the rearward motion of the machine. Suitable valves are provided, of course, for deactivating the foamer during any desired period.

The foam and particles suspended therein are transferred via the suction impeller to a suitable receptacle positioned on the handle of the machine. It is understood that this abstract is not to be utilized to limit the scope of this invention.

3,624,862

# KNIFE HINGE LATCH

Carl H. Little, Jamestown, N.Y., assignor to  
Weber-Knapp Company, Jamestown, N.Y.

Filed Apr. 23, 1969, Ser. No. 818,490

Int. Cl. E05d 11/10

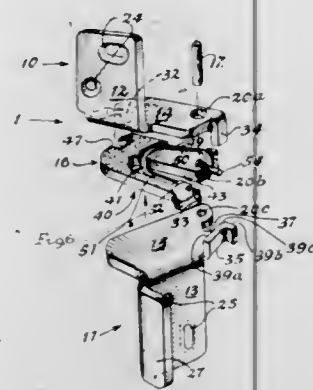
U.S. Cl. 16—145

12 Claims

A knife hinge latch for attachment of a door to a cabinet including a pair of hinge parts mounted one on each of the door and cabinet and joined by a hinge pin,



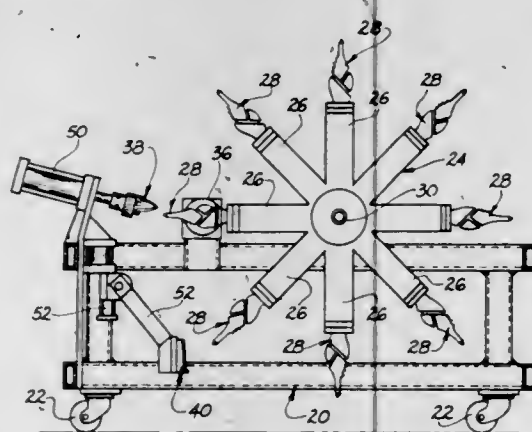
a keeper carried on one of the hinge parts, and a strike-bearing member carried on the other of the hinge parts. The strike-bearing member cooperates with the keeper



**3,624,863**  
**POULTRY CUTTING APPARATUS**  
Geno N. Gasbarro, 1305 Noe Bixby,  
Columbus, Ohio 43227  
Filed May 8, 1970, Ser. No. 35,603  
Int. Cl. A22c 21/00

U.S. Cl. 17-11

6 Claims



An automatic poultry cutting apparatus which is adapted to sever a commercially dressed poultry body into several predetermined pieces for subsequent retail use and requires no manual handling of the body during the cutting operation. The apparatus includes a poultry retaining mandrel adapted to receive the dressed poultry body which is automatically advanced to a cutting station adjacent to a plurality of movably mounted cutting blades. The blades are synchronized with the advance of the mandrel to engage predetermined portions of the poultry body, to sever the body into the predetermined number of pieces.

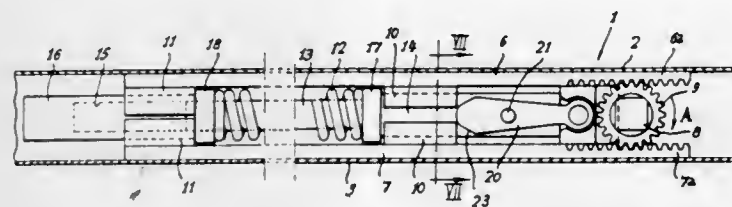
**3,624,864**  
**DOOR CLOSER**  
Eric Robert Marr, London, England, assignor to Brent  
Metal Works Limited, London, England  
Filed Nov. 6, 1969, Ser. No. 874,657  
Int. Cl. E05f 3/00

U.S. Cl. 16-62

4 Claims

This invention relates to a door-closer mechanism (particularly for stackable double-swing doors) which comprises a turnably mounted actuating member, first and second thrust members connected to the actuating member to move in opposite directions when the actuating member turns in either direction from a rest position, and a coil spring engaged by the thrust members with its axis parallel to said opposite directions, whereby turning the

turnable member in either direction from its rest position increases the stored energy of the coil spring. To control closing of the door damping means providing differential resistance to movement in two directions are

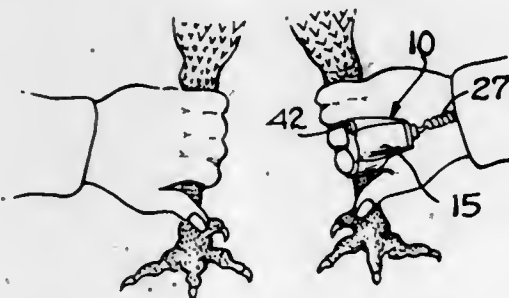


provided so that movement of the actuating member from its rest position in either direction is less damped by the damping means than return of the actuating member to its rest position under the influence of the coil spring:

**3,624,865**  
**HAND TYPE APPARATUS FOR QUIETING**  
**POULTRY DURING HANDLING THEREOF**  
Emery L. McDonald, 10395 Wunderlich Drive,  
Cupertino, Calif.  
Filed Mar. 31, 1970, Ser. No. 24,272  
Int. Cl. A22b 3/08; A22c 21/00

U.S. Cl. 17-11

9 Claims

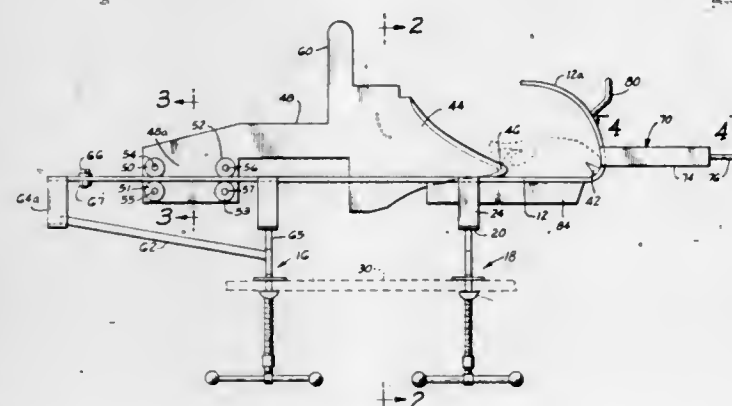


For pacifying birds into a state of calm during handling thereof from coop or yard to conveyance and from the latter to hangers incident to slaughter, a hand worn finger ring vibrator having a leg engaging palm plate for transmitting vibrations from the apparatus to the leg of a bird gripped by a hand wearing such apparatus and including visual means for exciting the curiosity of such birds for lulling them into a state of tranquility to thereby minimize undue excitement and wing flapping and resulting injury and bruising to the birds as well as the handler wearing such apparatus.

**3,624,866**  
**APPARATUS FOR BISECTING A FOWL**  
Leo Crappell, 102 Canal Drive, Franklin, La. 70538  
Filed Dec. 9, 1969, Ser. No. 883,563  
Int. Cl. A22c 21/00

U.S. Cl. 17-11

5 Claims



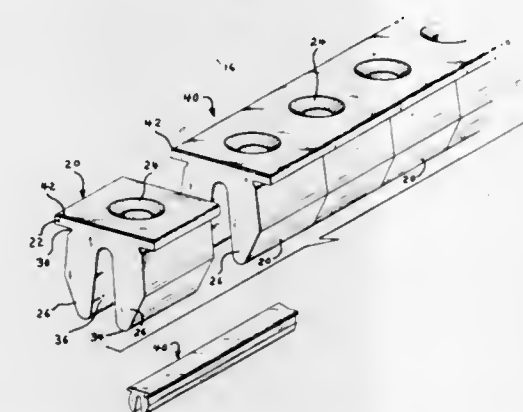
The apparatus includes a base having a surface upon which the fowl to be bisected can be positioned and held against movement along the surface in one direction. A

wedge-shaped knife blade is mounted for movement along the supporting surface with a portion of the blade extending into a longitudinally extending slot in the base. The forward, narrow end of the knife blade enters the vent of the fowl and bisects it as the blade moves parallel to the supporting surface.

**3,624,867**  
**PLASTIC LOCKING NUT IN STRIP FORM**  
Charles Edward Reynolds, Camp Hill, Pa., assignor to  
AMP Incorporated, Harrisburg, Pa.  
Filed Sept. 20, 1968, Ser. No. 761,063  
Int. Cl. A44b 21/00

U.S. Cl. 24-73 PF

5 Claims

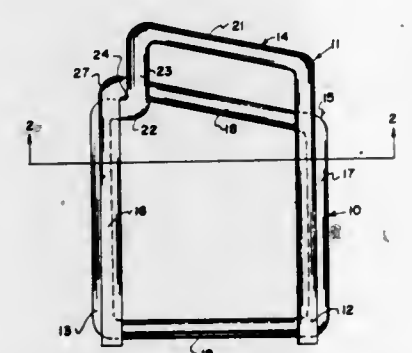


A plastic locking nut for fastening elements together is disclosed in strip form with a head portion of each of a series of nuts hinged to facilitate reeling of a strip of nuts and severing one nut from an adjacent nut for installation purposes. Each nut is provided with a cross-sectional configuration permitting the nut body to be formed essentially by extrusion with the nut including resilient legs operable transverse to the nut body in a sense accommodating extrusion tolerance and with the nut extrusion cut to provide its length dimension and thus made to a closer tolerance in such dimension. Each nut includes a slight recess between depending legs and the head portion to accommodate plastic scraped from the nut during installation.

**3,624,868**  
**SELF-LOCKING STRAP BUCKLE**  
Gert Somann, Centralia Industrial Park,  
Huron Park, Ontario, Canada  
Filed Oct. 5, 1970, Ser. No. 77,926  
Claims priority, application Canada, Nov. 17, 1969,  
67,546  
Int. Cl. A44b 11/00; B65d 63/06

U.S. Cl. 24-74 A

6 Claims

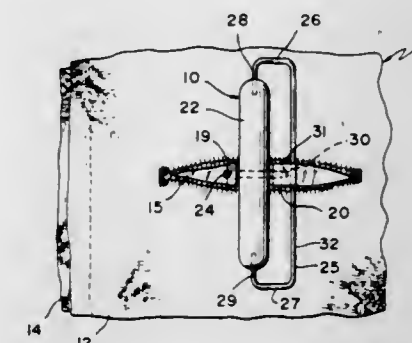


A wire buckle for web type strapping material is disclosed wherein the buckle maintains parallelism of the strap engaging arms. This is primarily achieved in the relationship by the formation of a notch by one of the bight members within which notch a distal leg is "locked" into position.

**3,624,869**  
**SAFETY LOCK CUFF LINK**  
Herman P. Filler, 1600 E. 41st St.,  
Cleveland, Ohio 58424  
Filed Sept. 8, 1970, Ser. No. 70,363  
Int. Cl. A44b 1/18

U.S. Cl. 24-90.5

8 Claims

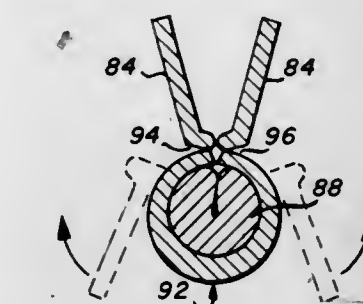


A cuff link for use with a shirt or blouse having French cuffs. Structurally, the cuff link has a narrow support adapted to extend through an opening provided therefor in the cuff, and the support is equipped at one end with a decorative face plate. Adjacent its opposite end, the support pivotally carries a lock bar selectively movable between a release position in alignment with the support to permit movement thereof through the opening in such cuff and a confining position at right angles to the support to prevent movement thereof through such opening to confine the link in functional association with a cuff. A safety latch structure incorporated in the cuff link includes a safety latch pivotally carried by the lock bar and a latch receiver in the form of a recess provided by the support. The safety latch is releasably engageable with the latch receiver to selectively constrain the lock bar against inadvertent movement thereof from its confining position in which it maintains the cuff link in functional association with a shirt cuff.

**3,624,870**  
**BINDING MAKING APPARATUS**  
David Scheff, 1376 Bretmoor Way,  
San Jose, Calif. 95129  
Filed Oct. 9, 1969, Ser. No. 865,081  
Int. Cl. A43c 9/04; A44b 21/00

U.S. Cl. 24-143 R

4 Claims



Apparatus for making selected lengths of bindings, such as shoelaces or the like, having end protective means disposed on the ends thereof comprising a long length of binding material having a plurality of ferrules disposed along the length thereof at spaced intervals. The ferrules are of a suitable length and cross section so as to be slidable along the binding material to selected positions and are deformable over the binding material so that when so deformed they will provide end protective means for a selected length of binding which may be cut from the binding material. Suitable deforming means are provided as a component part of the means for containing the lengths of the binding material.

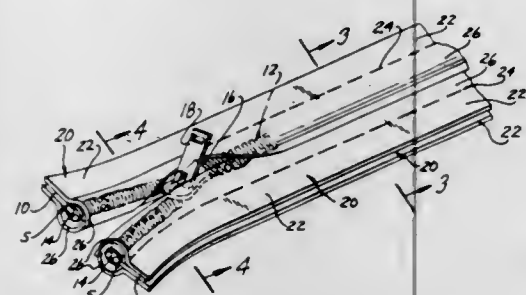


3,624,871

**COVERED SLIDE FASTENER**  
 Frederick N. Osterkorn, 45 East End Ave.,  
 Neptune City, N.J. 07753  
 Filed May 8, 1970, Ser. No. 35,862  
 Int. Cl. A44b 19/34

U.S. Cl. 24-205.1

5 Claims



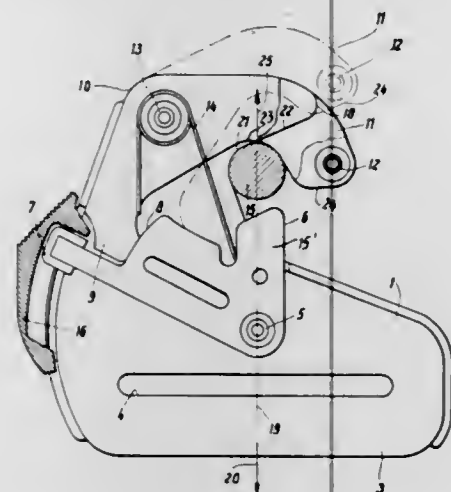
A covered slide fastener (zipper) in which the slide fastener elements (the coupling members) of each of a pair of cooperating stringers are covered by a cover element which extends over the slide fastener elements in the stringer, the cover element for each stringer being made of a resilient plastic material contoured or profiled to resiliently embrace the slide fastener elements on one side or face of such stringer. For a side and face and preferably for each side or face of the slide fastener, the cover elements of both cooperating stringers arrange themselves in mutually overlapping condition when the zipper is in closed condition. The slider of the slide fastener is movable in its zipper opening and closing operation fully embraced within the overlapping cover elements. The zipper thereby functions effectively as a snag-proof zipper.

3,624,872

**SELF-LOCKING CATCH FOR ATTACHING A SAFETY BELT IN A MOTOR CAR**  
 Arnold Blder, Hamburg-Garstedt, Germany, assignor to  
 Klippan G.m.b.H., Hamburg-Garstedt, Germany  
 Filed Sept. 11, 1969, Ser. No. 856,970  
 Claims priority, application Germany, Sept. 12, 1968,  
 P 17 80 408.9  
 Int. Cl. H44b 13/00

U.S. Cl. 24-241

4 Claims

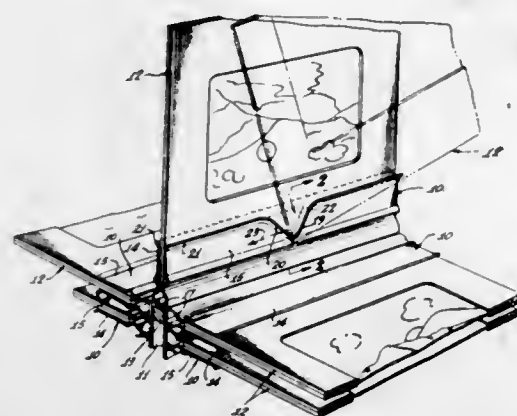


A self-locking catch for attaching a safety belt in a motor vehicle to a shackle comprises a bearing plate located between two side plates forming a casing, a spring-loaded retaining hook pivotally mounted on said bearing plate and a locking lever adapted to lock and release said retaining hook, an extension of said bearing plate having an edge on its underside comprising an arcuate portion for partly embracing said shackle and a straight portion adjoining said arcuate portion and extending below the retaining hook when the latter is in closing position.

3,624,873

**SLIDE-HOLDING CLIP**  
 Gerald J. Frey, 1834 Devon Road,  
 Pasadena, Calif. 91103  
 Continuation-in-part of application Ser. No. 865,613,  
 Oct. 13, 1969. This application Mar. 27, 1970,  
 Ser. No. 23,230  
 Int. Cl. A44b 21/00; G09f 11/14  
 U.S. Cl. 24-259 FC

15 Claims



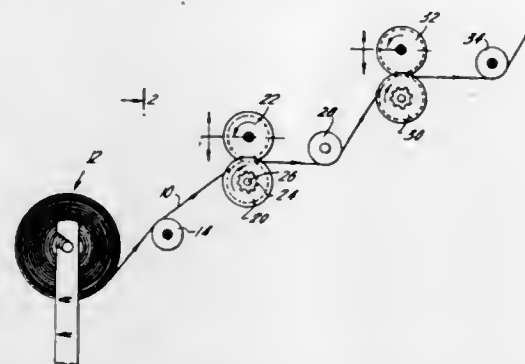
A slide carrier having an endless flexible belt adapted to be supported on two spaced shafts of a slide projector magazine and having a plurality of generally U-shaped spring clips each having two spring fingers pressed together to receive and hold a slide. The free edges of the fingers are inclined away from each other to form an entry mouth, and a V-shaped, flanged notch is formed in one finger, in alignment with an indentation in the other finger to receive the corner of a slide which spreads the fingers to facilitate insertion of the slide. Stop ribs are formed on both fingers to form a false bottom in the clip.

3,624,874

**APPARATUS FOR STRETCHING FABRICS**  
 Alfred E. Lauchner, Horn, Switzerland, assignor to  
 Raduner & Co. A-G, Horn, Switzerland  
 Continuation of application Ser. No. 532,397, Mar. 7,  
 1966, which is a continuation-in-part of application  
 Ser. No. 293,128, July 5, 1963. This application Nov.  
 18, 1969, Ser. No. 877,670  
 Claims priority, application Switzerland, July 6, 1962,  
 8,195/62  
 Int. Cl. D06c 3/06

U.S. Cl. 26-63

1 Claim



In apparatus for effecting micro-length stretching of webs of material transversely of the length of said webs comprising at least one pair of cylindrical rolls, each of said rolls having a series of circumferentially extending axially spaced grooves and lands, means mounting said rolls in parallel intermeshing relation so that the lands of one roll extend into the grooves of the other roll in spaced relation thereto, adjustable means for moving the rolls radially relative to one another to establish the desired amount of extension of the lands into the grooves of the rolls, means gripping longitudinally extending spaced parallel zones of said web as the web moves between the nip of the rolls, and means for rotating said

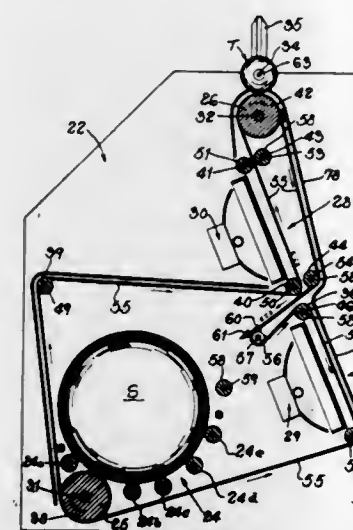
rolls at a predetermined angular rate in a direction to advance the web through the nip of the rolls to maintain a minimum tension on the web in a longitudinal direction, the distance between adjacent lands of each of said rolls being no greater than  $\frac{1}{40}$  the width of the web and said lands and grooves being in predetermined intermeshing relation to provide for a substantially uniform elongation of the web in a widthwise direction of at least 30% of the breaking elongation of the web material.

3,624,875

**MACHINE FOR INSPECTING A WEB OF CLOTH**  
 Peter Haft, Brooklyn, N.Y., assignor to Louis Pernick  
 and David Pernick, fractional part interest to each  
 Filed June 5, 1969, Ser. No. 830,738  
 Int. Cl. D06h 3/04

U.S. Cl. 26-70

1 Claim



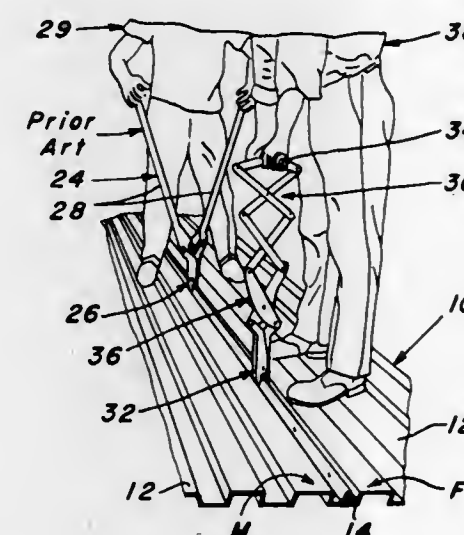
A machine for visually inspecting one or both sides of a web of cloth which is particularly adapted for inspecting tubular and open width fabric and is equipped with mechanism for automatically threading the web into the machine.

3,624,876

**MANUALLY OPERATED LIP CLINCHING TOOL**  
 Donald G. Irvin, East Burlington, Ontario, Canada, as-  
 signor to H. H. Robertson Company, Pittsburgh, Pa.  
 Filed Nov. 13, 1969, Ser. No. 876,536  
 Claims priority, application Canada, Dec. 10, 1968,  
 37,479, Patent 862,433  
 Int. Cl. B26f 1/36

U.S. Cl. 29-21.1

5 Claims



A manually operated lip clinching tool for clinching or dimpling interengaged connecting lips of adjacent

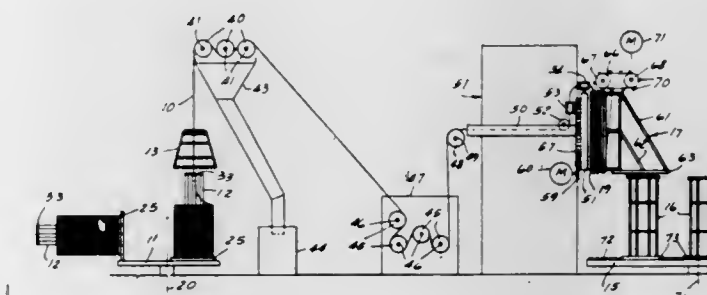
building construction panels. The tool comprises a handle, pivotal jaw means, and contractable and extensible jaw operating means—in the form of a lazy-tong assembly—connecting the handle to the pivotal jaw means. The jaw operating means converts forced downward movement of the handle into forced pivotal movement of the jaw means in a clinching direction.

3,624,877

**DESCALER FOR ROD AND THE LIKE**  
 James F. Sanders, Sterling, Ill., assignor to Northwestern  
 Steel and Wire Company, Sterling, Ill.  
 Filed Dec. 8, 1969, Ser. No. 883,039  
 Int. Cl. B21c 43/04

U.S. Cl. 29-81 A

11 Claims



Descaling apparatus and system including a turntable at the incoming end of the apparatus carrying a series of reels for bundles of rod. A second turntable for a series of reels is at the delivery end of the apparatus. The reels on the first turntable are pivoted to move from a horizontal loading position to a vertical pay-off position and are indexed, as loaded with rod beneath a guide basket. Bundles of coiled rod are placed on a reel when in a horizontal position, and as placed thereon, the trailing end of one bundle is welded to the leading end of the next bundle. The reel being full, is raised to a vertical position and as rod is paid off one reel a next adjacent full reel is indexed beneath the guide basket and the rod is trained from the basket about a series of overhead scale breaker rolls, downwardly about a second series of scale breaker rolls and then through a rod layer, laying the rod on a descaler block. The descaler block has downwardly turned guide stakes extending therefrom over a reel on the second turntable. The rod is picked from the descaler block and advanced along the guide stakes onto a reel on the second turntable. The descaling operation is a continuous operation and when the rod on one reel on the first turntable is paid off, its trailing end is welded to the leading end of the rod on a second reel.

3,624,878

**TOOLS FOR LATHES**  
 Leonard Victor Barnett, Gnilford, and George Nathan  
 Drinkwater, Little Brookham, England, assignors to  
 G. H. Drinkwater & Sons Limited  
 Filed Oct. 6, 1969, Ser. No. 864,045  
 Claims priority, application Great Britain, Oct. 9, 1968,  
 47,774/68  
 Int. Cl. B23b 29/00, 43/02

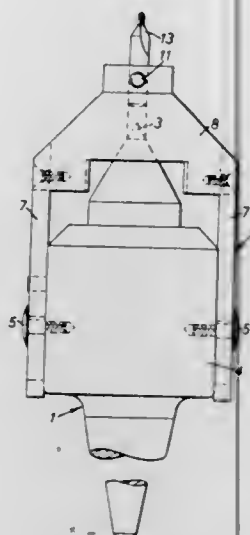
U.S. Cl. 29-96

4 Claims

A tool carrier for mounting and centering a tool on a centre receivable by a tail stock or turret comprising a body portion and parallel arms extending therefrom, the body portion including a conical recess in which a conical portion on the centre bears when the tool carrier is centred on the centre and a tool socket coaxial with the recess, the carrier being pivotal on and axially movable relative to the centre by pins extending through longitudinally extending apertures adjacent the ends of the arms of the



carrier into the centre or a ring removably fixed round the centre, whereby the carrier can be moved from an



operative position when it is centred on the centre to an inoperative position.

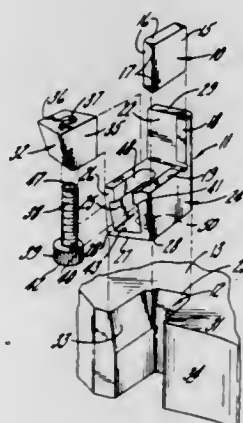
3,624,879

### CUTTER WITH NESTED INDEXABLE BLADE CLAMPED BY SCREW ACTUATED WEDGE

James C. Ayer, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.  
Filed Jan. 19, 1970, Ser. No. 3,687  
Int. Cl. B26d 1/12

U.S. Cl. 29—105

7 Claims



In the disclosed face milling cutter, square and indexable inserts of cutting material are clamped in cutting position between a wedge and an opposed wall of a body slot by inward drawing of a wedge during tightening of a screw threading only into the wedge and having a head whose underside, during tightening of the screw, presses against an abutment on a nest which provides a seat for locating the insert in its various indexed positions and is temporarily replaceably fixed in a slot of the cutter body by tack welds at opposite ends of the nest.

3,624,880

### PISTON AND END DAM SEALING APPARATUS FOR ADJUSTABLE DEFLECTION ROLLS

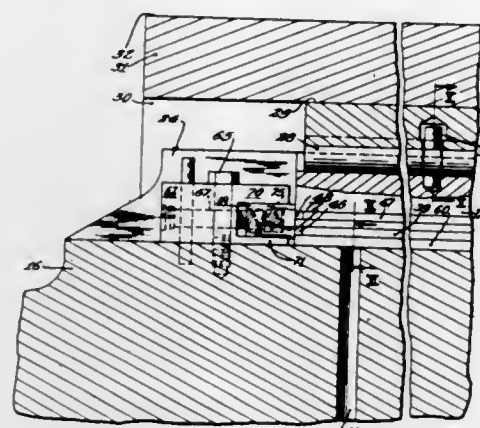
Edgar J. Justus, Beloit, Alan R. Sorenson, Orfordville, and John Paul Turcotte, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.  
Filed June 8, 1970, Ser. No. 44,319  
Int. Cl. B21b 13/14

U.S. Cl. 29—116 R

25 Claims

The piston for controlling deflection of a controlled deflection roll is disposed in an elongated slot in the center shaft of the roll and provided with metal sealing strips

which are spring biased to be urged against the sidewalls of the elongate slot for initial sealing of the piston. A fluid passageway is provided in communication with shaped surfaces of the sealing strips to force the sealing strips against the adjacent walls of the elongate slot and the seating groove of the piston for the sealing strips.



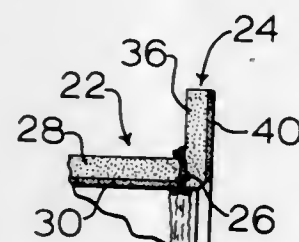
A pair of end dams are provided to define the ends of the elongate slot and to provide the slot with a variable length by means of fluid operated end dams pistons which are also spring biased to provide initial sealing against the end of the piston prior to the application of fluid pressure.

3,624,881

### METHOD OF MANUFACTURING A FLANGED BI-METALLIC BUSHING

Larry A. Brown, Peoria, Ill., Lavern J. Kracht, North Madison, Ohio, and John H. Paine, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Filed June 8, 1970, Ser. No. 44,354  
Int. Cl. B23p 11/00; B21d 53/10; B23k 27/00  
U.S. Cl. 29—149.5

5 Claims



A bi-metallic bushing has a sleeve portion and a flange portion wherein a relatively strong steel material is provided as a backing and a relatively thin layer of bearing material is applied thereto to form a bearing surface for both the sleeve and the flange, and wherein the sleeve portion and the flange portion are joined to each other by inertia friction welding.

3,624,882

### METHOD OF MAKING AND ASSEMBLING LINED GATE VALVES

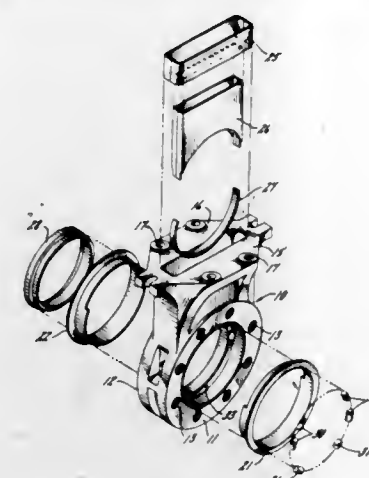
Lloyd E. Gustafson, New Brighton, Minn., assignor to Dezurik Corporation, Sartell, Minn.  
Original application June 19, 1968, Ser. No. 738,347, now Patent No. 3,545,480. Divided and this application Jan. 2, 1970, Ser. No. 39  
Int. Cl. B21d 53/00; B21k 29/00; B23p 15/26

U.S. Cl. 29—157.1 R

6 Claims

A method of fabricating a lined gate valve is disclosed in which a sleeve opening cast within the valve body member is used as a reference for final machining both

the valve throat and valve seat. Preformed throat and sleeve liner sections are fabricated to form a continuous



corrosion-resistant inner surface contiguous with and supported by the body material.

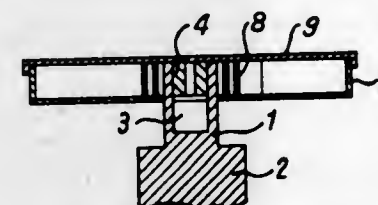
3,624,883

### PROCESS FOR FORMING SPIRALLY WOUND MAIN SPRINGS

Thomas Baehni, Brugg, Switzerland, assignor to Societe des Fabriques de Spiraux Reunies, Bienne, Switzerland  
Filed Feb. 7, 1969, Ser. No. 797,456  
Claims priority, application Switzerland, Feb. 8, 1968, 1,876/68  
Int. Cl. B23p 13/00

U.S. Cl. 29—177

7 Claims



A process for forming a spirally wound main spring comprises securing one end of a strip of spring material to a timepiece collet and then rotating the timepiece collet relative to the other end of the spring strip to spirally wind same into a main spring. During rotation of the collet, the wound coils of the spring are restrained from radially separating from one another and after the spring is fully wound, the spring is relaxed and the coils are allowed to radially separate. The relaxed spring may then be subjected to a thermal treatment to heat-set the spring.

3,624,884

### TRANSMISSION REPAIR TOOL

Emilio Scime, 919 65th Ave., Brooklyn, N.Y. 11223  
Filed Aug. 19, 1969, Ser. No. 860,143  
Int. Cl. B23p 19/00; B25b 27/06

U.S. Cl. 29—200 P

12 Claims



A bore, such as a governor bore in a transmission housing, is repaired by employing a first tool for burnishing

and enlarging the bore and a second tool for installing a bushing in the enlarged bore so as to restore the bore to its original diameter. Each of the tools is aligned within the bore when in use by means of an alignment guide which is mounted in the axis of the bore and which slidably engages the tool.

3,624,885

### APPARATUS FOR MAKING A THERMALLY INSULATING JOINT CONSTRUCTION AND AN ADJUSTABLE GUIDE ASSEMBLY FOR USE THEREWITH

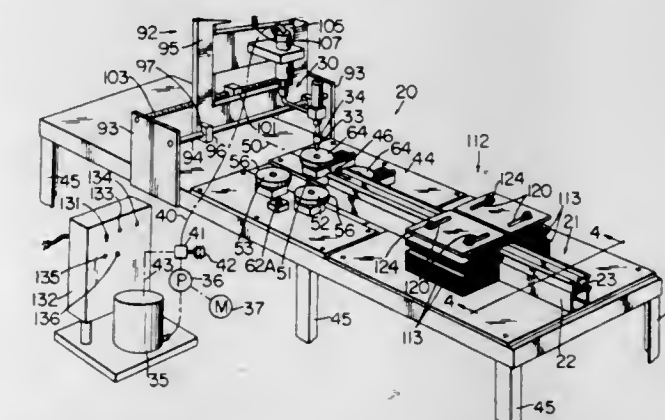
William H. Holliday, Bon Air, and Layle B. Barker, Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Nov. 17, 1969, Ser. No. 877,212

Int. Cl. B23p 17/00, 19/00

U.S. Cl. 29—200 A

27 Claims



A head assembly having a nozzle for dispensing a thermal insulating material is supported at a dispensing station and a dual-purpose device is provided and used for supporting and moving straight rigid members in a rectilinear path past the dispensing station so that an open channel in each member may be filled by gravity with the thermal insulating material. A guide assembly is also provided and adjusted so that members of irregular cross-sectional configuration may be easily guided along the rectilinear path.

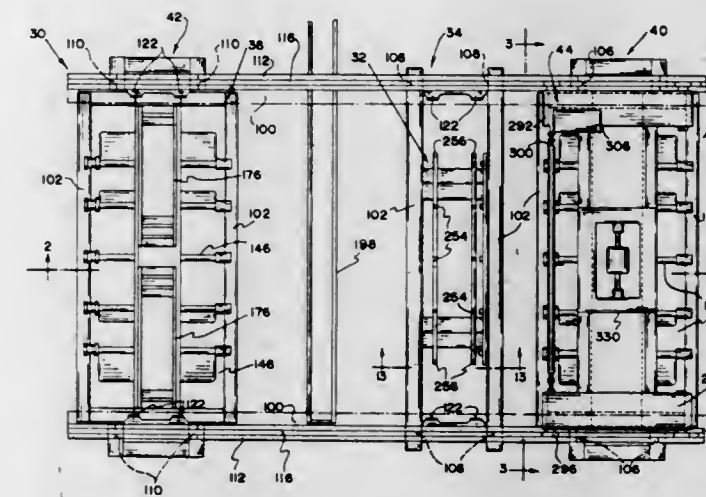
3,624,886

APPARATUS FOR ASSEMBLING A WORKPIECE  
Joseph E. Powers and Alfred F. Bastian, Napa, Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.  
Original application Mar. 27, 1967, Ser. No. 626,111, now Patent No. 3,507,024, dated Apr. 21, 1970. Divided and this application Nov. 24, 1969, Ser. No. 877,593

Int. Cl. B23p 19/00, 17/00

U.S. Cl. 29—200 J

28 Claims



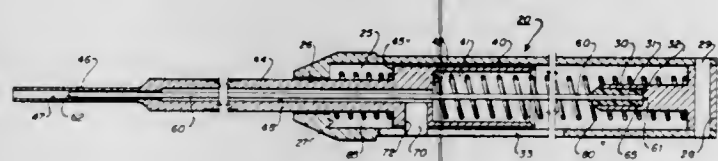
An apparatus for assembling a workpiece, especially a modular workpiece, wherein a group of elements of



the workpiece is oriented in predetermined angular and spaced relationship in one location; wherein these elements, with their angular and spaced relationship under control, are transferred as a group to another location where they are assembled in said predetermined relationship with another element of the workpiece; and wherein the assembled elements are interconnected.

3,624,887

**PIN AND SOCKET REMOVAL TOOL**  
Wolfgang Hilbert, Holzkirchen, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.  
Filed Mar. 2, 1970, Ser. No. 15,382  
Int. Cl. B23p 19/00; B25b 27/02; H01r 3/00  
U.S. Cl. 29—203 H 12 Claims



A hand tool having a slender pin-sized plunger extending through a hollow slide with a socket-sized ferrule. Coil springs bias against travel of the slide between extended and retracted positions with respect to the plunger. The extended position may be locked by rotation of the slide to engage a bayonet pin within a retaining J-slot. Pin removal is by reception of a pin in the ferrule at the extended position and pushing outward against the pin shoulder. Socket removal is by release of the extended position and insertion of the plunger for pushing at the bottom of the socket, the ferrule retracting along the plunger and providing protection and compressive bracing thereof.

3,624,888

**TOOL FOR WRAPPING AND REMOVING CONDUCTORS FROM TERMINALS**  
Arthur S. Kester, Chicago, Ill., assignor to Rauland-Borg Corporation, Chicago, Ill.  
Filed July 20, 1970, Ser. No. 56,492  
Int. Cl. H01r 43/04; H05k 13/00  
U.S. Cl. 29—203 H 4 Claims



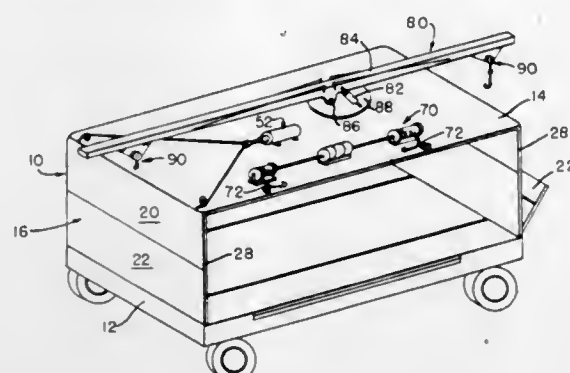
A hand tool with an adjustable tubular shank for wrapping electric wire conductors onto electric terminals including an attachment for unwrapping wire from the terminals. The tool also includes means for feeding a wire conductor through a tubular shank and hand wrapping a continuous length of wire conductor on a sequence of terminals for establishing a common circuit connection.

3,624,889

**MOBILE PLANT FOR THE FABRICATION OF STRUCTURAL MODULES**  
William Greenhalgh, P.O. Box 521, Oshawa, Ontario, Canada  
Filed Feb. 12, 1970, Ser. No. 10,754  
Int. Cl. B23p 19/00 7 Claims

A portable self-contained factory for the fabrication and erection of structural modules comprising a housing provided with ground traversing support means and wherein the housing provides means for the storage

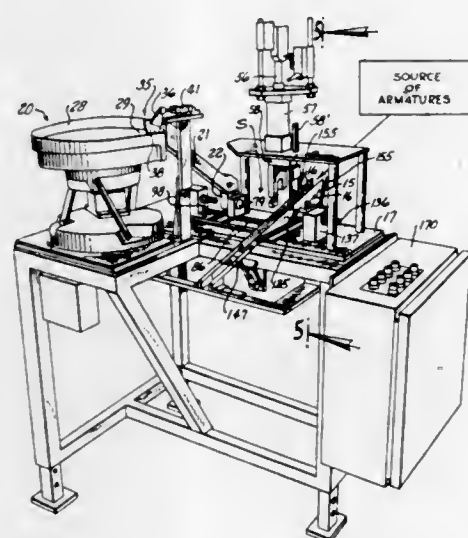
and dispensing of at least framing studs and construction board panels to facilitate the fabrication of at least modular construction panels such as suitable for the production of pre-fabricated housing units. The portable



factory is additionally provided with ancillary means for the handling of modules produced to erect and dismantle structures consisting of panels produced by the utilization of the factory.

3,624,890

**MACHINE FOR AUTOMATICALLY ASSEMBLING ARMATURE CORES AND COMMUTATORS THEREFOR**  
Thomas L. Schuette, Osseo, Melvin J. Straub, Minnetonka, and Pierre Dumas and Peter F. Aurich, Minneapolis, Minn., assignors to Possis Machine Corporation, Minneapolis, Minn.  
Original application Feb. 20, 1969, Ser. No. 801,084, now Patent No. 3,579,771, dated May 25, 1971. Divided and this application Sept. 16, 1970, Ser. No. 72,576  
Int. Cl. H02k 15/00; H01r 43/06  
U.S. Cl. 29—205 CM 13 Claims

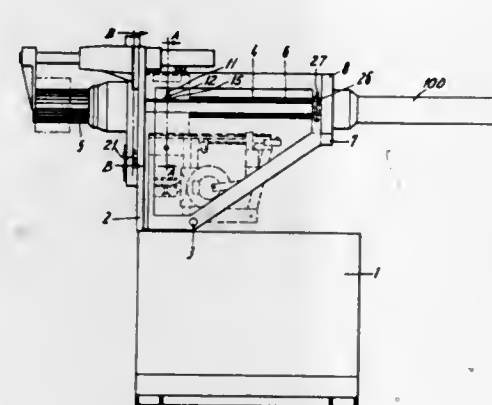


Feeding mechanism successively brings armature cores and commutators therefor to an assembly station where they are held in coaxial endwise spaced relationship and where rotation imparting mechanism brings each armature core and commutator pair into correct angular relationship. A ram then pushes the commutator axially towards the armature core with the terminal tangs on the commutator facing the core, and presses it onto the shaft thereof, moving the commutator through a die which straightens tangs that may be askew. The tang straightening die has a round hole that slidably accepts the commutator, and longitudinally extending circumferentially spaced parallel grooves that slideably accommodate the tangs. When the commutator reaches proper position on the armature shaft, and while still in the die, a tang shaping member having circumferentially spaced parallel fingers, one for each tang, telescopes over the commutator,

each finger moving along one of the grooves to engage under the tang therein and lift it into contact with the bottom of the groove.

3,624,891

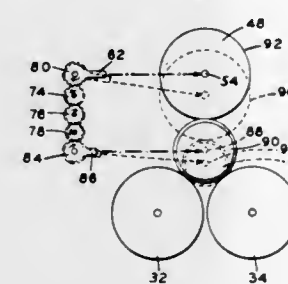
**MACHINE FOR INSERTING WINDINGS INTO STATORS OF ELECTRIC MOTORS**  
Hans Droll, Bergen-Enkheim, Germany, assignor to Balzer & Droll KG., Niederdorfelden an der Rosenhelle, Germany  
Filed June 23, 1969, Ser. No. 835,704  
Claims priority, application Germany, July 9, 1968, P 17 63 641.8  
Int. Cl. H02k 15/04  
U.S. Cl. 29—205 R 8 Claims



A machine for inserting windings into stators of electric motors and like machines which is provided with an insertion tool for the windings so arranged as to be held in its operative position in the machine frame by means of readily releasable quick-acting locking means disposed one on each side of the inserting tool and adapted on release to allow the tool to be lifted bodily out of the machine frame. The tool may be provided with lifting lugs adapted to receive the load hook of a crane. Locking means for the rear end, which may be telescopically formed with respect to the front end, may also be provided. If the tool, as is known, is provided with a rotatable ratchet disc held in position by a pawl engaging one or other of its teeth, means are provided for moving the pawl out of its engaged position.

3,624,892

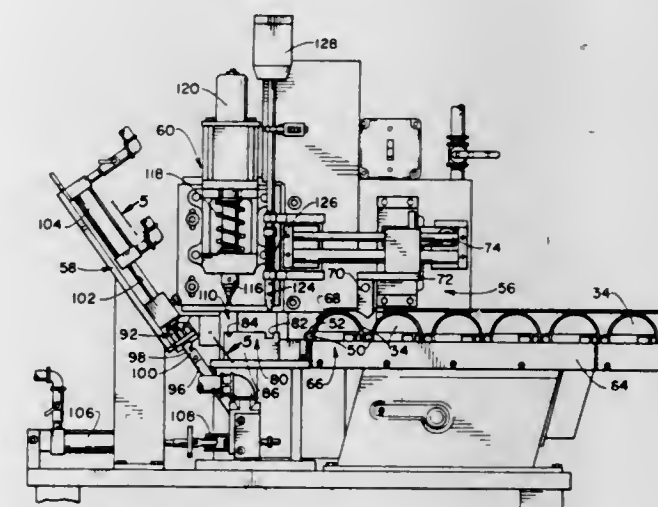
**APPARATUS FOR STRIPPING FLEXIBLE TUBES FROM MANDRELS**  
Levi Monteiro, Plymouth, Mass., assignor to Armstrong Cork Company, Lancaster, Pa.  
Filed Aug. 1, 1969, Ser. No. 846,888  
Int. Cl. B23p 19/02, 17/04  
U.S. Cl. 29—235 8 Claims



An apparatus for stripping flexible tubes from mandrels on which they are cured. The bond at the interface between the tube and the mandrel is broken by injecting a liquid at high pressure into the interface while simulta-

3,624,893

**METHOD OF FINALLY ASSEMBLING BALL COCK GUIDE AND FLOAT SUBASSEMBLY**  
Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631, and Fredric E. Schmuck, 535 Century Drive, Anaheim, Calif. 92805  
Filed Feb. 19, 1970, Ser. No. 12,783  
Int. Cl. B23p 19/00; B23q 7/10  
U.S. Cl. 29—429 20 Claims



A supply of ball cock floats are moved or fed consecutively by a vibrating supply bowl into a feed track and consecutively therealong to an assembly transfer station, with a supply of connecting clips being similarly moved or fed consecutively to a separated assembly transfer station, both the floats and connecting clips arriving and being retained at their respective transfer stations particularly positioned for following transfer operations. During a transfer operation preceding each assembly operation, a linearly movable float transfer arm engages each float at the transfer station and pushes that particular float to an assembly station float holder, while at the connecting clip transfer station a feed plunger moves a clip into a pivotal transfer arm mounted clip holder, the transfer arm subsequently pivotally moving the clip holder to its assembly station. In the respective assembly stations, the clip, U-shaped in configuration, has telescoped a float boss and is held aligning clip leg portion and float boss openings. An operator then simultaneously inserts a float end of a rigid guide through a guide opening of the float and a float end of a valve actuating link through the connecting clip and float boss aligned openings, a valve end of the guide being previously connected to a valve end of the actuating link through a valve control arm. Upon the float ends of the guide and valve actuating link simultaneously engaging limit switches, a staking punch stakes the float end of the valve actuating link beyond the connecting clip and float boss to permanently assemble the ball cock subassembly for removal from the assembly mechanism.

3,624,894

**SEALING TECHNIQUE FOR TRANSPARENT LIDS ON INTEGRATED CIRCUIT PACKAGES**  
Ralph W. Miller, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.  
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,396  
Int. Cl. B23k 31/02 2 Claims

Where thin film resistors in an integrated circuit require laser adjustment, an optically true transparent lid is



hermetically sealed to the base flatpack. The lid is vapor plated with chromium in a predetermined pattern followed by a coating of gold. A hermetic seal which maintains its integrity under moderate thermal shock conditions is formed by soldering to the flatpack.

3,624,895

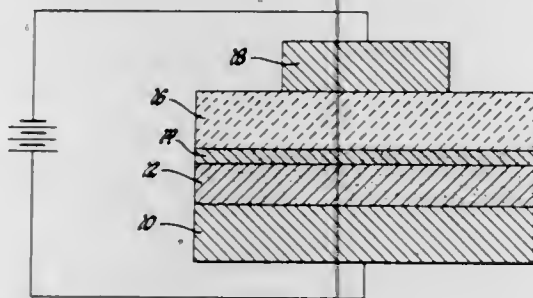
# METAL-INSULATOR-SEMICONDUCTOR VOLTAGE VARIABLE CAPACITOR WITH CONTROLLED RESISTIVITY DIELECTRIC

Bernard A. MacIver, Lathrup Village, and Matthew C. McKinnon, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Original application Nov. 11, 1968, Ser. No. 697,228, now Patent No. 3,512,052, dated May 12, 1970. Divided and this application Nov. 28, 1969, Ser. No. 880,711 Int. Cl. B01j 17/00; H01g 9/00

U.S. Cl. 29—570

1 Claim



A nonlinear capacitor of the metal-insulator-semiconductor type in which inversion of the semiconductor at the insulator-semiconductor interface is prevented. A surface varactor is described in which the insulating layer has a selected moderate resistance and is of a high permittivity dielectric. The specification discloses forming such insulating layers by reactive sputtering.

3,624,896

# METHOD OF MAKING AN ELECTRICAL MOVING COIL DEVICE

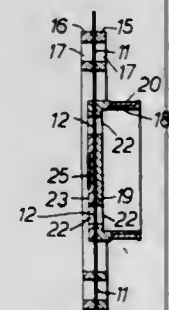
Roger Giles Daubeney, Charlton Kings, and Anthony George Lithgow Shore, Winchcombe, England, assignors to Dowty Technical Developments Limited, Brockhampton, England

Filed June 23, 1969, Ser. No. 835,684  
Claims priority, application Great Britain, June 26, 1968, 30,403/68

Int. Cl. H02k 15/00

U.S. Cl. 29—596

8 Claims



A spring mounting for an electrical moving coil device comprising a plurality of metallic spring blades extending from a fixed support to the moving coil carrying member to locate the moving coil carrying member and the moving coil for reciprocation in a magnetic field, the said spring blades also serving as electrical connections for coil. The moving coil device may form part of a force motor for use in a pressure regulating valve forming part of an electro-hydraulic or electropneumatic servo-valve.

3,624,897

# METHOD OF MAKING A FERRITE HEAD

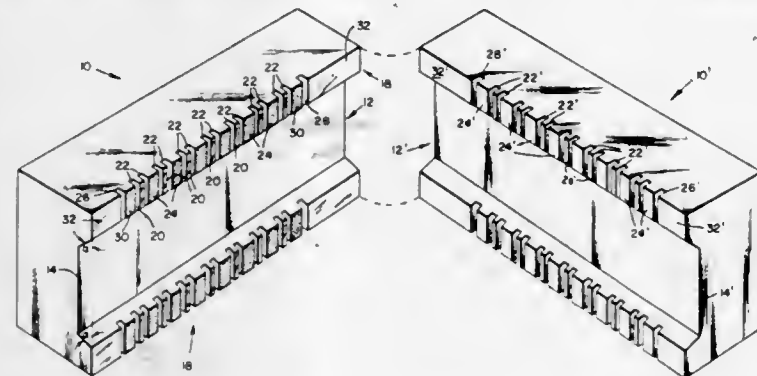
Franklin G. Reade, Monrovia, and Tazzell Smith, Los Angeles, Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed July 25, 1969, Ser. No. 844,851

Int. Cl. H01f 7/06

U.S. Cl. 29—603

7 Claims



A method of manufacturing a ferrite magnetic head, the pole tips being separated by a glass-filled gap of predetermined length, at least one of the ferrite-glass interfaces having been prepared by radio-frequency sputtering of glass on the ferrite. The method includes the following steps:

- (1) sputtering a layer of glass on a plurality of selected portions of a planar surface of a first ferrite member;
- (2) applying a layer of a refractory material on other portions of said surface alternating with said selected portions, said layer of refractory material having a thickness equal to the desired gap length; and
- (3) fusion bonding said layer of glass to a planar surface of a second ferrite member while said layer of refractory material is maintained in contact engagement with said surface of said second member.

3,624,898

# METHOD AND APPARATUS FOR HANDLING A FORMER

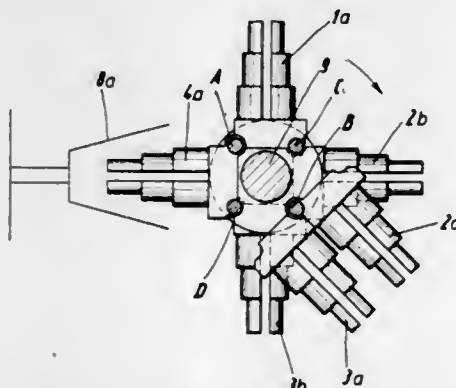
Hans Droll, Bergen-Enkheim, Germany, assignor to Balzer & Droll KG., Niederdorfelden an der Rosenhelle, Germany

Filed Oct. 22, 1969, Ser. No. 868,482  
Claims priority, application Germany, Apr. 17, 1969, P 19 19 432.2

Int. Cl. B21f 3/00; H01f 7/06

U.S. Cl. 29—605

15 Claims



A method and apparatus for holding and moving formers during winding thereon and removal therefrom of wire coils for electrical machines or the like. A plurality of formers are arranged in a group lying in a common plane and extending outwardly from a central axis perpendicular to said plane. As the formers move about the central axis the formers move at least to a winding position where they are wound and to a removal position where at least one former of the group is swiveled to be parallel to another former of the group for simultaneous removal of

the coils from the two parallel formers. There may be more than one group of formers, the planes of the other groups being parallel to the plane of the first mentioned group and all groups sharing the same central axis.

3,624,899

# METHOD OF MAKING VACUUM FUSE

Sidney R. Smith, Jr., Myrtle Beach, S.C., assignor to General Electric Company

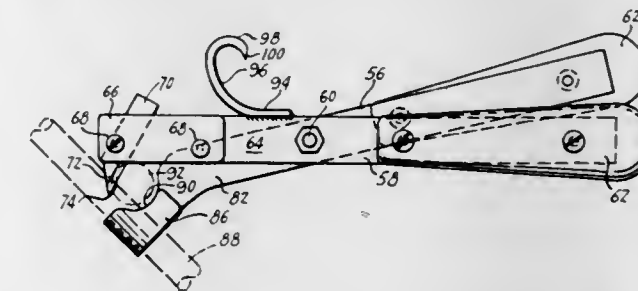
Original application Apr. 24, 1968, Ser. No. 723,695, now Patent No. 3,510,819, dated May 5, 1970. Divided and this application Nov. 6, 1969, Ser. No. 871,260

Int. Cl. H01h 69/02

U.S. Cl. 29—623

2 Claims

A vacuum fuse manufactured by sealing a fusible element within an evacuated envelope while the envelope is subjected to a relatively high temperature. Subsequent to the sealing operation, the fusible element is mechanically stressed by a coil spring. The stressing force of the spring is correlated with the tensile strength and thermal characteristics of the fusible element so that this force pulls the fusible element apart when the element's tensile strength is reduced, by the heating effect of overcurrent through the fuse, to a predetermined temperature level. The predetermined temperature level at which such rupture and subsequent fusion of the fusible element occurs is substantially lower than the temperature of fusion of the element when it is not stressed.



3,624,900

# SAFETY SCISSORS

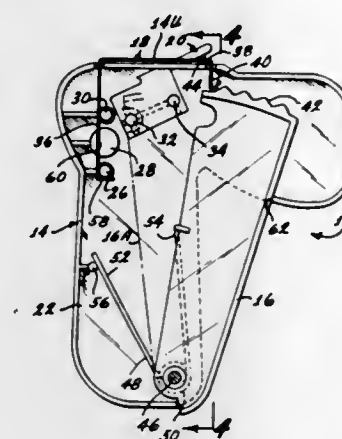
Denis V. Bosley, Palos Verdes Peninsula, Henry J. Folson, Redondo Beach, and John W. Ryan, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 26, 1969, Ser. No. 880,006

Int. Cl. B26b 13/08

U.S. Cl. 30—234

4 Claims



A scissors-type device for cutting a paper comprising a first rigid shearing member fixed to a housing and a second shearing member mounted to oscillate relative to the first member. A trigger mounted on the housing has a wavy upper portion that engages the second shearing member to move it rapidly up and down a small distance when the trigger is pulled.

3,624,901

# WIRE STRIPPER AND CUTTER

Walter G. Pettit, 8264 Tanoak Way, and Walter W. McCurry, 7812 Roswood Drive, both of Citrus Heights, Calif. 95610

Continuation-in-part of application Ser. No. 811,497, Mar. 28, 1969. This application Aug. 26, 1969, Ser. No. 857,280

Int. Cl. H02g 1/12

U.S. Cl. 30—90.4

2 Claims

An operating handle, functioning as a lever, is provided with a hand grip at one end and a knife at the other end,

and a work support in the form of a hook adapted to engage an insulated cable or the like is pivotally connected to the handle lever. The lever is operable to cause the knife to cut into and through the insulation of the cable, and after this has been done, the cable can be removed from the hook and the latter swung to an inoperative position to permit the knife to be used independently for stripping the wire or wires.

3,624,902

# KNIFE FOR SKINNING HIDES

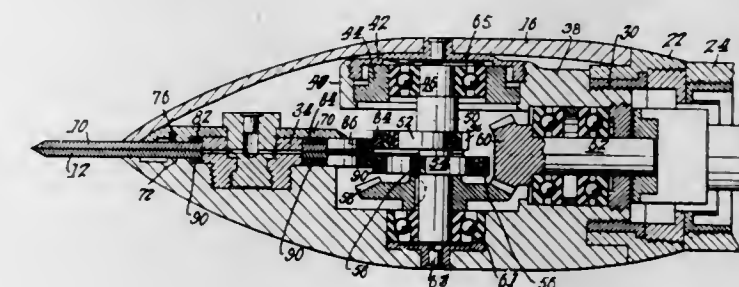
Franklyn G. Umholtz, Shutesbury, Mass., assignor to Russell Harrington Cutlery Corporation, Southbridge, Mass.

Filed Nov. 13, 1969, Ser. No. 876,292

Int. Cl. B26b 19/12

U.S. Cl. 30—220

6 Claims



A power operated knife for dehiding, of the type utilizing a pair of counter-oscillating circular toothed blades in close association, wherein said blades are provided with generally radial openings, each opening receiving a cam mounted on a shaft and rotated by power means, said cams rotating out of phase with each other; and including keys each having a yoke for the reception of said cams individually and in conjunction with the edges of the radial openings in the blades. A unitary main frame for containing and holding the blades, cams, and the power mechanisms, gear box, etc.

3,624,903

# CUTTER FOR ENERGIZED POWER LINES

James W. Tibbet, Rte. 1, Box 94, Gold Hill, Ore. 97525

Filed Aug. 26, 1969, Ser. No. 853,082

Int. Cl. B26b 13/26

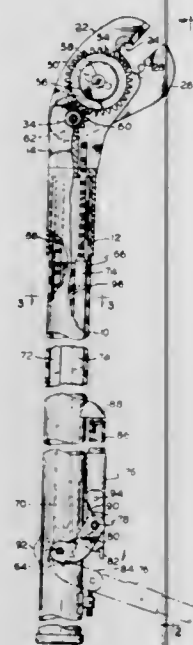
U.S. Cl. 30—238

7 Claims

A cable cutting tool for energized power lines having a fixed cutting head mounted on one end of an elongated



handle and a movable cutting head attached to the fixed cutting head. Cam means are provided to rotate the movable cutting head both laterally and longitudinally of the fixed cutting head to subject a cable placed between



the heads to a combined compression and shearing cutting action. A linkage disposed within the body of the tool provides the necessary mechanical advantage to the cam means.

3,624,904

## TEMPLATE FOR IMPLANT DENTURE

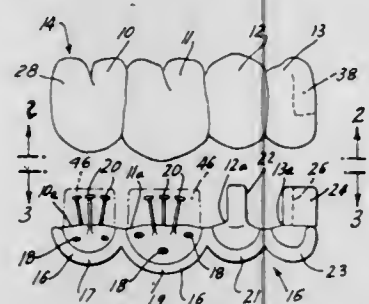
Leonard I. Linkow, 30 Central Park S.,  
New York, N.Y. 10019

Filed May 10, 1968, Ser. No. 728,304

Int. Cl. A61c 13/00

U.S. Cl. 32—10 A

23 Claims



In order to implant a fixed bridge into a patient's mouth when no teeth are present or large edentulous spaces exist with only a few teeth left, a template is formed having a configuration corresponding to the contour of the gum and bone structure, as well as the contour of the teeth that will form the superstructure in the area of the mouth in which the prosthesis is to be placed. Securing elements at the tooth area are passed through the template into the bone structure and a plurality of projections are provided on the template adjacent the securing elements. Tooth supports are formed around those projections and securing elements. The template may also have a vertical post projecting therefrom which, like said tooth supports, is adapted to be snugly received within a mating recess in the denture. Said post may cooperate with the denture in precision attachment fashion, and a gingival shoulder may be provided on the template to provide further support for the artificial tooth structure and to prevent contact of the denture with the gum tissue.

3,624,905  
WATER-COOLED DENTAL CUTTING MEMBER  
AND HANDPIECE FOR USE THEREWITH

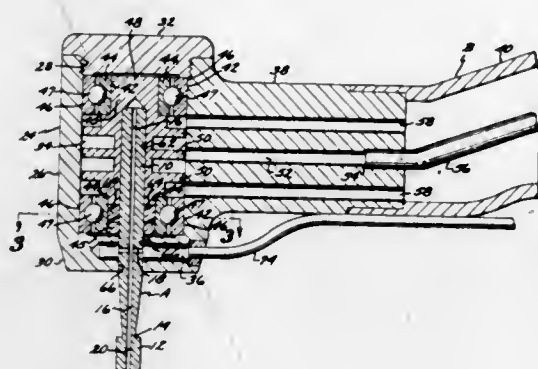
James B. Barsby, 6477 Atlantic Ave.,  
Long Beach, Calif. 90805

Filed Feb. 4, 1970, Ser. No. 8,639

Int. Cl. A61c 1/10

U.S. Cl. 32—27

3 Claims



A water-cooled dental cutting member that may be used for cutting, grinding, or drilling, depending upon the configuration of the tooth-contacting portion thereof, and a turbine-type dental handpiece that is particularly adapted for removably supporting the cutting member, as well as supplying a constant flow of cooling water thereto. The turbine rotor in the handpiece operates within a confined space that is at a substantially higher air pressure than the pressure of the cooling water. Accordingly, cooling water has no tendency to enter that portion of the handpiece in which the rotor is supported to slow down the rate of rotation of the rotor or stop the rotor by frictional contact therewith.

3,624,906

## DENTAL ARTICULATOR

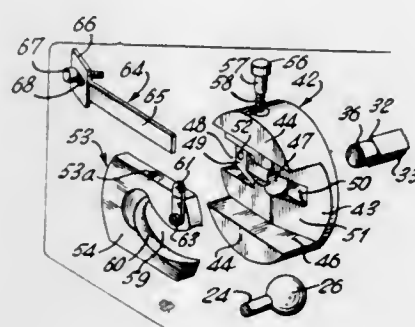
Ernest R. Granger, Pelham, N.Y.  
(149 Prospect Ave., Mount Vernon, N.Y. 10550)

Filed Aug. 29, 1969, Ser. No. 854,152

Int. Cl. A61c 11/00

U.S. Cl. 32—32

7 Claims



A dental articulator provided with an adjustable Bennett movement includes a pair of longitudinally spaced adjustable post-mounted, condyle-defining spherical bearings. A longitudinal shaft provided with a forwardly projecting mounting member terminates at opposite ends in longitudinally adjustable yokes which pivotally support condyle path members for rocking about vertical axes, the condyle path members having horizontal condyle tracks which engage respective condyles. A Bennett guide member is adjustably mounted on each yoke for limiting

the lateral excursion of the shaft relative to the condyles and screws carried by the yoke in the path of the condyle path members adjustably limit the angular rocking thereof.

3,624,907

DEVICES FOR THE RATIONAL WASHING OF  
TOOTH ROOT CANALS WITH SIMULTANEOUS  
SUCTION OF THE OUTFLOWING LIQUID AND  
RELATED IMPROVED DEVICES

Michele Brass and Ennio Brass, both of Via Paris  
Bordone 11, Milan, Italy

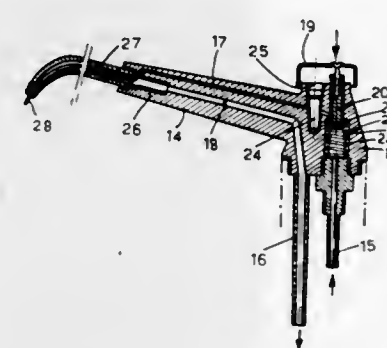
Filed June 5, 1969, Ser. No. 830,694

Claims priority, application Italy, June 6, 1968,  
17,416/68

Int. Cl. A61c 3/00

U.S. Cl. 32—40

9 Claims



This invention relates to an improvement in devices used in treatment of teeth, particularly in work on root canals. The device serves to supply a stream of fluid for the purpose of washing out the root canal or treating it with a medicament and also is connected to a vacuum force so that the fluid can be removed as rapidly as it is supplied. The head of the device, consisting of one tube with clearance inside another is sturdy, but yet is small enough in cross-section for insertion directly into the root canal.

3,624,908

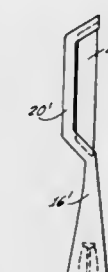
AUTOMATIC DENTAL STRIPPER INSTRUMENT  
Robert M. Ricketts, Pacific Palisades, and John Donald  
Tichenor, Tarzana, Calif., assignors to Dome, Inc.,  
Pacific Palisades, Calif.

Filed Jan. 26, 1970, Ser. No. 5,626

Int. Cl. A61c 3/06

U.S. Cl. 32—58

2 Claims



An improved dental tool is provided which imparts reciprocating movement to an abrasive or polishing strip, saw or the like, and which may be used for polishing fillings, or separating, excising and cleaning teeth, or for other appropriate dental stripping purposes. The tool includes a handle which encloses an electrically powered socket, the socket being adapted removably to receive the shank of a disposable plastic frame in which the abrasive strip, or equivalent element, is releasably mounted. A rechargeable battery power source may also be housed within the handle.

3,624,909

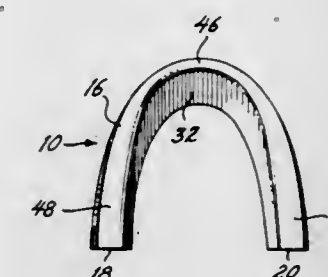
TEETH GRIPPING MEDICAMENT APPLICATOR  
FOR TREATMENT OF TEETH AND/OR GUMS  
Samuel Greenberg, Stump Road and Commerce Drive,  
Montgomeryville, Pa. 17754

Continuation-in-part of application Ser. No. 662,114, Aug.  
21, 1967, now Patent No. 3,527,219. This application  
May 26, 1970, Ser. No. 40,621

Int. Cl. A61c 3/00

U.S. Cl. 32—40

7 Claims



An applicator for the treatment of teeth and/or gums with fluorides or other medicaments wherein the applicator comprises a flexibly resilient substantially horse-shoe-shaped liquid-impermeable tray of channel cross-section and a medicament carrier substantially coextensive therewith and also of channel cross-section secured in the tray, the inner and outer flanges at the anterior teeth being inclined distally or inwardly while the inner and outer flanges at the posterior teeth converge towards the teeth so that when the applicator is applied to the teeth it will readily accommodate to and grip the teeth without springing off, and when moderate pressure is applied to the applicator the medicament will invest the teeth and/or gums.

3,624,910

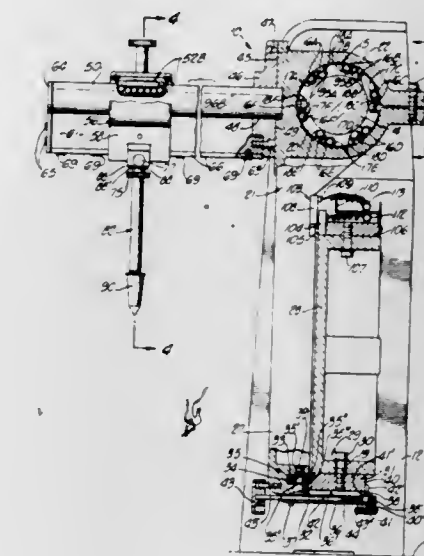
MULTIAXIS INSPECTION SYSTEM  
Clair L. Farrand, Bronxville, N.Y., assignor to  
Inductosyn Corporation, Carson City, Nev.

Filed Aug. 27, 1969, Ser. No. 853,237

Int. Cl. B43I 5/00

U.S. Cl. 33—1 M

4 Claims



A bearing arrangement for the movable carriages of a multi-axis inspection system comprising first and second mutually orthogonal shafts; first and second carriages, the second shaft being secured to the first carriage; bearing means for supporting the first and second carriages for movement relative to the first and second shafts, respectively, the bearing means for each of the carriages comprising first and second sets of recirculating balls which



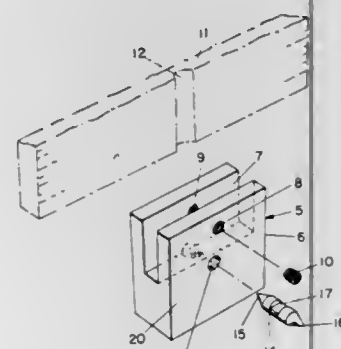
contact the shafts at a plurality of points along two lines on opposite sides of the circumference thereof above the longitudinal axes; and constraint, slide bearing means spaced from and below the shafts for preventing rotation of the first and second carriages about the longitudinal axes of the first and second shafts, respectively. The sets of recirculating balls and the constraint, slide bearing means form three-point supports for the carriages. The second carriage supports a probe for movement along an axis which is orthogonal to the axes of the first and second shafts.

The shafts may be rotated in order to select the location of the two lines contacted by the balls, the constraint, slide bearing means may be adjusted to insure linear motion of the carriages, and the angle between the first and second shafts may be adjusted to insure perpendicularity therebetween.

**3,624,911**  
**SCRIBER ATTACHMENT FOR A COMBINATION SQUARE**  
Bernard D. Max, 312 Circleview Drive S.,  
Hurst, Tex. 76053  
Filed Apr. 10, 1970, Ser. No. 2,316  
Int. Cl. B43I 13/02

U.S. Cl. 33—42

2 Claims



This invention relates to hand tools and consists of a rectangular steel block having an elongated U-shaped recess therein in which is placed the blade of a combination square after a steel pin, having a point at each end thereof, is placed in centrally located openings in the aforesaid steel block. One of the pointed ends of the aforesaid pin projects out beyond one side of the steel block while the other pointed end of the pin projects out beyond the other side of the same block, the steel pin being held in place in the block by both one end of the aforesaid blade and a set screw that is located in the bottom of the often mentioned steel block. A second set screw secures the aforesaid blade firmly in the steel block, the scribing being done by the two points of the steel pin.

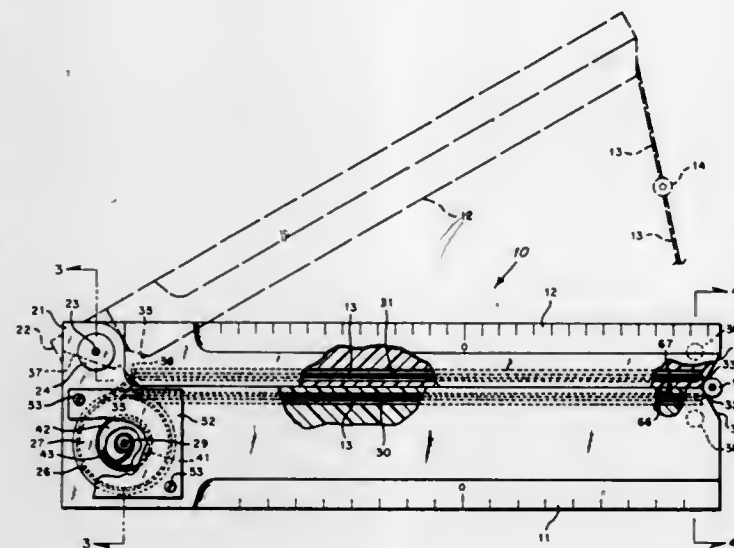
**3,624,912**  
**HYPERBOLIC PLOTTER**  
Paul R. Voss, Ann Arbor, Mich., and William E. Burns, Jr., Chalfont, Pa., assignors to the United States of America as represented by the Secretary of the Navy  
Filed Nov. 12, 1969, Ser. No. 875,705  
Int. Cl. B43I 11/02

U.S. Cl. 33—27 H

11 Claims

A portable drafting instrument for plotting hyperbolas foldable into a rectangular rule-like configuration comprising a pair of arms each having longitudinally extending channels through which is threaded a respective end of a pencil or pen guide-carrying string and each having a tab projecting from one end thereof to which is pivotally connected that of the other to permit registration of ports at the free ends of the arms from which the string issues with hyperbola foci. The string ends are connected

to a spool mounted for rotation about an arbor fixed to one of the arms coaxially of a spool receiving cavity against or under the action of an interior helical spring. The guide comprises a tubular cylinder terminating in spaced apart, radially projecting flanges and has the por-

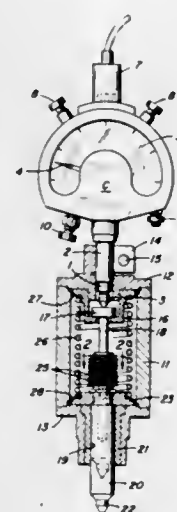


tion of the string issuing between the arms threaded through its medial portion so that the string can be internally crimped by insertion of a pencil or pen point there-through for retaining the guide in a substantially fixed, eccentricity determining position relative to the string.

**3,624,913**  
**METHOD AND APPARATUS FOR MEASURING DIFFERENTIAL MAGNITUDES**  
Valerio Ciampolini, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy  
Filed Apr. 9, 1970, Ser. No. 26,956  
Claims priority, application Italy, Apr. 14, 1969, 15,530/69  
Int. Cl. G01b 5/00

U.S. Cl. 33—172 R

20 Claims



A method and apparatus for measuring differential magnitudes between two predetermined limit values with a comparator the method comprising a first measuring of the surface of the object under study to calibrate the comparator so that the selected limit value from which the differential will be measured coincides with the predetermined base value and then conducting a second measuring to determine the differential of the surface from

the selected limit value; the apparatus comprising three sensing elements operatively connected to the comparator, two of the elements normally being held against relative movement but activated by two resilient elements one of which is adapted to overcome the resistance to relative movement of the two sensing elements, the other resilient element adapted to maintain the third sensing element in continuous contact with the other two sensing elements.

**3,624,914**  
**APPARATUS FOR MEASURING WHEEL ALIGNMENT**

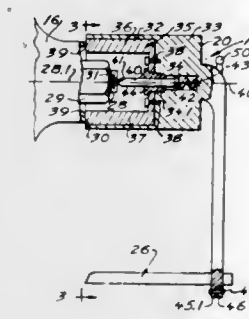
Henry Kosteriva, Victoria, British Columbia, Canada, assignor to K. and R. Industries Ltd., Victoria, British Columbia, Canada

Filed Dec. 1, 1969, Ser. No. 881,017

Int. Cl. G01b 5/24

U.S. Cl. 33—203.2

1 Claim

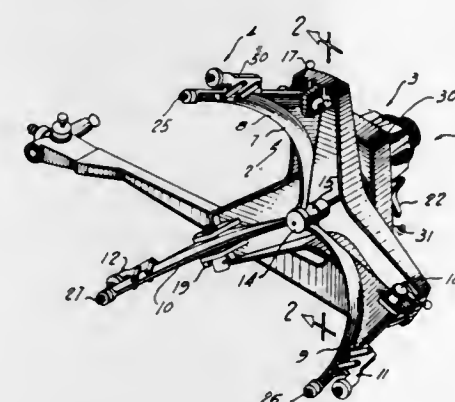


Apparatus for measuring the toe of front wheels of an automotive vehicle, a pair of hub engaging members adapted magnetically to cling to the wheel hubs. Both members carry supporting bars extending parallel to hubs of the wheels, and measuring rods adapted to be extended transversely across front and back ends of the supporting bars for determining toe of the wheels.

**3,624,915**  
**WHEEL ALIGNMENT APPARATUS**  
Edward D. Wilkerson, 595 Valley Road,  
Orange, N.J. 07050  
Filed Jan. 5, 1970, Ser. No. 658  
Int. Cl. G01b 9/08, 11/26

U.S. Cl. 33—203.18

10 Claims



This disclosure relates to improvements in the following features of wheel alignment equipment: (1) the wheel clamp, (2) the pivot post, and (3) the brake for locking the pivot post to the wheel clamp.

The improvement in the wheel clamp relates to a prior art clamp in which at least three support legs carrying wheel rim locks are adjustably driven into engagement with the wheel rim. The particular improvement in the clamp comprises an extensible leg with a

wheel rim lock movably coupled relative to and supported on each of the support legs by a parallelogram linkage. Each of the extensible legs is manually placed to project beyond its associated support leg when it is desired to align wheels having relatively large diameters.

The improvement in the pivot post adapted to the foregoing extensible leg type clamp relates to having a pivot post of L-shaped configuration. This post, in the usual alignment operating position, includes a generally vertical supporting base and a generally horizontal optical-transit arm. The arm is attached to the lower end of the support base so that visual sighting may be generally made below the bumper of a vehicle having a high hood, such as a truck.

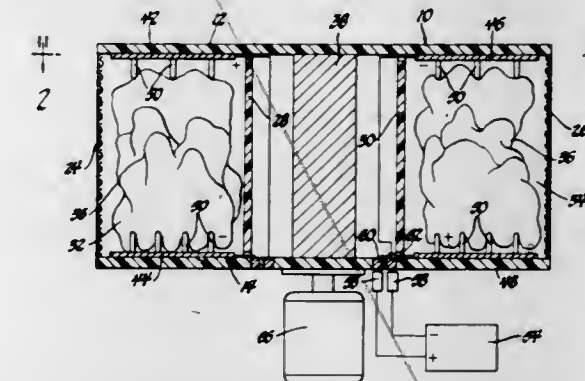
The improvement in the brake adapted to the foregoing clamp and pivot post includes a manually operated lock handle, a shaft rotated by the handle to drive two eccentric shaft sections, and a loop band having two ends each of which is fixed to a different shaft section. The band closely envelops a circular collar fixed to the wheel clamp. Rotation of the shaft selectively tightens and loosens the band about the collar to fix securely and accurately the post to the clamp.

**3,624,916**  
**ELECTROMAGNETIC MEANS FOR DRYING ARTICLES**

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.  
Filed June 24, 1970, Ser. No. 49,433  
Int. Cl. B01k 5/00

U.S. Cl. 34—1

2 Claims



In preferred form, an electromagnetic clothes dryer including a generally cubic clothes receptacle having a pair of opposite side walls formed by the poles of a permanent magnet and electrodes on its top and bottom walls one of which is connected to the positive terminal of a direct current source and the other of which is connected to the negative terminal. The passage of electric current through damp clothing in a direction normal to the magnetic field produces a force on the water particles in the damp clothing which separates the water from the clothes.

**3,624,917**  
**TOBACCO CURING SYSTEM**  
John F. Moore, 100 Hillside Ave. W.,  
Toronto 7, Ontario, Canada  
Filed Nov. 24, 1969, Ser. No. 879,380  
Claims priority, application Canada, Nov. 23, 1968, 35,988  
Int. Cl. F26b 21/06

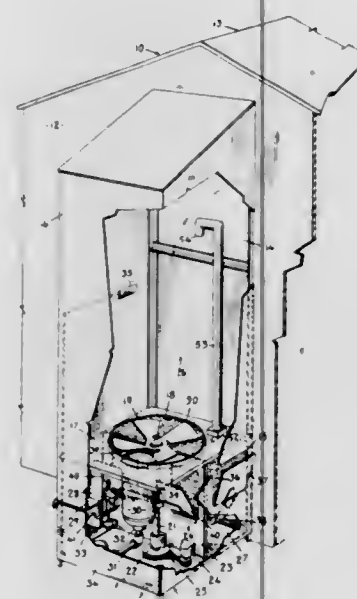
U.S. Cl. 34—46

7 Claims

A tobacco curing system in which air is fed into the upper part of a kiln under controlled conditions of temperature and humidity. A duct is mounted on a kiln wall



in communication with upper and lower openings in the wall. The lower part of the duct is divided into two compartments each of which communicates with the outside air and the duct. Both compartments also communicate with each other. One chamber also communicates with the lower opening in the kiln to receive air which has passed through the kiln.



External air is drawn into one compartment, heated, mixed with the recirculated air in controlled proportions and forced through the duct and kiln by a fan. The air intake is controlled by dampers in the heating compartment and a damper is provided in the recirculated air compartment to control the intake thereof.

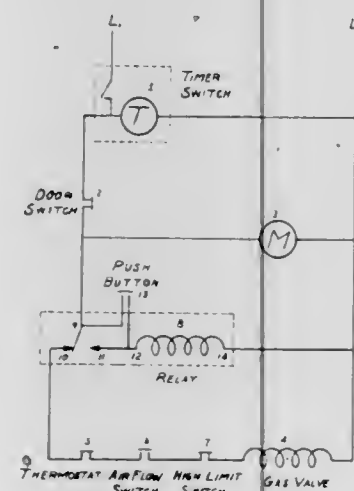
3,624,918

**CLOTHES DRYERS**

Maurice Ben Heftler, 1119 Harvard Road,  
Grosse Pointe Park, Mich. 48230  
Filed May 15, 1970, Ser. No. 37,720  
Int. Cl. F26b 19/00

U.S. Cl. 34—48

3 Claims



This invention consists of a relay operable by the user of a clothes dryer to alter the normal operation of the machine by turning off the heat while the machine continues to tumble the clothes and blow air through them to cool the clothes for wrinkle free drying of permanent press fabrics, which relay is coupled to the clothes door of the machine so that when the door is opened the action

of the user is cancelled, restoring the dryer heat to the normal thermostatic control so that the next user of the machine is assured of receiving full drying capacity.

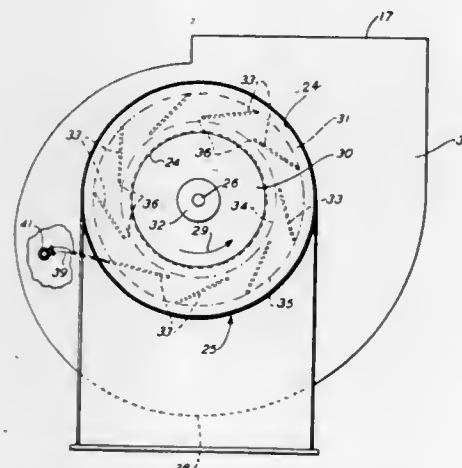
3,624,919

**CLOTHES DRYING BLOWER WITH LINT STRIPPING DEVICE**

John Joseph Miller, Cincinnati, Ohio, assignor to  
McGraw-Edison Company, Elgin, Ill.  
Filed Mar. 13, 1970, Ser. No. 19,414  
Int. Cl. F26b 19/00

U.S. Cl. 34—85

6 Claims



A clothes drying tumbler equipped with a blower for circulating a heated air during the drying operation has a nozzle for directing a fluid as of air or dry steam to exert a forward thrust onto the blower fan to remove the lint which collects on the leading edges of the fan blades. A flat nozzle is used and is positioned so that it is in line with each blade as the blade passes midway through the fluid stream. The fluid pressure to the nozzle is turned on at the end of each drying operation from the time the electric current is cut off from the drive motor to the time the blower is coasted to a near stop.

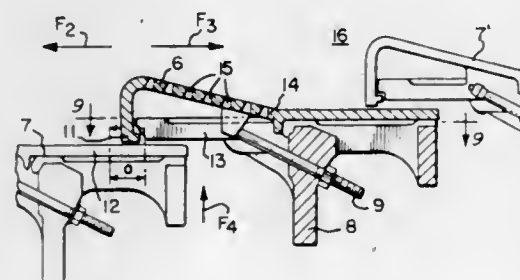
3,624,920

**HEAT EXCHANGE GRATE AND SUPPORT FRAME ASSEMBLY**

Pierre A. Coutelan, Eaubonne, France, assignor to  
Fuller Company, Catasauqua, Pa.  
Filed Jan. 7, 1970, Ser. No. 1,201  
Int. Cl. F26b 9/00

U.S. Cl. 34—164

6 Claims



This invention relates to an improved heat exchange apparatus of the reciprocating grate type having a grate and support frame assembly wherein no portion of the support frame contacts the grate at a point forward of about substantially the midportion of the grate and the grate has at least one reinforcing flange depending therefrom, said flange having a downwardly-protruding extension with engaging means adapted to engage the support frame.

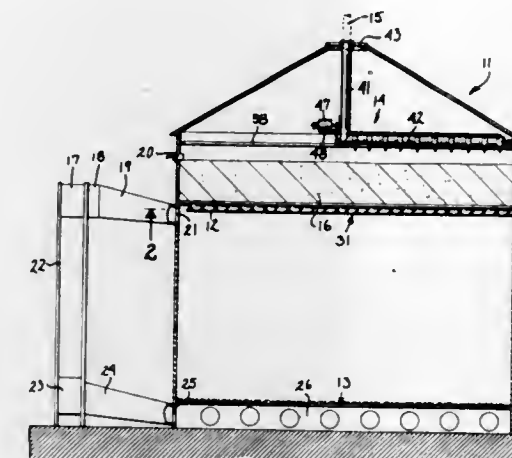
3,624,921

**GRAIN DRYING AND STORAGE APPARATUS**

Harlan J. Easton, Rte. 3, Box 607,  
Bloomington, Minn. 55917  
Filed Aug. 12, 1969, Ser. No. 849,941  
Int. Cl. F26b 19/00

U.S. Cl. 34—211

6 Claims U.S. Cl. 35—9 E



A grain drying and storage bin is disclosed that receives and evenly distributes grain over an upper floor grid where the grain is heated and dried. After drying is completed, the grain is transferred to a lower cooling floor by actuation of a linkage mechanism that simultaneously opens a plurality of openings in the upper grid.

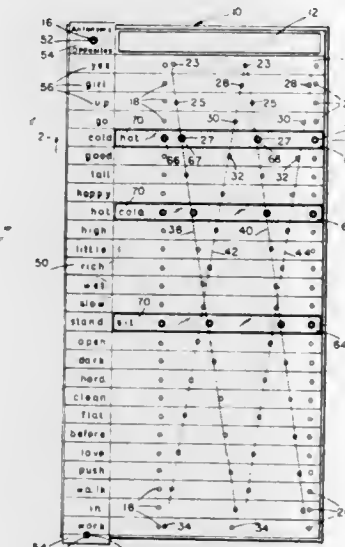
3,624,922

**EDUCATIONAL DEVICE**

Dennis Rich, Flushing, N.Y., assignor to General  
Learning Corporation, Morristown, N.J.  
Filed Apr. 3, 1970, Ser. No. 25,435  
Int. Cl. G09b 3/02

U.S. Cl. 35—9 R

9 Claims



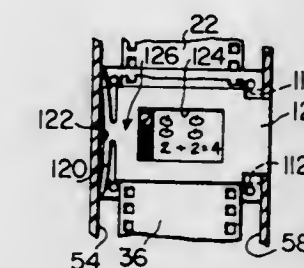
An educational device having a planar board provided with projections thereon for mounting a primary information bearing member and a plurality of secondary information bearing members for self-correcting and self-instructional teaching. The projections are disposed on the board in a preset arrangement so that each of the secondary information bearing members can be mounted on the board in only one position adjacent to the primary information bearing member. The information on the primary member is arranged in columnar form, whereby the secondary members are mounted in columnar form. Each secondary member is disposed in juxtaposition with correlated information on the primary member to self-teach an educational subject to the user of the device.

3,624,923

**VISUAL TEACHING DEVICE**

Jerome Oberwager, 30 Wensley Drive,  
Great Neck, N.Y. 11021  
Filed Oct. 24, 1969, Ser. No. 869,129  
Int. Cl. G09b 1/24

30 Claims



This invention is a visual teaching device of the type in which the student is provided with a series of problems and a choice of answers, and in which the student may continuously check his solutions as he goes through the teaching program of the device. The basis of this invention is one or more pairs of translucent film strips as contained within a cartridge means having an aperture for viewing or projection, together with means to independently move the strips so that a frame of a question strip and a frame of an answer strip can be placed in proper superimposed register within the aperture means to provide a composite visual problem-solution, which presents to the student in one frame a composite of the problem and answer material as a single picture. This single picture solution may either be correct or incorrect. The frames of each strip comprise separate coding portions to indicate whether the composite visual obtained is a correct or incorrect solution, said coding sections being hidden by a normally closed shutter which may be opened by the student at any desired interval to conform the correctness of his solution.

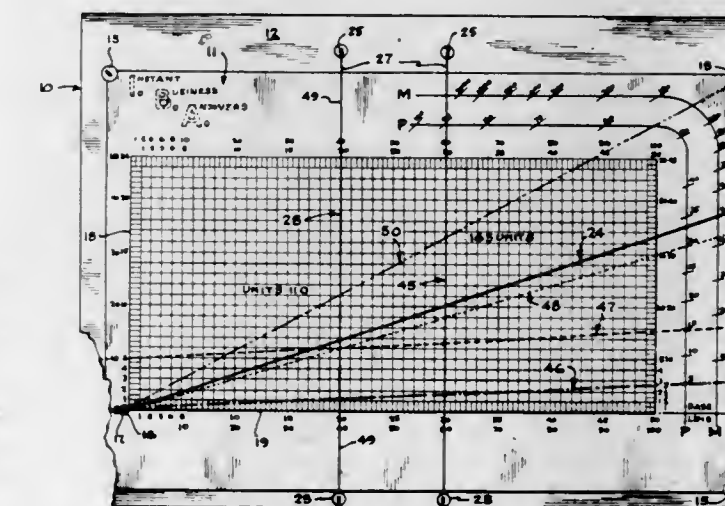
3,624,924

**BUSINESS ANSWERS DEVICE**

Russell C. Huber, 3121 52nd St., Kenosha, Wis. 53140  
Filed Jan. 29, 1970, Ser. No. 6,790  
Int. Cl. G09b 19/18; G06c 3/00

U.S. Cl. 35—24 R

10 Claims



A chart for determining business factors is removably secured to a backing member and orientated thereon by a post to which are attached stretchable cords. The cords



are positioned on the chart by a magnetized holder and the chart is removably secured to the backing member by magnets.

3,624,925

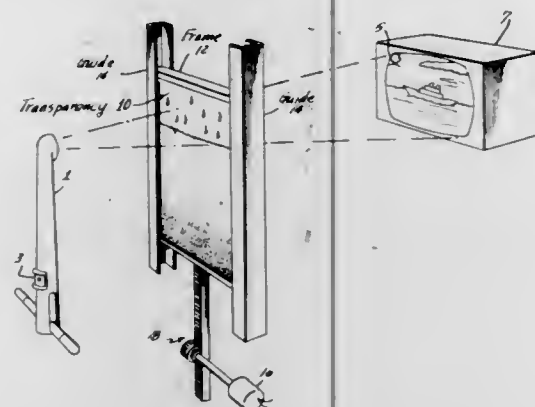
**PERISCOPE BREAKWATER SIMULATOR**

John W. Herndon, Orlando, Fla., assignor to the United States of America as represented by the Secretary of the Navy

Filed Apr. 1, 1970, Ser. No. 24,685  
Int. Cl. G09b 9/00

U.S. Cl. 35—25

2 Claims



Provides means in a known periscope view simulator for generating the varying change of light effects observable during submarine periscope raising or surfacing operations and periscope lowering or submerging operations.

3,624,926

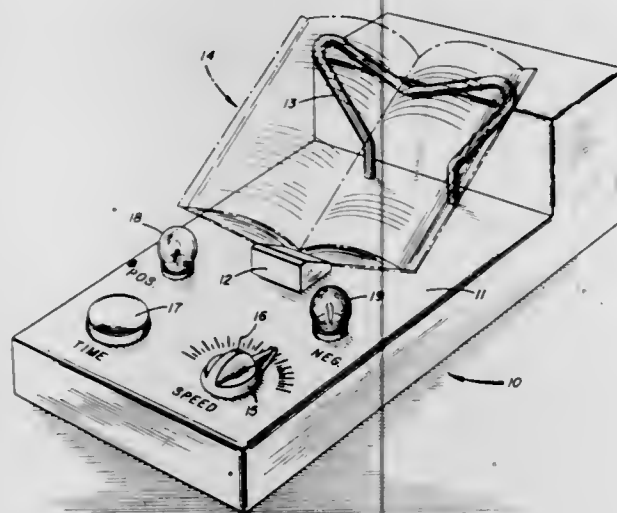
**LEARNING REINFORCER**

Michael Paul McCaughey, Highland Park, N.J. (Dept. of Physics, Rutgers University, New Brunswick, N.J. 08903)

Filed Oct. 13, 1969, Ser. No. 865,559  
Int. Cl. G09b 17/04

U.S. Cl. 35—35 B

5 Claims

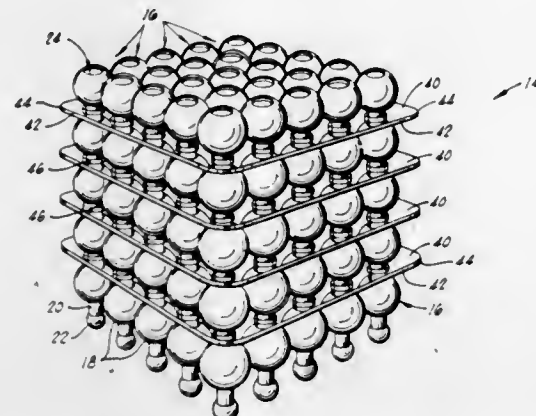


A learning reinforcer device comprising a selectively adjustable timing device and a pair of indicating lights. The subject being tested sets the timing device for a suitable time period and presses a button at the completion of the task. The manual depression of the button will cause the energization of one of said indicating lights in accordance with the time expired on the timing device to indicate whether or not the task had been completed within the time period allowed. This device is particularly suitable for a continuing task wherein continuous time segments are monitored.

3,624,927  
**BEAD COUNTING DEVICE**  
Margaret Whitehurst Sandlin, 2200 E. Central,  
Wichita, Kans. 67214  
Filed Jan. 27, 1970, Ser. No. 6,063  
Int. Cl. G09b 19/02

U.S. Cl. 35—32

3 Claims

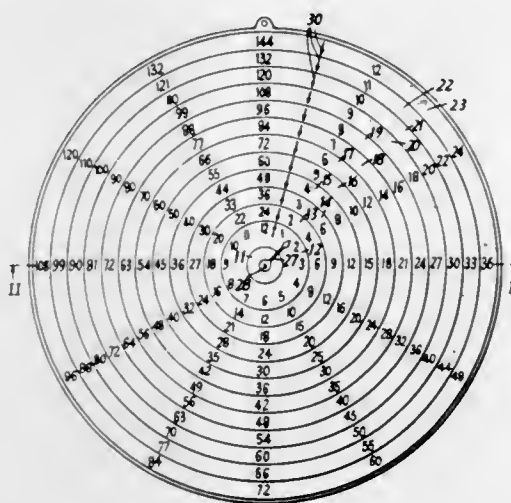


This invention is a mathematical multiplication teaching structure including a plurality of planes of interconnectible beads. More particularly, this invention comprises a plurality of beads each having a stem extending therefrom and a cavity therein which functions to join them; the beads are held in a planar relationship by a spacing sheet preferably of thin flat transparent material having apertures therein to receive the stems of the beads.

3,624,928  
**DEVICE FOR TEACHING ARITHMETIC**  
June Cynthia Felton, Holmwood, Hadley Green,  
Barnet, England  
Filed Apr. 15, 1970, Ser. No. 28,726  
Claims priority, application Great Britain, Feb. 11, 1970,  
6,610/70  
Int. Cl. G09b 19/02

U.S. Cl. 35—31 A

9 Claims



A device for teaching arithmetic has separate discs of different diameters mounted on a vertical post and each marked around its periphery with a separate one of the rows or columns of the "multiplication table," the numbers on each disc being arranged at the same angular interval around the disc. One of the discs is marked with the "one-times table," so that when the first numbers on the scales on each disc are in radial alignment the product or quotient of any two numbers within the range of the scales may be obtained. The discs may be removed from the post so that any selected disc may be used for

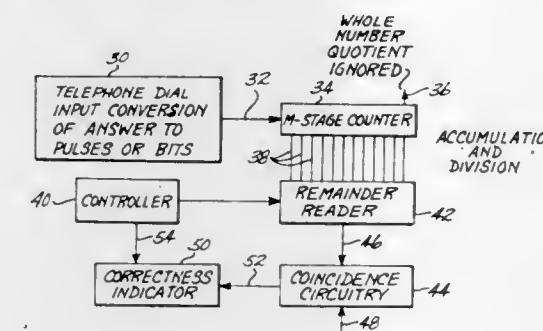
teaching the "table" in that disc, for example the "three-times" table. In addition the discs may be displaced angularly relative to one another on the post so that the numbers in radial alignment provide series of numbers conforming to a particular formula.

3,624,929  
**METHOD OF ELECTRICALLY COMPARING  
TEACHER AND STUDENT ANSWERS**  
Willis R. Swanson, deceased, late of Fulford Harbour,  
British Columbia, Canada, by Naola J. Swanson, execu-  
trix, Fulford Harbour, British Columbia, Canada, and  
Sidney P. Swanson, 101 S. Dorothy Drive, Richardson,  
Tex. 75080

Filed Aug. 27, 1970, Ser. No. 67,313  
Int. Cl. G09b 7/00

U.S. Cl. 35—48

4 Claims

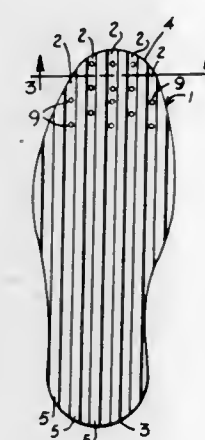


In the operation of teaching apparatus, a method of comparing student and teacher answers employing congruency as a test of "correctness" or equivalence. In the disclosed method both the teacher's answer and student's answers are expressed in terms of one or more alpha-numeric symbols, which for each answer are encoded into equivalent numbers of code signal elements, totalled and divided by a common modulus to obtain a remainder code. A comparison of the remainder codes indicates in most cases statistically whether the answers are the same or not.

3,624,930  
**INSOLE WITH VENTILATING PASSAGES**  
Oney A. Johnson, Forestville, and Robert A. Clark, Pied-  
mont, Calif., assignors of a fractional part interest to  
George B. White, San Francisco, Calif.  
Filed July 30, 1969, Ser. No. 846,046  
Int. Cl. A43b 13/38

U.S. Cl. 36—43

4 Claims



An inner sole for a shoe, provided with longitudinal resiliently compressible ribs along its underface forming longitudinal open channels throughout the entire length

of the insole from the heel end to the toe end, so that alternating foot pressure thereon from the heel to the toe, pumps air toward the toe; ventilating holes extend through the insole from the channels upwardly to direct air to the toes.

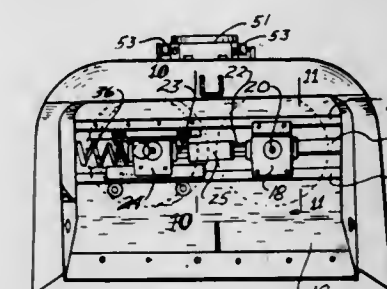
**ERRATUM**

For Class 36—67 see:  
Patent No. 3,624,934

3,624,931  
**SNOWPLOW WITH RAIL MOUNTING BOTH FIXED  
AND MOVABLE ROTARY MEANS**  
Harold D. Wandscheer and Evert Wandscheer, both of  
Sioux Center, Iowa 51250  
Filed June 25, 1969, Ser. No. 836,407  
Int. Cl. E01h 5/09

U.S. Cl. 37—43 F

3 Claims

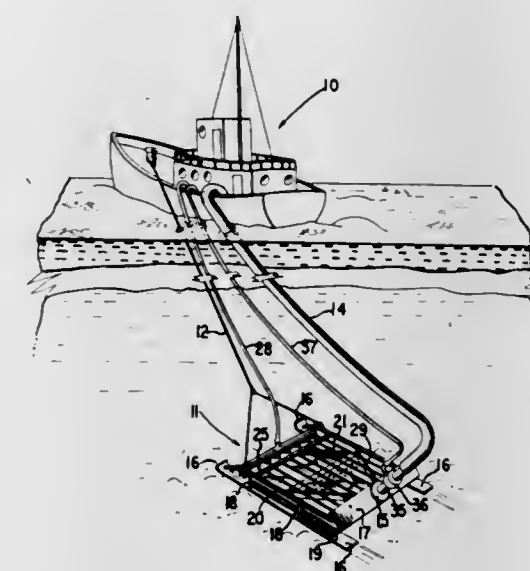


A snowplow adapted to remove snow and pack it into readily carried units. Heating means to partially thaw the snow to allow better packing is provided and improved cleats are used on the packing rotor. Signalling means for auxiliary trucks is included in the assembly.

3,624,932  
**APPARATUS FOR HARVESTING MOLLUSKS**  
Milton H. Doyle, Ardsley, N.Y., assignor to  
Borden Inc., New York, N.Y.  
Continuation-in-part of application Ser. No. 680,705,  
Nov. 6, 1967. This application Apr. 6, 1970, Ser.  
No. 25,687  
Int. Cl. A01m 25/00

U.S. Cl. 37—55

6 Claims



An apparatus for harvesting mollusks or the like comprising a dredge for gathering said mollusks; a tube



refining a path of travel for said mollusks open at one end adjacent and, secured to said dredge; a gas supply for directing gas under pressure into said tube adjacent the dredge to induce movement of the mollusks therein; equipment for measuring the pressure differential between the gas in said tube and the ambient pressure surrounding the dredge, and equipment operatively associated with the gas supply and measuring equipment to control the supply of gas in order to maintain a predetermined pressure differential.

3,624,933

# DREDGING PLANT APPARATUS COMBINING PUMPING AND DIGGING ACTION

Giovanni Faldi, Via Por S. Maria 4,  
Florence, Italy

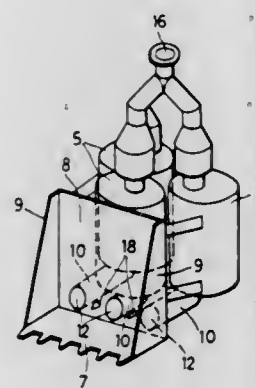
Filed June 12, 1969, Ser. No. 832,788

Claims priority, application Italy, June 17, 1968,  
17,828/68

Int. Cl. E02f 3/92

U.S. Cl. 37—63

4 Claims



Dredging plant apparatus in which the conventional pump body is integral with a digging shovel of an excavator. The device which is operative by thrusting or dragging action utilizes a shovel with a plurality of pump bodies opening in the rear of the shovel and with blowing nozzles also mounted thereon and with pump and nozzle openings directed in the direction of operation of the shovel.

3,624,934

# GOLF CLEAT

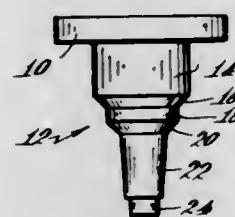
Louis E. Bernier, Rockland, and James P. Giblin, Milton, Mass., assignors to E. T. Wright & Co., Inc., Rockland, Mass.

Filed Dec. 10, 1969, Ser. No. 883,892

Int. Cl. A43c 15/00

U.S. Cl. 36—67 A

1 Claim



A golf shoe cleat comprising a head from which stems a shank embodying a first portion and a tapered por-

tion, characterized in that there is a conical shoulder at the junction of the first and tapered portions located at a distance from the head such that when incorporated in a shoe bottom the conical portion will be situated substantially at the tread surface. The first portion of the cleat may be of uniform diameter from the head to the tapered portion or may be of two diameters with a second conical shoulder at the junction of the portions of two diameters.

3,624,935

# TRENCHER HAVING AN ENDLESS DIGGER AND ADJUSTABLE AUGERS

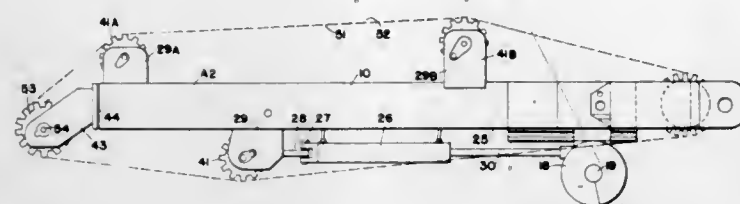
Robert G. Lawrence, Swift Current, Saskatchewan, Canada, assignor to Saskatchewan Power Corporation, Regina, Saskatchewan, Canada

Filed Sept. 2, 1969, Ser. No. 854,459

Int. Cl. E02f 5/06

U.S. Cl. 37—86

2 Claims



An adjustable boom carrying an endless digging chain operated hydraulically and having a downwardly extending offset tip with the end of the boom adjustable for chain loosening and tightening. Transverse augers move excavated dirt away from the trench formed by the digging chain and these are adjustable along the length of the boom to compensate for the swinging movement of the boom which allows a trench to be dug at various depths as the digging proceeds.

3,624,936

# BALLAST REGULATOR

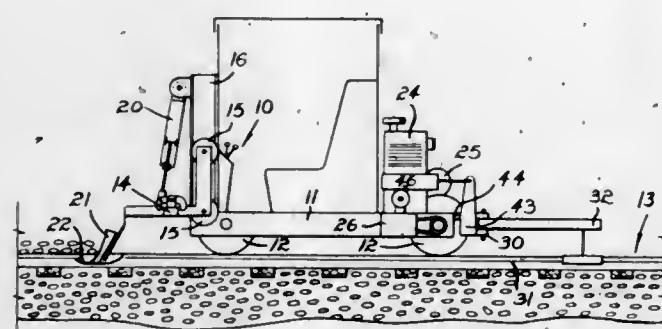
William James Yard, Cavan, South Australia, Australia, assignor to Aresco Trak-Chief Proprietary Limited, Cavan, South Australia, Australia

Filed Aug. 27, 1969, Ser. No. 853,317

Int. Cl. E01b 27/04

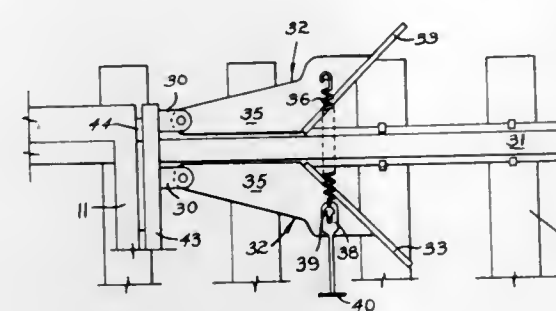
U.S. Cl. 37—104

9 Claims



Ballast levelling and regulating device for levelling ballast dumped on rail tracks, the device being provided with plow-blades and skid plates which can be raised or

lowered, the skid plates extending in a fore and aft direction and being effective in preventing the device from



tearing or dislodging the ties supporting the rails as the device moves along the rails to level the ballast.

3,624,937

# IRON WITH CLEANABLE SPRAYER

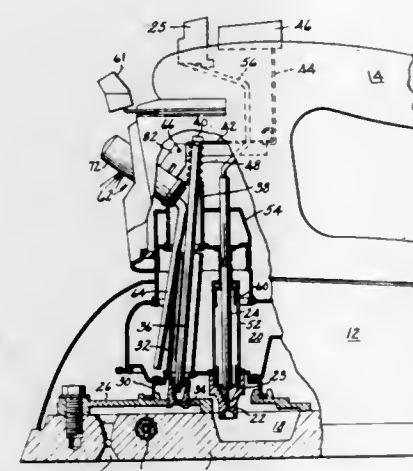
Harold S. Foster, Ontario, Calif., assignor to General Electric Company

Filed Dec. 15, 1969, Ser. No. 885,081

Int. Cl. D06f 75/06

U.S. Cl. 38—77.83

14 Claims



The disclosure herein shows a steam and spray iron wherein the sprayer is self-cleaning to remove any deposits when the iron is used with tap water.

3,624,938

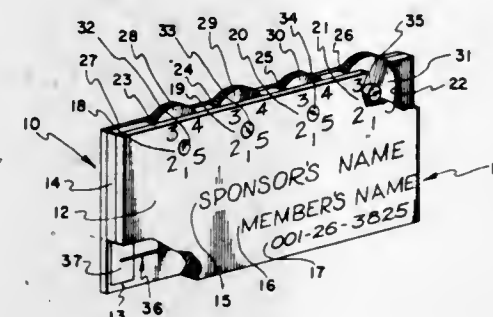
# FOOLPROOF CREDIT CARD

Lewis George Richard, Pacific Palisades, Calif., assignor to Kazuo Nakano, Gardena, Calif.

Filed Jan. 8, 1970, Ser. No. 1,380

Int. Cl. G09f 3/02; H01h 43/08; G06k 7/06, 19/04  
U.S. Cl. 40—2.2

7 Claims



A self-authenticating credit card device includes a plurality of discs rotatably positioned in a card with por-

tions projecting beyond an edge of the card so that a person may freely rotate the discs with a thumb or a single finger. Stationary indicia marked on the card corresponds with movable indicia marked on the discs so that a predetermined secret combination known only to an authorized card user may be established.

When the discs are rotated to establish the secret combination then wiper blades carried by the discs are urged into electrical contact with associated segments of an electrical circuit to switch the electrical circuit from an interrupted condition to a closed condition. When the electrical circuit in its closed condition is coupled to a signal circuit associated with a credit card information recording device, a signal will be imparted to indicate that the person possessing the card is a valid authorized user.

3,624,939

# NOVELTY CONTAINER FOR PHOTOGRAPHS

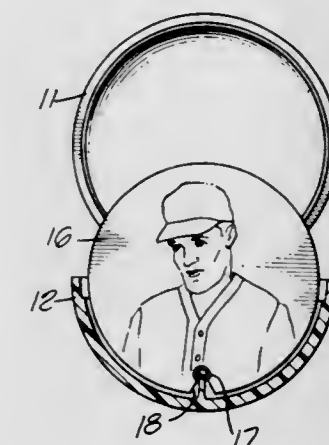
Wayne T. Gossard, Alhambra, Calif., assignor of a fractional part interest to Oxford W. Prisk, San Gabriel, Calif.

Filed May 13, 1970, Ser. No. 36,947

Int. Cl. G09f 3/18

U.S. Cl. 40—10

4 Claims



A pair of housing parts are hinged together to define an enclosure for a plurality of photographs. A retainer on one of the housing parts receives peripheral apertures in the photographs to maintain them in planes parallel to the axis of the hinge.

3,624,940

# INVERTIBLE VARIABLE DISPLAY

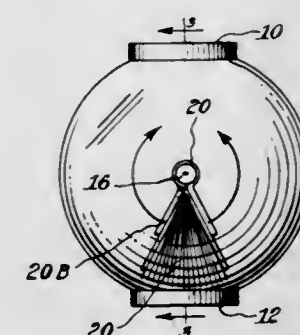
Frank Alexander Geddie, 4900 Old Brook Road, Apt. 6, Richmond, Va. 23227

Filed June 24, 1970, Ser. No. 49,271

Int. Cl. G09f 11/00

U.S. Cl. 40—28

4 Claims



A hollow transparent ball has two oppositely disposed flats whereby the ball can be held in place by resting on



either flat. Means in the ball provide a first display when the ball rests on one flat and provide a second display automatically changed from either one to the other when the ball is inverted from its original position.

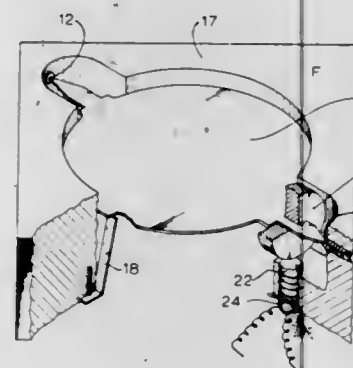
3,624,941

**REVERSIBLE SIGN ELEMENT**

Sydney F. Chantry, Weston, Ontario, Canada, assignor to Ferranti-Packard Limited, Toronto, Ontario, Canada  
Filed Dec. 29, 1969, Ser. No. 888,714  
Int. Cl. G09f 11/00

U.S. Cl. 40—52 R

6 Claims



With a magnetically actuatable reversible sign element a stationary ratchet element limits rotation in one direction and holds the element at a point where it may always be rotated by reversing an exterior magnetic field.

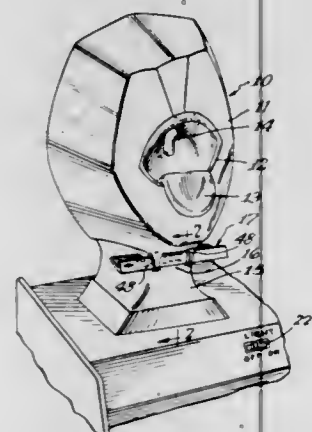
3,624,942

**SLIDE DISPLAY STRUCTURE**

Robert E. N. Kloor, Fenton, Mo., assignor to Sherwood Medical Industries Inc.  
Filed July 18, 1969, Ser. No. 842,969  
Int. Cl. G09f 11/30

U.S. Cl. 40—64 A

6 Claims

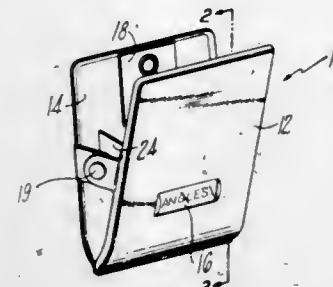


A slide display structure for holding viewing elements such as transparencies or pictures at a display position. The slide display structure includes a carrier portion adapted to hold a plurality of such viewing elements and is provided at one edge thereof with an upstanding information providing means which is further adapted for cooperation with associated apparatus for indexing the slide display structure. The information providing means may serve as a manipulating portion of the slide display structure. The slide display structures are adapted to be stored in a suitable drawer, or the like, with the information means viewable to facilitate selection of desired display structures.

3,624,943  
**MOVING MESSAGE CLIP**  
Robert Lewtan, 11 Arlen Way,  
West Hartford, Conn. 06117  
Filed Mar. 17, 1969, Ser. No. 807,805  
Int. Cl. G09f 11/04

U.S. Cl. 40—71

7 Claims



A changeable display device which can be made integral with various items, the items thereupon being provided with a window through which the display is viewed. A rotatable member carrying information to be displayed is moved, via linkages attached to a movable member of the item, so as to change the display each time the item is employed.

3,624,944

**TRANSFER LETTER**

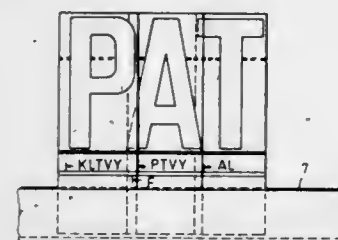
Kurt Gunnar Hakan Blomqvist, Enebyberg, Sweden, assignor to Eribolaget Erik Irestedt AB, Stockholm, Sweden

Filed Oct. 13, 1969, Ser. No. 865,744  
Claims priority, application Sweden, Oct. 16, 1968, 13,983/68

Int. Cl. G09f 7/02, 7/16, 7/20

U.S. Cl. 40—140

1 Claim



A transfer letter consisting of a letter image detachably applied to a temporary base intended to be transferred to a permanent base in the form of a text etc. together with other letter images of similar design by removal of the bases. Marks are applied to the base within the edge thereof which indicate the relative lateral position together with other letter images with regard to the light space formed by adjacent letters.

3,624,945

**UNIVERSAL SELF-CONFORMING TRIGGER LOCK FOR FIREARMS**

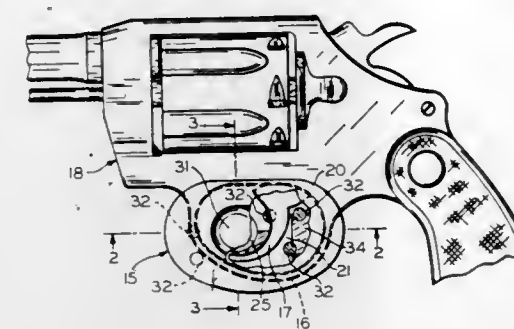
Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Inc.  
Filed Apr. 13, 1970, Ser. No. 27,684  
Int. Cl. F41c 27/10

U.S. Cl. 42—1 Y

6 Claims

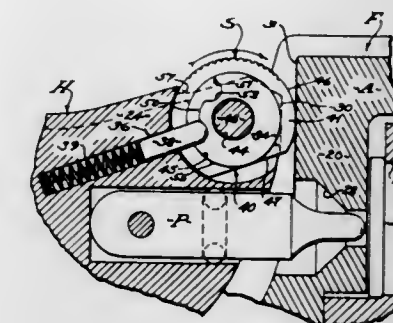
To protect the triggers of guns, rifles, pistols and various forms of firearms against accidental or unauthorized operation a firearm trigger lock is provided for detachable, self-conforming and non-shiftable mounting on the trigger guard portion of a firearm to enclose the latter and prevent unauthorized movement of the firearm trigger. A cover section of the trigger lock carries a transverse cylinder shell and strategically located transverse, axially,

yieldable plungers and other means designed to engage portions of the trigger guard and trigger to prevent movement of the latter and prohibit shifting of the trigger lock regardless of how it is mounted on the trigger guard.



Moreover, the trigger lock is universal in respect to its adaptability to trigger guards of various shapes and sizes and the disposition of the trigger therein, permitting its use on firearms of various types.

frame, by removing said abutment from said place of entry. The safety is manually movable between alternate positions, being held in alternate "safe" and "fire" positions by detent means. A feature is durability which involves a hardened safety element that is movable and that seats directly in the hammer.



3,624,946

**FISHING ROD AND REEL CASE**

Gordon T. De Baker, Sr., 1647 Forest Glen,  
Green Bay, Wis. 54304

Continuation-in-part of application Ser. No. 848,542, Aug. 8, 1969. This application Apr. 6, 1970, Ser. No. 25,955

Int. Cl. A01k 97/08

U.S. Cl. 43—26

11 Claims

3,624,946  
**SAFETY TOY REVOLVER WITH STEEL PIN PREVENTING THE USE OF CARTRIDGES WITH BULLETS**

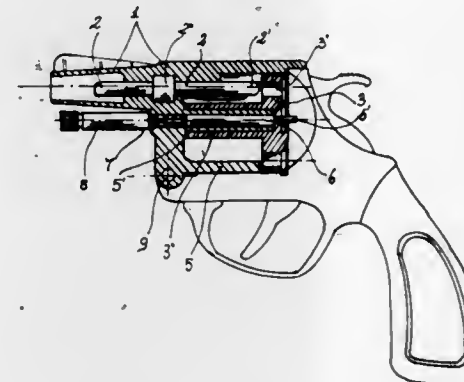
Francesco Cagnoni, Via S. Vittore 36, Milan, Italy  
Filed Apr. 3, 1969, Ser. No. 813,028

Claims priority, application Italy, Oct. 19, 1968, 22,743/68

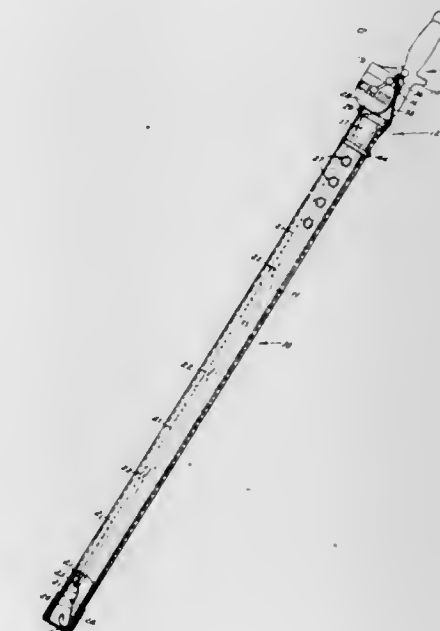
Int. Cl. F41c 3/06

U.S. Cl. 42—58

2 Claims



A safety toy revolver which comprises a barrel body made of a relatively fragile alloy, and a pin of case-hardened steel which has pointed ends and a collar intermediate said ends and is inserted in the barrel body so as to completely obstruct the barrel bore, said pin being dimensioned so that one end thereof is just clear of a rotatable magazine of minimum thickness, in such a manner as to prevent cartridges with bullets to be introduced into the rotatable magazine.



A tubular case for a combined fishing rod and reel, wherein only the rod shaft, line and hooks are received within the tubular case, and the attached reel and handle means are disposed externally thereof, and wherein the rim of the case is held urged against the handle means by means of a tensioned elastic band, thereby securing the tubular case in a position covering the rod shaft, line, and hooks, only, and excluding the rod handle and reel, therefrom.

3,624,947

**HAMMER SAFETY FOR FIREARMS**

George H. Worrall, Sr., Los Angeles, Calif., assignor to Salford Imports, Inc., Culver City, Calif.

Filed June 25, 1969, Ser. No. 836,370

Int. Cl. F41c 17/00, 17/04, 17/08

U.S. Cl. 42—66

18 Claims

An accessible "safety" is provided in a hammer of a firearm wherein said hammer is exposed for manipulation, whereby alternate blocking and firing positions of the safety are readily accomplished as circumstances require. In the safetied condition, the safety is positioned to block entry of the firing pin through the frame by establishing an abutment at or about the place of entry of said pin through said frame. In the firing condition, the safety is positioned to permit entry of the firing pin through the

3,624,949

**FISH HOOK POSITIONING DEVICES**

Frederick S. Lowndes, 106 Tyler Road,  
Pittsburgh, Pa. 15237

Filed Oct. 20, 1969, Ser. No. 867,636

Int. Cl. A01k 93/00

U.S. Cl. 43—43.15

6 Claims

A fish hook positioning device is provided for positioning a hook relatively to a fish line and comprising a floatation member having a passageway therethrough adapted



slidingly to receive a fish line, a drop line attaching means on the floatation means, and a line stop engaging means



on the passageway adapted to engage a stop on the line and hold the floatation means at the stop position.

3,624,950

**WEIGHT INSERTS FOR BAIT FISH**

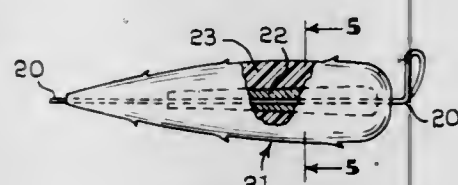
Nicholas P. Merckes, % L. Balzer, 3409 S. Whitnall Ave., Milwaukee, Wis. 53207

Filed Oct. 17, 1969, Ser. No. 867,147

Int. Cl. A01k 83/06

U.S. Cl. 43-44.2

1 Claim



A weighted insert for bait fish having an external angular projection apertured to be threaded on the fish line leader between the swivel and the hook or hook gang, said insert having a plurality of exterior barb points disposed toward said angular projection.

3,624,951

**CAGE TYPE ANIMAL TRAP**

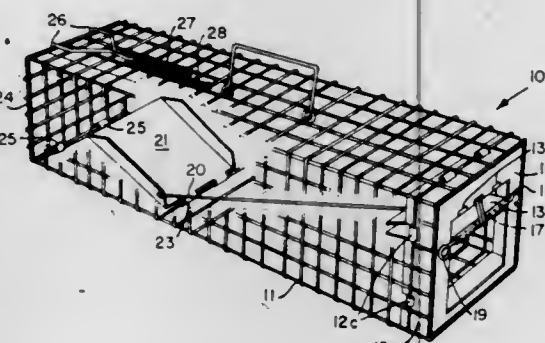
John W. Gilbaugh, 19396 Monte Vista Drive, Saratoga, Calif. 95070

Filed July 13, 1970, Ser. No. 54,220

Int. Cl. A01m 23/04, 23/08, 23/18

U.S. Cl. 43-61

6 Claims



An animal trap is made in the form of a wire mesh cage provided with a door made in two sections hinged together. The upper part of the door is hinged to a door frame which is attached to the wire mesh cage. The hinge attaching the door to the door frame includes a wire

member having a hook in the central portion thereof between hinge elements for latching the door in open position. One end of this wire member is in the shape of a lever attached to the trip mechanism which is actuated by the animal entering the cage so that the door latch is released and the door closed under spring pressure.

3,624,952

**HUMANE ANIMAL TRAP**

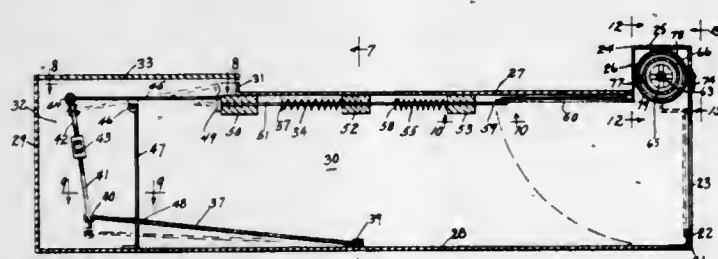
Arthur E. Gordon, Box 1, Baker, Calif. 92309 (Apt. 1, Villa Motel, 902 Data St., Truth or Consequences, N. Mex. 87901)

Filed May 14, 1970, Ser. No. 37,143

Int. Cl. A01m 23/20

U.S. Cl. 43-61

10 Claims



An animal trap having a spring-actuated hinged trap door and a treadle-operated interior door-releasing trigger mechanism. The hinged trap door is provided with a reversible ratchet mechanism for holding the door open while the trigger mechanism is being set and for latching the door closed after release by the trigger mechanism.

3,624,953

**TERMITE CONTROL SYSTEM**

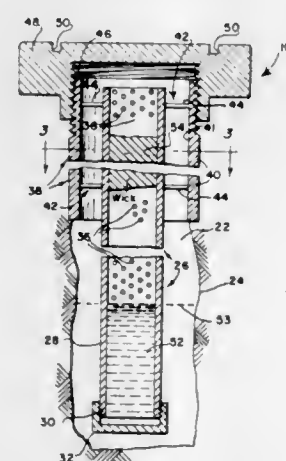
Frank P. Crosby, 5033 Mangum Road, College Park, Md. 20740

Filed Dec. 10, 1969, Ser. No. 883,794

Int. Cl. A01m 1/20

U.S. Cl. 43-131

5 Claims



A termite control system includes an insecticide dispensing pipe vertically disposed within a hole adjacent to a dwelling. The pipe has a lower unperforated portion for receiving a liquid insecticide and an upper portion having perforations through which the insecticide is dispensed in vapor form. A sleeve is provided at the upper end of the hole for mounting the pipe with its outer surface spaced inwardly from the walls of the hole so that the insecticide in vapor form may permeate the soil surrounding the hole. A wick may be provided within the pipe to facilitate transfer of the liquid upwardly in the pipe.

3,624,954

**COMBINED BOX AND CONSTRUCTION TOY, INCLUDING CONNECTING MEANS**

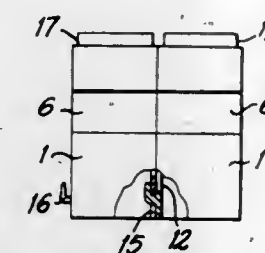
Germaine van der Veken, Vrijheidslaan 171, Brussels 8, Belgium

Filed Sept. 19, 1969, Ser. No. 859,456

Int. Cl. A63h 33/08

U.S. Cl. 46-11

3 Claims



A combined box and toy is formed with a transverse slot into which the sidewalls of another box may be inserted. A hook carried by the sidewall of one box is adapted to be hooked onto the sidewall of an adjacent box at the transverse slot or at an aperture formed in one of the sidewalls of the adjacent box.

3,624,955

**DISC-SHAPED BLOCKS WITH CYLINDRICAL PROJECTIONS AND CONCENTRIC WALLS**

Takashi Matsubayashi and Hirozo Matsubayashi, Habikino-shi, Japan, assignors to Nintendo Playing Card Co., Ltd., Kyoto-shi, Kyoto, Japan

Filed Feb. 6, 1969, Ser. No. 797,164

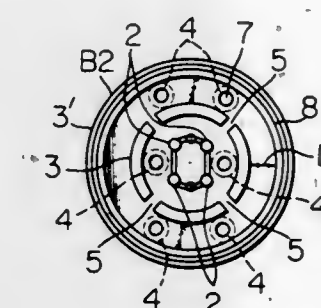
Claims priority, application Japan, Feb. 17, 1968,

43/11,821; May 27, 1968, 43/43,677

Int. Cl. A63h 33/08

U.S. Cl. 46-25

10 Claims



Each block of the mutually couplable assembling toy has a disc base plate, on one side of which is provided one or more cylindrical walls projecting vertically and concentrically therefrom and on the other side are provided plural cylindrical projections. The block of one embodiment has a cylindrical outermost wall and the block of another embodiment has a partially conical outermost wall. These walls and projections are arranged and constructed so that at least some of the projections of one block are fitted between the walls of another block when piled one on another.

3,624,956

**BRIDGE CONNECTOR FOR TOY LAYOUT**

Ralph Dunn, Manhattan Beach, Stephen W. Plurkowsky, Torrance, and Armando P. Villasana, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 24, 1970, Ser. No. 13,396

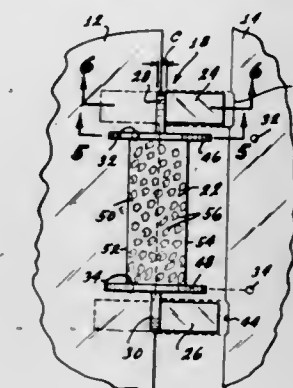
Int. Cl. A63h 33/10

U.S. Cl. 46-31

3 Claims

A connector for holding sheets of cardboard together while appearing to bridge roads printed on the sheets comprising an upper bridging portion for lying over the space between a pair of sheets, a pair of lower bridging portions for lying beneath the sheets and holding them

against the upper bridging portion, and a pair of intervening portions passing between the sheets to join the upper and lower bridging portions. The intervening portions hold each lower bridging portion so that it lies beyond a respective end of the upper bridging portion. Each of the cardboard sheets has a pair of small recesses formed



along its edge for receiving the intervening portions of the bridge connector, so that there is substantially no apparent gap between the sheets. The upper bridging portion has small protuberances that fit into corresponding holes in the cardboard sheets, to resist separation of the sheets.

3,624,957

**SCOOP SHOVEL FOR TOY VEHICLES**

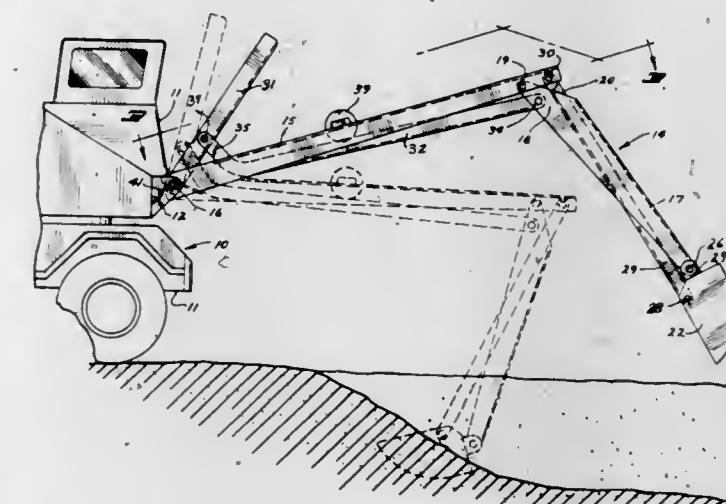
Thomas W. Good, Golden Valley, Minn., assignor to Tonka Corporation, Mound, Minn.

Filed May 26, 1969, Ser. No. 827,666

Int. Cl. A63h 33/30

U.S. Cl. 46-40

2 Claims



An articulated type scoop shovel for mounting on a toy vehicle having inner and outer booms interpivotable to end with the inner end of the inner boom pivoted to the vehicle and a scoop bucket pivoted to the outer end of the outer boom, a handle on the inner boom for raising and lowering it about its vehicle pivot, a lever adjacent the vehicle pivot, and linkage connecting the lever to the bucket for tilting the bucket about its pivot by manual operation of the lever.

3,624,958

**NOVELTY AERIAL TOP**

Stephen J. Salayka, 30 Montrose Ave., Brooklyn, N.Y. 11206

Continuation-in-part of applications Ser. No. 557,923, June 15, 1966, and Ser. No. 839,737, Dec. 12, 1968. This application Aug. 14, 1970, Ser. No. 63,712

Int. Cl. A63h 1/30

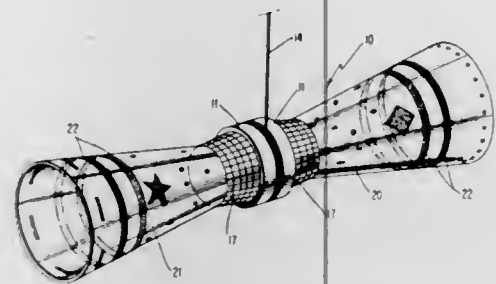
U.S. Cl. 46-61

18 Claims

A string actuated aerial top having a central main body wherein the weight of the top is mainly concentrated. To the main body on both sides thereof there are secured



extension members having a total weight which is substantially less than that of the main body of the top. At least one of such extension members in the form of a thin-walled axially elongated body of revolution. The axial length of the main body is a small fraction of the total

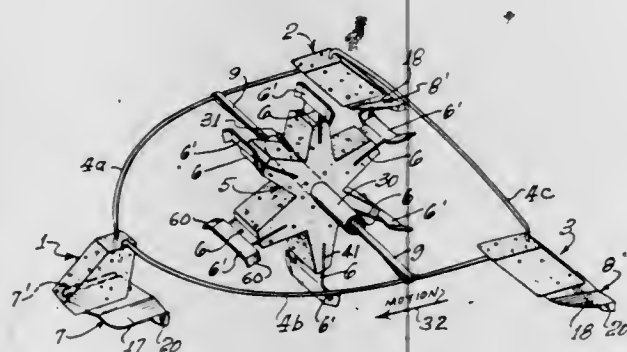


length of the top. The extension members markedly alter the appearance and performance of the top. The extension members, or at least a part of such members, are preferably removably secured to the remainder of the top whereby the appearance and performance of the top may be quickly altered.

**3,624,959**  
**TOY TRIMARAN WATERCRAFT**  
John P. Quirk, 970 W. 19th St.,  
Costa Mesa, Calif. 92627  
Filed Dec. 5, 1969, Ser. No. 882,450  
Int. Cl. A63h 23/02

U.S. Cl. 46—93

8 Claims



A toy trimaran driven by a paddle wheel. The three floats or hulls, equipped with planes, are held apart in a generally triangular configuration by wires or rods. The paddle wheel, driven by a rubber band or the like, is located inside this triangle. The hulls and paddle wheel may be made of plastic foam, and the planes and paddles made of light semi-rigid sheet material and inserted into slits therein. The paddles have a novel shape which produces an upward thrust reaction to assist in the hulls rising up on their planes. In operation, the craft planes at a relatively high speed for a long range. No adhesives nor separate fasteners are needed in the construction. The craft can be assembled from a kit without using tools.

**3,624,960**  
**POSABLE FIGURE MANIKIN**  
Henry J. Folsom, Redondo Beach, J. Stephen Lewis, Pacific Palisades, Marius J. Morin, Torrance, and John W. Ryan, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.  
Filed Oct. 31, 1969, Ser. No. 872,949  
Int. Cl. A63h 3/00

U.S. Cl. 46—151

1 Claim

A bendable toy figure which is economical to produce comprising a body wire, arm wire, and leg wire, all of the wires being bendable and covered by a flexible plastic

material that defines a mechanical man. The center of the arm wire, which extends through the chest portion of the figure, has a single bend, so that the arms extend at about a 120° angle from each other. The head of the

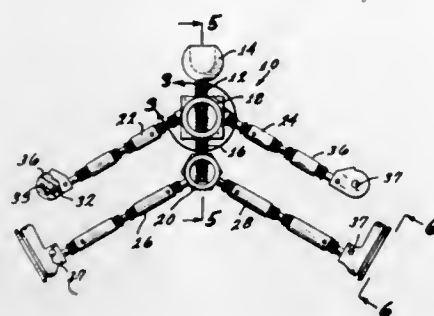
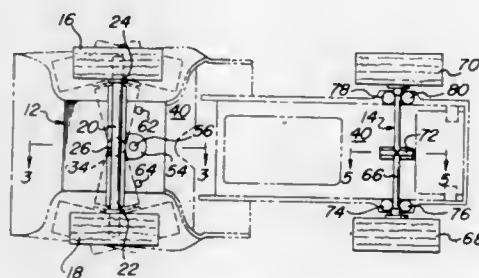


figure is featureless and a separate hat with ear flaps is provided which engages the head for rotation thereon, so that the figure appears to face in a direction defined by the orientation of the hat.

**3,624,961**  
**TOY VEHICLE BOGIE**  
Jacob Clarence Brubaker, Lancaster, Pa., assignor to Gabriel Industries, Inc., New York, N.Y.  
Filed Feb. 5, 1969, Ser. No. 796,681  
Int. Cl. A63h 17/26

U.S. Cl. 46—221

10 Claims

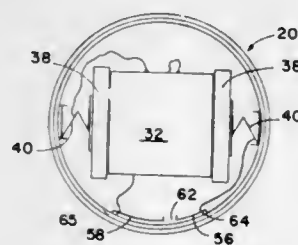


A steerable toy vehicle has a bogie which responds to a force applied to the vehicle body to turn the vehicle in the direction of the applied force; the bogie is mounted so as to turn and cant.

**3,624,962**  
**SELF-MOVING TOY**  
Kenneth E. Sykes, 2932 Perdue Ave.,  
Columbus, Ohio 43224  
Filed Dec. 11, 1970, Ser. No. 97,145  
Int. Cl. A63h 5/00

U.S. Cl. 46—232

3 Claims



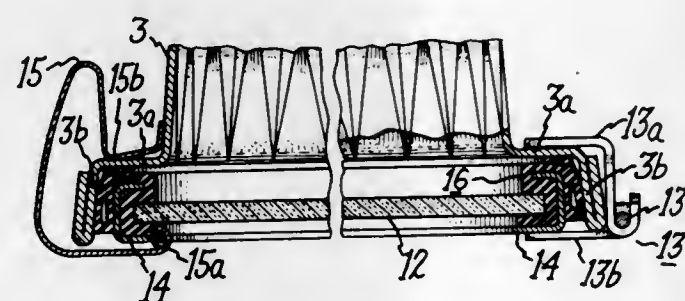
An improved self-moving toy characterized by a compact inner structure adapted to be wholly mounted within an appropriately shaped shell means and includes a novel single moving part driven by a battery powered motor to produce both motion and sound to amuse the user. The switch means for turning the motor on and off is

also wholly contained within the shell means with no outer depression or protrusion on the outer surface of the shell means.

**3,624,963**  
**SEAL DEVICE**  
Mitchell M. Osteen, Zirconia, and James L. Grindle, Hendersonville, N.C., assignors to General Electric Company  
Filed Apr. 6, 1970, Ser. No. 25,996  
Int. Cl. E05b 65/06

U.S. Cl. 49—394

10 Claims

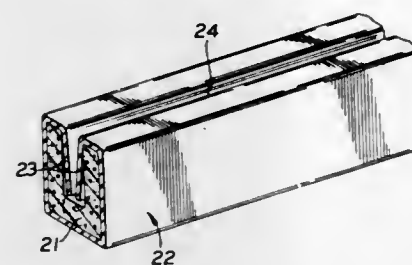


Seal for hinged glass cover for reflector of luminaire comprises an annular resilient gasket having an inner grooved mounting portion for embracing the edge of the glass cover, an intermediate recessed portion in which the frame of the glass cover is received, and the outer sealing portion sloping downwardly and outwardly from the cover frame and having wedge-shaped compressible portions at top and bottom which co-act with the flanged rim of the reflector in the closed position of the cover for tightly sealing the cover to the reflector rim.

**3,624,964**  
**CHANNEL-TYPE WEATHERSTRIP FOR SLIDABLE CLOSURES**  
Paul G. Bordner, Franklin County, Ohio, and Vernon P. Fredricksen, Washington County, Minn., assignors to Crane Plastics, Inc., Columbus, Ohio  
Filed Feb. 2, 1970, Ser. No. 7,785  
Int. Cl. E06b 7/23

U.S. Cl. 49—475

3 Claims



A channel-shaped weatherstrip of non-absorbent flexible plastic materials for installation in a bearing edge of a slidable closure and having a sandwich construction made up of a relatively thin outer layer of a first, relatively hard, wear-resistant plastic and an inner core of a relatively soft, flexible, foamed or expanded plastic.

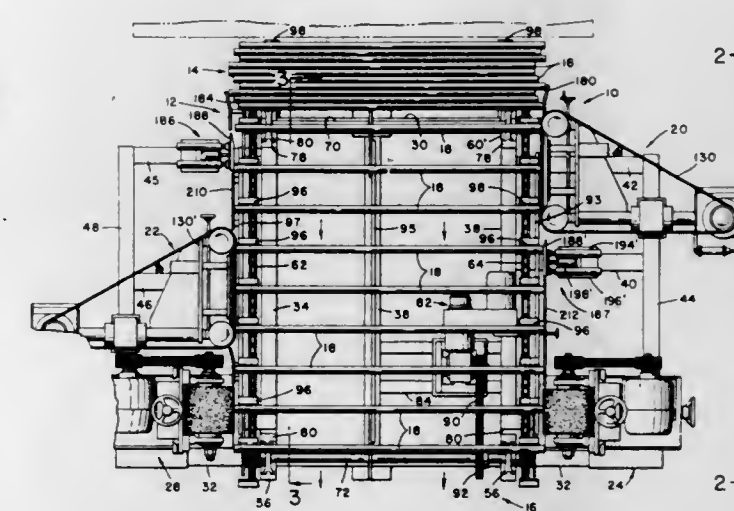
**3,624,965**  
**END FINISHING APPARATUS**  
Paul J. Geppert, Shaker Heights, Ohio, assignor to Loopco Industries, Inc.  
Filed Mar. 30, 1970, Ser. No. 23,686  
Int. Cl. B24b 7/00

U.S. Cl. 51—3

11 Claims

An apparatus for finishing the ends of elongated members such as rods, tubes, pipes or the like. The disclosed

apparatus includes a conveyor which conveys the members along a path in parallel, side-by-side relationship. The conveyor is arranged to rotate the members about their longitudinal axes and move them past a first pair of endless belt abraders which are positioned on opposite sides of the conveyor and act sequentially on the opposite

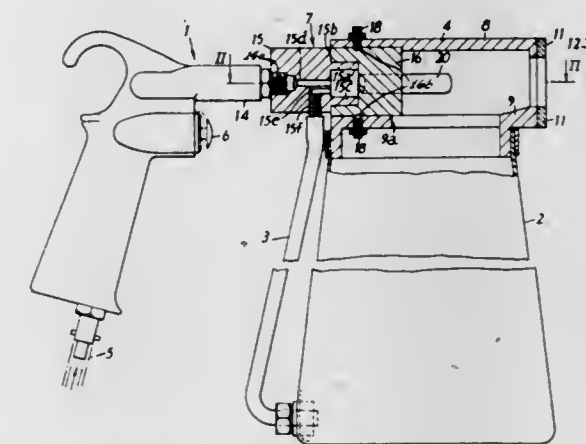


ends of the members. Associated with each belt abrader is an end positioning guide plate device which functions to properly locate the members. Mounted after the belt abraders are a pair of rotary belt abraders which are positioned directly opposite one another and simultaneously act on both ends of the members.

**3,624,966**  
**MEANS FOR MARKING GLASS AND THE LIKE**  
Francis R. Palmer, deceased, late of Leicester, England, by Peter R. Palmer and Shelia Bruce, executors, Leicester, England, assignors to Thomas Edward Boynton, Leicester, England  
Filed Nov. 27, 1968, Ser. No. 779,321  
Claims priority, application Great Britain, July 20, 1968, 34,741/68  
Int. Cl. B24c 3/06

U.S. Cl. 51—8

8 Claims



Portable spraying appliance for etching glass to the form of a stencil to mark e.g. a vehicle's registration number on its windows as an anti-theft precaution. Comprises a spray gun for spraying abrasive powder into one end of a casing at the other end of which, one or more stencils are located or to be located. Stencil(s) either mounted in a holder on the casing or preferably taped to the surface to be marked. In latter event, casing is open ended and is in use placed over stencil(s) while gun is operated.

Gun includes nozzles for spraying into casing. May be plurality of nozzles swivellable to direct abrasive from side to side in casing, or one or more fixed nozzles.



3,624,967

**PEENING MACHINE**

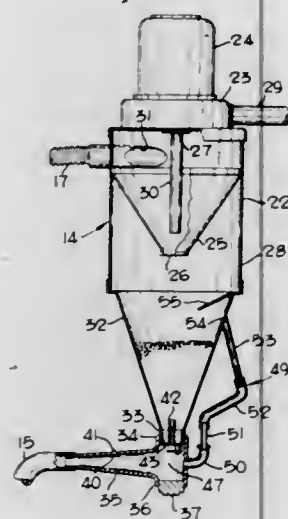
Charles E. Kamper, R.R. 2, and Richard R. Compton,  
% Zero Manufacturing Co., 811 Duncan Ave., both of  
Washington, Mo. 63090

Filed Sept. 2, 1969, Ser. No. 854,640

Int. Cl. B24c 3/06

U.S. Cl. 51—8

10 Claims



This peening machine includes a storage reservoir coupled to a metering chamber and supplying a discharge gun and the machine is provided with a flow control reclaim unit. The control apparatus includes a by-pass conduit which purges residual blasting material from the metering chamber and the discharge ductwork, and returns it to the reservoir. The purging action is effectuated by suction from a blower located in the reservoir, the suction being applied to the metering chamber via the by-pass conduit when the gun is inoperative. A metering platform below the reservoir orifice collects blasting material and effectively plugs the orifice to preclude escape of the blasting material from the reservoir when the gun is inoperative.

3,624,968

**GEM STONE POLISHING MACHINES**

Alec Leibowitz, London, England, assignor to Spectrum  
Diamonds (Proprietary) Limited, London, England

Continuation-in-part of application Ser. No. 690,915,

Dec. 15, 1967. This application May 26, 1970,

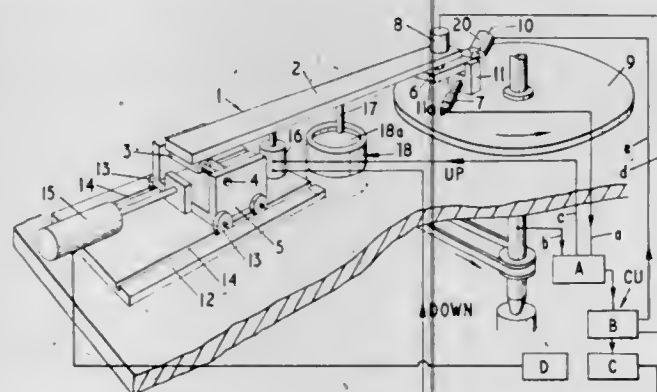
Ser. No. 40,571

Claims priority, application Great Britain, Dec. 20, 1966,  
56,978/66

Int. Cl. B24b 7/02

U.S. Cl. 51—122

5 Claims



A machine for automatically faceting gem stones which enables a complete ring of facets to be formed on a stone automatically, the machine having a control system for automatically polishing each facet to the same depth and automatically indexing the stone to different facet forming positions between each polishing operation.

3,624,969

**LENS GENERATING APPARATUS**

Ernest T. Dalton, Southbridge, Mass., assignor to  
American Optical Corporation, Southbridge, Mass.

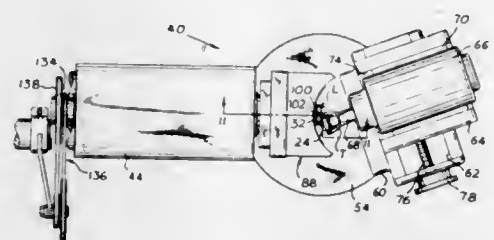
Continuation-in-part of application Ser. No. 840,887, May  
1, 1969, which is a division of application Ser. No.  
626,448, Mar. 28, 1969, now Patent No. 3,492,764.

This application July 15, 1970, Ser. No. 54,935

Int. Cl. B24b 29/00

U.S. Cl. 51—131

14 Claims



Generating surfaces of ophthalmic lenses to true toric shape using a cupped generating tool universally adaptable to the production of lenses of different refractive powers.

3,624,970

**FINISHING MACHINE HAVING RESILIENTLY SEGMENTED FINISHING CHAMBER**

Gunther W. Balz, Kalamazoo, Mich., assignor to

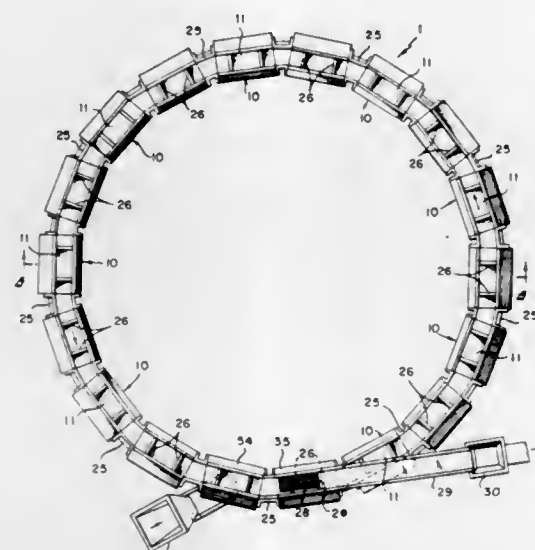
Roto-Finish Company, Kalamazoo, Mich.

Filed Sept. 10, 1968, Ser. No. 758,911

Int. Cl. B24b 31/06, 31/10, 1/00

U.S. Cl. 51—163

2 Claims



An apparatus for finishing parts comprising an elongated finishing chamber resiliently mounted for vibration and divided into segments, vibratory means operatively associated with each segment, and a flexible connecting member connecting adjacent segments, thus forming a continuous elongated finishing chamber, which can be used in effectively finishing parts having relatively great lengths or in effective continuous processing.

3,624,971

**GRINDING CONTROL SYSTEM AND METHOD**

Richard J. Levi, 256 Irving Ave., Closter, N.J. 07624

Filed Aug. 30, 1968, Ser. No. 766,358

Int. Cl. B24b 49/00

U.S. Cl. 51—165.74

16 Claims

A grinding control system for a valve assembly including means for determining the relative position between one member of the valve assembly and a reference standard similar to the other member of the assembly so that

3,624,973

**CONJOINT FACIA AND WATER DAM**

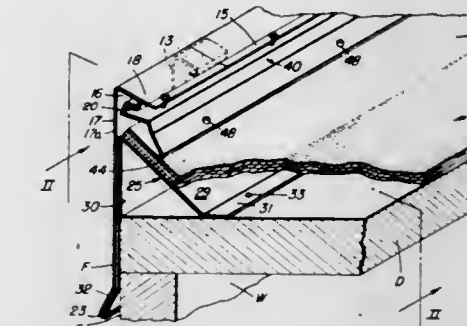
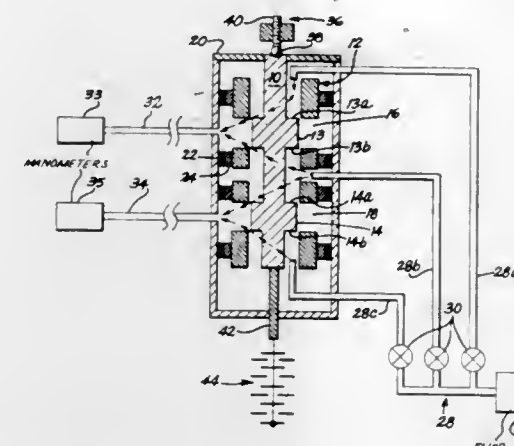
Julian J. Attaway, Tucker, Ga., assignor to Miscellaneous  
Manufacturing Corporation, Tucker, Ga.

Filed Jan. 7, 1970, Ser. No. 1,123

Int. Cl. E04d 13/15

U.S. Cl. 52—60

15 Claims



means adapted to be connected to an additional transducer for controlling the grinding of the stem member. A method for controlling the grinding.

3,624,972

**GENERATING MECHANISM FOR A GEAR GRINDING MACHINE FOR HELICAL GEARS**

Willi Graf, Zurich, Switzerland, assignor to Maag Gear  
Wheel & Machine Company Limited, Zurich, Switzerland

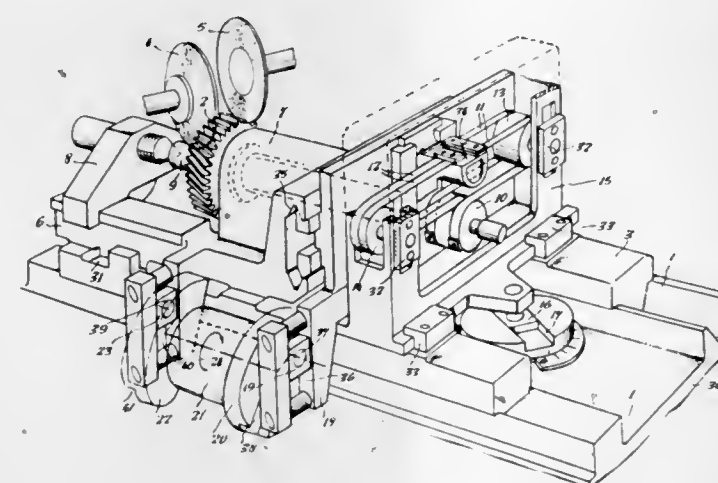
Filed May 19, 1970, Ser. No. 38,768

Claims priority, application Switzerland, June 3, 1969,  
8,391/69

Int. Cl. B24b 5/16

U.S. Cl. 51—232

2 Claims



In generating mechanism for a gear grinding machine for helical gears, on which a workpiece having helical teeth which are to be ground is mounted on a generating slide, a rolling pitch block is fitted to a work spindle which is to carry the workpiece, the rolling pitch block is encircled by rolling pitch tapes, the ends of which pitch tapes are fixed to the pitch block and to a secondary slide, and both the secondary slide and the generating slide are moveable parallel to each other and at right angles to the workpiece axis. The rolling pitch tapes are passed round return idler guide pulleys, the said guide pulleys are mounted in a tape stand which is moveable parallel to the generating slide and to the secondary slide, and the said tape stand is moveable from side to side by a sliding block which is slidable in a guideway which is angularly adjustable according to the helix angle of the teeth of the workpiece.

3,624,974

**BUILDING ENCLOSURE STRUCTURE**

Raymond Waddington, 1347 Jamie Lane,

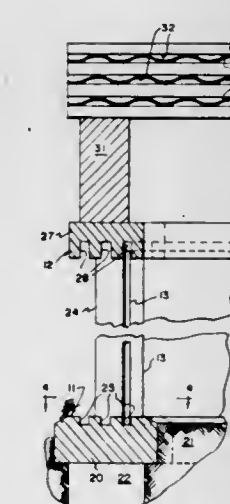
Homewood, Ill. 60430

Filed June 27, 1969, Ser. No. 837,115

Int. Cl. E04b 2/82, 7/16

U.S. Cl. 52—64

2 Claims



A horizontal base wall frame having track grooves in one upper surface thereof. A roof frame including spaced roof beams, wall track grooves in a bottom surface of



the roof frame, and parallel roof track grooves in facing vertical surfaces of the roof beams. Wall and roof panels slidable in the track grooves of the base wall frame and roof frame.

3,624,975

### STRIP SHINGLE OF IMPROVED AESTHETIC CHARACTER

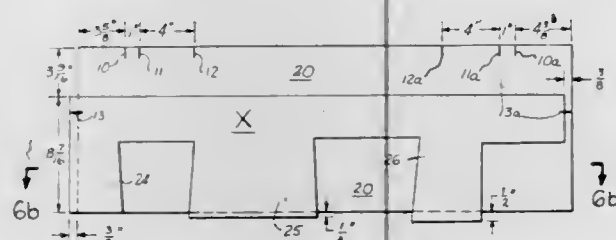
Albert R. Morgan, Paul R. Antoun, Howard E. Callahan, and Theodore R. Mangel, Cincinnati, Ohio, assignors to Panacon Corporation

Filed Jan. 6, 1970, Ser. No. 973

Int. Cl. E04d 1/26, 1/36

U.S. Cl. 52—105

19 Claims



A laminated, mineral-surfaced, asphalt strip shingle, which, when laid in courses on a roof, simulates the irregularity and attendant shadow effects found in wood shingles, while complying with Underwriters' Laboratories, Inc. standards for fire retardant asphalt shingles. A rectangular "monotab" base lamina and an "apron overlay" lamina are adhered together with roofing asphalt. The overlay lamina is of the same length as the base lamina and has a plurality of approximately rectangular tabs of varying widths and lengths, some of which project beyond the bottom edge of the base lamina, and is laterally offset with respect to the base lamina by a small amount, so as to cover the butt joint between adjacent base laminae in the same courses. Vertical alignment marks are provided, such that the base lamina overhangs the tops of the cut-outs between tabs of the overlay lamina in the next lower course. A plurality of horizontal laying marks, differently spaced, are provided to create a program in laying, which insures the avoidance of repetitive or directional patterning.

3,624,976

### LENS BLOCK AND ADAPTOR THEREFOR

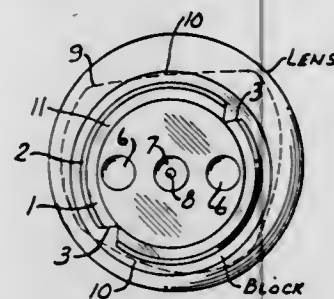
Richard J. McCall, Summer Hill, and Robert C. Irwin, Stony Creek Township, Cambria County, Pa., assignors to Shuron/Continental Division of Textron Inc., Rochester, N.Y.

Original application May 1, 1967, Ser. No. 635,232, now Patent No. 3,522,677. Divided and this application Mar. 21, 1969, Ser. No. 834,184

Int. Cl. B24b 41/06

U.S. Cl. 51—216

4 Claims



A lens block provided with reference surfaces which locate the lens horizontal layout line and permit the blocked lens to be properly chucked, either directly or by an adaptor positioned on the block, in a lens edge grinding machine for rough edging the lens before generating the same employing the same block used for generating the lens to prescription. The reference surfaces

are provided on the molded low melting point metal type block by a lens blocking apparatus having mating reference mold surfaces on the interior walls of the mold cavity.

3,624,977

### RECESSED CONDUIT CONSTRUCTION

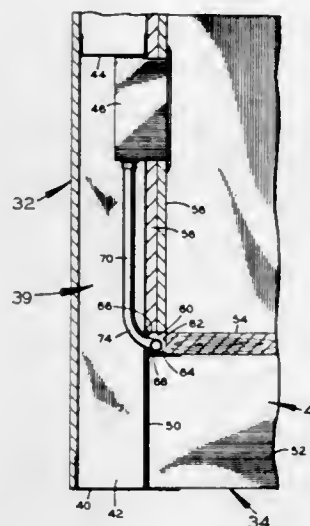
Evans T. Morton, Pompano Beach, and Tony R. Fitzgerald, Fort Lauderdale, Fla., assignors to Behring Corporation, Fort Lauderdale, Fla.

Filed Jan. 9, 1970, Ser. No. 1,769

Int. Cl. E04b 1/348, 5/48

U.S. Cl. 52—221

8 Claims



A recessed conduit construction for buildings, particularly modular homes and the like, wherein a wall and floor define a horizontally extending recess, and conduit means extends from outlets in or adjacent to the wall and enters into the recess at floor level and extends horizontally in the recess adjacent the frame structure but not interfering therewith. Preferably, the conduit means crosses corners between walls through a recess in the underside of the flooring.

3,624,978

### MONOLITHIC STRUCTURAL MEMBER FOR FOUNDATION OR CEILING SYSTEM

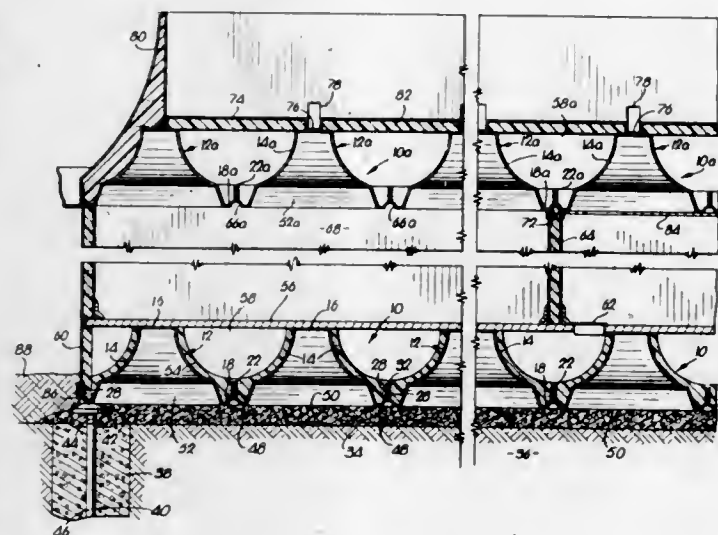
Jerald Paul Skinner, Topeka, Kans., assignor to Mono, Inc., Topeka, Kans.

Filed Sept. 25, 1969, Ser. No. 861,009

Int. Cl. E04b 1/62, 5/14

U.S. Cl. 52—265

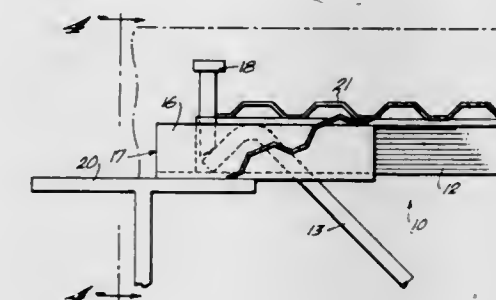
11 Claims



A structural member for foundation or ceiling systems, comprising a monolithic body of sheet material, preferably composed of a synthetic resin that may be readily

shaped by vacuum forming or other suitable techniques. Aligned rows of hollow, quadrilateral, generally frusto-pyramidal elements project upwardly from the base plane of the body and present spaced, load-supporting surfaces that define the mounting centers for the overlying floor or roof. Accordingly, the base of the body presents a grid of surfaces on its underside at the mouths of the cavities formed by the hollow support elements. In a foundation system, the base grid directly overlies a pad of sand, silt or gravel chips to seal each individual cavity and thereby trap air therein to establish air pockets of resistance to load. A single chamber is formed beneath the overlying floor between the upstanding support elements to provide a network of intercommunicating chases for plumbing and electrical runs, and define a duct beneath substantially the entire floor for heating and air-conditioning purposes.

a steel joist is provided at the underside with bearing means adapted to seat upon and be secured to the supporting beam, whereby, when the supported concrete slab is poured in place in such manner as to extend over and



3,624,979

### TELESCOPING HYDRAULIC CYLINDER ARRANGEMENT FOR MULTIPLE SECTION EXTENSIBLE BOOMS

Daniel F. Przybylski, 636 W. Lake St.,

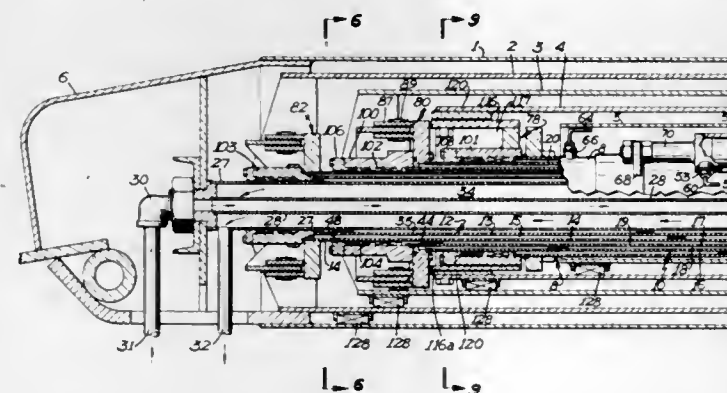
Winona, Minn. 55987

Filed Aug. 25, 1969, Ser. No. 852,850

Int. Cl. E04h 12/34

U.S. Cl. 52—115

13 Claims



A plurality of telescopically arranged hydraulic cylinders having piston surfaces of successively decreasing cross-sectional area are utilized to extend and retract a multiple-section, telescopic structure such as a crane boom. A continuous circuit for the flow of hydraulic fluid to and from the hydraulic cylinders takes the form of interconnected annular passages provided between adjacent, radially spaced wall segments of the hydraulic cylinders. The innermost and smallest diameter hydraulic cylinder is stationary, and the outermost, largest diameter hydraulic cylinder moves outwardly first by hydraulic pressure and carries with it the crane boom section of smallest cross sectional area to which it is connected. Full retraction of the crane boom and hydraulic cylinders to a very compact assembly is provided by connecting each of the successively smaller hydraulic cylinders to a boom section of larger cross sectional area, whereby the smallest, movable hydraulic cylinder is connected at its inner end to the inner end of the boom section of largest cross sectional area.

upon the supporting beam, the joist end interconnection therewith is encased within the slab concrete to effect the composite action between the supporting steel and the concrete.

3,624,981

### JOINING SYSTEM FOR WALL ELEMENTS

Artur Fischer, Althelmer Strasse 219, Tumlingen, Germany, and Siegfried Mrowka, Sulz Neckar, Germany; said Mrowka assignor to said Fischer

Filed Sept. 9, 1969, Ser. No. 856,350

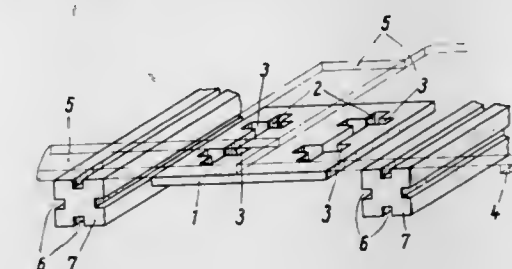
Claims priority, application Germany, Sept. 10, 1968,

P 17 84 713.1

Int. Cl. E04b 1/60

U.S. Cl. 52—460

5 Claims



Structural elements for erecting wall structures have exposed faces provided with first grooves. Cladding plates for cladding the wall structures have projections which are receivable in the grooves of the structural elements. Connecting elements for connecting adjacent ones of the cladding plates are provided with a plurality of grooves at least two of which extend crosswise of one another and which are all dimensioned to receive projections of the cladding plates.

3,624,982

### VACUUM PACKING APPARATUS

James W. Marietta, Jr., % D-Mar Co., 1116 W. 24th St., Los Angeles, Calif. 90007

Filed Dec. 15, 1969, Ser. No. 885,043

Int. Cl. B65b 31/04

U.S. Cl. 53—79

23 Claims

A machine for vacuum packaging items of irregular shape and size in tubular flexible plastic film comprising a tubular neck with open front and rear ends about which a supply of tubular film stock is engaged, means spaced forward of the neck to tie, clip or seal the front end of the film stock in closed condition, means for urging an item to be packaged forward into the rear end of, through and from the front end of the neck and suction means at the front end of the neck to evacuate fluid and air from between the film stock and the item as the item and

3,624,980

### COMPOSITE END CONNECTION FOR STEEL JOISTS

Ira J. McManus, 39 Lincoln Ave.,

Florham Park, N.J. 07940

Filed Feb. 11, 1970, Ser. No. 10,399

Int. Cl. E04b 1/16, 5/29

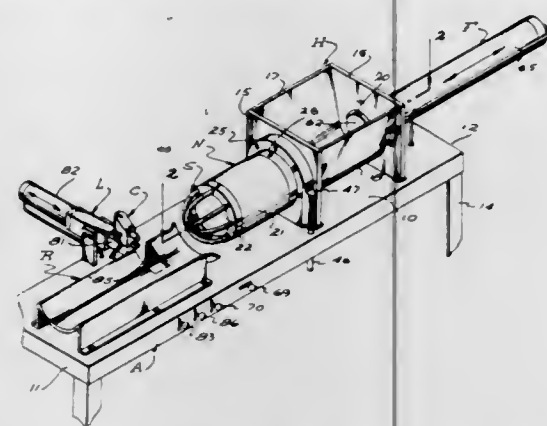
U.S. Cl. 52—327

9 Claims

A composite action joist end interconnection with a supporting beam and carrying a concrete slab is described. An outwardly-extending end portion of the top chord of



film stock moves forwardly from the neck, said means to tie, clip or seal the front end of the film stock closed and



adapted to similarly close the portion of the film stock adjacent the rear end of the packaged item.

3,624,983

### MEANS FOR RAPID AND UNIFORM HEATING OF A PACKAGED MEMBRANE SYSTEM

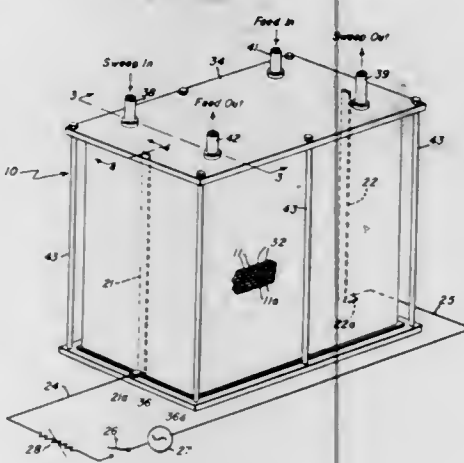
William J. Ward III, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 2, 1970, Ser. No. 15,679

Int. Cl. B01d 59/12

U.S. Cl. 55—16

6 Claims



An arrangement for electrically heating a packaged flat-sheet membrane system is described. In the preferred construction the membrane package consists of a plurality of spaced electrically conducting immobilized liquid membranes disposed in substantially parallel surface-to-surface array in combination with manifolding means so as to define both a first group of flow volumes and a second group of flow volumes alternating between the first group. Electrical conductors are connected to make electrical contact with each liquid membrane. These electrical conductors may be connected to an alternating current power supply in a circuit containing an intervening switch. Heating of the packaged membrane system to optimum operating temperatures is accomplished by passing A.C. current through the liquid membranes.

3,624,984

### METHOD AND APPARATUS FOR REMOVAL OF ORGANICS FROM CHEMICAL WASTE GASES

Domenic C. Ferrari, Winchester, and Carl G. Bertram, Brighton, Mass., assignors to The Badger Company Inc., Cambridge, Mass.

Filed June 15, 1970, Ser. No. 46,088

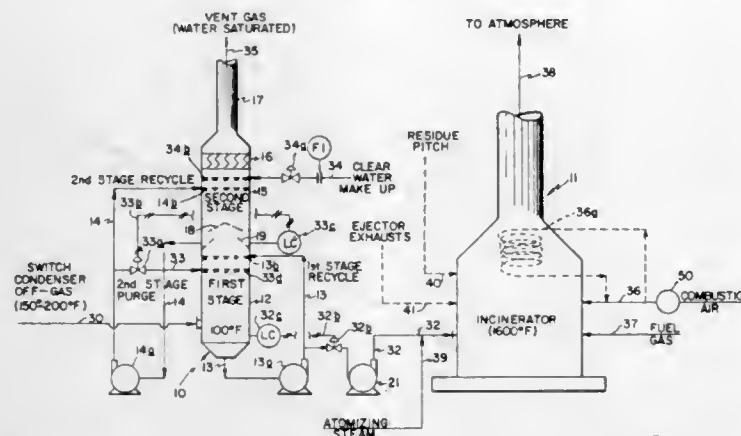
Int. Cl. B01d 47/12

U.S. Cl. 55—85

26 Claims

Chemical effluent waste gases from chemical plants, particularly effluent waste gases from phthalic anhydride and maleic anhydride plants, are effectively water washed of

residual organic matter (98 to 99% removal) in a wet scrubber using recycled water to concentrate the organic pollutants in the scrubber liquor. A concentrated liquid



purge (blowdown) from the scrubber recycle circulating loop is directed to a thermal incinerator where the purge is vaporized and the organic pollutants are oxidized to non-pollutant products.

3,624,985

### METHOD OF REMOVING POLLUTANTS FROM INDUSTRIAL EXHAUST PRODUCTS

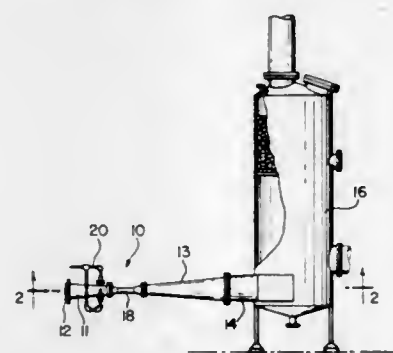
Roger F. Giles, Portland, Oreg., assignor to Simpson Timber Company, Seattle, Wash.

Filed Oct. 15, 1969, Ser. No. 866,468

Int. Cl. B01d 47/10

U.S. Cl. 55—85

3 Claims



A method of pollutant removal employs the step of accelerating the particles through a scrubbing liquid in a venturi scrubber and selectively changing the acceleration by changing the removable throat section according to the size of the particles in the industrial exhaust products being treated.

3,624,986

### FLOW CONTROLLER FOR CARRIER GAS CHROMATOGRAPHY

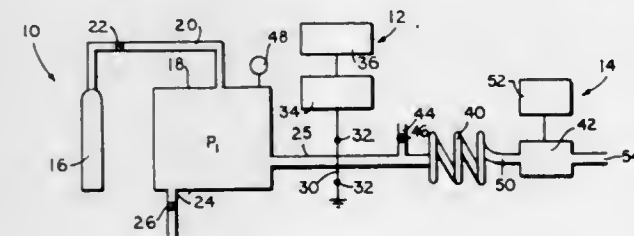
Gerald R. Shoemaker, La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Sept. 4, 1970, Ser. No. 69,676

Int. Cl. B01d 15/08

U.S. Cl. 55—197

15 Claims



A flow controller for a gas chromatograph includes a hydrogen permeable, palladium containing film interposed between a source of hydrogen carrier gas and the

inlet to the chromatograph column. The hydrogen permeability of the film is dependent on its temperature. A variable electrical power supply connected to the film is energized in a programmed manner to heat the film to a selected temperature to control the flow rate of gas through the column.

3,624,987

### HAY CUTTING AND CONDITIONING MACHINE

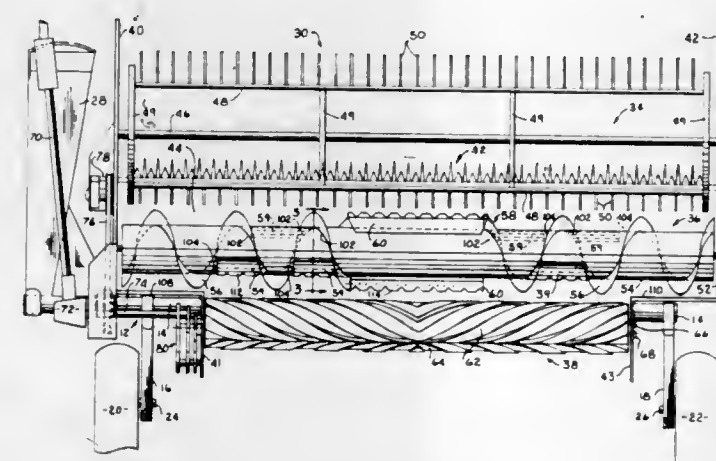
Henry N. Lausch and Bruce D. Schwalm, Leola, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Oct. 6, 1969, Ser. No. 864,062

Int. Cl. A01d 43/10

U.S. Cl. 56—1

8 Claims



An agricultural machine for cutting a wide swath of crop material, conveying it rearwardly, consolidating the outer portions of the swath with an auger having a pair of flight sections and a plurality of crop deflecting means disposed thereon which are cooperable to direct the crop material laterally and rearwardly to form a narrower, but uniformly thick mat of crop material for delivery to a pair of crop conditioning rolls disposed between the auger and having a length substantially longer than the space formed between the auger flight sections. The swath of crop material that is discharged on the ground after passing through the conditioning rolls has a width at least as great as a major portion of the width of the originally cut swath.

3,624,988

### LAWN MOWERS

Edward John Aldred, Ipswich, England, assignor to Ransomes Sims & Jefferies Limited, Ipswich, England

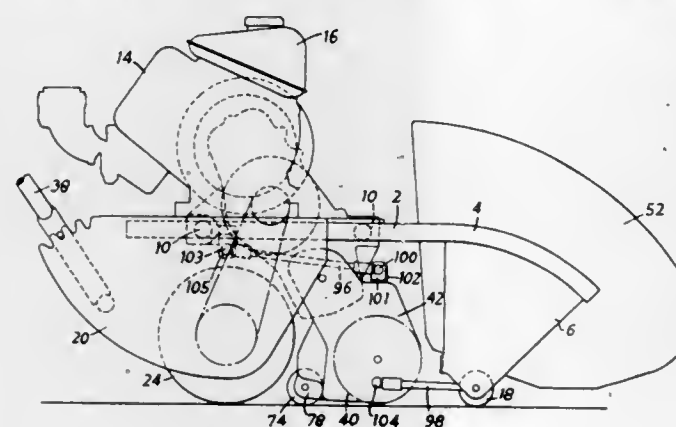
Filed Mar. 11, 1970, Ser. No. 18,681

Claims priority, application Great Britain, Mar. 14, 1969, 13,494/69

Int. Cl. A01d 75/30

U.S. Cl. 56—7

19 Claims



A lawn mower has a cutting unit supported on forward and rear ground-engaging members, and a cutting unit

connected to the frame by a pair of laterally spaced connecting members and by a third connecting member vertically spaced from the pair of connecting members. The cutting unit is supported by a single ground-engaging member mounted on the unit rearwardly of its bottom blade and by the three connecting members, which allow the unit to move bodily upwards and downwards relative to the frame and to tilt about any axis parallel to the direction of travel of the frame. A number of cutting units may be mounted on one frame.

3,624,989

### ATTACHMENT FOR ROTARY LAWN MOWERS

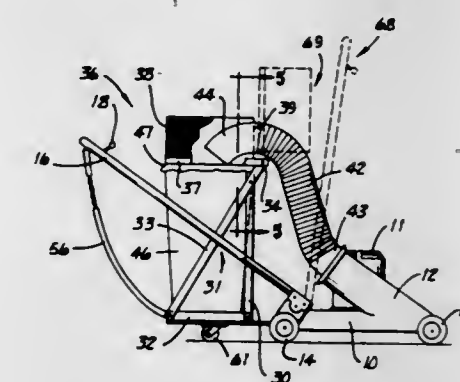
Marvin R. Gatheridge, 6626 Barr Will Drive, Indianapolis, Ind. 46220

Filed Nov. 2, 1970, Ser. No. 85,862

Int. Cl. A01d 35/22

U.S. Cl. 56—202

8 Claims



Disclosed is a casted support frame, carrying a collecting container for clippings, leaves, etc., the container being accommodated between the conventional mower handle arms. The support frame is pivotally coupled to the lower, rear portion of the mower, and the frame supporting casters are positioned so that the weight of the loaded container does not interfere with the maneuverability of the mower.

3,624,990

### MACHINE FOR HARVESTING MUSHROOMS

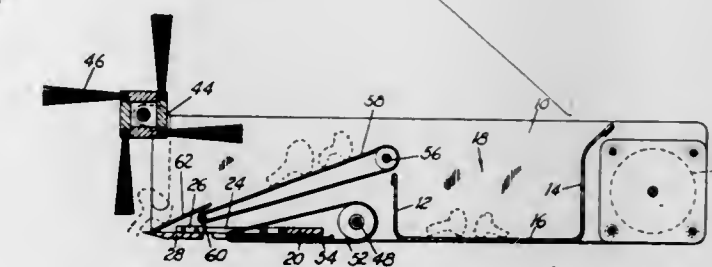
James W. Sinden, Zurich, Switzerland, and Gerald J. Stout, State College, Pa., assignors to Blueberry Equipment, Inc., South Haven, Mich.

Filed Oct. 15, 1970, Ser. No. 81,066

Int. Cl. A01d 45/00

U.S. Cl. 56—327 R

7 Claims



A rectangular frame is supported from the growing bed by crawler belts arranged in transversely spaced, longitudinally extending loops. A cutter bar is supported in front of the belts by transversely angled, horizontal, spring arms. A first motor with eccentric drive rapidly oscillates the cutter along its length. A rotating cylindrical brush located over the cutter bar brushes the crop against and rearwardly over the cutter. A collector belt inclined rearwardly and



upwardly receives the cut crop and delivers it over the top of a receptacle located within the rear end of the frame. A second motor drives the crawler belts, the brush and the collector belt.

### 3,624,991 FRUIT CATCHER AND CONVEYOR ASSEMBLY

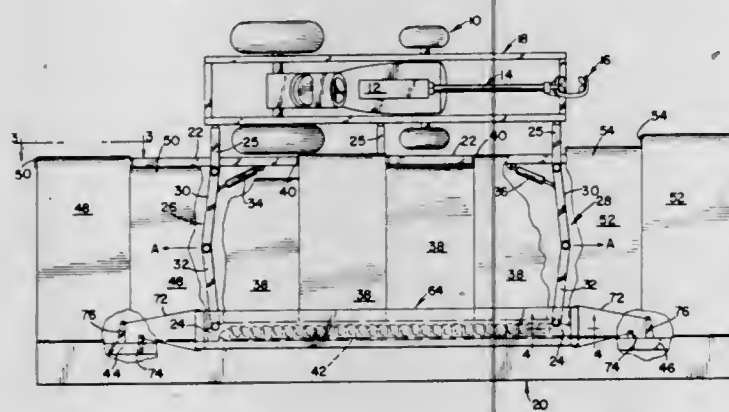
Calvin P. Rickerd, 523 N. Catherine,  
La Grange, Ill. 60525

Filed June 4, 1970, Ser. No. 43,491

Int. Cl. A01g 19/06

U.S. Cl. 56—329

6 Claims



A fruit harvesting machine including a prime mover upon which is mounted a boom, a tree clamp, and a shaker mechanism. A catcher and conveyor assembly extends laterally from the prime mover for powered extension toward a tree to be harvested for catching fruit shaken from the tree and conveying the fruit to a suitable collection point. The assembly is arranged for powered retraction to a transport position. A conveyor of the assembly is covered by a deflector strip to prevent tree-borne fruit from falling directly onto the conveyor. The deflector strip is mounted in a manner whereby it can be raised to a position in spaced relation above the conveyor to permit fruit to move beneath the deflector strip and onto the conveyor.

### 3,624,992 ELECTROSTATIC YARN PIECING DEVICE AND METHOD

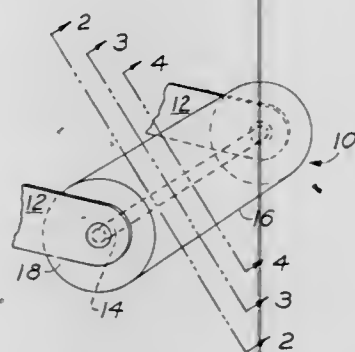
Herbert W. Brown, Easley, S.C., assignor to Maremont  
Corporation, Chicago, Ill.

Filed Mar. 2, 1970, Ser. No. 15,639

Int. Cl. D01h 15/00

U.S. Cl. 57—34 R

25 Claims



In combination with a yarn piecing device having a protrudable nosepiece for offering one end of broken yarn to another, a yarn-attracting, electrostatically charged nosepiece member and an electrostatic yarn piecing method are disclosed. The yarn ends, whether aligned or with off-set threadlines, are pieced by enhanced electrostatic attraction therebetween. In operation, one end releasably held on said member is advanced to piecing proximity of said other end, the ends being then drawn together by

enhanced electrostatic attraction, the held end is released and the ends piece themselves to form a continuous yarn strand. The nosepiece member may inherently possess a yarn-attracting electrostatic charge, as is the case when it is formed from polytetrafluoroethylene and the ends to be pieced are cotton. Alternately, the nosepiece member may be electrostatically charged prior to or concurrently with the piecing operations by some charging source or device.

### 3,624,993 LOCKING DEVICE FOR WIRE TWISTING MACHINE

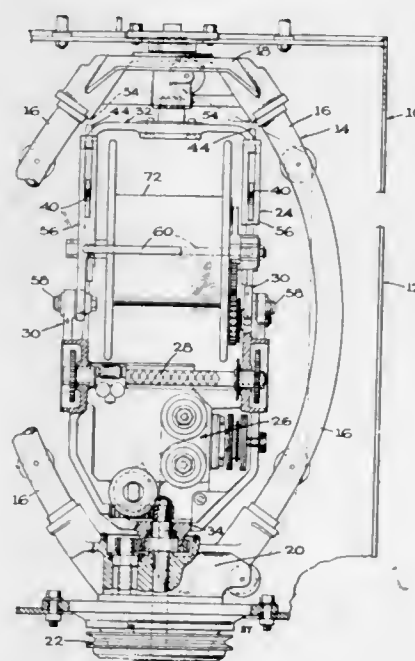
Charles F. van Hook, 2-31 Lyncrest Ave.,  
Fairlawn, N.J. 07410

Filed Aug. 5, 1969, Ser. No. 847,576

Int. Cl. B65h 49/36, 49/26

U.S. Cl. 57—58.52

9 Claims



A locking device for a wire twisting machine comprising a pair of latch arms adapted to be pivotally connected to the stationary cradle of a wire twisting machine and a pair of vertical rod members secured at their lower ends to said latch arms with biasing means mounted on said rod members to normally urge said latch arms in a downward direction. A pair of locking arms pivotally connected at their lower ends to the cradle of a wire twisting machine with said locking arms having slots therein adapted to receive the free end of said latch arms therein securing a spool on the cradle of the wire twisting machine with said rod members having elongated upper ends thereon adapted to be disposed in the path of rotation of the flyer of the wire twisting machine when said latch arms are in an unlocked position.

### 3,624,994 FIBER SPINNING APPARATUS

Vaclav Rohlena, Usti nad Orlici, Josef Hybl, Ceska  
Trebova, and Josef Stary and Jan Sterba, Usti nad  
Orlici, Czechoslovakia, assignors to Vyzkumny Ustav  
Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Oct. 15, 1969, Ser. No. 866,697

Claims priority, application Czechoslovakia,  
Oct. 18, 1968, 7,174/68

Int. Cl. D01h 1/12

U.S. Cl. 57—58.91

9 Claims

A hollow rotary spinning chamber is mounted for rotation about a predetermined axis intersecting an open side of the spinning chamber normal to the general plane of the open side. The spinning chamber has an inner annular surface which surrounds the open side concentric with

the axis of rotation which first diverges and thereupon converges in direction inwardly away from the open side. A separating roller is mounted for rotation proximal to the open side and receives fibrous sliver which it separates into the individual fibers thereof. A passage connects the separating roller with the open side of the spinning chamber and has an outlet located at this open side, fibers passing from the separating roller through the

the flow of air before the latter can escape through the apertures to thereby dislodge and eject with the flow of air such particulate contaminants as tend to accumulate in the chamber and in the apertures.

### 3,624,996 SPINNING OF TEXTILE YARNS

John Michael Shepherd, Ramsbottom, and Robert Greenwood, Whalley, England, assignors to T.M.M. (Research) Limited, Lancashire, England

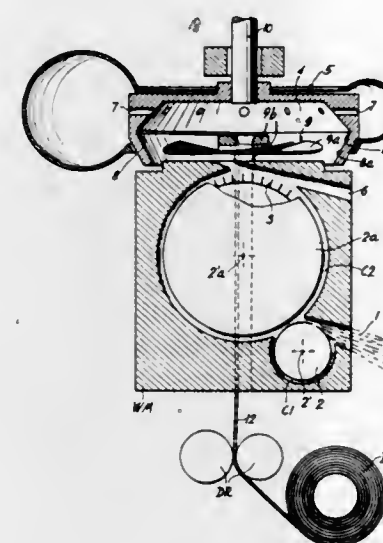
Filed Aug. 8, 1969, Ser. No. 848,565

Claims priority, application Great Britain, Aug. 16, 1968,  
39,281/68

Int. Cl. D01h 1/12; D02g 3/06

U.S. Cl. 57—58.91

12 Claims



passage and issuing from the outlet. Aperture means in the spinning chamber communicates with the interior thereof so as to create in the interior suction when the spinning chamber is rotated. Thereby a stream of air is drawn through the passage, carrying along the fibers into the spinning chamber. Directing means is provided for directing the stream of air with the fibers carried thereby in such a manner that the fibers are deposited on the inner annular surface in a region of the latter which is inwardly proximal to the open side of the spinning chamber.

### 3,624,995 METHOD AND DEVICE FOR SPINDLELESS SPINNING

Jaroslav Rajnoha, Tyniste nad Orlici, and Ladislav Bures,  
Usti nad Orlici, Czechoslovakia, assignors to Elitex  
Zavody Textilniho Strojirenstvi Generalni, Liberec,  
Czechoslovakia

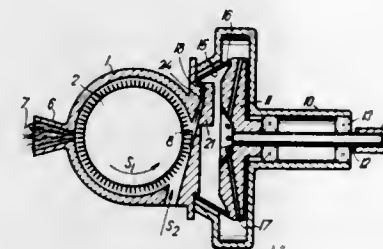
Filed Feb. 18, 1970, Ser. No. 12,191

Claims priority, application Czechoslovakia,  
Feb. 20, 1969, 1,183/69

Int. Cl. D01h 1/12

U.S. Cl. 57—58.91

10 Claims



A method and a device for spindleless spinning. A hollow spinning chamber is rotated about an axis which intersects an open side of the spinning chamber normal to the general plane of the open side. Such rotation causes escape of air under the influence of centrifugal forces from the interior of the spinning chamber through apertures provided for this purpose in the wall thereof. As a result of the escape, a continuous flow of air is aspirated through the open side. A stream of fibers is fed into the open side and is centrifugally deposited on the inner circumferential surface of the chamber and converted into a yarn. A pulsing motion is superimposed upon

A method and apparatus for fibrillating a plastic film and then spinning the fibrillated fibers into a yarn by the open-end spinning method.

### 3,624,997 SELF-CLEANING COMBING ROLLER ARRANGEMENT FOR A SUCTION SPINNING CHAMBER

Stanislav Didek, Ctibor Doudlebsky, Stanislav Kabele,  
Josef Stary, and Milos Vecera, Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky,  
Orlici, Czechoslovakia

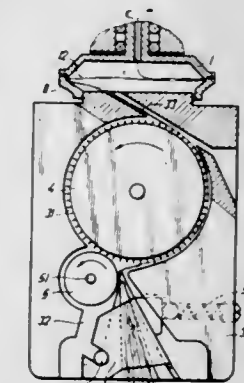
Filed Nov. 20, 1969, Ser. No. 878,370

Claims priority, application Czechoslovakia, Nov. 21,  
1968, 7,924/68; May 16, 1969, 3,490/69

Int. Cl. D01h 1/12

U.S. Cl. 57—58.91

22 Claims



A combing roller which supplies fibers to a rotary suction spinning chamber, has lateral flanges with peripheral projections generating air currents inhibiting fiber accumulations in lateral gaps formed between lateral convex or concave faces of the combing roller, and matching surfaces of a supporting body.

### 3,624,998 TEXTILE FLYERS

John Kay Pringle Mackie, Belfast, Ireland, assignor to  
James Mackie & Sons Limited, Belfast, Ireland

Filed Mar. 9, 1970, Ser. No. 17,570

Claims priority, application Great Britain, Mar. 12, 1969,  
13,045/69

Int. Cl. D01h 7/26

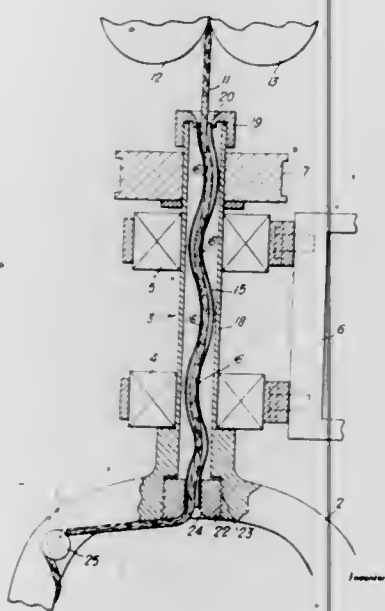
U.S. Cl. 57—115

12 Claims

A flyer for winding packages of textile roving and of the type having an axial portion extending in the opposite



direction from the legs of the flyer so as to be capable of journalling in one or more bearings has the axial portion formed along its length with a passage having a configuration such that the rove follows a devious path. The resultant changes of direction cause the fibres to be pressed together laterally thus binding them together and permitting considerably greater tension to be applied to



the rove thus rendering it possible to wind rove with very low twist with considerably greater tension than previously so as to form a firm package. The devious path may be formed either by a helical groove in a central member fitted within an outer shell or by means of a tube shaped to a sinuous configuration and mounted within an outer shell.

3,624,999

**REINFORCING YARNS OR CORDS**

Maurice A. Young, Lichfield, Staffordshire, England, assignor to The Dunlop Company Limited, London, England

No Drawing. Filed July 28, 1969, Ser. No. 845,587  
Claims priority, application Great Britain, Aug. 3, 1968, 37,147/68

Int. Cl. D02g 3/36, 3/40, 3/48

U.S. Cl. 57—153

11 Claims

A method for making textile yarns or cords of enhanced compression modulus. A multifilament low-twist yarn is coated with a liquid which can subsequently be converted to an elastic solid having a high Poisson's ratio, the depth of penetration of the liquid into the low-twist yarn being at least sufficient to bond together 30 percent of the filaments composing the yarn, converting the liquid into the elastic solid to form a yarn according to the invention or twisting two or more coated yarns together and converting the liquid into the elastic solid to form a cord.

3,625,000

**AUTOMATIC WINDING MECHANISM FOR QUARTER HOUR STRIKING CLOCKS**

Richard Hermle, Gosheim, Germany, assignor to Franz Hermle & Sohn, Gosheim, Germany

Filed May 4, 1970, Ser. No. 34,473  
Claims priority, application Germany, May 2, 1969, P 19 22 405.6

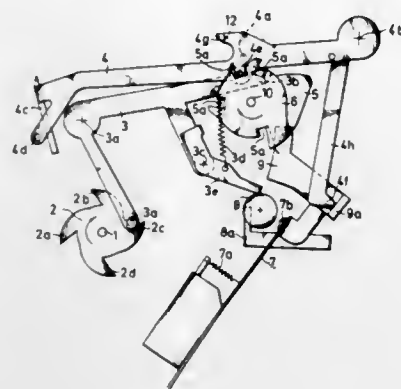
Int. Cl. G04c 1/04

U.S. Cl. 58—41

23 Claims

A clock having a cam means controlled quarter hour striking mechanism and springs for the clockwork drive and the hour striking mechanism, in which the quarter hour striking mechanism is operated by an electromotor supplied with power, for instance from a battery, and in

which a switch in the electric circuit connecting the battery to the motor is operated by the cam means controlling the quarter hour striking mechanism to energize the motor



during operation of the quarter striking mechanism, the motor when energized, winding the springs of the clockwork drive and the hour striking mechanism.

3,625,001

**LINK FOR USE IN MAKING A LINKAGE FOR A WATCH BRACELET OR SIMILAR ARTICLE AND EXPANSIBLE LINKAGE MADE THEREFROM**

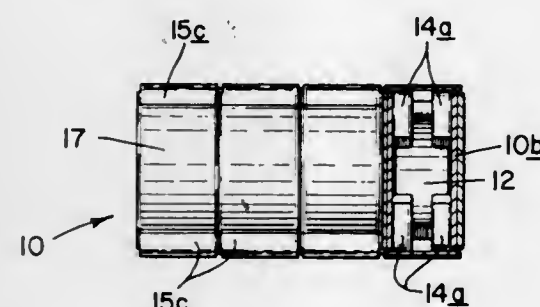
Paul Levinger, Providence, R.I., assignor to  
Textron Inc., Providence, R.I.

Filed May 13, 1970, Ser. No. 36,922

Int. Cl. F16g 13/24

U.S. Cl. 59—79 R

12 Claims



A link for use in making a linkage for a watch bracelet or similar article and an expansible linkage made from a series of such links. Each link includes an inner link having top, side and bottom walls. An ornamental insert is positioned above the top wall of each inner link and at least its upper portion is wider than the top wall of the inner link. The insert is secured to the inner link by a retaining member which has inwardly extending end flanges which engages the upper surfaces of outwardly extending end members of the insert. When a plurality of such links are assembled side by side in a linkage and the linkage is viewed from the top, the sides of the upper portions of the inserts abut each other and the inserts present the appearance of a ribbon extending longitudinally of the linkage between the inwardly extending flanges of the retaining members.

3,625,002

**ELECTRICAL ACTUATOR**

Noel Davis, Russell Township, Geauga County, Ohio, assignor to Integrated Development and Manufacturing Co., Chagrin Falls, Ohio

Filed Oct. 21, 1969, Ser. No. 868,115

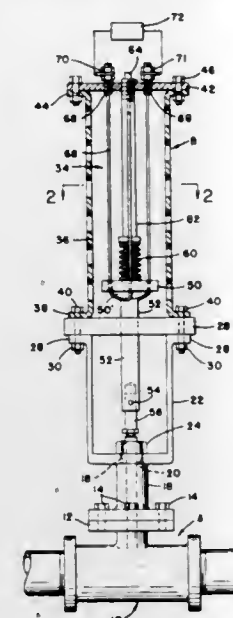
Int. Cl. F03g 7/06; F16k 31/02

U.S. Cl. 60—23

7 Claims

The drawings disclose an electrical actuator for valves, controls, and the like. The actuator shown comprises a drive plate adapted to act against a driven member. The drive plate is continuously biased in a first direction by an adjustably mounted spring. At least one elongated resistance wire member is connected with the plate to act

against the spring. Additionally, means are shown for supplying electric current to wire member to cause it to



expand or contract to produce controlled movement of the drive plate.

3,625,003

**SPLIT COMPRESSOR GAS TURBINE**

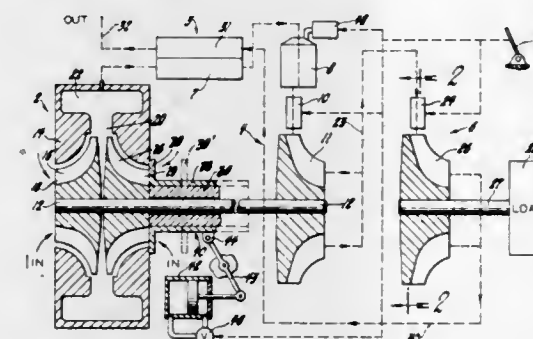
Sidney G. Liddle, Troy, and Mason K. Yu, Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 8, 1970, Ser. No. 70,201

Int. Cl. F02c 9/14; F02g 3/00

U.S. Cl. 60—39.25

9 Claims



A gas turbine engine has a double-entry centrifugal compressor, combustion apparatus supplied by the compressor, and a turbine having variable nozzle area supplied from the combustion apparatus and driving the compressor. The turbine may drive the load or a second power turbine in series with the compressor driving turbine may be provided. A regenerator to exchange heat between turbine exhaust and compressed air is preferably provided. One side of the double-entry compressor is provided with a shut off valve which closes the entrance to this side for operation at idling and under light loads. The valve is opened completely for higher power output of the engine.

3,625,004

**HYDRAULIC DRIVE CONTROL APPARATUS**

Werner G. Holzbock, Bloomfield Hills, and Wade R. Brown, Southfield, Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Original application July 5, 1968, Ser. No. 742,674, now Patent No. 3,568,713, dated Mar. 9, 1971. Divided and this application Nov. 20, 1969, Ser. No. 870,453

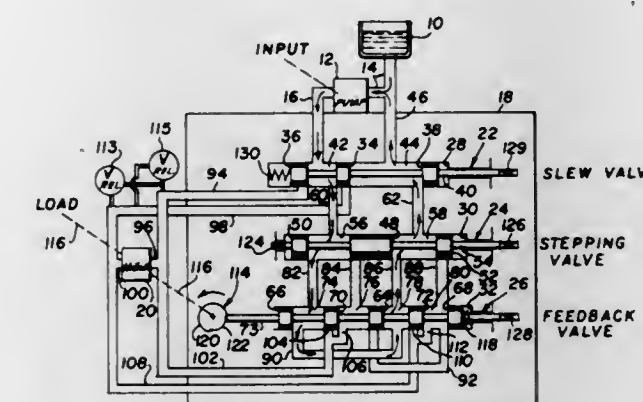
Int. Cl. F15b 15/18

U.S. Cl. 60—53 R

9 Claims

Disclosed herein in control apparatus for a hydraulic drive arrangement providing the drive arrangement with standby, intermittent, and continuous modes of operation. A fluid pressure source, hydraulic motor, and control

apparatus for regulating fluid flow between the fluid source and the motor form the drive arrangement. The control apparatus includes a plurality of flow paths through the apparatus, a plurality of valves disposed in the flow paths with each valve having a plurality of operating positions, and structure for operating the valves to move the valves between the various operating positions to regulate fluid



flow through the control apparatus. A mechanical feedback loop operable in response to a predetermined angular incremental advance of the motor controls the operating position of one of the valves whereby the motor may be utilized for the positioning of a driven member or load accurately and rapidly either in a series of predetermined increments or in a single continuous operation.

3,625,005

**ACTUATING MEANS FOR A BRAKE BOOSTER**

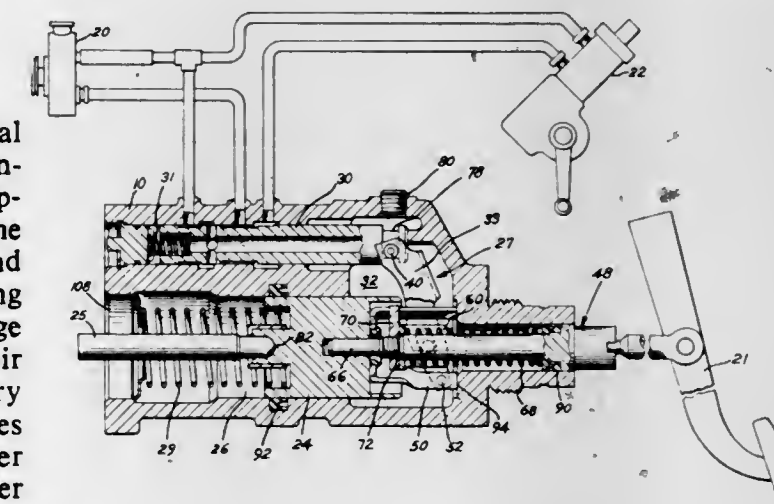
Cloyde E. Saunders and Richard W. Euler, South Bend, Ind., assignors to The Bendix Corporation

Filed May 8, 1970, Ser. No. 35,800

Int. Cl. F15b 7/00, 13/10; G05g 1/04

U.S. Cl. 60—54.6

9 Claims



A valve actuating mechanism for varying the applied force transmitted to a control valve and a power piston, which includes a support member fixed to the power piston. A lever with elongated slots in its arms is pivotally pinned to the support bracket and secured to the control valve by pins retained in a groove. A force transmitting member carried on an activating rod is connected to the lever by pivot pins slidably retained in the elongated slots. When force is applied by the activating rod, the force transmitting member with the pivot pins being free to move in the slots of the lever arm transmits a force to the piston and valve in proportion to the position of the pivot pins on the lever arm. Thus, the distance



traveled by the piston and valve in being actuated will vary in proportion to the distance traveled by the force transmitting member and its location on the lever arms.

of the motor to prevent cavitation and elastic compression of the hydraulic oil when the load on the motor increases.

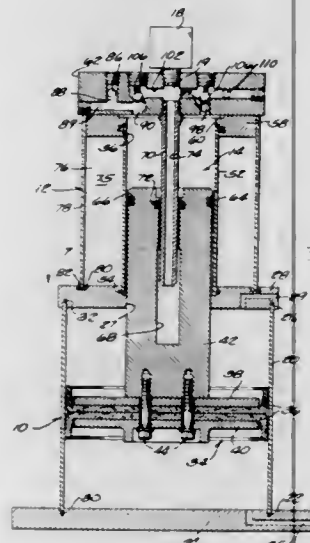
3,625,006

### TWO-STAGE HYDRAULIC BOOSTER

Thomas J. Schoenleben, Racine, Wis., assignor to Tomco, Inc., Racine, Wis.  
Filed Oct. 8, 1969, Ser. No. 864,682  
Int. Cl. F15b 7/00

U.S. Cl. 60—54.6

6 Claims



An air actuated two-stage hydraulic booster including an air actuated piston and cylinder assembly and a low pressure hydraulic piston and cylinder assembly actuated by the air actuated assembly, a high pressure piston and cylinder assembly incorporated within the low pressure hydraulic assembly and a pressure responsive relief valve to release the pressure in the low pressure assembly to provide a single shot of high pressure fluid from the high pressure assembly.

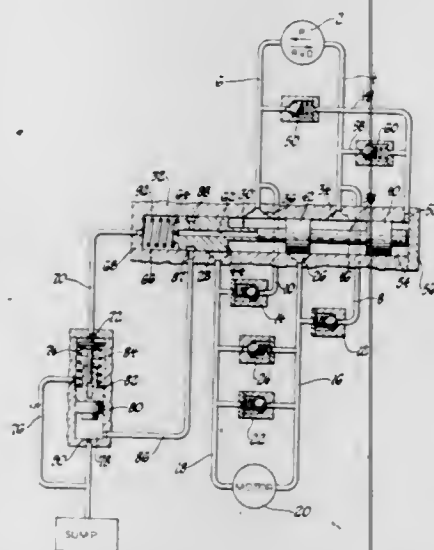
3,625,007

### HYDRAULIC SYSTEM INCLUDING FLOW STABILIZATION MEANS

Lee R. Herndon, Jr., 5640 Woodward Ave., Birmingham, Mich. 48011  
Filed Feb. 7, 1969, Ser. No. 797,569  
Int. Cl. F15b 13/042; F01k 13/02

U.S. Cl. 60—105

6 Claims



A hydraulic system including a hydraulic motor with means for controlling the pressure in the intake line.

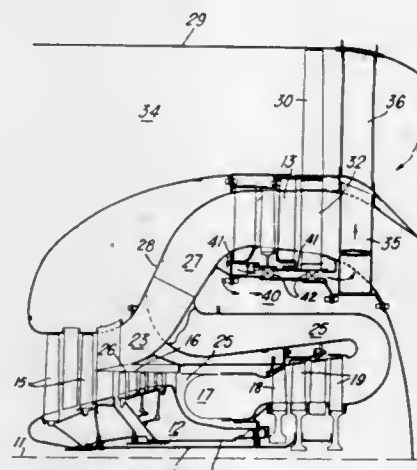
3,625,008

### GAS TURBINE POWER PLANT

Colin Taylor Hewson, Duffield, and John A. H. Scott, Derby, England, assignors to Rolls-Royce Limited, Derby, England  
Filed Sept. 24, 1969, Ser. No. 860,728  
Claims priority, application Great Britain, Sept. 27, 1968, 46,076/68  
Int. Cl. F02k 3/04

U.S. Cl. 60—226

6 Claims



A gas turbine power plant including a gas turbine engine having compressor means, combustion equipment and turbine means in flow series, a by-pass duct communicating with the compressor means and curving radially outwardly therefrom for receiving a portion of the compressed air, a main exhaust gas flow duct communicating with the turbine means and curving radially outwardly and then forwardly, the main exhaust gas flow duct and the by-pass duct communicating with each other and a further duct adjacent the forward region of the engine, the further duct extending rearwardly for discharging the mixture of air and gas. Free turbine means are positioned in the further flow duct and carry a fan and since the free turbine means is subjected to a relatively cool fluid, it may be made of light weight metal. The free turbine means, by reason of the particular arrangement of ducts, is located within the axial extent of the gas turbine engine whereby the power plant is particularly adaptable for VTOL aircraft.

3,625,009

### MULTI-TUBE NOISE SUPPRESSOR PROVIDING THRUST AUGMENTATION

George S. Schairer and Ross W. Colebrook, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed June 5, 1970, Ser. No. 43,888

Int. Cl. F02k 1/26, 3/08

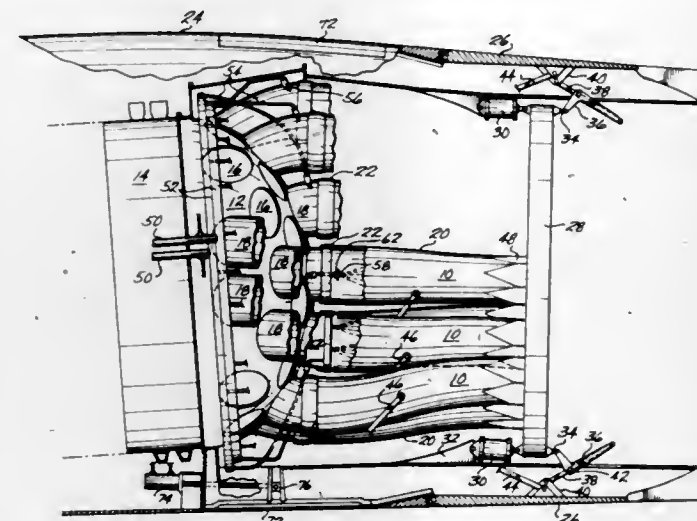
U.S. Cl. 60—261

16 Claims

A noise suppressor having a plurality of exhaust tubes, for receiving jet engine exhaust gases, movable between a first close packed position, wherein the tubes discharge exhaust gases in a single composite jet within a surrounding tubular nacelle, where one is employed; and a second radially deployed position, wherein the exhaust gases are discharged as separated jets through openable apertures in the nacelle wall; and having fuel nozzles and flame holders positioned interiorly of the exhaust tubes for selectively introducing and burning fuel within the tubes for thrust augmentation. Cooling liners are provided in-

side the exhaust tubes to cool the wall surfaces and tertiary air doors are provided in the nacelle upstream of

the adjacent field and the cover and into the drainage means, the cover comprising a substrate surfaced with a sheet of artificial surfacing; and means to removably hold the cover on the drainage means, wherein the strip of artificial surfacing on the cover is adjacent to and level



the tubes to supply ambient air for mixing with the exhaust gases when the tubes are in the deployed position.

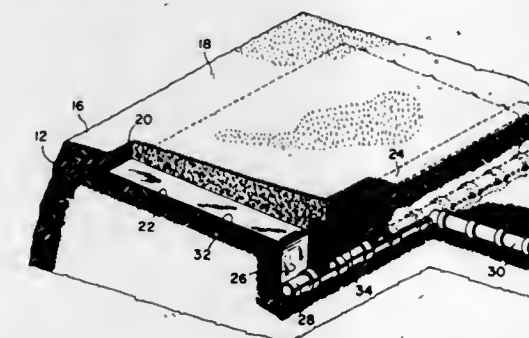
3,625,010

### SYSTEM AND METHOD FOR PREVENTING EROSION

Ralph W. Hakundy, 4741 N. Ridge E., Ashtabula, Ohio 44004  
Filed Feb. 27, 1970, Ser. No. 14,952  
Int. Cl. E02b 11/00

U.S. Cl. 61—10

8 Claims



A system and method for preventing erosion of an embankment in which a shallow excavation about nine feet in width is dug in the ground along the top of the embankment, spaced slightly back from the embankment edge. A trench deeper than the excavation is dug along the rearmost side of the excavation remote from the edge of the embankment. The bottom of the excavation is sloped gently in the direction of the trench and a water impervious plastic sheet is laid covering the bottom. Drain tile is placed in the bottom of the trench and covered with granular material such as crushed stone. The excavation and trench are then covered with topsoil. Water soaking into the soil close to the embankment is caused by the plastic sheet to drain away from the embankment edge and is collected by the tile.

3,625,011

### DRAINAGE SYSTEM

William W. Stevenson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

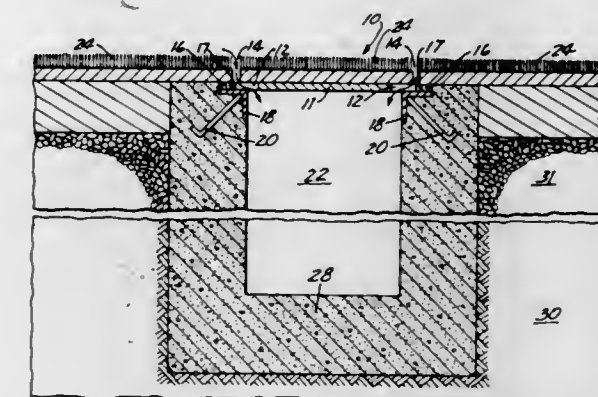
Filed Apr. 15, 1970, Ser. No. 28,798

Int. Cl. E02b 11/00; E01c 13/00; A63c 19/04

U.S. Cl. 61—11

8 Claims

A covered drainage system for the removal of water from an athletic playing field having an artificial surfacing thereon, comprising, in combination, drainage means below the surface of the playing field and proximate thereto for receiving and carrying water; a cover for the drainage means adapted to allow water to pass between



with the artificial surfacing of the playing field and separated only slightly therefrom to form a small space therebetween. Water, which is deposited on the playing field, passes from the field into the space between the playing field and the cover, providing a pass through of the water into the drainage means below the cover.

3,625,012

### SELF-LOCKING PILE JOINT

Samuel Thorburn, Glasgow, Scotland, assignor to Logistics Limited, Great Britain  
Filed Nov. 19, 1969, Ser. No. 878,056  
Claims priority, application England, Feb. 4, 1969, 6,059/69; May 22, 1969, 26,064/69  
Int. Cl. E02b 5/30; E04b 1/48

U.S. Cl. 61—56

12 Claims



Two piles are joined together by interfitting means in their opposed ends. One pile has a tube embedded therein, the tube having one, open, end flush with the end face of the pile and its other end being flared and closed. The other pile has a rod whose end is cut projecting from it. The rod is placed in the tube and as the pile is driven the cut end is forced by a wedge into the flare of the tube, thus locking the piles together.

3,625,013

### EXPANSIBLE MANDRELS FOR USE IN DRIVING OR WITHDRAWING TUBULAR PILES

Charles L. Guild, 7 Stone Tower Lane, Barrington, R.I. 02806, and Willard B. Goodman, P.O. Box 62, Newport, Ore. 97365

Filed June 16, 1970, Ser. No. 46,641

Int. Cl. E02d 7/30

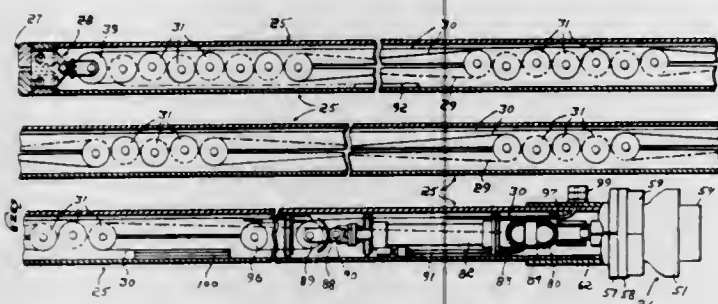
U.S. Cl. 61—53.72

11 Claims

Expansible mandrels are disclosed for use in driving or withdrawing tubular piles. The mandrels comprise sections interconnected by cables in a manner such that a



pull on one cable expands the mandrel so that it will tightly grip the pile into which it has been inserted and a pull on the other cable draws the sections together so that the mandrel may be inserted in or withdrawn



from the pile. In one embodiment, a single acting ram housed within the mandrel controls the expansion cable while in another embodiment of the invention, a double acting ram is used so that both cables can be actuated thereby.

3,625,014

# **METHOD AND APPARATUS FOR UNDERWATER DEPOSITION OF SETTABLE MATERIALS**

Henrikus Frederikus Josephus Marie Hillen, Laan van Meerdervoort, Netherlands, assignor to Prepakt N.V., Gouda, Netherlands

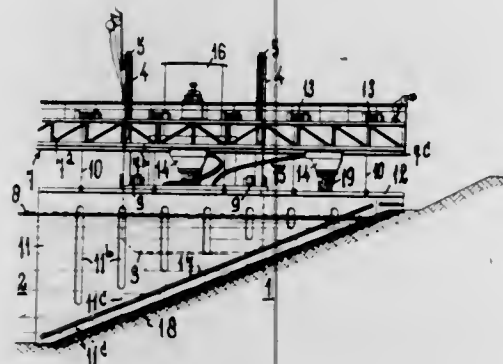
Filed June 11, 1969, Ser. No. 832,275

Claims priority, application Netherlands, June 13, 1968, 6808349

Int. Cl. E02b 3/12, 5/02

U.S. Cl. 61—72.4

14 Claims



A method and apparatus for the underwater deposition of settable materials, such as (concrete) mortar, asphalt and the like. Use is made of a pouring bag or envelope of flexible material, which is moved along with its lower end sliding on the underwater surface to be treated and tends to be constantly flattened by the static pressure of the surrounding water, so that the bag or envelope walls will continuously contract around the material flowing therethrough from a location above water level and consequently braking the free fall of the material. As a result of this the material will leave the lower outlet slot as a slowly outflowing uniform web and the danger of demixing of the outflowing material by the action of the surrounding water is reduced to a minimum.

3,625,015

# **ROTARY-VALVED CRYOGENIC APPARATUS**

Fred F. Chellis, Concord, Mass., assignor to Cryogenic Technology, Inc., Waltham, Mass.

Filed Apr. 2, 1970, Ser. No. 25,152

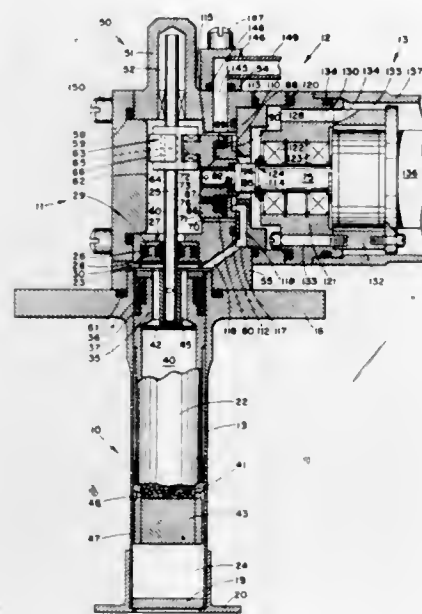
Int. Cl. F25b 9/00

U.S. Cl. 62—6

9 Claims

Cryogenic refrigerator of liquefier operating on the cycle of U.S. Pat. 2,966,035. Flow of high-pressure fluid into and withdrawal of low-pressure fluid from the apparatus

is controlled by a rotary valve which is readily installed and interchanged, if desired, to alter the timing of the



cycle. No valve adjustments are required after assembly of the apparatus.

3,625,016

# **SEPARATION OF HYDROGEN AND HYDROCARBON MIXTURES BY PLURAL STAGE DISTILLATION WITH HEAT EXCHANGE**

Michael L. Hoffman, Los Angeles, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

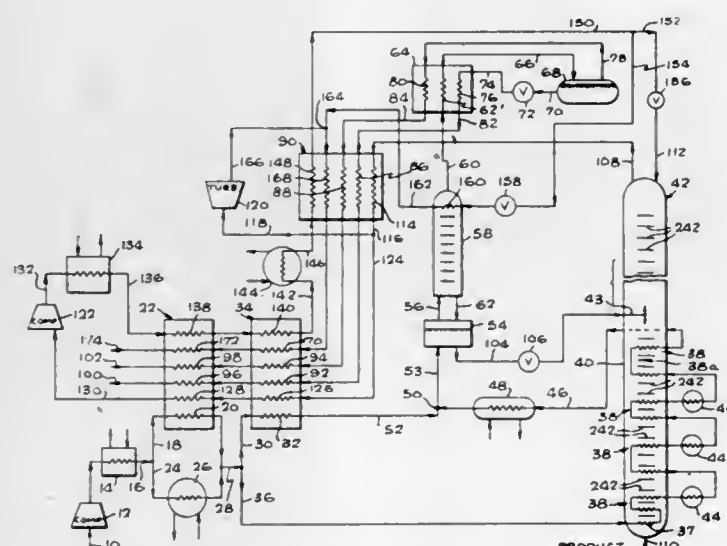
Filed June 7, 1968, Ser. No. 735,247

The portion of the term of the patent subsequent to Dec. 7, 1988, has been disclaimed

Int. Cl. F25j 3/02

U.S. Cl. 62—26

13 Claims



Method and system particularly designed for separating hydrogen and methane, and ethylene, from mixtures thereof, also generally containing heavier hydrocarbons, which involves cooling a compressed feed mixture, e.g., one containing 17% hydrogen, 32% methane, 32% ethylene, and 19% of heavier hydrocarbons including ethane and propylene, to a saturated vapor by heat exchange with cold product gas streams and by external refrigeration, passing the cooled saturated feed vapor mixture in indirect heat exchange relation through the lower portion of a distillation column at several different temperatures levels therein, such feed mixture also being subjected to external refrigeration at several different temperature

levels and affecting a non-adiabatic distillation in the column and a partial condensation of the feed vapor. The exiting partially condensed feed mixture from the column is phase separated into a vapor consisting essentially of hydrogen and methane, and a liquid consisting essentially of methane and ethylene. The liquid is introduced as feed into the distillation column, and a separation is effected therein into an overhead vapor of methane and a bottom liquid product of ethylene and any heavier hydrocarbons present in the feed mixture. The overhead methane vapor is passed in heat exchange relation with compressed feed mixture for cooling same, further cooled, and condensed, and recirculated to the top of the distillation column as reflux. The cold hydrogen and methane stream from the phase separator is passed in heat exchange relation with compressed feed mixture and recirculated overhead methane, for cooling same.

at least a portion of the compressed feed mixture for cooling same, is further cooled, and condensed, and recirculated to the top of the distillation column as reflux. The cold hydrogen and methane stream from the phase separator is passed in heat exchange relation with compressed feed mixture and recirculated overhead methane for cooling same. This process and system are designed to effect an efficient separation particularly by recovering and effectively utilizing refrigeration in a thermodynamically reversible manner, resulting in a reduction of compressor power cost.

3,625,018

# **CRYOGENIC FEEDTHROUGH**

Edward J. Roberts, Hampton, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 20, 1969, Ser. No. 867,851

Int. Cl. F16l 5/00

U.S. Cl. 62—55.5

2 Claims

# **SEPARATION OF COMPONENTS OF HYDROGEN AND HYDROCARBON MIXTURES BY PLURAL DISTILLATION WITH HEAT EXCHANGE**

Michael L. Hoffman, Los Angeles, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation-in-part of application Ser. No. 735,247,

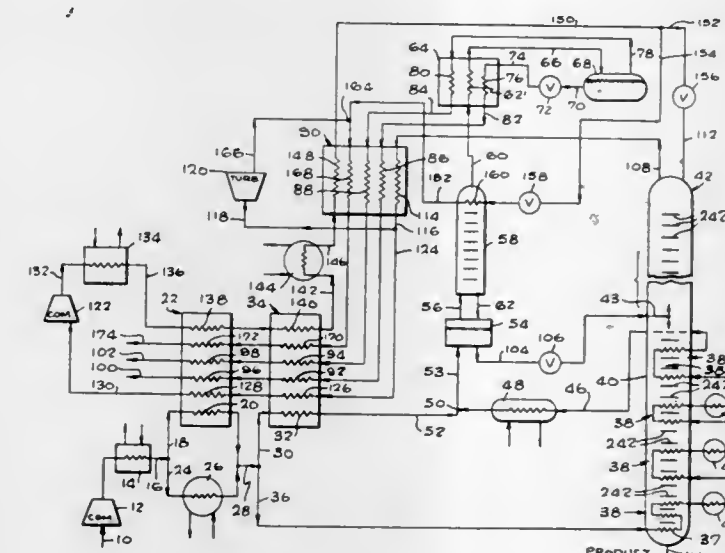
June 7, 1968. This application Nov. 1, 1968, Ser.

No. 772,563

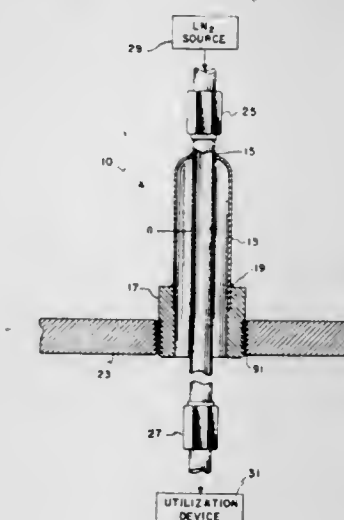
Int. Cl. F25j 3/02

U.S. Cl. 62—26

11 Claims



Method and system particularly designed for separating hydrogen and methane, and ethylene, from mixtures thereof, also generally containing heavier hydrocarbons, which involves cooling a compressed feed mixture, e.g., one containing hydrogen, methane, ethylene, and heavier hydrocarbons including ethane and propylene, preferably to a substantially saturated vapor, by heat exchange with cold product gas streams and by external refrigeration, passing the cooled substantially saturated feed vapor mixture in indirect heat exchange relation with the fluid from the lower portion of a distillation column at several different temperature levels, such feed mixture also being subjected to external refrigeration at several different temperature levels and effecting a non-adiabatic distillation in the column and a partial condensation of the feed vapor. The exiting partially condensed feed mixture from the column is phase separated into a vapor consisting essentially of hydrogen and methane, and a liquid consisting essentially of methane and ethylene. The liquid is introduced as feed into the distillation column, and a separation is effected therein into an overhead vapor of methane and a bottom liquid product of ethylene and any heavier hydrocarbons present in the feed mixture. The overhead methane vapor is passed in heat exchange relation with



A penetration unit for transferring liquid cryogenics from a source through the chamber wall of a vacuum system to a cryopanel or the like.

3,625,019

# **VACUUM PUMP WITH DEMOUNTABLE COLD TRAP AND GETTER PUMP**

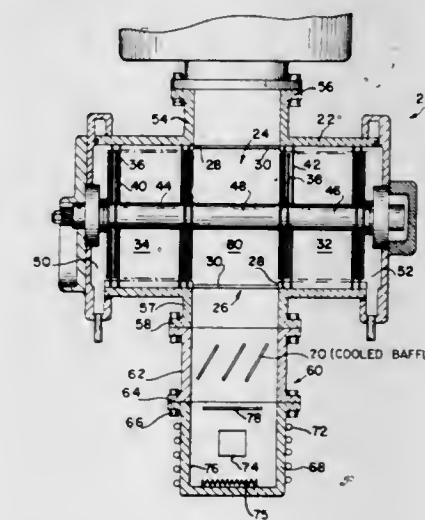
Gordon E. Osterstrom, Winnetka, Ill., assignor to Sargent-Welch Scientific Company, Skokie, Ill.

Filed Oct. 27, 1969, Ser. No. 869,747

Int. Cl. B01d 5/00

U.S. Cl. 62—55.5

9 Claims



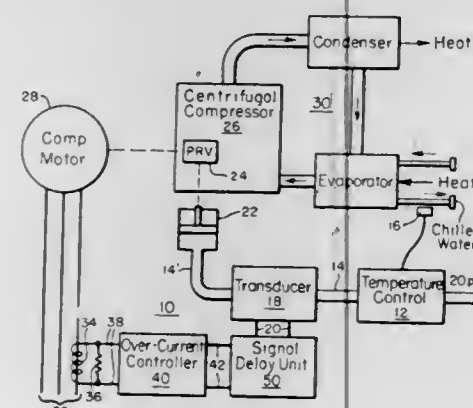
A turbo-molecular vacuum pump having a cylindrical casing with at least two large openings therein, one attached to or adapted for connection to a vessel to be evacuated and the other for providing access to a cold trap beneath which is disposed a getter pump, said cold



trap and getter pump being arranged in the high vacuum portion of the pump, which consists of the compressor sections disposed oppositely in axial portions of said casing. The cold trap and getter pump are demountably attached, and may be advantageously used where contaminants of the type best removed by the getter pump or cold trap are present in the influent stream.

**3,625,020**  
**ELECTRONIC CONTROL FOR CENTRIFUGAL CHILLER WITH PNEUMATIC CONTROLS**  
Frank A. Kimpel, York, Arthur R. Day III, Camp Hill, and Joseph E. Fleckenstein, Red Lion, Pa., assignors to Borg-Warner Corporation, Chicago, Ill.  
Filed June 30, 1970, Ser. No. 51,083  
Int. Cl. F25b 41/04  
U.S. Cl. 62—158

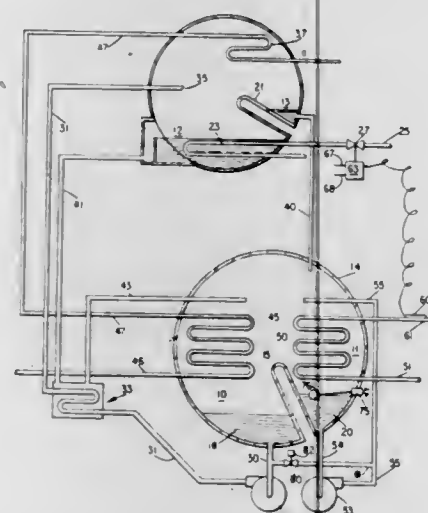
4 Claims



An improvement in the controls for pneumatic controlled centrifugal compressor-chillers of refrigeration systems is disclosed wherein a restrictor in a pneumatic line may be eliminated and a delay unit coupled between an electric motor current controller and a transducer, which transducer alters the pressure in the pneumatic line to change the throttling of the compressor input. The delay unit expands, linearly, the time period of changes in electrical current signal. It also provides different rates of time expansion for positive and negative changes in its input.

**3,625,021**  
**OVERLOAD CONTROL FOR ABSORBENT REFRIGERATION SYSTEM**  
Eddie L. Dyre, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.  
Filed Jan. 2, 1970, Ser. No. 82  
Int. Cl. F25b 15/06  
U.S. Cl. 62—148

2 Claims

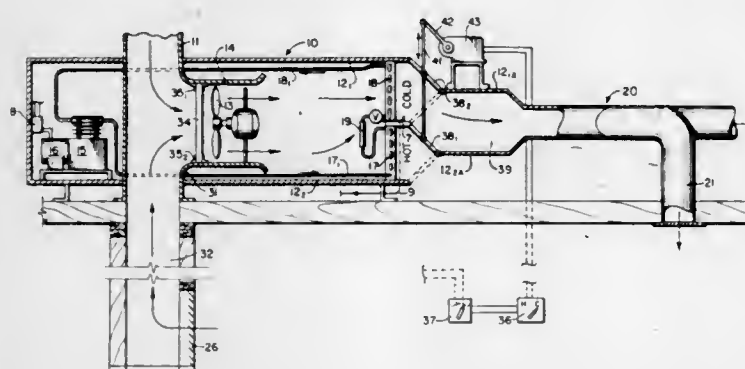


An absorption refrigeration system includes an arrangement operable upon the absorbent solution approaching

crystallization to render the chilled water sensor inoperable to modulate the heating medium supply valve when the demand load on the system exceeds the capacity of the system, as it is then operating, at the chilled water setpoint temperature, the object of said arrangement being to permit continued effective operation of the system in response to the excess demand load, with a concurrent elevation of the chilled water temperature above the setpoint of the chilled water sensor, and with minimum consumption of heating medium.

**3,625,022**  
**AIR CONDITIONING UNIT**  
John W. Johnson, 12222 Troy St., Baton Rouge, La. 70811  
Filed Dec. 23, 1969, Ser. No. 887,710  
Int. Cl. F25b 29/00  
U.S. Cl. 62—159

7 Claims



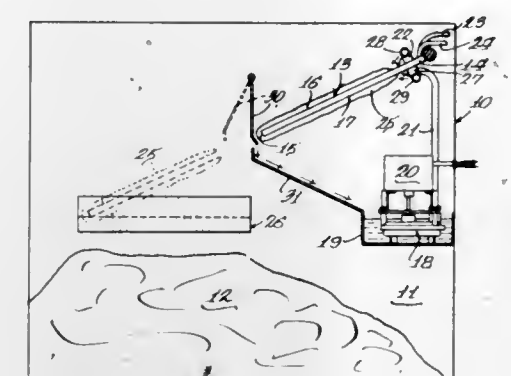
A coil-type air conditioning unit for operative communication via suitable duct work to an external source of air and to an enclosure which is to be air conditioned. The unit comprises a housing provided with air inlets and air outlets. On the one hand, a first inlet permits the withdrawal of fresh air from an external source, and another inlet permits withdrawal and recycle of air to the enclosure. On the other hand, a first outlet permits passage of conditioned air to the enclosure, and a second outlet is provided for exhaust air. The refrigeration components of the unit include a compressor operatively connected to a condenser and evaporator which lie within air flow paths through the air outlets, and a fan. The compressor and fan can be operated by the same or different motors, and means are provided for alternately opening and closing the air outlets to the flow of air delivered by the fan. In a cooling operation, representing one type of operation, air is delivered across the evaporator and cool air is passed into the enclosure while air simultaneously passed over the condenser is exhausted. In a warming type operation, warm air is delivered to the enclosure after passage over the condenser, while simultaneously cold air is exhausted after passage across the evaporator. Automatic controls are provided.

**3,625,023**  
**ICE MAKER APPARATUS**  
Donald F. Swanson and Wynn G. Winkler, St. Paul, Minn., assignors to Whirlpool Corporation  
Filed June 13, 1969, Ser. No. 832,914  
Int. Cl. F25c 1/12  
U.S. Cl. 62—320

5 Claims

An ice maker particularly of the commercial type comprising a heat conducting refrigerated plate maintained at an angle less than 90° and preferably less than 45° below the horizontal together with means for simultaneously flowing water over the resulting upper and lower inclined side surfaces and the three edge surfaces except for the

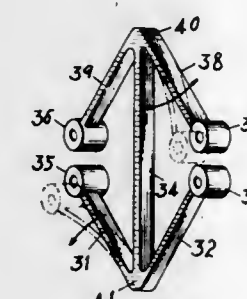
on at the upper end to form an envelope sheath of ice open at this upper end and means for releasing the ice sheath from the plate so that it can slide by gravity there- in a direction substantially normal to the direction of glass flow therefrom to prevent flooding of the orifice



from. The apparatus also preferably includes a heated cutter grid means in the path of fall intercepting the ice sheath and automatically cutting it into subdivided portions.

**3,625,024**  
**COUPLING**  
Takefusa Kikuchi, 6-18, 3-chome, Sakai, Musashino, Tokyo, Japan  
Filed Feb. 26, 1970, Ser. No. 14,522  
Claims priority, application Japan, May 29, 1969, 44/42,221  
Int. Cl. F16d 3/62  
U.S. Cl. 64—12

4 Claims

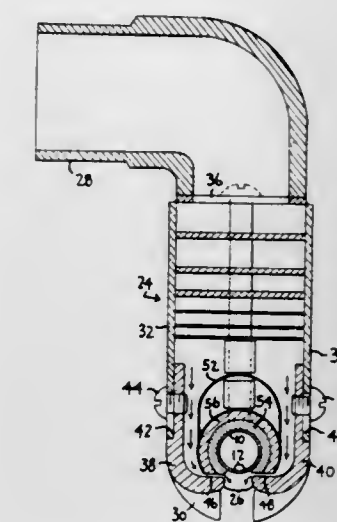


A coupling in which a driving flange and a driven flange located face-to-face are coupled by a link mechanism which comprises two V-shaped linkages, each linkage consisting of two bars and a cross bar bridging said V-shape linkages at their apices, one end of each V-shape linkage being pivotally secured to a pin projecting from the driving flange and the other end being pivotally secured to a pin projecting from the driven flange, whereby even when the driving shaft and driven shaft are axially misaligned, motive power is effectively transmitted from the former to the latter without any difficulty.

**3,625,025**  
**METHOD AND DEVICE FOR FORMING GLASS FIBERS**  
Thomas H. Jensen, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.  
Filed Nov. 29, 1968, Ser. No. 779,934  
Int. Cl. C03b 37/02  
U.S. Cl. 65—2

6 Claims

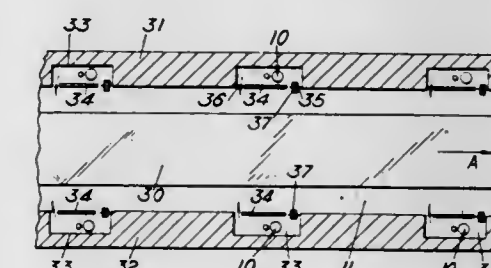
A glass fiberizing device comprises a tubular member having a plurality of orifices therein for extruding streams of glass delivered to the member under pressure. Cooling air is directed across the orifice portion of the member



portion while the remainder of the member is shielded and insulated from air cooling.

**3,625,026**  
**REMOVING DISSOLVED OXYGEN FROM MOLTEN TIN IN A GLASS RIBBON FLOAT BATH**  
Alan Joseph Cocker, Ormskirk, England, assignor to Pilkington Brothers Limited, Liverpool, England  
Filed Apr. 16, 1970, Ser. No. 29,051  
Claims priority, application Great Britain, Apr. 17, 1969, 19,723/69  
Int. Cl. C03c 18/02  
U.S. Cl. 65—27

23 Claims



The dissolved oxygen content of a molten metal, e.g. molten tin or tin alloy, is tested and/or controlled by means of an electrolytic cell including a wall of a refractory oxide electrolyte having a substantial oxygen ion conductivity one face of which is in contact with the molten metal and the other face of which is engaged by an electrode. The cell E.M.F. indicates the oxygen content of the metal which is controlled by passage of controlled current through the cell.

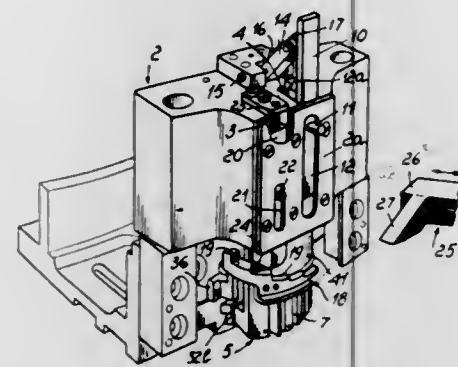
**3,625,027**  
**THREAD GUIDE UNIT FOR CIRCULAR KNITTING MACHINES**  
Francesco Piana and Angelo Brega, Varese, Italy, assignors to Mecmor S.p.A., Milan, Italy  
Filed Apr. 14, 1969, Ser. No. 815,673  
Claims priority, application Italy, Nov. 15, 1968, 829,249  
Int. Cl. D04b 9/06, 15/58  
U.S. Cl. 66—19

6 Claims

This disclosure relates to a thread guide unit for rapidly replacing one thread with another before commencing



ing the rows of knitting, said unit comprising a drum oscillating about its own axis and provided with peripheral grooves extending parallel to said axis, said grooves being arranged to house thread guide members, a step cam fast with said drum, a first slide member for causing the lowering of one of said thread guide members, a sec-



ond slide member arranged to engage said step cam and lock said drum, a series of control members equal in number to the number of steps of said step cam, each of said control members being arranged to engage a corresponding step of said cam and cause the rotation of said drum.

3,625,028

#### METHOD AND MEANS FOR EFFECTING WORK TAKE-OFF IN FLAT BED AND STRAIGHT BAR KNITTING MACHINES

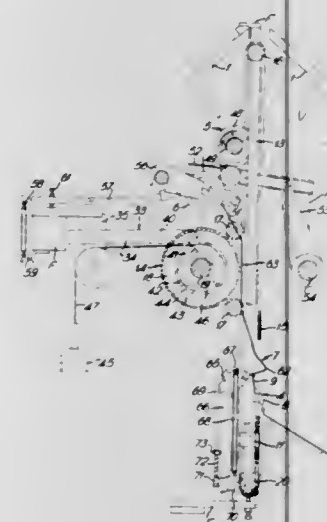
Frederick Raymond Challenger, Loughborough, and John Harry Cuthbertson, Skegby, England, assignors to S. A. Monk (Sutton-in-Ashfield) Limited, Sutton-in-Ashfield, Nottinghamshire, England

Filed Nov. 28, 1969, Ser. No. 880,559

Claims priority, application Great Britain, Dec. 6, 1968, 58,061/68

Int. Cl. D04b 15/88

U.S. Cl. 66—149



Method and means for effecting work take-off in V bed knitting machines, in which initial tension is applied to the fabric being knitted by a hook-up bar, said tension then being taken up by a drawing-off roller assembly, auxiliary means being provided to engage the fabric issuing from said drawing-off roller assembly and to cause said fabric to follow a pre-determined path.

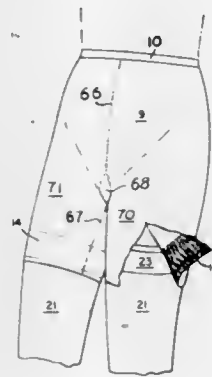
3,625,029  
GIRDLE AND METHOD  
Sam C. Safrin, Winston-Salem, and Kenneth E. Smith, Rural Hall, N.C., assignors to Separates, Ltd., Winston-Salem, N.C.

Continuation of application Ser. No. 729,261, May 15, 1968. This application Jan. 2, 1970, Ser. No. 130

Int. Cl. D04b 1/24

U.S. Cl. 66—172 E

4 Claims



A knitted girdle having two legs, each of which has a stocking supporting portion having vertically spaced circumferentially extending series of bare elastic yarn for engaging and supporting stocking tops during wear.

3,625,030

#### APPARATUS FOR CHEMICALLY CLEANING TEXTILES OR THE LIKE

Erwin Biesinger, Neckarhalde 90, Rottenburg, Germany

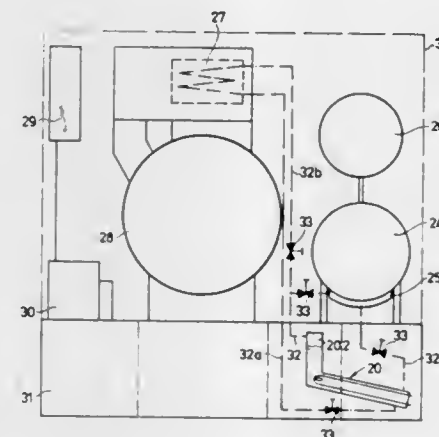
Filed Oct. 23, 1969, Ser. No. 868,824

Claims priority, application Germany, Oct. 24, 1968, P 18 04 864.1

Int. Cl. D06f 39/04, 43/08

U.S. Cl. 68—18 C

10 Claims

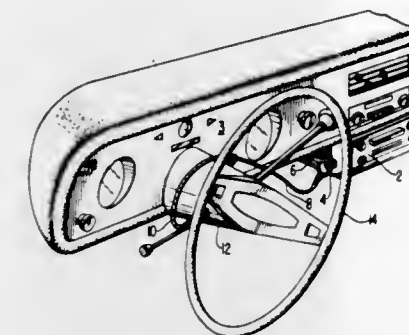


Apparatus for chemically cleaning textiles or the like which is provided with its own, preferably electrically heated, steam-generating means connected to at least one device of the cleaning apparatus which is to be heated by a closed circuit arranged in such a manner that the steam produced by the steam-generating means will flow into the device to heat the latter while the condensate forming in the closed circuit and in the device will flow back into the steam-generating means.

3,625,031  
APPARATUS FOR PREVENTING THEFT OF PORTABLE ARTICLES  
Granville M. Alley III, P.O. Box 1427, Tampa, Fla. 33601  
Filed Sept. 25, 1969, Ser. No. 861,069  
Int. Cl. E05b 65/12, 73/00

U.S. Cl. 70—58

10 Claims U.S. Cl. 70—278



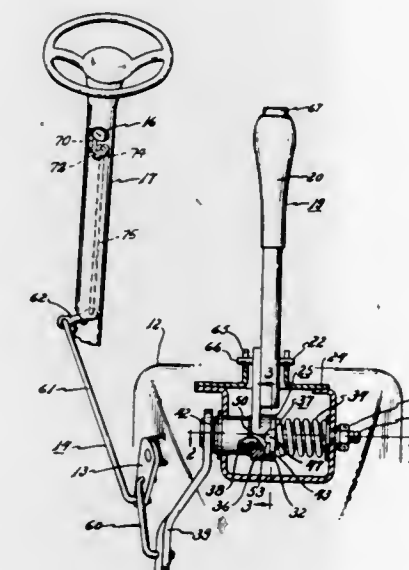
Unauthorized removal of a portable article from a vehicle is prevented by attaching the article to the vehicle steering column with a flexible elongated cable. An adjustably-sized loop at one end of the cable encircles the steering column, and the other end of the cable is connected to a lock which engages a bracket on the portable article. The bracket is attached to the portable article by a fastener which has a threaded shank and a recessed head for receiving a fastener-rotating tool. Access to the recess by a tool is obstructed by a pin on the lock which passes through apertures in the bracket.

3,625,032

COUPLING MECHANISM FOR TRANSMISSION SHIFT SELECTOR HAND LEVER  
Earl M. Muhleck, Detroit, Mich., assignor to American Motors Corporation, Kenosha, Wis.  
Filed Mar. 19, 1970, Ser. No. 20,978  
Int. Cl. B60r 25/06; G05g 5/06

U.S. Cl. 70—202

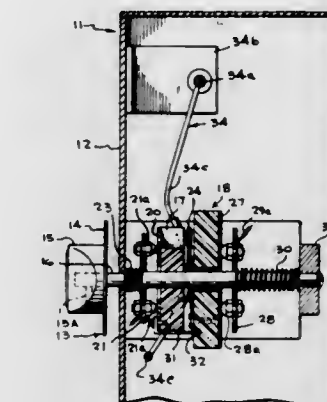
1 Claim



A coupling arrangement interposed between a shift selector hand lever and its connection with a vehicle's drive transmission and a key locking mechanism, the latter being operable to immobilize the shift selector hand lever which when subjected to forcement initiates a camming action in the coupling arrangement to release to free in idle movement the hand lever.

3,625,033  
ELECTROMECHANICAL COMBINATION LOCK CONSTRUCTION  
Carlos Subleta, Kensington, Md., assignor to Representation Unlimited, Washington, D.C.  
Filed Sept. 18, 1970, Ser. No. 73,359  
Int. Cl. E05b 49/02; H01h 27/10

11 Claims



An electromechanical combination lock construction, formed of a plurality of dial assemblies having an exterior, manually rotatable dial and a shaft fixed thereto carrying a first wheel of insulating material which has a radial electrical contact formation at a particular angular position thereon, and another wheel member of insulating material which is movable between forward and rearward positions axially of the shaft and carries a spring contact member to engage the confronting face of the first mentioned wheel and close an electrical circuit with the contact formation on the first mentioned wheel at a particular angular position of the dial. An exposed lever, and a cam operated thereby, control certain limit switches and activate a device to mechanically couple the rear wheels with the front wheels for coordinate rotation when the lock is in unlocked condition and to shift the rear wheels to a decoupled relation to the front wheels when the lock is moved to locked condition. The lever and cam also control retracting and projecting movement of a bolt when the latter is released by establishing an electrical circuit upon dialing of the proper combination.

3,625,034

#### CYLINDER LOCKS

Into Vilho Sinervo, Helsinki, Finland, assignor to Oy Wartsila AB, Helsinki, Finland

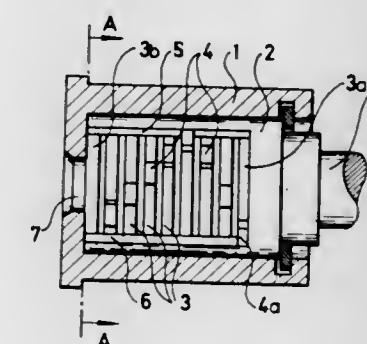
Filed July 2, 1969, Ser. No. 838,491

Claims priority, application Finland, July 5, 1968, 1,938/68

Int. Cl. E05b 9/04, 29/00

U.S. Cl. 70—366

1 Claim



A cylinder lock comprises a stationary cylinder housing and a cylinder turnable therein. The cylinder encloses a plurality of locking disks which are turnable by means of



the key of the lock. The torque of the key is transmitted through one or several of said locking disks by means of radial projections engaging one side border of an opening in the side of the cylinder. The torque transmission is arranged in such a way that the cylinder cannot be loaded by turning forces at its other end, that is the end from which the key is inserted.

3,625,035

**LOCK CONSTRUCTION**

Dietmar Brummer, Ludwigsburg, Horst Mischker, Leon-berg, Heinrich Spittler, Hohenacker, Berthold Walter, Stuttgart-Bad Cannstatt, and Hans Weismann, Stuttgart-Feuerbach, Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

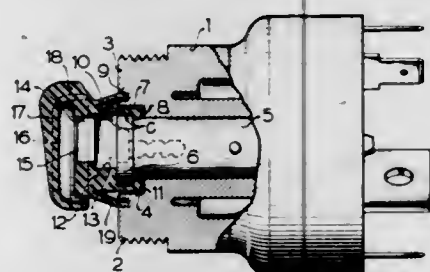
Filed Oct. 23, 1969, Ser. No. 868,693

Claims priority, application Germany, Oct. 25, 1968, G 68 03 835.7; June 6, 1969, G 69 22 684.2

Int. Cl. E05b 17/18

U.S. Cl. 70—455

11 Claims



An ignition lock for automotive vehicles has a housing provided in one surface with an inwardly extending recess. A key-operated lock cylinder is received in the recess and turnable therein between at least two positions in which it respectively makes and brakes an electrical circuit. The cylinder defines with the housing an annular gap adjacent the surface of the housing and has an exposed face located exteriorly of the recess and formed with a keyhole. Cover means covers the gap and the keyhole against the entry of contaminants while permitting insertion of the key into and withdrawal of the key from the key hole.

3,625,036

**GAGE CONTROL METHOD INCLUDING CONSIDERATION OF PLATE WIDTH EFFECT ON ROLL OPENING**

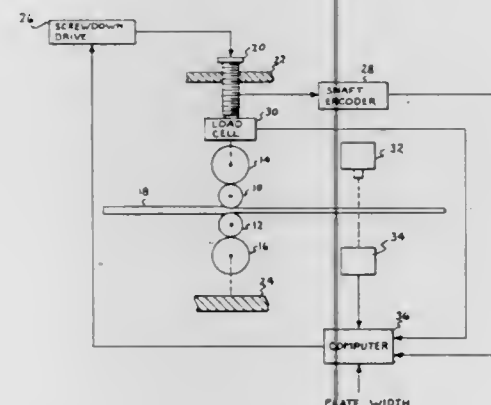
Donald J. Fapiano, Scotia, N.Y., assignor to General Electric Company

Filed Apr. 28, 1969, Ser. No. 819,723

Int. Cl. B21b 37/00

U.S. Cl. 72—6

6 Claims



A plate mill gage control method is described wherein the roll opening at the mill center line (as determined in conventional fashion from the desired delivery gage, the

predicted mill stretch and any changes in the center line diameter of the mill rolls from the last mill calibration) is modified by an amount substantially equal to the total space existing between adjacent roll surfaces in an unloaded condition at a point corresponding to the edge of the plate to be rolled. This modified roll opening then is employed to position the rolls for reduction of plate gage.

3,625,037

**AUTOMATIC GAUGE CONTROL SYSTEM FOR A ROLLING MILL**

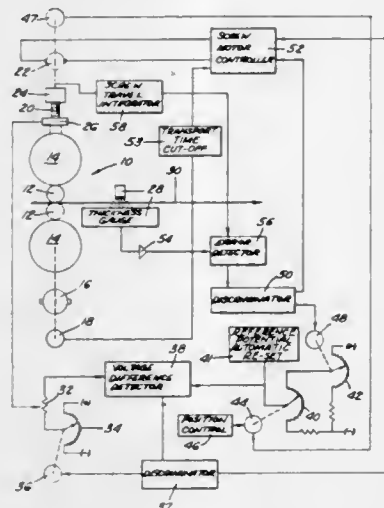
Mathias Michel, Riverside, Calif., assignor to Hunter Engineering Company, Inc.

Filed Feb. 25, 1969, Ser. No. 801,974

Int. Cl. B21b 37/08

U.S. Cl. 72—8

6 Claims



A system for automatically adjusting the opening between work rolls of a rolling mill to compensate for changes in incoming gauge. Corrective action is initiated by change in the roll separating force, as measured by a load cell, and is accomplished by a series of sequential servo mechanism operations which control the roll screws, and in which the total change in roll force is matched in a sensitive comparator against a reference signal that is modified as a function of screw travel, so that at the end of the gauge-correcting cycle, the potential change of the screw-operated reference potential is equal to the potential change of the load cell under the new force.

3,625,038

**APPARATUS FOR PROVIDING ACCESSIBLE TAB MEANS IN A SHEET-LIKE CONSTRUCTION**

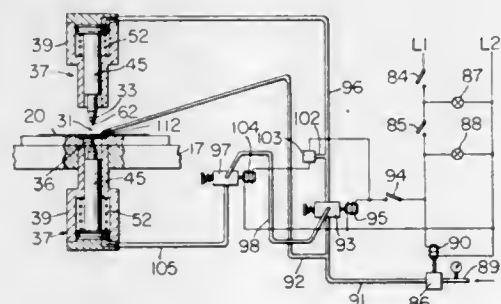
George L. Swigert, Maineville, Ohio, assignor to Avco Corporation, Cincinnati, Ohio

Filed Dec. 10, 1969, Ser. No. 883,821

Int. Cl. B21d 28/10, 31/02, 37/00

U.S. Cl. 72—20

6 Claims



An apparatus is provided which has a die and a co-operating punch which are controlled with optimum efficiency to expose tabs provided as an integral part of a

metallic layer comprising an associated laminate and bend such tabs transverse their original positions for easy access thereto. During the bending action the punch also cleans that surface of each tab which was previously bonded to a portion of a substrate which comprises the laminate and adjoins the metallic layer.

3,625,039

**CORROSION RESISTANCE OF DECORATIVE CHROMIUM ELECTROPLATED OBJECTS**

Theo G. Kubach, Drosselweg 68, Leonberg-Silberberg, Germany; and Werner H. R. Pritsch, Thomastrasse 57; and Wilfried Bolay, Saumweg 29, both of Stuttgart, Germany

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,977

Int. Cl. C21d 7/06

U.S. Cl. 72—53

9 Claims

Improved corrosion resistance results in decorative chromium plated objects having chromium plated over nickel by treatment of the surface chromium layer by impingement of solid particulate matter so as to form micropores in said chromium layer. These micropores extend through said chromium layer to the underlying nickel layer. The number of micropores per square inch should exceed 3,000 and preferably be in the range of 40,000–200,000 per square inch for decorative chromium plated objects depending on the type of particle, size of particle, density of particle and momentum at impingement. Likewise, multiple nickel coatings can be used and other underlying metal layers such as copper can be interposed between the substrate and the nickel and chromium surface layers.

3,625,040

**METHOD AND APPARATUS FOR FORMING ARTICLES FROM A TUBULAR BLANK**

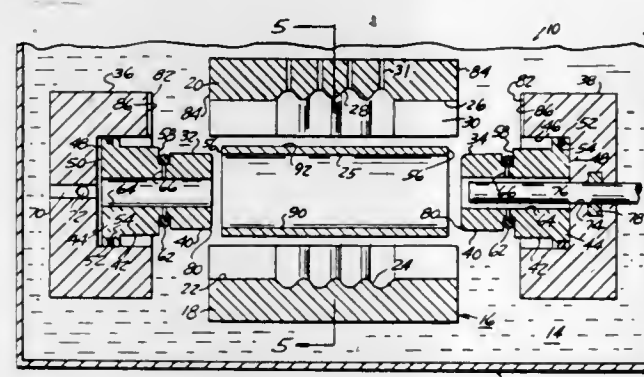
William J. De Gain, Warren, Mich., assignor to Koppy Tool Corporation, Ferndale, Mich.

Filed Aug. 6, 1969, Ser. No. 847,837

Int. Cl. B21d 26/04

U.S. Cl. 72—59

5 Claims



A hydrostatic method and apparatus for forming a tubular blank into irregular shapes and configurations through the application of outwardly directed pressure forces applied against the interior walls of the tubular blank. The apparatus is provided with a forming die which closes to provide a longitudinal passage for receiving and forming the tubular blank. A pair of plugs inserted within opposite ends of the tubular blank are provided with peripheral surfaces adapted to form fluid sealing engagement between the plugs and the associated interior walls of the tubular blank. In the preferred embodiment the peripheral surface of each plug has an elastomeric material disposed therein adapted to form and maintain fluid sealing engagement in response to the

pressure applied within the tubular blank. Pistons associated with each plug are responsive to the pressure within the tubular blank for urging the plugs inwardly into the die passage to prevent separation of the seal from the blank as same is shortened during the shaping process.

3,625,041

**ROLLING MILL FOR PRODUCING ANNULAR SHAPES**

Joseph Jeuken, Holzwickede, Germany, assignor to Rhein-stahl Wagner Werkzeugmaschinenfabrik m.b.H., Dortmund, Germany

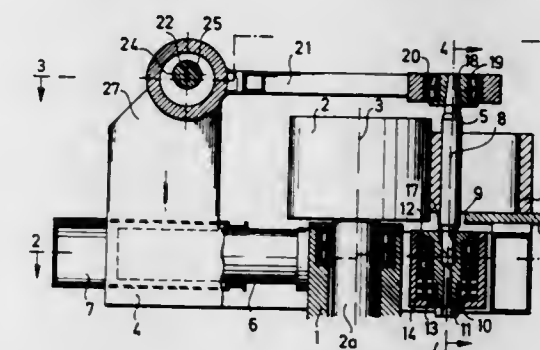
Filed Aug. 19, 1969, Ser. No. 851,274

Claims priority, application Germany, Oct. 2, 1968, P 18 00 569.1

Int. Cl. B21b 1/10

U.S. Cl. 72—101

6 Claims



A rolling mill for producing annular shapes includes a roller rotatably mounted in the rolling mill frame and a rolling mandrel associated with the roller which is rotatably mounted at each end. The mandrel can be fed toward and away from the roller and it includes one bearing which may be connected to or removed from the rolling mandrel to facilitate the loading and unloading of the workpiece. Both of the rolling mandrel bearings are pivotal in a plane defined by the center lines of the roller and the rolling mandrel and at least one of the rolling mandrel bearings is adjustable in respect to its spacing away from the roller and independently of the feeding motion of the rolling mandrel in respect to the roller.

3,625,042

**ROCKER MILL FOR ROLLING FLAT ARTICLES**

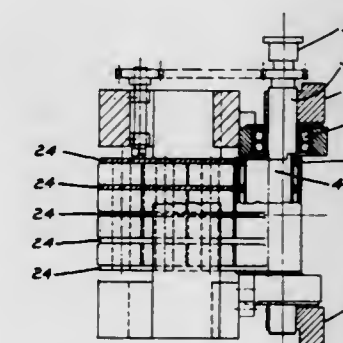
Tadeusz Sendzimir, % T. Sendzimir, Inc., Waterbury, Conn. 06712

Filed Apr. 4, 1969, Ser. No. 813,544

Int. Cl. B21b 13/14, 13/20

U.S. Cl. 72—189

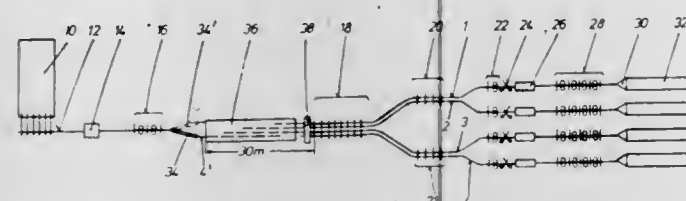
20 Claims



An oscillating rolling mechanism for use in a reciprocating strip mill rolling flat articles of great width and capable of resisting direct roll pressure while transmitting all bending moments to the mill housing.

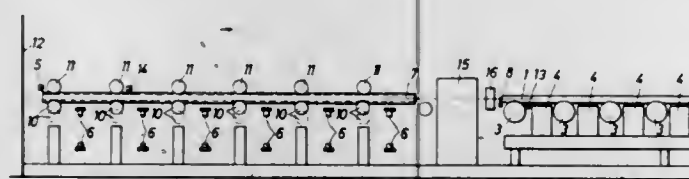


**3,625,043**  
**CONTINUOUS MULTIPLE CORE ROLLING MILL TRAIN FOR PRODUCING ROLLED BAR STOCK, ESPECIALLY WIRE OF HEAVY COIL WEIGHTS**  
 Karl Josef Neumann and Klaus Neumann, St. Ingbert (Saar), Germany, assignors to Moeller & Neumann G.m.b.H., St. Ingbert (Saar), Germany  
 Filed Nov. 13, 1969, Ser. No. 876,272  
 Claims priority, application Germany, Nov. 14, 1968, P 18 08 822.7  
 Int. Cl. B21b 1/18, 27/06, 41/00  
 U.S. Cl. 72-202 6 Claims



A multiple core wire train for heavy coil weights with a rapid travel single core roughing group and a multiple core heating trough from which the roughing sections that are rolled down to the usual billet dimensions of an edge length between about 80 to 100 mm. are continuously introduced into the vacated grooves of the first multiple core rolling groups. The pass cross section in the single core roughing group may be theoretically of any size depending on the number of roughing stands so that bars produced in a continuous casting operation having for example an edge length of 180 mm. may be rolled into wire in a single pass.

**3,625,044**  
**METHOD AND MEANS FOR INTRODUCING A MANDREL INTO A TUBULAR BLOOM**  
 Manfred Bellmann, Ratingen-Tiefenbroich, and Erhard Hentzschel, Aachen, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany  
 Filed Sept. 4, 1969, Ser. No. 855,168  
 Claims priority, application Germany, Sept. 6, 1968, P 17 77 104.9  
 Int. Cl. B21b 17/10  
 U.S. Cl. 72-209 9 Claims

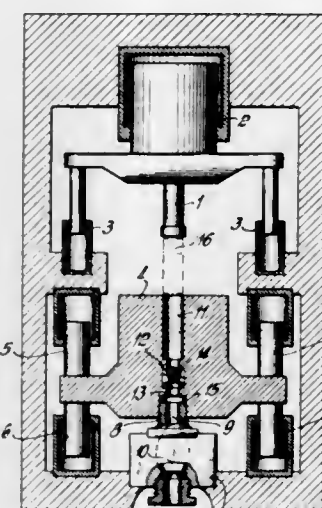


A mandrel is introduced into a tubular bloom for subsequent rolling. The bloom lies in front of the rolling mill and is first moved slowly toward it, and the mandrel is pushed into and through the bloom at a velocity which is a multiple of that of the bloom to a point such that a predetermined length of the mandrel will protrude from the front end of the bloom, and the velocities of the two are then synchronized.

**3,625,045**  
**CONTINUOUS EXTRUDER HAVING A RECHARGEABLE RECEIVER WITH CONTROLLED MOVEMENT**  
 Heinz Riemann, Duisburg-Rahm, Germany, assignor to Hydraulik G.m.b.H., Duisburg, Germany  
 Filed July 9, 1969, Ser. No. 840,170  
 Int. Cl. B21c 33/00  
 U.S. Cl. 72-270 2 Claims

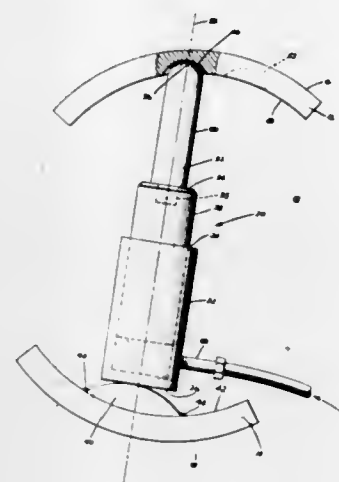
A continuous extruder includes a main press die, a rechargeable receiver having a receiving chamber which can be shut off from a coaxially arranged feed line for

the material to be extruded leading to a press chamber of a press head, a storage cylinder formed in the receiver, and an auxiliary apertured press die displaceably guided in the cylinder and connected to the press head. The storage cylinder is rechargeable by movement of the receiver relative to the press head, and takes over the extrusion during recharging of the shut off receiver chamber. The storage



cylinder has a cross section larger than that of the receiver chamber, and the receiver is movable, under control in the extruding direction, during shutting off of the receiver chamber and with the press dies stationary, the controlled movement being independent of the designed output velocity of the extrusion. A valve is movable in the feed line to shut off the receiver chamber.

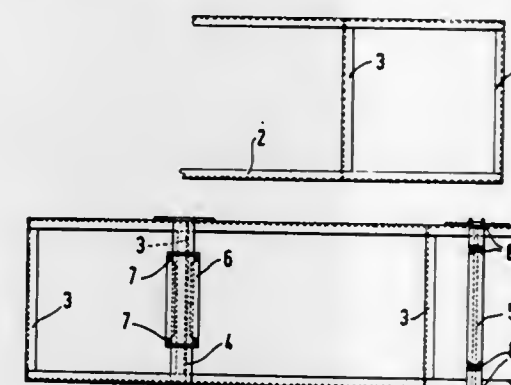
**3,625,046**  
**APPARATUS AND METHOD FOR STRAIGHTENING DEFORMED ROLLS OF SHEET STOCK**  
 James J. Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.  
 Filed Oct. 29, 1969, Ser. No. 872,093  
 Int. Cl. B21j 9/12  
 U.S. Cl. 72-392 21 Claims



A pair of spaced-apart, outwardly curved shoes are provided for respectively engaging generally opposite internal surface areas of the core of a deformed roll. A hydraulic ram is provided extending on an axis between the shoes and having a cylinder and an extensible piston rod which terminates in a pin coaxial with the axis and having a rounded distal end. One of the shoes has a raised, part-cylindrical portion thereon having rolling engagement with the end of the cylinder remote from the piston rod, and the other shoe has an opening therein which removably receives the rounded distal end of the piston rod

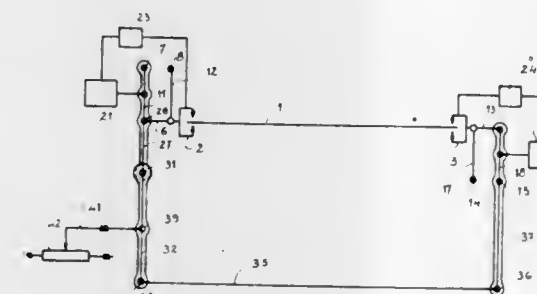
thereby providing for pivotal motion of both shoes with respect to the axis, whereby the shoes generally conform to an out-of-round configuration of the core without exerting side loading on the ram when the piston rod thereof is extended.

**3,625,047**  
**CAR BENCH**  
 Alipio Lunardini, Via dell'Acqua 2, Massa Carrara, Italy  
 Filed May 27, 1968, Ser. No. 732,225  
 Int. Cl. B21j 13/08  
 U.S. Cl. 72-459 4 Claims



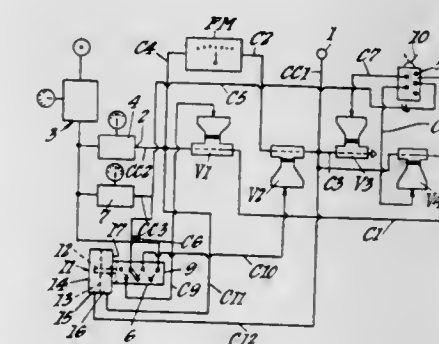
A car bench for straightening indentations in car bodies and substantially comprising a robust frame formed of a pair of longitudinal beams and a pair of adjustable transverse beams each provided with means for clamping the suspension members and mechanical members not elastically pivotally connected to the car body. An auxiliary fixture composed of at least one vertical beam carrying at least one thrust member may be associated with the frame to exert pulling and pushing stress to the car body, the frame itself serving as abutment for the thrust member and the pushing or pulling stress exerted thereby.

**3,625,048**  
**DEVICE FOR RECORDING WIDTH VARIATIONS OF A FABRIC**  
 Jean Claude Roitel, Paris, France, assignor to Centre d'Etudes Techniques des Industries de l'Habillement, Paris, France  
 Filed Mar. 3, 1970, Ser. No. 16,075  
 Claims priority, application France, Mar. 4, 1969, 6905869  
 Int. Cl. G01b 13/04  
 U.S. Cl. 73-37.7 2 Claims



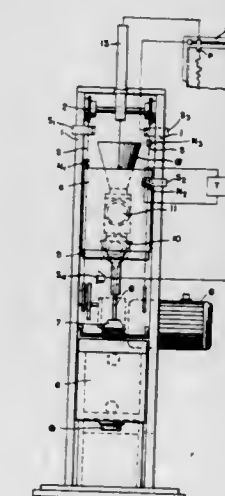
A device used for recording the width of a fabric which is unrolling, by measuring the algebraic difference of the instantaneous lateral shifts of the two selvages of the fabric. The device consists of a combination of the following part: a proximity detector of each of the two edges of the fabric, movable in a direction transverse to that of the unrolling of the fabric; a device for driving the shifts of each of the two detectors in response to the signals emitted by this latter so as to monitor the position of the said detector continually in response to the instantaneous position of the corresponding edge of the fabric; a device

**3,625,049**  
**APPARATUS FOR TESTING THE FLUID TIGHTNESS OF CONTAINERS**  
 Albert Edwin Mills, Letchworth, and Peter Gordon Davey, Oxford, England, assignors to Cosmopolitan Assurance Company Limited, Nassau, Bahamas  
 Continuation of application Ser. No. 722,828, Apr. 22, 1968. This application June 16, 1970, Ser. No. 48,900  
 Int. Cl. G01m 3/26  
 U.S. Cl. 73-49.2 17 Claims



Leak testing apparatus in which a thermal fluid flow detector is connected in a conduit between, on the one hand a compressed-air source and, on the other hand, a container to be tested. A by-pass conduit is connected across the flow detector and a valve is provided in the by-pass conduit whereby the by-pass conduit can be opened and closed. With the valve open the container can readily be brought to a test pressure and thereafter with the valve closed flow or fluid between the compressed-air source and the container is detected by the thermal fluid flow detector.

**3,625,050**  
**EQUIPMENT FOR DETERMINING THE MELT VISCOSITY OF THERMOPLASTICS**  
 Wolfram Noetzel and Theodor Daur, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
 Filed July 18, 1969, Ser. No. 843,140  
 Claims priority, application Germany, July 20, 1968, P 17 73 874.8  
 Int. Cl. G01n 11/06  
 U.S. Cl. 73-56 4 Claims

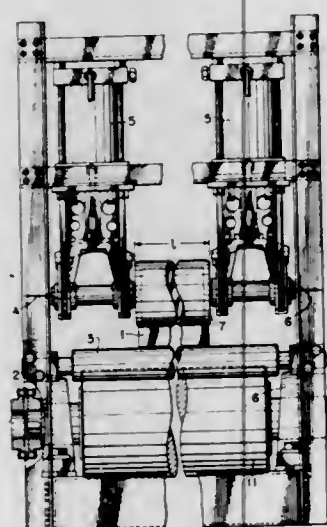


Equipment for determining the melt viscosity of thermoplastics consisting of a cylindrical tube with an orifice



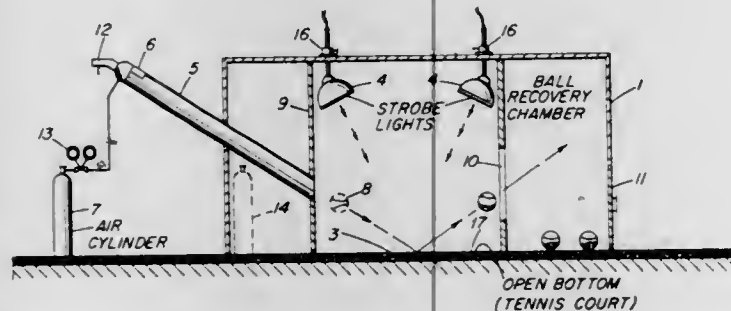
provided at the lower end, and a weighted plunger which is introduced into the tube after the plastics material to be tested has been charged into the same.

**3,625,051**  
**METHOD FOR CONTINUOUS SUPERSONIC INSPECTION OF HOT STEEL PLATES**  
Sutekiyo Uozumi, Tokyo, Japan, assignor to Electronics Research Co. Ltd., Kanagawa, Japan  
Filed Sept. 25, 1969, Ser. No. 870,374  
Claims priority, application Japan, Oct. 1, 1968, 43/70,789  
Int. Cl. G01n 29/00  
U.S. Cl. 73—71.5 5 Claims



In detecting flaws in steel plates at a relative high temperature by ultrasonic signals, a steel material of the same quality as a steel plate to be tested is employed as an acoustic coupling, the steel material is formed into a cylindrical roller in order to perform continuous and automatic inspection, and a high pressure within the non-destructive range is applied to the steel material to realize an excellent acoustic coupling. Then the steel material is heated to prevent generation of an abrupt heat transfer impact.

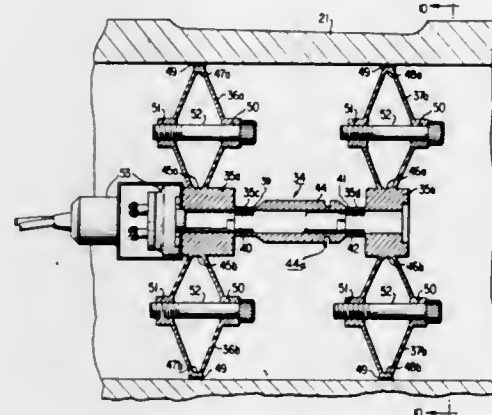
**3,625,052**  
**TENNIS COURT SURFACE TESTER**  
Robert F. Jones, Little Falls, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.  
Filed Apr. 1, 1970, Ser. No. 24,774  
Int. Cl. G01n 3/52, 3/08  
U.S. Cl. 73—79 2 Claims



A tester for tennis court surfaces, such as textile surfaces, in which a tennis ball is fired by compressed air through a tube into a chamber that is painted flat black on the inside. The tennis ball strikes the surface to be tested in front of a camera. Two flashing strobe lights are provided so that the camera takes a series of multiple

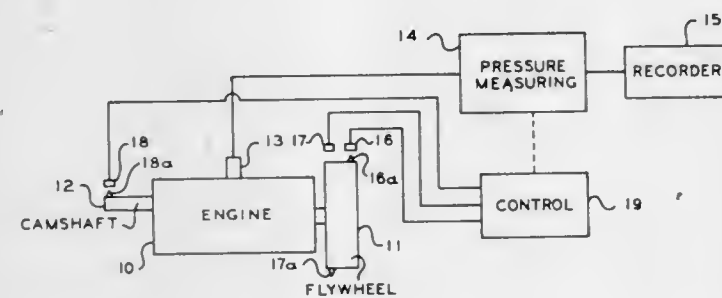
exposures of the tennis ball. The angle of the exposures of the tennis ball on the way down and on the rebound can be measured in photographs and is a measure of the surface to be tested.

**3,625,053**  
**ON-BOARD AIRCRAFT TRANSDUCER**  
Eric Lalmins, Belmont, Mass., assignor to BLH Electronics, Inc., Waltham, Mass.  
Filed Jan. 14, 1970, Ser. No. 2,892  
Int. Cl. G011 7/16, 5/12  
U.S. Cl. 73—88.5 19 Claims



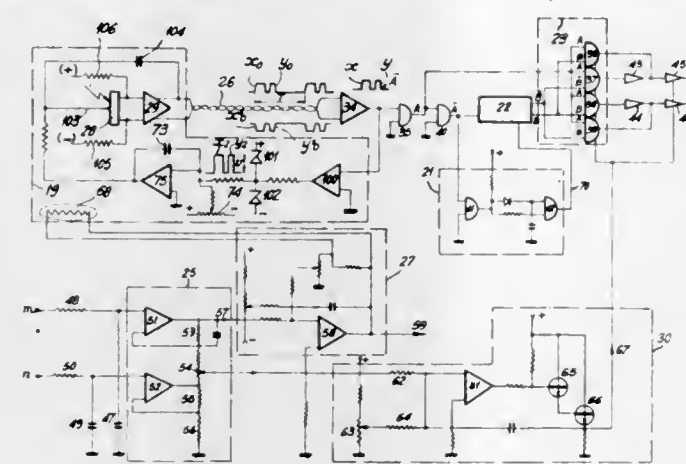
Weight supported by a wheeled vehicle such as an aircraft is detected inside hollow axles by strain-gage transducers which are locked in place by individually adjustable spring-type collets making substantially line-contact connections with interior axle surfaces; the collets for each transducer are carried by rigid end portions of a sensing section including at least one deformable tubular portion equipped internally with strain gages arranged to characterize shear effects caused by the weight; and, in appropriate cases where installed within axles having non-uniform thickness, the sensing section is of an asymmetrical construction introducing self-compensation for measurement errors induced by axle non-uniformity.

**3,625,054**  
**ENGINE ANALYZER TO MEASURE MEAN EFFECTIVE PRESSURE OF A FOUR CYCLE INTERNAL COMBUSTION ENGINE**  
Daniel M. Vesper and Charles E. Jones, Bartlesville, Okla., assignors to Phillips Petroleum Company  
Filed Nov. 20, 1969, Ser. No. 878,382  
Int. Cl. G01m 15/00  
U.S. Cl. 73—115 5 Claims



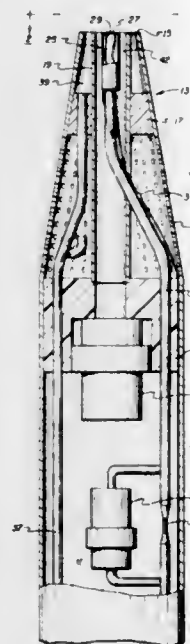
The indicated mean effective pressure in the cylinder of an internal combustion engine is measured from the output of a pressure transducer. This is accomplished by establishing a signal representative of the difference between the integrals of the cylinder pressure during compression and expansion. The measuring apparatus includes an integrator and switching means to transmit pressure signals in response to operation of the engine.

**3,625,055**  
**SYSTEM FOR MEASURING THE TORQUE TRANSMITTED BY A ROTATING SHAFT**  
Pierre Lucien Roger Lafourcade, Saint-Victoret, France, assignor to Sud-Aviation, Societe Nationale de Constructions Aeronautiques, Paris, France  
Filed Dec. 4, 1969, Ser. No. 882,232  
Claims priority, application France, Dec. 9, 1968, 177,223; Nov. 21, 1969, 40,112  
Int. Cl. C011 3/08  
U.S. Cl. 73—136 A 13 Claims



A system for measuring the torque transmitted by a rotating shaft comprises two connected coaxial rotating shafts. One of the shafts transmits the torque which is to be measured. One of the two shafts is rigidly connected to a disc which is formed, towards its periphery, with a rectangular aperture extending tangentially in relation to the axis of the shafts, while the other shaft is rigidly connected to a radial index extending through the said aperture, a fixed light source providing an axial beam of light which, on each revolution of the shafts, illuminates a fixed opto-electronic pick-up through the said aperture, the two electronic signals corresponding to the two successive aperture portions separated by the index being delivered to a comparison system for measuring the relative offset of the two shafts.

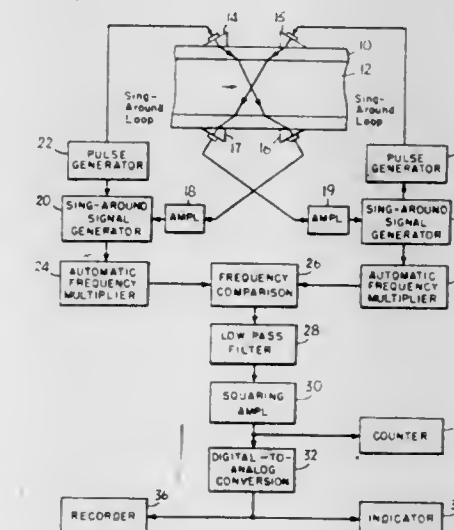
**3,625,056**  
**ENTHALPY AND PRESSURE SENSOR**  
Andrew Wortman, Santa Monica, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.  
Filed July 7, 1969, Ser. No. 839,330  
Int. Cl. G01k 17/00  
U.S. Cl. 73—190 R 10 Claims



A sensor for measuring the recovery pressure and enthalpy of very high energy flows, which comprises a

temperature sensor disposed in the nose of the device with means for additionally determining the pressure in the temperature sensing region. Further, means is provided for transpiration cooling the temperature sensing element together with secondary means for transpiration cooling the entire skin of the sensing device.

**3,625,057**  
**ULTRASONIC FLOWMETER**  
Yuji Yoshiyama, Takayoshi Ezawa, and Kazuhiro Akuta, Amagasaki, Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan  
Filed Oct. 29, 1968, Ser. No. 771,394  
Claims priority, application Japan, Nov. 1, 1967, 42/70,379  
Int. Cl. G01p 5/00  
U.S. Cl. 73—194 A 3 Claims



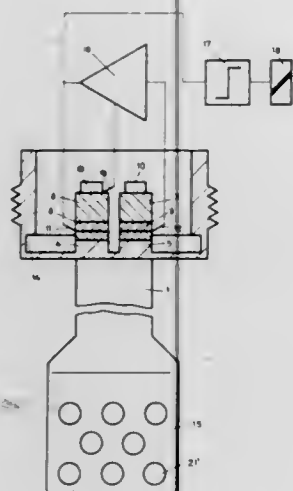
Signals from each of two sing-around loops, each including a pair of ultrasonic transducer-transmitters and transducer-receivers, are frequency multiplied by a predetermined number by an automatic frequency multiplier irrespective of a variation in their pulse recurrence period. Then the signals from the multipliers are applied to a frequency comparison circuit to develop a difference frequency-signal between the multiplied frequencies resulting from both loops. This difference signal is converted to an analog quantity representing a measure of a velocity of flow of the associated fluid. A time delay circuit can be connected in each sing-around loop to impart to the frequency difference signal a predetermined value or to electrically adjust a distance between both elements. Means are provided for determining from the frequency difference a direction in which the fluid is flowing.

**3,625,058**  
**APPARATUS FOR DETERMINING THE FILLING LEVEL OF A CONTAINER**  
George Herbert Endress, Reinach, Basel-Land, Switzerland, and Hans-Jürgen Franz, Fahrnau Baden, and Eberhard Hermann, Eichsel Baden, Germany, assignors to Endress & Hauser G.m.b.H. & Co., Baden, Germany  
Filed July 7, 1969, Ser. No. 839,320  
Claims priority, application Germany, July 10, 1968, P 17 73 815.7  
Int. Cl. G01f 23/00; G05d 11/13  
U.S. Cl. 73—290 V 11 Claims

Apparatus for determining the filling level of a container includes two vibrator elements extending into the



container. A first electromechanical transducer excites the elements into parallel vibrations of respective opposing senses, and a second electromechanical transducer transforms the vibrations into electrical signals having amplitudes corresponding to the amplitudes of the vibrations.



An amplifier has an input connected to the output of the second electromechanical transducer and an output connected to the first electromechanical transducer and to means providing output signals as a function of the amplitude of the vibrations.

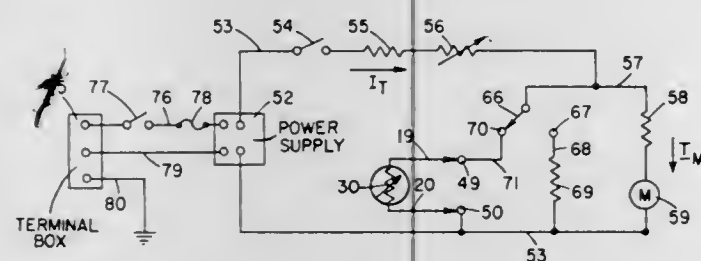
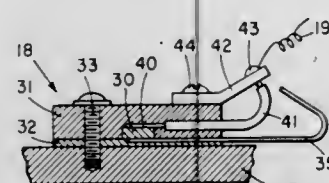
### 3,625,059 REMOTE CRYOGENIC TEMPERATURE INDICATING SYSTEM

Armand L. Camus, Westford, and Gerald J. Fortier, Danvers, Mass., assignors to Cryogenic Technology, Inc., Waltham, Mass.

Filed Aug. 8, 1968, Ser. No. 751,214  
Int. Cl. G01k 1/02, 1/14, 7/22

U.S. Cl. 73—343.5

1 Claim



A device for accurately observing and recording cryogenic temperatures remote from the actual cryogenic equipment. A thermistor is mounted on the refrigerator at the point where the temperature is to be determined, and lead wires from the thermistor are connected to a circuit which includes a meter and its associated circuit, a standardization resistant circuit in parallel with the meter circuit, and a switch adapted to selectively connect either the standardization resistant circuit or the thermistor circuit. The combination of thermistor, mounting, and circuit

eliminates variations in temperatures measurement which may be brought about by self-heating within the thermistor due to large power dissipation within the circuit.

### 3,625,060 INDICATOR SYSTEMS WITH POINTER AND COUNTER

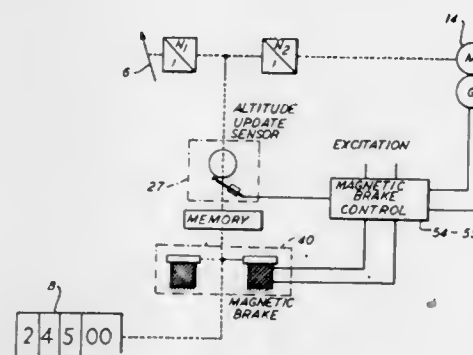
John D. McCallion, Pompano Beach, and Henry J. Carlomagno, Plantation, Fla., assignors to McGraw-Edison Company, Elgin, Ill.

Filed June 26, 1970, Ser. No. 50,021

Int. Cl. G011 7/12

U.S. Cl. 73—384

7 Claims



The altitude indicator has a counter for registering altitude in steps of twenty foot increments and a pointer progressively movable with change in altitude for measuring each increment. The invention includes a sensor movable in proportion to the movement of the pointer to release a brake on the counter when the pointer goes through a predetermined incremental movement to cause the counter to be shifted in a backward or forward direction by one increment depending on whether the altitude is decreasing or increasing.

### 3,625,061 BAROMETRIC ALTITUDE SIGNAL TRANSMITTER FOR PILOTS

Karlhans Schwarz, Owining, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Überlingen (Bodensee), Germany

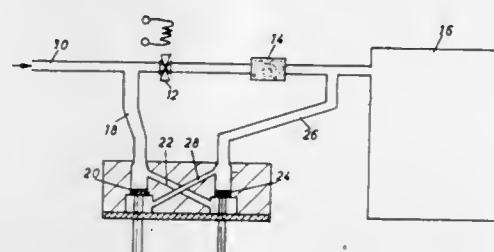
Filed Apr. 27, 1970, Ser. No. 32,067

Claims priority, application Germany, Apr. 30, 1969, P 19 22 077.0

Int. Cl. G011 9/00

U.S. Cl. 73—384

9 Claims



Ambient pressure communicates with a closed chamber through a valve and a throttle. Ambient pressure is applied to the cap of a first pressure sensitive transistor and with the base of a second pressure sensitive transistor while the base of the first and the cap of the second have reference pressures applied thereto from the chamber. The two transistors are connected in two legs of a bridge circuit. A constant current is applied to one diagonal of the bridge and an output signal is obtained from the other diagonal.

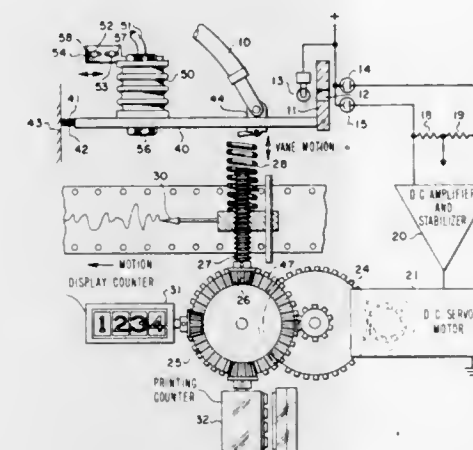
### 3,625,062 PRESSURE INDICATING APPARATUS

William A. Heske, 2101 Burr St., Fairfield, Conn. 06430  
Continuation-in-part of application Ser. No. 859,246, Sept. 17, 1969, which is a continuation-in-part of application Ser. No. 732,472, Apr. 12, 1968, which in turn is a continuation-in-part of application Ser. No. 565,857, July 18, 1966. This application Aug. 24, 1970, Ser. No. 66,366

Int. Cl. G011 9/00

U.S. Cl. 73—398 R

11 Claims



Apparatus for effecting absolute or differential pressure sensitivity of a pressure measuring device. A bellows atmospherically balanced against a system pressure unit, such as a Bourdon tube or second bellows, is either evacuated for absolute pressure sensitivity or connected to a pressure source for differential pressure sensitivity.

### 3,625,063 PRESSURE RATIO TRANSDUCER

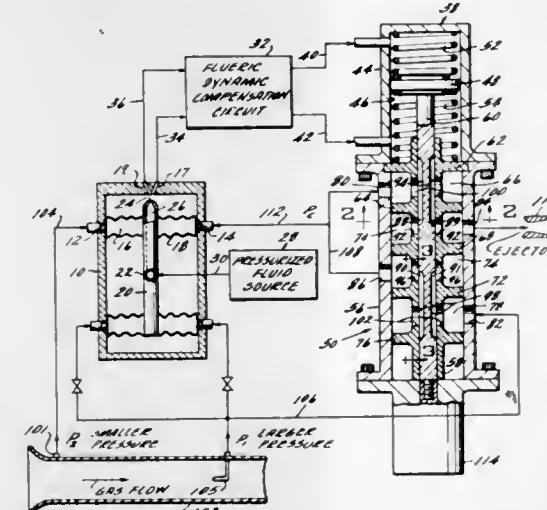
Thomas F. Urbanosky, Cincinnati, Ohio, assignor to General Electric Company

Filed Mar. 6, 1970, Ser. No. 17,188

Int. Cl. G011 13/02

U.S. Cl. 73—407 PR

7 Claims



A pressure ratio sensor or transducer for generating an output proportional to  $P_2/P_1$  is disclosed which comprises a fluid signal summing device, a fluoric dynamic compensation circuit, a mechanical valve, and a feedback loop.  $P_2$  provides an input to the summing device, while  $P_1$  provides an input to the mechanical valve. The mechanical valve is basically a spool valve with three lands and an integral pis-

ton of larger diameter. The output of the fluoric is a differential pressure which is applied across the piston area to drive the spool. As the spool moves, each of the three lands crosses over a shaped port varying the exposed area in some prescribed fashion. Two of these areas are used to form an area ratio which is a unique function of the pressure ratio of concern. The third generates an output signal which is a function of the shaft position, which, in turn, yields an output indicative of the sensed pressure ratio.

### 3,625,064 AUTOMATIC MIDSTREAM URINE SAMPLE COLLECTOR

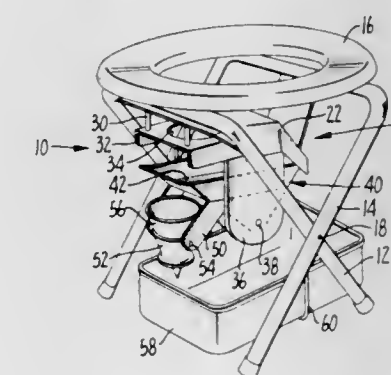
Frank Hinman, Jr., and Arthur Lutz, San Francisco, Calif., assignors to the United States of America as represented by the Secretary of the Army

Filed Jan. 9, 1969, Ser. No. 790,028

Int. Cl. G01n 1/10

U.S. Cl. 73—421 R

6 Claims



A urine sample collection apparatus having collection receptacles on either end of a beam which moves responsive to collected portions of the incoming stream to collect a specimen of a predetermined portion of an incoming urine stream.

### 3,625,065 FLUID SAMPLING DEVICE

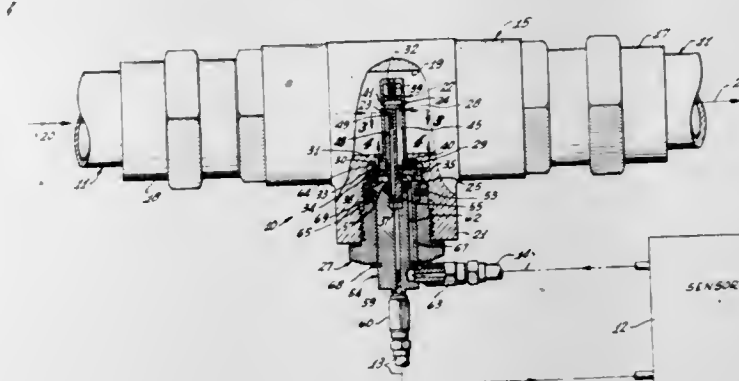
Lloyd W. Thompson, Buena Park, Calif., assignor to Thompson Industries, Buena Park, Calif.

Filed Apr. 6, 1970, Ser. No. 25,940

Int. Cl. G01n 1/10

U.S. Cl. 73—422

10 Claims



A device having a ported probe projecting into a fluid conduit to withdraw fluid from the center thereof, a valve plunger movable in the probe between open and closed positions and normally held in the closed position, and a detachably mountable sampling fitting operable during coupling to the device to shift the plunger to the open



position while simultaneously connecting the inlet and return ports of the probe through the plunger to the inlet and return lines of a particle counter.

3,625,066

**WATER SAMPLING APPARATUS**

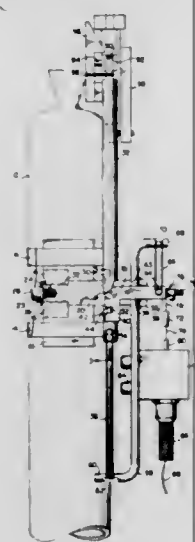
Michael L. Greene, Hillcrest Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed Mar. 30, 1970, Ser. No. 23,641

Int. Cl. G01n 1/10

U.S. Cl. 73—425.4 R

5 Claims



Water sampling apparatus includes a standard Nansen bottle to which is clamped a mounting block which swivelingly supports a support bar, transversely bored to guide a slide rod. A slide rod, slidably disposed in the bore of the support bar, is attached to the upper valve lever of the Nansen bottle. A connecting rod conventionally connects the upper and lower valve levers so that the valves close together. The slide rod is urged downward by several elastic bands, but is prevented from downward movement by a pivoted latch which engages a pin projecting from the slide rod. The latch is, in turn, urged to unlatching position by its own elastic bands, but is restrained in latching position by a low wattage resistor. When the apparatus has been lowered to the proper depth in the sea, a high voltage can be delivered to the resistor through appropriate circuitry to break the resistor and permit the latch to move under the influence of its elastic bands out of latching position and release the slide rod to move downward under the influence of its elastic bands. Downward movement of the slide rod closes both top and bottom valves of the Nansen bottle, and the water sample is trapped.

3,625,067

**DEVICE FOR DETECTING ROTATION ABOUT AN AXIS AND METHOD OF USING THE SAME**

Alfred G. Emslie, Scituate, Mass., assignor to General Motors Corporation, Detroit, Mich.

Filed July 18, 1969, Ser. No. 843,109

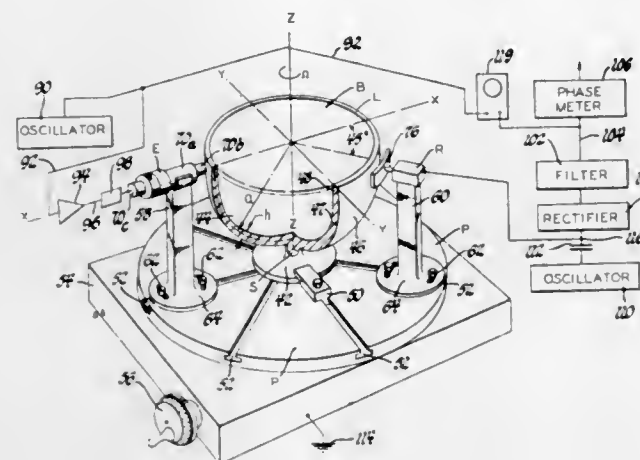
Int. Cl. G01c 19/56

U.S. Cl. 73—505

15 Claims

A device for detecting rotation wherein radial vibrations are established in a ring-like body capable of high-Q vibration and of frequency such as to produce a standing wave pattern having spaced nodes and anti-nodes. The radial vibration amplitude at a nodal region is sensed to measure the rotation of the body. In preferred form, the body is cup-like in shape, supported on a platform

by an axially positioned stem, and defines a ring-like lip capable of high-Q vibrations. Exercising vibrations in the radial mode are imparted to the lip of the device by an exerciser also mounted on the platform, and are of frequency to produce vibrations between two generally



elliptical extreme shapes, giving four nodes and four anti-nodes. The sensing device is supported on the platform and is located at one of the nodes. In its preferred form, the body is made of high-Q factor aluminum alloy; its lip is about 0.025 inch thick and its diameter at the lip is about 2 inches. The frequency of the exercising vibrations is about 1600 cycles per second.

3,625,068

**OMNIDIRECTIONAL SENSOR**

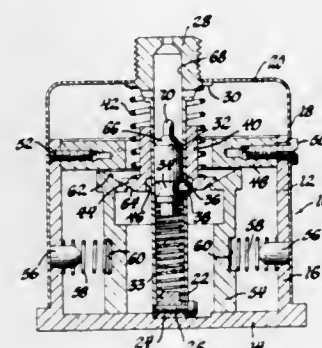
Robert Garth Kelly, Franklin, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1970, Ser. No. 68,390

Int. Cl. G01p 15/02

U.S. Cl. 73—514

3 Claims



A support has a hollow tubular axial guide mounted on an end wall thereof. An operator is slidably mounted within the guide and spring biased in one axial direction toward actuated position. Balls mounted within openings in the wall of the guide engage a shoulder of the operator to hold the operator in normal position. The balls are held in engagement with the operator by a release member slidably mounted on the guide and spring biased in a direction opposite the direction of movement of the operator. An annular seismic mass surrounds the guide and includes an upper conical surface engageable by a like mating surface of the release member to thereby locate the seismic mass radially with respect to the guide. Additional centering springs between the mass and a cylindrical side wall of the support cooperate with the bias on the release member to additionally locate the mass. When

the mass receives an acceleration pulse of predetermined amplitude and time, it will move radially of the guide, and the camming action of the mating surfaces on the mass and release member move the release member axially relative to the guide to release the balls and permit movement of the operator to actuated position.

**ERRATUM**

For Class 73—457 see:  
Patent No. 3,625,081

3,625,069

**CONTROL APPARATUS**

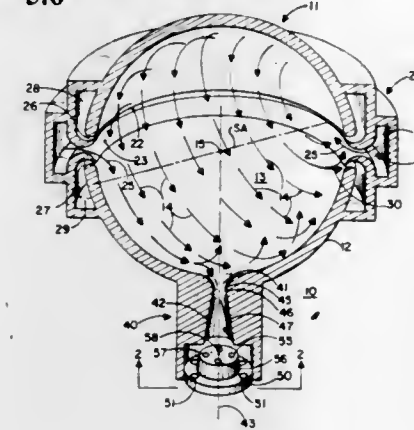
David L. Paine, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 17, 1969, Ser. No. 867,286

Int. Cl. G01c 19/28

U.S. Cl. 74—5.6

10 Claims



A flow direction sensor comprising a surface across which fluid is adapted to flow. A converging-diverging passage extending along an axis perpendicular to the surface connects a circular sensing port in the surface to a fluid sink whereby fluid is drawn through the passage. The passage converges with distance from the sensing port to an area of minimum diameter and then diverges at such an angle that fluid attaches to only a portion of the passage wall depending upon the direction of flow across the surface. A plurality of pressure ports are associated with the diverging portion of the passage for sensing the location of flow attached to the wall thereof.

3,625,070

**CONTROL APPARATUS**

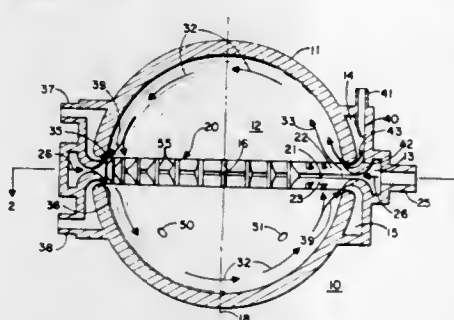
David L. Paine, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 17, 1969, Ser. No. 867,269

Int. Cl. G01c 19/28; G01p 15/14

U.S. Cl. 74—5.6

10 Claims



A single axis fluoric attitude gyroscope having a spherical chamber adapted to contain a spinning fluid mass and circumferential nozzle means located on a great circle of the chamber for introducing fluid thereto. The nozzle means comprises a central opening bounded by a pair of divergent opposite walls, each configured for attachment of fluid flow thereto, fluid flowing into the chamber at any point along the nozzle attaching to one of its walls de-

3,625,071

**ELECTRIC STARTER FOR SMALL INTERNAL COMBUSTION ENGINES**

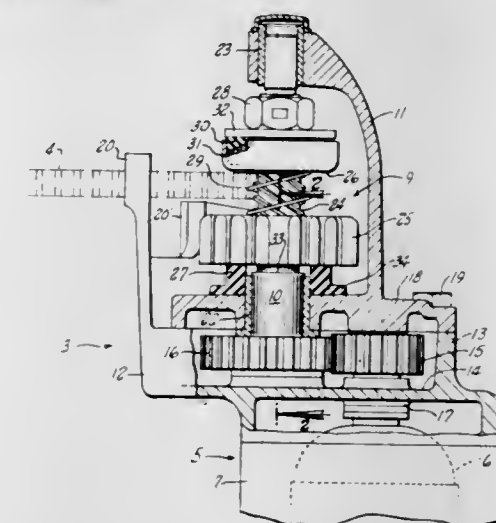
Joseph R. Harkness, Germantown, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Apr. 3, 1970, Ser. No. 25,473

Int. Cl. F02h 11/00

U.S. Cl. 74—7 R

10 Claims



An electric motor driven starter for a small vertical shaft internal combustion engine. A steeply pitched threaded connection between the drive shaft and the pinion thereon effects rapid return motion of the pinion toward its inactive position in consequence of rotation thereof in the same direction as the shaft is driven, but at a greater rate. A collar of resiliently yieldable material defines the inactive position of the pinion and cushions its return thereto. The collar encircles a bearing in which the shaft is journaled, and it is normally frictionally engaged by the retracted pinion and snugly confined between the retracted pinion and a fixed wall in which the bearing is mounted to assure against entry of dirt into the bearing.

3,625,072

**TRANSMISSION AND SPEED-VARIATION DEVICE APPLICABLE TO TRACTORS FOR EXAMPLE**

Emile Bobard, 17 Rue de Reon, Beaune, Cote d'Or, France

Filed Sept. 17, 1969, Ser. No. 858,606

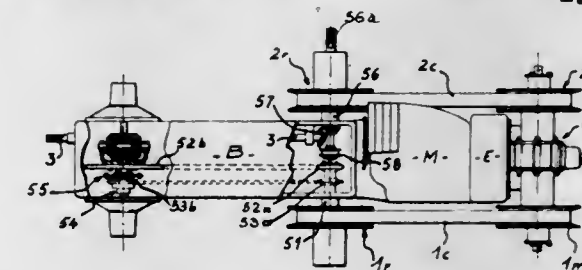
Claims priority, application France, Sept. 20, 1968,

167,073; Sept. 27, 1968, 167,929

Int. Cl. F16d 21/06; 25/063; F16h 55/56

U.S. Cl. 74—15.4

23 Claims



The present disclosure pertains to a transmission and speed variation device for an automotive vehicle, such as a harvester combine or tractor for driving the vehicle both in forward and reverse directions at various speeds in both directions. The device is capable of engaging at will, independently of one another, at least two driven shafts with a driving shaft and includes a speed changing means coupled to at least one of the driven shafts and means for axial clamping of conventional clutch plates.



### 3,625,073 AUTOMATIC LATHES

Reginald John Dixon, Solihull, and Harold James Gilbert, Coventry, England, assignors to Wickman Machine Tool Sales Limited, Coventry, England

Filed Nov. 14, 1969, Ser. No. 876,962

Int. Cl. F16h 25/08

U.S. Cl. 74—55

3 Claims



A lathe having a plurality of tool slides, at least one of which is controlled by a cam comprising a disc member on which are fixed parts defining cam surfaces extending parallel to the axis of adjoining shafts, the slide being connected to a cam follower by means of a rigid connection.

### 3,625,074 ECCENTRIC VIBRATOR

Hans-Georg Waschulewski and Helmut Erdmann, Dusseldorf, Germany, assignors to Losenhausen Maschinenbau Aktiengesellschaft, Dusseldorf-Grafenberg, Germany

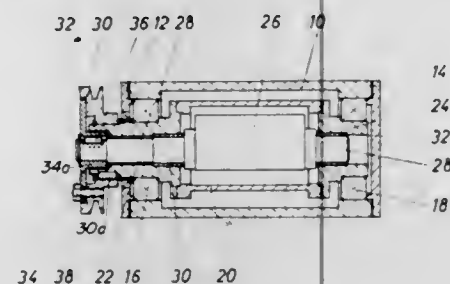
Filed Apr. 21, 1969, Ser. No. 818,001

Claims priority, application Germany, Apr. 26, 1968, P 17 58 226/2

Int. Cl. F16h 33/00

U.S. Cl. 74—61

7 Claims



An outer eccentric has hollow journals at opposite ends thereof which are rotatably mounted in a frame. An inner eccentric has shafts extending from each end thereof which are rotatably mounted in the hollow journals. In some embodiments there are a second corresponding pair of inner and outer eccentrics with the two outer eccentrics being geared together, and the two inner eccentrics being geared together. In some embodiments a driving pulley is secured to the distal end of a journal and a flange abutting the pulley is secured to the distal end of a shaft. The flange has an arcuate slot through which extends a stud bolt threaded into the pulley thereby enabling the angular position of the inner and outer eccentrics to be adjusted relative to each other. In some embodiments the distal ends of a hollow journal and a shaft have pulleys mounted thereon. A gear driving device has two concentric pulleys, one of which is belt connected to the pulley on the journal, and the other of which is belt connected to the pulley on the shaft. One of these two pulleys of the driving device can be adjusted to different angular positions about its axis.

### 3,625,075 MECHANICAL AMPLIFIER

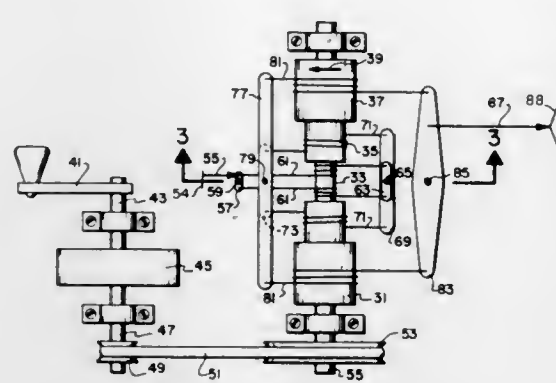
Jeremy M. Harris, Worthington, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Original application Feb. 13, 1967, Ser. No. 615,687, now Patent No. 3,491,603. Divided and this application Oct. 6, 1969, Ser. No. 864,107

Int. Cl. F16h 21/12; G05b 11/00; H04m 1/00

U.S. Cl. 74—63

8 Claims



A rotating drum with two flexible elements wrapped around it, one end of each connected to input means on one side of the drum and the opposite end connected to output means on the opposite side. A multi-stage amplifier includes several sets of flexible elements. The distortion between input and output signals is minimal, and the response of the amplifier is very rapid.

### 3,625,076 DEVICE FOR THE FINE ADJUSTMENT OF TAPE POSITION IN A TAPE RECORDER

Takehiko Yamada, Osaka, Japan, assignor to Orion Electric Co., Ltd., Osaka, Japan

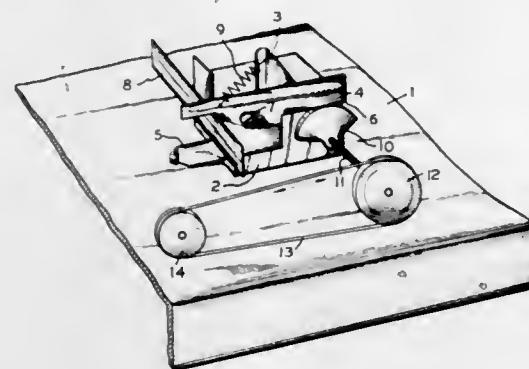
Filed Nov. 14, 1969, Ser. No. 876,916

Claims priority, application Japan, Feb. 3, 1969, 44/10,006

Int. Cl. F16h 27/02; G11b 5/86, 5/00

U.S. Cl. 74—89

1 Claim



A device for making fine adjustments of a tape position includes a guide mounting plate fixed to a frame. A guide plate pivots around a pin on the guide mounting plate. One end of the guide plate has a slot through which a tape runs. The other end of the guide plate has a cam engaging surface which contacts a cam mounted on a rotatable shaft.

### 3,625,077 TRANSFER RODS

Henri Bernard, Antony, and Henri Bruel, Lyon, France, assignors to Commissariat a l'Energie Atomique and Societe Robatel-SLPI, Paris, France

Filed Aug. 18, 1969, Ser. No. 850,773

Claims priority, application France, Aug. 22, 1968, 163,779

Int. Cl. F16h 29/02

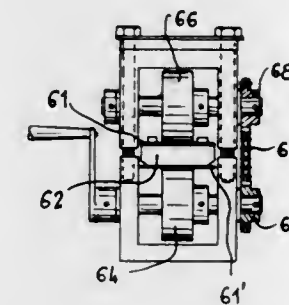
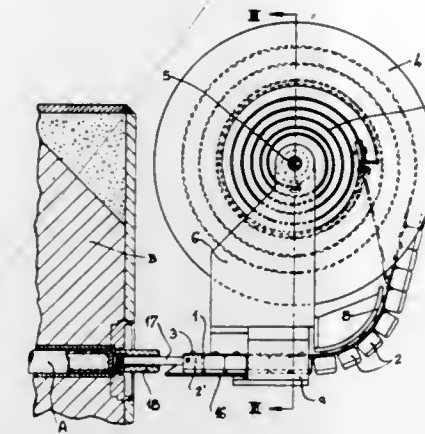
U.S. Cl. 74—89.21

6 Claims

The transfer rod is made up of rigid blocks or plates referred to as rod elements which can be interlocked and

are secured to at least one metallic strip having high tensile strength. The rod is stored on a freely rotatable take-

downwardly about twice as far as the conveyor to achieve this gentle transfer and to get both the conveyor and the table with its fingers out of the way of the foundry machine and its succeeding cycles of operation. Both the core receiving table and the conveyor move along a vertical path with a common motive means for the two. The foregoing abstract is merely a resume of one general application and is not a complete discussion of all principles of operation, applications or methods and is not to be construed as a limitation on the scope of the claimed subject matter.



up drum and delivered by guiding and actuating means in opposition to a spiral spring mounted in the drum.

### 3,625,078 ELEVATING TABLE

Hugh A. Bourassa, University Heights, Arthur H. Emser, Mentor, and Edward J. Ptak, Cleveland, Ohio, assignors to Acme-Cleveland Corporation

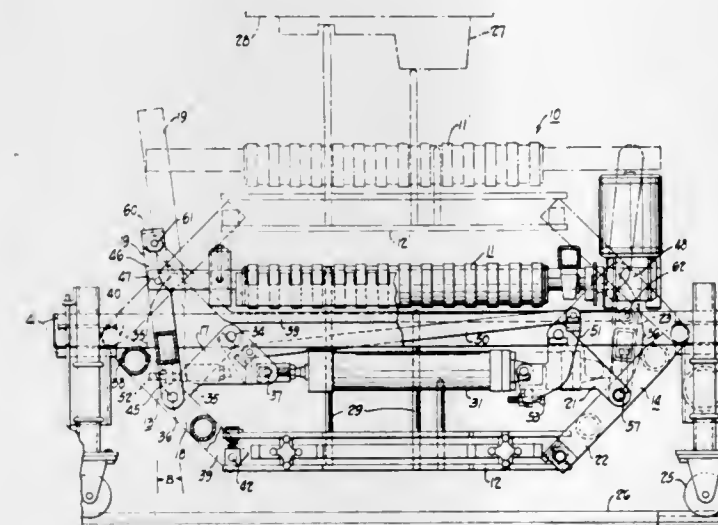
Original application June 10, 1968, Ser. No. 735,867.

Divided and this application Nov. 21, 1969, Ser. No. 871,275

Int. Cl. F16h 21/44

U.S. Cl. 74—110

9 Claims



The disclosure relates to an assembly to receive a core or mold from a foundry machine and to move it gently onto a conveyor. The core may be dropped by gravity onto a series of fingers held in a core receiving table and then this table drops downwardly to gently place the core on a ribbon type conveyor. The table moves

### 3,625,079 VARIABLE RATIO MINI BIKE DRIVE

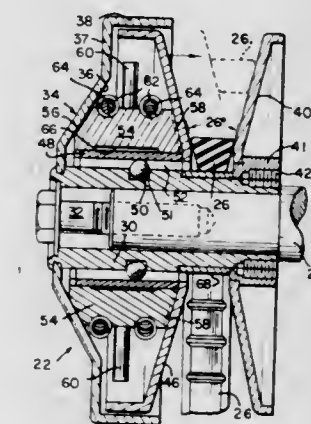
Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.

Filed Sept. 21, 1970, Ser. No. 73,916

Int. Cl. F16h 55/52

U.S. Cl. 74—230.17

18 Claims



A variable-ratio belt drive for mini bikes and the like, responsive to both engine speed and drive torque. A normally-open, variable-width driver pulley responsive to engine speed is connected by a V-belt to a normally-closed variable-width driven pulley which initially gives a high-reduction drive ratio, e.g., 3:1. One flange of the driven pulley is movable and urged toward the fixed flange by low-angle cams and a torsion spring. A movable flange of the driver pulley is urged toward the fixed flange thereof by wedge weights acting between the movable flange and a reaction cone, so that increased speed closes the driver pulley and exerts belt tension to open the driven pulley, which lowers the drive ratio. High torque causes the cams to close the driven pulley and overcome the speed-response control, hence to increase the drive ratio to handle the increased torque at high engine speed.

### 3,625,080 TRANSMISSION SYNCHRONIZING AND SHIFT CONTROL SUPERVISORY SYSTEM

Todd L. Rachel, Elmira, David S. Vaughan, Erin, and Theodore K. Riggen, Elmira, N.Y., assignors to The Bendix Corporation

Filed Nov. 24, 1969, Ser. No. 879,483

Int. Cl. F16h 3/38, 5/42; B60k 17/02

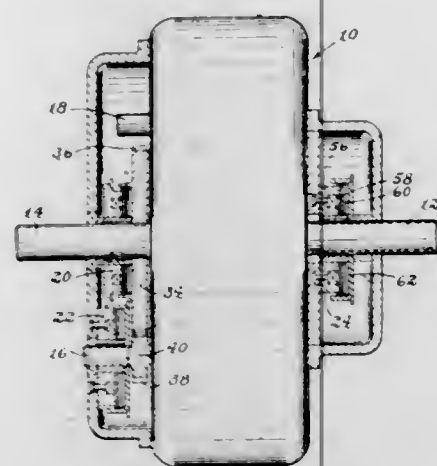
U.S. Cl. 74—336

5 Claims

A control system for a mechanical power transmission to provide synchronization of gear speeds to thereby permit automatic gear changing in response to a desired gear selection. The system includes anticipation circuitry to provide the control system with a signal indicative of synchronization sufficiently in advance of actual synchronization to compensate for response time delays in the remainder of the system and in the shifting mechanism. Further circuitry is provided to inhibit the system if the desired gear change would not be compatible with best



operation of the associated prime mover. The shift inhibit circuitry is provided with means for recognizing the error in gear selection and with means for correcting the error by attempting to select a proper gear setting. A shift lever mechanism operative to be self-disabling in the event of a down shift to a prohibited position and further operative to seek the nearest permitted position is also shown.



The lever mechanism includes biasing means operative to bias the gear indicating lever toward the highest gear settings and latching means operative to be energized at gear settings lower than the lowest permitted setting to prevent the lever mechanism, and hence, the associated system input means, from commanding a prohibited down shift.

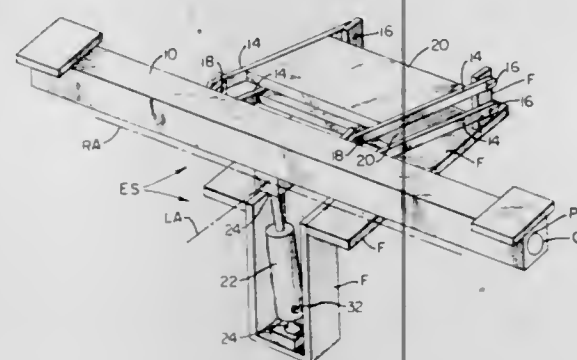
### 3,625,081 APPARATUS FOR DETECTING UNBALANCE OF VEHICLE WHEELS

Marcellus S. Merrill, 335 Colorado Blvd.,  
Denver, Colo. 80236

Filed Apr. 1, 1969, Ser. No. 811,727  
Int. Cl. G01m 1/28

U.S. Cl. 73-457

14 Claims

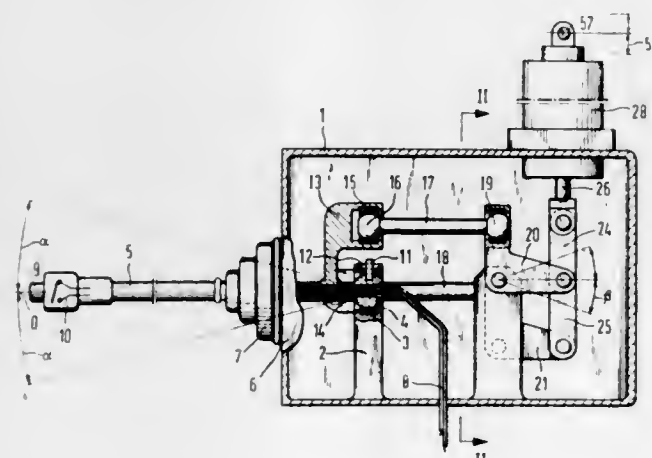


Apparatus for detecting rotary unbalance of automotive vehicle wheels in situ characterized by an improved elevating and supporting beam which may oscillate about its midpoint with equal amplitudes of oscillation of its ends, permitting a single vibration pick-up to be employed at only one end of the beam and also establishing a known phase relationship between the detected magnitude of unbalance and the actual position of unbalance. Wheel spin speed may be lower than conventional spin speed through a critical speed where resonance occurs which permits use of relatively low constant speed sparkless motors conforming to safety requirements to obviate fire and explosion hazards near floor level. The foregoing apparatus is common to two versions, one being a pit mount requiring extensive floor excavation and the other a floor mount requiring a minimum of excavation. Pairs of chocks

are employed to locate companion wheels in predetermined position relative to the beam and one chock of each pair is movable to perform the additional function of arresting rotation of a wheel.

### 3,625,082 CONTROL MECHANISM FOR A DUAL SERVO ARRANGEMENT

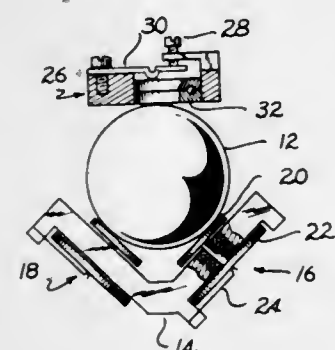
Rudolf-Erich Muller, 12 Reichenbacher Strasse, 8732  
Munsterstadt, Germany, and Karl Schorn, deceased, late  
of Dusseldorf, Germany  
Filed Jan. 27, 1970, Ser. No. 6,064  
Claims priority, application Germany, Feb. 4, 1969,  
P 19 05 428.5  
(Filed under Rule 47(a) and 35 U.S.C. 116)  
Int. Cl. G05g 9/04  
U.S. Cl. 74-471 XY 13 Claims



Two hydraulic actuators of a servo mechanism are independently controlled by pivoting movements of the same control stick in two perpendicular planes. The stick is mounted on a universal joint and carries two additional universal joints on radial arms offset 90° about the stick axis and equidistant from the same, and linkages connecting the additional joints to the actuators respectively are equipped with biasing arrangements for returning the stick to the neutral position and may be equipped with magnets for holding the stick in a desired position angularly offset from the neutral position.

### 3,625,083 TRACK BALL ENCODER

Norman J. Bose, North Hollywood, Calif., assignor to  
The Singer Company  
Filed Oct. 17, 1969, Ser. No. 867,209  
Int. Cl. G05g 9/00  
U.S. Cl. 74-471 XY 4 Claims

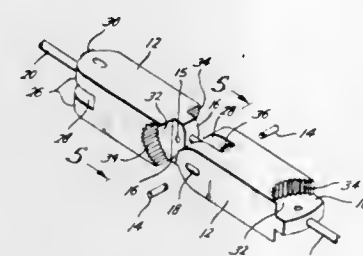


A two axis digital encoder having as an input a manually controlled bearing-supported spherical ball which, when rotated, actuates two rotatable encoders frictionally

coupled to the ball surface and oriented 90 degrees from each other so that the output of one encoder represents an X function, and the other a Y function.

### 3,625,084 FLEXIBLE/RIGIDIFIABLE CABLE ASSEMBLY

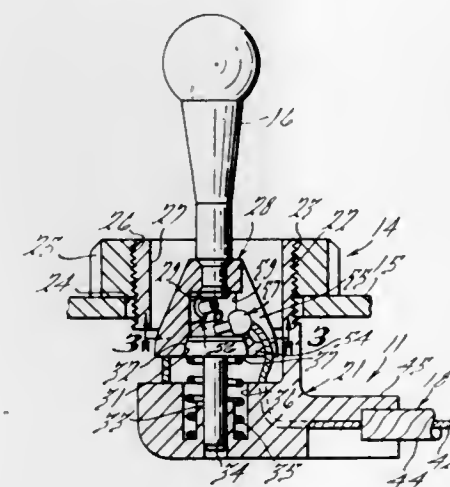
George M. Low, Deputy Administrator of the National  
Aeronautics and Space Administration, with respect  
to an invention of Cletus J. Siebert, Littleton, Colo.  
Filed Sept. 21, 1970, Ser. No. 73,932  
Int. Cl. F16c 1/00  
U.S. Cl. 74-501 R 9 Claims



A flexible yet rigidifiable cable assembly capable of being selectively tensioned. A plurality of elongate link members each have an axial bore to receive a cable. At one end of each link member are two spaced, parallel projections providing a slot therebetween, the projections having serrations at their apex. At the second end of each link member is a projecting tongue having serrated, semi-circular reliefs on either side. In assembled relation, the parallel projections of one end of a link member are engageable with and journaled to the semi-circular reliefs on either side of the tongue of another link member. A spring between each link member permits flexibility of the cable assembly by maintaining the links in a disengaged relation, the cable assembly being rigidifiable upon overcoming the bias of the springs through tensioning of the cable whereby the links engage.

### 3,625,085 CONTROL FOR REMOTE CONTROLLED MIRROR

Wilford B. Shrode, Huntington Woods, Mich., assignor to  
Leader International Industries, Inc.  
Filed Oct. 27, 1969, Ser. No. 869,802  
Int. Cl. F16c 1/14  
U.S. Cl. 74-501 7 Claims

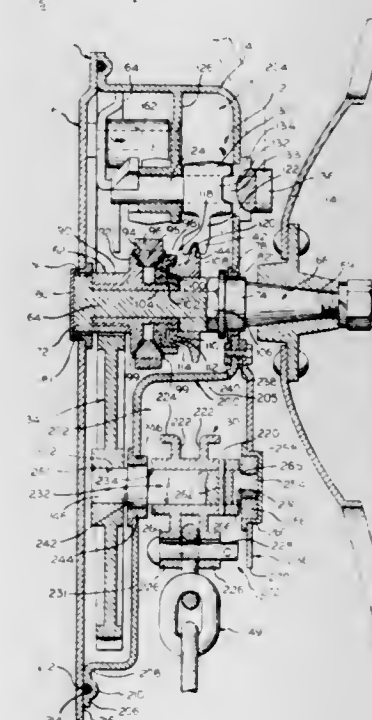


A remote controlled mirror assembly wherein motion is transmitted from a control lever to a remotely positioned mirror by means of a plurality of flexible transmitters. An arrangement is provided for conveniently attaching the

ends of the transmitters to the control lever and for preventing inadvertent displacement of the wire ends by means of an interference type relationship.

### 3,625,086 SEALED NON-SPIN HAND BRAKE ARRANGEMENT

Eldred H. Natschke, Bourbonnais, Ill., assignor to  
Universal Railway Devices Company  
Filed Oct. 27, 1969, Ser. No. 869,534  
Int. Cl. F15d 63/00 6 Claims



A hand brake of the non-spin type for railroad cars including a front casing and rear attachment plate that define a housing space for the brake operating shaft, ratchet wheel, ratchet wheel clutch, brake release mechanism, and drum gear, that is sealed from the elements by a seal applied between the two. The front casing is intended to define a mounting space for the brake drum, which may be of either the single or double chain wind type and is keyed to a mounting shaft that is journaled between the casing and a brake drum cover plate that is removably secured to the casing. The drum shaft extends into the housing space where it has fixed to same the drum gear. The brake drum and shaft cooperate with bearings that journal the brake drum shaft to keep the brake drum centered in its mounting space and the drum gear spaced from the rear attachment plate.

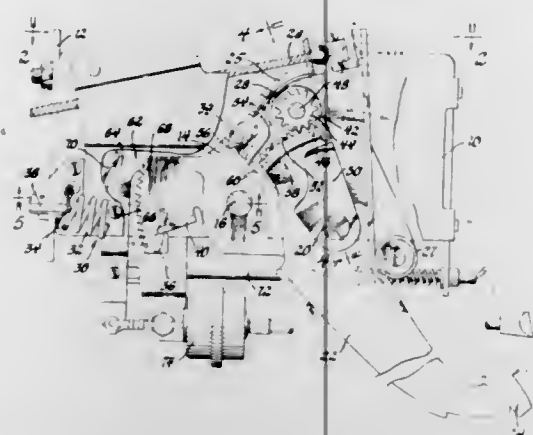
### 3,625,087 STEP RATIO PARKING BRAKE CONTROL

Donald M. Flory, Arcanum, and Elton S. Moyer, Dayton,  
Ohio, assignors to General Motors Corporation, De-  
troit, Mich.  
Filed Sept. 2, 1970, Ser. No. 68,902  
Int. Cl. G05g 1/04 3 Claims

A variable ratio force multiplying parking brake control mechanism wherein a pedal lever having output means attached thereto is pivotally mounted on a main lever which is in turn pivotally mounted on a stationary bracket. A pretensioned spring holds the main lever while the pedal lever pivots thereon to provide relatively low force multiplication for fast takeup of the slack in the brake system. The reaction of the brake cable tensioning force causes the pretensioned spring to yield, and the



resulting pivotal movement of the main lever engages a clutch acting between the main lever and the pedal lever so that upon further pedal lever movement the pedal lever

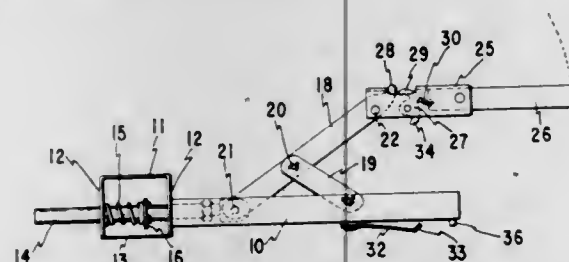


and the main lever rotate unitarily about the main lever pivot to provide continuously increasing force multiplication.

**3,625,088**  
**AUTOMATIC RESETTING TOGGLE ARM**  
Henry L. Sundermann, Box 79, R.R. 4,  
Sioux Falls, S. Dak. 57101  
Filed Aug. 15, 1969, Ser. No. 850,461  
Int. Cl. G05g 1/04

U.S. Cl. 74—520

6 Claims

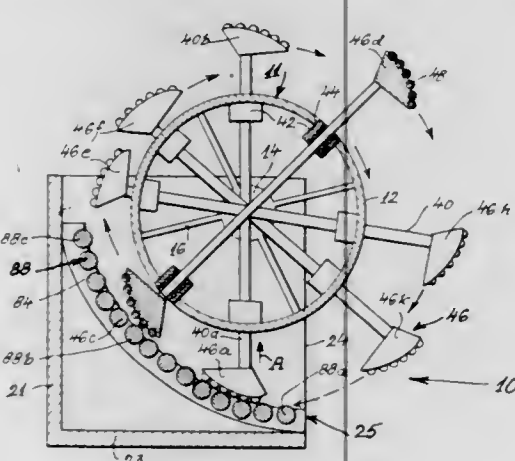


A toggle or similar device having a unique operating arm. The arm includes a releasing device by which the toggle can be released. The releasing device includes a latch on one part of the handle adapted to hold the other part, and a latch release on the toggle to engage the latch and release it. The latch is adapted to re-engage so that repeated operation is possible.

**3,625,089**  
**GRAVITY WHEEL APPARATUS**  
Edward Rutkove, 601B Surf Ave.,  
Brooklyn, N.Y. 11224  
Filed Apr. 30, 1970, Ser. No. 33,342  
Int. Cl. H02k 7/02

U.S. Cl. 74—572

10 Claims



A rotary gravity wheel apparatus includes an axially horizontal cylinder carried by a support. A plurality of spokes extend diametrically of the cylinder in axially and

circumferentially spaced array. Weighted shoes are mounted on opposite ends of the spokes. An inclined platform under the cylinder causes the spokes to move axially diametrically of the cylinder and raise upper shoes while lower shoes ride on the platform. Roller bearings on the shoes and platform minimize friction. A governor controlled motor overcomes inertia of the cylinder when starting.

**3,625,090**  
**TRANSMISSION CONTROL**  
Howard E. Chana, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Filed Feb. 24, 1970, Ser. No. 13,718  
Int. Cl. B60k 21/08

U.S. Cl. 74—864

6 Claims

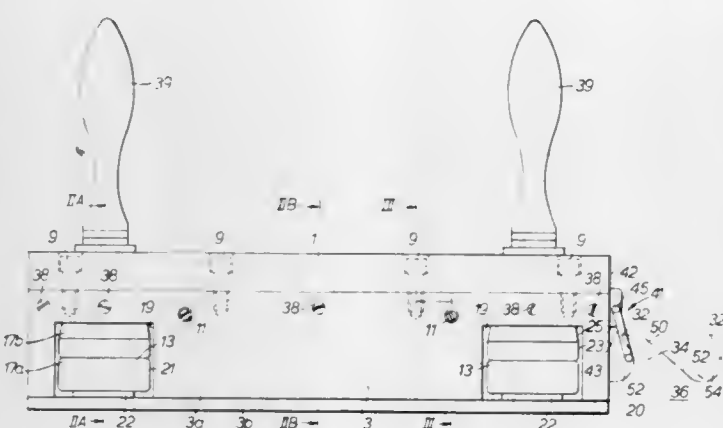


An automatic transmission control providing for shifting between three forward drives wherein there is provided part engine throttle sequential upshifting, part engine throttle downshifting from the high to the intermediate drive, downshifting from intermediate to the low drive at a predetermined vehicle speed and coast downshifting from the high drive directly to the low drive at a predetermined vehicle speed.

**3,625,091**  
**DEVICES FOR SIDE-DRESSING SWAGE SET SAWS**  
Jack Wilfred Shanks, Princes Risborough, England, assignor to National Research Development Corporation, London, England  
Filed Nov. 18, 1969, Ser. No. 877,750  
Claims priority, application Great Britain, Nov. 20, 1968, 55,124/68  
Int. Cl. B23d 63/06

U.S. Cl. 76—49

8 Claims



A device for side-dressing swage set saws including two pairs of rollers with the nips of the two pairs on a common plane. The rollers have surfaces for forming the swages into the required form i.e. frusto-conical surfaces for forming tapered wedges. A guide is provided for co-operation with the tops of the teeth to locate the swages relative to the frusto-conical surfaces of the rollers. The position of the guide is adjustable to allow the formation of different sets on the saw. The rollers also have cylindrical surfaces for co-operation with opposite surfaces of

the saw beneath the swages. The distance between the rollers of a pair is adjustable whereby the device can operate upon different gauges of saws.

**3,625,092**  
**METHOD FOR MANUFACTURING DIES FOR STAMPING GRADUATED SCALES ON SLIDE RULES AND RULES FOR TECHNICAL PURPOSES**

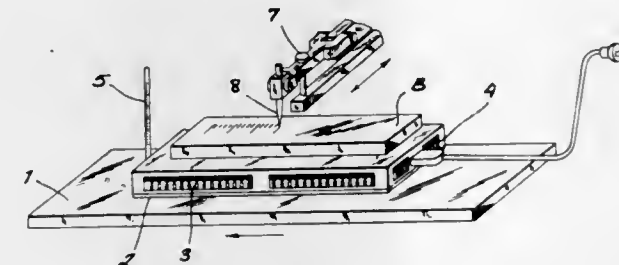
Iosif Hondrea and Mihai Hilger, Timisoara, Francisc Moser, Bucharest-sos, and Iosif Glass, Timisoara-piata, Romania, assignors to Iprofil-Tehnolemn, Timisoara, Romania

Filed Aug. 11, 1969, Ser. No. 849,041

Int. Cl. B21k 5/20

U.S. Cl. 76—107 R

5 Claims



A method of embossing scales upon a thermally softenable surface of a slide rule or the like in which the die is subjected to multiple heat treatments to relax the internal stress, is precision engraved with the pattern to be embossed at the embossing temperature and is thereafter milled at ordinary temperatures with optical control of the milling operation to define a deep relief pattern equivalent to that to be formed in the rule face.

**3,625,093**  
**MACHINE FOR ROTATABLY DRIVING THE BOTTOM OF A WATCH-CASING OR THE BOTTOM OF A MEASURING APPARATUS**  
Bernard Freiburghaus, Bienne, Switzerland, assignor to Fimecor Fine Mecanique S.A., Bienne, Bern, Switzerland

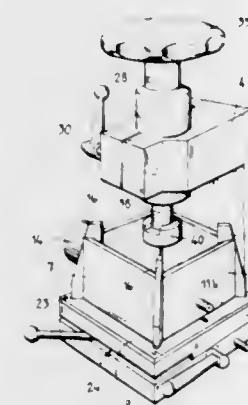
Filed June 23, 1970, Ser. No. 49,079

Claims priority, application Switzerland, June 30, 1969, 10,046/69

Int. Cl. G04d 3/04

U.S. Cl. 81—6

6 Claims



A machine for screwing or unscrewing the bottom of a watch-casing or the like having a support for receiving and holding the casing and a bracket carrying a rotatable spindle disposed above the support. The spindle is axially movable with respect to the bracket and carries a driver for application against the bottom of the casing for driving the same rotatably.

**3,625,094**  
**TIRE REPAIR CORD INSERTION TOOL**  
Harry F. Garrison, 7470 Gerald Ave.,  
Warren, Mich. 48092

Original application May 12, 1969, Ser. No. 823,905.  
Divided and this application Dec. 15, 1969, Ser. No. 885,092

Int. Cl. B60c 25/16

U.S. Cl. 81—15.7

1 Claim

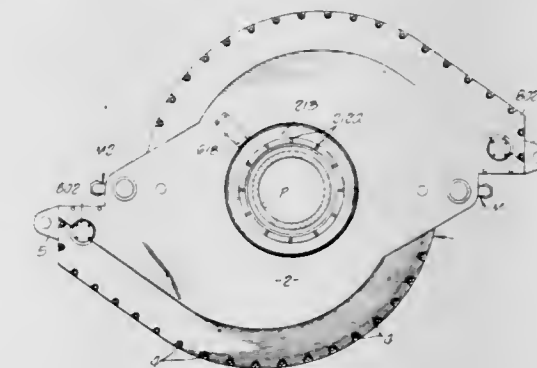


An elongated elastomeric cord is inserted in a notch, with or without a hook-shaped guard or shield in the forward end of the shank of a tool, coated with suitable elastomeric cement, and this assembly pushed into the hole in the tire to be plugged. In the tool of FIGS. 5 to 7 inclusive, the hollow barrel and nozzle contain rubber cement and a plunger which, after insertion of the elastomeric cord through a hole in the nozzle tip and then into the tire hole, injects rubber cement into the hole to coat the elastomeric cord and wall of the hole therewith. In either form of the invention, the shank of the tool or nozzle is then withdrawn from the hole, converting the V-shaped form of the cord, upon insertion, to a W-shaped form upon removal. The protruding ends of the cord are then cut off flush with the adjacent outer surface of the tire, completing the repair job.

**3,625,095**  
**DRIVE FOR PIPE TONGS**  
James M. Barnett, San Gabriel, John L. Dickmann, Whittier, and Melvin J. Palmer, Huntington Park, Calif., assignors to Byron Jackson Inc., Long Beach, Calif.  
Filed Mar. 24, 1970, Ser. No. 22,293  
Int. Cl. B25b 17/00, 23/02, 23/04

U.S. Cl. 81—57.18

28 Claims



A power tong for well pipe, in which a jaw carrying ring is rotatable in opposite directions by a rotatable jaw actuating cam ring, the cam ring being driven by a single hydraulic motor for low torque operation, a pair of hydraulic motors driving the cam ring for higher torque operation, and a ram actuated ratchet ring being provided to move the cam ring angularly for still higher torque operation.



3,625,096

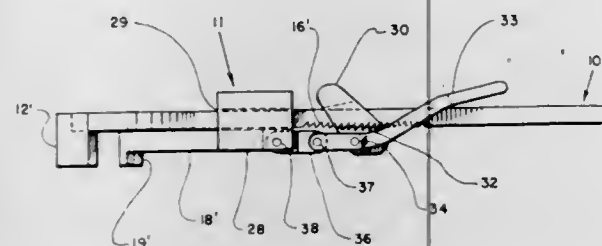
**ADJUSTABLE BOX END WRENCH**

Herman Myers, Lake Lynn, Pa., assignor to Insta-Snap, Inc., Monongahela, Pa.

Filed Apr. 9, 1970, Ser. No. 26,828  
Int. Cl. B25b 13/14

U.S. Cl. 81—130

4 Claims



An instantly adjustable box end wrench comprising a stationary handle and a slidable jaw assembly. Both the stationary handle and the slidable jaw assembly terminating in bipartite jaw sections extending normal thereto. The stationary handle has an opening therethrough in the vicinity of its bipartite jaw section to permit a bolt to extend therethrough when a nut is being held by the jaw sections. Locking is accomplished by engaging sets of teeth along the stationary handle and slidable jaw assembly, and additional locking can be accomplished by an over-center link arrangement.

3,625,097

**METHOD AND APPARATUS FOR SETTING CUTTING TOOLS IN MACHINE TOOLS**

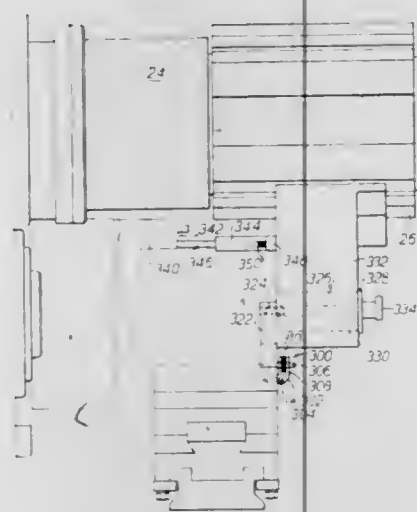
Leslie Harkness, Halifax, England, assignor to Warner Swasey Asquith Limited, Halifax, England

Filed Aug. 14, 1968, Ser. No. 752,604  
Claims priority, application Great Britain, Sept. 15, 1967, 42,065/67

Int. Cl. B23b 1/00

U.S. Cl. 82—1 C

8 Claims



A machine tool has front and rear cross slides with tool locating means thereon and a turret with a tool locating datum surface thereon. The cutting tools for the machine tool are preset prior to their being mounted on the turret and cross slides. The tools are preset by using apparatus which includes a first jig operable to preset tools for use on both the front and rear cross slides prior to positioning said tools on said cross slides and a second jig for presetting tools for use on said turret. Both jigs include a reference surface simulating the datum plane so that tools preset on said jigs are easily and quickly positionable on the machine tool with reference to the datum plane. The apparatus further includes a datum surface transfer arm having a transfer surface adapted to lie

on the datum surface, and means for mounting said transfer arm on the turret so that the transfer arm is operable to facilitate positioning the tools on the cross slide.

3,625,098

**DEVICE ADAPTABLE TO THE HEADSTOCK OF ENGINE-LATHES ENABLING THE HEIGHT OF THE MACHINE GEOMETRIC AXIS**

Romeu Romi, Santa Barbara d'Oeste, Sao Paulo, Brazil, assignor to Industrias Romi S.A.

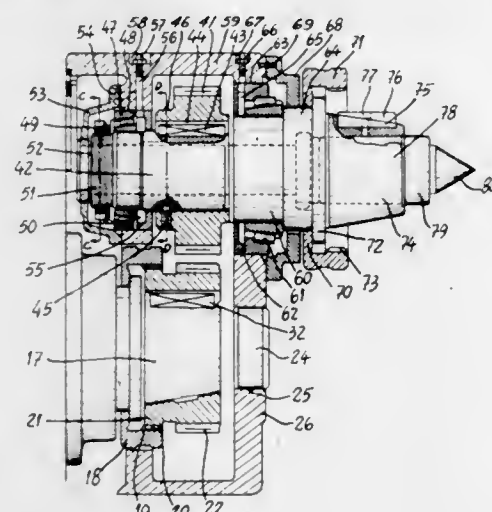
Filed Sept. 3, 1969, Ser. No. 854,899

Claims priority, application Brazil, Sept. 5, 1968, 202,046

Int. Cl. B23b 19/00

U.S. Cl. 82—28

5 Claims



The geometrical axis of a lathe is raised to the level of a spindle offset to the main spindle, and supported on the headstock of the lathe. A gear transmission connects a gear wheel secured to the main shaft with a gear secured to the offset spindle, and has such a number of gears that the offset spindle rotates in the same sense as the main spindle, permitting the attachment of a chuck to the offset spindle.

3,625,099

**CORRUGATED THIN GAUGE WEB CUTTING METHOD AND APPARATUS**

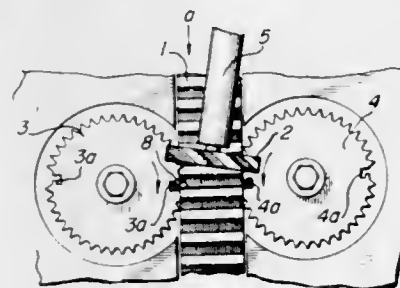
Takehisa Mase and Hiroshi Kawaura, Kariya-shi, and Terumoto Yamaguchi and Yosinao Amano, Anjo-shi, Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Apr. 8, 1970, Ser. No. 26,595

Int. Cl. B26d 5/20

U.S. Cl. 83—13

3 Claims



A method of and apparatus for automatic high speed cutting of a corrugated thin gauge web produced and supplied continuously by a corrugated thin gauge web producing machine for producing a predetermined length of web having a fixed number of corrugations of a predetermined pitch adapted for use as a fin material with heat exchangers. The apparatus comprises a feed worm wheel disposed above the path of travel

of the corrugated thin gauge web and formed with a number of teeth for giving a uniform pitch to the corrugations of the corrugated thin gauge web, a pair of guide gears disposed posterior to the feed worm wheel and arranged on opposite sides of the path of travel of the corrugated thin gauge web for engaging the opposite sides of a predetermined length of web having a fixed number of corrugations to bring the pitch of the corrugations of the predetermined length of web into means for severing the length of web having the fixed number of corrugations of the predetermined pitch from the rest of the corrugated thin gauge web.

3,625,100

**TAPE DISPENSER**

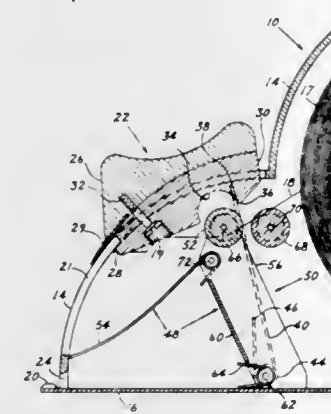
David I. Barnard, 360 Jasmine St., Denver, Colo. 80220

Filed Sept. 11, 1969, Ser. No. 857,011

Int. Cl. B65h 51/18

U.S. Cl. 83—205

6 Claims



A tape dispenser in which tape in any desired length is stripped from a supply roll by a positive gripper, presented outside the dispenser by a spring-type extruder, and severed from the supply roll by a cutter blade carried on an operating button.

3,625,101

**WIRE-CUTTING MACHINE**

Jean Leveque, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France

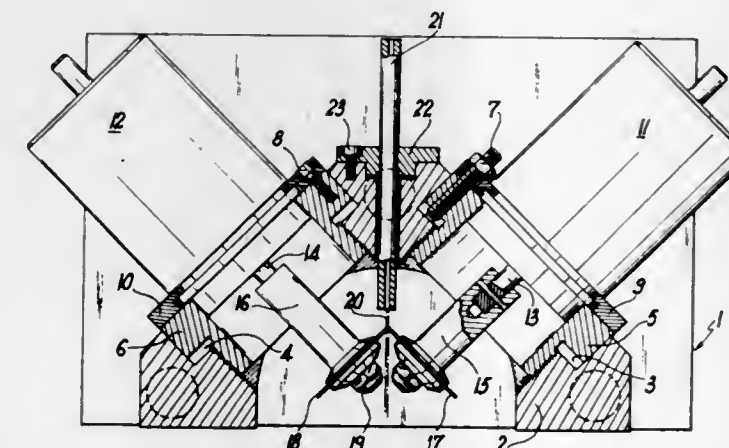
Filed Mar. 31, 1970, Ser. No. 24,217

Claims priority, application France, Apr. 4, 1969, 6910211

Int. Cl. B23d 25/00

U.S. Cl. 83—355

4 Claims



The machine makes it possible to cut a wire by shearing at a precise point along the length of the wire without subjecting this latter to any longitudinal stress. Two

rotary cutters mounted on the ends of the driving shafts of two impulse or stepping motors carry out identical movements but in opposite directions, the driving shafts being disposed on each side of the wire to be cut at an opposite angle of inclination with respect to the wire.

3,625,102

**CIRCULAR SAWING MACHINE WITH A PAIR OF VISES**

Fumio Shiino, 34-3, 4-chome, Egota, Nakano-ku, Tokyo, Japan

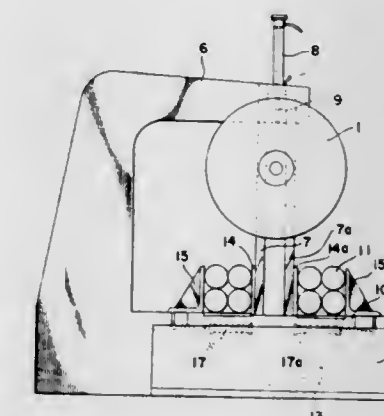
Filed Oct. 3, 1969, Ser. No. 863,552

Claims priority, application Japan, Oct. 5, 1968, 43/72,418

Int. Cl. B23d 45/02; B27b 5/18

U.S. Cl. 83—460

4 Claims



This disclosure relates to a circular sawing machine with a pair of vises comprising a circular saw driven with a pressure oil motor, guide members guiding said circular saw and pressure oil motor integrally, and vises for holding the works on both sides of said guide members, and the object of this invention is to provide a machine which is made of simple construction, and in which efficiency and accuracy of cutting are obtained due to the cutting on two positions on both sides of the moving line.

3,625,103

**CIGARETTE TURN AROUND**

Filippo Giatti, Bologna, Italy, assignor to AMF Incorporated

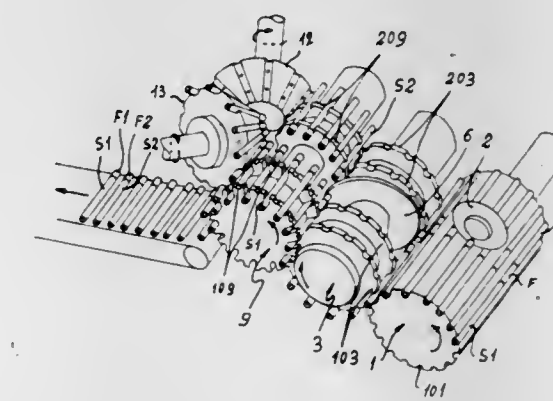
Filed Apr. 6, 1970, Ser. No. 25,869

Claims priority, application Italy, Apr. 30, 1969, 6,992/69

Int. Cl. B26d 1/14

U.S. Cl. 83—102

13 Claims



This disclosure relates to a device for cutting a single row of two axially aligned cigarettes having an interposed double length filter plug in half to form two rows, each



row being fed to a grooved drum, two grooved drums being used to space and offset the severed cigarettes. The drums are mounted to rotate freely at different speeds about a common axis and are spaced longitudinally from each other, the drums having a different number of grooves. A turn around device is coupled to pick up the cigarettes of one row, turn them around, and thereafter position them between the cigarettes of the other row.

### 3,625,104 WATER KEY FOR BRASS WIND MUSICAL INSTRUMENTS

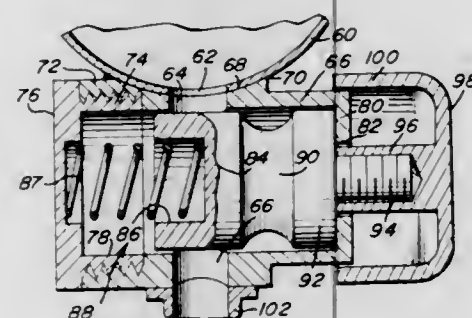
Raymond A. Amado, 9 W. Broad St.,  
Haverstraw, N.Y. 10927

Filed May 12, 1970, Ser. No. 36,577

Int. Cl. G10d 7/10

U.S. Cl. 84—397

10 Claims



A fluid release valve for brass wind instruments (cornets, trumpets, trombones and the like) commonly known as a water key but distinct and different from the conventional pivoted lever-type water key. It comprises a valve body embodying a cylinder and an enclosed spring-loaded piston which reciprocates in the cylinder and which simultaneously opens and closes diametrically opposite fluid inlet and discharge ports and has a push-button-type finger-piece at a readily accessible end of the valve body.

### 3,625,105 INSTRUMENT FOR TEACHING COORDINATION BETWEEN WRITTEN STAFF NOTES AND CORRESPONDING MUSICAL TONES

Robert B. Dingwall and William B. Reimann, Mahopac,  
and Carmine C. Ravosa, Briarcliff Manor, N.Y., as  
assignors to Stanbow Productions, Inc., Valhalla, N.Y.

Filed Oct. 9, 1969, Ser. No. 865,133

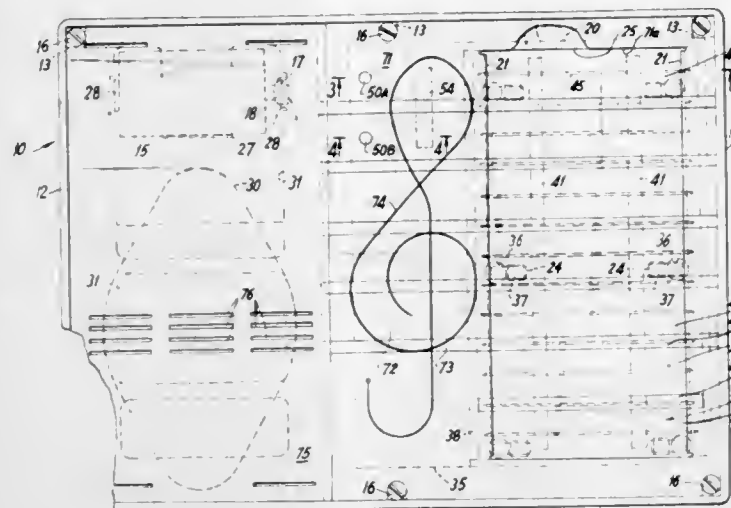
Int. Cl. G09b 15/04

U.S. Cl. 84—471

12 Claims

An instrument for teaching a pupil coordination between notes written on the lines and spaces of a staff, as in sheet music, and the actual corresponding musical tones, has a housing including a panel formed with an opening and preferably having a clef sign adjacent the opening. A plurality of relatively elongated substantially rectangular keys are arranged in the opening and include alternating narrow keys and wide keys to stimulate the alternating lines and spaces of a musical staff. An oscillator, a sound transducer and a battery are mounted in the housing. A printed circuit board is supported within the housing on a pair of spaced strips of resilient material, and a second pair of spaced strips of resilient material support the keys on the upper surface of the printed circuit board. The battery has one terminal grounded to the housing and its other terminal electrical connected to the printed circuitry. A tapped resistance is connected to the oscillator input, and is associated with a condenser to provide an R-C member. The value of the R-C member controls

the frequency of the oscillator. Each key has an electrically conductive strip on its lower surface which, when the key is depressed, connects a respective tap of the resistance to the ungrounded terminal of the battery. As each key is depressed, the printed circuit board is first moved slightly inwardly to connect printed circuitry on its undersurface



to metal tabs forming part of the metal housing. A pair of resistances are included in series with the tapped resistance, and one of this pair of resistances is controlled by a "sharp" key and the other by a "flat" key. When either the "sharp" key or the "flat" key is operated, the oscillator frequency is changed by a half-tone.

### 3,625,106 PARACHUTE DEPLOYMENT SAFETY APPARATUS

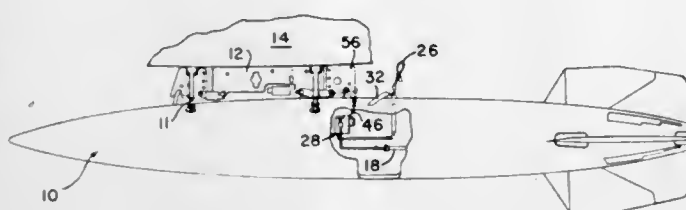
Frank Russo, 4008 Ridge Road, Annandale, Va. 22003,  
and Robert J. Scire, 1308 Michael Lane, Hixson, Tenn.  
37343

Filed Feb. 26, 1970, Ser. No. 14,322

Int. Cl. B64d 1/04

U.S. Cl. 89—1.5 D

4 Claims



In combination with an aircraft-launched armament device having a parachute, a safety valve apparatus for preventing inadvertent release and deployment of the parachute during ground handling, or carrier catapults and landings that may otherwise cause personnel injuries and damage to stores and aircraft.

### 3,625,107 FEED MECHANISM FOR AN OPEN BREECH HIGH RATE AUTOMATIC ROCKET LAUNCHER

Arthur A. Smith and Corbet M. Cornelison, Huntsville,  
Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed Nov. 3, 1969, Ser. No. 873,295

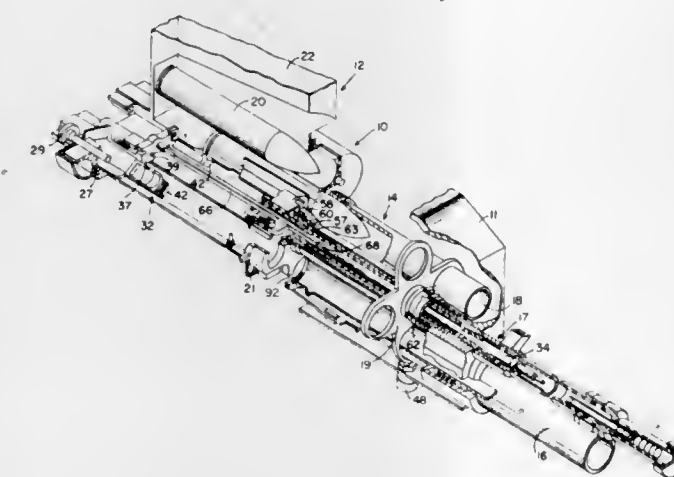
Int. Cl. F41f 3/04

U.S. Cl. 89—1.8

2 Claims

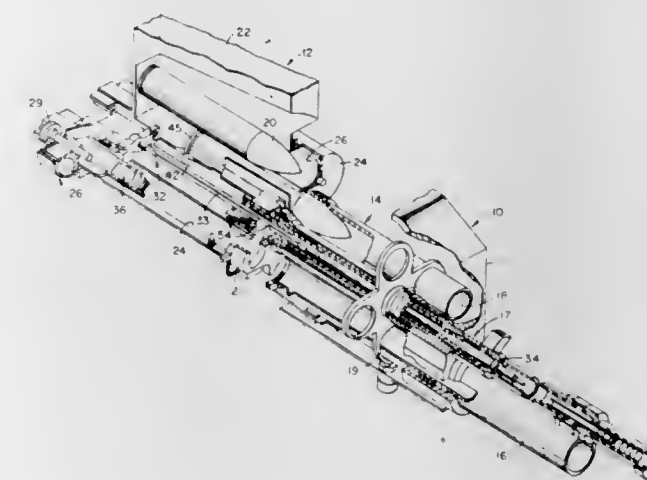
A feed mechanism for an automatic high rate, open breech, dual tube launcher. The launch tubes are fed by a

four-cylinder revolver which generates rotary reciprocating motion. Two rounds are loaded and two rounds are fired each half cycle. A pair of hydraulic double acting cylinders actuated by a pair of solenoid valves serve to actuate the launcher. One hydraulic cylinder rotates the revolver to align the chamber with the launching tubes while the second hydraulic cylinder performs the loading operation, reciprocates the revolver to seal and align the firing chambers with the launching tubes, and retracts to clear the seals, and latch the rounds being loaded into the revolver chamber. A pulsing switch operated by revolver motion serves to actuate the hydraulic cylinders. The feed mechanism includes a pair of loading chutes mounted on opposite sides of the second hydraulic cylinder. The rockets are carried in the chutes in stacked relation and a pair of pressure caps is attached to the tops of the loading chutes to maintain a predetermined amount of pressure on the rounds even during loading thereof.



The rockets fired from the launcher may be the type which includes a propulsion system having a boost phase and an after-boost sustain phase. The rocket boost phase occurs wholly within the launcher tube at all temperatures. The ignition system of the boost and sustain phases is incorporated in the system in a manner which insures that no debris (wires, metal parts, etc.) is ejected from the rear of the launcher tube on firing. Booster thrust termination and ignition of the sustainer motor occurs within the launcher tube and the tube serves as the combustion chamber for the motors.

A pair of hydraulic double acting cylinders actuated by a pair of solenoid valves serve to actuate the launcher. One hydraulic cylinder rotates the revolver to align the chamber with the launching tubes while the second hydraulic cylinder performs the loading operation, reciprocates the revolver to seal and align the firing chambers with the launching tubes, retracts to clear the seals, and latch the rounds being loaded into the revolver chamber. A pulsing switch operated by revolver motion serves to actuate the hydraulic cylinders. Details of the complete launcher system is more clearly set forth in the patent application filed of even date herewith by Corbet M. Cornelison and entitled "Open Breech High Rate Automatic Rocket Launcher."



The rockets fired from the launcher may be the type which includes a propulsion system having a boost phase and an after-boost sustain phase. The rocket boost phase occurs wholly within the launcher tube at all temperatures. The ignition system of the boost and sustain phases is incorporated in the system in a manner which insures that no debris (wires, metal parts, etc.), is ejected from the rear of the launcher tube on firing. Booster thrust termination and ignition of the sustainer motor occurs within the launcher tube and the tube serves as the combustion chamber for the motors.

### 3,625,109 DETENT AND FIRING MECHANISM FOR AN OPEN BREECH HIGH RATE AUTOMATIC ROCKET LAUNCHER

Corbet M. Cornelison, Huntsville, Ala., assignor to the  
United States of America as represented by the Secretary of the Army

Filed Nov. 3, 1969, Ser. No. 873,419

Int. Cl. F41f 3/04

U.S. Cl. 89—1.807

2 Claims

An open breech, high rate automatic rocket launching system wherein a pair of rockets are fired from a pair of revolver chambers aligned with a pair of launch tubes while, simultaneously, a second pair of rockets are loaded in a second pair of revolver chambers. More particularly, the invention relates to a detent and firing contact mechanism to provide a regulated restraining force to the rocket during the various phases of launcher operation and to provide the firing contact for firing the rockets.

The launcher is an automatic high rate, open breech, dual tube launcher, fed by a four cylinder revolver which generates rotary reciprocating motion. The revolver is provided with the mechanism of the present invention for retention therein of the rockets during the reciprocating motion and to effect firing of the rockets at a predetermined time. Two rounds are loaded in the revolver and

### 3,625,108 OPEN BREECH FOUR CYLINDER REVOLVER FOR A TWIN BARREL AUTOMATIC ROCKET LAUNCHER

Arthur A. Smith, Corbet M. Cornelison, and Charles Hill, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed Nov. 3, 1969, Ser. No. 873,294

Int. Cl. F41f 3/04

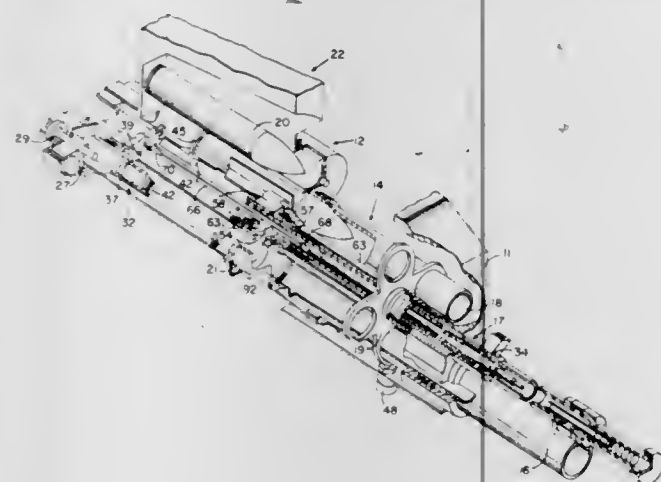
U.S. Cl. 89—1.804

6 Claims

An automatic high rate, open breech, dual-tube launcher, fed by a four cylinder revolver which generates rotary reciprocating motion. Two rounds are loaded and two rounds are fired each half cycle. The four cylinder revolver is open breech for firing rockets and is provided with a sinusoidal cam track having a piston activated cam therein to provide rotary motion through a 90° arc to permit the loading of two rounds in the lateral cylinders while the two rockets in the vertical cylinders are being fired. The revolver is also disposed for reciprocating motion and also houses the lock and firing detents for holding the rounds in position while the firing current is ap-



two are fired each half cycle. A pair of hydraulic double acting cylinders actuated by a pair of solenoid valves serve to actuate the launcher. One hydraulic cylinder rotates the revolver to align the chamber with the launching tubes while the second hydraulic cylinder performs the loading operation, reciprocates the revolver to seal and align the firing chamber with the launching tubes, and retracts to clear the seals, and latch the rounds being loaded into the revolver chamber. A pulsing switch operated by revolver motion serves to actuate the hydraulic cylinders.



The rocket fired from the launcher may be the type which includes a propulsion system having a boost phase and an after-boost sustain phase. The rocket boost phase occurs wholly within the launcher tube at all temperatures. The ignition system of the boost and sustain phases is incorporated in the system in a manner which insures that no debris (wires, metal-part, etc.) is ejected from the rear of the launcher tube on firing. Booster thrust termination and ignition of the sustainer motor occurs within the launcher tube and the tube serves as the combustion chamber for the motors.

3,625,110

# FIRING CIRCUIT AND SAFETY INTERLOCK FOR AN AUTOMATIC ROCKET LAUNCHER

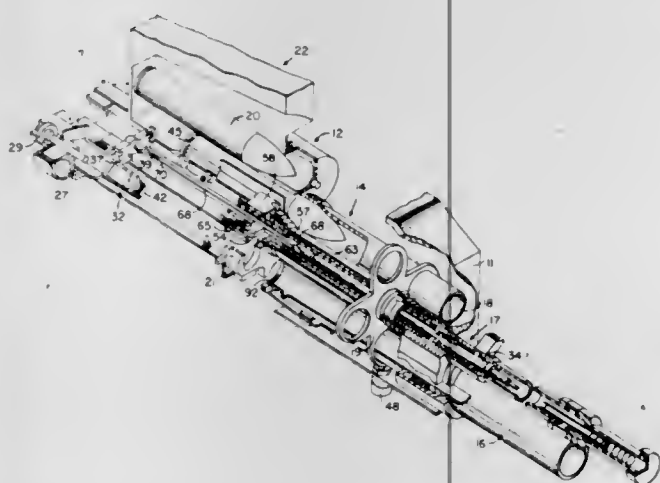
Corbet M. Cornelison and Arthur A. Smith, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed Nov. 3, 1969, Ser. No. 873,425

Int. Cl. F41f 3/04

U.S. Cl. 89—1.807

4 Claims



An open breech, high rate automatic rocket launching system wherein a pair of rockets are fired from a pair of revolver chambers aligned with a pair of launch tubes

while, simultaneously, a second pair of rockets are loaded in a second pair of revolver chambers. More particularly, the invention relates to a firing circuit and safety interlock for such a rocket launcher which provides sequenced duration control electrical firing pulses to rockets, while maintaining electrical isolation of the rockets except in the selected firing position and time period.

The launcher is an automatic high rate, open breech, dual tube launcher, fed by a four cylinder revolver which generates rotary reciprocating motion. The revolver is provided with the mechanism of the present invention for retention therein of the rockets during the reciprocating motion and to effect firing of the rockets at a predetermined time. Two rounds are loaded in the revolver and two are fired each half cycle. A pair of hydraulic double acting cylinders actuated by a pair of solenoid valves serve to actuate the launcher. One hydraulic cylinder rotates the revolver to align the chamber with the launching tubes while the second hydraulic cylinder performs the loading operation, reciprocates the revolver to seal and align the firing chambers with the launching tubes, and retracts to clear the seals, and latch the rounds being loaded into the revolver chamber. A pulsing switch operated by revolver motion serves to actuate the hydraulic cylinders.

The rockets fired from the launcher may be the type which includes a propulsion system having a boost phase and an after-boost sustain phase. The rocket boost phase occurs wholly within the launcher tube at all temperatures. The ignition system of the boost and sustain phases is incorporated in the system in a manner which insures that no debris (wires, metal parts, etc.) is ejected from the rear of the launcher tube of firing. Booster thrust termination and ignition of the sustainer motor occurs within the launcher tube and the tube serves as the combustion chamber for the motors.

3,625,111

# KEY DUPLICATING MACHINE

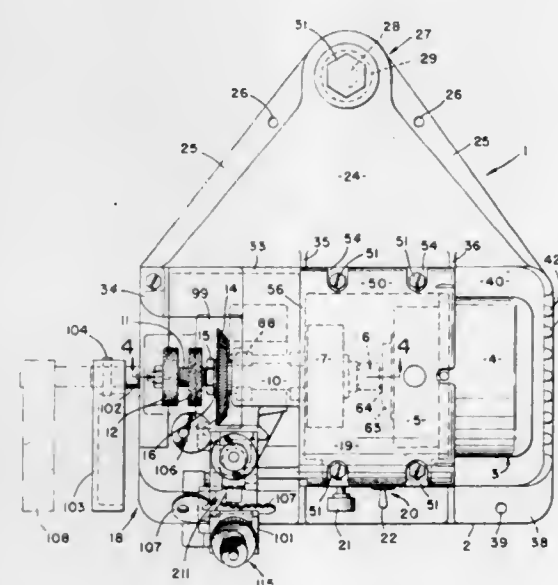
Louis D. Carlo, Cleveland, Harold L. Baker, Warrensville Heights, and Philip C. Hungerford, Jr., Cleveland Heights, Ohio, assignors to Cole National Corporation

Filed Oct. 6, 1969, Ser. No. 863,782

Int. Cl. B23c 1/16

U.S. Cl. 90—13.05

11 Claims



An automatic key duplicating machine which causes a key blank in a fixed position relative to a key master to

traverse a rotating cutting member and one or more deburring brushes to duplicate the configuration of the key master on the key blank. Both the master and the blank are fixed relative to one another on a member forming part of carriage means which are capable of linear translatable motion with respect to the apparatus support means. The cutting member and the brushes, Means, including a cam and drive assembly, are disclosed for translating the rotational movement of a gear drive mechanism to cause the linear motion of a carriage member. The cam assembly includes a barrel cam having a continuous groove and also includes a cam follower fixed in the groove to impart the linear motion to the carriage when automatic operation is desired. The groove in the cam has a spiral portion to guide the cam follower during automatic operation of the machine and an axial portion which permits manual operation of the machine and free return of the carriage after automatic operation. Biasing means are provided to maintain the force of the keys and the carriage means against the stationary guide blade engaging the serrations on the key master and the rotating cutting member which engages the key blank. Control means are provided to select either single-cycle automatic or manual operation of the machine. The cutter assembly includes one or more counter-rotating deburring brushes mounted on an axis concentric with the axis of the cutter wheel and driven by a pinion gear from the drive gear on the cutter motor shaft so that the direction of rotation of the brush is opposite to that of the cutter wheel. The means for securing the key blank and the key master on the carriage include a novel locking member and permit easy positioning of those elements as well as strongly securing the elements against inadvertent displacement during the operation.

3,625,112

# HYDRAULIC BRAKE BOOSTER BLIND ASSEMBLY

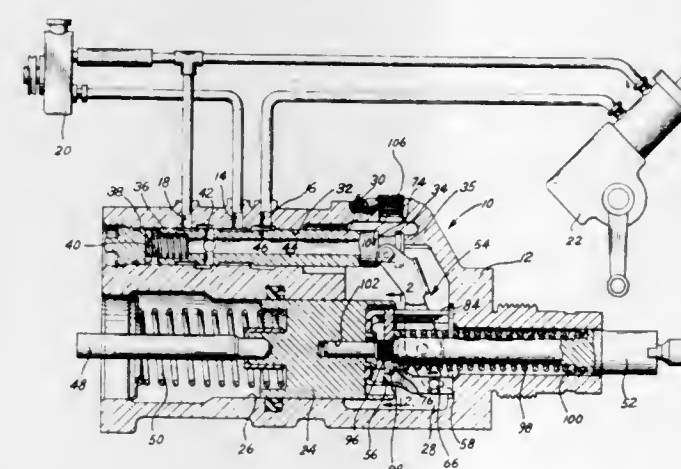
Arthur K. Brown, South Bend, Ind., assignor to The Bendix Corporation

Filed Feb. 25, 1970, Ser. No. 14,133

Int. Cl. F15b 13/10

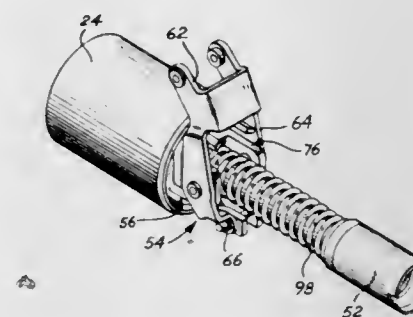
U.S. Cl. 91—391

6 Claims



A hydraulic boost device is disclosed which includes a housing defining a stepped bore having larger and smaller diameter sections. Valve means are provided in the housing to control communication of the bore with a source of pressurized fluid. A pair of valve-operating levers are pivotally mounted on the piston and interconnect the lever with the valve means and with a plunger operated by

the vehicle operator. The plunger extends through an aperture in a plate that is pivotally mounted on the levers. A resilient member urges the plate into engagement with



an abutment on the plunger. This construction facilitates assembly of the device, since the levers may be mounted on the piston before the latter is inserted into the housing.

3,625,113

# HYDRAULIC BRAKE BOOSTER

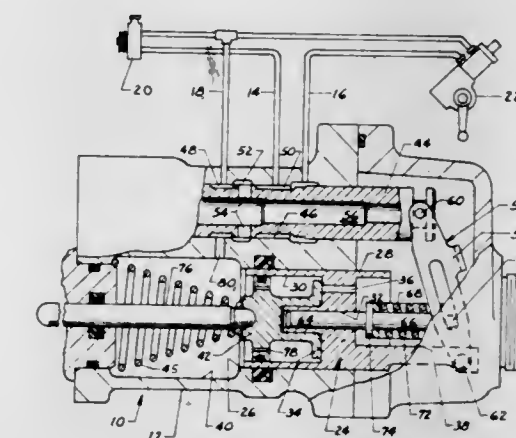
Richard W. Euler, South Bend, Ind., assignor to The Bendix Corporation

Filed Aug. 24, 1970, Ser. No. 66,296

Int. Cl. F15b 13/10

U.S. Cl. 91—391

9 Claims



A hydraulic boost device is disclosed which includes a housing defining a bore therewithin, and a piston slidable in the bore. A valve is provided within the housing that communicates pressurized fluid into the bore for shifting the piston to assist the vehicle operator when the brakes of the vehicle are applied. The piston includes a pair of relatively movable portions. One of the portions is provided with fluid passages extending therethrough that communicate fluid through the piston from one end of the bore to the other end of the bore. The other portion of the piston is yieldably biased towards a position closing the passages so that when fluid pressure is admitted to the bore the piston shifts as a unit. Operator-actuated means are provided to operate the valve. However, if the valve malfunctions, the operator-actuated means engages the piston so that the brakes of the vehicle may be applied manually. When this occurs, one portion of the piston is moved relative to the other portion of the piston to open the passages and thereby permit fluid communication through the piston. This feature prevents an abrupt application of the brakes should the valve resume functioning after a manual brake application has been initiated.



3,625,114

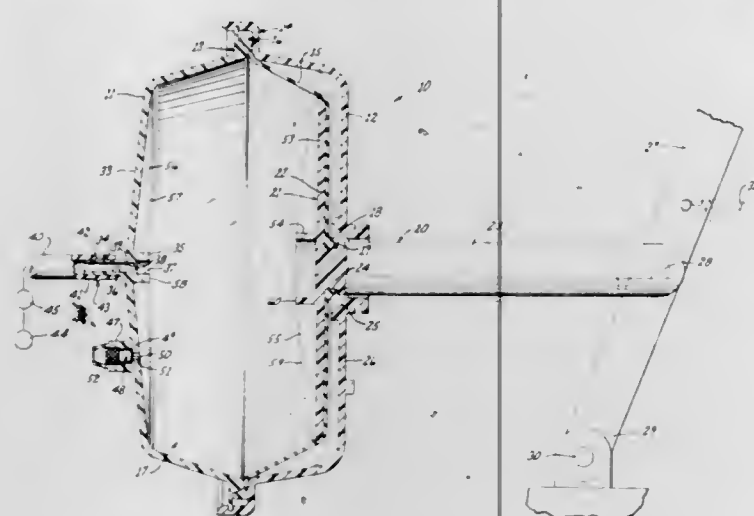
**FLUIDICALLY OPERATED ACTUATOR MEANS OR THE LIKE**

Robert L. Golden, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Original application Dec. 5, 1966, Ser. No. 599,064, now Patent No. 3,483,800. Divided and this application Sept. 23, 1969, Ser. No. 871,157

Int. Cl. F15b 15/24; F01b 19/02; F16j 3/00  
U.S. Cl. 91-394

12 Claims



This disclosure relates to a pneumatically operated actuator having two cup-shaped housing members snap fitted together at the open ends thereof and sealingly holding an outer periphery of a flexible diaphragm between flange means of the housing members, each flange means having an outwardly directed rib offset relative to the rib of the other flange means and respectively compressing into the outer periphery of the flexible diaphragm. The diaphragm cooperates with one of the wall means to define a chamber therebetween, the one housing member having a passage means interconnecting the exterior of the housing means to the chamber with the passage means including a projection extending into the chamber from the wall means. A plate is carried by the diaphragm and is movable therewith, the plate having an inwardly directed projection means for abutting against the projection means of the one housing member and having means cooperating therewith to maintain fluid communication between the passage means and the chamber.

3,625,115

**SYNCHRONIZED CONTROL APPARATUS FOR HYDRAULIC HEAVY WEIGHT LIFT**

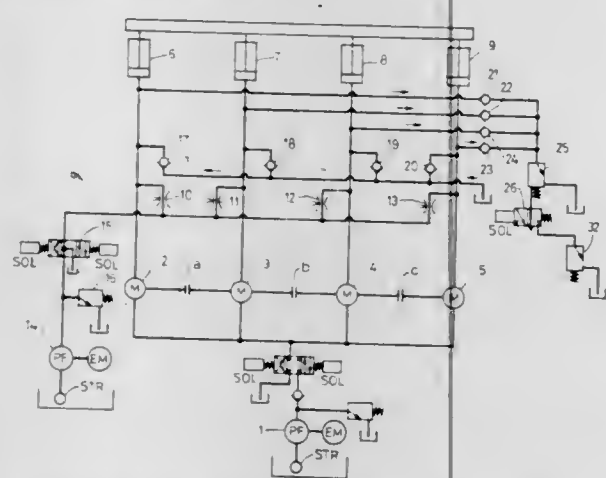
Shoichi Tani, 12-1, Ozawamicho, Yoshikazu Horikawa, 8-1, 1-chome, Ozawamicho, both of Tobata-ku, Kitakyushu-shi, Fukuoka-pref.; Ichiro Goshima, 2-chome, Tenjin-sho, Yawata-ku, Kitakyushu-shi, Fukuoka-pref.; Kiyomitsu Araki, 2-17, Minamikamato, and Yoshitake Nakamura, 3-32-16, Omoriminami, both of Ota-ku, Tokyo, all of Japan

Continuation-in-part of application Ser. No. 808,809, Mar. 20, 1969, now abandoned. This application Dec. 5, 1969, Ser. No. 882,492

Int. Cl. F15b 11/22

U.S. Cl. 91-411 B

2 Claims



A hydraulic heavy duty lift of the multicylinder type may be operated in the most stable and efficient manner in ac-

cordance with the synchronized control apparatus of this invention in which the control apparatus comprises interconnected hydraulic motors, independent flow rate compensating circuits for the hydraulic motors, release circuits to release the excess liquid in preceding cylinders at the highest terminal position, a common adjusting circuit for even loading at the starting position, liquid feeding circuits to avoid the evacuation caused by the preceding cylinder at the lowest terminal position.

3,625,116

**PRESSURE-SENSING DIAPHRAGM**

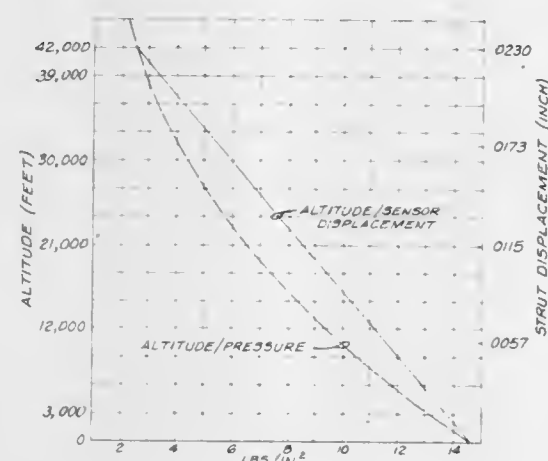
Stephen A. Hluchan, Riverside, Calif., assignor to Bourns, Inc.

Filed Sept. 15, 1969, Ser. No. 858,055

Int. Cl. F01b 19/00; G011 7/20, 7/08

U.S. Cl. 92-104

6 Claims



A diaphragm-type sensor comprising an integral one-piece diaphragm the central portion of which is a flat flexible disc and the outer portion of which consists of an annular peripheral rim portion and inwardly thereof an annular corrugated portion encircling the flat disc portion and consisting of a plurality of annular conical sections, the arrangement being such that displacements of the center of the diaphragm are linearly related to changes of a physical quantity which is nonlinearly related to variation of the summation of the forces acting on the face of the sensor diaphragm.

3,625,117

**MECHANICAL RELEASE MEANS FOR SPRING APPLIED, FLUID PRESSURE RELEASED ACTUATORS**

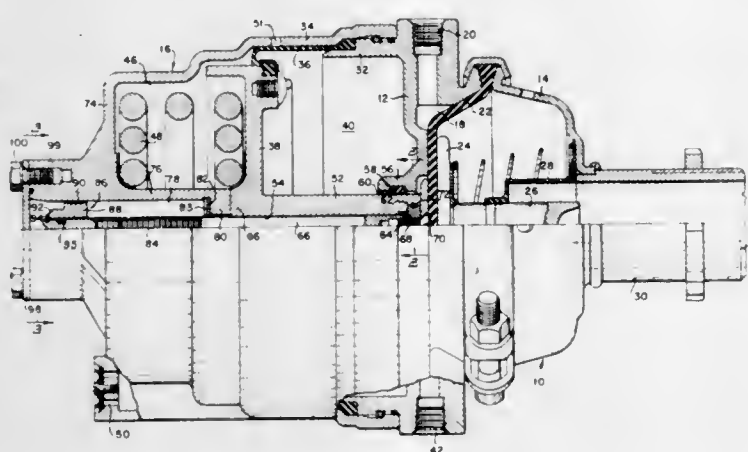
William N. Tazelaar, Elyria, Ohio, assignor to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Filed Nov. 18, 1969, Ser. No. 877,741

Int. Cl. F01b 19/02, 31/00

U.S. Cl. 92-130

2 Claims



A threaded rod carried by a spring applied actuator and extending rearwardly into a fixed cylindrical socket of greater diameter than the shaft and having a shoulder at the forward end of the socket, a nut carried on the threaded shaft within the socket and having a cylindrical bearing surface engaging the socket wall and tool receiving means engageable through the open rear end of the socket to rotate

the nut against the shoulder to draw the shaft and actuator against the opposing force of the spring.

3,625,118

**MANUFACTURE OF FILTERS FOR CIGARETTES OR LIKE SMOKING ARTICLES**

Norman Walter Jackson, London, England, assignor to The Molins Machine Company Limited, London, England

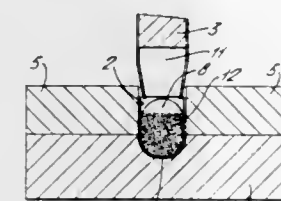
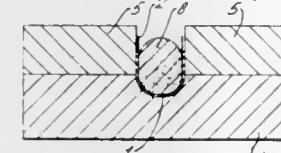
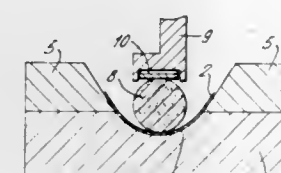
Continuation-in-part of application Ser. No. 753,532, Aug. 19, 1968, now abandoned. This application Feb. 7, 1969, Ser. No. 797,435

Claims priority, application Great Britain, Feb. 16, 1968, 7767/68

Int. Cl. B65b 1/06, 1/24; B31f 7/00

U.S. Cl. 93-1 C

15 Claims



Making cigarette filters consisting of two filter plugs wrapped in a tube to define a compartment in which there is particulate filtering material, by the method of deforming the plugs and surrounding wrapper to increase the useful volume between the plugs into which the particulate material can be deposited, and then reforming to the desired shape, thus increasing the volume of particulate material in the finished filter and improving its efficiency.

3,625,119

**SURFACE APPLICATIONS SUCH AS BRIDGE DECK COVERING, PAVEMENT PATCHING, ROOFING APPLICATIONS AND OTHER COVERINGS**

Duane W. Gagle; Homer L. Draper, and Dale F. Levy, all of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed July 28, 1969, Ser. No. 845,493

Int. Cl. E01c 7/18

U.S. Cl. 94-9

4 Claims

A nonheat-sealed polypropylene fabric, e.g., nonheat-sealed nonwoven polypropylene mat or fabric, is used within an asphalt aggregate surface covering. A cutback asphalt or asphalt emulsion is spread, a mat of nonheat-sealed polypropylene fabric is laid into the asphalt, further adhesive can be applied together with aggregate and finally, the mass is smoothed by rolling to make the final surface application covering. Blisters which are formed when using heat-sealed fabric are avoided.

3,625,120

**ROAD REPAIR TRUCK**

Joseph Nagy, Rte. 3, P.O. Box 412, Newfoundland, N.J.

Filed June 30, 1970, Ser. No. 51,079

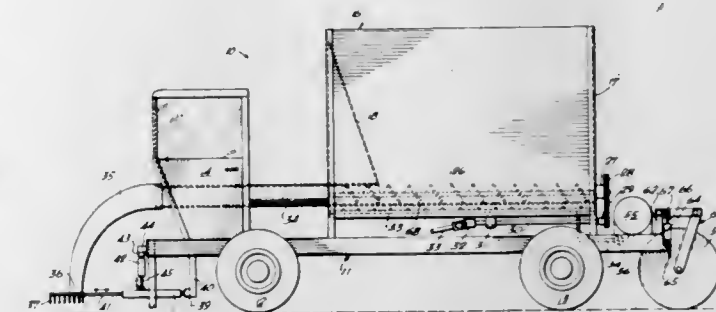
Int. Cl. E01c 23/00

U.S. Cl. 94-39

7 Claims

A vehicular truck equipped for road repair work is described, including a repair materials hopper, a front discharge chute and a drive worm conveyor mechanism for

transporting road repair material from the hopper through the chute for deposit in a pavement "pothole" or the like to be repaired. The discharge end of the material chute carries a rake movable up and down, from side-to-side and from front-to-back, through the use of hydraulic piston control mechanism controllable by a single operator in the



truck cab, for spreading the deposited material evenly over the pavement defect being repaired. A hydraulically controlled roller, also controlled by the single operator in the cab, is mounted at the rear end of the truck for use in rolling the deposited and raked repair material to complete the road repair operation.

3,625,121

**APPARATUS FOR PRODUCING SUPPORTING LAYERS OR ROAD SURFACES**

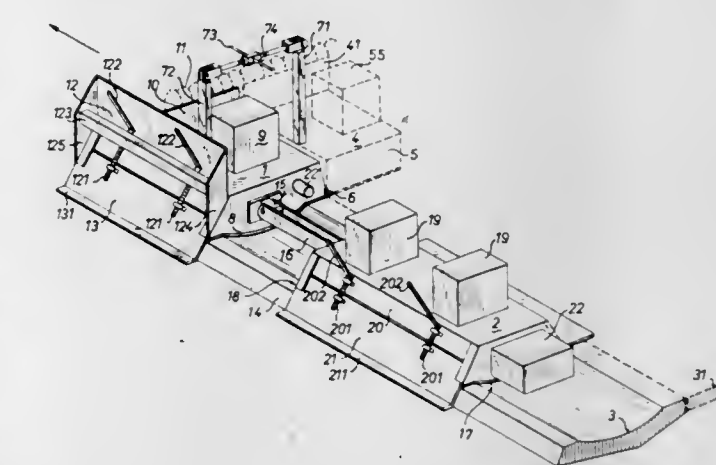
Mathias Blumer, Hunibach, and Walter Gasser, Gwatt, both of Switzerland, assignors to Frutiger Sohne AG., Thun, Switzerland

Filed Oct. 10, 1969, Ser. No. 865,280

Int. Cl. E01c 19/30

U.S. Cl. 94-48

1 Claim



There is disclosed a method for producing bituminous layers having at least one marginal rim, curbing, shoulder, gutter or other profiled edge configuration, termed abutment, in which bituminous mix is laid out over the area of the road and the area of the abutment with the abutment being shaped to the desired profile and simultaneously precompact. Another aspect of the method includes subjecting the shaped and precompact abutment to a second precompact step. The method includes applying additional heat to the mix of the abutment during either or both precompact steps. There is also disclosed apparatus for carrying out the method including a means for laying out and precompact an area of the bituminous layer, a laterally connected and relatively movable guide plate for shaping the desired profile, a profiled drag plate connected to the guide plate in trailing relation therewith and vibrating and heating means operably associated with either one or both of the guide and drag plate.

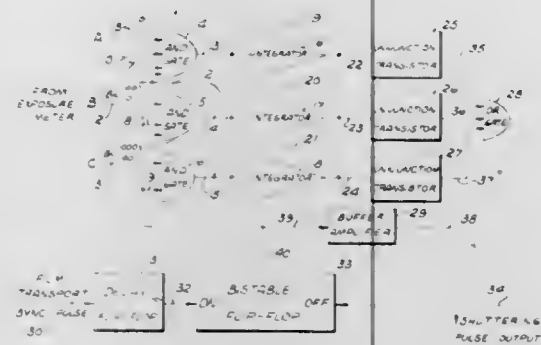


3,625,122

**ELECTRONIC PULSE GENERATING AND CONTROL SYSTEM FOR SHUTTERING AN IMAGE INTENSIFIER**  
Sergio F. Valdes, Saugus, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.  
Filed June 15, 1970, Ser. No. 46,262  
Int. Cl. G03

U.S. Cl. 95—1

10 Claims



An automatic camera shuttering system particularly adapted for aerial photography in that it is continuously operative over a wide range of ambient light levels on a frame-to-frame basis. The scene to be photographed is imaged on a photo-cathode surface, passed through an electron image intensifier and thereafter imaged in intensified form on an output phosphorescent screen adjacent to the film.

During each frame, a shuttering pulse of a duration which is a function of the output of a light measuring transducer, is generated and applied to the image intensifier to control the intensified image "on time."

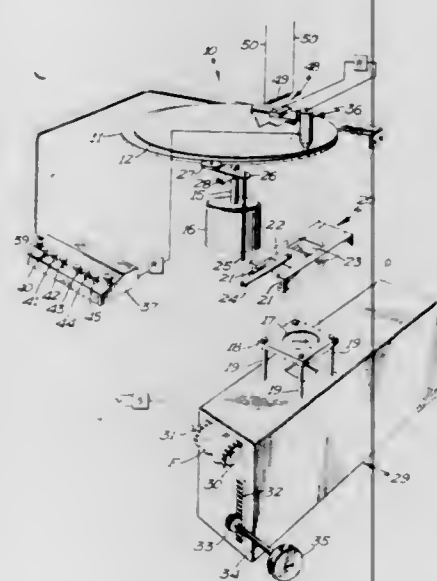
The light transducer output is broken into a plurality of decade ranges and the pulse generating circuit is thereby adapted to handle wide variations of light and generate corresponding inversely related shuttering pulse durations.

3,625,123

**PHOTO-SETTING DEVICE**

Harvey D. Smalley, Perham, Minn.  
Filed May 26, 1969, Ser. No. 827,803  
Int. Cl. B41b 13/00, 15/00, 17/00  
U.S. Cl. 95—4.5

2 Claims



A photo-setting device includes a revolvable disc having symbols, such as letters, numbers, and the like, affixed thereto, and having opaque coated indicia thereon in a transparent background along the periphery corresponding to and adjacent each symbol. A photographic lens is positioned adjacent one surface of the disc and an instantaneous flashing strobe unit is positioned adjacent the other surface of the disc to permit a film to receive a photographic image of a symbol from the lens. A photoelectric cell sensor mechanism is provided and cooperates with the keyboard for rapidly selectively causing the strobe unit to be energized for selectively photographing symbols.

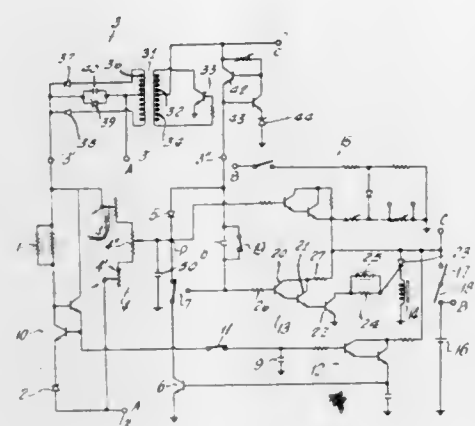
3,625,124

**SHUTTER TIMING MECHANISM USING INVERSE FEEDBACK CIRCUIT**

Seinan Miyakawa, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan  
Filed June 26, 1969, Ser. No. 836,928  
Claims priority, application Japan, July 3, 1968, 43/45879  
Int. Cl. E01c 7/10

U.S. Cl. 95—10 C

6 Claims



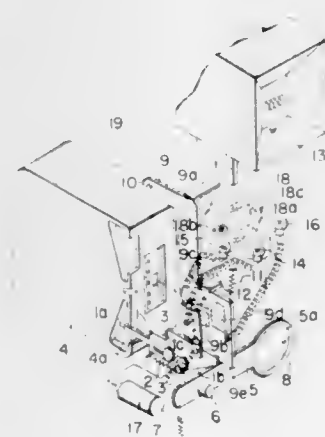
A light responsive shutter control comprises a control circuit including a photoconductor coupled to a log compression network, a variable resistance network and a transistor network providing an output responsive to the resistances of the photoconductor and resistance network. The control circuit output charges a memory capacitor connected across the input of a high input impedance amplifier whose output controls a current control transistor whose output electrode is connected to a voltage source through a log expansion network. The output of the current control transistor is connected in inverse feedback to the control circuit and to indicating means and alternatively to a shutter release control transistor switch.

3,625,125

**CAMERA HAVING AN AUTOMATIC INDICATOR OF LIGHTING SOURCE**

Yoizo Iida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan  
Filed Aug. 4, 1969, Ser. No. 847,113  
Claims priority, application Japan, Aug. 8, 1969, 43/55863  
Int. Cl. G03b 11/00, 17/18  
U.S. Cl. 95—11 R

6 Claims



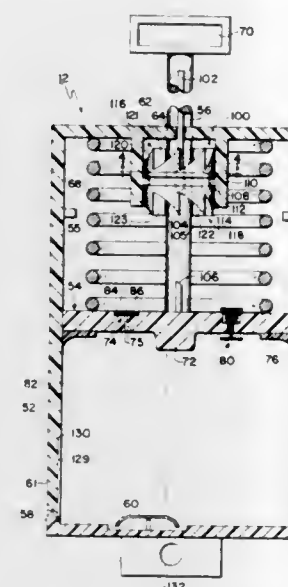
The camera of this invention provides a member for sensing the film type loaded by receiving a signal from the film cartridge, and an operational lever receiving a signal directly or indirectly from an artificial lighting source. With this provision, a spectral sensitivity conversion filter is pivoted in or out of the phototaking light path. According to this invention, with the aid of signals from the sensing member and operational lever, a mark expressing daylight light source, artificial light source or inadequacy for phototaking is selectively indicated to a photographer.

3,625,126

**PHOTOGRAPHIC PROCESSING APPARATUS INCLUDING AUTOMATIC TIMER**  
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Filed July 31, 1969, Ser. No. 846,394  
Int. Cl. G03b 17/52

U.S. Cl. 95—13

17 Claims



An indicator interposed between a hand strap and a self-developing camera is responsive to the exertion and subsequent release of forces producing withdrawal of photographic materials to automatically provide a signal when time required for development of the photographic materials has elapsed.

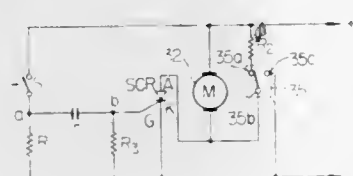
3,625,127

**AUTOMATIC RELEASE MECHANISM OF AN ELECTRONIC SHUTTER**

Hiroshi Tsuda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan  
Filed Mar. 16, 1970, Ser. No. 19,790  
Int. Cl. G03b 17/40

U.S. Cl. 95—53 E

2 Claims



Automatic release mechanism for a camera mounted on a microscope for photographing an object while the same is being observed. A shutter release member is actuated by a cam rotated by a motor so as to open the shutter blades during one revolution of the cam. A manually operable switch controlling the motor is located so near the focusing knob of the microscope that the switch may be simultaneously operated with the knob. A resistor is connected in series with the switch so that the voltage across the terminals of the resistor when the switch is closed is applied to a pulse-producing circuit, the output pulse of which is applied to the gate electrode of a silicon-controlled rectifying element connected in series to the motor thereby starting the motor. When the movable contact of a SPDT switch is shifted by the rotation of the aforementioned cam, the rectifying element is short-circuited. After the cam has made a complete revolution, the SPDT switch connects a resistor in parallel to the motor so that the motor is stopped in the initial position of the cam, whereby the mechanism is ready for the next operation of the shutter.

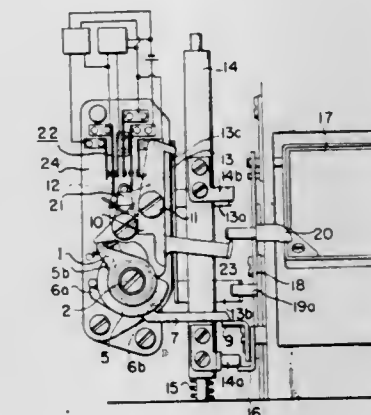
3,625,128

**CAMERA SELF-TIMER**

Katsuhiko Nomura, and Tadazumi Sakazaki, both of Tokyo-to, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, both of Tokyo-to, Japan  
Filed Feb. 18, 1969, Ser. No. 800,190  
Claims priority, application Japan, Feb. 22, 1968, 43/10789  
Int. Cl. G03b 9/64

U.S. Cl. 95—53.3

9 Claims



A camera self-timer includes a spring-wound timing motor, a motor brake and a spring-raised shutter release rod. The depressing of the rod releases the brake and activates means for locking the rod in a depressed condition when the motor is charged. The closing of the camera shutter releases the rod to its raised condition and brakes the motor. The discharge of the timing motor releases the shutter. When the timing motor is in a discharged condition the shutter may be released merely by depression of the shutter release rod.

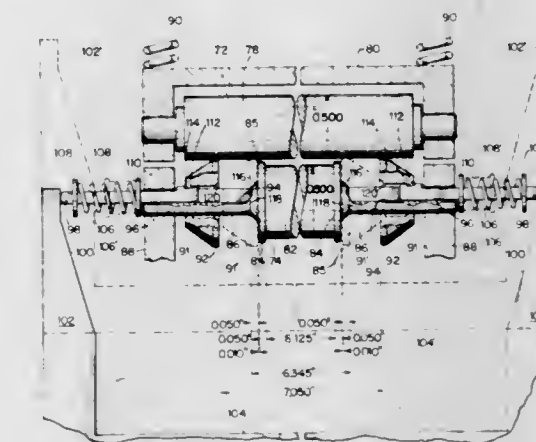
3,625,129

**PHOTOGRAPHIC FLUID-SPREADING APPARATUS**

David Van Allen, Malden, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Filed June 30, 1970, Ser. No. 51,164  
Int. Cl. G03d 3/00

U.S. Cl. 95—89 R

20 Claims



Photographic apparatus for alternately distributing processing fluid in a layer having a first predetermined thickness and in a layer having a second predetermined thickness less than such first predetermined thickness between sheet materials of a predetermined width. A first roller has a facing surface extending a distance greater than the width of such materials. A second roller is positioned in juxtaposed relationship thereto and has a shorter facing surface and collars at each end thereof spaced a distance apart less than the width of such sheet materials and extending from that facing surface and a radial distance substantially equal to such second predetermined fluid thickness. Movable annular collars are mounted on respective shafts of the second roller for simultaneous displacement between first positions wherein sheet-contacting surfaces thereof are spaced apart a distance greater than the width of such sheet materials and second positions wherein their sheet-contacting surfaces are in contact with the sheet materials.



surfaces are spaced apart a distance less than such width. These sheet-contacting surfaces on the movable rollers are disposed a radial distance from the facing surface of the second roller substantially equal to such first predetermined thickness of fluid. The two rollers are continually yieldably urged towards each other.

3,625,130

# STEPPED PHOTOGRAPHIC PROCESSING FLUID-SPREADING APPARATUS

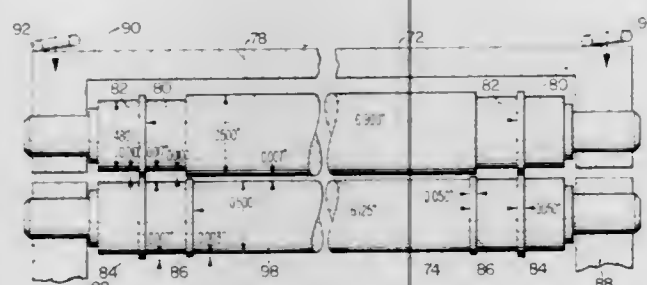
David Van Allen, Malden, Mass., and Frank W. Knight, Salem, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 30, 1970, Ser. No. 51,170

Int. Cl. G03d 3/00

U.S. Cl. 95—89 R

21 Claims



Apparatus for alternately distributing processing fluid in a layer having a first predetermined thickness between a first pair of sheet materials and in a layer having a second predetermined thickness greater than such first predetermined thickness between a second pair of sheet materials. To facilitate these operations, the width of the second pair of sheet materials is greater than the width of the first pair of sheet materials. A first roller includes a facing surface slightly shorter in length than such first predetermined width disposed between two reduced end portions thereof. A second roller is disposed in parallel alignment with the first roller, and an arrangement is included for yieldably urging the rollers toward one another. The rollers include annular collars spaced a distance apart greater than such first predetermined width but less than such second predetermined width and which serve to establish a minimum spacing between the two facing surfaces of the juxtaposed rollers substantially equivalent to the second predetermined thickness of processing fluid. Also provided on the second roller are a pair of additional annular collars respectively disposed in juxtaposition with the opposite ends of the first roller's facing surface and extending from the second roller a distance substantially equivalent to the first predetermined thickness of processing fluid.

3,625,131

# APPARATUS FOR AUTOMATICALLY DEVELOPING PRINTING PLATES

Ewald Puls, Altenrather Str. 30, D 521 Troisdorf, Germany

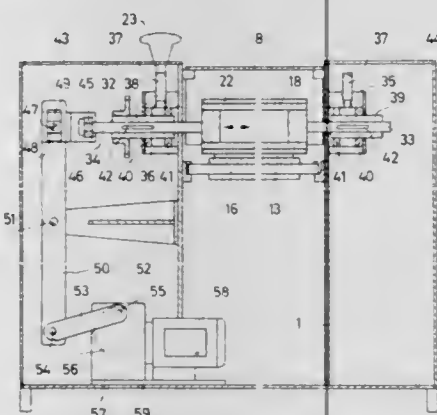
Filed Nov. 19, 1968, Ser. No. 776,995

Claims priority, application Germany, May 28, 1968, P 17 72 512.1

Int. Cl. G03d 5/06

U.S. Cl. 95—89 R

14 Claims



An apparatus for the automatic developing of printing plates wherein at least two distributing rollers are positioned

above a conveyor belt adapted to carry the printing plates to be processed, with each roller being mounted for rotation in a direction opposite to the direction of travel of the conveyor belt and being axially slidable transversely of the belt thereby to apply the developer uniformly to the surface of the plates in a manner similar to prior manual methods.

3,625,132

# VEHICLE COMPARTMENT VENTILATOR

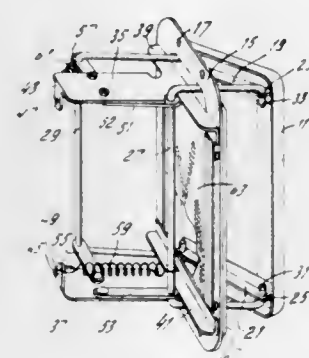
Peter B. Smith, Monroe, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,958

Int. Cl. B60h 1/24

U.S. Cl. 98—2 A

7 Claims



A ventilator for providing ventilation to the interior compartments of vehicles which will pass air in either direction therethrough. A cover on one side of an aperture is connected to a pair of C-shaped rods which pass through the aperture. Each rod is connected to a pair of arms pivotally attached to a brace extending on the opposite side of the aperture from the cover. Spring means bias the rods so as to maintain the cover in either a closed or open condition.

3,625,133

# AIR-CURTAINING APPARATUS FOR FORMING AN INTERNAL-ISOLATED ZONE

Taro Hayashi, Osaka-shi, Osaka, Japan, assignor to Sanko Air Plant Ltd., Osaka-shi, Osaka, Japan

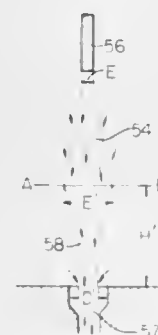
Filed Aug. 22, 1969, Ser. No. 852,334

Claims priority, application Japan, Jan. 13, 1969, 44/2842; Jan. 13, 1969, 44/2843; Feb. 4, 1969, 44/8307; Feb. 13, 1969, 44/10666

Int. Cl. F24f 9/00

U.S. Cl. 98—36

5 Claims



An apparatus for forming an air curtain encircling an internal zone completely isolated from surroundings. In preferred embodiment, a stratospheric air flow is simultaneously supplied into the isolated internal zone for removing harmful gaseous contaminant produced therein. Dimension of the air curtain forming air exhaust opening is selected in relation to the shuttering distance and that of the supply opening by application of critical mass flow ratio method theory.

3,625,134

# ROOF RIDGE VENTILATOR

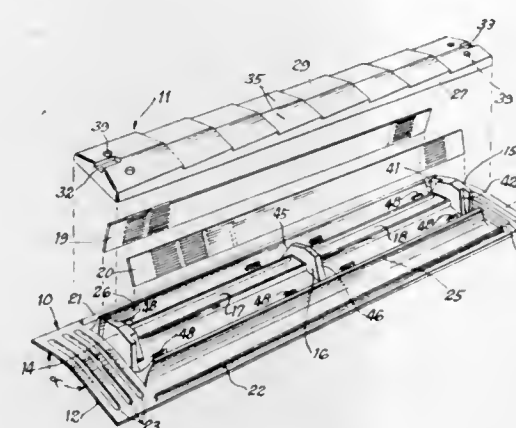
Lester L. Smith, Peoria, Ill., assignor to Home Comfort Products Co., Princeville, Ill.

Filed Jan. 2, 1970, Ser. No. 16

Int. Cl. F24P 7/02

U.S. Cl. 98—42

11 Claims



A roof ridge ventilator made of molded plastic parts except for louvered metal sheets closing the open sides of the ventilator, the design providing a low silhouette with a large air flow area through the louvered sheets by sloping the louvered sheets. Stiffness is built into the thin flashing forming part of the ventilator by molding beads into the flashing to inhibit buckling, particularly under extremes of temperature. The ventilator is formed from two molded parts to one of which the louvered sheets which, when fastened together, form a unit which may be installed in multiples to cover any desired length of roof ridge vent opening.

3,625,135

# AUTOMATICALLY CONTROLLED COOKING AREA VENTILATING SYSTEM

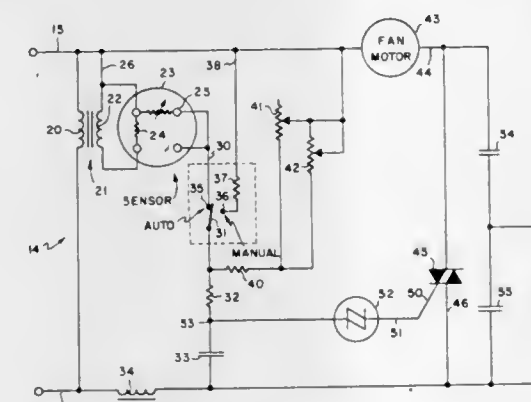
Elmer A. Carlson, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 22, 1970, Ser. No. 30,738

Int. Cl. F23j 11/00

U.S. Cl. 98—115

6 Claims



A cooking area ventilating system which operates automatically through the expedient of an aerosol particle sensor. The system operates automatically in response to aerosol particles or smoke, and has a varying speed for the ventilator fan depending on the concentration of the particles that are to be removed by the ventilating system.

3,625,136

# LOUVER ASSEMBLY

Oliver Dininno, Baden, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Dec. 10, 1969, Ser. No. 883,936

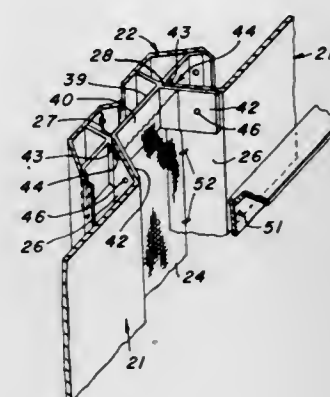
Int. Cl. F24f 13/08

U.S. Cl. 98—121

9 Claims

A louver assembly for a building wall or the like, including inner blades which are spaced apart to provide longitudinal

openings for ventilating the building, and outer blades which confront the longitudinal openings. A strip of wire mesh confronts each longitudinal opening and prevents ingress of extraneous material, such as debris and birds for example.



Bracket means connects each outer blade directly to adjacent ones of the inner blades. The bracket means fixes the spacing between adjacent inner blades and the spacing between the inner blades and the outer blades.

3,625,137

# TANK TRAILER

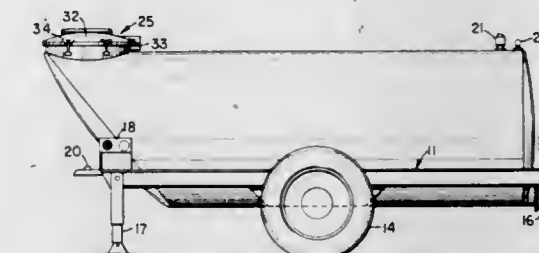
Wallace J. S. Johnson, Berkeley, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Oct. 13, 1969, Ser. No. 865,900

Int. Cl. A23l 3/00

U.S. Cl. 99—271

7 Claims



An enclosed tank trailer, balanced and tiltable about a central wheeled axle, and with a filling inlet at its top in vertical alignment with its towing hitch, which can be filled with crushed grapes as it is towed, then tilted one way for transportation to prevent seeds from settling in the outlet, tilted the other way for gravity discharge of the contents, and in which inert gas is used to prevent entry of oxidizing air into the tank at all times during filling, transportation and discharge and is used to discharge the contents from the tank.

3,625,138

# WASTE DISPOSAL

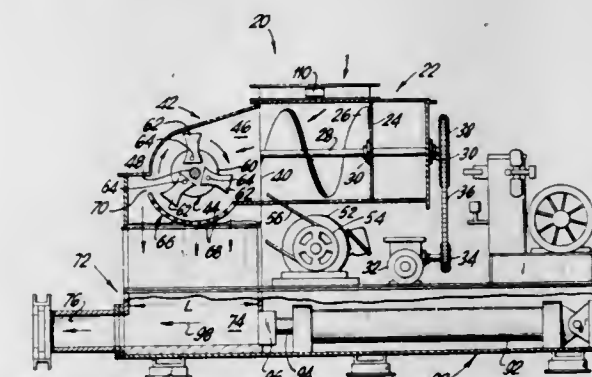
David Shinn, Oakhurst, and George McCullough, Oceanport, both of N.J., assignors to Electronic Assistance Corporation, Red Bank, N.J.

Filed June 16, 1969, Ser. No. 833,528

Int. Cl. B30b 15/08, 15/30

U.S. Cl. 100—45

5 Claims



A screw force feeds waste to a swing-hammer rotor shredder. Waste processed by the shredder sifts through a



grate into a compaction chamber. A first compaction ram compresses the waste by pressing down on it at an angle of about 30°, and a second compaction ram further compresses the waste by pressing horizontally on it. A gate opens and the compressed waste is extruded. Sensors and a control circuit coordinate the various functions and automatically start and stop the apparatus under certain conditions.

3,625,139

# REFUSE PACKING ASSEMBLY FOR BUILDINGS AND THE LIKE

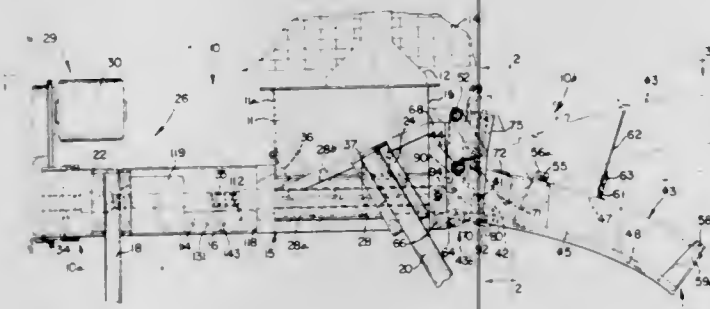
Cyril R. Gollnick, Oshkosh, Wis., assignor to Leach Company, Oshkosh, Wis.

Filed Sept. 29, 1969, Ser. No. 861,663

Int. Cl. B30b 1/18, 15/14, 15/32

U.S. Cl. 100—49

9 Claims



A hopper of a refuse packing assembly is positioned to receive refuse material from a refuse chute of a building. A ram is positioned in the hopper for movement transversely of the path traveled by refuse material as it falls into the hopper whereby movement of the ram into engagement with the refuse material will result in compaction of the refuse material between a front face of the ram and a yieldable panel member. An electrical control system automatically energizes the drive for the ram when a predetermined amount of refuse material has been received in the hopper.

3,625,140

# PORTABLE REFUSE PACKER

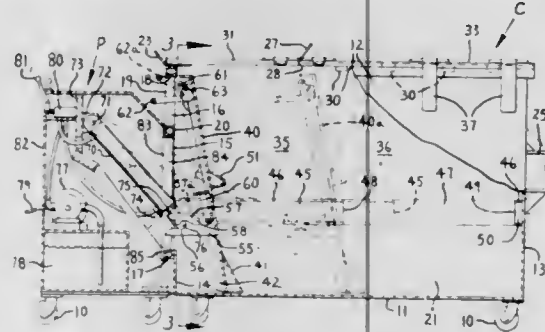
Richard G. Glanz, 3038 N.E. 139th Ave., Portland, Oreg.

Filed June 18, 1970, Ser. No. 47,300

Int. Cl. B30b 15/06

U.S. Cl. 100—100

20 Claims



A wheeled container having a pair of hinged lids has a packer plate mounted for sliding movement within the container. A wheeled power unit has a hydraulic cylinder with a piston rod arranged for detachable connection with the packer plate in the container. Refuse deposited in the container is crushed and compressed to a small volume by the packer plate and when the container is full the power unit is connected to an empty container. Then the filled container is wheeled to a loading area for garbage trucks and its contents dumped into a truck. Thus, the packer is brought to the refuse instead of following the conventional practice of transporting the refuse to the packer.

# 3,625,141 CONTINUOUS EXTRACTION PRESS

Oskar Braun, Bensheim, Bergstrasse, Germany, assignor to Josef Willmes KG, Bensheim Bergstr., Germany

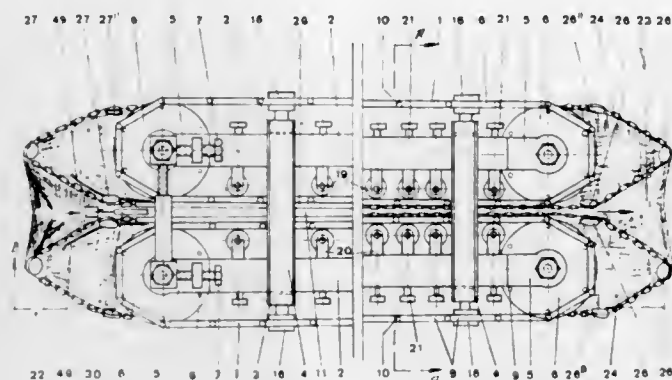
Filed Feb. 12, 1969, Ser. No. 798,758

Claims priority, application Germany, Feb. 16, 1968, P 16 27 981.5

Int. Cl. B30b 9/24

U.S. Cl. 100—119

14 Claims



Two conveyors form therebetween a pressure zone which tapers in the common direction of conveyor movement. At least one of the conveyor belts consists of hingedly connected plates which are backed by a row of rollers spaced more closely than the length of each conveyor plate. The material to be extracted is fed into the pressure zone in a continuous loop of a porous web folded into a U-channel while in the pressure zone.

3,625,142

# HIGH-SPEED PRINTING APPARATUS HAVING SLIDABLY MOUNTED CHARACTER-FORMING ELEMENTS FORMING A DOT MATRIX

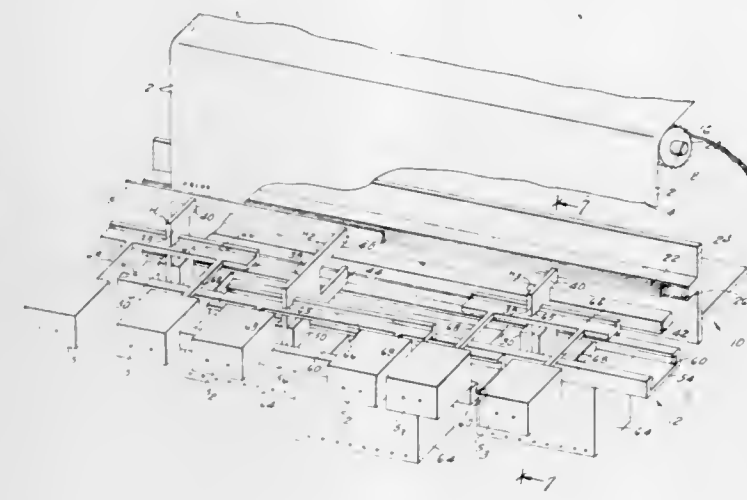
Aaron D. Bresler, Merrick, N.Y., assignor to Datascript Terminal Equipment Corp., Lindenhurst, N.Y.

Filed June 10, 1970, Ser. No. 45,008

Int. Cl. B41j 1/16

U.S. Cl. 101—93 C

47 Claims



A high-speed printer apparatus characterized by a font assembly having a plurality of slidably mounted character-forming elements forming a dot matrix. The dot projections are so arranged on said elements that any given character may be formed on said matrix at any given character position by small linear relative movements of such elements. Hammer means are mounted opposite the font assembly and are movable to said character positions and actuated to press the character image onto the paper by means of a ribbon. Logic means are provided to control the position of the character-forming elements and hammer means and the sequence of operation, all in response to data input signals.

3,625,143

# MARKING DEVICE

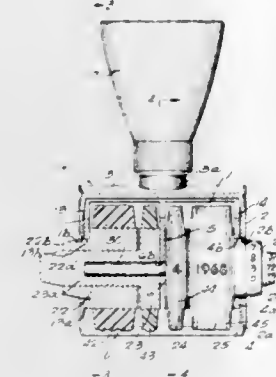
Raphael D. Nettesheim, New Berlin, and Thomas J. Mohs, Madison, both of Wis., assignors to The Schwaab Label Company, Inc., Milwaukee, Wis.

Continuation of application Ser. No. 764,540, Oct. 2, 1968, now abandoned. This application Nov. 18, 1970, Ser. No. 90,768

Int. Cl. B41j 1/26, 27/20

U.S. Cl. 101—106

2 Claims



A marking device, such as a hand stamp, dater, coder or other printing device, and having a marking band of self-storing fluid material for marking articles with ink or other fluids. The band is formed as a sleeve of microporous synthetic resin and this resin band is bonded to an inner flexible and woven reinforcing material. The composite sleeve so formed is insertable over a supporting cylinder which fully supports the entire sleeve of said relatively fragile resin. A holder is provided for such a sleeve of microporous resin material, and the resin material and its supporting cylinders are shiftable in the holder between (1) an inoperative, protected position within the holder and (2) an operative position where it can contact the article to be marked.

3,625,144

# SKEWING DEVICE FOR DAMPENER OF OFFSET PRINTING PRESS

Robert Reinartz, Augsburg, and Oskar Liebert, Westheim, both of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg AG, Augsburg, Germany

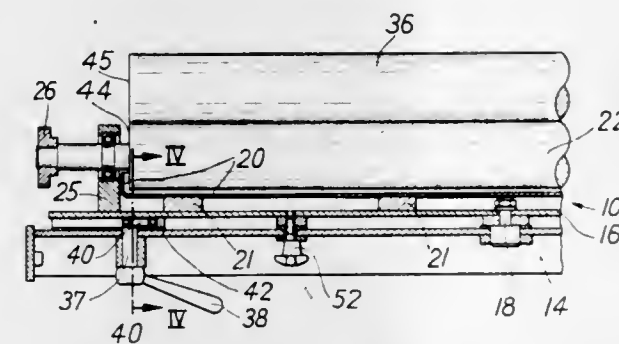
Filed July 24, 1969, Ser. No. 844,387

Claims priority, application Germany, July 26, 1968, P 17 61 949.7

Int. Cl. B41i 25/02

U.S. Cl. 101—148

6 Claims



A wetting mechanism for transferring liquid from a supply roll which is immersed in a liquid reservoir to a lifting roll. The supply roll and the lifting roll are peripherally engaged. The axes of the rolls are in a common plane. The supply roll is mounted on a support plate and both are pivoted about a center pivot. The pivotal movement is caused by moving a lever which is connected to a cam which engages a camming surface on the support plate.

3,625,145

# CYLINDER CART FOR EXCHANGING CYLINDERS ON THE FLY

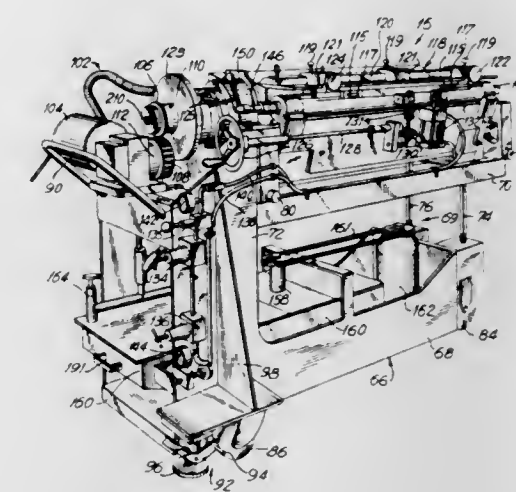
William A. Heatley, Jr., Wayne; Joseph R. Caulfield, Norwood, and Alfons M. Schmid, East Orange, all of N.J., assignors to Bobst Champlain, Inc., Roseland, N.J.

Filed June 5, 1969, Ser. No. 830,697

Int. Cl. B41f 9/18

U.S. Cl. 101—152

33 Claims



A rotogravure printing press has a printing station frame defining a hollow space, and a detachable gravure carriage is movable into and out of the hollow space in the frame. The detachable printing carriage is an integral unit and carries a number of components which are employed in the printing operation. The carriage is provided with lower wheels for movement of the carriage along the ground when it is outside of the station. In addition, rollers are provided on the side of the carriage frame for carrying the carriage into the printing station to a position where the printing cylinder on the carriage engages the main drive mechanism in the printing station through coupling means. This can be accomplished "on the fly" with adjacent printing stations in operation. Means are also provided to engage the printing cylinder "in register." Additional features include an idling drive mechanism mounted on the gravure carriage for rotating the printing cylinder outside of the printing station and a complete inking system for off-press make-ready. With this mechanism the doctor blade which is also positioned on the carriage can be "run in" outside of the station. A unique connecting assembly partly positioned on the carriage and partly positioned in the printing station is provided for enabling the doctor blade to be joined with an oscillatory drive mechanism in the printing station.

3,625,146

# IMPRESSION ROLLER FOR CURRENT-ASSISTED PRINTING

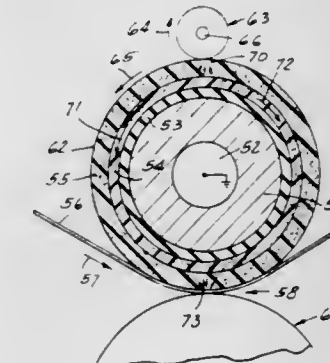
Joel F. Hutchison, Danville, Ill., assignor to Hurlertron Incorporated, Danville, Ill.

Filed June 2, 1969, Ser. No. 829,241

Int. Cl. B41f 9/00

U.S. Cl. 101—153

12 Claims



An impression roll comprising a core of metal which can be assumed to be grounded, an insulating layer, preferably of rubber, on the core, and a semiconductive layer preferably of



rubber providing the external surface but having a conductor internally thereof to provide a conductive path bypassing at least a substantial portion of the semiconductive layer.

3,625,147

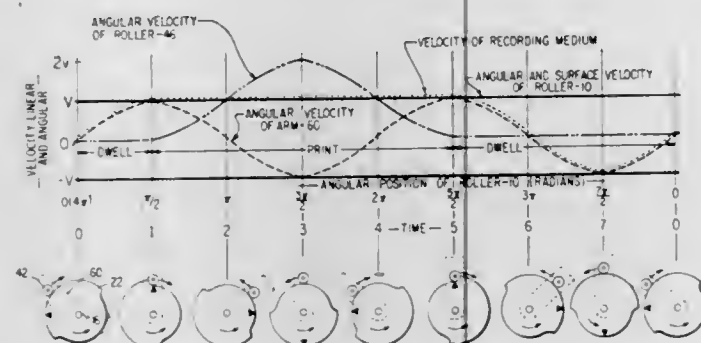
**APPARATUS FOR CONTACT PRINTING**  
Robert Aron Rubenstein, Framingham, Mass., assignor to RCA Corporation

Filed Oct. 8, 1969, Ser. No. 864,676

Int. Cl. B41f 5/10

U.S. Cl. 101—223

13 Claims



A continuously rotating roller transporting a printing master and an idler roller transporting a recording medium are engaged for printing transfer when the idler roller has zero angular velocity but is being driven about the surface of the continuously rotating roller at the latter's angular velocity. As there is no difference in surface speed between the printing master and recording medium at the area they make contact, smudging is prevented.

3,625,148

**DEVICE FOR AXIALLY MOVING FLUID-DISTRIBUTING ROLLERS**

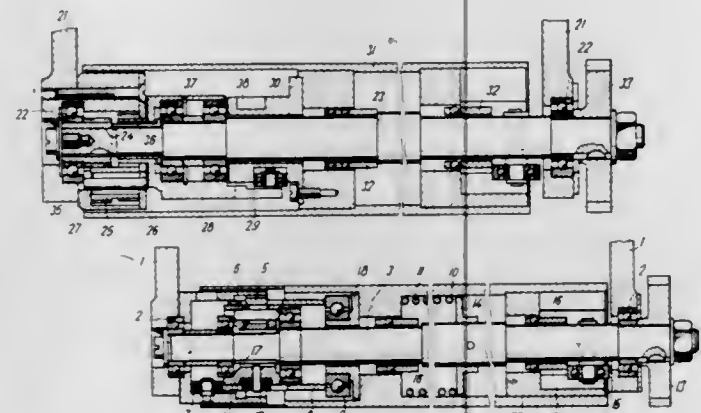
Miloslav Musellk, Ricmanice, and Antonin Svoboda, Adamov, both of Czechoslovakia, assignors to Adamovske strojirny narodni podnik, Adamov, Czechoslovakia

Filed Aug. 25, 1969, Ser. No. 852,569

Int. Cl. B41f 1/46; F16h 25/12

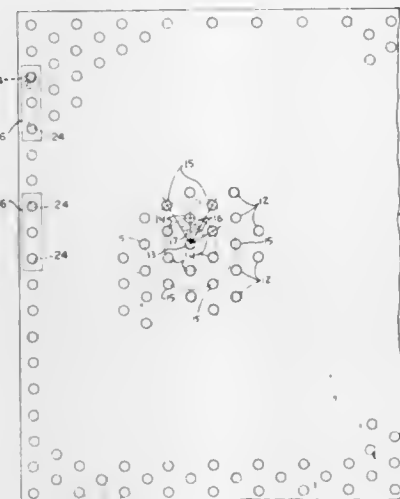
U.S. Cl. 101—348

5 Claims



In a drive for the fluid-distributing roller of a printing press, the roller can be used for distributing either moisture or ink and, in addition to rotating about its axis, is required to be axially reciprocated. The distributing roller coaxially surrounds a drive shaft with which it rotates but with respect to which it can be axially reciprocated. Housed within the roller and surrounding the drive shaft is a step down transmission driven by the drive shaft and driving a cam assembly which is also situated within the distributing roller between the latter and the drive shaft. The cam assembly is driven by the stepdown transmission to provide for the distributing roller lateral movement cycles each of which includes axial movement first in one direction and then in the opposite direction. Each of the lateral movement cycles takes place during a time when the distributing roller and drive shaft both rotate through more than one revolution.

3,625,149  
**VARIABLE DESIGN PRINTING MEANS**  
Robert Moore Allen, 718 Knollwood St., Winston-Salem, N.C.  
Filed Oct. 21, 1969, Ser. No. 868,153  
Int. Cl. B41f 17/00  
U.S. Cl. 101—373 9 Claims



In abstract, a preferred embodiment of the present invention is a variable design block print consisting of a pegboard with pins or pegs for mounting the printing blocks thereon. The holes for receiving the pegs within the board are spacingly arranged in a uniform pattern of equilateral triangles. The blocks are of various shapes and contain multiple pin-receiving holes arranged in a predetermined pattern for mounting in different orientations and positions.

3,625,150

**DEVICE FOR SECURING ARCuate STEREOTYPE PRINTING PLATES ONTO A PLATE CYLINDER OF WEB-FED ROTARY PRINTING PRESSES**

Hans-Bernhard Bolza-Schunemann, Wurzburg, and Heinrich Lichtblau, Karlstadt, both of Germany, assignors to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

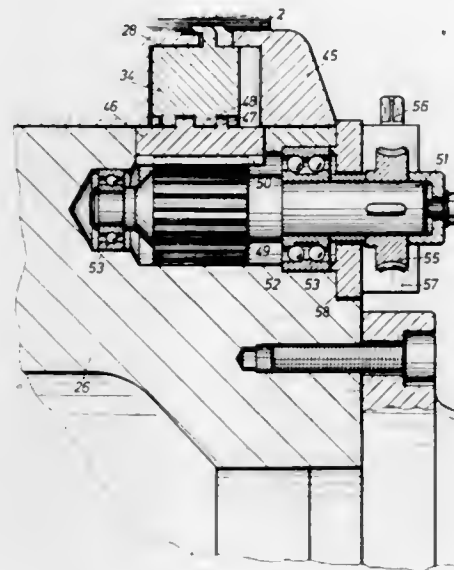
Filed Oct. 14, 1969, Ser. No. 866,211

Claims priority, application Germany, June 11, 1969, P 19 29 604.4

Int. Cl. B41f 13/16, 27/06

U.S. Cl. 101—378

10 Claims



The invention relates to a device for securing arcuate stereotype printing plates forming a part of a circle and being secured onto a plate cylinder of web-fed rotary printing presses by tensioning several pairs of viselike underside jaws actuating resiliently in an axial direction one against another and gripping into underside facets of the plate. The jaws are shaped like segments forming a part of a circle and corresponding to the length of curvature of the plate. The stereotype plates are positioned on supporting segments

which are secured onto the body of the cylinder and correspond to the length of curvature of the plate. The jaws are provided with a thread on their respective underside. A threaded segment meshes with the thread of the jaw and has teeth on its underside which coast with a pinion being secured on an axle which is arranged parallel to the axis of the plate or form cylinder, the axle of which is driven by a worm gear. By actuating the worm gear the jaws are shifted and the printing plate is clamped. The worm of the worm gear is preloaded in the axial direction by cup springs bundled as a package. In order to clamp four plates on the circumference of the plate cylinder, the threaded jaw segment 34 has a radian length of 90° and the toothed segment 46 has a thread on its upper side and a length of 60° of radian measure, the maximum of the clamping way i.e. the difference between 90° and 60°, amounts therefore to 30° of radian measure.

3,625,151

**PRINTING PLATE LOCKING DEVICE**

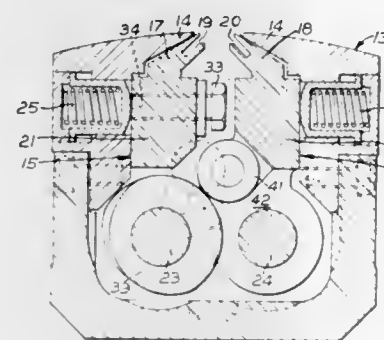
Michael Leonard Hart, Northborough, Peterborough, England, assignor to Baker Perkins Limited, Peterborough, England

Filed July 7, 1969, Ser. No. 839,532

Int. Cl. B41f 27/12

U.S. Cl. 101—415.1

8 Claims



Device for locking a printing plate onto a cylinder of a rotary press which enables the plate to be mounted and tensioned in register for operative rotation of the cylinder in either direction. A pair of grippers, each having a head for engagement with a respective opposite end portion of a plate wrapped around the cylinder, are mounted in a carrier transversely of the cylinder periphery and are each resiliently urged for independent plate-tensioning movement. Adjustment means is engageable alternatively with whichever gripper is to locate the operatively leading end portion of the plate to prevent said movement thereof so as to establish the register of the plate, while leaving the other gripper free to move for tensioning it.

3,625,152

**IMPACT-ACTUATED PROJECTILE FUZE**

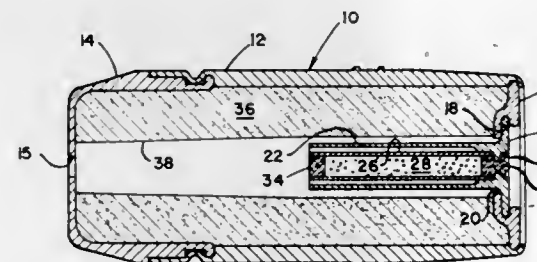
Clayton J. Schneider, Jr., East Aurora, and Richard E. Reinagel, Elma, both of N.Y., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.

Filed July 9, 1969, Ser. No. 840,292

Int. Cl. F42c 1/10, 9/00

U.S. Cl. 102—73

21 Claims



A projectile housing. A body of pyrotechnic material in the housing. A fuze container fixed to the base end of the housing. A burning fuze material in the fuze container, the container fabricated of a material that loses its structural in-

tegrity in response to the heat of the fuze flame front, whereby upon impact of the projectile that container separates exposing the burning fuze to the body of pyrotechnic material.

3,625,153

**PROPELLANT CARTRIDGE CARRYING BAND FOR COMMERCIAL DEVICES**

Heinz Gawlick, Furth, and Hans Umbach, Stadeln, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

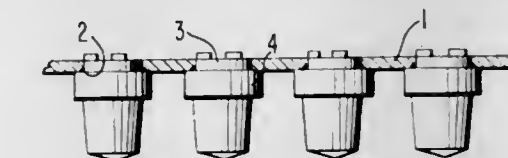
Filed Jan. 8, 1969, Ser. No. 789,860

Claims priority, application Germany, June 9, 1968, P 16 78 199.0

Int. Cl. C06c 7/02; F42c 19/10; C06d 1/04

U.S. Cl. 102—86.5

8 Claims



A plurality of propellant cartridges are serially connected with each other to form a band that may be rolled up for utilization in a commercial device, such as a riveting gun. The cartridges may be attached to a band by extending their electrical leads through the band for clamping the cartridges to the band, bonding the cartridges to the band, or providing the cartridges with a force fit in recesses of the band, for example. Also, propellant carrying cases may be formed in pairs for serial connection with primer carrying bases formed in pairs. Also, preformed lengths of cartridge-carrying bands may be connected serially with each other by means of connectors.

3,625,154

**MAGAZINE FOR PROPELLANT CHARGES WITHOUT CARTRIDGES**

Heinz Gawlick, Furth; Gunther Marondel, Erlangen, and Hellmut Bandler, Nurnberg, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

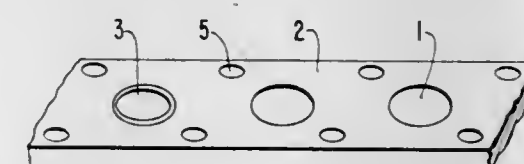
Filed Feb. 11, 1969, Ser. No. 798,291

Claims priority, application Germany, Feb. 21, 1968, P 16 78 202.8

Int. Cl. F42b 39/12

U.S. Cl. 102—86.5

10 Claims



A magazine for caseless propellant charges which are entirely consumed leaving no residue after burning, for use in both military and commercial applications, including an extended flexible band having a plurality of recesses, each adapted for receiving a single propellant charge, spaced along the length of said band. Additionally, the band may incorporate a plurality of depressions, apertures and/or projections spaced along the length thereof for indexing of the magazine relative to the activating device. Further, a readily detachable foil may be secured adhesively along one or both major surfaces of the band to retain the propellant charges with the respective recesses and simultaneously shield them from heat which could cause accidental detonation.



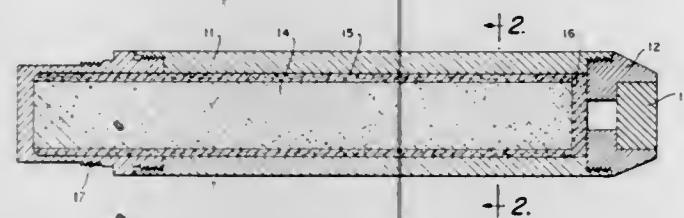
3,625,155

**DEVICE FOR PRODUCING WHITE SMOKE BY  
IMPLoding RED PHOSPHORUS**

Bernard E. Douda, Bloomfield, Ind., and Roscoe D. Dwiggins, Derwyn Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy  
Filed Jan. 8, 1970, Ser. No. 1,500  
Int. Cl. F42b 13/44

U.S. Cl. 102-90

3 Claims



A device for producing white smoke having an inner core of red phosphorus surrounded by a flexible sheet of explosive material and having means for detonating said explosive material whereby red phosphorus is imploded to produce white smoke.

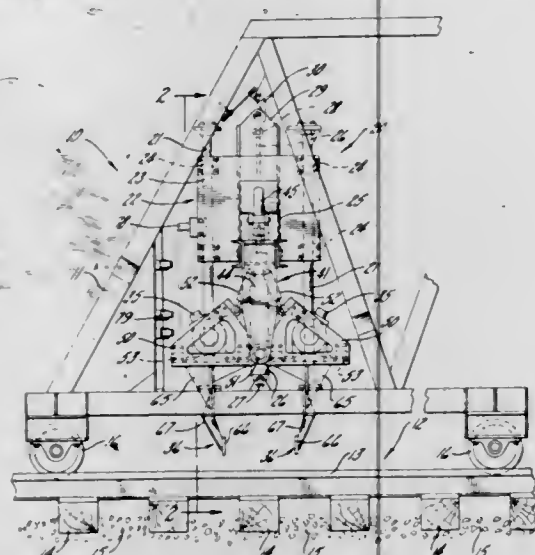
3,625,156

**BALLAST TAMPING WORKHEAD**

James E. Anderson, Ludington, Mich., assignor to Jackson Vibrators, Inc., Ludington, Mich.  
Filed Sept. 5, 1969, Ser. No. 855,579  
Int. Cl. E01b 27/16

U.S. Cl. 104-12

6 Claims



A ballast tamping workhead having tamping blades rigidly fixed to high-frequency vibratory motors that are carried, through compression-loaded insulating mountings, for up and down movement and swinging movement both toward the rail and toward the ties. Actuation of the workhead drives the vibrating blades into the ballast on either side of a tie, forces the blades in a squeezing action toward the rail, and then forces the blades in a further squeezing action toward and under the tie.

3,625,157

**GAS CUSHION LOAD-SUPPORTING DEVICE**

William Barrie Hart, Burwell, England, assignor to Tracked Hovercraft Limited, London, England  
Filed June 23, 1969, Ser. No. 835,581  
Claims priority, application Great Britain, June 24, 1968, 29,983/68

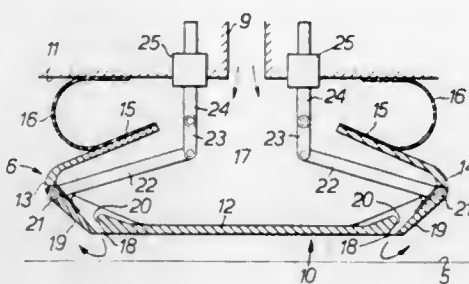
Int. Cl. B60v 1/04, 1/16

U.S. Cl. 104-23 FS

10 Claims

A gas cushion load-supporting device, particularly useful for a tracked gas cushion vehicle, has a member with a nozzle for forming a peripheral jet for containing a gas cushion. This cushion member is movable with respect to a load-supporting structure. The nozzle has a movable wall which is connected to the supporting structure through a linkage so

that movement of the cushion member towards the structure opens the nozzle thus increasing the jet thickness. The results



in the height of the cushion member above the track remaining more nearly constant.

3,625,158

**TROLLEY FOR OVERHEAD MONORAIL CONVEYOR**

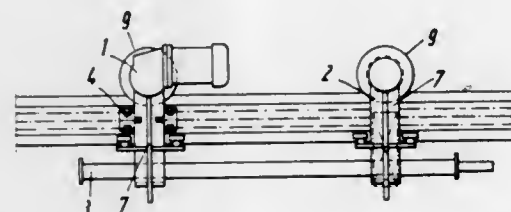
Klaus Lorenz; Horst Glessler; Friedrich Juergens, Whylen/Baden, Germany; Marc Waelti, Luzern, Switzerland; Adolf Mutter, and Adolf Steinbock, Whylen/Baden, Germany, assignors to Firma Rene Blaser Hebe-und Foerderanlagen, Maschinenbau und Translift, Gesellschaft fuer Hebe-und Foerderanlagen mbH, Germany  
Filed Sept. 19, 1969, Ser. No. 859,356

Claims priority, application Germany, Nov. 11, 1968, P 18 08 210.5

Int. Cl. B61b 3/00; E01b 25/24

U.S. Cl. 104-93

5 Claims



An overhead trolley system using a special-profile monorail structure with horizontal curve sections, where the trolley assembly consists of a drive unit and an idler unit, connected by a traverse. The two units have similar C-frames, a support and guide wheel on top, and lateral guide rollers at the bottom. The wheel of the drive unit is driven by a motor and worm gear, and the power is transmitted over a roller-supported collector from rail-mounted bus bars. The traverse includes a yoke and a runup switch.

3,625,159

**MANUALLY OR AUTOMATICALLY ACTUATED  
CLOSURE OPERATING MECHANISM LOCK**

Charles R. Radey, Michigan City, Ind., and James J. Schuller, Dolton, Ill., assignors to Pullman Incorporated, Chicago, Ill.  
Filed July 2, 1969, Ser. No. 838,713

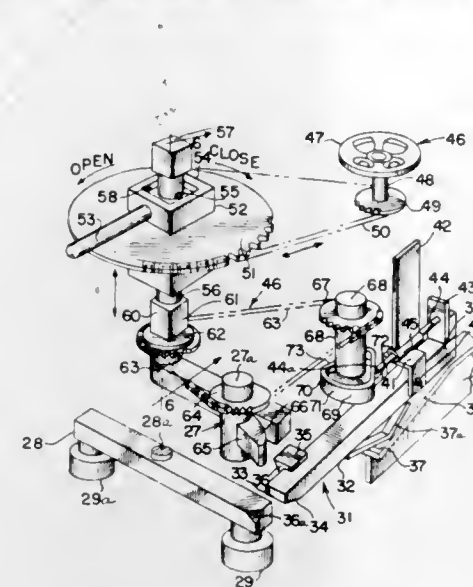
Int. Cl. B61d 7/18, 7/26, 7/30

U.S. Cl. 105-241 C

4 Claims

In a railroad hopper car, hopper door-operating means operable automatically between open and closed positions by ground-mounted door-actuating structure and/or opened by manually operated railroad car-mounted means, the door-operating mechanism including a crank mechanism and drive lever therefor rotatably mounted about a vertical axis of the car, said crank mechanism in the closed position being overcenter against a stop and being swingable past the overcenter position to the open door position, and pivotally mounted auxiliary lock bar means automatically positionable from an elevated out-of-way position to a horizontal position obstructing movement of the crank mechanism past the overcenter position, and vice versa with manual means for raising the lock bar to the inoperative position and lowering the

same to the operative position, said manual means including a handwheel and gear means operable upon a cam element retracted, storing position. They are also movable laterally to span the space between two bucket-type seats. The tray is



engageable with a push rod for pivoting the lock bar between raised inoperative and lowered operative positions.

3,625,160

**SYSTEM FOR BALANCING A TABLETOP THAT MAY BE  
ADJUSTABLY SET IN POSITION**

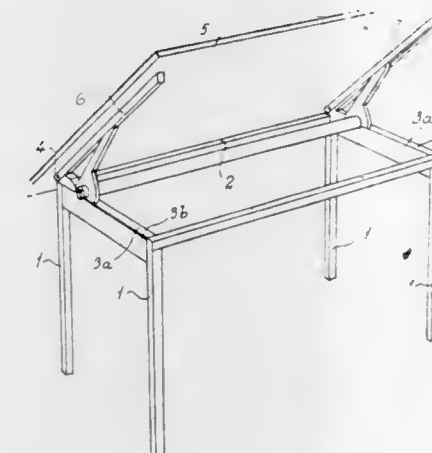
Per G. Bergman, Hyggevangen 21, 163 54 Spanga, Sweden  
Filed Mar. 6, 1970, Ser. No. 17,052

Claims priority, application Sweden, Mar. 14, 1969, 3551/69

Int. Cl. A47f 5/12

U.S. Cl. 108-2

3 Claims



A torsion spring system for balancing a tiltable tabletop so that it will be retained in any rotative position to which it is set. One or more torsion spring elements are nonrotatively positioned in a rotatable tube carrying two arms for engaging the lower side of the tabletop. Means are provided for locking the torsion spring elements and the rotatable tube into definite rotative positions with respect to each other, and additional means are provided for clamping the tabletop into position after it has been set.

3,625,161

**FOLDING TRAY**

Bette J. Rosner, 6777 E. Pleasant Run Parkway, South Drive, Indianapolis, Ind.

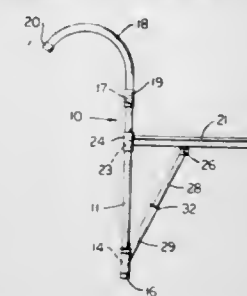
Filed Dec. 8, 1969, Ser. No. 882,963

Int. Cl. A47b 23/00

U.S. Cl. 108-44

1 Claim

Folding tray for use in conjunction with the seat of an automobile. The tray is supported by a pair of leg portions that terminate in hooks which engage the back of an automobile seat. The hooks swivel between extended, use position and



supported by a single brace and is readily adjustable to varying heights.

3,625,162

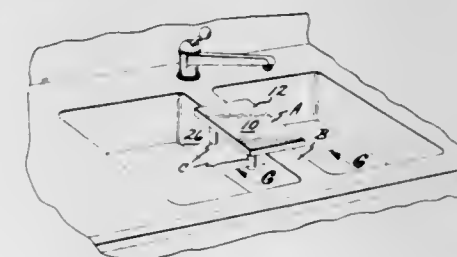
**SINK DIVIDER SUPPORTED UTILITY BOARD**

Beatrice L. Crew, 5120 Abbott Road, South Gate, Calif.  
Filed July 21, 1970, Ser. No. 66,157

Int. Cl. A47b 5/00

U.S. Cl. 108-47

4 Claims



A flat rigid rectangular member having a first work-supporting surface and second surface oppositely disposed therefrom, which second surface has a number of diagonally positioned slots of T-shaped transverse cross section extending inwardly into said member therefrom, with said slots intersecting at a central opening, and each of said slots slidably supporting a nut in a nonrotatable position within the confines thereof. Four legs are provided that have threaded studs extending upwardly therefrom which studs are insertable in said slots, and by rotation of said legs engaging said nuts. By rotation of the legs relative to the nuts, the legs may be forced into friction gripping contact with said second surface to so position the legs that said member may be removably mounted on the divider of a sink to provide a work surface for such kitchen chores as slicing fruit, cleaning pots and pans and the like. By removing the device from the divider and placing it in an inverted position, the free ends of the legs provide a convenient means supporting a hot pan or skillet in a location adjacent a stove, but without danger of the heated utensil defacing or burning the surface on which the device rests.

3,625,163

**SHELF BRACKET SUPPORT**

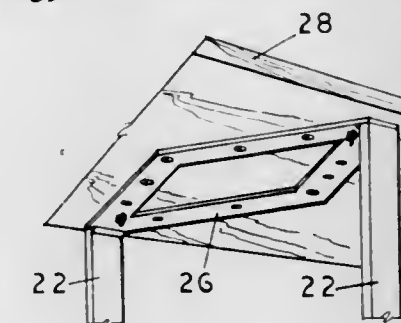
Arnold A. Grossman, 14 Imperial Ave., San Francisco, Calif.

Filed Oct. 22, 1969, Ser. No. 868,359

Int. Cl. A47b 47/02

U.S. Cl. 108-59

1 Claim



A rigid support bracket for assembling a tier of shelves comprised of a generally rectangular-shaped member with



means on an upper portion for securing the bracket to the underside of a shelf.

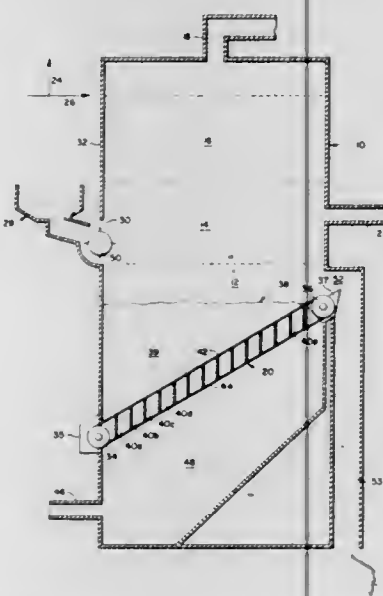
3,625,164

# COMBUSTION OF HIGH-SULFUR COAL IN A FLUIDIZED BED REACTOR

Marshall L. Spector, Bellemead, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.  
Continuation-in-part of application Ser. No. 60,379, Aug. 3, 1970, now Patent No. 3,599,610, dated Aug. 17, 1971. This application Apr. 21, 1971, Ser. No. 135,981  
Int. Cl. F23d 19/00

U.S. Cl. 110-1 J

10 Claims



Heating values are recovered from sulfur-containing coal in a reactor which includes a gasification zone, a combustion zone and a heat recovery zone. A fluidized bed of coal and limestone is maintained within the gasification zone, which is supported by a moving foraminous grate. Primary air, which is also the fluidizing medium, enters the gasification zone through the grate. The zone is operated adiabatically, under reducing conditions, to yield CaS and an effluent rich in CO. The CaS is discharged from the gasification zone by the moving grate and the gaseous effluent, containing entrained desulfurized coal fines, enters the combustion zone where secondary air is added. The exotherm of combustion is retrieved in the heat recovery zone, using conventional techniques. The flue gas from the reactor contains little sulfur dioxide to pollute the environment. The CaS may be processed in several ways to recover elemental sulfur.

3,625,165

# A BURNING APPARATUS

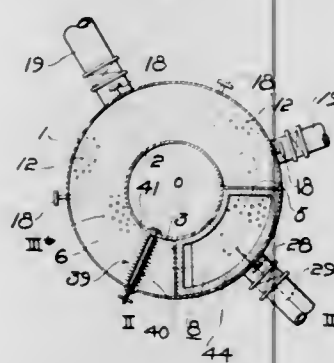
Eiichi Ishigaki, Sakaide, Japan, assignor to Ishigaki Kiko Co., Ltd.

Filed Feb. 24, 1970, Ser. No. 013,489.

Int. Cl. F23g 5/04

U.S. Cl. 110-7 R

6 Claims



A burning apparatus for wet substances to be burnt up such as dewatered slurry from a filtering apparatus wherein a fluidized bed of particles unable to be burnt is formed in a series or several series of drying chamber and burning chamber

or these two chambers and heating chamber therebetween, said fluidized bed is circulated continuously through said chambers in a direction from the drying chamber toward the burning chamber, and powder or particle-like substances to be burnt up are fed into the drying chamber and are carried with said fluidized bed so that the substances are dried in the drying chamber and then are burnt up in the burning chamber. At least one of the communicating passages between the drying chamber and the burning chamber is so designed that it opens to one chamber at a higher level than to the other, so that the particles of the fluidized bed form a particle pile in the latter chamber, which pile closes said passage so as to preserve a pressure differential between the chambers and facilitate circulation of the fluidized bed.

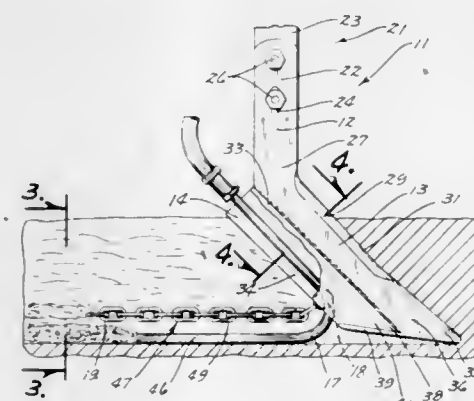
3,625,166

# VOLATILE LIQUID KNIFE APPLICATOR

Morris I. Woodley, R.R. 3, Hampton, Iowa  
Filed May 15, 1970, Ser. No. 37,613  
Int. Cl. A01c 23/02

U.S. Cl. 111-7

7 Claims



A knife applicator for applying volatile liquids to the soil is provided herein. The knife applicator is comprised of a shank securable to a tool bar and a leading knife formed on the shank for opening a slit in the ground. Side shields extend rearwardly of the knife and a flexible hose extends downwardly between these shields. A hose support member is affixed between opposite side shields and maintains the hose in the ground. The hose extends rearwardly of the side shields a sufficient distance to prevent icing of the side shields. In a preferred embodiment, a link chain is secured above the hose and extends rearwardly of the hose to facilitate sealing the volatile liquids in the ground.

3,625,167

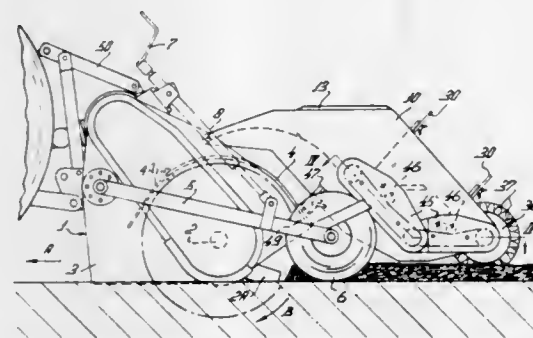
# CULTIVATING IMPLEMENTS

Van Der Lely, 10, Weverskade, Ary, Maasland, Netherlands  
Filed Feb. 11, 1969, Ser. No. 798,283  
Claims priority, application Netherlands, Feb. 16, 1969, 6802209

Int. Cl. A01c 5/00; A01b 33/00

U.S. Cl. 111-87

6 Claims



This invention relates to cultivating implements or cultivators of the kind comprising a movable frame, a rotary shaft supported by the frame, soil-working members mounted on said shaft and a hood that partially surrounds said shaft and soil-working members in such a way that one edge thereof contacts, or is in close proximity to, the ground surface during a cultivating operation.

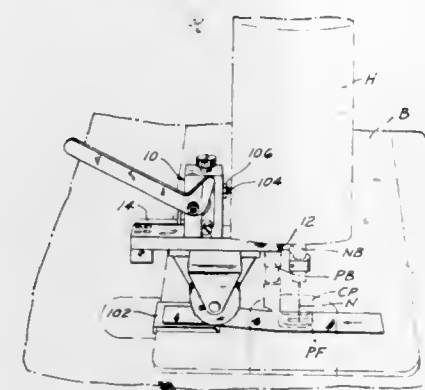
3,625,168

# WORKPIECE PULLER ADAPTED FOR ATTACHMENT TO THE NEEDLE BAR OF A SEWING MACHINE

Louis Palazzo, 124 Meridian Road, Levittown, N.Y.  
Filed Nov. 28, 1969, Ser. No. 880,539  
Int. Cl. D05b 27/14

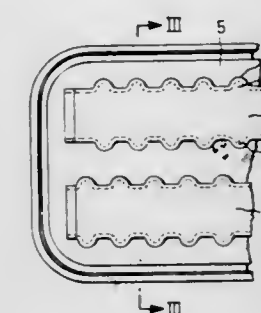
U.S. Cl. 112-211

10 Claims



Roller means adapted to pull a length of goods in a step-wise manner is mounted on the presser bar of a sewing machine and is angularly displaced in response to the movement of the sewing machine needle bar in both directions of the movement thereof. Clutch means control the movement of the roller means.

collecting vessels i.e. headers for a heat exchanging medium and rows of tubes of flattened cross section with their flat sides turned towards each other arranged between said vessels. According to the invention, before draw-punching the holes, an elongated, preferably rectangular recess is pressed for each row of tubes, the recess having a length at least equal to the length of the tube row, a width less than the



length of the tube cross section and a depth approximately equal to the height of the collar formed around the edge of each hole, the recess having along its longitudinal sides at the locations of junction of the tubes opposite with the end plate pairwise opposed widened portions corresponding in shape and size to the end portions of the tube cross sections extending outside the longitudinal sides of the recess.

3,625,169

# CHAIN-STITCH-FORMING DEVICE FOR LOCK-STITCH SEWING MACHINES

Chikao Yamashita, Aichi-ken, and Koji Nishiyama, Osaka-shi, both of Japan, assignors to Brothers Kogyo Kabushiki Kaisha, Mizuho-ku, Nagoya-shi, Japan

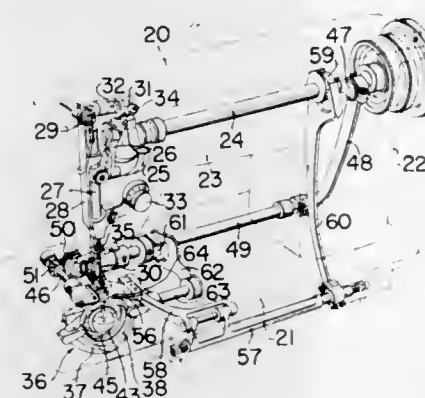
Filed Oct. 20, 1969, Ser. No. 867,721

Claims priority, application Japan, Sept. 1, 1969, 44/69157

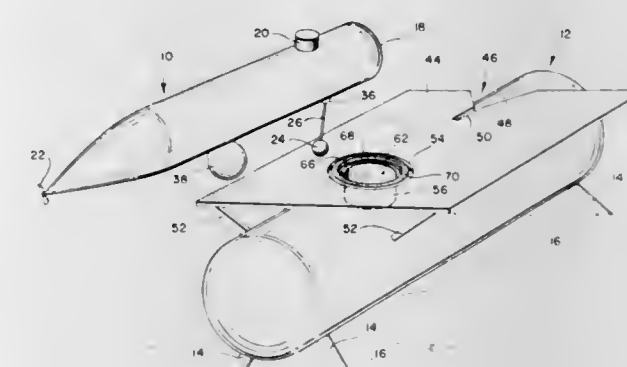
Int. Cl. D05b 1/14

U.S. Cl. 112-168

13 Claims



A chain-stitch-forming member is fitted into the loop of a lock-stitch sewing machine in place of the usual bobbin case. The chain-stitch-forming insert member has a loop retaining projection for retaining a loop in cooperation with a needle of the machine and a cam mechanism between the loop taker and the projection to effect the prescribed movement of the projection to form chain-stitches as the machine operates.



A transfer submarine and a submerged structure are constructed to facilitate transfer of personnel. The submarine is provided with a tethered ball at the end of a cable, and the submerged structure has a capture platform which has a slot for receiving the cable and restraining the submarine so as to facilitate alignment of a depending chamber of the submarine and an upstanding chamber of the submerged structure. The depending chamber has a spherical outer surface and the upstanding chamber has a mating conical surface for forming a transfer chamber. A method is disclosed by virtue of which the transfer occurs at substantially atmospheric pressure.

3,625,170

# PROCESS OF MAKING HOLES IN A PLATE TO BE USED IN A HEAT EXCHANGER

Rolv Gunnar Josok, Olofstrom, Sweden, assignor to Olofstrom AB, Olofstrom, Sweden  
Filed Nov. 28, 1969, Ser. No. 880,568

Claims priority, application Sweden, Dec. 3, 1968, 16479/68

Int. Cl. B21d 53/04

U.S. Cl. 113-118 C

1 Claim

This invention is concerned with a process of making holes with a surrounding collar by a combined punching and drawing operation, hereinafter called "draw-punching," in the so called end plates of a heat exchanger for inserting the tubes of heat exchangers of the type comprising distributing and

3,625,172

# UNDERWATER STEERING AND DIVING VANE FOR SWIMMERS

William James Gilster, 249 Albany, Ferndale, Mich.  
Filed Oct. 3, 1969, Ser. No. 863,485

Int. Cl. B63g 8/00; B63b 21/00

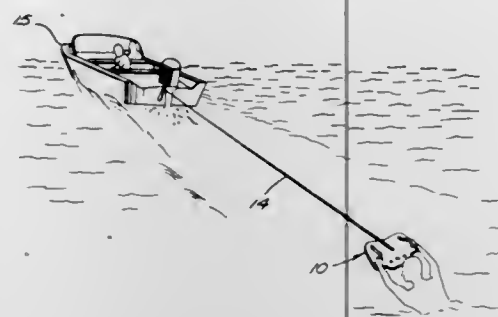
U.S. Cl. 114-16

5 Claims

An underwater steering and diving vane towable by a boat and controllable by a swimmer vertically, horizontally and obliquely having a substantially central towline attachment and at least one handle lying rearwardly of the towline attachment which in conjunction with the water resistance drag of the swimmer, the universal pivot point of the attachment,



and the location of the handle substantially equalizes forces imposed on the vane leaving the vane substantially force-



equalized under tow with a swimmer so that the swimmer may steer the vane as desired with minimal steering effort.

3,625,173

**HULLS FOR POWER BOATS**

Les Mitton, 9, Parkland View, Hinstock Road, Birmingham, 20, England

Filed Aug. 8, 1969, Ser. No. 848,593

Int. Cl. B63b 1/10

U.S. Cl. 114-61

3 Claims



A hull for a power boat has a bottom configuration comprising two subhulls providing a catamaran-type structure, with an additional intermediate subhull, and this last is formed on the bottom with a rearwardly facing step, nearer the fore-end than the afterend, to provide a local sectional change of a tunnel defined by the said two subhulls.

3,625,174

**SHIP CONSTRUCTION**

Bjarne Rosted, Bekkelagshogda, Norway, assignor to A/S Akers Mek. Verksted

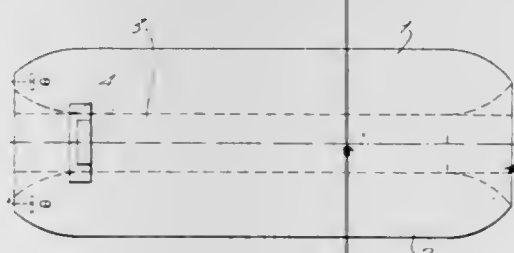
Filed May 20, 1969, Ser. No. 869,979

Claims priority, application Norway, May 20, 1968, 1957/68

Int. Cl. B63b 3/02

U.S. Cl. 114-77 R

2 Claims

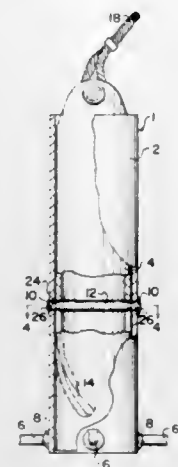


A large capacity ship is constructed by joining three smaller vessels, two of which include independent propulsion and navigation means and each having an asymmetrical cross section. The third vessel has less draft than the other two and lies between the two other vessels and is joined thereto so that its hull lies above the waterline. The nonsymmetrical sides of the two vessels are placed in opposing relationship to one another so that the sea-going characteristics of the combined vessel are improved.

3,625,175  
**RECOVERABLE BOAT ANCHOR**  
Laverne E. Mangel, 4713 Florist, Wichita Falls, Tex.  
Filed Feb. 20, 1970, Ser. No. 12,927  
Int. Cl. B63b 21/34

U.S. Cl. 114-207

5 Claims



A tubular boat anchor with inner and outer shank portions, one of which portions has multiple flukes thereon. The anchor portions may be rotated relative to each other so as to normally free the boat anchor, one shank portion of which has a slot formed therein, which slot may be inclined or spiral with an interengaging pin passing through the slot and being secured to the other of the shank portions. Provision is made for the interengaging pin to be a shear pin, which is circumferentially scored at the point of shear, to pass through the slot, which pin will shear upon predetermined impact, to enable recovery of the anchor line and one of the shank portions of the anchor.

3,625,176

**HYDROJET PROPULSION OF BOATS**

Karl Moellering, 77 Forest Drive, Pompton Plains, N.J.

Filed Apr. 28, 1969, Ser. No. 819,682

Int. Cl. B63h 11/00

U.S. Cl. 115-12 R

9 Claims



A system for and a method of propelling boats by hydrojets. The illustrative embodiment employs a single engine driving a pump provided with a central water inlet and with two longitudinally extending discharge conduits which are equally spaced on opposite sides of the centerline of the boat. The rear, discharge ends of the conduits are disposed below the waterline when the boat is at rest. Connected to the conduits adjacent their rear ends by selectively operated valves are upper branch conduits which provide jets for driving the boat when it is planing and the discharge ports of the branch conduits are then under water. The boat is also provided with jet means for reversing the boat and for maneuvering it at slow speeds, as during docking.

3,625,177

**PORTABLE EMERGENCY WARNING APPARATUS**

Adam C. Miller, P.O. Box 1488, 1712 West McKinley, Phoenix, Ariz.

Filed Aug. 10, 1970, Ser. No. 62,409

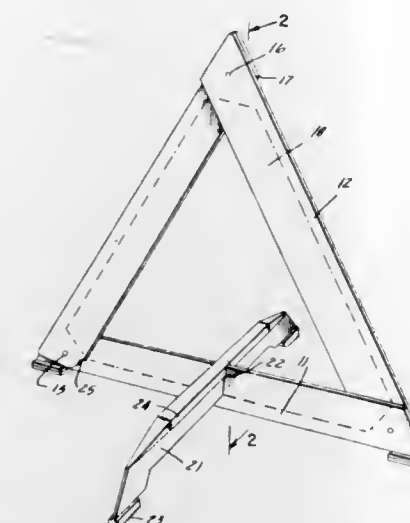
Int. Cl. E01f 9/10

U.S. Cl. 116-63

1 Claim

A portable emergency warning apparatus is provided having a foldable triangular-shaped warning portion in which one side of the triangle has pads thereon to act as a portion of the base and a removable base member having a pair of

feet attached between the ends of the side having pads thereon, whereby the base can be easily removed and the triangular portion folded for easy storage of the warning device. The base may be weighted and may have feet that are ser-



rated to resist movement by wind being applied against the triangle and has means for steadying the triangular portion when assembled, and for locating the sides in a desired position when folded.

3,625,178

**BIDIRECTIONAL SENSOR**

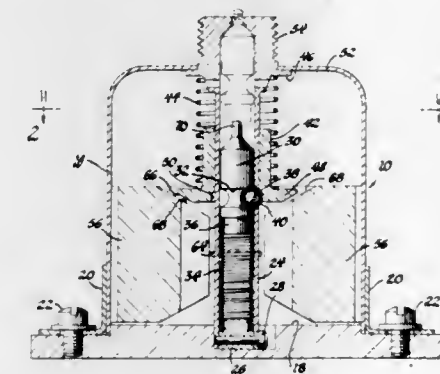
Otakar P. Prachar, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 24, 1970, Ser. No. 66,463

Int. Cl. G01d 21/00

U.S. Cl. 116-114

3 Claims



A support has a hollow tubular axial guide mounted on an end wall thereof. An operator is slidably mounted within the guide and spring biased in one axial direction or from normal unactuated position toward actuated position. Balls mounted within openings in the guide wall engage an annular shoulder of the operator to hold the operator in normal position. The balls are held in engagement with the operator shoulder by a cylindrical release member slidably mounted on the outer surface of the guide and spring biased oppositely of the operator and into engagement with the balls. A pair of seismic masses are pivoted to the support for swinging movement radially of the guide about axes located generally parallel of the guide axis. The masses are spring biased apart with respect to each other and radially outwardly of the guide into engagement with sidewalls of the support. Each mass includes a tapered elongated surface normally positioned in adjacent spaced relationship to a conical surface on a flange of the release member. Upon receipt of an acceleration pulse of predetermined amplitude and time directed generally radially of the guide, one of the masses moves radially toward the guide and the camming engagement of the tapered mass surface with the conical surface of the release member moves the release member axially of the guide to release the balls and in turn release the operator.

893 O.G.—4

3,625,179  
**INDIRECTLY LIGHTED VERTICAL SCALE INDICATOR INSTRUMENT**

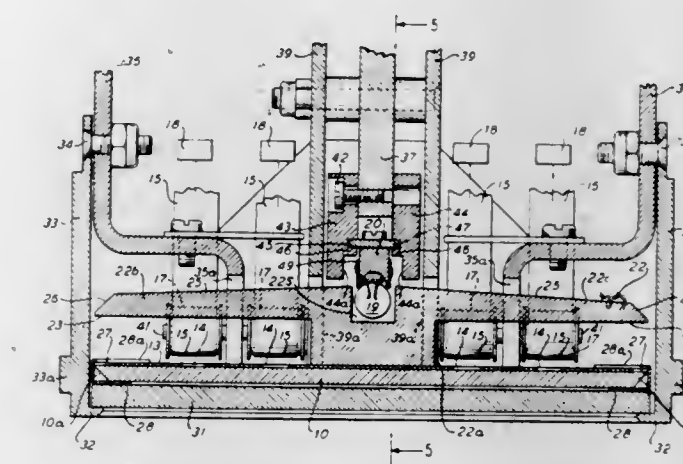
William W. Allen, Jr., Plantation, and Edward T. Lovasz, Fort Lauderdale, both of Fla., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Mar. 17, 1970, Ser. No. 20,358

Int. Cl. G09f 9/00

U.S. Cl. 116-124

8 Claims



An indicator instrument has a transparent dial with horizontal indicia lines printed on the back side and with a masking plate covering the back side having vertical slots running past the indicia lines. Indicator tapes of translucent material at the back of the dial are moved vertically along the slots to indicate variations in variable quantities relative to the indicia lines. The dial is edge-lighted and the tapes are transilluminated by a lighting system including a light source and a plastic light diffuser plate.

3,625,180

**EVAPORATION SOURCES**

Stanley Desmond Smith, Reading, and Frederick Stafford Ritchie, Newcastle upon Tyne, both of England, assignors to Sir Howard Grubb Parsons & Company Limited, Newcastle upon Tyne, England, by said Ritchie

Filed Sept. 16, 1969, Ser. No. 858,304

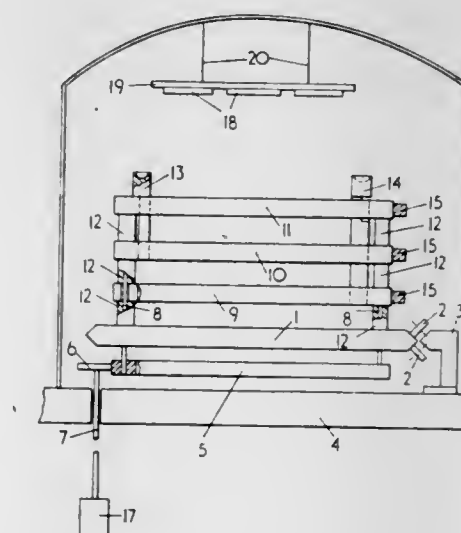
Claims priority, application Great Britain, Dec. 2, 1968,

57,052/68

Int. Cl. C23c 11/00

U.S. Cl. 118-48

3 Claims



An evaporation device for depositing thin films of material in high vacua which includes means for supporting a substrate material on which the films are to be deposited, and a rotatable evaporation source.



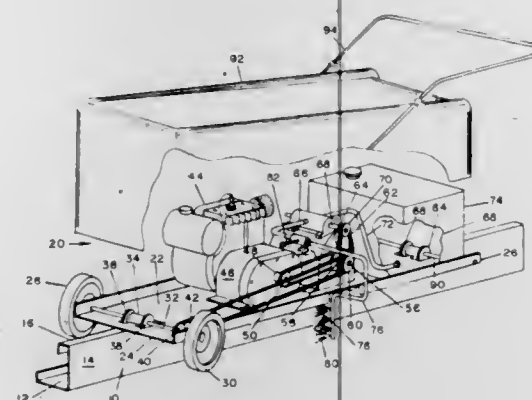
3,625,181

**APPARATUS FOR CLEANING AND OILING PAVING FORMS**

Arthur J. Weaver, 745 N. 57th Ave., Omaha, Nebr.  
Filed Oct. 27, 1969, Ser. No. 869,829  
Int. Cl. B05c 11/00

U.S. Cl. 118—72

8 Claims



An apparatus for cleaning and oiling elongated paving forms which have a flat upper end. The apparatus includes a portable frame means having front and rear guide rollers adapted to roll along the upper end of the form. A power means is provided on the frame means and drives one of the guide rollers to propel the apparatus along the length of the form. A cleaning means is mounted on the frame means and is powered by the power means to clean the upper end of the form and the upper end of the vertical base portion of the form as the apparatus is moved along the length of the form. A powered spray means is mounted on the frame means and sprays oil on the form as the apparatus is propelled along the form. One embodiment of the cleaning means includes a rotatable member having a plurality of finger elements extending therefrom which are adapted to strike the form to remove foreign material such as concrete or the like therefrom. A modification of the cleaning means is disclosed wherein a plurality of spring loaded chisels or the like are operated by the power means to remove the foreign material from the upper end of the form.

3,625,182

**TREATMENT OF WATER IN FISH HATCHERY REARING PONDS**

Earl Pierce Williams, Pen Argyl, and Nathan David Field, Allentown, both of Pa., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,378  
Int. Cl. A01k 63/00

U.S. Cl. 119—3

4 Claims

A method of treating waters so as to render the same suitable for rearing trout fry and similar fry of fresh water fish comprising passing the waters through and in contact with a porous granular or porous bead form of a water-insoluble, cross-linked vinylpyrrolidone polymer.

3,625,183

**FEED DISPENSER FOR YOUNG ANIMALS**

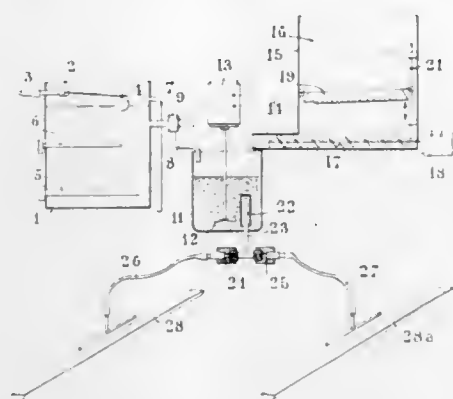
Adolphe Tartar, Blencques, (Pas de Calais), France  
Filed Mar. 3, 1969, Ser. No. 803,671  
Claims priority, application France, Mar. 1, 1968, 142,045  
Int. Cl. A01k 05/00

U.S. Cl. 119—51.11

7 Claims

An apparatus for dispensing artificial food to young animals, which comprises a mixing vessel in which predetermined amounts of warm water and nutritive powder are delivered from a warm-water tank and a powder storage hopper, respectively, characterized in that the outlet of the mixing vessel is connected in parallel to separate troughs in which animals divided into groups requiring different food

supplies can feed themselves, and that each supply line connecting said outlet of said mixing vessel to a trough has in-



3,625,184

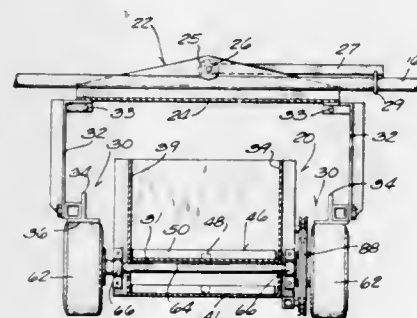
**STRAIGHT LINE OVERHEAD CATTLE FEEDER**

Paul Patz, Pound, Wis., assignor to Patz Company, Pound, Wis.

Filed May 18, 1970, Ser. No. 38,095  
Int. Cl. A01k 05/00

U.S. Cl. 119—52 B

21 Claims



A self-propelled feed distributing apparatus including a feed bunk supported by a number of pairs of vertical frame members, a crossbar connected to each pair of frame members, a traveling conveyor supported on a support assembly pivotally mounted on the crossbars, the traveling conveyor being reciprocally movable longitudinally with respect to the feed bunk, the support assembly including a number of cross members pivotally mounted on the crossbars and movable relative thereto and a pair of rails. The traveling conveyor is driven by a pair of drive wheels operably positioned to engage the rails and is formed by a number of hingedly interconnected sections. A riddle conveyor is provided within the traveling conveyor to move feed, grain or silage within the traveling conveyor in the same direction as the direction of movement of the traveling conveyor with respect to the feed bunk.

3,625,185

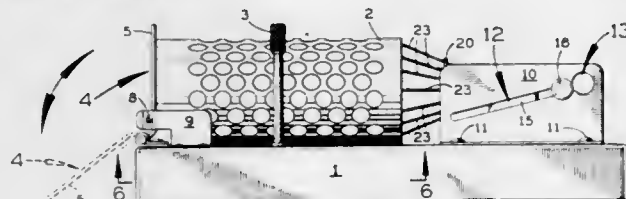
**ADJUSTABLE DEVICE FOR LIMITING THE MOVEMENT OF LABORATORY ANIMALS**

Arthur S. Kester, Chicago, Ill., assignor to Rauland-Borg Corporation, Chicago, Ill.

Filed May 28, 1970, Ser. No. 41,196  
Int. Cl. A61d 3/00

U.S. Cl. 119—98

6 Claims



An adjustable device for retaining and limiting the movement of each of a number of small laboratory animals of dif-

ferent size by confinement in a cylindrical cage of adjustable diameter having a gate means providing a closure for one end thereof and a variable closure for the opposite end of the cage, for adjustment of the distance to the gate. The adjustment of the diameter of the cylinder in close proximity to the animal prevents the animal from turning, and the adjustment of the internal distance limits the longitudinal movement of the animal.

3,625,186

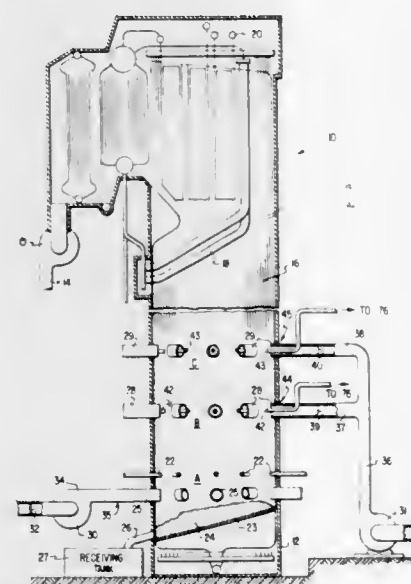
**CONTROL SYSTEM FOR FIRING BLACK LIQUOR RECOVERY BOILER AUXILIARY FUEL IN RESPONSE TO PLANT LOAD SWINGS**

Roy Roger Herbst, Birmingham, Ala., assignor to The Rust Engineering Company, Birmingham, Ala.

Filed Aug. 11, 1970, Ser. No. 62,815  
Int. Cl. F22b 1/18

U.S. Cl. 122—7 C

12 Claims



A black liquor recovery boiler is provided with a plurality of combustion zones for firing black liquor at a relatively constant rate and auxiliary fuel at variable rates. In response to signals indicative of the total paper plant steam demand and the rate of firing of black liquor, the air required for completing the combustion of black liquor and for firing auxiliary fuel is supplied to the boiler. The lesser of the plant steam demand signal and a signal indicative of the actual amount of air available in a selected combustion zone for firing auxiliary fuel operates a device for controlling the pressure of auxiliary fuel supplied to such combustion zone. The combustion air is apportioned to the plurality of combustion zones according to the actual amount of auxiliary fuel and black liquor supplied to each zone.

3,625,187

**BOILER**

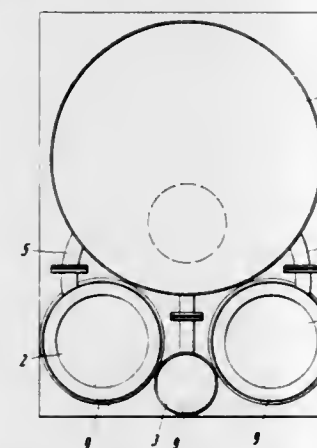
Hans Viessmann, Battenberg/Eder, Im Hain, Germany

Filed Jan. 5, 1970, Ser. No. 623  
Claims priority, application Germany, Jan. 4, 1969, P 19 01 438.1

Int. Cl. F22d 7/00

U.S. Cl. 122—406 R

6 Claims



A boiler assembly comprises a boiler with an associated domestic water heater arranged below the boiler in a com-

3,625,188

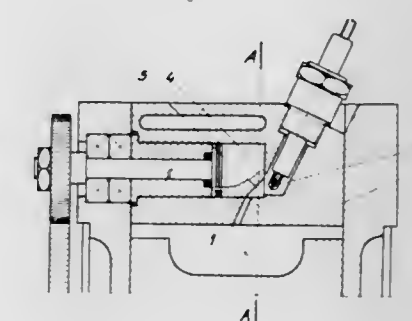
**GLOW IGNITION DEVICE FOR ROTARY PISTON ENGINES**

Stanislaw Jarnusiewicz, Krakow, Swierczewskiego 29, Poland

Filed Nov. 20, 1969, Ser. No. 878,403  
Claims priority, application Poland, Nov. 21, 1968, P 130.161  
Int. Cl. F02b 53/08

U.S. Cl. 123—8.19

6 Claims



A rotary piston engine is provided with a chamber in which is a glow plug; a pair of passages, controlled by a rotary valve, communicate that chamber with the piston chamber or hollow, the passages entering the piston chamber or hollow substantially at the median plane of rotation of the rotary piston and at circumferentially spaced points.

3,625,189

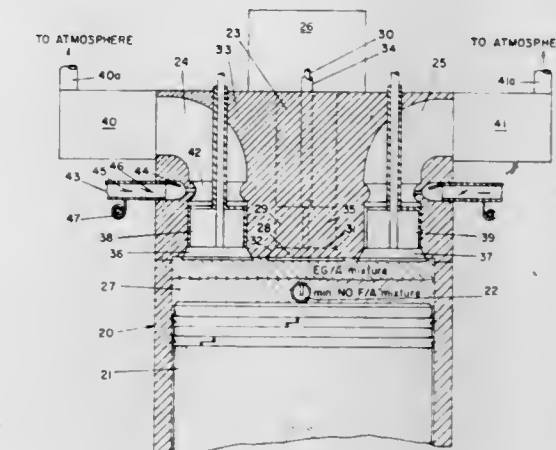
**METHOD AND APPARATUS FOR REDUCING EXHAUST EMISSIONS AND IMPROVING FUEL UTILIZATION IN INTERNAL COMBUSTION ENGINES**

Phillip S. Myers, 3210 Oxford Drive, Madison, Wis., and Otto A. Uyehara, 1610 Waunona Way, Madison, Wis.

Continuation-in-part of application Ser. No. 615,145, Feb. 10, 1967, now Patent No. 3,494,336, Continuation-in-part of application Ser. No. 835,134, June 20, 1969, now Patent No. 3,507,261. This application Feb. 2, 1970, Ser. No. 7,641  
Int. Cl. F02b 17/00

U.S. Cl. 123—32 ST

2 Claims



Method and apparatus for providing a stratified charge of two constituents in the combustion chamber of an internal combustion engine when the engine is operated at less than full load to reduce all three undesirable exhaust emissions, i.e., hydrocarbons, carbon monoxide and oxides of nitrogen. One constituent of the stratified charge comprises exhaust gas, mixed with air if desired; and the other a fuel/air mixture, having exhaust gases mixed therewith if desired, to produce reduced quantities of oxides of nitrogen. The exhaust gas portion of the exhaust gas/air mixture provided in the combustion chamber at all partial engine loads is selected from that portion of the exhaust gases which was formed by



the burning of the fuel/air mixture constituent of a previous stratified charge. At relatively heavy engine loads, when all of the exhaust gases formed by the burning of the fuel/air mixture constituent of a previous stratified charge cannot be recycled, a secondary selection is made to recycle either the bulk gases thereof (high in carbon monoxide) or the quench gases thereof (high in hydrocarbons) or all of one and as much of the other as possible.

The relative amounts of the fuel/air mixture and exhaust gas/air mixture making up the stratified charge may be varied in response to accelerator position by auxiliary intake and exhaust timing valves which are actuated by variable timing control mechanism, with a maximum quantity of fuel/air mixture and a minimum quantity of exhaust gas/air mixture being introduced for full engine load, and vice versa for minimum load. During deceleration the fuel/air mixture intake can be completely cut off until engine idling speed is reached when, of course, a sufficient fuel/air mixture is again supplied to keep the engine running.

3,625,190

**FUEL VAPORIZER**

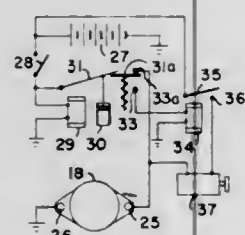
Mathew G. Boissevain, 27181 Sherlock Road, Los Altos Hills, Calif.

Filed Mar. 5, 1970, Ser. No. 16,714

Int. Cl. F02m 31/08, 31/12

U.S. Cl. 123—122 AC

5 Claims



A rapid start fuel vaporizer for internal combustion engines employing a very rapid-acting heat exchanger that is heated either electrically or by exhaust gases or both to selectively vaporize the heavier fuel droplets which drop into the intake manifold from the engine carburetor without increasing intake air temperature. This vaporizer assembly is attached to the underside of the intake manifold directly below the downdraft carburetor and it is provided with a membrane of thin stainless steel or other material that resists oxidation caused by heating. A honeycomb, grid pattern, or closed convolutions between membrane and carburetor stagnates the intake air directly above the membrane, thus reducing heat transfer from the membrane surface to the intake air.

3,625,191

**FUEL INJECTION APPARATUS**

John Kammerer Harding, Charlton Kings, England, assignor to Dowty Technical Development Limited, Cheltenham, England

Filed Nov. 13, 1969, Ser. No. 876,276

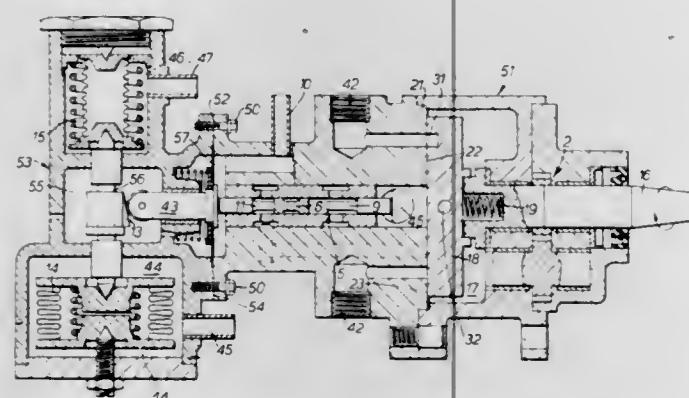
Claims priority, application Great Britain, Dec. 12, 1968,

59,047/68

Int. Cl. F02m 59/32

U.S. Cl. 123—139 AM

2 Claims



A fuel injection apparatus for a multicylinder internal combustion engine comprising an integrated unit formed in two

easily separable parts of which the first part comprises a drive shaft for connection to the engine, a fuel pump, a fuel-metering device and a distributing valve to distribute the metered fuel to the engine injectors, and the second part comprises control means responding to the operating conditions of the engine and a mechanical adjuster set by the control means, the attachment together of the two parts being such as to connect the adjuster to the metering device for adjustment of the latter in accordance with the operating conditions of the engine.

3,625,192

**FUEL INJECTION NOZZLE WITH HYDRAULIC VALVE-CLOSING MEANS**

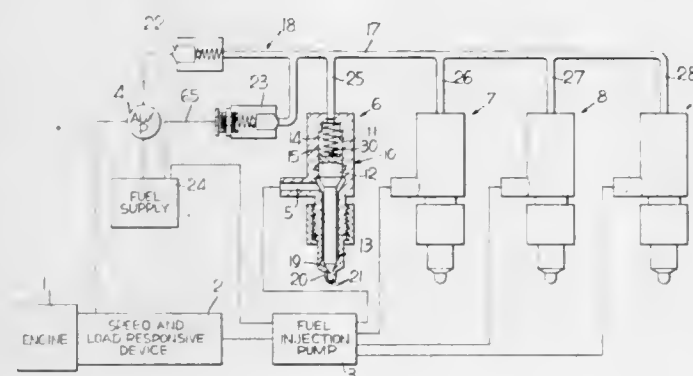
Alexander Dreisin, Olympia Fields, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 12, 1969, Ser. No. 884,491

Int. Cl. F02m 47/02

U.S. Cl. 123—139

10 Claims



A fuel injection system having a nozzle with a differential valve normally biased to a closed position by means of a spring with augmentation of hydraulic means. The hydraulic means include a source of pressurized fluid with pressure-regulating means to provide a fluid pressure biasing the differential valve to a closed position.

3,625,193

**ARCHERY BOW WITH VARIABLE BOW-TENSIONING DEVICE**

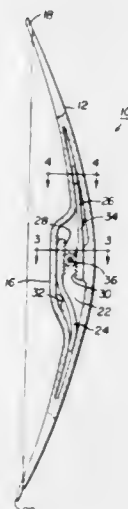
James R. Palma, 1502 Curry Road, Schenectady, N.Y.

Filed May 21, 1970, Ser. No. 39,297

Int. Cl. F41b 5/00

U.S. Cl. 124—23

9 Claims



An archery bow provided with an internal cavity extending substantially along its entire length. A pair of longitudinally movable reinforcing members are disposed in the cavity for movement therein toward the ends of the bow which are drivingly connected by an actuator having a shaft extending outwardly of the bow to which is secured a knob for rotation of said actuator to move the reinforcing members in opposite directions to thereby adjustably vary the tension force of said bow and thereby vary the force necessary to bend the bow.

The bow has a pointer that indicates on a scale the adjusted tension force developed in the bow.

3,625,194

**TRITERPENIC ALCOHOLS, PROCESS FOR THEIR PREPARATION AND THERAPEUTICAL COMPOSITIONS CONTAINING SAME**

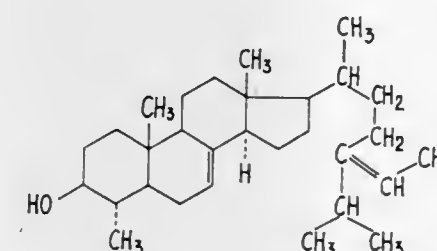
Henri Pinhas, Paris, France, assignor to Serdex-Societe D'Etudes, de Recherches de Diffusion Et D'Exploitation, Rue Aristide-Briand, France

Filed May 12, 1969, Ser. No. 823,719

Int. Cl. C07c 169/48

U.S. Cl. 424—238

16 Claims



Citrostadienol, cycloartenol, 24-methylene-cycloartanol and 3  $\beta$ -hydroxy-24-methyl-9-19-cyclo-9  $\beta$ -lanosta-23-ene have analeptic, anti-inflammatory and connective tissue harmonizing properties.

3,625,195

**SELF-SUPPORTING FOLDABLE STRUCTURES AND BLANKS THEREFOR**

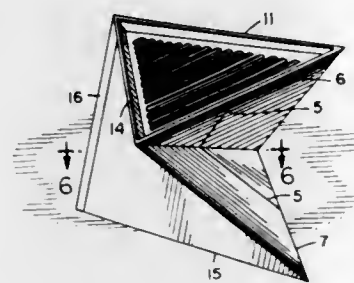
Terrand Bernard Grall, Sheboygan, Wis., assignor to Design Dynamics, Inc., Northfield, Ill.

Filed Nov. 10, 1969, Ser. No. 875,323

Int. Cl. A47b 3/00; B65d 5/36; F24c 1/16

U.S. Cl. 126—9 A

15 Claims



Self-supporting foldable structures made from preformed blanks of sheet materials are provided which are useful for portable barbecue grills and portable seating.

3,625,196

**BURNER CAP ASSEMBLY**

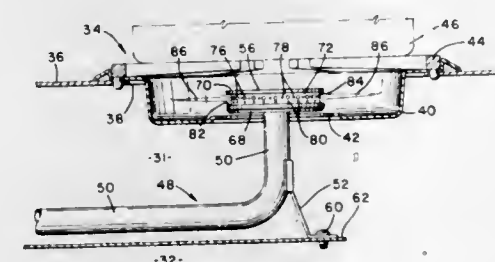
Albert F. Craver, Bay Village, Ohio, assignor to The W. J. Schoenberger Co., Cleveland, Ohio

Filed May 13, 1970, Ser. No. 36,907

Int. Cl. F24c 3/00

U.S. Cl. 126—39 H

9 Claims



A combination of a steel burner cap, a burner cap mounting plate and a mixing tube. One end of the tube is adapted

for connection to a gas manifold and the other end is connected to the mounting plate. Unobstructed openings intermediate the ends of the tube allow air to be aspirated when gas is injected from the manifold. The cap may be crimped to the plate for assembly tightness. Gas and primary air pass from the tube into the cap for further mixing while flowing radially out within the cap and subsequently through a plurality of ports. Ledges on the cap both above and below the ports extend radially outwardly to provide a flame shielding annular recess at the outer extent of the ports.

3,625,197

**CONTROL DEVICE**

Rudolf Pirker, Nurnberg; Walter Link, Nurnberg; Hans Grunbauer, Beiersdorf, and Roland Kelchner, Furth, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

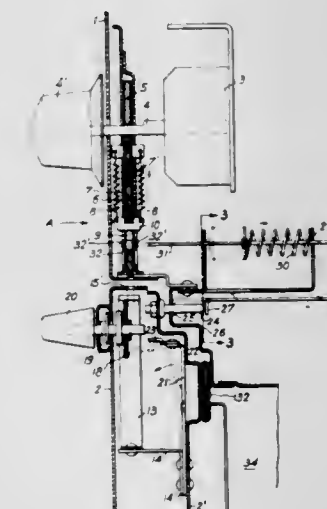
Filed Dec. 8, 1969, Ser. No. 883,252

Claims priority, application Germany, July 31, 1969, P 19 38 908.3

Int. Cl. F24c 15/02

U.S. Cl. 126—273 R

31 Claims



A device for controlling the cleaning cycle of a self-cleaning oven. A timer mechanically actuates a mechanism for locking the oven door before the cleaning cycle begins. This door-locking device has a bolt which is retained either by a bimetallic element or by the timer itself. An additional latching device assures that the bolt of the door-locking device can not be advanced unless the oven door is fully closed. A mechanism is provided that makes it necessary to set the oven control switch before the timer can be wound up. Once the timer is wound, and the heating elements for the cleaning cycle have been actuated, the timer can not be unwound except by running through the cleaning cycle. A thermal protection device is arranged in heat-conductive communication with the oven. A ventilator device, such as a fan, is arranged so as to normally cool this thermal protective device, as well as the other switching elements. If the timer fails to shut off the heating element for the cleaning cycle at the proper time, the thermal protective element will shut them off shortly after the ventilating device has been shut down by the timer. The timer only permits the locking device to be unlocked and the oven door opened after an appropriate cooling-off period.

3,625,198

**DIE AND HOLDER FOR IMPLANTING IN A LIVING BODY TO GROW TISSUE GRAFTS**

Charles H. Sparks, 3725 S.E. Martins St., Portland, Oreg. Continuation-in-part of application Ser. No. 655,838, July 25, 1967, now Patent No. 3,514,791. This application May 9, 1969, Ser. No. 823,287

Int. Cl. A61b 19/00; A61f 1/24

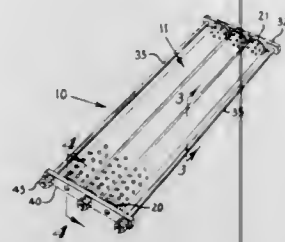
U.S. Cl. 128—1

11 Claims

Method and apparatus for growing a graft structure, particularly in a patient's own body. A die cluster is disclosed



comprising a plurality of dies for growing graft tubes whereby such graft tubes may be connected together end to end to



make a tube of desired length. The invention also includes an improved method for implanting the die cluster in the body.

3,625,199

**IMPLANTABLE PRESSURE INDICATOR**

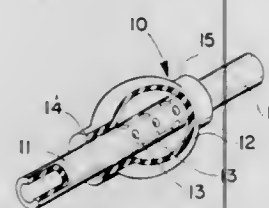
George D. Summers, Bethesda, Md., assignor to Fairchild Hiller Corporation, Montgomery County, Md.

Filed Nov. 6, 1969, Ser. No. 874,467

Int. Cl. A61b 05/02

U.S. Cl. 128-2 R

13 Claims



An implantable pressure indicator for detecting and indicating abnormal body fluid pressures in a body cavity or canal including a fluid conduit adapted to be connected to the body cavity or canal containing the body fluid whose pressure is to be measured and a distensible member associated with the fluid conduit. The distensible member can consist of a tubular sleeve, an elastic disc, or a longitudinally expandable bellows.

3,625,200

**CONTROLLED CURVABLE TIP MEMBER**

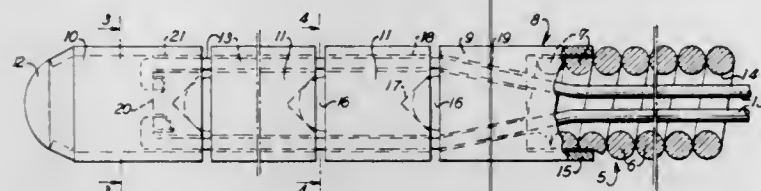
Wolf F. Muller, Southampton, N.Y., assignor to United States Catheter & Instrument Corporation, Glen Falls, N.Y.

Filed Aug. 26, 1969, Ser. No. 853,147

Int. Cl. A61b 10/00; A61m 25/00

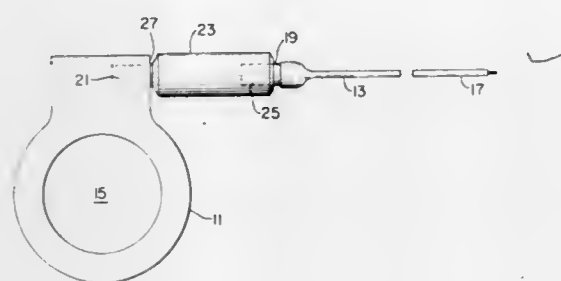
U.S. Cl. 128-2.05 R

9 Claims



A wire-controlled curvable tip for a spring guide comprising solid cylindrical links engaging each other with non-locking ball-and-socket type of articulation and adjustable to varying degrees of curvature by means of wires, each wire passing through a series of matching tunnels lengthwise of the links, secured at one end in the most distally located link and manipulated by applying differential tension to the other ends of the respective wires at the proximal end of the spring guide.

**3,625,201**  
**TESTER FOR STANDBY CARDIAC PACING**  
William P. Murphy, Jr., Miami, Fla., assignor to Cordis Corporation, Miami, Fla.  
Filed Nov. 28, 1969, Ser. No. 880,801  
Int. Cl. A61b 5/04  
U.S. Cl. 128-2.06 R 6 Claims



The tester disclosed herein facilitates the proper placement of the electrode of a standby cardiac pacer by attenuating both the stimulating pulses generated by the pacer and the spontaneous cardiac signals which either inhibit or trigger the operation of the pacer during standby operation. A nonlinear network is employed for providing different attenuating factors.

**3,625,202**  
**ELECTRICAL INSTRUMENT FOR MEDICAL TREATMENT ON MOXACAUTERY AND ACUPUNCTURE**

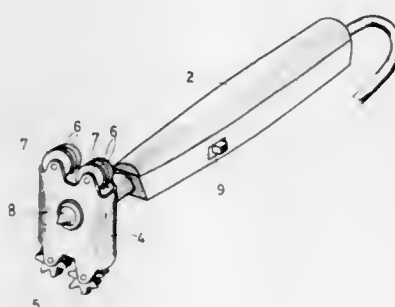
Sakae Oyoshirahara, No. 242, Akitsuki-cho, Ebisugawadori Kawabata Higashi, 6 Sujime Agaru, Sakyo-ku, Kyoto-shi, Japan

Filed Mar. 12, 1970, Ser. No. 18,996

Int. Cl. A61h 29/00

U.S. Cl. 128-24.3

1 Claim

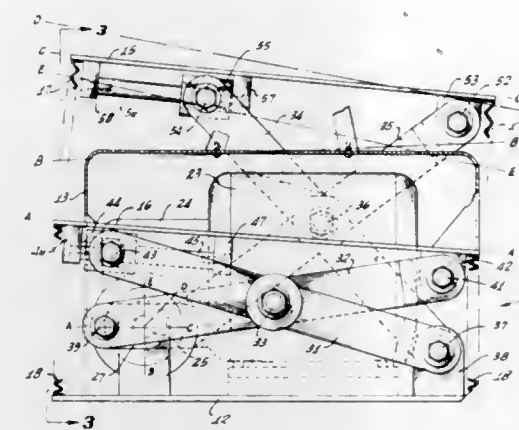


Star gearwheels, rubbing rollers and a projection are provided on a handle to be heated by an electrical source to a temperature, under which the skin of an affected part is treated with acupuncture and is applied by moxocautery.

**3,625,203**  
**FOOT AND LEG EXERCISER**  
Donald P. Wadleton, 11260 Nestle Ave., Northridge, Calif.  
Filed Mar. 30, 1970, Ser. No. 23,896  
Int. Cl. A61h 1/02  
U.S. Cl. 128-25 B 18 Claims

A foot and leg exerciser for paraplegics and other inactive patients supplying passive exercise by elevating and lowering the patient's feet while tilting them. The patient's feet rest on individual plates which move substantially 180° C. out of phase and are each controlled by a pair of scissors-connected levers joined substantially at their midpoints with the lower end of one lever pivotally mounted to a fixed point, the upper end of that lever being pivotally connected to a traveling bearing sleeve at the forward end of the footplate the lower end of the other lever being pivotally connected to a motor-driven crank, and the upper end of the other lever being pivotally connected to the back end of the footplate.

The driving cranks are mounted displaced 180° C., and the resulting operation raises and lowers and tips the footplates



drape is folded over on its outer surface from one longitudinal edge to form a cuff and thereafter folded inwardly from both transverse edges forming end sections. Each end section overlies adjacent portions of the center section thereby completely covering the inner surface of the drape and dividing the cuff into pockets. The adhesive extends adjacent the top margin of the cuff on the inner surface of the drape. The drape is so folded that a technician may unfold and apply the drape to a patient by handling only the outer surface and without necessitating any contact with the inner surface.

**3,625,206**  
**PROTECTIVE CLOTHING**

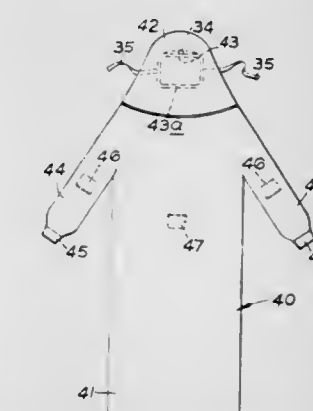
John Charnley, "Naemoor" South Road, Hale, Cheshire, England

Continuation-in-part of application Ser. No. 746,426, July 22, 1968, now Patent No. 3,529,594. This application Nov. 3, 1969, Ser. No. 873,247

Int. Cl. A61b 19/00

U.S. Cl. 128-142.5

5 Claims



to provide passive exercise for the feet and legs of the patient.

**3,625,204**  
**TOOL FOR SIMULATING FINGER-PRESSURE TREATMENT**

Ushinosuke Sekiguchi, 21-5, Imaya-Kami-machi, Kashiwa-shi, Chiba-ken, Japan

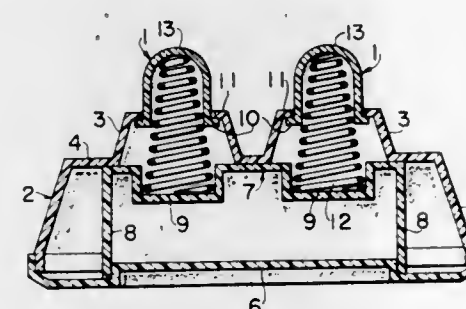
Filed Oct. 16, 1969, Ser. No. 866,895

Claims priority, application Japan, Oct. 14, 1968, 43/89674

Int. Cl. A61h 7/00

U.S. Cl. 128-60

6 Claims



A tool for simulating finger-pressure treatment comprising a platform and a plurality of operating spherical bodies supported on said platform by a supporting cup and provided with operative head of part spherical shape projecting from the cup, between the platform and spherical bodies within the supporting cups, and spherical bodies being axially movable and supported so as to permit rocking movement in any operative position.

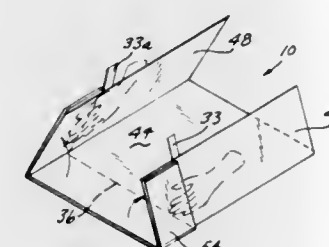
**3,625,205**  
**DISPOSABLE SURGICAL TOWEL**  
John J. Madden, Kearny, and Martin P. Galen, Livingston, both of N.J., assignors to Becton, Dickinson & Company, East Rutherford, N.J.

Filed May 8, 1970, Ser. No. 35,848

Int. Cl. A61h 13/00; A61h 15/00

U.S. Cl. 128-132

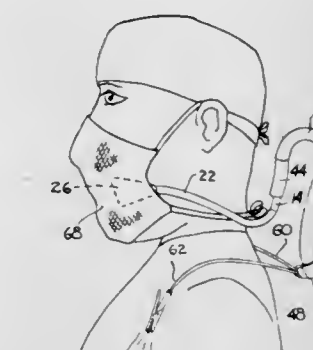
5 Claims



A surgical repair drape or towel is provided comprising a generally rectangular sheet of nonwoven material provided with a strip of double-faced adhesive on one surface. The

Protective clothing for protecting an environment from contamination by a wearer comprising: an air-impermeable sleeved gown formed with an integral hood having a front opening therein in combination with a face mask in the front opening enabling a wearer to see out of the hood, connections for a suction line to the face mask for drawing air from the region of the wearer's face and cooling the wearer by causing an upward current of air over the body surface and extracting dust particles and bacteria emanating from the wearer's body.

**3,625,207**  
**RESPIRATORY MASK AND DUCTING**  
Boyd F. Agnew, 111 Via Lido Nord, Newport Beach, Calif.  
Filed June 18, 1970, Ser. No. 47,414  
Int. Cl. A61b 19/00; A62b 23/06  
U.S. Cl. 128-146.2 14 Claims



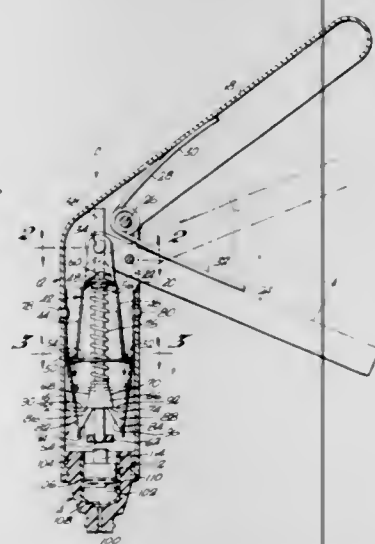
A suction ducting system for use under a conventional surgical mask comprises a pair of divergent hose sections joined at the back of a wearer's neck to a primary suction line. The divergent hose sections extend about the sides of the wearer's head adjacent his lower jaw and terminate at the cheeks in flattened substantially triangular ports. The ports lie against the wearer's cheeks and each diverges from its suction hose to a narrow, elongated mouth that lies closely adjacent to the wearer's cheek and extends from a point just below the side of the nose to a point between the corner of the mouth and



the chin. Resilient wire stiffeners extend through the suction hoses to resiliently clamp the ducting system to the wearer's head. The primary suction line is held in a vertical loop at the back of the head and is formed of a number of readily disconnectable sections that may be individually attached to the back of the wearer's gown. The flattened ports are covered by the mask.

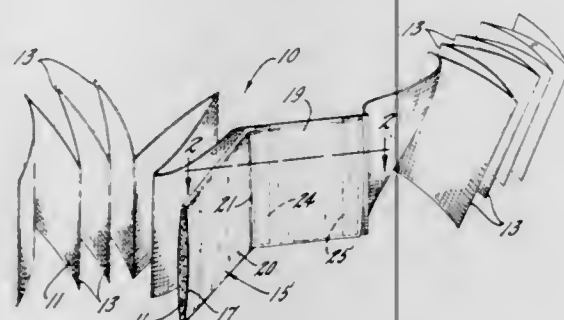
**3,625,208**  
**APPARATUS FOR PRESSURE-ADMINISTERING**  
**MEDICAMENTS**

Philip Frost, and Harry Van Der Gaast, both of Miami Beach, Fla., assignors to Mediquip Corporation  
Filed May 19, 1969, Ser. No. 825,528  
Int. Cl. A61m 1/00  
U.S. Cl. 128—173 H 4 Claims



Apparatus for pressure administration of a fluent medicament in which a medicament-containing cartridge includes a needlelike outlet bore communicating with a chamber containing the medicament and includes a dispensing piston exposed at the rear end of the cartridge, and the cartridge is removably mounted on the barrel of a dispensing apparatus which includes a handle and actuator, in which the actuator controls a force transmitting assembly having a force transmitting rod directed toward the piston of the medicament cartridge and in which the force transmitting rod is subject to a buildup of axial pressure normally urging the rod toward the dispensing piston during an initial increment of travel and subsequently forcibly engages the piston during a terminal portion of the travel causing the medicament to be forcibly discharged at a skin-penetrating pressure from the needlelike outlet of the cartridge, and means for resetting the apparatus for subsequent use with another cartridge.

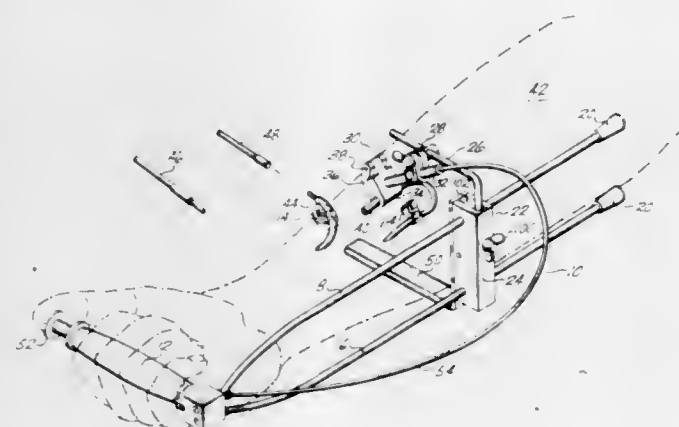
**3,625,209**  
**BANDAGE WITH COMPRESS PAD**  
Roland R. Clark, Rockford, Ill., assignor to Medical Supply Company, Rockford, Ill.  
Filed June 26, 1969, Ser. No. 836,699  
Int. Cl. A611 15/01  
U.S. Cl. 128—169 2 Claims



A bandage includes a compress pad which is secured to an elongated bandage strip of gauzelike material by strips of

tape sandwiched between the pad and the gauze strip and each having pressure-sensitive adhesive on both faces to stick the pad to the gauze strip.

**3,625,210**  
**CANNULA CLAMP**  
Martin Mikkelsen, Bothell, Wash., assignor to Harold V. McPherson, Seattle, Wash., a part interest  
Filed Apr. 10, 1970, Ser. No. 27,329  
Int. Cl. A61m 05/00  
U.S. Cl. 128—214 R 18 Claims



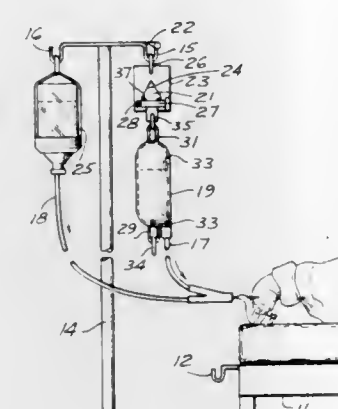
A device for holding a cannula connected to a vein or artery in the arm of a kidney machine patient comprising a handgrip having a longitudinal brace extending therefrom, the longitudinal brace including slidable support means for a clamp. The clamp having a bight portion peculiarly adapted to hold but not compress the cannula, and a cable extending from the clamp to the handle whereby the patient may actuate the clamp by use of the hand of the arm in which the cannula is implanted. In another embodiment compressors are provided to stop the flow of blood in a vein in the arm of the patient.

**3,625,211**  
**FAILSAFE APPARATUS FOR ADMINISTERING A**  
**PARENTERAL SOLUTION**  
William F. Butler, Oakland, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.  
Filed June 6, 1969, Ser. No. 830,934  
Int. Cl. A61m 05/14  
U.S. Cl. 128—214 C 4 Claims



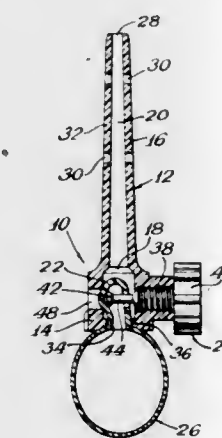
A set for administering a premeasured volume of parenteral solution from a prime fluid supply, utilizing a valve arrangement which prevents the possibility of the prime fluid supply being connected directly to the patient and enables repeat administration without manipulation of an anti-air-entrainment valve.

**3,625,212**  
**ELIMINATING MISTAKES IN PLASMAPHERESIS**  
Ralph Rosenberg, Bay Harbor Island, and Sheldon Reich, Hollywood, both of Fla., assignors to North American Biologicals, Inc., Fort Lauderdale, Fla.  
Filed July 9, 1969, Ser. No. 840,154  
Int. Cl. A61m 05/00  
U.S. Cl. 128—214 R 7 Claims



In plasmapheresis, this disclosure teaches a method for eliminating mistakes in returning a container of red blood cells to the correct donor. A mating plug and receptacle of distinctive shape are connected between the container and its support. If the plug and receptacle do not match, there is no convenient way to support the container for intravenous delivery of the red blood cells to the donor. The basic concept can be applied also to a wide variety of other services.

**3,625,213**  
**DISPENSER WITH RUPTURING MEANS**  
Frank E. Brown, Burbank, Calif., assignor to R. P. Scherer Corporation  
Filed Sept. 22, 1969, Ser. No. 859,797  
Int. Cl. A61m 1/00  
U.S. Cl. 128—232 8 Claims



A dispenser for a fluid or fluidlike material, such as medicaments. A support member includes a conduit and an outlet on the conduit. The support member receives a puncturable, flexible capsule which contains a fluid substance. A puncturing member is operatively received by the support member and punctures a portion of the capsule so as to release fluid from the capsule. Pressure applied to the flexible capsule forces the fluid substance from the punctured capsule, into the conduit, and through the outlet to the place of application.

**3,625,214**  
**DRUG-DELIVERY DEVICE**  
Takeru Higuchi, Lawrence, Kans., assignor to Alza Corporation  
Filed May 18, 1970, Ser. No. 38,237  
Int. Cl. A61m 7/00  
U.S. Cl. 128—260 14 Claims

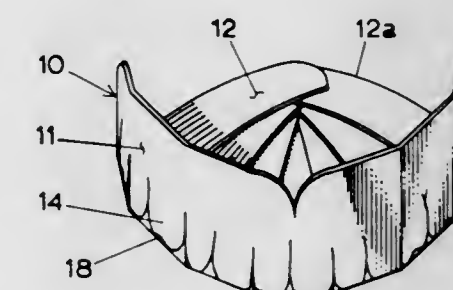
A drug-delivery device for prolongedly delivering drugs to patients according to any predetermined time release profile,

e.g., increasing, decreasing, constant, pulsing, sinusoidal, and like patterns of release, is fabricated by applying a drug coating of varying or uniform thickness to a relatively drug-impermeable film soluble in body fluids and thence rolling said coated film about itself in spiral or "jellyroll" fashion. Upon administration to the body, the outermost extremities of the



film gradually erode at a predetermined rate in body fluids thus exposing coextensive extremities of the drug coating, also soluble in body fluids, and drug is released to the tissues of the body. Suitable design of the drug coating along the spiral, e.g., of varying thickness, etc., provides for the aforesaid release patterns as the device disintegrates.

**3,625,215**  
**DENTAL SHEATHS**  
Sverre Quisling, 1240 Sherman Ave., Madison, Wis.  
Filed July 9, 1970, Ser. No. 53,529  
Int. Cl. A61m 7/00  
U.S. Cl. 128—260 1 Claim



A disposable dental sheath of plastic-coated absorbent paperboard for applying medicament gels and liquids to the teeth and gums and covering recently filled or otherwise treated teeth, defective or missing teeth, and orthodontic appliances. The sheath has a curved front panel integrally connected along a foldline to a rear panel which is divided into a series of tabs overlapped in fantail relation. The medicament is placed in the sheath for treatment of the teeth and gums. The front panel may have an outline of teeth formed thereon along the foldline.

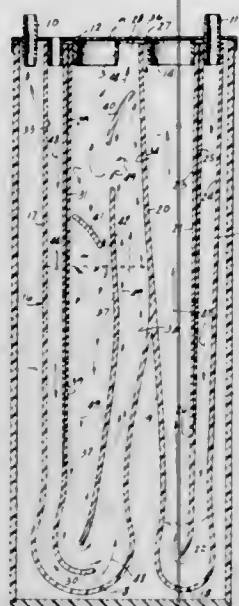
**3,625,216**  
**DISPOSABLE WATER SEAL AND SUCTION CONTROL**  
**BAG**  
Karl A. Pannier, Jr.; Gordon S. Reynolds, and James L. Sorenson, all of Salt Lake City, Utah, assignors to LeVoy's, Inc., Salt Lake City, Utah  
Filed Apr. 24, 1970, Ser. No. 31,581  
Int. Cl. A61m 1/00  
U.S. Cl. 128—277 15 Claims

A disposable bag for disposition between a source of suction and a container for collecting drainage from the body of a patient after severe wounding of or surgery performed on



the patient, the bag having a suction control section and a water seal section and is fixedly attached to a canister cover,

the bell and wire, and current of cutting frequency, suitably timed for the cut to be made, is applied to effect the cut



both the bag and cover being discarded after usage with a single patient or whenever desired.

3,625,217

# **APPARATUS FOR EXTRACTING SNAKE POISON FROM WOUNDS**

Johan George Schmidt, Gibsonstraat 31, Deventer, Netherlands

Filed May 28, 1969, Ser. No. 828,523

Claims priority, application Germany, May 30, 1968, P 17 66 485.6

Int. Cl. A61m 1/00

U.S. Cl. 128—300

11 Claims



A suction device for extracting poison, particularly snake poison, from wounds which comprises a cylinder having an open end and a hand-operable piston displaceable in the cylinder in opposite directions. With the open end applied to the area directly surrounding the wound and upon movement of the piston in one direction, partial vacuum is created in the cylinder in the region of the open end, as a result of which poison is extracted from the wound and sucked into the cylinder.

3,625,218

# **APPARATUS FOR ELECTROSURGICAL CIRCUMCISION**

Joseph R. Vallinoti, Jr., 80 Lake Road, Manhasset, N.Y.

Filed Mar. 14, 1969, Ser. No. 807,188

Int. Cl. A61n 3/00

U.S. Cl. 128—303.14

9 Claims

A method and apparatus employing a high-frequency electric current having a bell as one electrode inserted within the foreskin and having a relatively fine stainless steel wire tightly encircling the foreskin at the position where the foreskin is to be cut. The wire serves as the other electrode and overlies an opposed area of the bell within the foreskin. A source of high-frequency current has its leads connected to

beneath the wire. The bell has electrical insulation applied to its exterior surface and preferably has heat-insulation material applied to its interior surface.

3,625,219

# **APPARATUS TO FACILITATE SEALING OF ARTERIAL PUNCTURES**

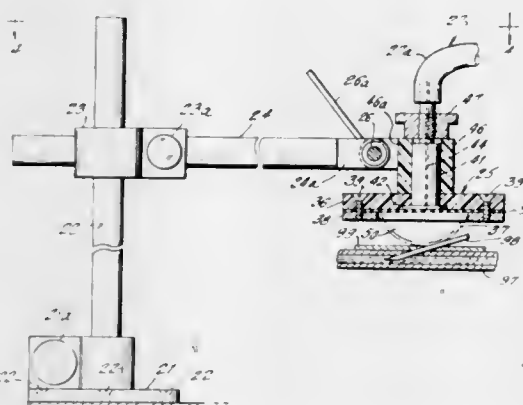
Raymond M. Abrams, 29 Old Pond Road, Great Neck, N.Y., and Elliott R. Beranbaum, 110 Bleeker St., New York, N.Y.

Filed Jan. 3, 1969, Ser. No. 788,874

Int. Cl. A61b 17/12; A47I 5/10; A62b 35/00

U.S. Cl. 128—325

4 Claims



A device for arterial compression to promote formation of a blood clot or thrombus which closes an arterial puncture is constructed with an inflatable transparent expandable pad unit. An adjustable support means mounted to a base supports the transparent pad in its required operative position. The patient is properly located by body-positioning pads located on the base with a pair of belts maintaining the patient in such operative position. After the unit is placed over the arterial opening, the unit is inflated to a point where blood does no more than merely ooze from the arterial opening and pulsing indications of blood pressure within the artery in question become observable on a gauge connected to read pressure within the transparent chamber. The arterial compression is observable through the pad and the clot is usually formed properly a short time after blood stops oozing.

3,625,220

# **EXTENDIBLE SUTURE GUARD**

Harvey J. Engelsber, Yonkers, N.Y., assignor to Horizon Industries, Ltd., Bronx, N.Y.

Filed Oct. 7, 1969, Ser. No. 864,353

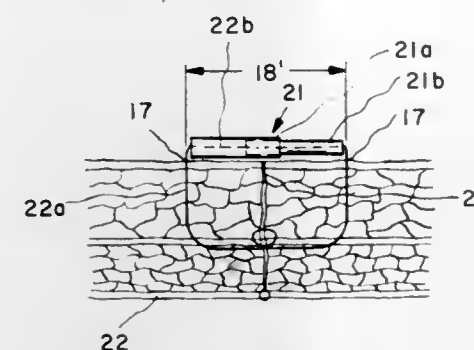
Int. Cl. A61b 17/04

U.S. Cl. 128—335

9 Claims

A retention suture guard is formed of a pair of semirigid inner and outer tubes arranged in telescoping relationship. Locking means between the tubes permit their relative axial movement in one direction to lengthen the device incrementally as desired, while providing substantial resistance to relative axial movement in the opposite direction. In practice, the ends of a suture extend through exit points in the skin on

opposite sides of a wound, with one end of the suture being threaded through the central bore of the suture guard. The tubes of the guard are then telescopically extended to have a total length equal to the distance between said exit points,



and the suture ends are tied. The guard thus provides a generally flat support surface across the wound, and establishes fixed lateral points through which the suture's tension is applied.

3,625,221

# **FLAP-TROL SUCTION CATHETER**

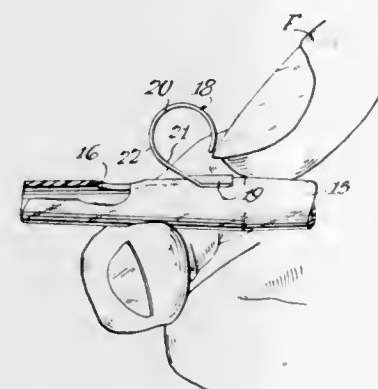
Joseph H. Corbett, Fort Edward, N.Y., assignor to Sherwood Medical Industries Inc.

Filed July 29, 1969, Ser. No. 845,682

Int. Cl. A61m 25/00

U.S. Cl. 128—351

4 Claims



An airway suction catheter for use in aspirating applications. The catheter tube is provided adjacent a distal end thereof with an aperture for varying the suction. A manually operable valve is carried on the catheter adjacent the aperture for adjustably closing the aperture and correspondingly adjusting the suction.

3,625,222

# **BATON-TYPE ARREST DEVICE**

Kunio Shimizu, No. 33-2, 1-chome, Asagaya Minami, Suginami-ku, Tokyo, Japan

Original application Dec. 6, 1966, Ser. No. 599,446, now

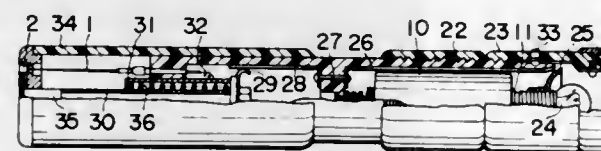
Patent No. 3,523,538, dated Aug. 11, 1970. Divided and this

application Mar. 9, 1970, Ser. No. 17,419

Int. Cl. A61n 1/04, 1/20; A61m 21/00

U.S. Cl. 128—405

5 Claims



A pair of needle electrodes which are slightly spaced and are adapted to pierce the skin are normally concealed into a cylindrical casing but projected to pierce the skin only when the casing is pressed against the skin and in contact therewith. A minute electric current sufficient to create in the human body a false state of epilepsy is applied to the human body through the needle electrodes under the skin.

3,625,223

# **SELF-CLEARING CORN CUTTERHEAD**

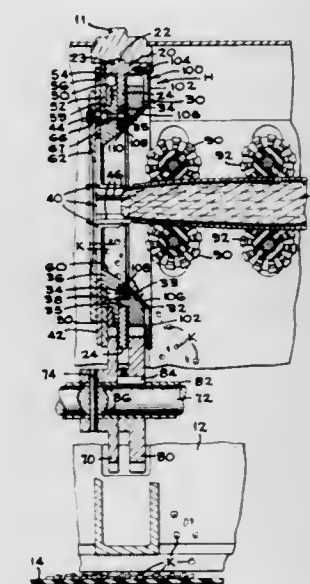
Robert E. Shuler, Hoopeson, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 8, 1970, Ser. No. 79,158

Int. Cl. A01F 11/06

U.S. Cl. 130—9

5 Claims



A rotary corn cutterhead has a housing, an annular cutterhead gear, a knife anchor assembly rotatable in the housing and forming a conical entrance throat that rotates. Radial knives are formed on the assembly and project into the entrance throat. A fixed conical deflector overlies the axially outer portion of the entrance throat to serve as a gravity delivery chute for the kernels, whereas the axially inner portion of the throat presents a rotating conical surface to the knives and hence is self-cleaning. A radial scraper is mounted on the fixed conical deflector and overlies the rotating conical surface of the entrance throat.

3,625,224

# **TOBACCO PRODUCT**

John Charles Leffingwell, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 30, 1969, Ser. No. 820,619

Int. Cl. A24b 15/04; A24d 01/06

U.S. Cl. 131—17 R

14 Claims

Addition of methyl and ethyl substituted pyridine compounds to tobacco to enhance the flavor and aroma.

3,625,225

# **RECONSTITUTED TOBACCO**

Howard Martin Halter, Norwalk, Conn., assignor to AMF Incorporated

Filed July 24, 1969, Ser. No. 844,652

Int. Cl. A24b 03/14, 13/00

U.S. Cl. 131—17 AC

5 Claims

A reconstituted tobacco composition and method of manufacturing same wherein a slurry of tobacco and solvent is created and has added thereto ethylhydroxyethyl cellulose as a burn improver.

3,625,226

# **COUNTING AND MARKING DEVICE**

Jacques Flesselles, Fleury-les-aubrais, France, assignor to Service d'Exploitation Industrielle des Tobacs et des Alumettes, Paris, France

Continuation of application Ser. No. 325,570, Jan. 22, 1963, now abandoned, which is a continuation of application Ser. No. 835,889, June 12, 1969, now abandoned. This application

Feb. 9, 1970, Ser. No. 9,096

Int. Cl. A24c 05/32

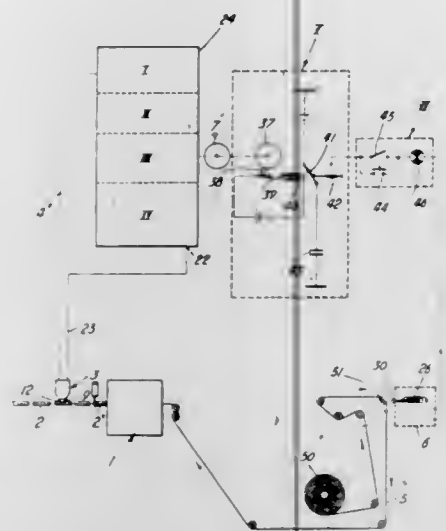
U.S. Cl. 131—21 B

5 Claims

A marking device for the wrapper in a cigarette-making machine including a photoelectric device for counting



cigarettes at the discharge end of the machine arranged to energize an electromagnet which moves a pencil into momentary contact with the wrapper tape within the machine.



When a preselected number of cigarettes has been counted, a drum having a peripheral lug rotates to close a switch which energizes the electromagnet.

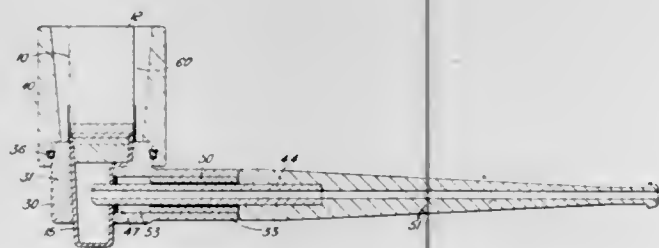
3,625,227

### PIPE-LIKE SMOKING DEVICE FOR USE WITH TOBACCO CARTRIDGES

Kenneth B. Fether; David B. L. Brickwood, and Peter Steer Sampson, all of London, England, assignors to Imperial Tobacco Group Limited, Bristol, England  
Filed Aug. 8, 1969, Ser. No. 848,514  
Int. Cl. A24f 5/00.

U.S. Cl. 131—225

7 Claims



A pipelike smoking device for use with cartridges of tobacco. A mouthpiece, a bowl constructed to hold the cartridge, and a stem provide communication from the stem through the bowl to the cartridge. The stem projects into the bowl and penetrates the cartridge to provide the communication between the mouthpiece and the interior of the cartridge. Concurrently, the stem releasably retains the cartridge within the bowl.

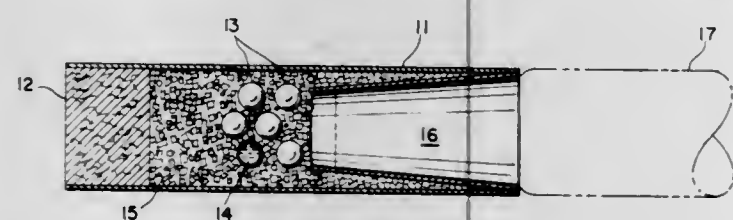
3,625,228

### HEAT ACTIVATED FILTER FOR SMOKING DEVICES

Mortimer Russell Dock, New York, N.Y., assignor to The H-2-O Filter Corporation, New York, N.Y.  
Filed Oct. 16, 1969, Ser. No. 866,812  
Int. Cl. A24d 01/06; A24f 13/06

U.S. Cl. 131—262

2 Claims



This invention relates to a filter for smoking devices wherein the heat caused by combustion of the tobacco products causes the release of encapsulated fluid and the

consequent moistening of the filtering material disposed within the device. The fluid is retained in capsules the walls of which are constituted of waxlike material which is melted when the heat of the smoke is concentrated in "jet" form thereon by a truncated conical baffle the smaller end of which is in proximity to the capsules and the larger end is close to the tobacco charge.

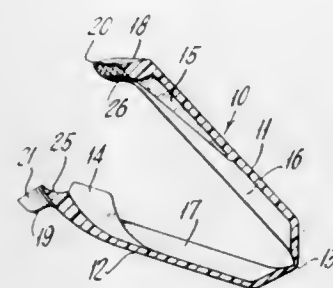
3,625,229

### TONGS FOR HANDLING FALSE EYELASHES

Victor Silson, New York, N.Y., assignor to Helena Rubinstein, Inc., New York, N.Y.  
Filed July 17, 1969, Ser. No. 842,637  
Int. Cl. A45d 2/00

U.S. Cl. 132—31 A

2 Claims



A tongs having an integral molded hinge joining a pair of legs, each leg having a crosspiece at its outer end, the crosspieces being curved to grasp the lashes of a false eyelash and to exert an even pressure on all the lashes when the crosspieces flex under closing forces, the legs having interlocking tongue-and-groove elements to prevent relative sliding of the crosspieces.

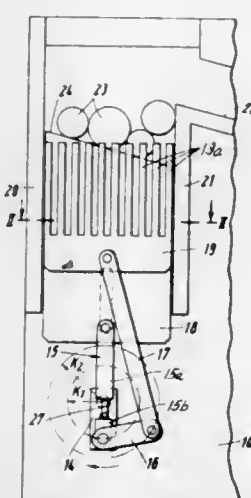
3,625,230

### COIN SORTING DEVICE

Herbert K. Zschaeck, Oberflockenbach, and Karl Rothinger, Plankstadt, both of Germany, assignors to Firma Kontex Kontrolltechnik, Mannheim, Germany  
Filed Nov. 18, 1969, Ser. No. 877,690  
Int. Cl. G07d 3/00

U.S. Cl. 133—3

11 Claims



A coin-sorting device includes a coin receptacle which is arranged adjacent the upper end of a sorting bar which is inclined for the feeding of coins therealong. The sorting device includes a plate which bears on a plane of an inner wall of the receptacle and this wall is inclined backwardly from the vertical in order that it might receive the coins placed in the receptacle. Crank means are provided for moving the plate upwardly and downwardly. In its upper position an inclined top edge of the plate is aligned with the inclined sorting bar. Coins which are moved to the edge of the plate during its downward movement, because of the inclined deposition of receptacle and the rear wall thereof, are lifted upwardly by the plate until its lowermost edge is alongside the end of the sorting bar at which point the coins will roll off the plate onto the bar. In order to insure that the coins

become trapped on the plate, and that no other coins interfere with the rolling movement, a second plate is arranged for up and down movement in a location directly overlying the first plate and it provides a shielding effect in respect to the other coins in the receptacle in order to hold the coins which are trapped on the first plate and permit their rolloff without interference by the other coins. The crank means for operating the second plate is such that the two plates move with the same up and down frequency of movement but the second lags in phase behind the first plate.

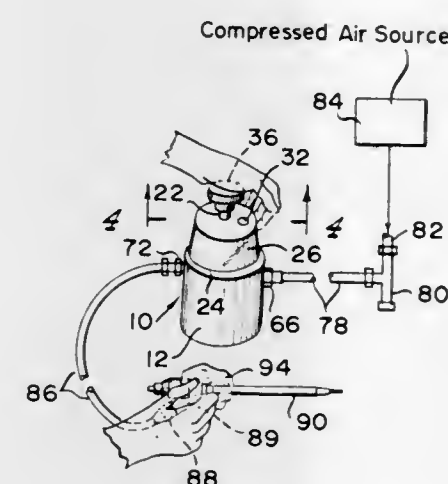
3,625,231

### APPARATUS FOR CLEANING AND CONDITIONING DENTAL HANDPIECES

George William Littrell, Jr., Aurora, Colo., assignor to Denso Division of William Getz Dental Products, Denver, Colo.  
Filed July 31, 1970, Ser. No. 59,902  
Int. Cl. B08b 9/00, 13/00

U.S. Cl. 134—102

9 Claims



This invention is an apparatus for cleaning and conditioning air-driven dental handpieces, the apparatus including a valve body which supports a reservoir containing a cleaning and conditioning fluid. A piston is operable through the reservoir and valve body for delivering a predetermined amount of cleaning and conditioning fluid carried by the piston, into a stream of a carrier gas, the carrier gas and fluid being expelled under pressure from the valve body through the dental handpiece, for removing foreign material from the internal parts and conditioning these parts.

3,625,232

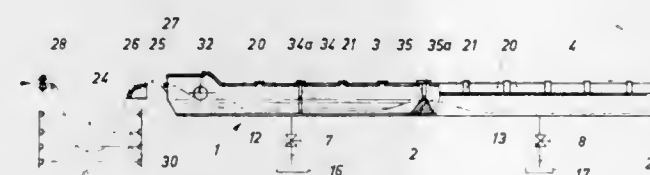
### CONTINUOUS PICKLING LINE FOR ENDLESS SHEETS

Rudolf Speilmanns, Hilden (Rhld.), and Friedrich Wilhelm Delwig, Dusseldorf, both of Germany, assignors to Moeller & Neumann GmbH, Ingbert Saar, Enshelmer Str., Germany  
Filed May 16, 1969, Ser. No. 825,376  
Claims priority, application Germany, May 16, 1969, P 17 71 402.2

Int. Cl. B08b 3/08, 1/02

U.S. Cl. 134—122

5 Claims



A pickling line for continuously travelling endless sheets consisting of a subdivided acid trough 1 with individual cover

plates 20 removable in sections, a driving device 31 for pulling the sheet and a loop pit 24 mounted in front of the acid trough without means to effect a back pull.

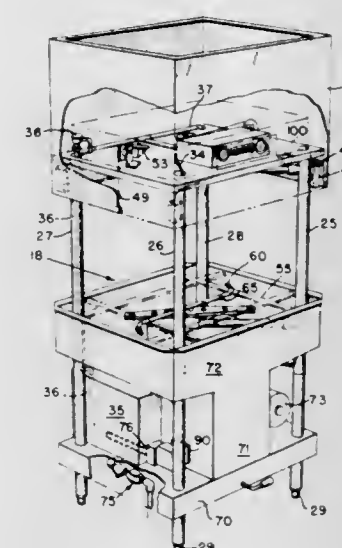
3,625,233

### DISH WASHING MACHINE

Creston R. Southard, Old Town, N.C., assignor to Creston Equipment Corporation, Winston-Salem, N.C.  
Filed June 19, 1969, Ser. No. 834,743  
Int. Cl. B08b 3/02

U.S. Cl. 134—165

10 Claims



This invention relates to a new and improved dish-washing machine accessible from all four sides thereof making it suitable for straight through or corner-type installation. The vertical legs are utilized for supporting the washer and receiving the electrical and plumbing mechanisms.

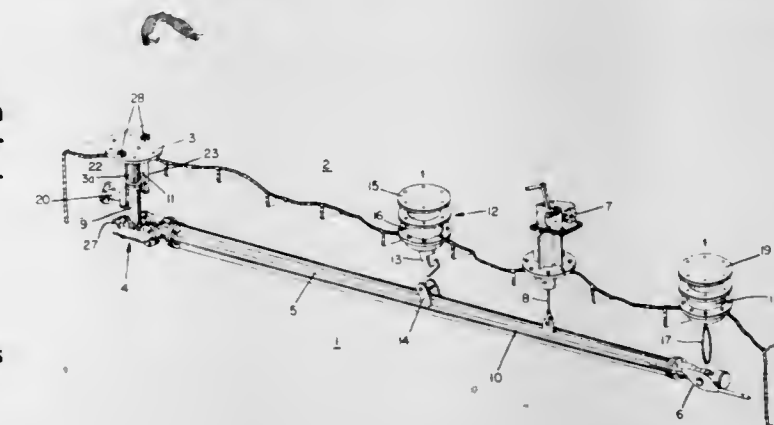
3,625,234

### CLEANING OF THE INTERIOR OF STORAGE TANKS

David J. Baldwin, London, England, assignor to Sybron Corporation, Rochester, N.Y.  
Filed July 27, 1970, Ser. No. 58,599  
Int. Cl. B08b 3/02, 9/08

U.S. Cl. 134—167 R

15 Claims



Device for tank-cleaning apparatus having a flanged mounting extending through and carried by the hatch, closure or top of a tank to be cleaned and an elongated pipe pivotally connected at one end to the flanged mounting inside of the hatch, closure or top and carrying the tank-cleaning apparatus at the other end. The tank-cleaning device is raised up out of the tank and locked into an inoperative storing position or lowered into the tank and locked into an operating position. Raising and lowering is controlled externally of the tank. Cleaning fluid is introduced to the tank-cleaning apparatus through the pivotal connection which communicates with the elongated pipe.



3,625,235

## PORTABLE SHELTER

Peter Gorgichuk, 108 McNaughton Street, Sudbury, Ontario, Canada

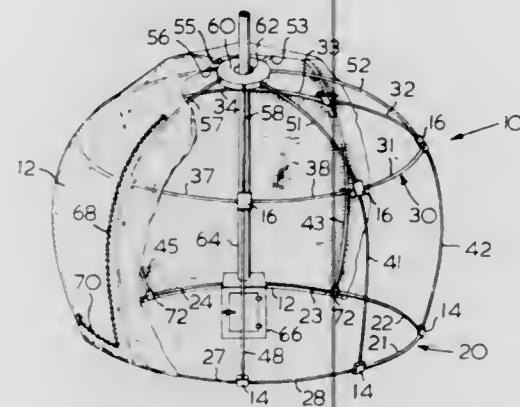
Filed June 29, 1970, Ser. No. 50,688

Claims priority, application Canada, July 3, 1969, 056070

Int. Cl. A45f 1/00

U.S. Cl. 135-1

8 Claims



A free-standing portable, sphere-segment-shaped, shelter is made from basically three types of components; initially straight resilient rods, joining members and, of course, a cover. The rods are bent into arcs within their elastic limit so that two circles are formed and these are separated and a dome provided by other initially straight rods similarly bent elastically; a top joining member in the form of a circular plate can have a central hole to provide ventilation and an outlet for a stovepipe.

3,625,236

## FOLDABLE UMBRELLA

Gonzaburo Hayano, 8 Takauchi Hondori 6-chome, Higashiosaka-shi, Osaka-fu, Japan

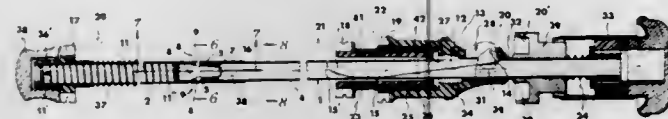
Filed Apr. 22, 1970, Ser. No. 30,721

Claims priority, application Japan, Oct. 6, 1969, Oct. 7, 1969, Oct. 8, 1969; 44/95626, 44/95929, 44/96377

Int. Cl. A45b 25/16

U.S. Cl. 135-22

4 Claims



A foldable umbrella comprising a center pole and main ribs formed of telescopically slidable members that are so arranged as to be opened or closed by movable rings slidably mounted on the center pole. Both the center pole and the main ribs are automatically opened by spring means in engagement with the movable rings and the pole members, and are substantially reduced in size owing to the telescoping of their members when the umbrella is manually closed.

3,625,237

## ARM SUPPORT FOR INVALID WALKERS

Mabel L. Wertz, 1301 N. Astor St., Chicago, Ill.

Filed Apr. 13, 1970, Ser. No. 27,716

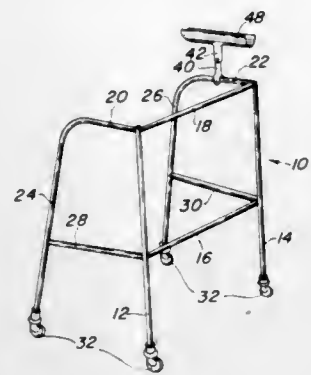
Int. Cl. A61h 3/00

U.S. Cl. 135-45 A

1 Claim

An arm support for invalids using walkers which is adjustable in all directions, either longitudinally, diagonally or verti-

cally, and is capable of being placed on either the right-hand side of the upper tubular rails of the walker, or the left-hand



side, and, if desired, could be placed on the front upper member of the walker.

3,625,238

## TWO-DIMENSIONAL FLUIDIC LOGIC DEVICE

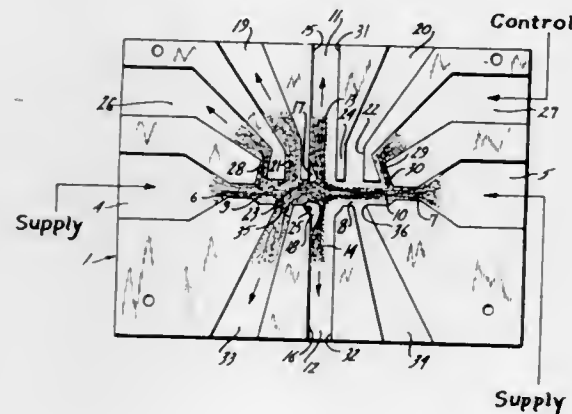
Warren A. Lederman, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 26, 1970, Ser. No. 5,652

Int. Cl. F15c 1/20

U.S. Cl. 137-81.5

9 Claims



A pair of opposing airstreams impact within a rectangular chamber having opposed stream-confining sidewalls. A pair of opposite impacting streamflows are established and flow into a pair of passageways provided in the first sidewalls with each passageway having axially spaced planar lock-on walls to one of which the impacting streamflow attaches as a result of fluid entrainment. Control passageways and related output passageways are connected to the chamber in one of said first walls to the opposite sides of the passageways. Main stream bleed passageways are connected to the opposite sides of the first impact flow passageway in the second or opposite of the first sidewalls. The impacting flow lock-on to the corresponding planar walls of the first bleed passageways results in flow and pressure in the corresponding output passageway. A control stream applied to one main stream associated with the free lock-on wall reduces the stream strength to shift the impact flow to the opposite lock-on walls and an output is created in the other output passageway.

3,625,239

## TRANSFER ELEMENT FOR A MEASURING OR CONTROL DEVICE

Horst Bader, Stuttgart-Fasanenhof, Germany, assignor to J. C. Eckardt A.G., Stuttgart-Fasanenhof, Germany

Filed Dec. 10, 1968, Ser. No. 782,633

Claims priority, application Switzerland, Dec. 22, 1967, 18077/67

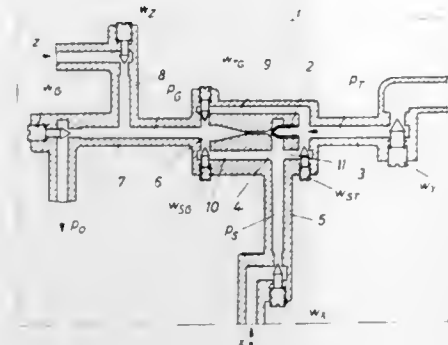
Int. Cl. F15c 1/00

U.S. Cl. 137-81.5

12 Claims

A transfer element for a measuring or control device which is operated by the flow of a pressure medium, in which a jet apparatus of a type known as such is employed for bringing at least two fluid-pressure values into operative association

with each other which may be applied by separate conduits so as to serve selectively as a main jet pressure, as a back of the bar. Means is provided for proper vertical adjustment of the bushings in the bar to cause sequential movement of



pressure, or as a suction pressure and may be controlled by a throttle valve in each conduit.

3,625,240

## HYDRAULIC BOOSTER SYSTEM

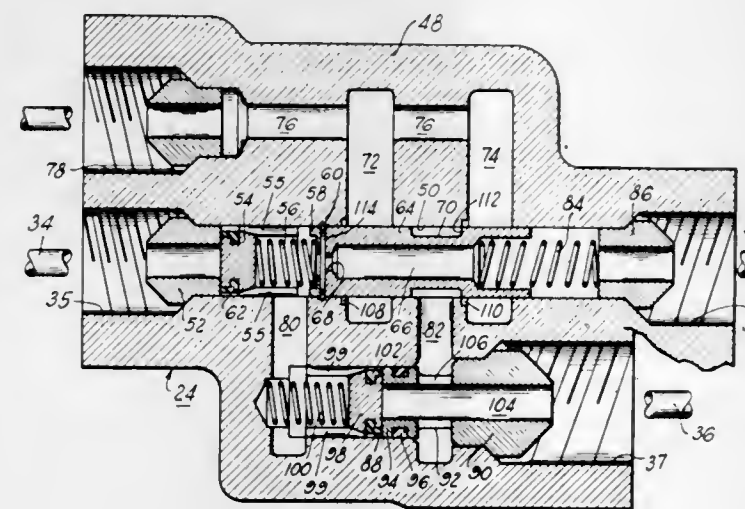
Stanley I. MacDuff, South Bend, Ind., assignor to The Bendix Corporation

Filed May 16, 1969, Ser. No. 825,353

Int. Cl. G05d 11/00

U.S. Cl. 137-113

3 Claims



A hydraulic booster system for a vehicle which is operable when the vehicle's engine is running and also when the engine is not running provided the vehicle is in motion. Said hydraulic booster system including a flow control valve means for connecting a second pump means to the system upon partial or complete fluid pressure failure of a first pump means.

3,625,241

## STEAM ADMISSION VALVE STRUCTURE FOR STEAM TURBINES

James Rodger Shields, Pittsburgh, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

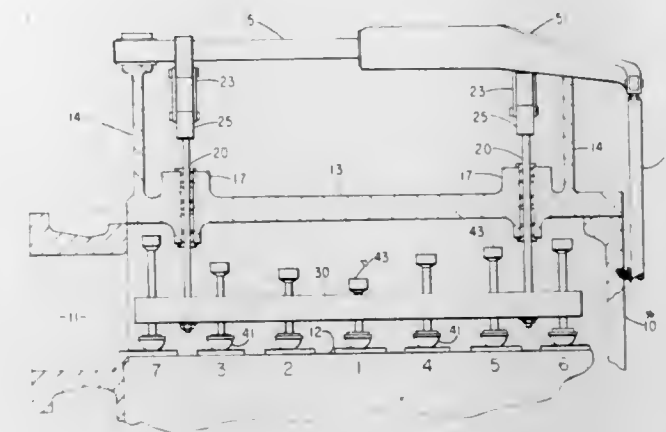
Filed Oct. 16, 1969, Ser. No. 867,017

Int. Cl. F16k 1/00, 31/44

U.S. Cl. 137-630.19

2 Claims

The valves are moved toward and from the seats by a valve lift bar provided with removable split bushing in which the valve stems are slidable. The stems are formed with enlarged integral head portions dimensioned to pass through the apertures in the bar in which the bushings are mounted. The heads are engaged by the bushings upon upward movement



the valves form their seats upon upward movement of the lift bar.

3,625,242

## PRESSURE ACCUMULATOR

Fritz Ostwald, Buchschlag, Germany, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

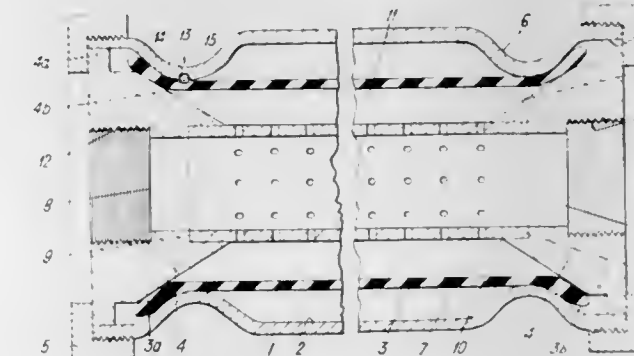
Filed Jan. 15, 1970, Ser. No. 3,215

Claims priority, application Germany, Jan. 17, 1969, P 19 02 217.4

Int. Cl. F16l 55/04

U.S. Cl. 138-30

1 Claim



In a pressure accumulator having a cylindrical housing, a coaxial perforated pipe supported within the housing through which pressure medium flows and an elastic tubular partition dividing the space between the housing and the pipe into an outer annular gas chamber and an inner chamber. The ends of the cylindrical housing have recessed sections and tapered end rings which press the elastic tube against the recessed sections to seal the accumulator. The rings also support the perforated tube and have means for fitting the accumulator in a pressure line.

3,625,243

## TIME CYCLE WARP-STOP MOTION CONTROL FOR WEAVING LOOMS

Harry P. Hansen, Martinsville, and Warren A. Barber, N. Planfield, both of N.J., assignors to The Slinger Company, New York, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,241

Int. Cl. D03d 51/00

U.S. Cl. 139-336

7 Claims

A circuit is disclosed for controlling the energization of the solenoid for actuating the conventional power-stop motion of a weaving loom in the event either of power failure or of breakage of warp threads. A silicon-controlled rectifier



(SCR) is connected in series with the solenoid and an AC voltage supply. Gating of the SCR is controlled by a unique transistor flip-flop circuit, the state of which is responsive to two different threshold voltages established at a control point. The voltage at the control point is determined by an



RC charging and discharging circuit conditionally responsive to the drop wire contacts. The RC circuit is adjusted so that a definite charging time must elapse after the opening of the drop wire contacts until the flip-flop changes state to gate the SCR into conduction. This time is made longer than the time of a pick-cycle of the loom.

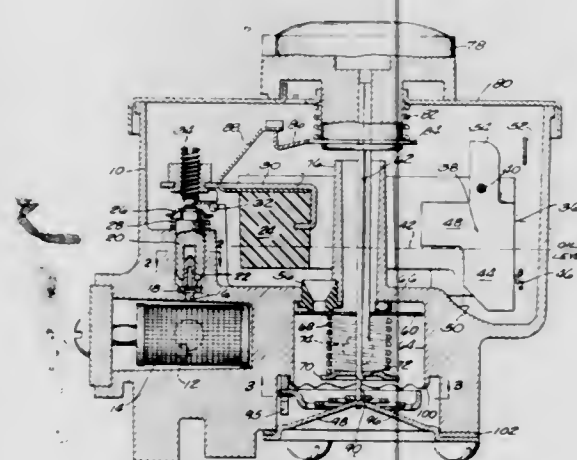
### 3,625,244 OIL CONTROL VALVE FLOW METERING ARRANGEMENT

Harry L. Giwosky, Milwaukee, Wis., assignor to Controls Company of America, Melrose Park, Ill.

Filed July 6, 1970, Ser. No. 52,603  
Int. Cl. F16k 11/02

U.S. Cl. 137-405

6 Claims



Oil flows into the control valve body past the float controlled inlet valve to maintain a constant level in the body. The thin metering disc is rotatable to multiple positions in which a metering orifice underlies the float chamber outlet to accurately meter the flow. The undulating track cast in the body cooperates with the spring-loaded rollers on the bottom of the metering stem to give a detent action; to registry of the metering holes. When the knob is turned to "off" the spring arm acts on the link to lift the float and force the inlet valve closed. If the oil level rises too high (due to leaking inlet valve), the inverted, L-shaped safety float flips clockwise to wedge in the valve-closing position until manually reset.

### 3,625,245 TIP FOR VALVE MEMBER AND METHOD OF ASSEMBLING SAME

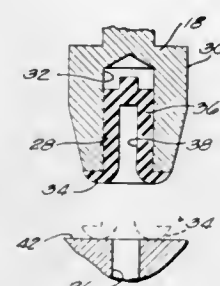
William A. Biermann, Brookfield, Wis., assignor to Controls Company of America, Melrose Park, Ill.

Filed Nov. 13, 1969, Ser. No. 876,532

Int. Cl. F16k 31/26

U.S. Cl. 137-434

6 Claims



The needle valve stem of a float-controlled valve is provided with a tip made of resilient material such as a fluorocopolymer. The end of the valve stem includes a cylindrical bore and the resilient tip has a cylindrical portion disposed in that bore which has a relaxed diameter greater than the diameter of the bore. The tip is inserted in the bore by stretching its cylindrical portion axially to reduce the diameter of the cylindrical portion. Once in the bore, the stretching force is released whereupon the tip tends to return to its relaxed state and in doing so creates an inherent bias which acts against the bore walls to hold the tip on the valve stem. The tip includes an annular, convex in transverse cross section projection which engages an unobstructed surface surrounding the valve orifice through which flow occurs. The tip closes the orifice to flow and does so without protruding into the orifice.

### 3,625,246 NONBLEED HIGH-PRESSURE POSITIONER

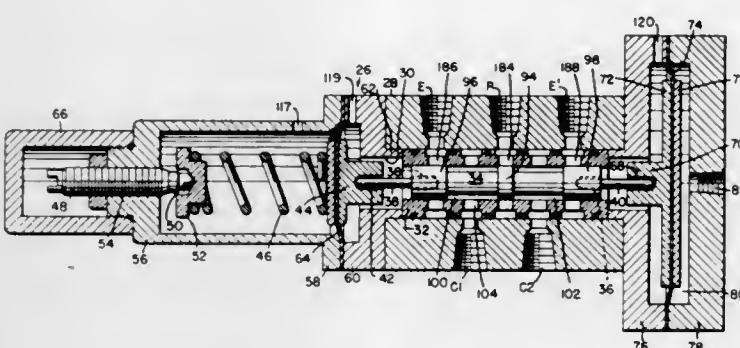
Henry V. Reaves, Cincinnati, Ohio, assignor to Matrix Corporation, Houston, Tex.

Filed Sept. 22, 1969, Ser. No. 859,698

Int. Cl. G05d 16/06

U.S. Cl. 137-488

20 Claims



The positioner actuates a pipeline control valve, utilizing the full pressure of the pipeline for its operation, and is constructed to minimize bleeding and waste of the pipeline fluid in normal operation. Automatic operation depends entirely upon pressure differentials in the pipeline system.

### 3,625,247 PRESSURE REGULATOR WITH PRESSURE RELIEF VALVE

Theodore A. Darga, Rockford, and Charles F. Leonard, Belvidere, both of Ill., assignors to Eclipse Fuel Engineering Co., Rockford, Ill.

Filed Oct. 27, 1969, Ser. No. 869,599

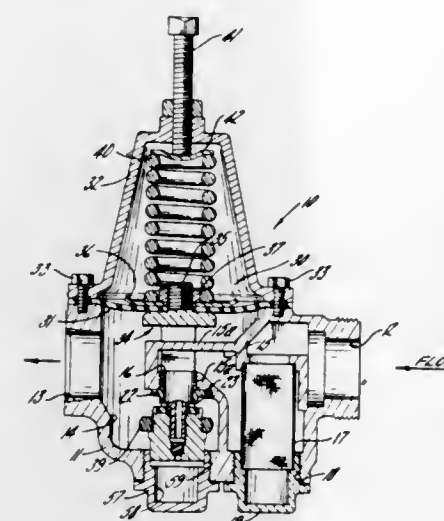
Int. Cl. G05d 16/06

U.S. Cl. 137-493.2

5 Claims

A pressure regulator valve having an inlet port for connecting the valve to a high-pressure supply of water and communicating with a passageway which extends into a chamber formed in the valve body, the passageway and the chamber

communicating with one another through an opening in one wall of the passageway. The chamber communicates directly with an outlet port for connecting the valve to a service pipe. To block the opening when the pressure in the chamber rises to a predetermined value, a valve element is moved into en-



agement with the wall of the passageway. A ball-type pressure relief valve is formed directly in the valve element itself to allow water to flow reversely from the chamber to the passageway when the pressure in the chamber rises above the pressure in the passageway.

### 3,625,248 AUTOMATIC PRESSURE-EQUILIBRATING VALVES

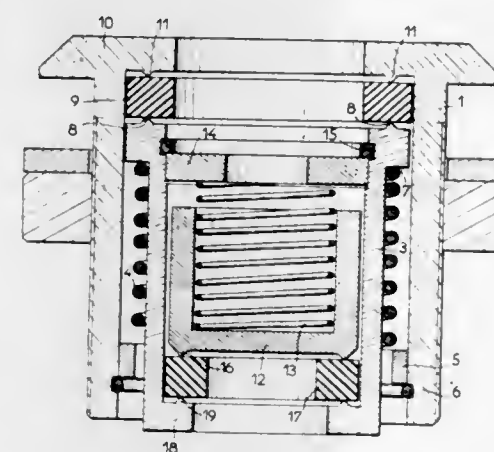
Philippe Lhotellier, Montrichard, (Loir et Cher), France

Filed Dec. 4, 1969, Ser. No. 882,153

Int. Cl. F16k 17/18

U.S. Cl. 137-493.6

4 Claims



A pressure-equalizing valve includes a passage having a first valve seat at one end for cooperation with a longitudinally movable sleeve member, the sleeve having a second valve seat spaced longitudinally from the first valve seat for cooperation with a cup-shaped member in the sleeve; the sleeve and the cup-shaped member being urged into engagement with the respective valve seats by helical springs.

### 3,625,249 ECCENTRIC DAMPER-TYPE VALVE FOR CONTROLLED ACTION

James F. Karr, 38 Joe De Diego, Mayaguez, P.R.

Filed Feb. 26, 1970, Ser. No. 14,496

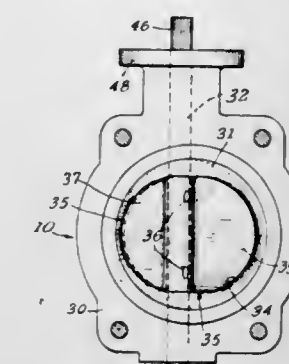
Int. Cl. F16k 3/04, 3/22

U.S. Cl. 137-527

9 Claims

An eccentric damper-type valve disposed across a flow line and which is adapted to open under pressure of the flow on the larger of the two uneven sections of the valve on either side of the valve shaft, whereby the total upstream pressure on the valve being unequal on the opposite sides of the shaft, the resulting differential of pressures enables manual or

mechanical (automatic or not) operation of the valve with a lower expenditure of force than would be required under



comparable conditions, to open or otherwise operate a completely unbalanced check valve.

### 3,625,250 ELECTROHYDRAULIC CONTROL APPARATUS FOR CONSUMER VALVES

Heinz Flaschar, Asperg; Klaus Schneider, Ludwigsburg, and Heinz Kleinschmidt, Stuttgart-Wangen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 16, 1970, Ser. No. 72,771

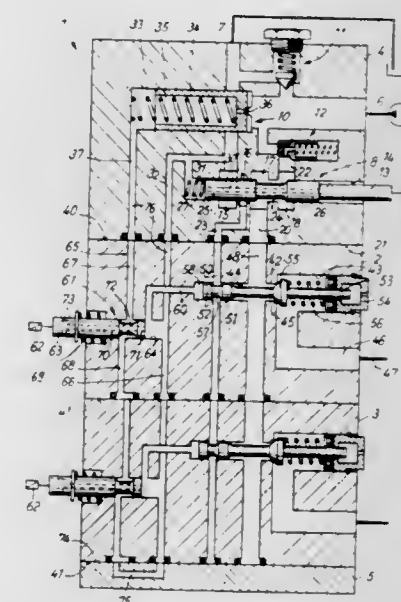
Claims priority, application Germany, Sept. 23, 1969, P 19

48 038.7

Int. Cl. F16k 11/00, 11/00

U.S. Cl. 137-596.12

14 Claims



The apparatus comprises an operation control unit, and a plurality of consumer control units with consumer conduits for a plurality of hydraulic motors. The consumer conduits are individually controlled by spring-biased consumer valves which are, respectively, actuated under control of single-stroke electromagnets. The operation control units include a spring-biased control valve actuated by another single-stroke electromagnet, to connect inlet means and outlet means, respectively, through a connecting conduit with all consumer control units.

### 3,625,251 HYDRAULIC COUPLER

Vaughn A. Nelson, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 15, 1970, Ser. No. 28,834

Int. Cl. F16k 15/18

U.S. Cl. 137-614.04

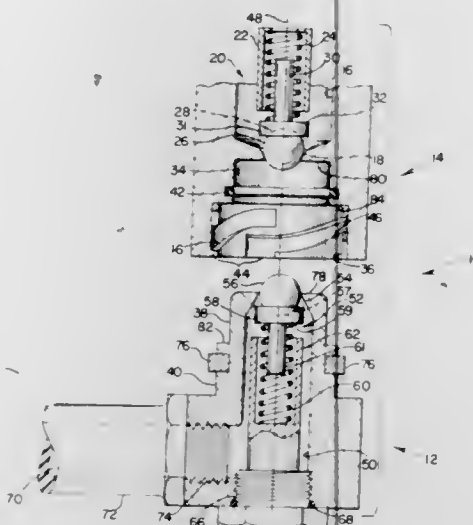
3 Claims

A quick disconnect valved hydraulic coupling characterized in that telescoping components are engaged and dis-



engaged by rotating them with respect to each other. Additionally, means are included that automatically disengage the

of the cylinder block relative to the control surface. The fluid bearing preferably comprises a plurality of circumferentially spaced pockets in the surface of the control body facing the cylinder block annularly disposed outside the control surface, the pockets being connected in communication with one



coupling when an elongating force is applied to a conduit that communicates with one of the telescoping components.

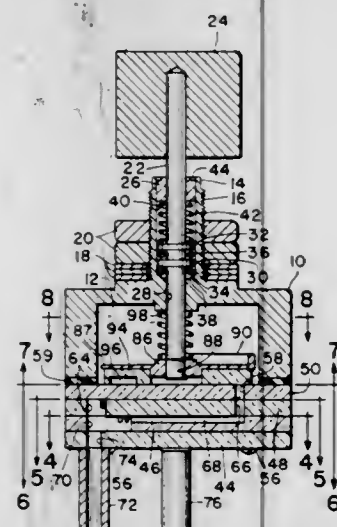
3,625,252

**LINEARLY VARIABLE LINEAR FLUIDIC RESISTOR**  
Thomas W. Bermel, Corning, N.Y., and Nicholas Lazar, Scranton, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 23, 1968, Ser. No. 723,387  
Int. Cl. F16k 1/52

U.S. Cl. 137-625.3

18 Claims



A variable linear fluid resistor in which a variable number of restricted paths connect two chambers to which the terminal fittings are connected. In addition to providing linear pressure flow characteristics, a linear relationship between rotary resistance adjusting motion and resistance is obtained.

3,625,253

**HYDRAULIC UNIT**

Kurt Christiansen, Oberbuchsitzen, Switzerland, assignor to Firma Von Roll AG, Gerlafingen, Switzerland  
Filed Dec. 1, 1969, Ser. No. 881,159

Claims priority, application Switzerland, Dec. 5, 1968, 18204/68

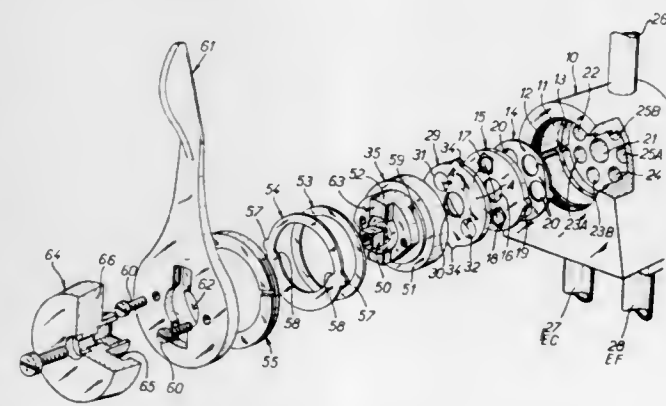
Int. Cl. F16k 11/02

U.S. Cl. 137-652.21

6 Claims

A hydraulic unit is disclosed having a rotating cylinder block in which a plurality of pistons move within axial cylinders, and a stationary control surface controlling the flow of fluid to and from the cylinders. A portion of the pressurized control fluid is taken from the fluid supply and is fed to a fluid thrust bearing means surrounding the control surface, which fluid bearing permits substantially frictionless rotation

Improvements in mixing water taps, comprising two similar closure members, one member being keyed in the tap body



3,625,255

**MIXING TAPS**

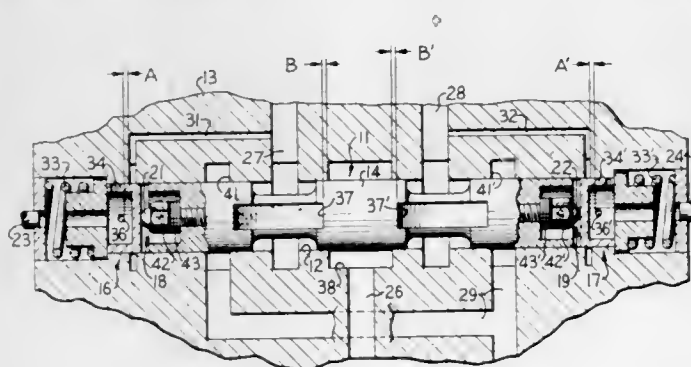
Bernard Genin, 137 Rue du Chemin Vert, Paris 11e, France  
Filed Sept. 26, 1969, Ser. No. 861,308

Claims priority, application France, May 22, 1969, 6,916,636  
Int. Cl. F16k 11/02

U.S. Cl. 137-637.3

7 Claims

A segmented valve spool in a fluid control valve permitting very accurate control over spacing between various portions of the spool. The segmented spool portions are selectively separated by shims with resilient means such as springs urging the spool segments toward each other. To avoid binding of the segmented spool within a spool bore, each shim assembly includes a tapered member or ball to establish point contact between each pair of adjacent spool segments.



3,625,254

**SEGMENTED VALVE SPOOL**

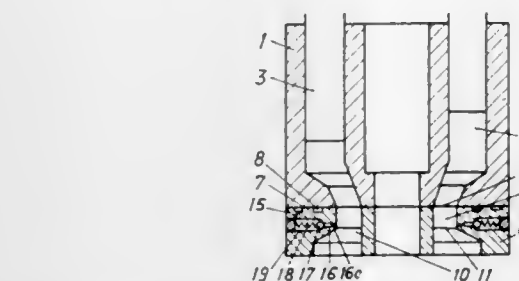
Roger A. Rice, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 12, 1970, Ser. No. 18,997

Int. Cl. F16k 11/07

U.S. Cl. 137-625.66

16 Claims



another by short, relatively fine passageways. A suitable check valve means is inserted between the source of fluid supply and the thrust bearing so that pressurized fluid cannot return to the fluid supply and thus adversely affect control of the flow of fluid in the cylinders.

while the other member is keyed inside a distributor core rotatably mounted in the tap body. The improvements relate especially to the provision of a spigot member permitting total modulation of the mixed water delivered by the tap, and also to the arrangement of nonreturn valves which prevent undesired flow from one of the inlet pipes to the other.

3,625,256

**LIQUID PRESSURE ACCUMULATOR SYSTEMS**

Victor Frederick Smith, Highbett, Victoria, Australia, assignor to F. W. Davey and Company Proprietary Limited, Victoria, Australia

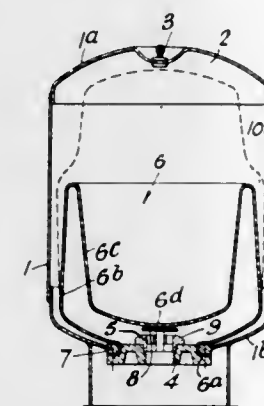
Filed Dec. 29, 1969, Ser. No. 888,491

Claims priority, application Australia, Oct. 13, 1969, 62,221/69

Int. Cl. F16l 55/04

U.S. Cl. 138-30

1 Claim



A liquid pressure tank is provided for storing liquid under pressure for use in domestic or commercial reticulated supply of the type having an impervious diaphragm dividing the tank into an air chamber and a liquid chamber, a constant amount of air being maintained in the chamber under pressure. A liquid pump and pressure switch system is provided for maintaining liquid in the chamber between preset pressure limits, the diaphragm being so configured and secured to form a pistonlike portion within the tank which reciprocates under variation of liquid pressure to minimize wrinkling or stretching of the diaphragm. Also a fixed plate can be arranged over the liquid outlet as protection from rupturing of the diaphragm at low liquid levels.

3,625,257

**FLUID FLOW TUBE**

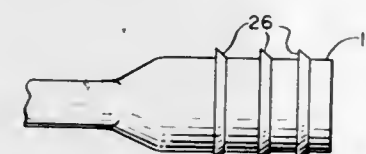
Harry J. Schroeder, Racine, Wis., assignor to Modine Manufacturing Company

Filed July 15, 1970, Ser. No. 54,886

Int. Cl. F16l 9/18, 9/02

U.S. Cl. 138-109

5 Claims



A fluid flow tube of a plastically deformable metal such as aluminum, brass, copper and the like of generally oval cross section and divided by one or more integral longitudinal walls or ribs into a plurality of parallel fluid flow passages in which an end of the tube is formed to circular cross section with a smooth interior to provide an attachment for fittings in which the rib or ribs and internal fins where used are blended into the sidewall to comprise integral structurally indiscernible reinforcing parts of the wall of this tube end.

3,625,258

**MULTIPASSAGE PIPE**

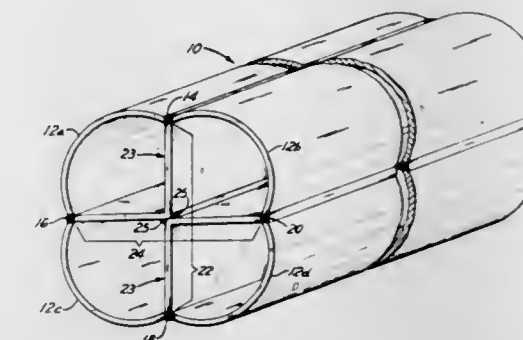
Rex V. Phelps, Tulsa, Okla., assignor to Warren Petroleum Corporation, Tulsa, Okla.

Filed Mar. 16, 1970, Ser. No. 19,825

Int. Cl. F16l 9/18

U.S. Cl. 138-115

2 Claims



A multichannel pipe of reduced wall thickness and increased rigidity consists in a plurality of elongated strips welded along their lateral edges to one another. The strips are of arcuate shape in a direction transverse to their length to form a tubular structure. Webs extend from each juncture of two strips across the pipe to another juncture. The angles included by the arcs of the strips are such that the angle at which the strips and the webs meet is larger than 90°. The radius of curvature of the arcs on which the strips are curved is less than the radius of a circle having the same cross-sectional area as the pipe. In the preferred method of manufacture of the pipe the web structure is assembled and the arcuate strips then welded to one another and the ends of the webs.

3,625,259

**PRECOATED UNDERGROUND PIPING**

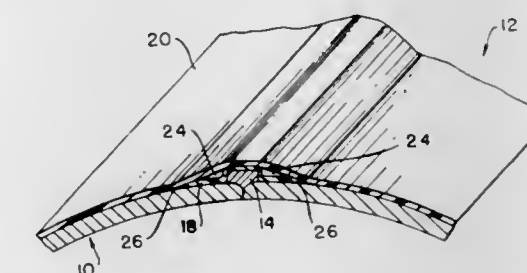
Ted Kennedy, Jr., Ann Arbor, Mich., assignor to The Trenton Corporation, Ann Arbor, Mich.

Filed Oct. 15, 1969, Ser. No. 866,612

Int. Cl. F16l 9/14

U.S. Cl. 138-145

4 Claims



A protective cover for an underground conduit having a raised weld. The cover consists of a relatively hard corrosion-resistant precoat applied over the weld, and an elongated protective strip wrapped around the conduit, with or without a primary coating under the strip.

**ERRATUM**

For Class 139-336 see:  
Patent No. 3,625,243

3,625,260

**FABRICS WITH INTRICATE PILE ARRANGEMENTS**

James E. Troy, Eden, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Continuation of application Ser. No. 822,851, Dec. 8, 1969.

This application Jan. 27, 1970, Ser. No. 6,119

Int. Cl. D03d 27/06

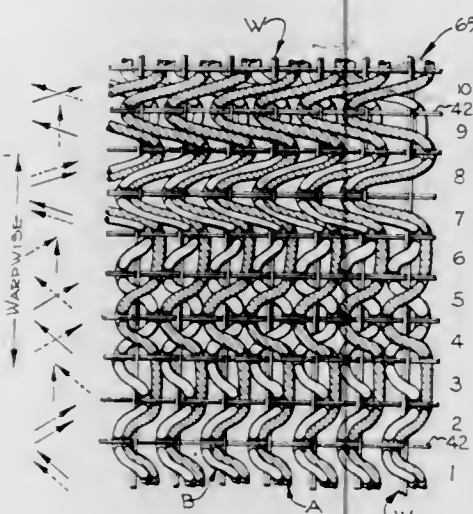
U.S. Cl. 139-402

41 Claims

This invention is directed to a variety of fabrics in which sets of warpwise extending pile yarns, preferably of different



visual characteristics, extend weftwise over one or more groups of ground warp yarns to form warpwise rows of pile in the form of straight or oblique lines of pile, with the pile being in the form of loops or cut pile tufts of the same or dif-



ferent sizes and arranged in any desired pattern. Also, by floating at least one set of pile yarns, certain areas of the fabrics may be of lesser pile density, with such floating enhancing the variety of color effects obtainable.

3,625,261

#### APPARATUS FOR WINDING AND PLACING COILS IN THE SLOTS OF A STATOR

Donald E. Hill, Fort Wayne; Stanley D. Payne, Fort Wayne, Ind., and Robert G. Walker, Brighton, Mich., assignors to Industra Products Inc., Fort Wayne, Ind.

Filed July 29, 1969, Ser. No. 845,804  
Int. Cl. H02k 15/00; B21f 3/04

U.S. Cl. 140-92.1

21 Claims



Apparatus for winding and placing coils in the slots of a stator comprising a rotary index table carrying three sets of placer fingers spaced at 120° intervals, each set being adapted to hold a plurality of pole windings for a stator. The table is adapted to be indexed successively to bring each set of placer fingers from a first winding station to a second winding station, thence to a placing station, and thence back to the first winding station, with a dwell at each station. At each of the winding stations, there is provided a coil winding and transfer mechanism including a coil form, a flyer for winding coils on the coil form, and means for transferring coils from the coil form to the set of placer fingers at the respective winding station. Each set of placer fingers is indexable during its dwell at each winding station for reception of successive sets of coils in proper position for placement of

the coils in the stator. After the winding of coils and their transfer to the set of fingers at the first winding station, the table is indexed to bring this set of fingers with the coils thereon to the second winding station. After the winding of additional coils and their transfer to the set of fingers at the second winding station, the table is indexed to bring the set of fingers with the coils thereon to the placing station, where a stator is placed on the fingers and the coils are pushed into the slots of the stator. The stator with the coils in its slots is then removed, and the table indexed to bring the set of fingers to the first winding station to start another cycle.

3,625,262

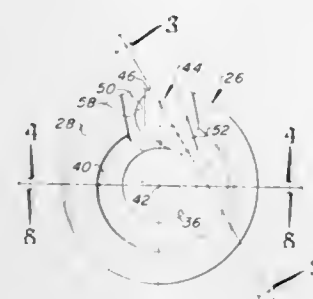
#### CONDUCTOR WRAPPING BIT AND METHOD FOR FORMING A SURFACE THEREON

William J. Baker, Reed City, and Richard J. Hurst, Hersey, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.

Filed May 29, 1969, Ser. No. 828,822  
Int. Cl. B21f 3/02, 15/00

U.S. Cl. 140-124

4 Claims



A rotary bit for wrapping conductor wire about a terminal in helical convolutions to form an electrical connection. The bit includes a longitudinal terminal-receiving bore and a conductor wire-receiving groove in radially offset parallelism therewith. A wire-camming surface slopes radially inwardly from the transverse end face of the bit to the terminal bore and includes a helical rise for continuously camming and supporting a major portion of successive wire convolutions. A wire guide surface intersects the conductor groove and sloped camming surface for feeding the wire into camming position. The sloped camming surface is formed by a rotary form machining tool which is simultaneously rotated relative to the bit longitudinal axis and axially moved relative to the bit end face.

3,625,263

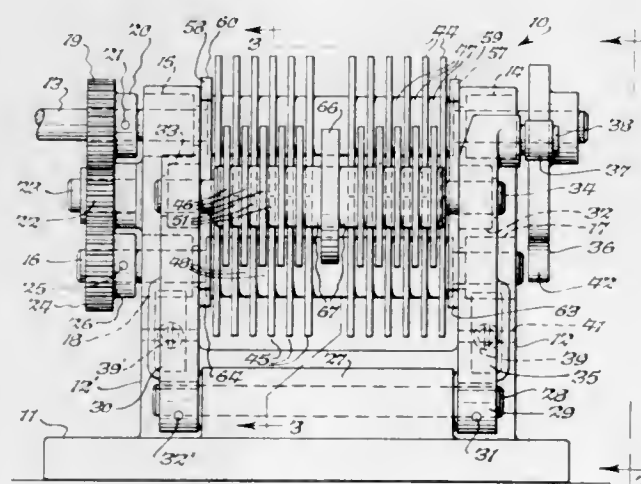
#### ROLL BENDING MACHINE AND METHOD

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y.

Filed Mar. 7, 1969, Ser. No. 812,534  
Int. Cl. B21f 1/02

U.S. Cl. 140-147

32 Claims



A method and machine for straightening an elongated wirelike workpiece wherein the machine includes a plurality

of substantially parallel shafts each mounting a series of spaced coaxial rolls with at least one of said series being radially movable into overlapping relationship with the other series to define a central opening, and cam means for sequentially varying the orientation of the series of rolls relative to each other to provide a first opening between the rolls which is sufficiently large to receive the wire in a radial direction, a second opening which is relatively small for providing an overbending action in which axial portions of the wire are bent back and forth while the wire is rotated about its longitudinal axis while in engagement with the rolls, a third opening which is larger than the second opening to provide straightening action wherein the wire is continued to be rotated about its own axis in an opening which is substantially the same diameter as the wire while in contact with the rolls so as to straighten it, and a fourth opening wherein one of the series of rolls is moved away from the others to permit the workpiece to drop out of the opening in a radial direction. The cam means may be of a contour so as not to include the overbending action when this is not required. All of the rolls of adjacent series may be axially staggered relative to each other and oriented in radially overlapping relationship. The rolls also may be of different hardnesses in certain roll orientations. Certain of the rolls of each series may alternately be of larger and smaller diameter. A machine for rotating a spindle having first, second, and third series of rolls mounted on parallel shafts with the rolls of each series being axially offset and radially overlapping the rolls of the other series and defining a space therebetween to receive the spindle.

3,625,264

#### ANTISTATIC VALVE

Leonard W. Swain, London, Ontario, Canada, assignor to Emco Limited, London, Ontario, Canada

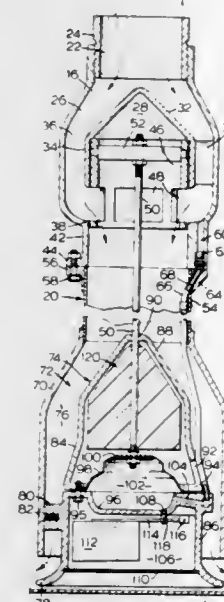
Filed Oct. 7, 1970, Ser. No. 78,789

Claims priority, application Canada, Feb. 20, 1970, 075,381

Int. Cl. B65b 39/00

U.S. Cl. 141-198

12 Claims



A flow control valve for reducing the buildup of static electricity in a liquid when loading a liquid into a storage tank. The valve is actuated by a float which senses the level of liquid in the storage tank and moves the valve between a position wherein the flow through the valve is restricted to an open position wherein the flow through the valve is substantially unrestricted. The float is adapted to activate an expandable diaphragm valve when the level of liquid in the tank rises above the level of the upper end of the discharge orifice which opens into the tank. The expandable diaphragm valve moves the many valve closure members between the open and closed positions as required in use such that the flow of liquid into the tank is quite slow until the discharge orifice is covered and thereafter the valve opens rapidly to permit full flow into the tank.

3,625,265

#### FRACTION COLLECTOR

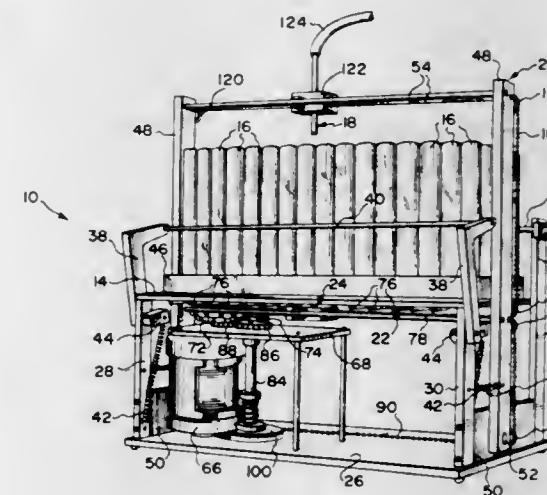
Warren E. Gilson, 4801 Sheboygan Ave., Madison, Wis.

Filed Jan. 7, 1970, Ser. No. 1,191

Int. Cl. G01n 1/18

U.S. Cl. 141-284

11 Claims



A fraction collector includes structure pivotally mounted for tilting movement about a generally horizontal axis in order to move a filling head in one direction over an array of containers. Movement is imparted to the filling head in accordance with the movement of a drive member, and the drive member is confined to a predetermined pattern of movement by means of a maze structure through which the drive member is moved.

3,625,266

#### CHIP EJECTOR CHAIN TOOTH

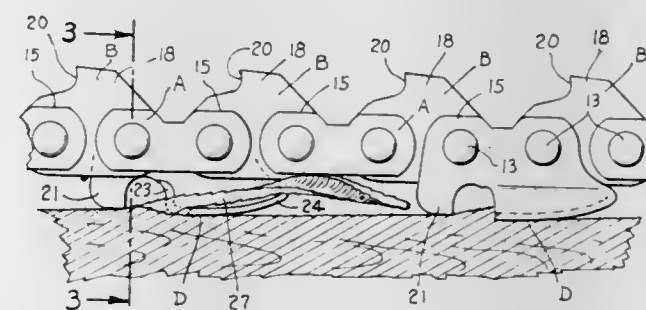
Paul H. Kennemore, P.O. Box 12, Greenwood, S.C.

Filed Nov. 21, 1969, Ser. No. 878,659

Int. Cl. B27b 33/14

U.S. Cl. 143-135 G

1 Claim



A saw chain having a plurality of spaced teeth coupled together by means of tie straps and drive links. Each of the teeth has an elongated substantially vertical sideplate and a top plate. A chip ejector is integral with the top plate and sideplate for turning chips during a cutting operation upwardly and laterally from the top plate in order to aid in ejecting the chips from the kerf.

3,625,267

#### STUMP REMOVAL MACHINE

Robert E. Welborn, Lafayette, Ind., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Dec. 11, 1969, Ser. No. 884,218

Int. Cl. A01g 23/06

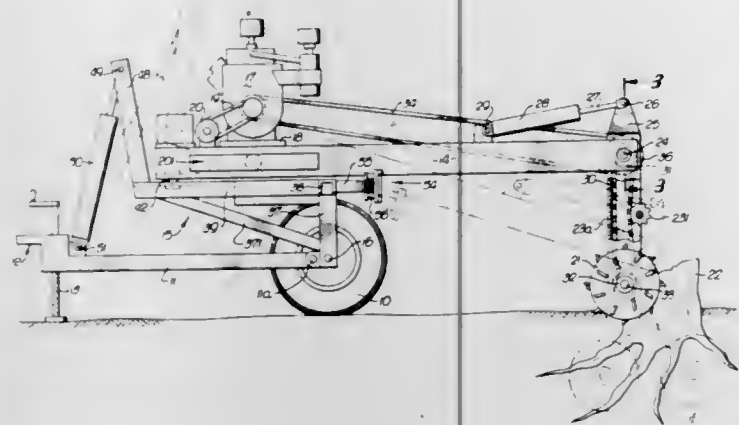
U.S. Cl. 144-2 N

11 Claims

A vehicle-mounted stump removal machine employs a



cutter-carrying boom mounted for lateral swinging above the vehicle wheels, the boom being carried by a cradle or sup-



porting structure mounted for oscillation about the vehicle wheel axis to control the operating depth of the cutter.

3,625,268

**FELLING HEAD RECIPROCATING BLADE TYPE**

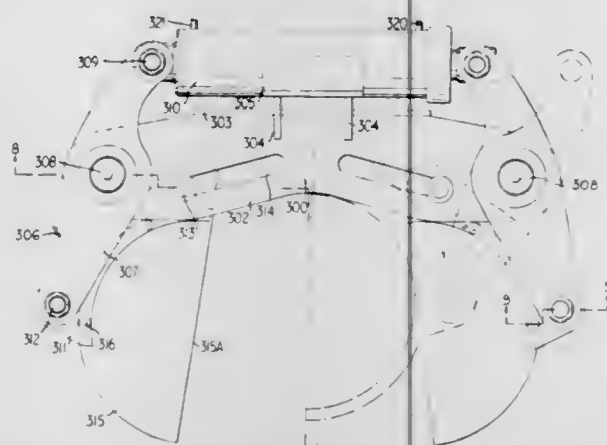
Carl Kempe, Ornskoldsvik, Sweden, assignor to Canadian International Paper Company; Quebec North Shore Paper Company, Montreal, Quebec and Abitibi St. Anne Paper Ltd., Beaufre, Quebec, Canada, part interest to each

Continuation of application Ser. No. 639,883, May 19, 1969, now abandoned. This application Feb. 6, 1970, Ser. No. 9,391

Claims priority, application Canada, May 20, 1966, 960,903 Int. Cl. A01g 23/08

U.S. Cl. 144—34

77 Claims

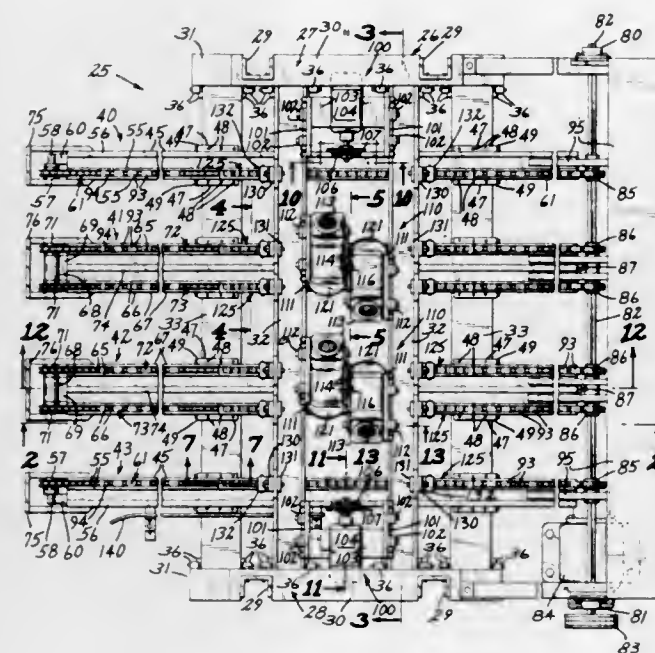


A tree feller skidder comprising a mobile, self-propelled unitary vehicle, including a tracked undercarriage having a platform on which is mounted an operator's station for effecting operation of the vehicle and various components mounted thereon. The components mounted thereon include an extendible and retractable variable-reach boom mounted for slewing about a vertical axis and having a felling head pivotally attached to the free end thereof, pivotal movement being about a horizontal axis and controlled by a hydraulic motor. The felling head consists of a grapple and shear mounted in fixed spaced relation relative to one another and each has jaw members movable in a direction toward and away a plane passing between the jaw members. The grapple grasps a vertical standing tree and the shear located therebelow severs the tree from its stump, the grapple and shear jaws being controlled by respective ones of two different hydraulic actuators. The shear includes a pair of shear blades mounted on a frame, each by a link member and one further pivotal connection, the latter, in one form, consisting of a cam and cam follower respectively, a slot in the frame and a pin on the respective shear blade or holder therefor. A further component mounted on the vehicle consists of a bunk for anchoring the end of the felled trees to the vehicle and includes an upwardly facing jaw controlled from the operator's station, the jaw being defined by a plurality of arcuate arms pivotally mounted and spaced longitudinally along the length of the bunk between a pair of upstanding posts.

3,625,269  
**WOODWORKING MACHINE**  
Leif A. Holan, Winona, Minn., assignor to Leif A. Holan; William Wernz and Rudolph Miesbauer, Winona, Minn.  
Filed May 9, 1969, Ser. No. 823,370  
Int. Cl. B27f 1/02

U.S. Cl. 144—136 R

4 Claims

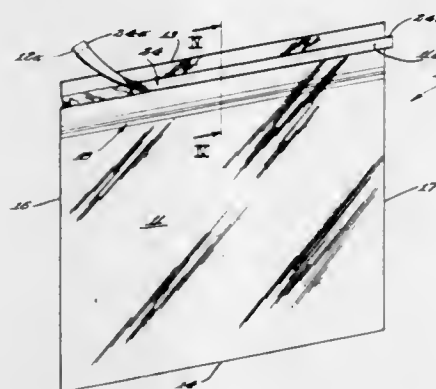


A frame having a plurality of cutting heads mounted thereon, two of the cutting heads including a pair of rotary saws mounted in planes lying at approximately 90° to each other and intersecting along a line through the panel being cut at a position spaced a predetermined distance from the outer planar surface of the panel so as to form grooves for two plain miter joints, and two cutting heads mounted to coincide with either edge of the panel each including a router and a circular saw for forming grooves for rabbet joints and trimming the outer edges, whereby the entire panel can be formed into three sides of a cabinet for TV, speakers, or the like.

3,625,270  
**PILFERPROOF PACKAGE**  
Milorad Skendzic, 110 West 69th St., New York, N.Y.  
Continuation-in-part of application Ser. No. 817,080, Apr. 17, 1969. This application Apr. 17, 1970, Ser. No. 29,602  
Int. Cl. B65d 17/20

U.S. Cl. 150—3

3 Claims

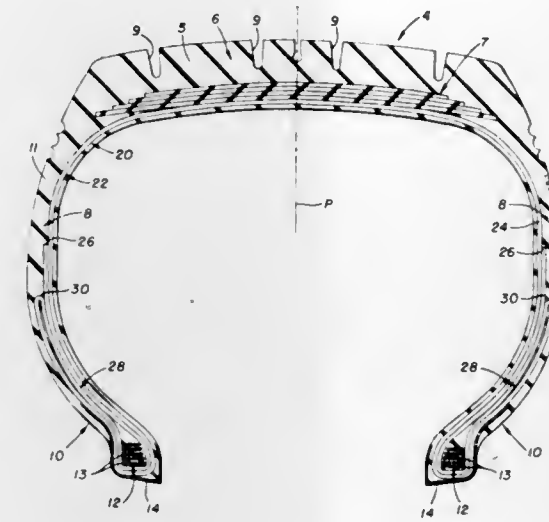


A pilferproof plastic bag having reclosable interlocking members and a tear ribbon which forms an access opening when pulled from the bag. The tear ribbon protrudes from the side of the bag for easy finger gripping. A method of and means for making the bag by cutting and heat-sealing the sides to form completely sealed side edges having the tear ribbon protruding therefrom.

3,625,271  
**RADIAL TIRE WITH STRENGTHENED BEAD TIE-IN**  
Harry Lewis Hutch, 3810 Englewood Drive, Stow, Ohio  
Filed July 13, 1970, Ser. No. 54,276  
Int. Cl. B60c 9/08

U.S. Cl. 152—354

6 Claims



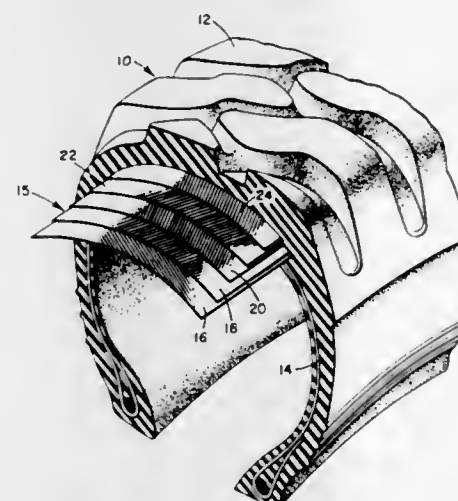
The annular margins of a radial ply carcass are plaited or folded back and turned around the bead cores such that the bead portion and, if preferred, the lower or inner portions of the sidewalls of the tire are reinforced by four layers of ply cords while the remainder of the tire carcass reinforcement is in the form of a single layer of cords. Thus, in one tire, advantages of a single radial ply carcass reinforcement are combined with advantages of a two-ply "tie-in" at the beads. The plaited margins can be either turned "up" or turned "down" around the bead cores thereby locating each folded terminal edge of the carcass either outside or inside the bead cores.

3,625,272  
**PNEUMATIC TIRES**  
Henry R. Fletcher, deceased, late of Birmingham, England (by Agnes Marion Fletcher, legal representative), assignor to Dunlop Holdings Limited

Filed July 16, 1969, Ser. No. 20,267  
Claims priority, application Great Britain, July 16, 1968, 33,747/68  
Int. Cl. B60c 9/16

U.S. Cl. 152—357

16 Claims

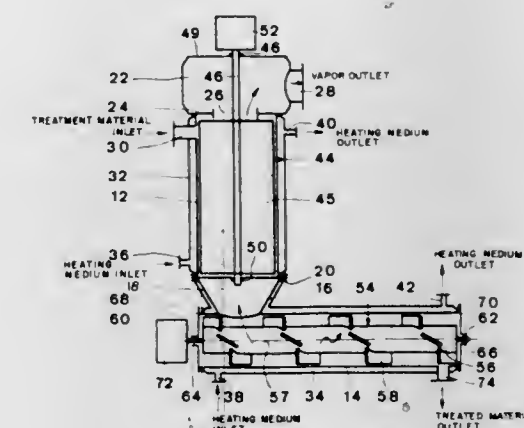


A pneumatic tire incorporating a flexible energy-absorbing layer of fine steel wires for protection of the carcass and/or breaker of the tire against damage by e.g. concussive forces or for reducing the transmission of vibrational energy from the ground of the carcass and thence to the vehicle to which the tire is fitted.

3,625,273  
**THIN FILM APPARATUS HAVING A TWO-PART HEAT TREATMENT CHAMBER**  
Albert Buschor, Urdorf, Switzerland, assignor to Luwa AG, Zurich, Switzerland  
Filed Nov. 12, 1969, Ser. No. 875,961  
Claims priority, application Switzerland, Nov. 15, 1968, 17066/68  
Int. Cl. B01d 1/22

U.S. Cl. 159—6 W

7 Claims

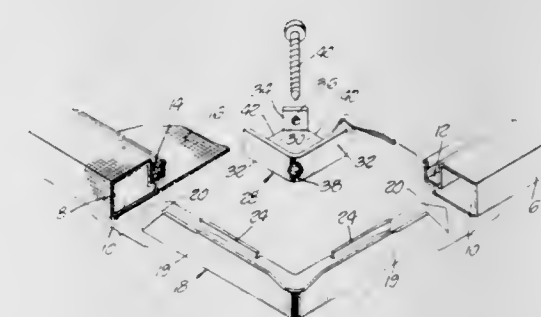


A thin film apparatus is disclosed for converting materials suspended in a liquid medium into a powdery form, comprising a pair of substantially cylindrical heat treatment chambers having their axes disposed at an angle to each other, each of the chambers having rotatably mounted therein an agitating rotor or spreader member. In a preferred form of the invention, the first or upper chamber is disposed substantially vertically and communicates with the lower or second chamber by means of a connector member; the second chamber may be horizontal or inclined towards its discharge end either upwardly or downwardly from the first chamber.

3,625,274  
**ADJUSTABLE FRAME FOR CANVASES**  
James B. Johnson, South Pasadena, Calif., assignor to Universal Molding Co., Inc., Lynwood, Calif.  
Filed May 1, 1970, Ser. No. 33,820  
Int. Cl. B44d 3/18

U.S. Cl. 160—374.1

1 Claim



An adjustable frame, such as for artists canvases and silks, including tubular metal side and end members joined by frictionally retained corners and having spline grooves in the rear faces of the side and end members for the retention of materials stretched over the frame, and means provided at the corners for forcing the end and side members apart to slightly enlarge the dimensions of the frame and tighten the canvas or other material.



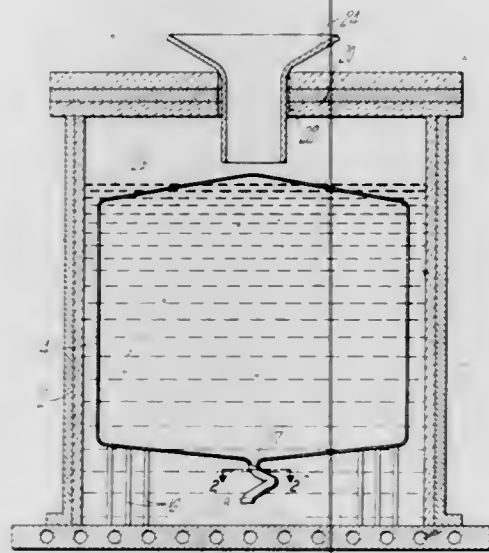
### 3,625,275 APPARATUS AND METHOD FOR SINGLE-CRYSTAL CASTING

Stephen M. Copley, Madison; Anthony F. Giamei, Middletown; Merton F. Hornbecker, Woodbury, and Bernard H. Kear, Madison, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 13, 1969, Ser. No. 806,978  
Int. Cl. B22d 25/06

U.S. Cl. 164—60

9 Claims



Apparatus and method for producing single-crystal parts having a relative large dimension at right angles to the major axis, for example, discs or plates, or rods or ingots having a large cross-sectional area.

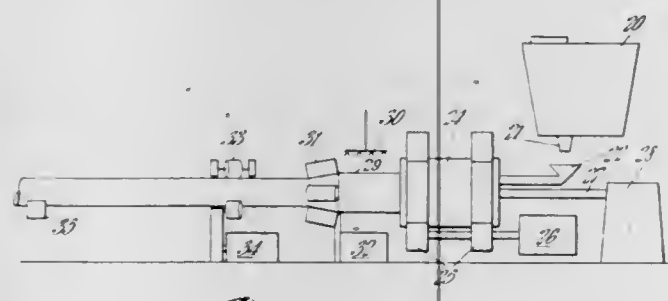
### 3,625,276 CENTRIFUGAL CASTING OF TUBES INCLUDING SLAG SEPARATION

William Howard Considine, Storrington, Sussex, and Derek Slater, Hoathly, Sussex, both of England, assignors to The A.P.V. Company Limited, Sussex, England

Filed Feb. 10, 1969, Ser. No. 797,879  
Int. Cl. B22d 13/10

U.S. Cl. 164—84

10 Claims



A method and apparatus for continuous centrifugal casting in which the mold is horizontally located and is rotating about its horizontal axis. One end of the mold is cooled to initiate solidification. Preferably, the interior of the tubing being cast is kept clean by ensuring that no slag enters the cooling zone and that the metal surface is shielded by a gas inert to the metal.

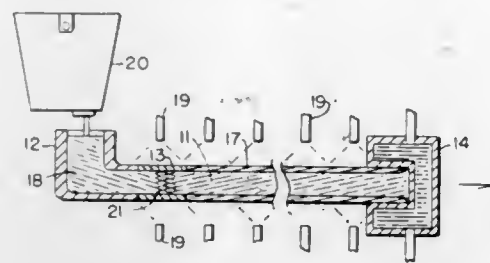
**3,625,277  
CONTINUOUS CASTING PROCESS**  
Leonard Watts, Cedarhurst, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.  
Continuation-in-part of application Ser. No. 705,491, Feb. 14, 1968, now Patent No. 3,517,725, dated June 30, 1970. This application Apr. 13, 1970, Ser. No. 27,607  
Int. Cl. B22d 11/06

U.S. Cl. 164—86

8 Claims

A tundish receiving a first molten metal and a closed end mold are moved apart relative to each other so that the mold

forms a solidified shell of a billet, molten metal flowing through the solidified shell to the mold. During the casting, a second or altered molten metal is introduced into the tundish to flow through the elongating billet so that a continuously cast billet is produced with a core of one metal, a layer of al-



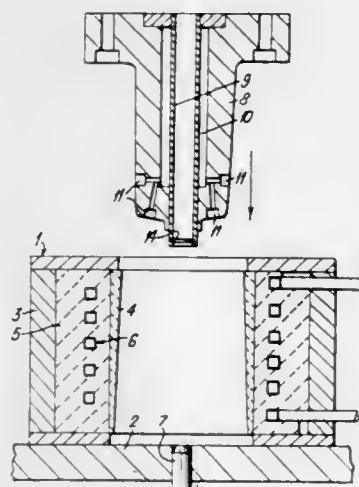
loyed metals, and a shell of another metal. Billets may be produced with steel cores and stainless steel shells, "killed" steel cores and "rimmed" steel shells, and other combinations. Tubing may also be formed by the continued relative separation of the tundish and the mold after the source of molten metal is exhausted.

**3,625,278  
METAL CASTING MACHINES**  
Edward C. Bishop, Bromsgrove; Roland P. Chapman, Redditch, and John W. Coleman, Northfield, all of England, assignors to The British Motor Corporation Limited, Birmingham, England

Filed July 17, 1969, Ser. No. 842,549  
Claims priority, application Great Britain, Aug. 6, 1968, 37415/68  
Int. Cl. B22c 15/24

U.S. Cl. 164—201

6 Claims



A metal casting machine of the kind equipped with a high-frequency electric induction melting unit that includes a crucible to which the stock is supplied in billet form; in which the crucible is made in situ by blowing, resin-bonded powdered refractory material into a preformed mold cavity established in the structure of the melting unit, and subjecting the molded crucible to the action of a gaseous hardening agent.

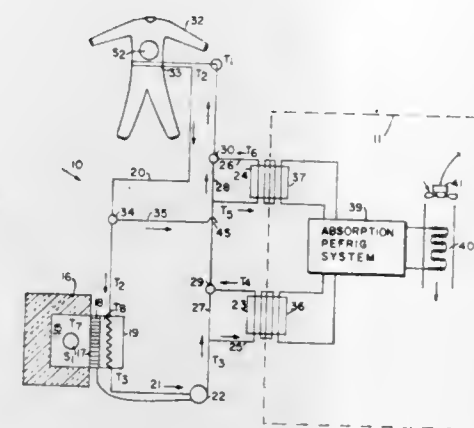
**3,625,279  
COMBINED HEATING AND COOLING SYSTEM**  
Kenneth E. Mayo, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.  
Filed Sept. 16, 1969, Ser. No. 858,344  
Int. Cl. F25b 13/00

U.S. Cl. 165—62

4 Claims

A combined heating and cooling system is provided which is particularly useful for flyers and astronauts. The system utilizes a self-contained heat source in combination with a conduit for carrying a heat transfer fluid. The conduit has first, second and third portions. A pump circulates the fluid in the conduit in a first direction, with the heat source positioned to heat the first portion of the conduit to a desired

temperature. A second portion of the conduit is positioned adjacent a cooling means for cooling the fluid in the conduit and the third portion of the conduit is operatively positioned to heat or cool an object such as a flyer. Means are provided for controlling the temperature of the fluid in the third por-



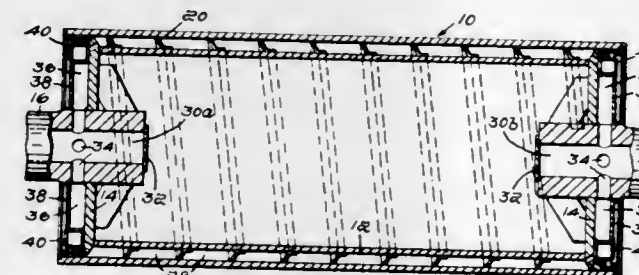
tion. Preferably the pump is actuated by a thermoelectric generator interconnected with the heat source. Preferably the means for controlling the temperature of the fluid in the third portion comprises bypass valves which permit the fluid to bypass the cooling means when desired.

**3,625,280  
INDUSTRIAL ROLL**  
Fritz Peter, Flawilerstr., Switzerland, assignor to Rodney Hunt Company, Orange, Mass.

Filed Oct. 31, 1968, Ser. No. 772,348  
Int. Cl. F28d 21/04

U.S. Cl. 165—90

6 Claims



An industrial roll having inner and outer cylindrical shells held in spaced concentric relationship by one or more intermediate resilient spacer elements. The spacer elements are disposed at an angle relative to a line perpendicular to the rotational axis of the roll, and provide the sole radial support for the outer shell. Axial movement as well as axial expansion and/or contraction of one shell relative to the other may if desired be opposed by spring retainers.

**3,625,281  
WELL COMPLETION METHOD AND APPARATUS**  
David P. Herd; Valoris L. Forsyth, and James V. Bonds, all of Houston, Tex., assignors to Rockwell Manufacturing Company, Houston, Tex.  
Filed Apr. 23, 1969, Ser. No. 818,726  
Int. Cl. E21b 43/01

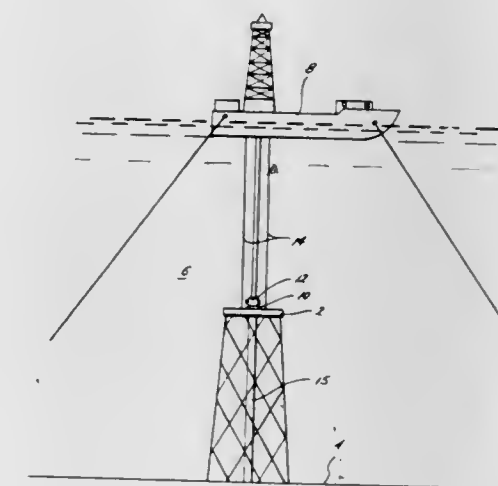
U.S. Cl. 166—06

36 Claims

A method and apparatus for completing an underwater well comprising the steps of: lowering hanger means and at least one tubing string on a handling string into the well casing to a position where said hanger means will be supported substantially below the mudline; cementing the tubing string within the well casing by passing cement through the handling string and the tubing string; disconnecting and removing the handling string; lowering connector means, a tubing riser and valve in the casing; and remotely connecting the connector means to the hanger means, placing the tubing string and tubing riser in fluidtight flow communication, the valve being installed in the tubing riser at a point substan-

tially below the mudline, the tubing riser extending to the well platform.

One hanger embodiment comprises remotely operable hydraulic slip suspension means which may be activated by a remote pressure source in communication with the suspension means through a handling string and setting tool. The setting tool is provided with latches disengageable from the hanger on rotation of the handling string.

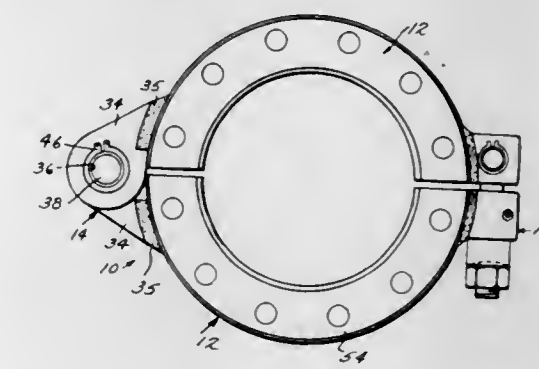


One connector means embodiment comprises remotely operable hydraulic latch means which may be activated through a tubing riser to engage the hanger means. An orientation sleeve may be provided on the connector means for aligning the tubing riser and tubing string before engagement. A conduit arrangement is shown which may be used to subsequently disconnect the connector means and riser from the hanger means for removal.

**3,625,282  
ADAPTIVE CONDUIT CONNECTION, PARTICULARLY FOR BRINGING BLOWING PETROLEUM WELLS UNDER CONTROL**  
Charles D. Bridges, and Douglas A. Miller, both of Houston, Tex., assignors to Gray Tool Company, Houston, Tex.  
Filed Mar. 19, 1970, Ser. No. 21,172  
Int. Cl. F21b 33/03

U.S. Cl. 166—75

8 Claims



When a petroleum wellhead conduit part equipped with a clamp-receiving wedging flange and tapered sealing ring seat at one end, as shown in the U.S. Pat. of Watts et al., U.S. Pat. No. 2,766,829, issued Oct. 16, 1956, is to be connected with a part having a bolt-receiving flange, an adapter is provided which may be used for closing in a blowing well by allowing blowout control equipment such as a blowout preventer or master valve to be initially secured to the one part of the adapter, swung into place in an "open" condition and fully circumferentially secured to the adapter. The control equipment may then be closed to shut in the well. Additionally to this special use, the adapter may be used to interconnect parts whose end connectors differ in type from one another.



3,625,283

**WELL BORE CASING HANGER APPARATUS**

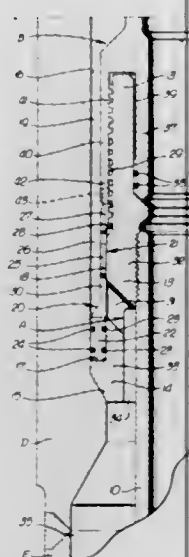
Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed May 15, 1970, Ser. No. 37,528

Int. Cl. F21b 33/03

U.S. Cl. 166—87

29 Claims



A casing hanger body is threadedly connected to a running tool secured to a running string, the tool being clutched or otherwise coupled to a seal structure, which is also threadedly connected to the body, the running string being used to lower the apparatus through a body of water to engage the hanger body with a seat in an underwater wellhead housing, and to locate its seal structure between the housing and body and in an initial position in which a fluid circulation path is open, the running string and running tool being rotated to thread the tool and seal assembly simultaneously along the hanger body to release the running tool from the body and place the seal structure in a position closing the circulation path, after which the running string and running tool may be retrieved. A plurality of such casing hanger apparatus can be placed or stacked one upon the other to support different sizes of concentric casing strings in the underwater well bore, the circulation path associated with each apparatus being closed by a seal structure. A tubing hanger may be landed on the uppermost hanger apparatus and locked to the threaded portion of the uppermost hanger body.

3,625,284

**STIMULATION OF WATER INJECTION WELLS WITH MICELLAR DISPERSIONS**

William B. Gogarty, Littleton, Colo.; Wilson L. Kinney, Findlay, Ohio, and Walter B. Kirk, Jr., Robinson, Ill., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 29, 1969, Ser. No. 862,053

Int. Cl. E21b 43/22, 43/27

U.S. Cl. 166—273

28 Claims

Stimulation of water injection wells is accomplished by injecting into the well 1-500 gallons of acid followed by the injection of 1-500 gallons of a micellar dispersion, the gallons of acid and dispersion based on vertical feet of oil-bearing formation. Preferably, the acid is followed by 0.5-50 volumes of water per volume of acid, i.e., a water slug is injected before the micellar solution.

3,625,285

**STIMULATING WELLS WITH LIQUID EXPLOSIVES**

Clarence R. Fast; George C. Howard, and Riley F. Farris, all of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Apr. 22, 1970, Ser. No. 30,751

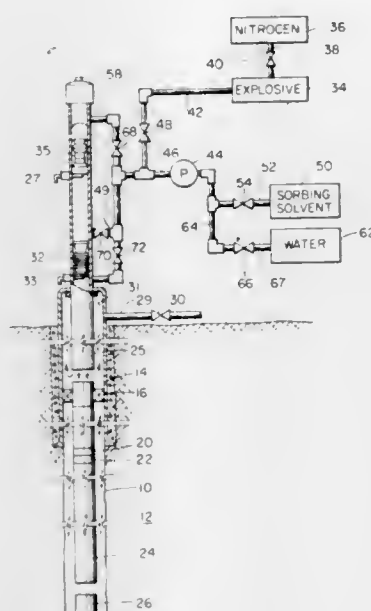
Int. Cl. E21b 43/26

U.S. Cl. 166—299

15 Claims

This is a method for increasing the permeability of underground formations adjacent a well bore by explosive frac-

turing. This invention relates especially to a special method of placing the liquid explosive in the well. It includes setting a plugged packer in the well just above the formation to be stimulated. A tubing string is run in the well with the lower end just above the plugged packer. The selected amount of



liquid explosive is then forced into the tubing string. After this, the tubing string is inserted in the packer and the plug of the packer is removed. The explosive is then forced downward into the well bore. The packer is replugged, tubing is removed and the well bore stemmed. The detonation is then effected.

3,625,286

**WELL-CEMENTING METHOD USING A SPACER COMPOSITION**

Patrick N. Parker, Allen, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,459

Int. Cl. E21b 33/16

U.S. Cl. 166—291

6 Claims

A spacer composition for use while cementing a well that contains an oil-base drilling fluid, the spacer containing a water-in-oil emulsion and at least one of an inorganic and organic material such as halides, hydroxides, borates, sulfates, phosphates, organic acids, and the like. A method for emplacing a cementing composition in a well bore containing an oil-base drilling fluid wherein the spacer is the composition of this invention, is employed between the drilling fluid in the well bore and the cementing composition, and is maintained there while the cementing composition is emplaced and hardened in the desired position in the well bore.

3,625,287

**METHOD OF IMPROVING STRENGTH AND STABILITY OF SAND CONSOLIDATIONS MADE WITH RESIN SYSTEMS**

Bill M. Young, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation of application Ser. No. 260,826, Feb. 25, 1963, now abandoned. This application Feb. 3, 1970, Ser. No. 8,393

Int. Cl. E21b 33/138

U.S. Cl. 166—295

20 Claims

The present invention relates to the use of organosilicon compounds in sand consolidation resins used in consolidating loose sands to produce a permeable sand consolidation.

3,625,288

**METHOD AND APPARATUS FOR VENTING GAS THROUGH A DOWNHOLE PUMP ASSEMBLY**

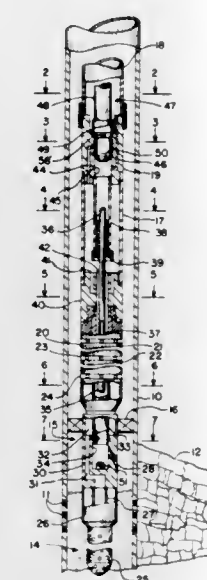
George K. Roeder, P.O. Box 3931, Odessa, Tex.

Filed Apr. 14, 1970, Ser. No. 28,304

Int. Cl. F21b 43/00; F04b 47/00

U.S. Cl. 166—314

10 Claims



Method and apparatus for venting gas through a downhole pump assembly by producing fluid through the casing annulus, forcing power oil to the pump by either one of the tubing annulus or the innermost string, and using the one remaining flow path for the gas vent.

The pump is flow connected to the producing formation through a packer. The gas is vented through a lower hollow rod of the pump, through the pump piston and connecting rod, through the engine piston and valve control rod, where the gas continues to the surface of the earth along one of the recited flow paths.

3,625,289

**SPRINKLER**

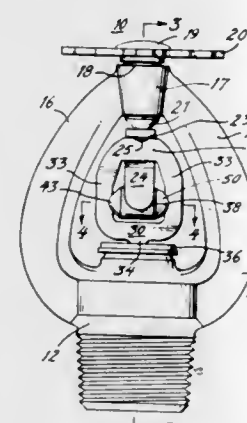
Fred A. Gloeckler, Philadelphia, Pa., assignor to Star Sprinkler Corporation of Florida, Philadelphia, Pa.

Filed May 4, 1970, Ser. No. 34,184

Int. Cl. A62c 37/08

U.S. Cl. 169—39

3 Claims



A sprinkler is provided which includes a frame, a deflector, seat closure cap, a strut and a lever bearing against the strut, which is held from seat cap release by a transversely disposed interengaged tube containing a ball and a heat-sensitive collapsible alloy element.

3,625,290

**SEPARATING APPARATUS FOR MOBILE POTATO HARVESTING VEHICLE**

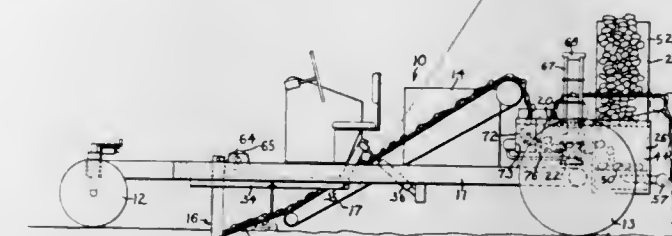
Lynn F. Johnson, American Falls, Idaho, assignor to University of Idaho Research Foundation, Inc., Moscow, Idaho

Filed Sept. 29, 1969, Ser. No. 861,892

Int. Cl. A01d 17/00

U.S. Cl. 171—17

6 Claims



The mobile harvesting machine has a vibrating digging means for scooping the potatoes along with foreign material (rocks, clods, vines and trash) from the ground and conveying the same to water flumes. The flumes have traps formed therein to receive the foreign materials that are heavier than the potatoes. A vine and trash conveyor remove the foreign materials that are lighter than the potatoes from the surface of the water. The potatoes flow along the flumes to a receiving tank. A conveyor removes the potatoes from the receiving tank. A recirculating pump removes the water from the tank and directs the water back to the flumes.

3,625,291

**PEANUT-HARVESTING MACHINE**

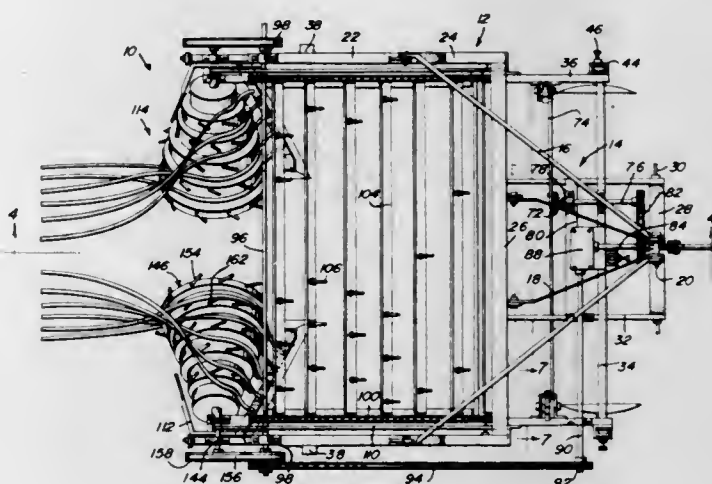
John R. Paulk, Pine Needle Road, Fitzgerald, Ga., and Jacob W. Paulk, Route #1, Wray, Ga.

Filed June 2, 1970, Ser. No. 42,722

Int. Cl. A01d 29/00

U.S. Cl. 171—101

15 Claims



Peanut plants having taproots cut below the soil surface are transported upwardly by a conveyor in a harvesting machine to a location from which the plants are deposited onto the ground. Conical roller devices and guide rods invert the plants as they are discharged from the conveyor to windrow the plants with the taproots exposed.

3,625,292

**POWER CUTTING TOOL HAVING INSULATED SLIP CLUTCH**

Michael T. Lay, West Chicago, Ill., assignor to G. W. Murphy Industries, Inc.

Filed July 17, 1969, Ser. No. 842,602

Int. Cl. A01b 45/00; F16d 7/02

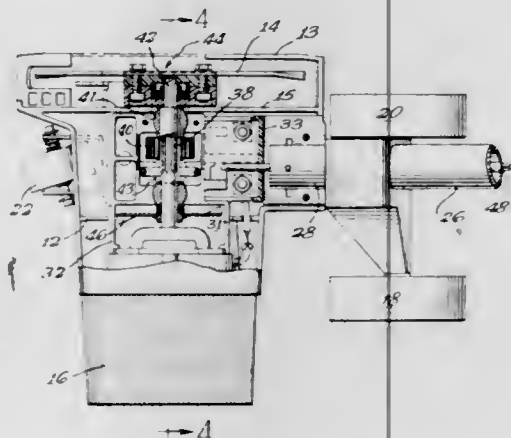
U.S. Cl. 172—13

7 Claims

A lawn edger and trimmer or the like having a shaft driven by an electric motor mounted in a casing and supplied with



electricity by a power cord. The cutting blade is mounted on the shaft by a slip clutch which also electrically insulates the blade from the shaft to prevent shock to the operator in the event of electrical malfunction of the motor or in the event the blade accidentally cuts the power cord or other source of electrical supply. The slip clutch includes an electrically insulative mass on which the blade is mounted and in which is provided an enclosed internal cavity receiving the end of the shaft. An appropriate resilient means such as a series of Bell-



ville washer springs are mounted on the shaft and bias between an enlarged end of the shaft, e.g., a retaining and tightening nut, and a portion of the cavity wall to cause driving of the insulating mass and blade by the shaft. When an obstruction such as a rock or other hard object is struck by the blade, the spring bias of the resilient means is overcome and the shaft can continue to rotate without driving the blade. The bias of the clutch can be adjusted by means of the tightening nut.

3,625,293

## GAUGE WHEEL FOR A TWO-WAY PLOW

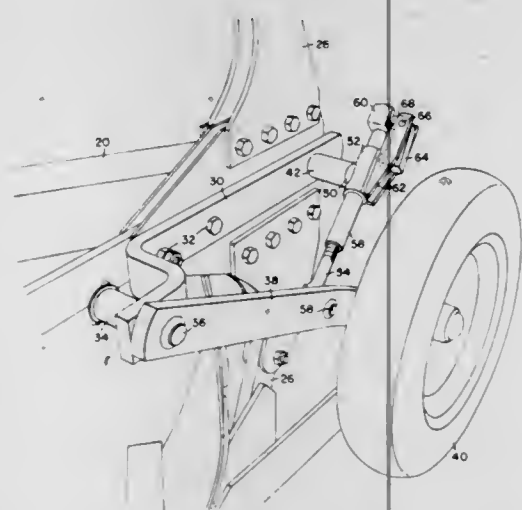
Richard Dale Nelson, Cambridge, Ill., assignor to Deere & Company, Moline, Ill.

Filed Feb. 2, 1970, Ser. No. 7,443

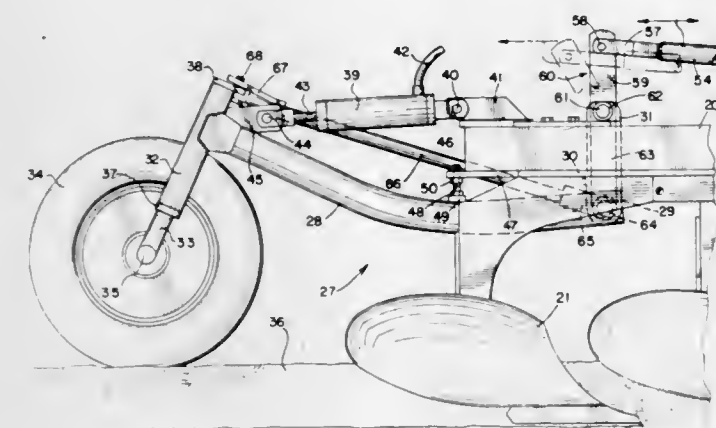
Int. Cl. A01b 3/28, 3/40

U.S. Cl. 172-212

10 Claims



A two-way plow having alternately usable right- and left-hand plow units mounted on a frame that is selectively rotatable about a fore-and-aft axis to dispose the plow units in operating positions and a single gauge wheel that is automatically positioned when the plow is indexed to one of its alternate plowing positions to regulate the plowing depth when the plow is in either of its plowing positions. The mounting of the gauge wheel includes a single adjustment which varies the working depth of the plow for both of the plowing positions, and the adjustment can easily be made by hand without the use of tools when the plow is intermediate its alternate positions.



3,625,294

## STEERABLE REAR WHEEL FOR PLOW

James Morkoski, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 26, 1970, Ser. No. 66,948

Int. Cl. A01b 69/08

U.S. Cl. 172-282

9 Claims

A combination gauge and transport wheel is mounted on the rear end of a plow and is carried at the end of an arm pivotally connected to the plow frame for vertical movement between operating and transport positions of the plow, the rear wheel being steered by linkage operatively connecting the wheel to the tractor hitch so that turning motion of the tractor is transmitted to the wheel without impairing its gauging function.

3,625,295

## AIRHAMMER

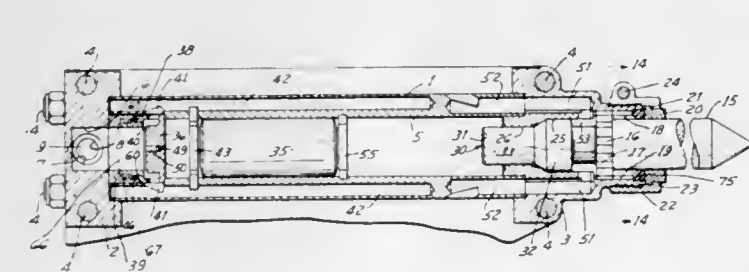
Samuel D. Gunning, Cleveland, Ohio, assignor to Kent Air Tool Co., Kent, Ohio

Filed Feb. 12, 1970, Ser. No. 10,826

Int. Cl. B25d 9/16

U.S. Cl. 173-15

10 Claims



The hammer barrel has a reciprocable power piston driven on both its power and return strokes by live air under the control of a rapid action kick valve. The piston drives a tappet which, in turn, drives a moil. The moil is held yieldably in extended position by the live air. The tappet cooperates with ducts in the barrel and thereby controls venting of the air to cause reciprocation of the piston by live air when the moil is retracted and to air lock the piston when the moil is fully extended.

A supplemental cutoff valve is arranged in the barrel and is controlled by the tappet to cut off completely the air supply to the barrel, when the hammer is idle, so as to reduce the loss of pressure air and to improve starting characteristics. An air supply connection is arranged on the rear end of the barrel and is free from overhang laterally beyond the sides of the barrel. Accumulator ducts in the barrel store air compressed by the piston and employ it to assist in starting the piston from rest upon each reversal of stroke.

3,625,296

## MECHANICAL SOIL SAMPLER

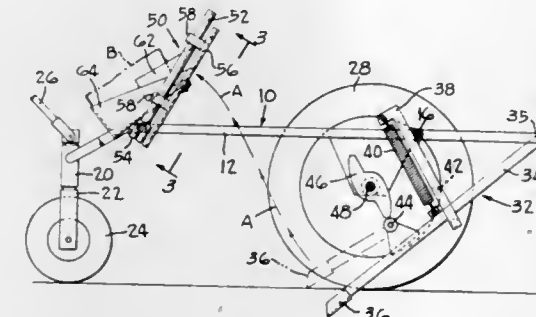
Harold E. Mabry, Greenbelt, and Donald Whittam, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Dec. 30, 1969, Ser. No. 889,274

Int. Cl. G01n 1/08

U.S. Cl. 173-24

9 Claims



Apparatus and method for collecting subsamples of surface soil. The apparatus is a wheeled device having a spring-loaded, hinged lever provided with a cam following roller and digger foot, an adjustable spring and bumper block, a cam mounted on a wheel axle and a holder for a sample collection container having a baffle with opening and adjustable cover plate. The cam rotates with the axle and a cam lobe intermittently engages the cam follower whereupon the lever is pressed downward and the digger foot is forced into the soil. When the cam lobe disengages from the follower a spring pulls the lever rapidly upward until it strikes the bumper block. The resultant impact causes the soil sample on the digger foot to be thrown upward and forward into the sample collection container.

3,625,297

## BLEED SYSTEM FOR HYDRAULICALLY ACTUATED DEVICE

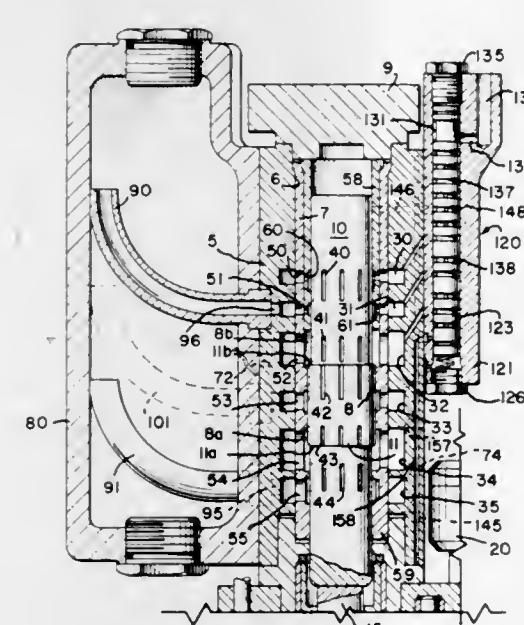
Martin Worman, M.R. 12, Phillipsburg, N.J.

Filed Sept. 22, 1969, Ser. No. 859,650

Int. Cl. B25d 9/00

U.S. Cl. 173-135

4 Claims



A bleed system for devices such as rock drills which are powered by hydraulic fluid. The system includes a valve which when actuated, provides communications between the various chambers in the hydraulically actuated device and a sump which is at atmospheric pressure. After a long period of shutdown the valve is opened to bleed off any air which may be in the hydraulic system.

3,625,298

## GUIDE FOR PRESSURE HOSES

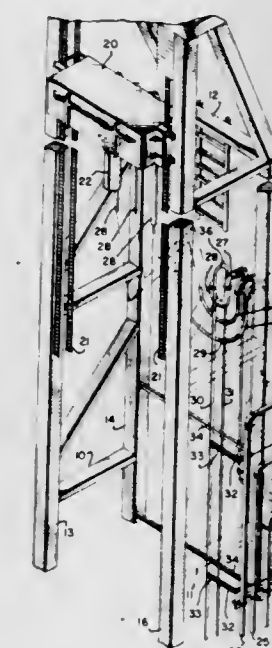
Laszlo Gyongyosi, 137 Grove Ave., Clarksburg, W. Va.

Filed Nov. 28, 1969, Ser. No. 880,848

Int. Cl. E21c 1/10

U.S. Cl. 173-163

5 Claims



A guide for pressure hoses for use with a machine such as a rock drill machine wherein there is a drill tower and a rotary head movable along the longitudinal axis of the drill tower. The pressure hoses are located within the drill tower in a single vertical plane and have a loop formed therein. A guide including a pair of parallel, spaced-apart guide bars is mounted within the drill tower. The bars are interconnected by a plurality of U-shaped members. The pressure hoses for supplying fluid under pressure to the rotary head fit between the parallel guide bars. As the rotary head moves up and down the tower, the loop formed in the hoses rolls between the guide bars. The guide retains the hoses within the drill tower in the designed single plane arrangements.

3,625,299

## ELECTRONIC SCALE APPARATUS

Manfred Kammerer, Ebingen, Germany, assignor to August Sauter KG, a Kommanditgesellschaft, Ebingen, Germany

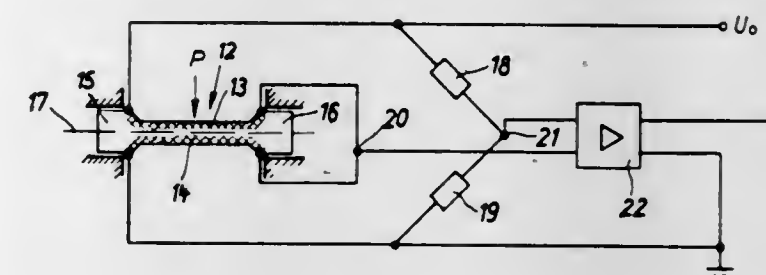
Filed July 3, 1969, Ser. No. 838,894

Claims priority, application Germany, July 24, 1968, P 17 74 599.2

Int. Cl. G01g 3/14

U.S. Cl. 177-211

3 Claims



An electronic scale apparatus comprising a member capable of undergoing deformations resulting in changes of the inner mechanical tensions thereof upon the application of a force thereto and consequently undergoing a change of the electrical resistance thereof, a bridge circuit connected to include such member to develop a signal according to the change of the electrical resistance of such member, and output means producing an indication of the force in response to the signal.



3,625,300

**SUSPENSION OF AN AXLE UNIT IN MOTOR VEHICLES BY MEANS OF A SUPPORT MEMBER**

Bela Barenji, Maichingen, Württemberg, and Karl Wilfert, Gerlingen-Waldstadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

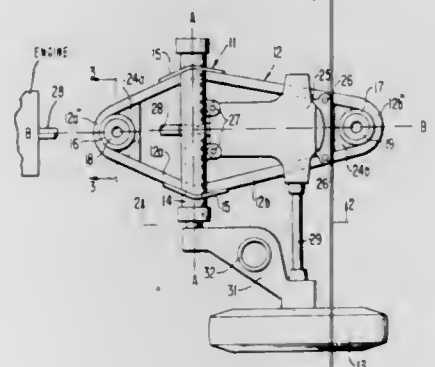
Filed Aug. 21, 1969, Ser. No. 3,263

Claims priority, application Germany, Aug. 21, 1968, P 17 80 255.0

Int. Cl. B60g 3/12

U.S. Cl. 180-73

32 Claims



A suspension for an axle unit in motor vehicles by means of a support structure which enables a pivoting of a wheel pair in relation to the vehicle superstructure about two mutually perpendicular directions; the support structure is formed by an approximately annularly shaped support frame which is elastically connected in one of the axial directions at least at one end, but preferably at both ends thereof at the superstructure.

3,625,301

**POWER STABILIZER AND METHOD**

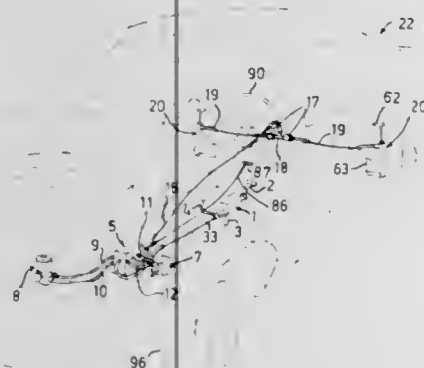
Jack F. Joyslen, Concord, Calif., assignor to Gerhard W. Stiefvater, Chico, Calif.

Filed May 11, 1970, Ser. No. 36,136

Int. Cl. B60g 21/10

U.S. Cl. 180-79.2 R

11 Claims



A device to be connected in the hydraulic system in a conventional vehicle that includes a body-supporting chassis sprung on wheel-mounted running gear, which device includes relatively movable elements connecting the chassis and running gear adjacent to each of the ground wheels automatically hydraulically actuatable for restricting unsafe movements of the chassis and body relative to the running gear during either straight away movement of the vehicle over the ground, or around curves during normal or abnormal operation of the vehicle and application of the brakes, and which device also performs the function of shock absorbers.

3,625,302

**HYDROSTATIC TRANSMISSION CONTROL**

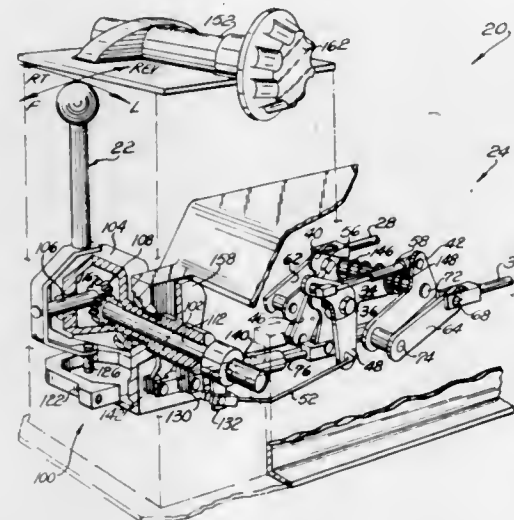
Robert B. Lauck, Southfield, Mich., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed May 12, 1969, Ser. No. 823,787

Int. Cl. B62d 11/04

U.S. Cl. 180-6.48

31 Claims



An improved apparatus for controlling the operation of a plurality of hydrostatic transmissions includes a single-control member. The control member is connected with the hydrostatic transmissions by a mechanical linkage which enables the control member to be moved in a natural manner to control both forward and reverse movement of a vehicle driven by the hydrostatic transmissions. The mechanical linkage can be used with different types of control members, such as a joystick or a T-handle.

3,625,303

**TERRAIN PROFILER AND PASSIVE MICROWAVE SENSOR FOR CONTROLLING VEHICLE SUSPENSION**

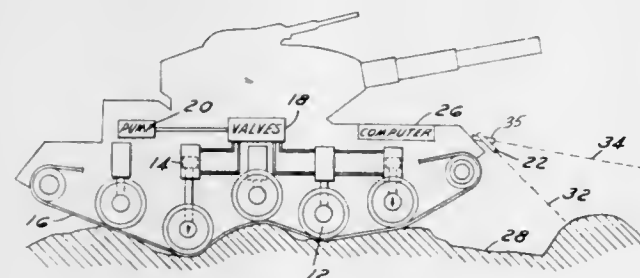
John W. Cameron, Rochester, Mich., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 14, 1970, Ser. No. 2,768

Int. Cl. B62d 55/14

U.S. Cl. 180-24.02

4 Claims



A terrain profiler comprising the combination of a laser ranger, a rocking mirror, and a passive microwave sensor for simultaneously automatically controlling vehicle suspension. The device provides means for allowing high speed over irregular terrain by providing a short range laser profiler to control the active suspension of a vehicle automatically and a passive microwave sensor for sensing the crushability of obstacles by disclosing the nature and moisture content of the soil and the nature of the subsoil material.

3,625,304

**MOBILE SWIVEL LADDER**

Willi Siefermann, deceased, late of Karlsruhe by Luise Siefermann, nee Gaugler, Bussardweg 49, Karlsruhe; Dorothea Siefermann, Bussardweg 49, Karlsruhe, and Hans Siefermann, Kreuzstr. 12, Forchheim near Karlsruhe, all heirs, all of Germany

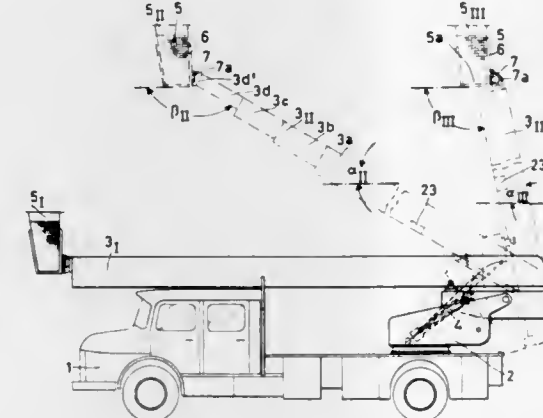
Claims priority, application Germany, Mar. 14, 1968, P 17

08 078.3

Int. Cl. E06c 5/04; B66f 11/04

U.S. Cl. 182-2

19 Claims



A rescue mobile ladder comprising a ladder pivotally connected at one end to a vehicle and a cage pivotally suspended on the second end of said ladder so that under the action of gravity, said cage adapts itself automatically to any change in the incline of the ladder relative to the horizontal position.

3,625,305

**TRANSPORT BASKET AND METHOD OF PRODUCING THE SAME**

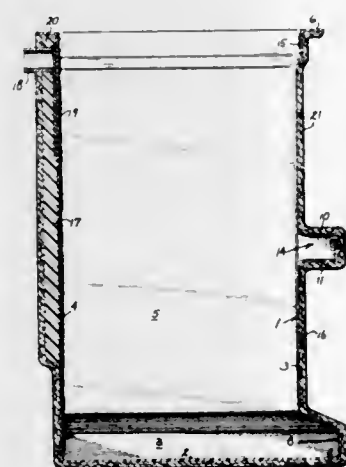
Otto M. Mueller, and Melvin R. Nordin, both of Lakeville, Minn., assignors to Viking Engineering and Manufacturing, Inc., Lakeville, Minn.

Filed June 2, 1969, Ser. No. 829,489

Int. Cl. B65d 1/48; E04g 5/08

U.S. Cl. 182-46

2 Claims



A transport basket for raising personnel or material to elevated positions from a vehicle having an elevatable basket supporting structure thereon. The basket comprises a liner of electrical insulating material and an outer rigid jacket covering the exterior surface of the liner. A method of producing the transport basket involves molding the liner in a rotational mold without a core, removing the liner from the mold, and thereafter covering the exterior surface of the liner with glass fiber-impregnated plastic resin.

3,625,306

**CONVEYANCE SERVICING STRUCTURE**

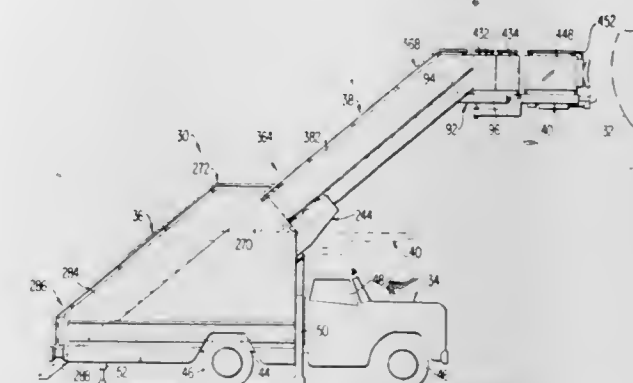
James F. Sauer, and Leonzo V. Glidewell, both of Miami, Fla., assignors to Wollard Aircraft Equipment, Inc.

Filed July 16, 1970, Ser. No. 55,456

Int. Cl. E06c 5/06

U.S. Cl. 182-63

13 Claims



Conveyance servicing structure includes a truck-mounted, extensible ramp arrangement in the form of a stair assembly. The stair assembly extends to various heights for servicing conveyances of various sizes or at various levels. The stair assembly includes a lower stair section, an upper stair section, and a carriage for the upper section. Extension of the stair assembly is effected by linearly extensible power means which move the carriage relative to the lower stair section, and which move the upper stair section relative to the carriage. When retracted, the upper stair section underlies the lower stair section and, when extended, the lower end portion of the upper section is contiguous to the upper end portion of the lower section to define a continuous stairway. The stair assembly can be locked in increments of one riser height, so that all the steps of the stair assembly are of uniform height.

3,625,307

**MOBILE SWIVEL LADDER**

Willi Siefermann, deceased, late of Bussardweg 49, Karlsruhe, Germany (by Luise Siefermann, nee Gaugler, executrix); Dorothea Siefermann, Bussardweg 49, Karlsruhe, and Hans Siefermann, Kreuzstr. 12, Forchheim near Karlsruhe, both of Germany

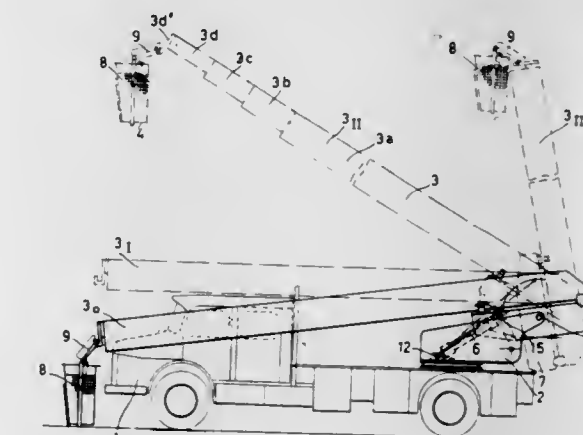
Filed Mar. 10, 1969, Ser. No. 812,540

Claims priority, application Germany, Mar. 14, 1968, P 17 08 079.4

Int. Cl. E06c 5/06; B66f 11/04

U.S. Cl. 182-66

12 Claims



A rescue mobile ladder comprising a ladder pivotally connected at one end to a vehicle and a cage pivotally suspended on the second end of the said ladder so that under the action of gravity, said cage adapts itself automatically to any change in the incline of the ladder relative to the horizontal position.



3,625,308

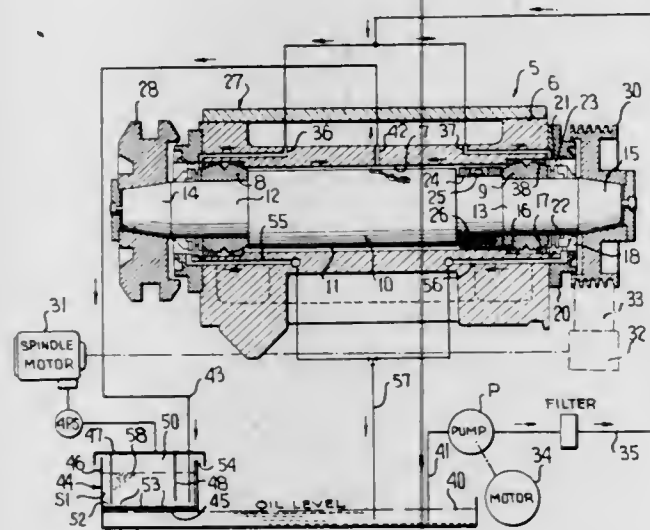
## SPINDLE LUBRICATION SAFETY DEVICE

Kurt M. Gebel, Waynesboro, Pa., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Aug. 21, 1969, Ser. No. 851,890  
Int. Cl. F16n 29/00

U.S. Cl. 184-6.1

11 Claims



Lubrication of spindle bearings, and more particularly to safety means for preventing the starting of the spindle drive motor before there is assurance of adequate lubrication for the spindle bearings. It is necessary that lubricant in the spindle housing be adequate before the spindle drive motor can start. This is accomplished by providing a pressure chamber in which the rise in lubricant level confines a small volume of air. When the lubricant level rises to a predetermined point, the air is subjected to compression sufficient to actuate a pressure switch in the circuit to the spindle drive motor. The compression chamber may either be part of an external lubricating system, or may be an integral part of the spindle housing. When the machine of which the spindle is a part is stopped, lubricant drains out of the spindle housing and the lubricant level within the compression chamber is reduced to permit the pressure switch to open.

3,625,309

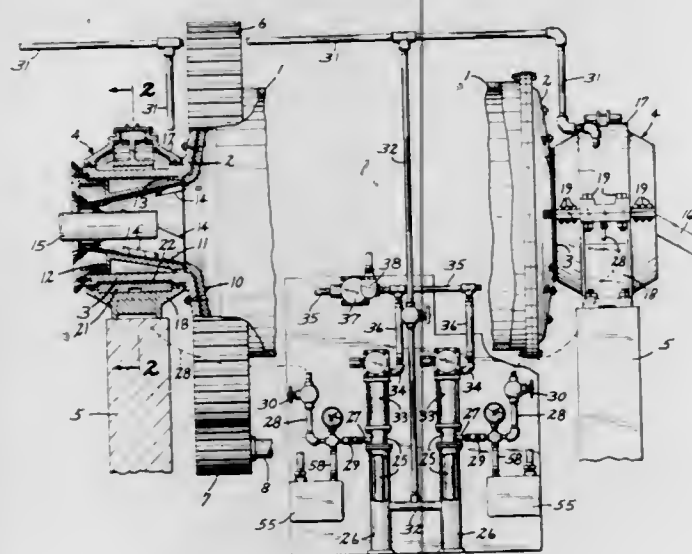
## AUTOMATIC JOURNAL LIFT APPARATUS FOR GRINDING MILLS

Clifford E. Lovold, Two Harbors, Minn., assignor to Reserve Mining Company, Silver Bay, Minn.

Filed Mar. 23, 1970, Ser. No. 21,577  
Int. Cl. F16c 33/66

U.S. Cl. 184-6.3

6 Claims



Apparatus for lifting journals of heavy rotary equipment away from metal to metal contact with underlying bearing

portions and simultaneously lubricating the journals prior to imparting rotary movement to the rotary equipment.

3,625,310

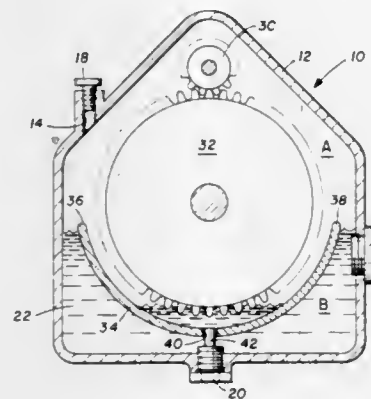
## GEARBOX LUBRICATION

David B. Herrick, Connersville, Ind., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 20, 1970, Ser. No. 4,376  
Int. Cl. F16n 7/26

U.S. Cl. 184-6.12

5 Claims



A gearbox having an improved drain and liquid level equalizing arrangement therein. The gearbox includes a housing having meshing gears mounted therein and containing a liquid for lubricating and cooling the gears. A drain opening extends through the lower side of the housing and is threaded to receive a drain plug. A baffle is positioned in the housing and has a port therein in alignment with the drain opening. The drain plug has an extension thereon that projects, in one position, into the port in the baffle. The extension of the drain plug is provided with a passageway whereby fluid can flow from within the baffle into the housing therein below. The drain plug can be moved to a second position wherein the extension on the drain plug is removed from the port, permitting rapid fluid communication between the interior of the baffle and the housing therein below when it is desired to accurately determine the level of the liquid in the gearbox.

3,625,311

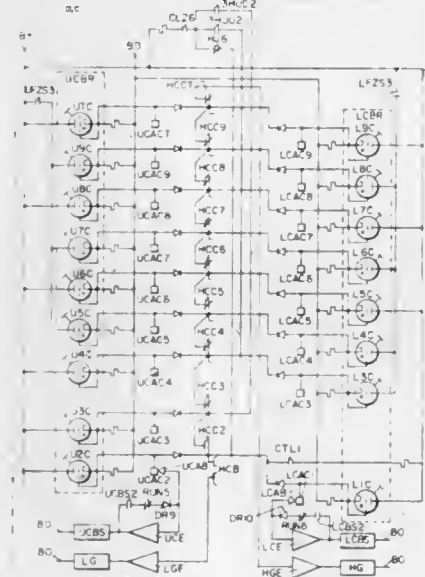
## CONTROLS FOR MULTICOMPARTMENT ELEVATORS

Frederick Henry Nowak, New Fairfield, Conn., and Henry Joseph Pasternak, Parlin, N.J., assignors to Otis Elevator Company, New York, N.Y.

Filed Apr. 21, 1970, Ser. No. 30,408  
Int. Cl. B66b 1/18

U.S. Cl. 187-29 R

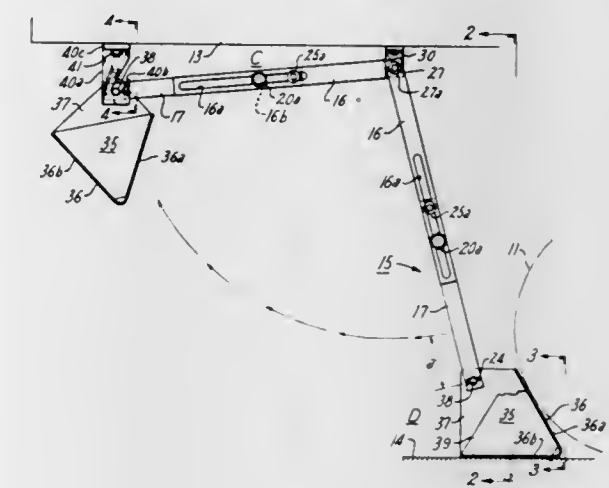
51 Claims



Controls for multicompartment elevator cars including, one, an arrangement operating while a car is parked and in

response to the answering of a hall call for one direction of travel by one compartment to delay for at least a predetermined period the answering of a hall call for the other direction by the other compartment; two, an arrangement for preventing under certain circumstances the registration of certain car calls in each of the compartments of a car; three, an arrangement in which two separate hall call registration devices are provided at a predetermined intermediate landing for indicating desired travel in a particular direction from that landing, one for travel to odd landings in that direction and the other for travel to even landings; four, an arrangement for stopping some of a plurality of two compartment cars with their lower compartments for odd landing hall calls and the rest of the cars with their upper compartments for even landing hall calls; five, an arrangement for preventing both the registration of car calls for even landings in lower compartments stopped for odd landing hall calls and the registration of car calls for odd landings in upper compartments stopped for even landing hall calls; six, an arrangement for transferring selection at a dispatching floor from a selected car to another car in response to an indication that a passenger at that floor desires to travel to a landing which is not served by the compartment of the selected car adjacent the dispatching floor; and seven, an arrangement for transferring selection at a dispatching floor from a selected car to another car in response to the registration of a hall call at a predetermined landing which the selected car cannot answer.

extended "down" or operating position to a shortened, securely retained, upper, underframe latched position when



not in use; it is strong but light in weight for easy manual manipulation.

3,625,312

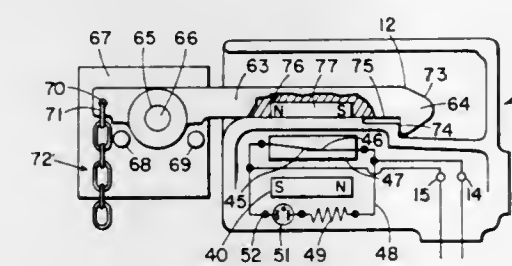
## SAFETY APPARATUS FOR LANDING GATES ON HOIST ELEVATORS

Murray Hutner, 562 Briar Hill Ave., Toronto, Ontario, Canada

Filed June 9, 1969, Ser. No. 831,335  
Int. Cl. B66b 1/00

U.S. Cl. 187-48

12 Claims



A hoist control system having electrical control circuits for each landing gate, and contact breakers in the control circuits in sealed containers mounted on the hoist adjacent each landing gate, the contact breakers being magnetically operable from the exterior of the container, and mechanical landing gate latching means, incorporating magnets which close the contacts when the landing gates are closed and mechanically latched.

3,625,313

## CHOCKING DEVICE

Walter B. Lowrie, 104 Newkirk Drive, Glenshaw, Pa.

Filed Oct. 17, 1969, Ser. No. 867,121  
Int. Cl. B60t 3/00

U.S. Cl. 188-4 R

9 Claims

A pair of wheel blocking or chocking devices is operatively positioned in an opposed relation for cooperatively engaging opposite sides of the tire of a rear wheel of a heavy wheeled vehicle, such as a truck or trailer, for positively retaining the vehicle at a desired location and, particularly, when loading or unloading or when parking. Each chocking device is manually reducible in length and radially swingable from an

3,625,314

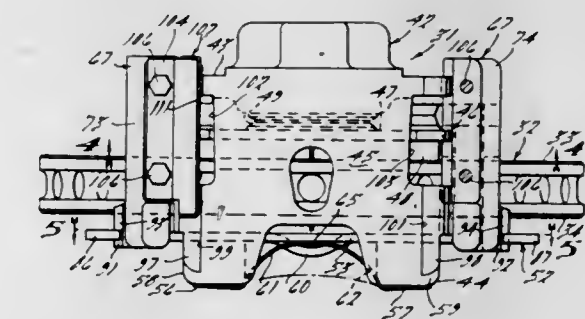
## SLIDING CALIPER-TYPE DISK BRAKE

Kurt H. Rinker, Wayne, Mich., assignor to Kelsey-Hayes Company

Filed June 26, 1969, Ser. No. 836,794  
Int. Cl. F16d 55/18

U.S. Cl. 188-72.4

14 Claims



A sliding caliper-type disk brake embodying a torque member having a pair of spaced arms each of which takes the force from a respective one of the brake pads upon their engagement with the associated disk. The caliper is also slidably supported upon the torque member arms but takes substantially no force from the brake pads. Several embodiments of antirattle devices are provided for interposition between the torque member arms and the caliper for accommodating some movement of the caliper while precluding rattling thereof.

3,625,315

## BRAKING CONTROL MEANS

Bernard Laverdant, Vincennes, France, assignor to Societe Anonyme D.B.A.

Filed Oct. 15, 1969, Ser. No. 866,542  
Claims priority, application France, Oct. 23, 1968, 170938  
Int. Cl. F16d 55/18

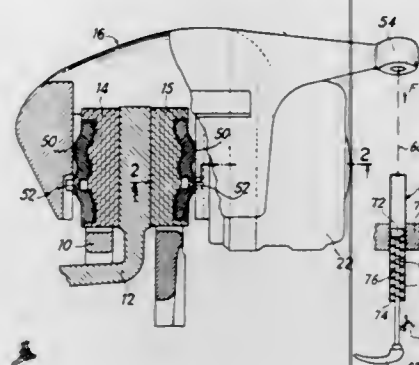
U.S. Cl. 188-72.6

5 Claims

In an emergency and parking mechanical control braking system there is inserted a heavy resilient means between the control lever or pedal and the mechanical braking



mechanism of the brakes. Such resilient means is used to store energy restituted to apply the brakes when they are no



longer hydraulically applied. The invention applies notably to braking systems comprising tilting caliper disc brakes.

3,625,316

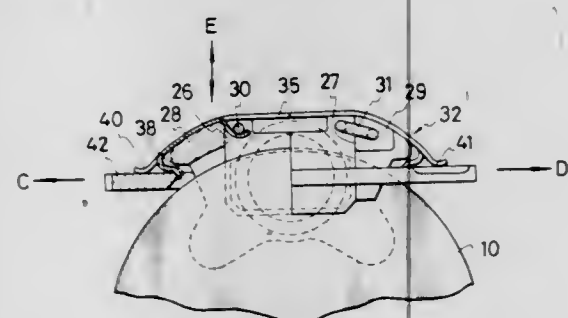
## ANTIRATTLING DEVICE OF DISC BRAKE

Yoshinori Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya Aichi Pref., Japan  
Filed Feb. 9, 1970, Ser. No. 9,729

Claims priority, application Japan, Feb. 21, 1969, 44/15734  
Int. Cl. F16d 65/02

U.S. Cl. 188—73.5

6 Claims



An antirattling device for use on a spot-type disc brake which is formed of resilient material such as thin metal and engages at its intermediate portion backing plates guiding pins and at its ends a movable plate for preventing excessive vibrations of the backing plates and movable plate.

3,625,317

## MAGNETIC BRAKE SYSTEM

Max Baermann, 506 Bensberg Bezirk, Cologne, Germany

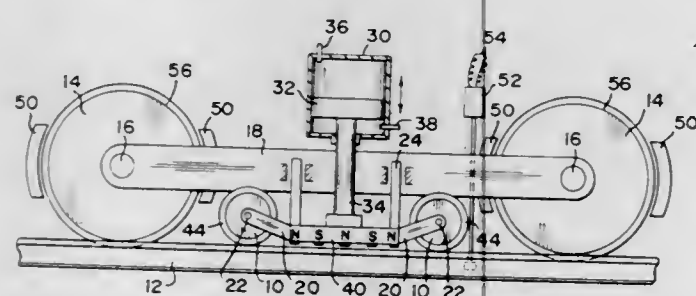
Filed June 24, 1969, Ser. No. 836,033

Claims priority, application Germany, June 27, 1968, P 17 55 827.9

Int. Cl. F16d 65/34; H02k 49/04

U.S. Cl. 188—165

5 Claims



A magnetic brake system for vehicles, comprising an eddy current brake having a stator and a rotor. The stator is fixed with respect to the vehicle and the rotor is arranged to be driven by a member which moves relative to the vehicle.

Means are provided for bringing the rotor into driven relationship with the movable member, whereby upon the energization of the eddy current brake, a braking effect is imparted to the vehicle.

3,625,318

## FRICTION BRAKE

Hans Heinrich Wymann, Munchenbuchsee, Switzerland, assignor to Maschinenfabrik Winkler, Fallert & Co. AG, Bern, Switzerland

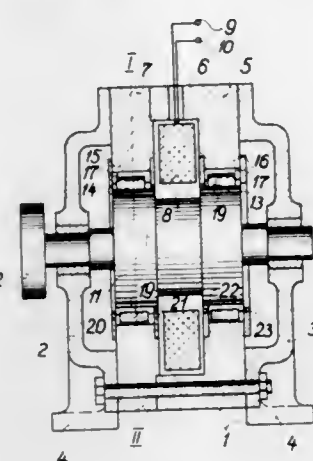
Filed Nov. 5, 1969, Ser. No. 874,228

Claims priority, application Sweden, Nov. 8, 1968, 15206/68

Int. Cl. F16d 65/34

U.S. Cl. 188—164

17 Claims



An electromagnetically operated friction brake includes a stator element, a rotor element and a magnetizing winding producing at least one magnetic field extending through both the stator element and the rotor element, the two elements defining at least one air gap therebetween. One of the elements is formed with a smooth sliding surface at an airgap, and a plurality of ferromagnetic friction bodies, such as balls, or cubes, are arranged in the airgap for movement along the sliding surface. The other element has ferromagnetic portions facing the airgap and formed with grooves or recesses cooperable with the friction bodies to provide for limited movement thereof in the grooves or recesses parallel to the sliding surface, and further providing for limited play of the friction bodies perpendicularly to the sliding surface. The sliding surface may comprise an annular surface of one of the two elements or may comprise the peripheral surface of a cylinder forming part of one of the two elements.

3,625,319

## DISC ELEMENT CONSTRUCTION FOR DISC BRAKE

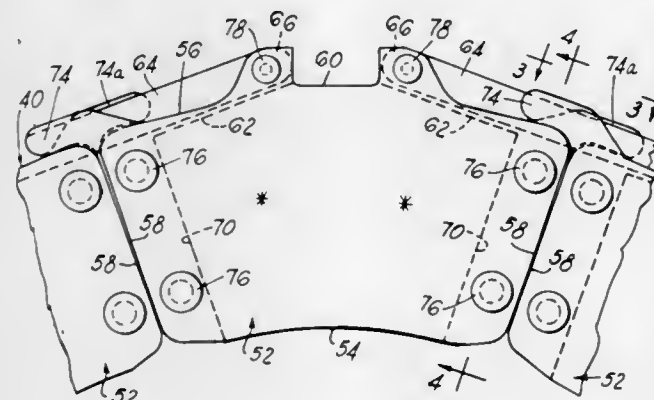
Walter J. Krause, South Bend, Ind., assignor to The Bendix Corporation

Filed Aug. 19, 1969, Ser. No. 851,287

Int. Cl. F16d 65/12

U.S. Cl. 188—218 XL

6 Claims



The following relates to a friction disc element construction for a disc brake which includes a pair of laminations

formed of a plurality of interconnected annularly arranged segments wherein the interconnection includes a plurality of circumferential link members. All of the segments of both laminations are symmetrically alike, but the segments of one lamination are allochirally arranged with respect to the segments of the other lamination. Each segment includes an integral protruberance extending therefrom which overlaps and contacts the next adjacent segment along the radially outer edge thereof.

3,625,320

## PNEUDRAULIC SHOCK ABSORBER

Peter Doetsch, Altdrossenfeld, and Wilfried F. Roos, Bayreuth, both of Germany, assignors to Stabilus Industrie-Und Handelsgesellschaft MBH, Kobleng-Neuendorf, Germany

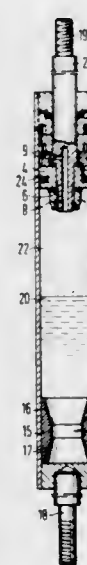
Filed July 31, 1969, Ser. No. 846,391

Claims priority, application Germany, Aug. 8, 1968, P 17 75 416.4

Int. Cl. F16d 69/00

U.S. Cl. 188—269

6 Claims



A pneumatic shock strut for aircraft has a cylinder which is about half-filled with liquid. The piston assembly which includes the piston and piston rod has two throttling bores of which one has an inlet orifice in a plunger projecting from the piston face directed away from the piston rod and approximately conformingly engageable with a central bore in a resilient ring mounted near an end wall of the cylinder. The outlet orifice of the bore is directed radially from the piston rod. The inlet orifice of the second conduit is axially offset from the first inlet orifice in the annular piston face about the plunger and its outlet is axially directed. The second conduit is closed by the ring when the piston approaches the end of its stroke.

3,625,321

## SHOCK ABSORBER AND FLUID-COMPENSATING MEANS

Dieter Lutz, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG., Schweinfurt am Main, Germany

Filed Aug. 26, 1969, Ser. No. 853,105

Claims priority, application Germany, Sept. 6, 1968, P 17 75 663.7

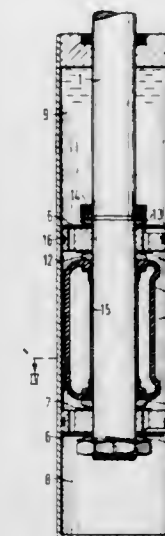
Int. Cl. F16f 9/08

U.S. Cl. 188—298

6 Claims

In a shock absorber having a cylinder and two axially spaced pistons on the same piston rod, a tubular membrane attached to the piston rod between the pistons is filled with compressed gas to compensate for the changes in the cylinder volume available to a liquid when the piston rod moves into and out of the cylinder cavity. In a modified ar-

angement, the compensating chamber is mounted on the piston rod outside the cylinder behind a flexible membrane



to which the liquid in the central cylinder compartment has access through a bore in the piston rod.

3,625,322

## FRICTION COUPLING CONTROLLED BY VEHICLE SPEED AND MANIFOLD VACUUM

Hiroaki Nagamatsu; Katsuhiko Handa, and Tetsuo Shimosaki, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

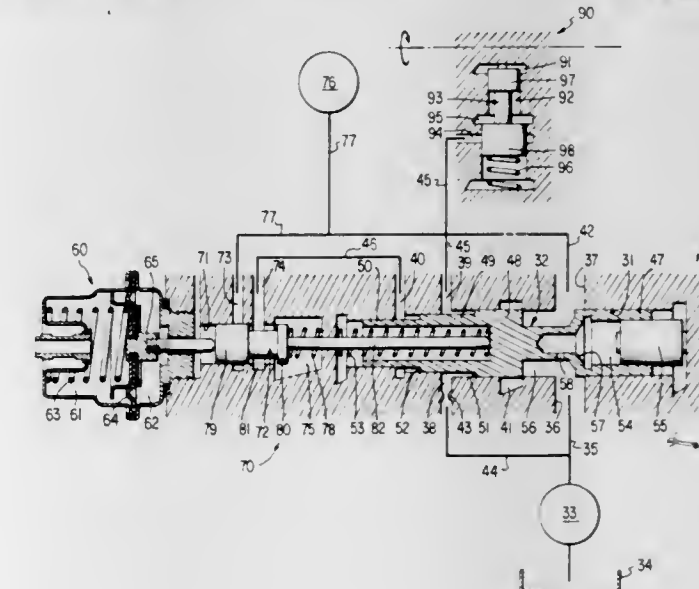
Filed Oct. 30, 1969, Ser. No. 872,631

Claims priority, application Japan, Oct. 30, 1968, Oct. 31, 1968, Oct. 31, 1968; 43/79417, 43/79790, 43/95252

Int. Cl. F16d 25/00, 43/284

U.S. Cl. 192—.032

5 Claims



The control system for an automatic transmission controls the flow of fluid to a friction clutch or brake to establish various drive gear ratios of a transmission including a friction-engaging mechanism to complete a power train between said shafts. A source of fluid for supplying a line pressure to said friction-engaging mechanism is provided. A vacuum motor is connected to the intake manifold of an engine. A regulator valve is disposed between the source of fluid and the friction-engaging mechanism to regulate the line pressure from the source. Valve means connected to said vacuum motor increase the line pressure in response to the decrease of the vacuum in the intake manifold by contacting with the regulator valve when said vacuum is below a predetermined value to hold the line pressure higher than the minimum value. When said vacuum is above a predetermined value, said valve means releases itself from the regulator valve and at the same time communicates line pressure to a valve land area on the regulator valve to increase the force acting on



said regulator valve and hold the line pressure higher than the minimum valve. A pressure area of the regulator valve is coupled to the source of fluid through a restriction, and a speed-responsive device connects the pressure area to a sump or exhaust to reduce the line pressure above a predetermined speed for either of said shafts.

3,625,323

**TORQUE CONVERTER WITH DUAL CLUTCHES**

Richard Hetmann, Tamm, Germany, assignor to Firma Dr.-Ing. h. c. F. Porsche KG, Zuffenhausen, Germany

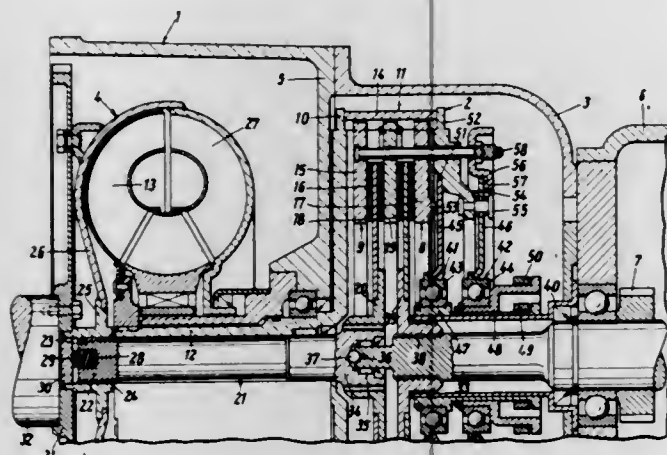
Filed Aug. 12, 1969, Ser. No. 849,388

Claims priority, application Germany, Aug. 24, 1968, P 17 80 276.5

Int. Cl. F16h 45/02

U.S. Cl. 192—3.26

10 Claims



A clutch assembly for compound transmissions including a hydrodynamic torque converter and a change-speed gear. The gear input shaft can be selectively connected with the turbine impeller of the torque converter by means of a separating clutch or the input shaft can be selectively connected to the pump impeller of the torque converter by means of a bypass clutch. Both the separating clutch and bypass clutch are located in a structural group within an oil-free zone between the torque converter and the change-speed transmission.

3,625,324

**ROLLER CLUTCH ASSEMBLY**

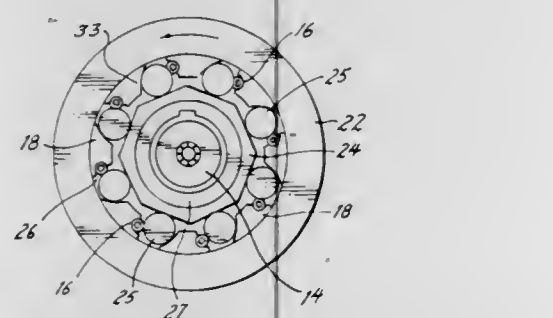
Herbert D. Scharf, 437 Merwyn Road, Merion, Pa.

Continuation of application Ser. No. 47,465, June 18, 1970, now abandoned. This application Sept. 10, 1970, Ser. No. 71,164

Int. Cl. F16d 15/00, 41/06

U.S. Cl. 192—45

3 Claims



In a roller clutch assembly including the conventional crankshaft-cam-flywheel arrangement wherein rotation of the flywheel ring may be transmitted to the cam through engaged drive rollers, the improvement comprising forming slots in the cage retainer walls to receive flexible tubing for each drive roller, whereby when the roller clutch is brought to the actuated position each drive roller will be in resilient contact with its corresponding piece of tubing such that rotation is transmitted from the flywheel ring to the cam through all of

the drive rollers, and wherein in disengaged position the cage retainer wall, through direct contact between the tubing and each individual roller urges the rollers against the next retainer arcuate wall and away from the rotating ring.

3,625,325

**VARIABLE-TORQUE CENTRIFUGAL FRICTION CLUTCH**

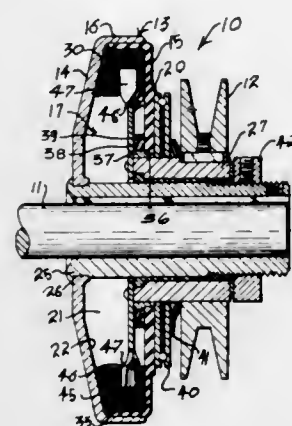
Richard A. Hersey, 1809 James Ave. South, Minneapolis, Minn.

Filed Feb. 2, 1970, Ser. No. 7,542

Int. Cl. F16d 31/08, 37/00

U.S. Cl. 192—58 A

8 Claims



A rotatable housing connected to a driving member defines a circular cavity in which a circular clutch plate connected to a driven member is mounted for rotation relative to the housing. A clutching medium in the cavity having a fluid state moves radially toward a restricted annular passage defined by the housing and clutch plate responsive to rotation of the housing to cause common rotation of the drive and driven members, and means is provided to impart relative movements axially between the housing and clutch plate for varying the torque required to cause relative rotational movement between the housing and clutch plate.

3,625,326

**CENTRIFUGALLY CONTROLLED LOOP SPRING CLUTCH**

Albert Rix, Wilhelmshaven, and Georg Werner, Heldmühle, both of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

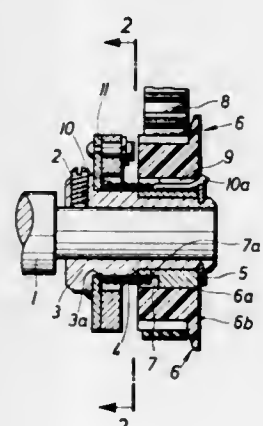
Filed Mar. 3, 1970, Ser. No. 15,990

Claims priority, application Germany, Mar. 3, 1969, P 19 10 663.9

Int. Cl. F16d 43/24

U.S. Cl. 192—105 CE

9 Claims



A centrifugally controlled loop spring clutch for coupling and decoupling a drive shaft to a coaxial member. The drive shaft is provided with a pair of centrifugally responsive weight members which are mounted so that they pivot in op-

posite directions about their pivot axes, and are coupled for movement together. Movement of the weight members causes a loop spring mounted on the coaxial member and encircling the end of the drive shaft, to be pressed against the periphery of the drive shaft to thereby couple the drive shaft to the coaxial member. The oppositely acting arrangement of the centrifugal weight members permits the forces caused by tangential accelerations due to torsional vibrations to be compensated and a smooth coupling and decoupling action to take place.

3,625,327

**CLUTCH CONTROL BEARINGS**

Harold Donald Birdsey, Newark, England, assignor to Ramsome & Morles Bearing Co. Ltd.

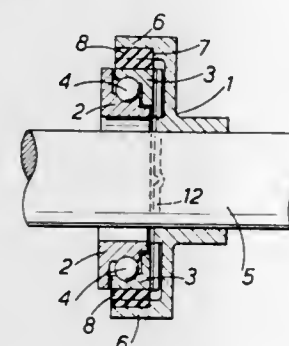
Filed Feb. 3, 1970, Ser. No. 8,226

Claims priority, application Great Britain, Feb. 3, 1969, 5,658/69

Int. Cl. F16d 13/60

U.S. Cl. 192—110 B

11 Claims



A clutch control bearing wherein adjustment to compensate for eccentricity with respect to a shaft is accomplished by a resilient mounting interposed between a raceway and a hub plate. A wobble plate may be employed to permit further adjustment relative to the shaft.

3,625,328

**DUAL-RESPONSE DRIVE TRAIN**

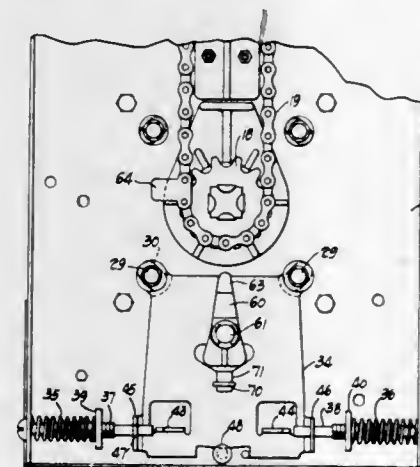
Alvin J. Carli, Sebring, Ohio, assignor to The Alliance Manufacturing Company, Inc.

Filed Dec. 18, 1969, Ser. No. 886,175

Int. Cl. F16d 71/00

U.S. Cl. 192—142 R

18 Claims



A planetary drive train is disclosed having a first input from an electric motor and a first output which is connected to drive a load. A second output from the drive train is partially rotatable and is connected to actuate a control switch whenever the torque requirements of the load exceed a first predetermined limit established by an adjustable screw and a yieldable spring. When this predetermined limit is exceeded the spring is stressed to permit partial rotation of the planetary drive second output and this actuates the switch to deenergize the motor. Additionally, the planetary drive first output driving the load is connected so that movement of the load

between first and second limits actuates the switch to deenergize the motor. The load may be a garage door moved between upward and downward limit positions, and the drive train second output may be a limiting torque condition to deenergize the drive motor whenever the garage door exceeds first and second predetermined force requirements in moving in the upward and downward directions. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,625,329

**CRADLE LOCKING ARRANGEMENT FOR COIN SORTER**

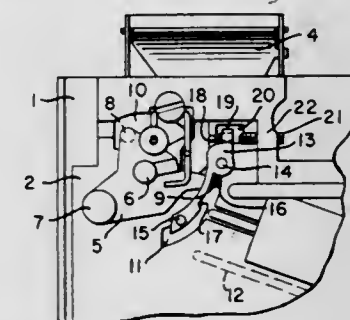
Wilson M. Stewart, Ottawa, Ontario, Canada, assignor to Vendall Machines Limited, Ottawa, Ontario, Canada

Filed Aug. 21, 1969, Ser. No. 851,932

Int. Cl. G07f 3/02

U.S. Cl. 194—102

3 Claims



In a coin sorter having a cradle adapted to be rocked by a coin of predetermined size, there is provided a locking member for locking the cradle against full rocking movement by a coin of smaller size, said locking member being pivotally mounted intermediate its ends and having a shoulder biased into the path of a pin on the cradle but movable out of said path in response to engagement of a screw by a coin of acceptable size in the cradle, the screw being finely adjustable in an arm of the locking member to enable fine selection of the minimum size of coin required to fully rock the cradle. Preferably, another screw is adjustably mounted in the sorter to engage said arm and limit displacement thereof when a coin or slug of greater than acceptable size is received in the sorter.

3,625,330

**REGISTRATION ALIGNMENT DEVICE FOR EMBOSING MACHINE**

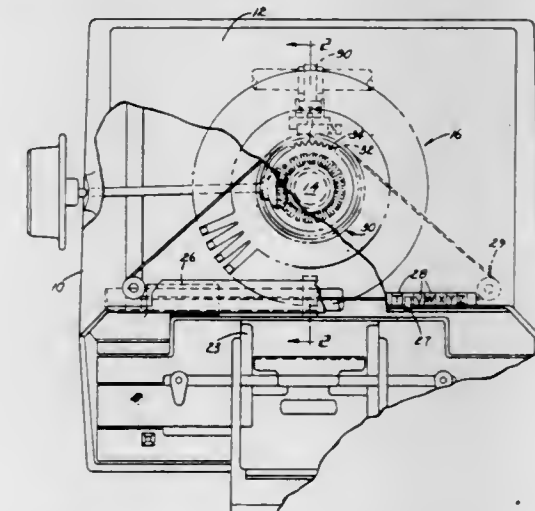
George Marinoff, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Apr. 21, 1969, Ser. No. 818,005

Int. Cl. B41j 1/30

U.S. Cl. 197—6.4

8 Claims



A registration device of the rack-and-pawl type designed to accurately position the rack in the event said rack is misaligned with the pawl member.



A circular rack carries a device that must be accurately positioned but because of the speed at which it rotates a detent mechanism is objectionable. The pawl assembly consists of a sensing pawl pivotally mounted to an engaging pawl and arranged slightly out of alignment and in advance of the engaging pawl. If the rack is stopped in a position where a tooth on the rack is in line with the tooth of the engaging pawl the sensing pawl will rotate the rack slightly to prevent tooth-on-tooth damage.

3,625,331

## TYPE HEAD POSITIONING APPARATUS

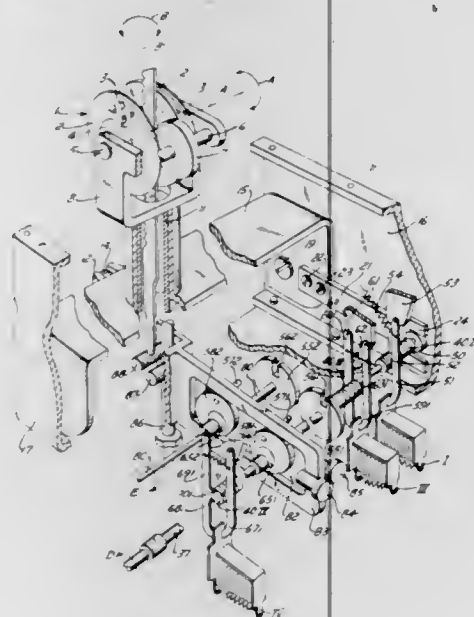
Hermann Waldenburger, Wolkersdorf, and Herbert Decker, Lauf, both of Germany, assignors to Triumph Werke Nurnberg AG, Nurnberg, Germany  
Filed June 17, 1969, Ser. No. 834,017

Claims priority, application Germany, June 10, 1968, P 17 61 660.3

Int. Cl. B41j 1/60

U.S. Cl. 197-48

11 Claims



The type head of a typewriter or like business machine is turned about perpendicular axes by two incremental links in order to place a character selected by actuation of a key, in a printing position. Each incremental link is placed in a plurality of angular positions by two eccentric means which are coupled or disengaged from two drive shafts under the control of electromagnetic means energized by key switches.

3,625,332

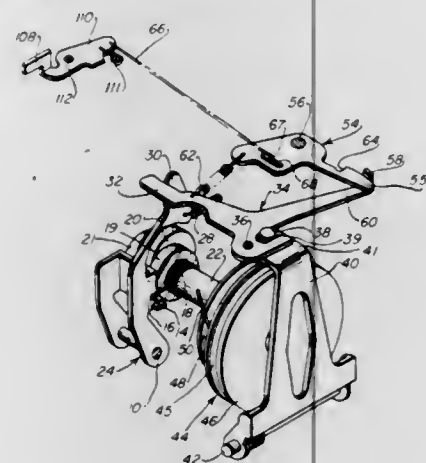
## QUIET REPEAT-LINE-INDEXING MECHANISM

Robert E. McGrath, 102 West St., Rocky Hill, Conn.  
Continuation of application Ser. No. 690,488, Dec. 14, 1967, now abandoned. This application Apr. 20, 1970, Ser. No. 28,265

Int. Cl. B41j 19/70

U.S. Cl. 197-65

6 Claims



In a typewriter in which a frame-based power mechanism is responsive to a carriage return key to operate a carriage-

supported line-indexing mechanism and then to draw the carriage in return direction by a limitedly movable cushioning counterstop means, provision is made so that then the said power mechanism under key control will intermittently effect line indexing operations and furthermore said counterstop means during said intermittent operations is blocked against movement to prevent carriage movement.

3,625,333

## FRONT-FEEDING DEVICE FOR ACCOUNTING OR OTHER SUCH MACHINES

Alessandro Cortona, Banchette, Turin, and Bruno Sandrone, Ivrea, Turin, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy

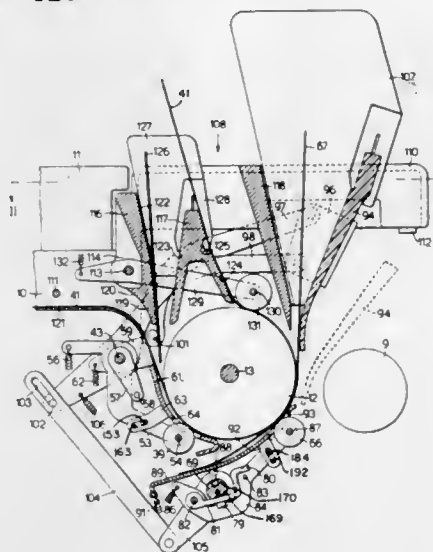
Filed Feb. 27, 1969, Ser. No. 802,831

Claims priority, application Italy, Mar. 2, 1968, 50,743/68

Int. Cl. B41j 11/48

U.S. Cl. 197-128

4 Claims



Feed apparatus for printing machines providing both front and back feed in which a pivotal guide frame mounted over the printing platen has a plurality of longitudinal guide surfaces for guiding front and back fed sheets separately, a pivotally supported guide rule parallel to said frame providing a front-most guide surface, lateral adjustable guides mounted on said frame and said rule, front and rear bottom guides positioned below the printing platen together with respective paper-pressing rollers, a plurality of interengaged levers for effectuating release of a plurality of said guides simultaneously for insertion of sheet material and cam-operated clutch means for releasing the printing platen for free manual rotation during the insertion of material.

3,625,334

## APPARATUS FOR ERASING TYPEWRITER TAPE

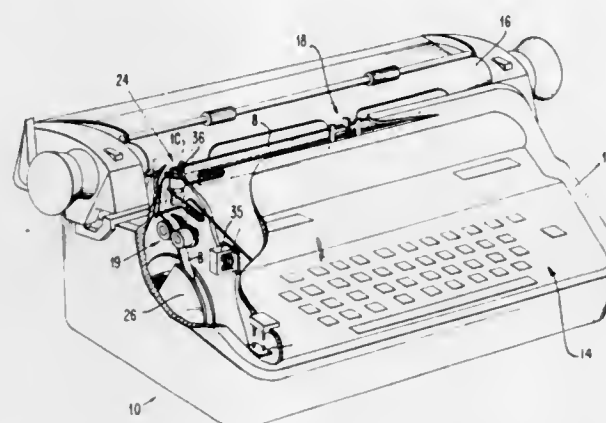
Kie Y. Ahn, Bedford, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,256

Int. Cl. B41j 31/14, 27/00, 29/16

U.S. Cl. 197-171

9 Claims



A tape having a smooth surface upon which a low melting point ink has been flowed, has ink reflowed over those por-

tions which have been struck by typewriter keys. To effect a redistribution of the ink on the tape, heat is imparted locally thereto, such heat being applied to the typewriter tape either by conduction or radiation. Alternatively, the ink may be caused to flow freely at ambient temperatures and then be permitted to dry to a film thickness.

3,625,335

## DEVICE FOR TABULATING PRINTED CHARACTERS TO THE RIGHT FOR TELEPRINTERS AND SIMILAR DATA TERMINAL PRINTOUT APPARATUS

Giuseppe Ricciardi, and Luciano Rattini, both of Ivrea, Torino, Italy, assignors to C. Olivetti Ing. & C., S.p.A., Ivrea (Torino), Italy

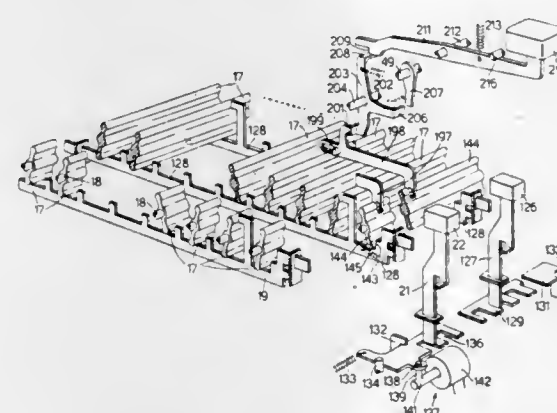
Filed Apr. 22, 1969, Ser. No. 818,300

Claims priority, application Italy, Apr. 26, 1968, 51435-A/68

Int. Cl. B41j 25/18

U.S. Cl. 197-176

7 Claims



In printers, such as used in teleprinters and data terminal equipment, having a carriage for providing relative motion between a printing paper support and a type carrier, a mechanism for backspacing the carriage responsive to a backspace code and an accumulator for storing code combinations corresponding to characters set on a keyboard; a mechanism for right justifying a group of characters to be printed comprising locking means responsive to setting of a first character in the group to prevent readout from said accumulator of the code combinations of entered characters, means to generate said backspace code independently of the accumulator upon setting of each character of the group and control means for disengaging the locking means and effecting readout of said accumulator; whereby said carriage may be spaced to a tabulated position, the characters of said group may be entered without printing while the carriage backspaces for each entry, and then the characters may be automatically read out of said accumulator printing right justified to the tabulated position.

3,625,336

## BOTTLE-LOADING APPARATUS

Yoshikazu Fuwa; Yoshio Sata, both of Nagoya; Tadaaki Ono, Inazawa, and Shiro Kato, Nagoya, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

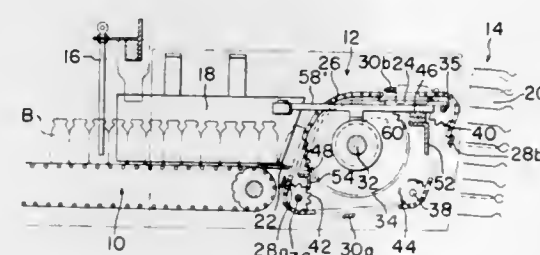
Filed Aug. 11, 1969, Ser. No. 849,055

Claims priority, application Japan, Aug. 8, 1968, 43/62115

Int. Cl. B65g 47/57

U.S. Cl. 198-22

7 Claims



A bottle-loading apparatus, for loading bottles, supplied from a bottle conveyor, into an apertured carrier of a bottle-

processing apparatus, comprises guide means receiving and guiding a row of bottles, supplied from the bottle conveyor, into the carrier. Transfer means that are cooperable with the guided bottles, and include at least a pair of endless belts, such as chain belts, extending along the guide means. Push rods extend transversely of the guide means and are coupled to the belts for driving along the guide means to push bottles, supported on the guide means, toward the carrier. When the apertures of the carrier are arranged in laterally staggered rows, the guide means are cyclically reciprocated laterally to align with the apertures in the successive rows. Preferably a bridge member is provided between the carrier and the discharge ends of the guide means to support the lower surfaces of the bottle during transfer to the carrier. The carrier may be stopped periodically and cyclically when the transfer means engages the bottles on the guide means.

3,625,337

## DEVICE FOR COORDINATING AND SEPARATELY SUPPLYING OBJECTS WRAPPING MACHINE

Ariosto Seragnoli, Via Bollinzona, 31 Bologna, Italy

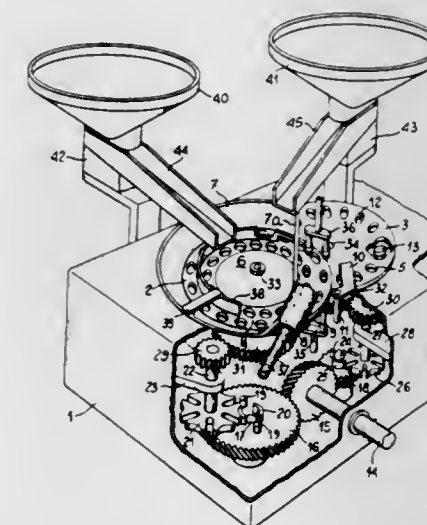
Filed Mar. 28, 1969, Ser. No. 811,423

Claims priority, application Italy, Apr. 3, 1968, 1588A/68

Int. Cl. B65g 47/26

U.S. Cl. 198-32

6 Claims



A device for coordinating and separately supplying objects, such as sugar-drops and the like, to a paper-wrapping machine, is described as having intermittently moving dispensing means acting as a bottom for a container provided with holes each for receiving an object, with intermittently moving conveyor means, provided with holes and by partial overlapping said dispensing means for receiving the objects therefrom and supply the same to the paper-wrapping machine, the holes in said dispenser means being arranged in sets and the intermittent movement of the dispensing means being coordinated with the holes and intermittent movement of the conveyor means, so that at each transfer step a plurality of objects in the individual holes of said plurality of hole sets in the dispensing means pass to as many individual subsequent holes in the conveyor means, the sets of holes in the dispensing means being separated from one another by a stationary wall concentrically disposed there between which is interrupted in the area comprising the transfer station.

3,625,338

## METHOD AND APPARATUS FOR STACKING SHEET MATERIAL

Wesley D. Cawley, 721 Avenue A., Port Neches, Tex.

Original application Sept. 18, 1967, Ser. No. 668,412, now Patent No. 3,523,686. Divided and this application July 10, 1969, Ser. No. 842,826

Int. Cl. B65g 47/04, 57/02

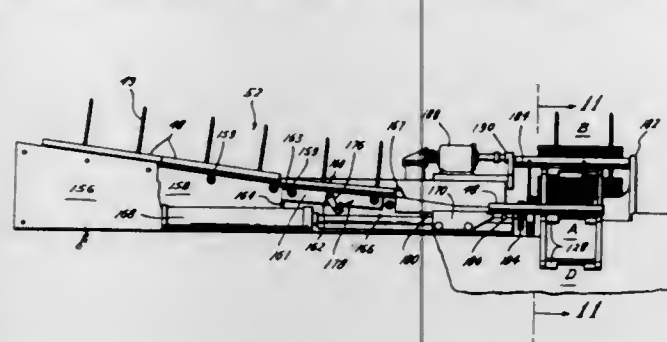
U.S. Cl. 198-35

18 Claims

The present invention is directed to apparatus used to automatically stack sheet material on supports for ease of handling. Endless conveyors are utilized to carry spring loaded, cam operated gripper jaws at a constant speed. At pickup and release stations, the conveyors move about

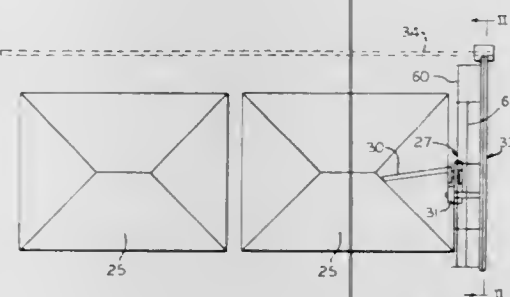


sprockets, whereby their speed is slowed to allow the proper pickup or release of the sheet material. A novel indexing means is used to position the supports at the receiving station and to remove loaded supports, whereby the movement of the conveyors need not be stopped or slowed. Vacuum



**3,625,339**  
**REMOVAL AND CONVEYING OF MATERIAL FROM STORAGE PILES OF EXCAVATIONS**  
Fred T. Smith, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.  
Filed May 31, 1968, Ser. No. 733,648  
Int. Cl. B65g 65/28  
U.S. Cl. 198—36

32 Claims

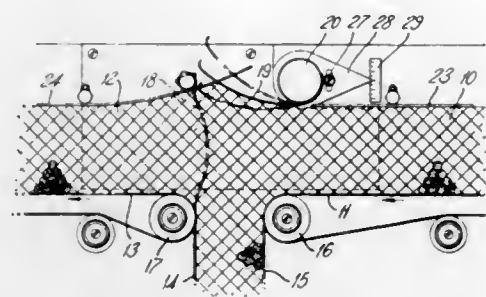


A material moving machine is operated to loosen and remove material in successive cuts or swaths of predetermined width and substantial length from the face of a material source such as a storage pile or an excavation. A conveyor on the opposite side of the moving machine and receiving the removed material therefrom extends substantially parallel and in spaced relation to the material source face. As the position of the face shifts relative to the conveyor due to removal of successive swaths of material requiring consequential shifting movement of the machine, the conveyor correspondingly moves up to maintain substantially the same spaced relation between the successive positions of the face, the machine and the conveyor to facilitate reception of the material from the machine. The conveyor comprises a plurality of articulated sections connected in end-to-end relation and having a continuous single endless conveyor belt carried by sections, with running wheels supporting the sections and means for driving certain of the wheels to move the conveyor as a unit.

**3,625,340**  
**ARTICLE-HANDLING APPARATUS**  
Alan Keith McCombie, London, England, assignor to Molins Machine Company Limited, Deptford, London, England  
Filed May 7, 1969, Ser. No. 822,386  
Claims priority, application Great Britain, May 10, 1968, Feb. 28, 1969; 22,413/68, 10,942/69  
Int. Cl. B65g 43/00, 43/08  
U.S. Cl. 198—37

This invention is basically an improvement on the sliding piston-type sensor used for example at 21 or at right-angle downward bends to deliver cigarettes from a horizontal over-

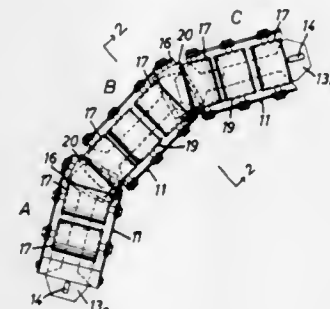
head conveyor to a chute extending downwards to a packing machine. The sensor according to this invention is preferably pivoted and has a convex underneath surface so as to



respond rapidly to a drop in the level of the cigarettes beneath it by sinking into the hollow formed in the surface of the cigarette stack.

**3,625,341**  
**BELT CONVEYORS**  
Heinz Kretschmar, Wiesensteig, and Werner Wallberg, Ludwigsburg, both of Germany, assignors to Organisation Rolfs K.G., Wiesensteig (Wurttemberg), Germany  
Filed July 9, 1970, Ser. No. 53,385  
Claims priority, application Germany, Feb. 17, 1970, P 20 07 166.3  
Int. Cl. B65g 15/60, 41/00  
U.S. Cl. 198—109

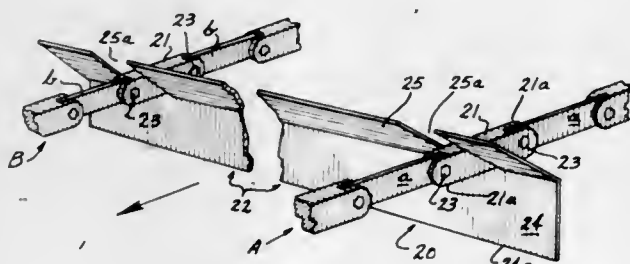
10 Claims



In a belt conveyor an assembly comprising at least two sections similarly constructed. Each of the sections comprises a frame, having a plurality of rollers journaled thereon for supporting a belt. The sections are adjustably secured in tandem along a defined radius of curvature and are provided with connecting rollers between adjacent sections. The connecting rollers being journaled beneath the supporting rollers, and being themselves pivotably mounted to the connecting means to permit the training of the belt in a continuous path from one section to another.

**3,625,342**  
**FLIGHT CONSTRUCTION**  
Robert W. Clyne, 5701 Sheridan Road, Chicago, Ill.  
Filed Aug. 21, 1969, Ser. No. 851,982  
Int. Cl. B65g 19/22  
U.S. Cl. 198—174

3 Claims

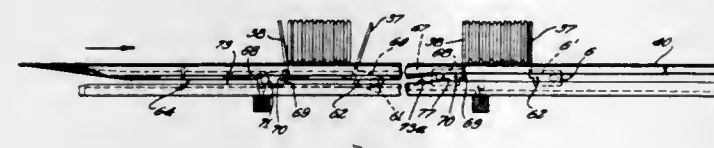


A flight is provided for use in an apparatus which is adapted to handle waste products or the like that have accumulated on a surface. The flight is connected to and forms a

part of a conveyor means and is adapted to move across the surface and remove the accumulated waste therefrom. The configuration of the flight is such that it has a short moment arm whereby the overturning moment of force encountered by the flight when in moving contact with the accumulated waste is small.

**3,625,343**  
**CONVEYOR RECEIVING AND CONVEYING ROWS OF ARTICLES IN PRESELECTED GROUPS FOR WRAPPING**  
Richard C. Talbot, Skokie, Ill., assignor to Peters Machinery Company, Chicago, Ill.  
Original application Apr. 1, 1968, Ser. No. 717,688, now Patent No. 3,500,984. Divided and this application Oct. 17, 1969, Ser. No. 871,345  
Int. Cl. B65g 17/16  
U.S. Cl. 198—179

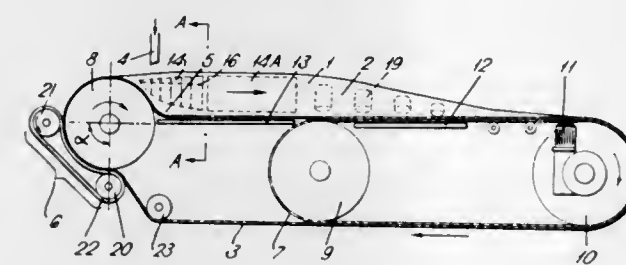
5 Claims



Conveyor for receiving rows of articles, such as cookies, dropped onto the conveyor in preselected groups from above, and conveying the groups of articles in a single row for wrapping. The conveyor includes a single strand chain having a material carrying run movable in a generally horizontal plane and having sets of leading and trailing flights spaced along the chain and extending upwardly of the material carrying run of the conveyor. The flights are carried by attachments, pivotally connected to the chain to pivot about the axes of certain pintle pins of the chain. A series of cams engaged by followers on the attachments opens two flights at a receiving position to form in effect a hopper and receive a group of articles deposited from above, and closes the two flights to close the space between the articles and hold the articles in vertical positions for wrapping.

**3,625,344**  
**ENDLESS BELT CONVEYOR**  
Maurice Debeaux, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France  
Filed Oct. 17, 1969, Ser. No. 867,156  
Claims priority, application France, Oct. 18, 1968, 170537  
Int. Cl. B65g 15/08  
U.S. Cl. 198—192

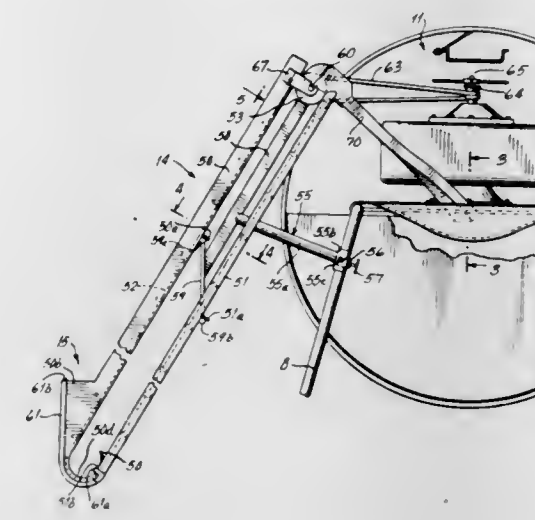
9 Claims



A conveyor for continuously receiving a substance and conveying in the liquid state and while it solidifies, in which a conveying endless belt is driven at its upstream end to form a dish portion in its upper run to receive the liquid substance. An auxiliary endless belt is mounted in contact with at least a part of said conveying belt. The linear speed of the driving means at the upstream end of the conveying belt is greater, e.g., 0.1 to 6 percent, than the speed of the auxiliary endless belt.

**3,625,345**  
**FEED CONVEYER FOR MEAT AND BONES SEPARATOR**  
Lucas J. Conrad, and Gerard Eugene Leonard, both of Winston-Salem, N.C., assignors to R. J. Reynolds Company, Winston-Salem, N.C.  
Filed Mar. 18, 1970, Ser. No. 20,564  
Int. Cl. B65g 15/60  
U.S. Cl. 198—204

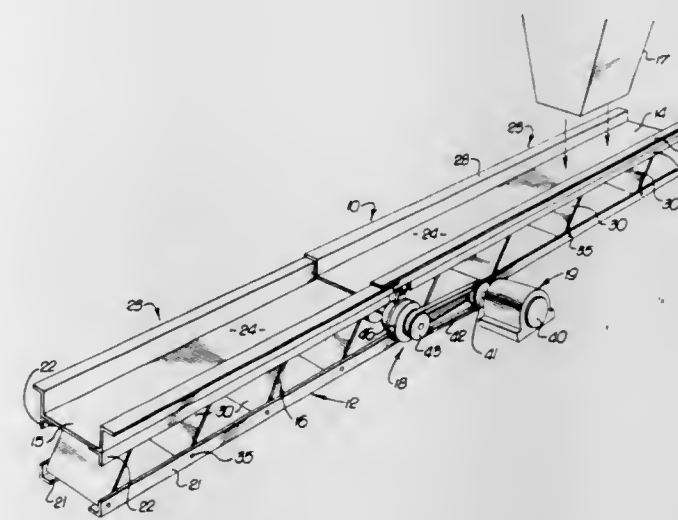
9 Claims



The feed conveyor consists of an upper trough defining a conveying reach and a lower trough defining a return reach. The conveyor belt is a simple single strand plastic belt of circular cross section on which spaced pushers are mounted by an arrangement which permits ready removal and cleaning of the pushers and belt.

**3,625,346**  
**STABILIZING MEANS FOR A VIBRATORY CONVEYOR APPARATUS**  
Lee B. Holman, Whittier, Calif., assignor to State Steel Products, Inc., City of Industry, Calif.  
Filed June 25, 1969, Ser. No. 836,526  
Int. Cl. B65g 27/20  
U.S. Cl. 198—220 CA

3 Claims



A stabilizing and support means for an actuating means arranged to impart vibratory forces to at least two longitudinally aligned conveyor sections resiliently supported by inclined members from a base frame. The stabilizing means includes stabilizing members yieldably interconnecting a shaft of the actuating means with one of adjacent conveyor section end portions whereby the actuating means is fully floatingly supported by the conveyor sections and whereby transmission of vibratory forces to the base frame means and its supporting floor structure are virtually eliminated.

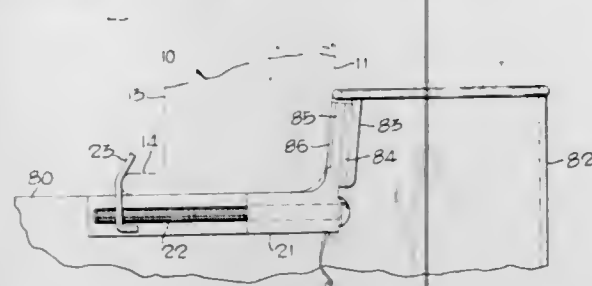


3,625,347

**LITTER AND STORAGE CONTAINER IN AN AUTOMOBILE SEAT ASSEMBLY**Earl M. Trammell, Jr., 39 Salem Estates Drive, Ladue, Mo.  
Filed Dec. 2, 1969, Ser. No. 881,415  
Int. Cl. B60n 3/08

U.S. Cl. 206—19.5 R

7 Claims



A litter and storage container in an automobile seat assembly, having a rear portion that fits under the seat communicating with a front portion that engages the front seat side adjacent the lower edge of the automobile seat, said front and rear portions together having a generally L-shaped configuration. A mounting means connects the casing to the seat, the mounting means including an adjustable clamp means connected to the container and engaging a rearwardly facing seat shoulder to hold the container tightly against the front seat side. In one embodiment, the clamp means includes a threaded fastener that extends through socket, connected to the container by magnets, and a hook threadedly attached to the fastener that engages the seat shoulder to clamp the seat between the hook and casing flange. In another embodiment, the clamp means includes a flat coil spring having one end attached to the container and the opposite end attached to the seat shoulder, the spring loading clamping the seat between a spring end and the container front portion. The container includes telescopically related upper and lower sections, the container sections being adjusted for different underseat heights.

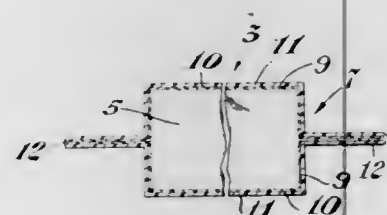
3,625,348

**PACKAGING ARTICLES IN CONTAINERS HAVING SELF-ADHERING INNER LAYERS**

Oliver R. Titchenal, Berea, Ohio, and Almar T. Widiger, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 8, 1969, Ser. No. 848,441  
Int. Cl. B65b 31/00, 53/00; B65d 85/00  
U.S. Cl. 206—46 F

27 Claims



An article is packaged in a multilayer flexible plastic sheet having a layer of a self-adhering plastic material and a layer of normally solid, thermoplastic organic polymer by (1) inserting the article between two opposing portions of the multilayer plastic sheet such that the layer of self-adhering plastic material faces the article; (2) collapsing the opposing portions into conforming contact with the article such that essentially all gases are permitted to pass out of the resulting package; and (3) sealing together the opposing contacting surfaces of said opposing portions to form a hermetically sealed package such that the self-adhering plastic material remains in clinging, conforming contact with the article and itself upon puncture of the multilayer plastic sheet.

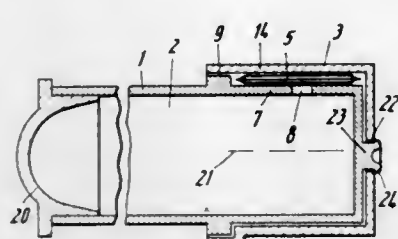
3,625,349

**DUPLEX CAPSULE FOR DENTAL FILLING INGREDIENTS**Ernst A. Muhlbauer, Hamburg, Germany, assignor to Zahn-  
Porzellan KG E. Muhlbauer & Co., Hamburg, Germany  
Filed Nov. 6, 1969, Ser. No. 874,540Claims priority, application Germany, Mar. 4, 1969, P 19 10  
885.1

Int. Cl. B65d 81/32

U.S. Cl. 206—47 A

9 Claims



A container for storing two ingredients or components which are to be later mixed together to produce a dental filling substance or the like which comprises a container body having a first chamber adapted to hold a first component, said chamber having a sidewall with at least one perforation; a rotatable closure member partially encompassing and eccentric to said container body, said closure member cooperating with said perforated wall to define a second chamber for holding a bag of frangible material containing a liquid second component, said second chamber having a wall section of diminishing radius whereby upon rotation of said closure member and the volume of the second chamber is reduced and the bag is pressed against the perforated wall so as to burst and deliver the liquid into the first chamber.

3,625,350

**WEB AND CONNECTORS**

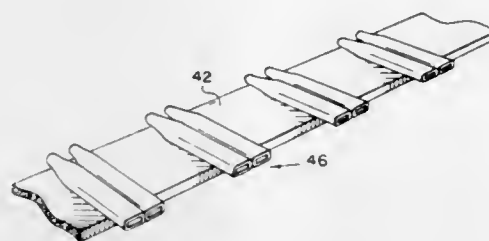
Jimmy C. Ray, Denison, Tex.

Continuation-in-part of application Ser. No. 836,291, June  
25, 1969, which is a division of application Ser. No. 525,506,  
Feb. 7, 1966. This application Aug. 12, 1970, Ser. No.  
63,255

Int. Cl. B65d 85/54; H02g 15/08

U.S. Cl. 206—56 A

8 Claims



Connectors are attached to a tape in pairs. The tape is fed into a machine and wires are inserted into the connectors. Four wires are selected, arranged in two pairs and then are inserted, two each into the two connectors. Thereafter, the connectors are crimped, electrically connecting the wires together.

3,625,351

**A STERILIZED TEARABLE BAG**

Melvin I. Eisenberg, 2908 West Lunt, Chicago, Ill.

Filed Apr. 22, 1969, Ser. No. 818,272

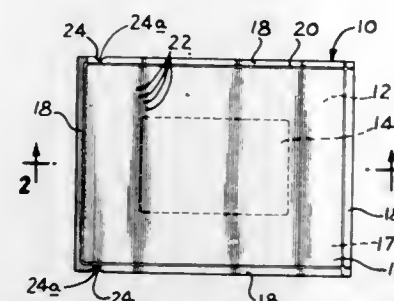
Int. Cl. B65d 27/32, 83/00; A61b 19/02

U.S. Cl. 206—56 AA

9 Claims

A sterilized tearable bag is preferably made by forming sheets of polyvinyl chloride material most advantageously striated throughout. Before or after cutting the sheets to size, they are placed into confronting relation with the striations extending in the same direction and sealed around the

product to be sterilized. The bag walls can be brought into face-to-face contact beyond the product so the bag can be



subsequently torn along a pair of aligned striation-forming indentations.

3,625,352

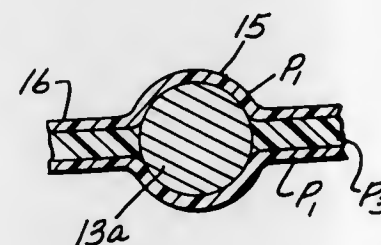
**LAMINATED FASTENER STRIP HAVING INNER AND OUTER LAMINAE OF DISPARATE MELTING POINTS**Garry R. Perkins, Cary, Ill., assignor to Spotnails, Inc.,  
Rolling Meadows, Ill.

Filed Oct. 22, 1969, Ser. No. 868,375

Int. Cl. B65d 83/00

U.S. Cl. 206—56 DF

3 Claims



The elongated tape comprises a flexible continuous outer laminae of a first plastic material heat-fused at first segments directly to opposed exterior portions of the fastener shanks spaced along said tape and laminated second segments alternately arranged with and interconnecting the first segments. Each second segment has an outer laminae formed of corresponding portions of the continuous outer laminae with a flexible inner lamina of a second plastic material. The melting point of the inner laminae of the second segment is lower than that of the outer laminae.

3,625,353

**PACKAGE FOR STERILIZED ARTICLES**Ichiro Ishii, Tokyo, Japan, assignor to Jintan Terumo Co.,  
Ltd., Tokyo, Japan

Filed May 27, 1969, Ser. No. 828,305

Claims priority, application Japan, Feb. 19, 1969, 44/11778

Int. Cl. B65d 81/18

U.S. Cl. 206—63.2 R

4 Claims



A package particularly adapted for use in sterilizing and storing medical implements, which comprises a plastics vessel having an opening for receiving or taking out the article, and a sealing sheet made of plastics-impregnated, gas-permeable moistureproof and germproof paper, and having a hot-melt-type adhesive agent coated on the back for sealing the opening.

3,625,354

**PROCESS FOR MAGNETICALLY SEPARATING REDUCED IRON-CONTAINING MATERIALS DISCHARGED FROM A ROTARY KILN**Gunter Heitmann, Frankfurt am Main, Germany, assignor to  
Metallgesellschaft Aktiengesellschaft, Frankfurt am Main,  
Germany and The Steel Company of Canada Limited,  
Ontario, Canada

Filed Jan. 21, 1969, Ser. No. 792,831

Claims priority, application Germany, Jan. 23, 1968, P 15 83  
774.8

Int. Cl. B03b 1/00; B03c 1/30

U.S. Cl. 209—3

4 Claims

Iron-containing materials reduced in a rotary kiln are separated magnetically into a high iron-containing fraction and a low-ash reducing agent fraction in two stages, one above and one below 1,000 oersteds. The reducing agent fraction which is recycled to the kiln, keeps the ash content of the recycled reducing agent substantially constant.

3,625,355

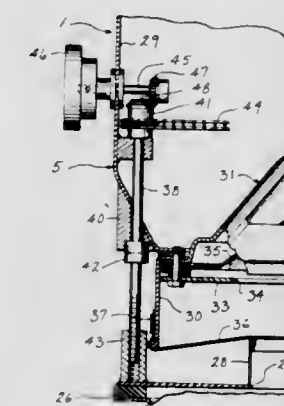
**FULLY ENCLOSED TUNABLE RECIPROCATING AIR COLUMN SIFTER**Robert L. Schurrer, Milwaukee, Wis., assignor to Allen-  
Bradley Company, Milwaukee, Wis.

Filed Nov. 17, 1969, Ser. No. 877,079

Int. Cl. B07b 9/00

U.S. Cl. 209—21

4 Claims



A reciprocating air column sifter includes rigid, fully enclosed speaker and screen housings which define air chambers of sufficient volume to allow reciprocal air movement. A flexible diaphragm is stretched across the opening between the chambers and can be tightened and loosened to tune the sifter. The diaphragm is carried by the speaker housing and is stretched across an upstanding rim on the screen housing, and is adjusted by tightening and loosening screws holding the two housings together. There are three such screws, and they are connected by a chain for simultaneous movement.

3,625,356

**APPARATUS FOR CONTINUOUSLY SORTING LONG, SLENDER ARTICLES BY LENGTH**

Aldrich L. Jackson, Eustis, Fla., assignor to Dynasort Corporation

Continuation-in-part of application Ser. No. 707,164, Feb. 21,  
1968, now abandoned. This application June 8, 1970, Ser.  
No. 44,399

Int. Cl. B07c 1/14

U.S. Cl. 209—73

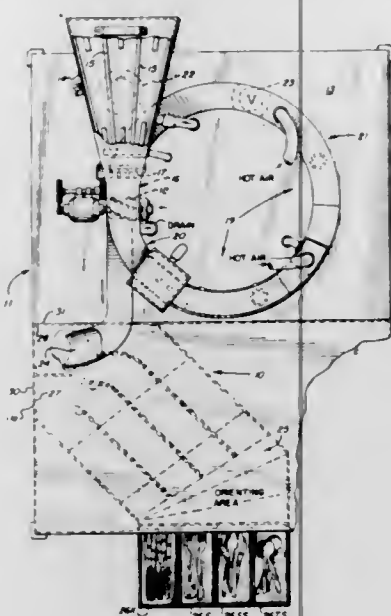
20 Claims

Apparatus for rapidly and continuously sorting relatively long, slender articles, such as silverware, into a plurality of categories which are differentiated by the length of the articles in each category.

All the articles, which may be pieces of silverware, drop endwise from an inclined delivery chute into a restricted indexing area of an indexing surface, and the indexing area is so tilted that the upper ends of the articles swing outwardly by gravity toward a series of vertically spaced, transversely extending gauge bars. Inclined sorting troughs for short pieces (spoons), intermediate pieces (forks), and long pieces (knives) extend downwardly from the outer margin of the indexing surface, and the gauge bars are so arranged that short



pieces swing beneath all the bars directly into a first trough, the upper end portions of the intermediate pieces slide along a lower gauge bar which spans the first trough and terminates alongside a second trough into which those pieces fall; while the upper end portions of the long pieces slide along an



upper gauge bar which is above the tips of the intermediate pieces and spans both the first and second troughs, so such long pieces fall into a third trough. If necessary, four troughs and three gauge bars may be provided; and there may be one or more secondary sorting stages, similar to the first, if needed.

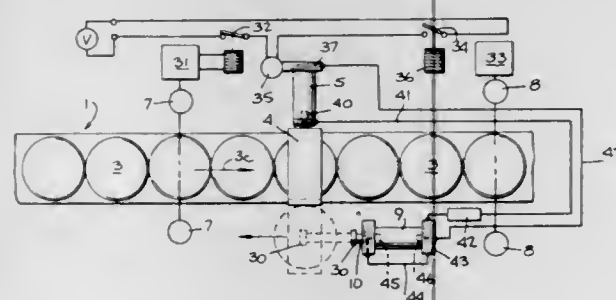
### 3,625,357 DAMAGED CAP EJECTOR

Charles S. Ochs, and Charles W. Probasco, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed May 4, 1970, Ser. No. 34,450  
Int. Cl. B07c 3/02

U.S. Cl. 209-74

12 Claims



A bent cap ejector for a closure cap feed chute. A cap gauge captures and holds improperly shaped or bent caps as they pass along the chute. Sensing devices detect the resulting stoppage of cap flow and the gauge with the bent cap therein is moved clear of the chute. An ejector located outside of the chute then punches the improperly shaped cap from the gauge and the gauge is then moved back into the chute. A stop is automatically operated by the gauge movement to stop the flow of caps along the chute when the gauge is moved clear of the chute. The reinsertion of the gauge into the chute disengages the stop member from the chute thereby reinstating flow of the caps.

### 3,625,358 RANDOM FILING SYSTEM

Keith D. Duperron, Box 178, Creston, British Columbia, Canada

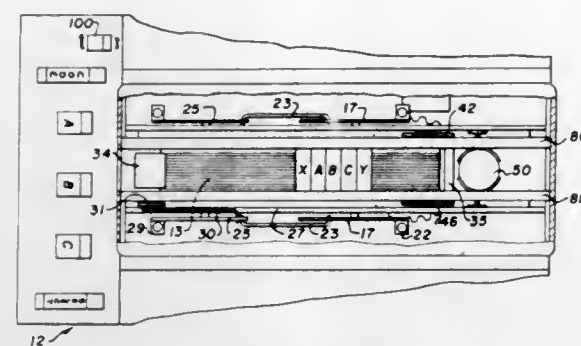
Filed Aug. 20, 1969, Ser. No. 851,673  
Int. Cl. B07c 3/16

U.S. Cl. 209-80.5

23 Claims

Apparatus for selecting one or all similar cards from a plurality of randomly distributed and different cards, the cards

having magnetizable tags along an edge, in which there is a plurality of magnets which can be selectively and independently energized and deenergized. There are means for moving the cards into contact with the magnets so that ones with



tags corresponding to the energized magnets are held by those magnets and those which do not have corresponding tags can be moved from the magnets. In this way selected cards, regardless of their positions in a stack of cards can be separated from nonselected cards.

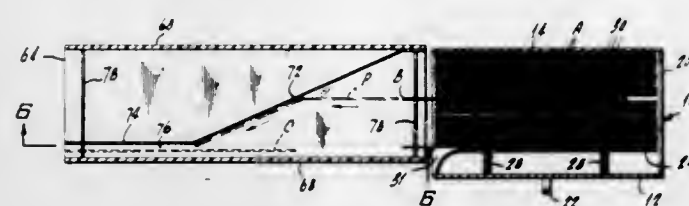
### 3,625,359 CARD TRANSFER DEVICE FOR INFORMATION RETRIEVAL SYSTEMS

Laurence Allan Cross, Jr., Lambertville, N.J., assignor to Randomatic Data Systems Inc.

Filed Dec. 18, 1969, Ser. No. 886,302  
Int. Cl. B07c 3/02

U.S. Cl. 209-80.5

4 Claims



A cartridge holding a deck of randomly filed coded cards opens upon an information retrieval station to which a selected card is to be transported. A card selection apparatus selects the wanted card and offsets it from the deck proper. A carrier bar engages the offset card and moves it to the retrieval station where the information on the card is read, photographed, copied or otherwise retrieved. By a return movement of the bar, the card is reinserted in the deck through an entranceway provided in the cartridge for this purpose.

### 3,625,360 ELECTROSTATIC SEPARATION METHOD AND APPARATUS

Alfred Schickel, Freiberg/Saxon, Germany, assignor to Deutsche Akademie Der Wissenschaften Zu Berlin Institut Fur Aufbereitung, Freiberg/Saxon, Germany

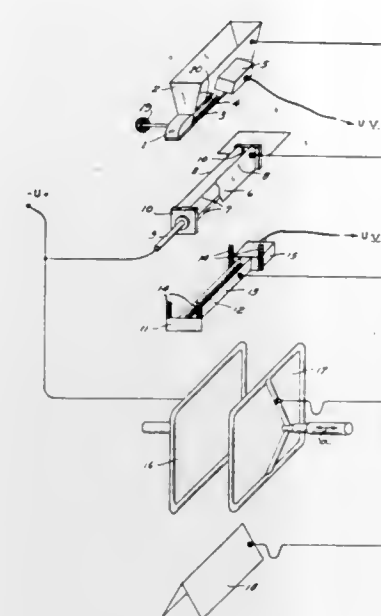
Filed May 19, 1969, Ser. No. 825,759  
Int. Cl. B03c 7/12

U.S. Cl. 209-127 B

13 Claims

A process and accompanying apparatus through which finely intermixed particles are separated into their individual components or groups of components. A feed hopper by which the rate of flow of a production process can be controlled through the application of perforated plates, allows the mixture of particles to fall freely through a high-voltage charger which charges the particles through ionic current of a corona discharge. The particles fall freely through the charger and then impinge upon a series of baffles spaced from each other and arranged so that the particles impinge upon the baffles which are connected to ground potential, and thereupon drop through spaces between the baffles. The baffles discharge the particles as a function of their surface conductivities while contacting the particles. A plate capacitor beneath the baffles serves to separate the discharged par-

cles and to deflect them in accordance with the components or group components to which they belong to. A V-shaped



collector beneath the capacitor plates serves to collect the grouped and sorted particles.

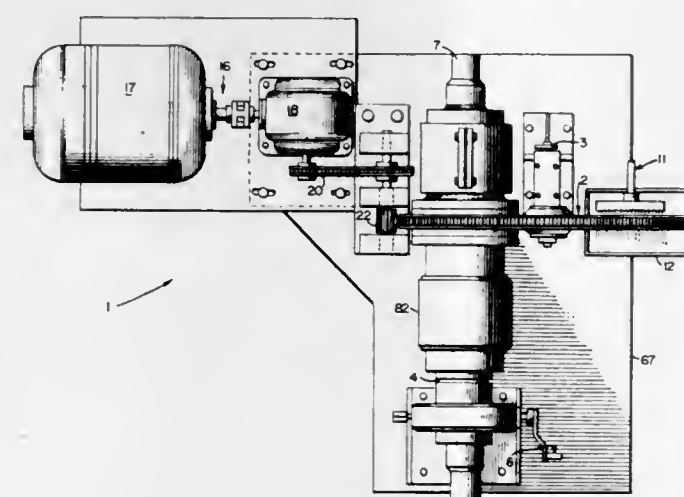
### 3,625,361 FILTERING APPARATUS AND METHOD

Robert B. Frazier, Pasadena, Tex., assignor to U.S. Plywood-Champion Papers Inc., Hamilton, Ohio

Filed Aug. 30, 1968, Ser. No. 756,542  
Int. Cl. B01d 33/24

U.S. Cl. 210-77

14 Claims



A filtering apparatus and method wherein a filter screen is moved through a liquid stream that is passing through closed conduits while liquidtight sliding seals are maintained between the conduit and screen.

### 3,625,362 REMOVAL OF OIL FROM WATER

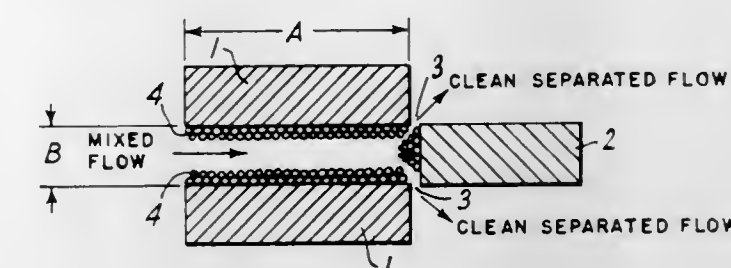
Marcel Clarence Sicaud, Cheshire, Conn., assignor to AMF Incorporated

Filed June 2, 1969, Ser. No. 829,451  
Int. Cl. B01d 25/18

U.S. Cl. 210-96

10 Claims

A combination filter/separator device and a system for its application which will separate a mixture, or suspension or



tion and the others containing all of the original particulate contamination.

### 3,625,363 SPIN-ON TYPE FILTERS

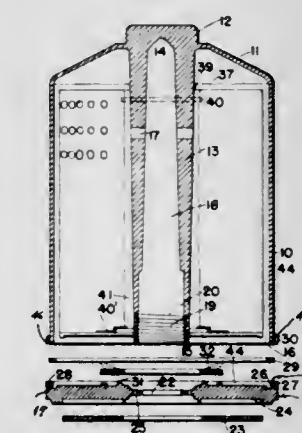
John Eberle, 2027 28th Ave. S.W., Calgary, Alberta, Canada

Filed Feb. 26, 1970, Ser. No. 14,486

Claims priority, application Japan, Feb. 27, 1969, 44/14967  
Int. Cl. B01d 35/14, 27/10

U.S. Cl. 210-130

11 Claims



A replaceable filter which includes an outer perforated canister and an inner star-shaped, perforated canister around which is woven a plurality of layers of nonwoven relatively open-pored filter material. A relief valve surrounds the inner stem in the form of a resilient washer which lets oil bypass the filter without dumping dirt or oil back into the oil stream.

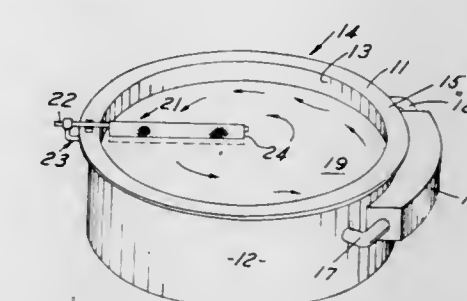
### 3,625,364 SKIMMING DEVICE FOR SWIMMING POOLS

Charles H. La Chance, 23838 Oak Ave., Dearborn, Mich.

Filed Sept. 22, 1969, Ser. No. 859,858  
Int. Cl. E04h 3/20

U.S. Cl. 210-169

3 Claims



The invention relates to a skimming device which is used to remove floating debris from swimming pools provided with means for circulating the water in the pool. The skimming device comprises a pole and a screening. One end portion of the pole is supported from the edge of the pool while the other portion extends inwardly of the edge so as to be positioned above and substantially parallel with the surface of the



pool water. The screening is supported from the extending portion of the pole and extends downwardly into the water.

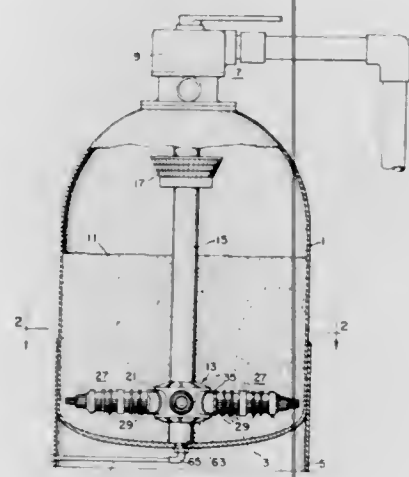
3,625,365

**UNDERDRAIN ASSEMBLY FOR POOL-TYPE FILTER**  
John E. Armstrong, Weston, Ontario, and Virgil Jacuzzi, Islington, Ontario, both of Canada, assignors to Jacuzzi Bros., Inc.

Filed June 25, 1969, Ser. No. 836,338  
Int. Cl. B01d 23/20

U.S. Cl. 210-232

6 Claims



An underdrain assembly for a swimming pool-type filter, involving a hub mounted on the lower end of a central return flow column, and having a plurality of slotted radial arms, each of which is made up of one or more similar snap on sections and terminating in a snap on slotted terminal component. The slots enlarge inwardly to avoid clogging.

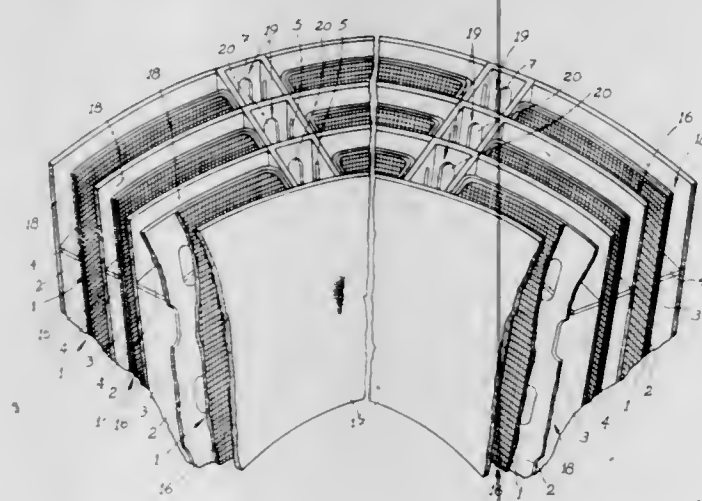
3,625,366

**CONICAL CENTRIFUGE FOR THE SEPARATION OF SOLID MATTER AND A FLUID**  
Felipe Urbano Garrone, Ciudad de La Paz 432, piso 6, Buenos Aires, Argentina

Filed Sept. 9, 1970, Ser. No. 70,818  
Int. Cl. B01d 33/02

U.S. Cl. 210-330

1 Claim



A conical centrifuge for the separation of solid matter and a fluid, comprising a plurality of arcuate, elongated sections grouped together so as to form a rotary truncated conical assembly, each section having a filter, a support for the filter, and a backplate provided with guide fins for the channelling of the fluid passing through the filter, the sections being flanked by, radially extending chambers communicating with the chambers through openings formed in the part of these chambers located opposite the space between the respective supports and backplates, an inlet for admitting fluid carrying solid matter being disposed at the truncated end of the assembly, the inlet communicating with each filter section, the

radially extending chambers communicating with each other and with the openings disposed on a corresponding generating line of the truncated assembly for the discharge of treated fluid, the assembly being surrounded by an envelope for receiving the filtered fluid and the solid matter being surrounded by an envelope for receiving the filtered fluid and the solid matter being discharged from the end of larger diameter of the conical assembly.

3,625,367

**SUSPENSION FOR ENVELOPES CONTAINING GRAMOPHONE RECORDS OR THE LIKE**

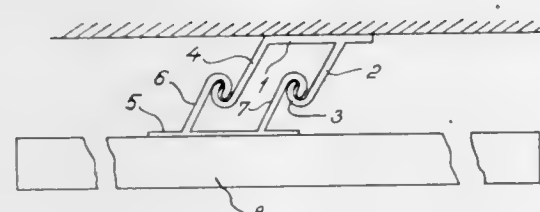
Rene Morck, Ballerup, Denmark, assignor to A/S Platex-Plastartikler, Frederiksvaerk, Denmark

Filed Mar. 18, 1970, Ser. No. 20,533

Int. Cl. A47g 29/00

U.S. Cl. 211-40

5 Claims



Suspension for envelopes containing gramophone records or the like and consisting of suspension rails having movable slides secured to envelope suspension elements extending at right angles to the rails. Each suspension element is formed as a tube having a slot at the bottom and is adapted to slidably receive a web permanently attached to the upper edge of the envelope.

3,625,368

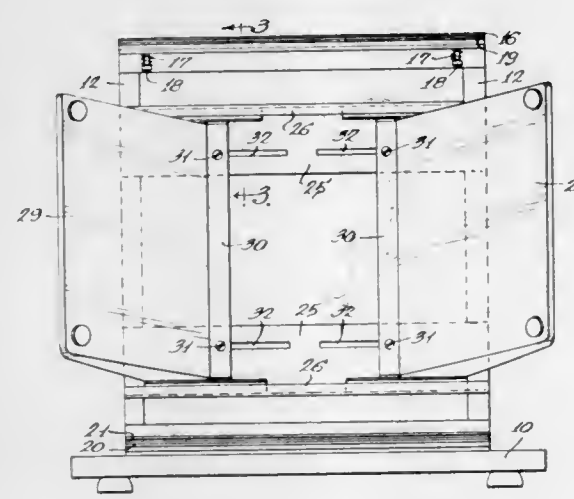
**ADJUSTABLE CAPACITY RECORD HOLDER**  
Lloyd M. Toms, Crozet, Va., assignor to Acme Visible Records, Inc., Crozet, Va.

Filed Oct. 20, 1969, Ser. No. 867,757

Int. Cl. G09f 11/06

U.S. Cl. 211-51

2 Claims



An adjustable capacity stand for pivotally mounting a plurality of visible record frames on inclined axes and slidably and adjustably mounted inclined end stop members that will accommodate a varying complement of frames which are normally mounted between said end stop members.

3,625,369

**MECHANICAL HOLDING DEVICE**

Earl L. Walls, 7460 La Jolla Blvd., La Jolla, Calif.

Filed Mar. 9, 1970, Ser. No. 17,670

Int. Cl. A47f 7/00

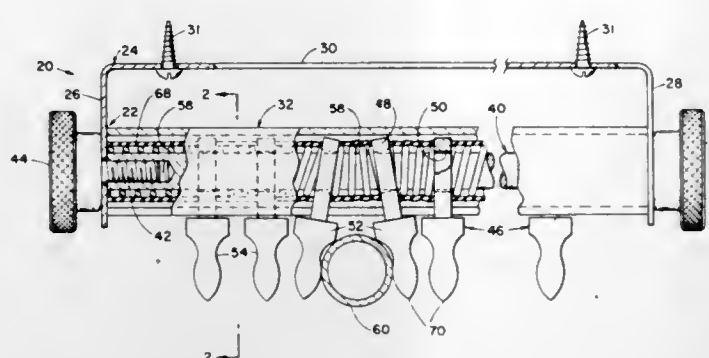
U.S. Cl. 211-60 R

12 Claims

The holding device includes an elongated support for a plurality of elements having sections providing gripping sur-

faces for a tool or instrument, the gripping surfaces of adjacent elements confronting one another. The adjacent elements are flexibly and resiliently movable toward and away

In another form, the connector is arranged to permit removal and installation of the panel in a horizontal position, thus al-



from one another whereby when a tool is pressed between the gripping surfaces of adjacent elements, the tool is yieldingly held in position.

3,625,370

**PORTABLE RECEPTACLE SUPPORT**

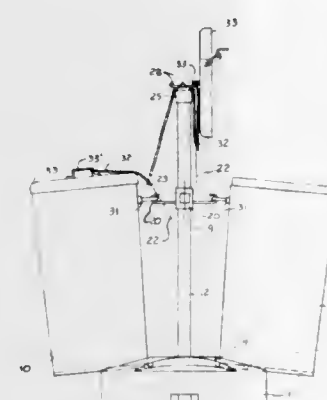
Maxie R. Mintz, 543 Dale Drive, Fayetteville, N.C.

Filed Aug. 11, 1970, Ser. No. 36,404

Int. Cl. A47g 29/00

U.S. Cl. 211-71

10 Claims



In abstract, a preferred embodiment of this invention is a can-supporting and tipover preventing device in the form of a freestanding base pedestal on which a number of cans rest. These cans are prevented from overturning by an upright member which adjustably and lockingly attaches to one of the handles of each container. Also retainers are provided to support the lids of the containers when in the off position.

3,625,371

**SHELF WITH TILT DOWN FRONT FOR FREEZER**

Charles R. Dill, Evansville, Ind., assignor to Whirlpool Corporation

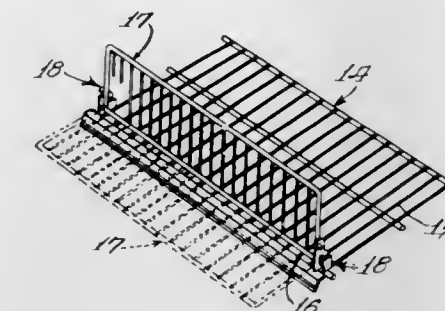
Continuation of application Ser. No. 654,400, July 19, 1967, now abandoned. This application Sept. 5, 1969, Ser. No. 856,908

Int. Cl. A47b 96/02; A47f 5/00

U.S. Cl. 211-153

8 Claims

A shelf structure for use in a cabinet such as a freezer cabinet having a removable upright front panel for selectively arranging the shelf as a basket-type shelf and an open-type shelf. The means for connecting the panel to the shelf moves rearwardly of the front edge of the shelf during removal therefrom so as to guide articles on the shelf away from the front edge during such removal. The panel is pivotally mounted on the shelf to swing to a horizontal position wherein it comprises a loading, or unloading table for facilitated transfer of the articles relative to the freezer compartment. In one form, the connector is arranged to permit removal and installation of the panel in a vertical disposition.



3,625,372

**PALLET RACK**

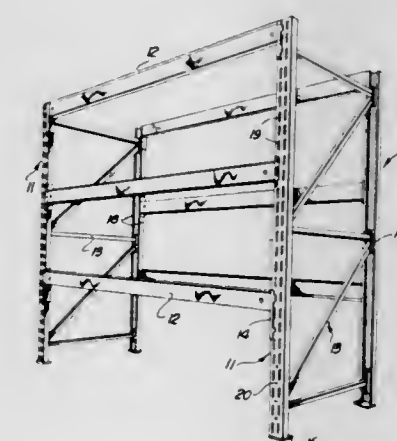
James A. MacKenzie, 100 Bronson Ave., Ottawa, Ontario, Canada

Continuation-in-part of application Ser. No. 661,247, Aug. 17, 1967, now abandoned. This application July 6, 1970, Ser. No. 52,583

Int. Cl. A47f 5/10

U.S. Cl. 211-176

3 Claims



A pallet rack made from uprights, beams and end frames, easily assembled and disassembled by virtue of the uprights having two series of elongated slots to receive T-shaped projections on the beam ends and on connecting members on the end frames, the beams and uprights being reversible and the beam ends being removable.

3,625,373

**FAIL-SAFE ACCESSORY FOR HOISTING EQUIPMENT**  
Ralph E. Hull, 1600 E. Clark St. Space 10, Santa Maria, Calif.

Filed Jan. 2, 1970, Ser. No. 101

Int. Cl. B66c 13/48

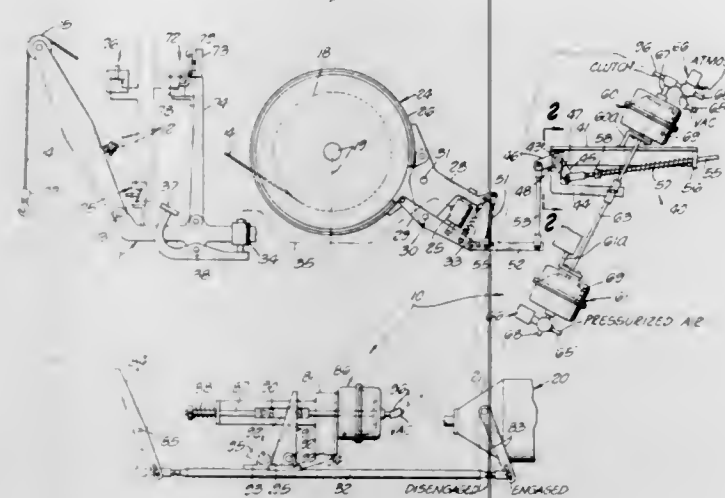
U.S. Cl. 212-39 R

21 Claims

A safety accessory attachable to existing hoist equipment to provide fail-safe operation of the winch-braking means for the hoisting cable. The accessory comprises spring-powered linkage means connectable to the winch brake and held in armed position so long as the hoist engine is operating and control means for the accessory is held cocked. The control means for the armed spring preferably includes a deadman control operable by the hoist operator, as well as remote control means operable by an observer having a good view of the operating end of the hoist cable. The accessory may and preferably does include failsafe means attachable to the



operating linkage for the clutch connecting the hoist engine to the cable winch and effective and operable to disengage



the clutch automatically and hold it disengaged under unsafe hoisting conditions.

3,625,374

# APPARATUS FOR DISPOSING OF REFUSE

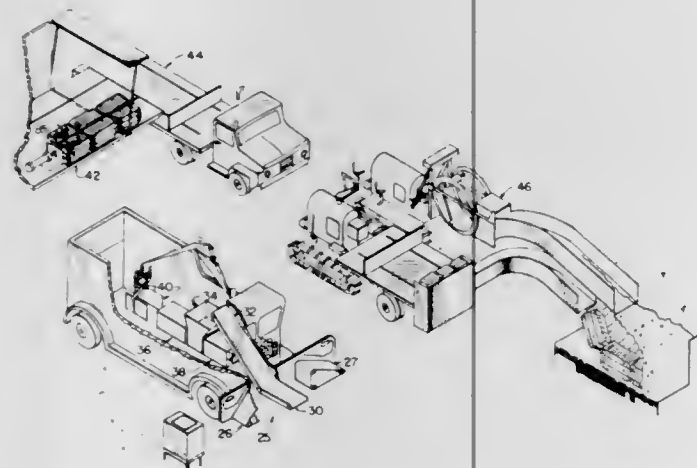
Charles Wayne Hemphill, 5520 Brownfield Hwy., Lubbock, Tex.

Original application Aug. 15, 1966, Ser. No. 572,520. Divided and this application Jan. 7, 1970, Ser. No. 6,006

Int. Cl. B65g 61/00

U.S. Cl. 214-6 B

3 Claims



Method and apparatus for collecting and disposing of refuse by collecting refuse from a multiplicity of garbage cans which are adapted to be automatically dumped into a compacting unit where the refuse is compacted into a bale. The bales are transported to a digging apparatus which provides a ditch by digging two parallel spaced-apart vertical slots within the earth and removing the earth therefrom by passing a knife edge blade perpendicularly to and at the lower extremity of the slots to thereby continuously remove an elongated rectangular disengaged portion of the earth. The bales are placed below the surface of the ground and covered with the removed earth so as to provide the ground with improved moisture retention characteristics.

3,625,375

# METHOD AND APPARATUS FOR POSITIONING MATERIAL SUCH AS BRICK BLANKS, IN STACKS

Johann Lingl, Finningerstrasse 70, Neu-Ulm/Danube, Germany

Continuation of application Ser. No. 645,850, May 31, 1967, now abandoned. This application Apr. 22, 1970, Ser. No. 24,262

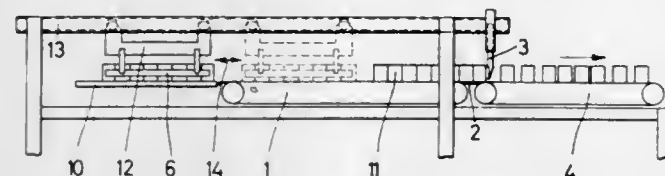
Int. Cl. B65g 57/26

U.S. Cl. 214-6 A

9 Claims

A method and apparatus for assembling bricks in layers or flats for stacking on a kiln car or the like wherein bricks of

different sizes can be assembled in transverse rows that are spaced at various distances from one another by first moving the bricks in longitudinal rows on a feed belt against a stop which compacts them together longitudinally of the feed belt and at the same time aligns them into the transverse rows, which are then moved onto a transfer belt by automatically programming the starts and stops of the feed belt as the transfer belt is run continuously during the assembly of the layer, so that each row is moved onto the transfer belt and then moved a predetermined distance to space it the required



amount from the next row on the feed belt while the latter is momentarily stopped. The invention also includes a method and means for forming oblong stacks by feeding different numbers of longitudinal rows for alternate layers of the stack, the number of longitudinal rows for alternate layers of the stack, the number of longitudinal rows for one layer corresponding to the length of the stack and the number of longitudinal rows for the alternate layer corresponding to the width of the stack.

3,625,376

# APPARATUS FOR LOADING BAGGED MAIL FROM A LOADING DOCK INTO A HIGHWAY VEHICLE

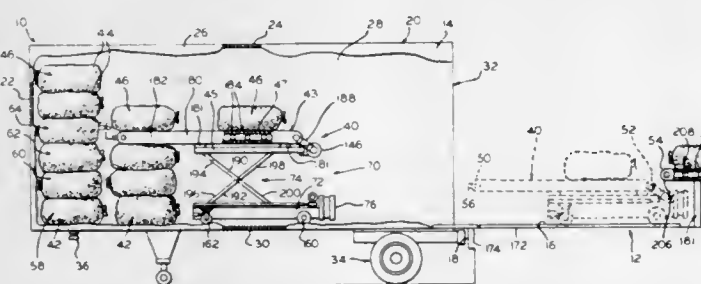
Joseph E. McWilliams, 1345 Canterbury Lane, Glenview, Ill.

Original application Dec. 28, 1967, Ser. No. 694,151, now Patent No. 3,507,411. Divided and this application June 2, 1969, Ser. No. 870,921

Int. Cl. B65g 67/24

U.S. Cl. 214-6 DK

7 Claims



The invention relates to the loading of mail bags from a loading dock into an end loading highway vehicle, such as a truck or a trailer, to fully load the vehicle with stacks of mail bags in which the bags are compactly loaded into place in individual stack forming tiers without those performing the bag loading operation having to enter the vehicle. In practicing the invention, the loading dock at the post office or the like is provided with a conveyor on which out-going bags are placed and oriented in closely spaced tier form. Operating between the conveyor and the highway vehicle is a carriage that receives the tier load without disturbing the orientation of the bags and brings the tier load into the vehicle loading area for discharge of the stack forming tier unit, and effects placement of the tier as part of a stack in the vehicle, again without disturbing the orientation of the bags. The carriage then returns to the conveyor for another tier load.

The carriage movements are controlled so that the individual tier loads are formed into vertical stacks of mail bags that are disposed to position the bags of adjacent stacks in closely spaced relation, with the vehicle being thus filled with bags throughout its load receiving area so as to make maximum use of the available loading space within the vehicle to maximize the pay load. The operation of the carriage is mechanized so that workers do not have to go into the vehicle, and palleting of the bags in groups is avoided while still achieving uniform loading in tier form.

Several specific arrangements for practicing the invention are disclosed in which the carriage either operates on the floor of the vehicle and loading dock, or is suspended for operation within the vehicle, wherein the carriage is either self-propelled or cable actuated, wherein the bags as loaded extend either longitudinally or transversely of the vehicle, and wherein the tiers employed as part of the loading procedure extend transversely or longitudinally of the vehicle.

3,625,377

# STACKED SHEET FEEDER

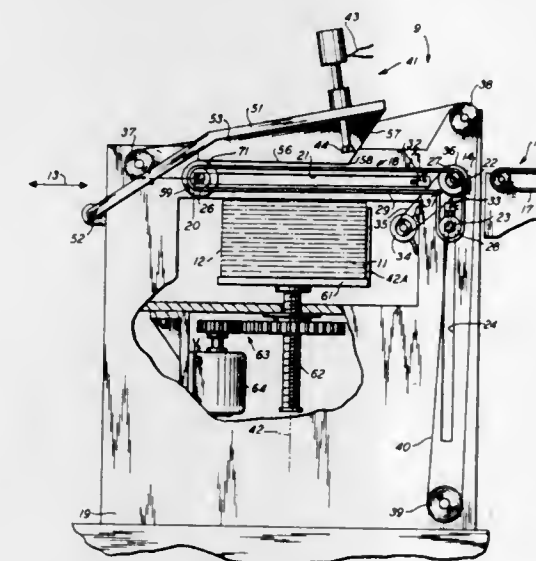
Robert C. Bohannon, and William H. McDaniel, both of Greensboro, N.C., assignors to Western Electric Company Incorporated, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,446

Int. Cl. B65g 59/04

U.S. Cl. 214-8.5 A

13 Claims



A retractable conveyor individually feeds printed circuit boards from a stack into a processing machine. As the conveyor retracts toward the machine from an extended position over the stack, it cams a releasable pickup device downwardly into gripping engagement with the top board on the stack at a position forward of the stack center. As the conveyor starts to extend again, it cams the pickup device upwardly to lift the engaged board into an inclined position over the stack and in the path of extension of the conveyor, whereupon further extension causes the conveyor to engage the inclined board and separate it from the stack. The pickup device is thereupon released so that the board drops on the conveyor to be carried into the processing machine during the next retraction.

3,625,378

# HIGH-VACUUM MANIPULATING TOOL

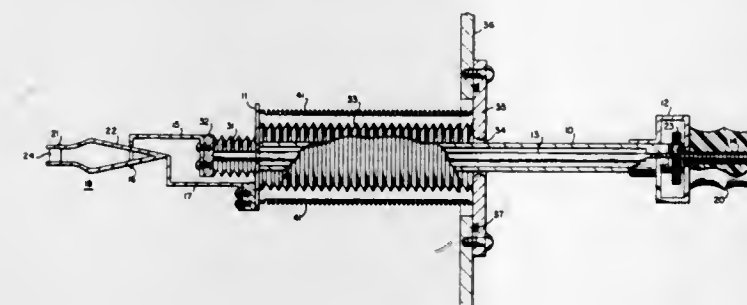
Frank H. Attiz, 209 Emerald Hill Drive, Oxon Hill, Md.

Filed June 25, 1970, Ser. No. 49,701

Int. Cl. B25j 1/10

U.S. Cl. 214-1 CM

2 Claims



This disclosure is directed to a simple manipulator which permits handling of, and performance of work on, small objects within a vacuum chamber. In one embodiment, it is pro-

vided with pincers or tweezers having normally open tines which are closed on an object by a movable rod that extends into the vacuum chamber through a vacuumtight opening. Two flexible metal bellows are employed in the vacuum seal: the smaller one allows rod motion to open and close the pincers; the larger bellows allows axial and lateral translational motion of the pincers and the object being held. The device is provided with springs along the outer surface of the larger bellows to prevent atmospheric pressure from expanding the bellows to its maximum length. Therefore, operation of the manipulator from the outside permits handling of objects within the evacuated chamber.

3,625,379

# TOBACCO STICK WAREHOUSING APPARATUS

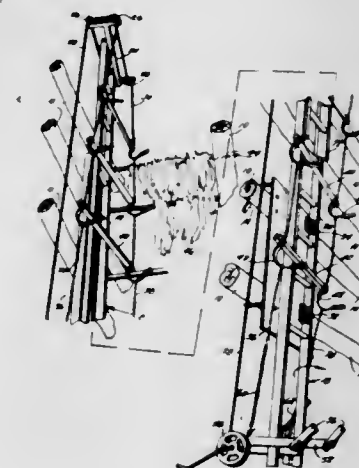
Buford S. Gregory, and Neal J. Gregory, both of RFD #2, Box 156, Danville, Va.

Filed Apr. 3, 1970, Ser. No. 25,391

Int. Cl. B65g 65/00

U.S. Cl. 214-16.6

7 Claims



The invention consists in an upright conveyor for lifting loaded tobacco sticks in a tobacco-curing barn for placement on spaced pairs of horizontal tier poles.

3,625,380

# APPARATUS FOR LOADING REELS

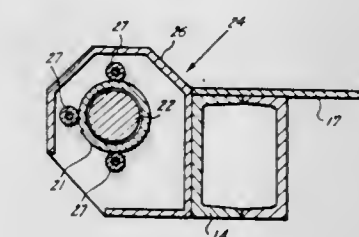
Albert L. Anderson, West Des Moines, Iowa, assignor to Mid-America Body & Equipment Co., Inc., West Des Moines, Iowa

Filed Apr. 20, 1970, Ser. No. 30,148

Int. Cl. B60p 1/48

U.S. Cl. 214-77

1 Claim



A series of three transversely spaced lift arms are mounted on a common transverse rock shaft carried at the rear end of a portable frame for movement between a first position projected rearwardly and downwardly from the frame to a second position projected upwardly and forwardly above the frame. The center one of the lift arms is releasably secured to the rock shaft at a position spaced equidistantly from each of the outer lift arms to provide for a small reel being loaded by the center lift arm and one of the outer lift arms. On removal of the center lift arm a large reel is loaded by the outer two arms.



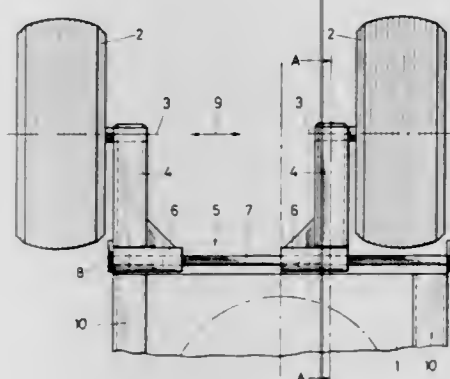
3,625,381

**WHEEL MOUNTING FOR A VEHICULAR EXCAVATING MACHINE**

Ernst Menzi, Widnau, Switzerland, assignor to Ernst Menzi A.G., Eidnau, Switzerland  
Continuation-in-part of application Ser. No. 794,310, Jan. 27, 1969, now Patent No. 3,534,877. This application May 26, 1969, Ser. No. 828,453  
Int. Cl. E02f 3/75

U.S. Cl. 214-138

5 Claims



The two front wheels of an excavating machine whose rear end is normally supported on soil gripping feet, and whose frame carries a bucket on a swinging boom are rotatably attached to two arms which can be shifted transversely on a guide rail of the frame and project forwardly from the frame a distance greater than the wheel radius so that the wheels may be shifted toward and away from a position in which they are longitudinally aligned with the frame for movement on narrow paths while permitting the wheels to be moved apart for stability of the frame during excavating.

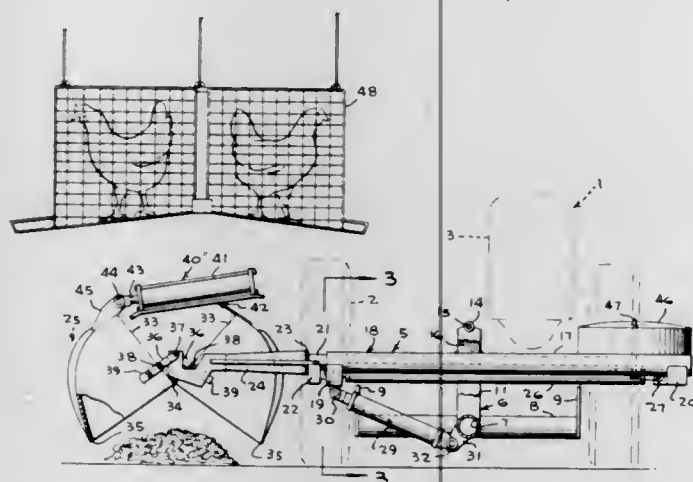
3,625,382

**ATTACHMENT FOR TRACTORS**

Walter R. Stanley, Rte. 1, Box 150, Kountze, Tex.  
Filed June 19, 1969, Ser. No. 834,820  
Int. Cl. B66c 3/16

U.S. Cl. 214-147 G

4 Claims



An attachment for tractors which includes a frame fastened to the tractor and carrying a tiltable, telescoping boom to which a bottom-opening scoop is attached. The tractor can be run adjacent overhanging structure, and by manipulation of the boom and scoop debris can be gathered from beneath the overhanging structure and then carried away for disposal. The boom may be counterweighted to facilitate operation. Fluid cylinders are used to telescope and tilt the boom and to open and close the scoop.

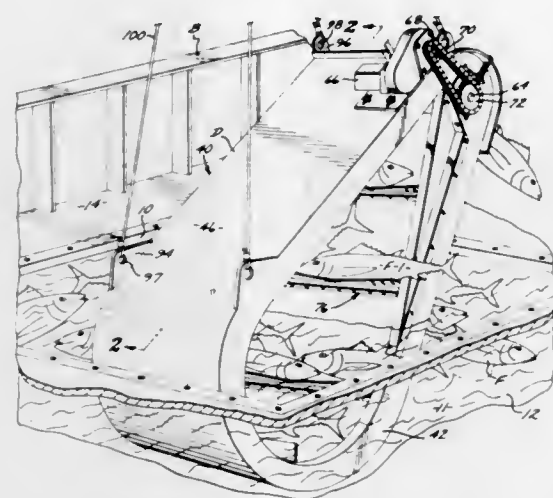
3,625,383

**FISH UNLOADING SYSTEM**

Mario J. Puretic, 259 6th Ave. North, Monte Cristo Isle, Tierra Verde, Fla.  
Filed July 1, 1970, Ser. No. 51,573  
Int. Cl. B63b 35/14

U.S. Cl. 214-152

2 Claims



A fish-unloading system for removing fish from the hold of a fishing boat. The fish hold is substantially filled with water and sufficient salt added to cause the fish to float near the surface of the water. A fish-impelling device having an enclosure arranged in a loop with a discharge aperture formed in its upper portion is lowered into the upper portion of the hold. A power-driven chain looped about the interior of the enclosure drives a plurality of blades so as to continuously propel fish upwardly from the hold.

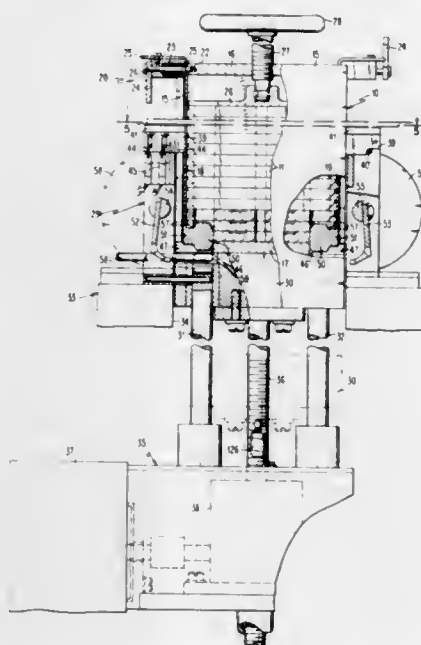
3,625,384

**ARTICLE-HANDLING APPARATUS**

Frank E. Boerger, Poughkeepsie; Carlo Nuccio, Poughkeepsie, and Charles A. Rosboschil, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Sept. 26, 1968, Ser. No. 762,896  
Int. Cl. B65g 59/00

U.S. Cl. 214-306

12 Claims



Articles are transported from one position to another by being disposed in trays, which are carried within a portable magazine. The trays are automatically unloaded in sequence from the magazine and transported to a position in which the articles in the tray may be removed therefrom. The unloaded tray is then returned to the magazine and the next of the

trays is removed from the magazine. The apparatus includes coding means on the magazine to indicate the status of the articles within each of the trays in the magazine.

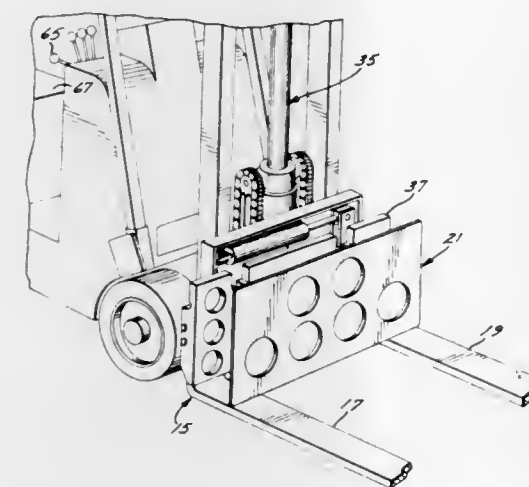
3,625,385

**FORKLIFT APPARATUS**

Allan R. Ide, Cyprus, Calif., assignor to Metropolitan Stevedore Company, Wilmington, Calif.  
Filed Feb. 2, 1970, Ser. No. 7,924  
Int. Cl. B65g 47/00

U.S. Cl. 214-750

4 Claims



Forklift apparatus for use with pallets which are rectangular in plan view and adapted to receive the tines of a forklift in both their long and short dimensions. The apparatus includes a fork having forwardly projecting tine means. A vertical limit plate is disposed rearwardly on the tines and is shiftable between a first position limiting extension of the tine means to, or less than, the relatively short dimension and shiftable to a second position to limit insertion of the tine means under said pallets to, or less than, the long dimension. Actuation means is provided for shifting the limit plate between the first and second positions whereby such limit plate can be adjusted to permit full extension of the tines in either direction under the pallet but to limit projection of the tines from the far side of the pallet to thereby avoid damage to adjacent cargo.

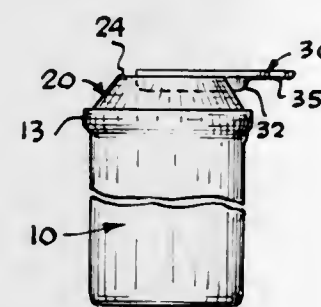
3,625,386

**SAFETY CONTAINER ASSEMBLY**

Edward E. Schaefer, Lake Forest, Ill., assignor to Research and Safety Devices Corporation  
Filed Nov. 25, 1969, Ser. No. 879,718  
Int. Cl. A61j 1/00; B65d 55/02

U.S. Cl. 215-9

14 Claims



A safety container assembly having a specially constructed closure member for the container opening comprising an extension means which projects laterally beyond the edge of the container and closure member for applying an upwardly axial force to the closure member to effect removal of the closure member, with the extension means being displaceable and adapted to be removed from the closure member or enclosed within the periphery of the container to increase the difficulty of removing the closure member from the container

opening. A groove or recess is also provided in the upper end wall of the container which is adapted to enclose the lower end of the closure member where it is desired to further increase the difficulty of removing the closure member from the container opening.

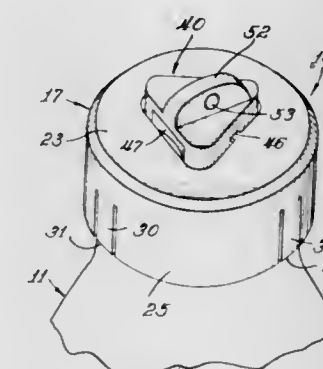
3,625,387

**SAFETY CLOSURE**

Edward E. Schaefer, Lake Forest, Ill., assignor to Research and Safety Devices Corporation  
Filed Oct. 17, 1969, Ser. No. 867,162  
Int. Cl. A61j 1/00; B65d 55/02

U.S. Cl. 215-9

18 Claims



A safety closure for closing an opening in a container such as a bottle having a threaded neck. The closure includes an inner, cup-shaped closure member and an outer, cup-shaped closure member enclosing the inner closure member and freely the relative thereto. A separable key prevents relative rotation between the closure members when the key is engaged with the closure members so that the closure may be threaded onto or off of the container. The key is releasably retained in engaged relation with the closure members, but is separable therefrom to render the closure operable as a safety closure. However, if it is desired to use the closure in an ordinary manner, the key is not separated from its engaged position with the closure members. Resilient means in the form of at least one resilient arm, or a snapping, permits rapid and permanent interconnection of the closure members during assembly of the closure.

**ERRATUM**

For Class 220-26 see:  
Patent No. 3,625,415

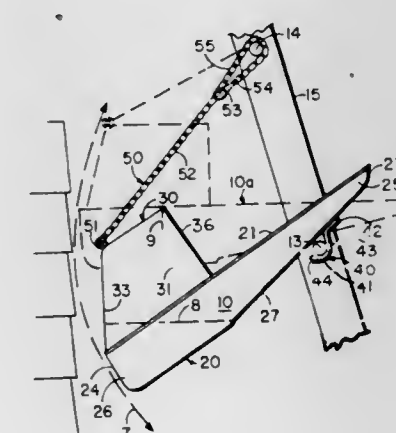
3,625,388

**PAINT TRAY**

Henry Golden, and Samuel R. Genca, both of Rochester, N.Y., assignors to Tray-X Corporation  
Filed Dec. 11, 1969, Ser. No. 884,127  
Int. Cl. E06c 7/14

U.S. Cl. 220-1

7 Claims



A paint tray particularly useful with an upright ladder having rungs wherein the paint tray includes pivot means at a



proximal end for hinge mounting the paint tray on one rung of the ladder and tension means including a tension member such as a chain, rope or the like at a distal end of the paint tray for coupling the paint tray to another rung of the ladder higher than the one rung so as to support the distal end in a number of selected positions. The tension means includes means for varying the length of the tension member between the distal end of the paint tray and the other higher rung so that the declination of the paint tray may be selected not only to compensate for the tilt of the upright ladder but also for selecting the angle at which the paint tray may be most useful. The paint tray includes a cover member in sealing relationship with the distal end of the paint tray for containing and confining paint, other liquids or tools therein.

3,625,389

## CONTAINER HAVING COMBINED MANWAY LID AND VENT

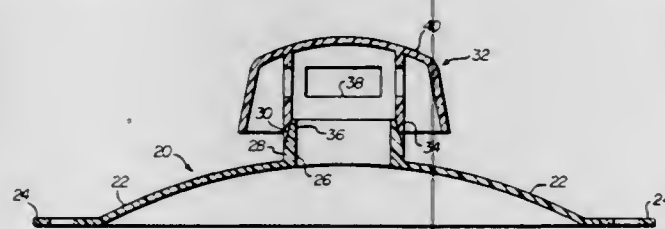
David H. Bartlow, Huntingdon, Pa., assignor to Owens-Corning Fiberglass Corporation

Filed Nov. 17, 1969, Ser. No. 877,346

Int. Cl. B65d 51/16

U.S. Cl. 220-3

4 Claims



A container of hollow tubular configuration having a combined manway lid and vent. The combined manway lid and vent includes a horizontally disposed base section and a vent cap removably mounted thereon. The base section has an orifice therein and an upwardly projecting lip surrounding the orifice, the lip being adapted to receive the vent cap in close fitting relationship. The vent cap includes a vertically disposed hollow section having a sidewall with a plurality of vents and a lower edge adapted for engagement with the lip on the base section and a cover attached to the hollow section and curving down the sidewall thereof to a level below that at which the vents are present.

3,625,390

## SIGHT GLASS ASSEMBLY

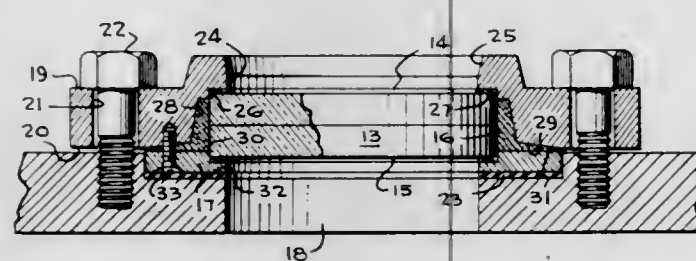
Charles E. Meginnis, 429 1/2 Nancy St., Charleston, W. Va.

Filed Feb. 9, 1968, Ser. No. 704,368

Int. Cl. B65d 53/06

U.S. Cl. 220-46 R

17 Claims



A sight glass assembly comprising housing means having an opening therethrough, a lens mounted in the opening, the opening having an inclined wall, resilient packing means interposed between the lens and the inclined wall of the opening, a faceplate disposed about the lower periphery of the lens engageable with the packing member and means for securing the faceplate to the housing means to apply a force on the packing means directed against the inclined wall of the opening in the housing means whereby the packing means is forced toward the lens to provide a compressive force about the periphery thereof.

3,625,391  
CAP ASSEMBLY

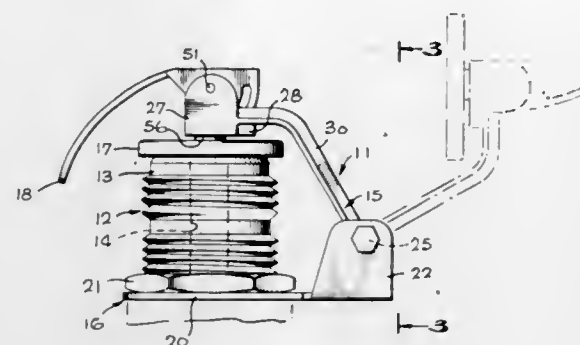
Wolfgang G. Wunderlich, Saugus, Calif., assignor to The Rucker Company Roylyn Division, Glendale, Calif.

Filed Oct. 13, 1969, Ser. No. 865,912

Int. Cl. B65d 43/16

U.S. Cl. 220-34

7 Claims



The application discloses a mounting for a cap adapted to close the end of a fitting, such as a nipple or the like, the mounting including a support, a lever pivotally mounted on the support and carrying a closure cap at one end, the lever being so mounted that when in a given position the pivoted end can move laterally of the pivotal axis, and means on the support for engaging the lever when so moved to prevent pivotal movement thereof, the closure cap having means for moving the cap relative to the lever.

3,625,392

## MEANS FOR ATTACHING A PULL-TAB TO A CAN END

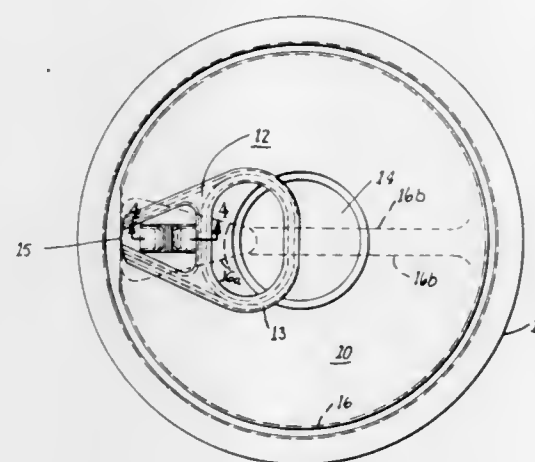
Elton G. Kaminski, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Filed Mar. 16, 1970, Ser. No. 19,855

Int. Cl. B65d 17/24

U.S. Cl. 220-54

9 Claims



In an easy-open can, a structure is provided which eliminates the conventional tab-holding rivet. The can end proper is provided with at least one pair of integral raised abutments having mutually opposed parallel vertical walls normally to the axis of the tab, and the tab is provided with at least one curled portion normal to its axis and of a diameter to enter between said parallel vertical walls, which walls are then crimped over said curled portion to hold the tab to the can end. A reinforcing wire may be inserted in said curled portion to give it additional strength. The curled portion when firmly crimped into said abutments serves as a fulcrum for the tab when the latter is raised to perforate the can end and to tear open a panel which is defined by a scoreline. The invention applied equally to can ends provided with beverage type openings whether the tab be captive or not, and to cans wherein substantially the entire end panel is removed, and can be applied to a previously fabricated can end.

3,625,393

## ONE PIECE COLLAPSIBLE PLASTIC-CARRYING CARTON

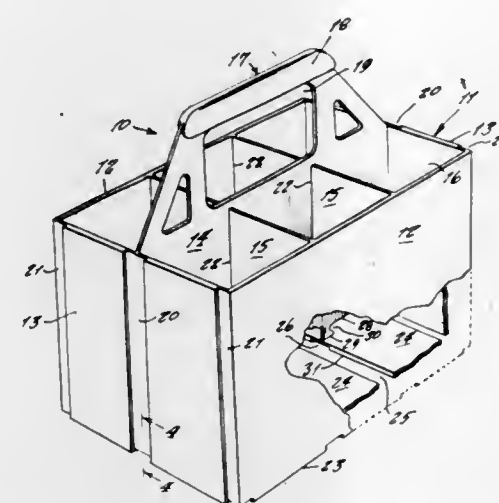
Charles J. Mittel, 1100 80th St. CT. South, St. Petersburg, Fla.

Filed June 15, 1970, Ser. No. 46,386

Int. Cl. B65d 75/00

U.S. Cl. 220-113

1 Claim



A bottle carrier of collapsible type, and having a general appearance of the conventional "six pack," the device comprising of one piece member molded out of plastic material, the device including opposite sidewalls and opposite end walls enclosing a rectangular central area divided by transverse partitions and a central longitudinal partition with a handle grasp at the upper end thereof, and a plurality of transverse extending sections comprising a bottom wall; the bottom walls being downwardly bent about a central fold line when at the same time the opposite end walls and transverse partitions are bent about vertical center fold lines so as to collapse the device into a flat shape when not in use.

3,625,394

## TISSUE PACKAGE DISPENSER WITH BOTTOM AS FOLLOWER

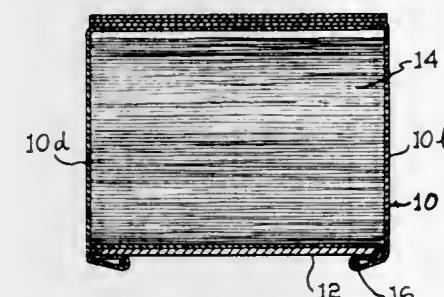
Keith T. Bleuer, 1663 Wilshire Drive N.E., Rochester, Minn.

Filed Jan. 26, 1970, Ser. No. 5,784

Int. Cl. A47k 10/44

U.S. Cl. 221-59

9 Claims



A package of a stack of facial tissues having a wrapping with sides of thin, flexible sheet material and with a relatively rigid base support under which the sides are drawn by an elastic band so as to maintain the wrapping tight about the tissue stack as the tissues are withdrawn from the top of the stack.

3,625,395

## DISPENSER CARTON FOR NESTED ARTICLES

Oscar E. Salazar, Catla-Caracas, Venezuela, assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 9, 1970, Ser. No. 9,527

Int. Cl. B65h 3/00

U.S. Cl. 221-63

5 Claims

A dispenser carton for holding nested articles such as paper cups or the like. The carton includes a sleeve formed

of foldably interconnected panels, each of the panels having a flap foldably connected thereto and foldable to position to define a closure element. Each flap has a weakened line to



define a removable closure portion and a fixed closure portion. Upon removal of the removable part an opening is created, the edge of which engages the sides of the lowermost of the stack of nested articles.

3,625,396

## DISPENSER FOR SILVER WAFFER BATTERIES, AND THE LIKE

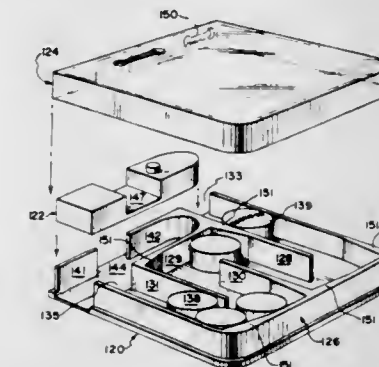
Cornelius Mark Phipps, 1001 Crescent Blvd., Glen Ellyn, Ill.

Filed Dec. 17, 1969, Ser. No. 885,704

Int. Cl. B65d 83/04

U.S. Cl. 221-102

4 Claims



Wafer batteries, and the like, are dispensed from a storage enclosure through a narrow opening in an inner enclosure wall onto an enclosed slidable member. The slidable member receives a battery on a recess thereon which passes completely across the slidable member, and is sized to receive only one battery. The slidable member is moved to a second position in which the recess is aligned with a discharge opening in the outer wall. A preferred embodiment provides a dispenser-storage container for new and used silver wafer batteries, e.g., hearing aid batteries, prevents inadvertent confusion of new and used batteries and yet facilitates return and salvage of valuable used batteries.

3,625,397

## CONTAINER DISPLAY AND DISPENSER

George R. Shelly, Miami; Robert J. Shelly Jr., Miami; Arthur B. Dixon, W. Hollywood, and Bruce F. House, Miami, all of Fla., assignors to Shelley Manufacturing Company, Miami, Fla.

Filed Mar. 9, 1970, Ser. No. 17,811

Int. Cl. A47l 1/06

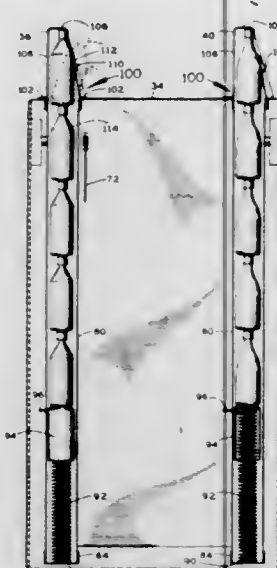
U.S. Cl. 221-155

14 Claims

A beverage dispenser having a cartridge including a tube for holding a stack of containers, a stop spaced from one end of the tube by about the height of a container, and a spring in the tube for urging the stack of containers toward the stop and to urge the end container against the stop. The end container may be viewed for display purposes and also may be removed from the tube with the spring pushing another container against the stop. The cartridge is carried in a cart, and in this application, a plurality of the tubes are arranged side-by-side with the stop projecting above the upper surface of



the cart so that a plurality of containers are viewable at the top of the cart and can be dispensed easily from the top of the cart. A spring normally holds the containers under the stop, and the spring is yieldable to allow removal of the con-



tainers from the cartridge. A loader is provided consisting of a tube which may be inserted under the stop to release the spring, the tube carrying containers for either loading the containers into the cartridge or removing containers from the cartridge.

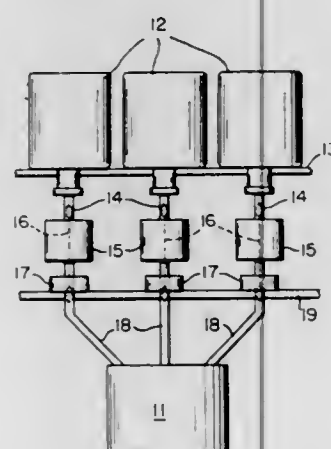
3,625,398

**AUTOMATIC CHEMICAL REACTION SYSTEM**  
Andrew M. Tometsko, Rochester, N.Y., assignor to Chemtrox Corporation, Rochester, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,801  
Int. Cl. B67d 5/08

U.S. Cl. 222-52

14 Claims



A plurality of bottles containing different chemicals are mounted in a cabinet which also contains a tape-operated mechanism that controls the opening and closing of valves that govern flow of the chemicals from the bottles to associated measuring chambers and from the measuring chambers to a reaction vessel. A time-delay mechanism comprising a pulse-generating clock, bimetallic switch arms and heating coils governs the step-by-step advance of the tape. A paddle for mixing the chemicals is rotatably mounted in the reaction vessel; and when a particulate material is used, the paddle may be foraminous and hold the particles.

3,625,399

**AUTOMATIC CARBONATED BEVERAGE DISPENSING SYSTEM**

Noel D. Heisler, Wausau, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Feb. 3, 1969, Ser. No. 796,063

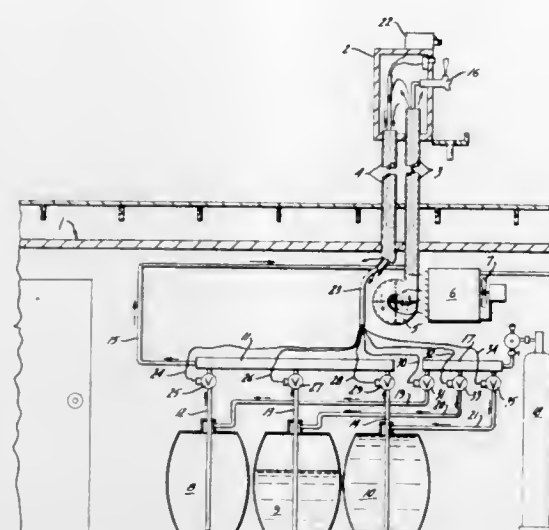
Int. Cl. B65d 5/54

U.S. Cl. 222-76

9 Claims

This invention relates to an automatic beer dispensing system wherein an electrical circuit is actuated by a single

selector control remote from the barrels containing the beer to simultaneously operate a solenoid valve to open a line from one barrel to a tap and another solenoid valve to open a



line from a source of CO<sub>2</sub> gas to the barrel being tapped and to thereafter successively operate corresponding solenoid valves to supply beer from other barrels and CO<sub>2</sub> gas to each respective barrel then supplying the beer.

3,625,400

**AEROSOL DISPENSER WITH FLEXIBLE, COMPONENT RESERVOIRS**

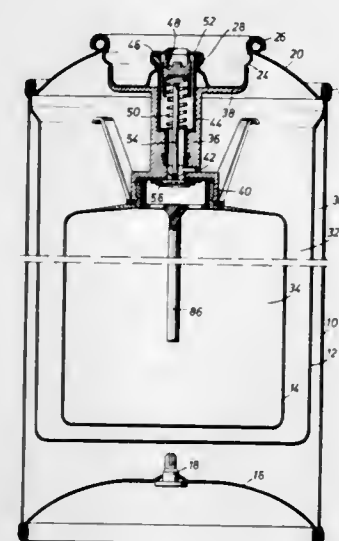
Richard Friedrich, Wassenach, Andernach, Andernacher Weg, Germany

Filed Aug. 1, 1969, Ser. No. 846,813  
Claims priority, application Germany, Aug. 9, 1968, P 17 86 036.5

Int. Cl. B65d 83/14

U.S. Cl. 222-94

14 Claims



A dispenser has two separate inner containers for liquid or pasty materials which are to be mixed and dispensed together but must be stored separately. The two inner containers are flexible and are disposed in an outer container containing a propellant. A discharge valve for the mixture comprises a closure element common to both inner containers and separate closure element for one of the inner containers. On closing the discharge valve the separate closure element closes first and a mixing passage between the two closure elements is purged by the material in the other inner container. Thus no residual mixture of the two materials remains in the dispenser.

3,625,401

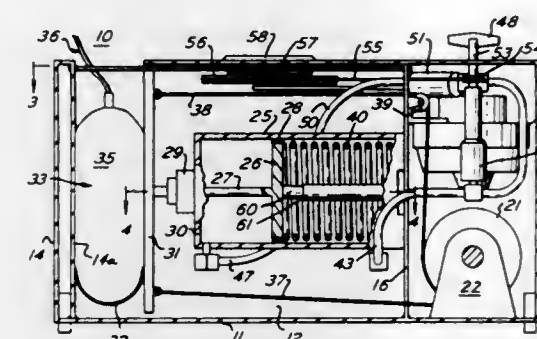
**PUMP FOR BLOOD PLASMA AND THE LIKE**  
John Vaden Terry, 234 W. Valley Forge Road, King of Prussia, Pa.

Filed Nov. 20, 1969, Ser. No. 878,420

Int. Cl. B67d 35/28

U.S. Cl. 222-103

8 Claims



A pump for plasma and the like is provided suitable for use with but not confined to available plasma containers and with the rate of discharge maintained constant but adjustable over a wide range, the pump being portable and self-contained, with accessibility to the components, and having a fluid transferring spring-impelled piston driving a pressure plate which is manually reset by a handle for each operation. The pump is independent in operation, of temperature, weather conditions, altitude, orientation, and whether it is in motion or at rest.

3,625,402

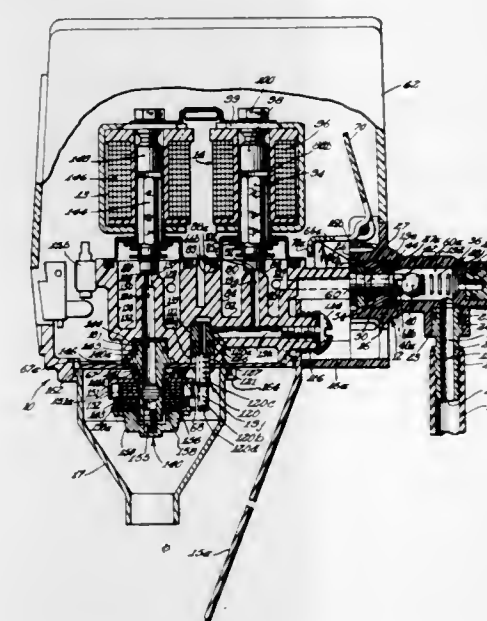
**ELECTRIC POST MIXING DISPENSING APPARATUS**  
Arthur W. Kull, Morton Grove, Ill., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Sept. 15, 1969, Ser. No. 857,692

Int. Cl. B67d 5/56

U.S. Cl. 222-129.3

8 Claims



An efficient, highly serviceable fluid dispensing apparatus comprises a control valve assembly detachably connected to an inlet housing assembly by means of a quick disconnect coupling wherein the supply of fluid from the inlet housing assembly is automatically shut-off upon disconnection of the valve component. At least first and second passageways extend through the apparatus from an inlet in the inlet supply housing to an outlet in the valve assembly. Each passageway includes a check valve disposed in a first portion thereof and first and second valve means disposed in a second portion thereof. of the first valve means includes a chamber surrounding an upstanding member having a seat on its upper end about an opening into the passageway against which seat an armature movable closure disc seats and unseats to close

and open the passageway. The second valve means in the first passageway is an adjustable diffuser assembly comprising a diffuser mount, a pair of telescoping opposed splash cups positioned on the mount and a stack of diffuser discs on the mount retained between the opposed cups in clamping engagement whereby variance of the pressure between the disc controls the CO<sub>2</sub> content of carbonated water dispensed therefrom. The second valve means in the second passageway is an adjustable metering valve having a hollow stem with an upper inlet end adapted to seat against a portion of the valve assembly body to open and close the second passageway to the flow of fluid. Controls for the first valve means allow dispensing of fluid from both passageways into a mixing spout or from the first passageway only.

3,625,403

**AEROSOL-TYPE DISPENSER FOR DISPENSING A POWDERED MATERIAL**

Felix Rousselot, St. Benoit, France, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,642

Claims priority, application France, Apr. 5, 1968, 147102

Int. Cl. B67d 5/54

U.S. Cl. 222-193

13 Claims



An aerosol-type dispenser for dispensing a powdered material. The dispenser has a propellant container, valve means operatively associated with said propellant container for controlling release of propellant from said propellant container, and a product-containing chamber for containing the powdered material to be dispensed. A fluidization chamber is mounted on one end of said product-containing chamber and said product-containing chamber opens into it. The propellant container is mounted on said fluidization chamber and said valve means discharges into said fluidization chamber. The fluidization chamber has an outlet orifice therein, the propellant container is mounted on said fluidization chamber with the axis thereof at an oblique angle to the axis of said product-containing chamber, whereby when the dispenser is held with the product-containing chamber above the propellant-containing container, the powdered material is fed to the fluidization chamber by gravity.

3,625,404

**APPARATUS AND METHOD FOR DISPENSING PARTICULATE MATERIAL**

Richard O. Probst, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed June 2, 1969, Ser. No. 829,206

Int. Cl. B65g 69/06

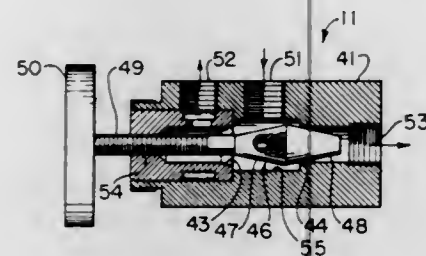
U.S. Cl. 222-193

16 Claims

An apparatus capable of dispensing particulate material and a method for accomplishing the dispensing of the material. The apparatus includes a fluid-activated means capable of causing particulate material to be withdrawn from a reservoir at a rate which is substantially proportional to the fluid flow rate in the fluid-activated means. A means for dispensing the particulate material toward an article to be coated is con-



nected to the fluid-activated means through a conduit. A fluid divider has an inlet port connected to a source of compressed fluid. The fluid divider also includes a plurality of outlet ports. One of the outlet ports of the fluid divider is connected to the reservoir to thereby provide the fluid flow which activates the fluid-activated means. Another of the outlet ports of the fluid divider is connected to the conduit to



provide a fluid flow in the conduit which assists in the movement of the particulate material in the conduit toward the means which dispenses the material. The fluid divider may be a device which includes a fluid-splitting member which divides the fluid flow at the inlet port among the several outlet ports. The sum of the fluid flows at the outlet ports of the fluid divider is substantially proportional to the fluid flow at the inlet port.

3,625,405

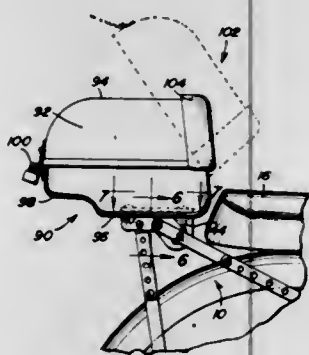
## CARRIER AND BRACKET ASSEMBLY FOR MOTORCYCLES

Newton P. Kezar, Granby, and Donald J. McCleary, Neosho, both of Mo., assignors to Rudolph E. Farber, Neosho, Mo., a part interest

Filed June 23, 1969, Ser. No. 835,549  
Int. Cl. B62j 7/04

U.S. Cl. 224-32 A

11 Claims



A strap assembly is provided for mounting to the rear fender of a motorcycle. The strap assembly attaches a rack thereto having a generally flat supporting surface and a pad or cushion fastened to the edge of the rack confronting the motorcycle seat to form a backrest therefor. Instead of the rack, a helmet receptacle may be connected to the strap assembly. The receptacle can be locked to prevent unauthorized opening and theft of the cyclist's helmet. The surface of the receptacle confronting the motorcycle seat is padded to serve as a backrest for a guest passenger.

3,625,406

## MOTION PICTURE CAMERA AND THE LIKE

Rouel R. Campbell, 3410 Club Drive, Apt. 6, Los Angeles, Calif.

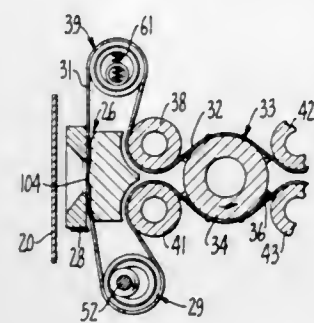
Filed Aug. 6, 1969, Ser. No. 848,007  
Int. Cl. G03b 1/32

U.S. Cl. 226-52

13 Claims

A motion picture camera of the type which advances the film through a film gate in stop and go motion comprising a film drive mechanism having a sprocket and two guide means for forming and guiding a loop of film through a film gate, one of the guide means being mounted on an eccentric for continuous rotation while moving the loop of film against a stationary registration pin in intermittent fashion and the other guide means cooperating with the first to prevent

undue slack in the loop the camera is also constructed in two sections with one section containing the film and film guide means, and the other section containing power means, a shutter and an appropriate lens system; the film gate being characterized by having a zero clearance construction and



3,625,407

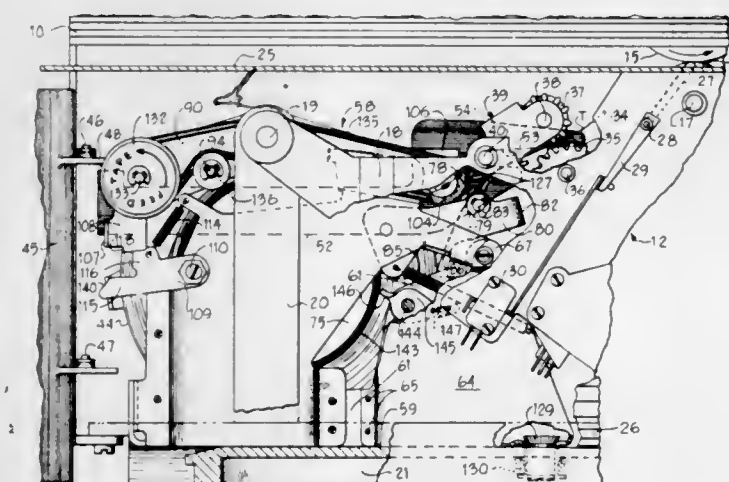
## TAPE ROLL-INSERTING DEVICE

Melvin H. Norman, Oakland, and Nathaniel F. Hawthorne, Alameda, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,625  
Int. Cl. B65h 17/20

U.S. Cl. 226-91

7 Claims



A tape roll supply mechanism comprising a container or cartridge in which a tape roll is supported, the cartridge being removably positioned within the framework of a printing device. Once the cartridge is secured in an operative position, a mechanism carried by the cartridge is manipulated to initially advance the inaccessible leading end of the tape to a "start" position relative to a rotatable printing drum for advancement thereafter by a tape feed mechanism.

3,625,408

## ELECTRIC STAPLER APPARATUS

Saichi Amakawa, Moriguchi-shi; Toshio Torigoe, Hirakata-shi; Osamu Miyamoto, Moriguchi-shi; Akito Kawamoto, Neyagawa-shi; Yasuzo Hatazaki, Asahi-ku, Osaka; Tadayuki Haruyama, Neyagawa-shi; Seiji Yokogawa, Kadoma-shi, and Hiroshi Kawai, Moriguchi-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

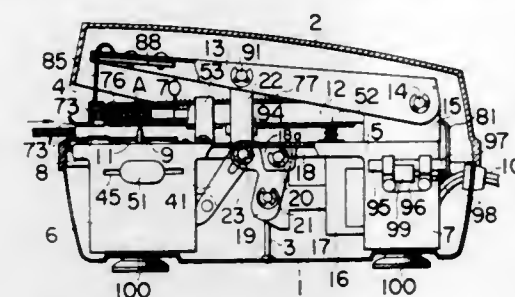
Filed Mar. 23, 1970, Ser. No. 21,984  
Claims priority, application Japan, Mar. 25, 1961, 44/24526  
Int. Cl. B25c 1/06

U.S. Cl. 227-131

7 Claims

An electric stapler apparatus which automatically drives staples into sheets of paper, utilizing an electromagnet to

provide the driving force. This electric stapler apparatus is an improvement over prior art apparatus of the type operative in such a manner that a microswitch is closed to energize an electromagnet when a switch lever is operated by sheets of



paper to be fastener, and a staple-driving lever is actuated by the electromagnetic force of the electromagnet, said microswitch being opened by operation of the staple-driving lever.

3,625,409

## VINYLIDENE CHLORIDE RESIN COMPOSITION AND CONTAINER STRUCTURES MANUFACTURED THEREFROM

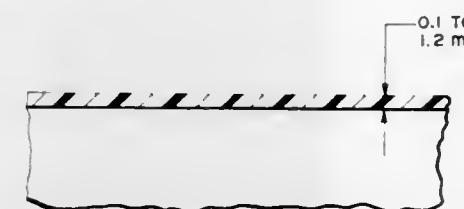
Nobuyuki Hisazumi; Masashi Ito, and Takao Ichii, all of Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 19, 1969, Ser. No. 878,027

Claims priority, application Japan, Nov. 19, 1968, 43/84659  
Int. Cl. B65d 1/00; C08f 45/38

U.S. Cl. 229-3.5 R

2 Claims



A container structure for paste or high-viscosity liquid having stretch-oriented wall and improved shape-restitution property is manufactured from vinylidene chloride resin composition containing therein a particular polyester plasticizer such as a polyester produced by the reaction of succinic acid and ethylene glycol.

3,625,410

## COLLAPSIBLE CONTAINERS AND BLANK FOR MAKING SAME

Urban C. Hirschey, 36 N. Main St., Carthage, N.Y.

Filed June 18, 1969, Ser. No. 834,271

Int. Cl. B65d 5/36, 5/46

U.S. Cl. 229-16 R

19 Claims



This disclosure teaches a top-loading collapsible rectangular container including a cover formed from an integral blank

of sheet material and the blank from which the container is formed. The container includes a self-unfolding bottom and bottom corner construction of increased strength and an end wall and cover corner construction of increased strength.

3,625,411

## CARTON AND BLANK FOR THE PACKAGING OF A PLURALITY OF USE RELATED ARTICLES

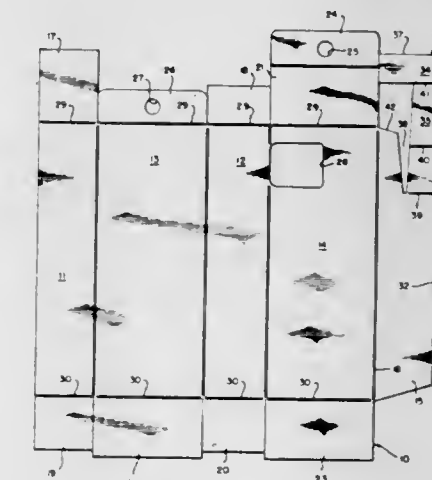
Raymond A. Cote, Charlotte, N.C., assignor to Riegel Paper Corporation, New York, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,123

Int. Cl. B65d 5/02, 23/12

U.S. Cl. 229-37 R

4 Claims



A carton tube for packaging a plurality of use related products having different dimensions and the blank for forming same is disclosed. The new carton includes an automatically set up internal bracing structure for retaining the smaller item in the top portion of the carton. The disclosed internal bracing structure is articulated to a dust flap and a sidewall panel of the carton and sets up in response to the inward folding of the dust flap during set of the carton.

3,625,412

## CARTONS CONTAINING COUPONS

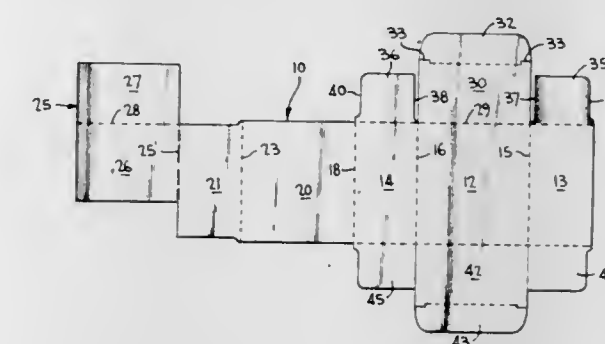
Charles W. Rosenberg, Jr., N. Tonawanda, N.Y., assignor to F. N. Burt Company, Inc., Buffalo, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,266

Int. Cl. B65d 5/10

U.S. Cl. 229-39

7 Claims



The one-piece carton blank has the usual side-face-side-face order of panels with a securing panel attached to the outward edge of one of the side panels by a hinge crease. Secured along a line of severance to the outward edge of the securing panel is a coupon panel, a hinged portion of which projects upwardly beyond the upper ends of the principal panels.

In the erected panel, the securing panel in one embodiment is of the same width as the remote side panel and is glued thereto, whereby the main portion of the coupon panel lies flat against the remote face panel. In another embodiment the securing panel is turned back medially, one-half being glued to a portion of the side panel, the coupon lying against the near face panel.

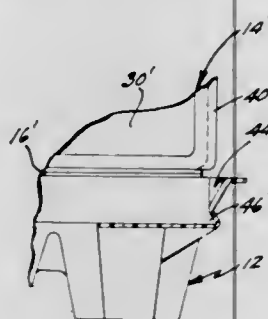


The projecting portion of the coupon panel is adapted to be folded into the top closure structure between the closure flaps of the two side panels and the closure flap of that face panel against which the main portion of the coupon panel lies.

### 3,625,413 EGG CARTON

Roger L. Medendorp, Grand Rapids, Mich., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.  
Filed June 12, 1969, Ser. No. 832,692  
Int. Cl. B65d 85/32  
U.S. Cl. 229-44 R

6 Claims

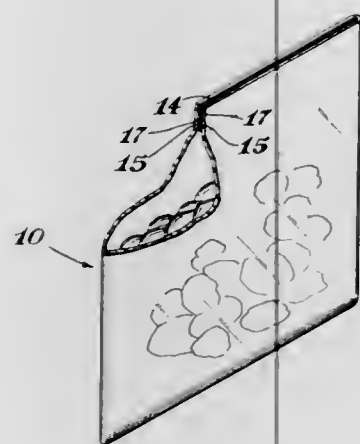


A molded polymeric container for fragile articles such as eggs, employing unique closure and latching features between the cover means and the container bottom. It involves special camming and latching between the ends of the cover means and the ends of the bottom member. The cover means has a pair of cover members with a special cooperative overcenter action during closure combined with the latching feature to obtain and maintain effective closure.

### 3,625,414 SEALED SURFACE SULFONATED PLASTIC-SHAPED ARTICLES

Robert J. Caiola, Fort Wayne, Ind., assignor to The Dow Chemical Company, Midland, Mich.  
Continuation-in-part of application Ser. No. 818,817, Apr. 23, 1969. This application Oct. 22, 1969, Ser. No. 868,554  
Int. Cl. B65d 33/16  
U.S. Cl. 229-62

12 Claims



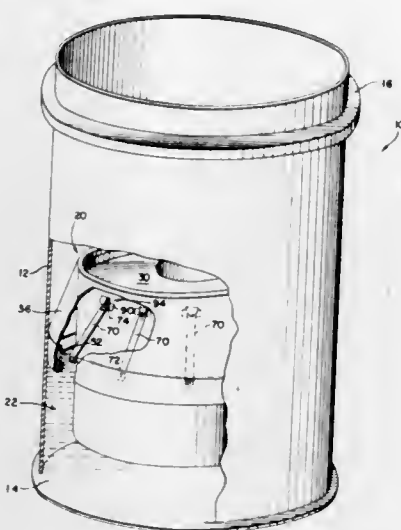
Shaped articles of thermoplastic organic polymers are sealed at temperatures below the heat distortion temperature of the polymer by (1) sulfonating at least a portion of a surface of a shaped article, (2) treating at least a portion of the sulfonated surface with a liquid which is a nonsolvent for the base polymer and a solvent for sulfonated polymer on the surface, e.g., water, (3) positioning the treated surface against another surface of surface sulfonated shaped article such that the liquid is disposed therebetween and (4) removing the liquid at temperatures below the heat distortion point of the polymer. Soaking the sealed portion of shaped article in a suitable sealing liquid releases the seal without damaging the article.

### 3,625,415 FLOATING ROOF SEAL

Ardell H. Nelson, and Harold A. Maeder, both of Coraopolis, Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Mar. 27, 1970, Ser. No. 23,183  
Int. Cl. B65d 45/00  
U.S. Cl. 222-26 S

5 Claims

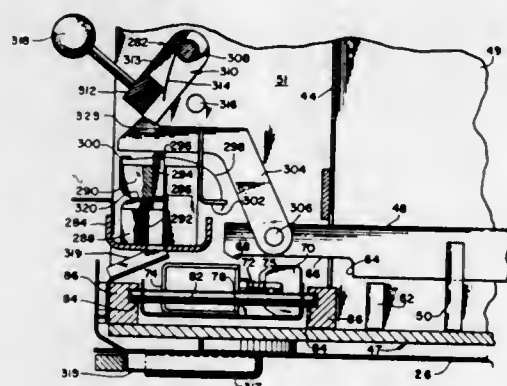


A floating roof seal includes an annular flexible band, the upper portion of which is connected to the roof and has a gastight seal with respect thereto. The lower portion of the band is connected to an annular ring means. The lower part of the band has hole means formed therethrough for admitting liquid between the ring means and the band from the tank. A plurality of spaced support members are loosely connected at the upper ends thereof to the roof and are loosely connected at the lower ends thereof to the ring means to permit movement of the ring means relative to the roof during use. An annular seal means may be supported by the ring means and engages the inner surface of the band. This annular seal means has hole means formed in the upper and lower parts thereof. The ring means may also be of variable size including a plurality of spring loaded relatively movable portions.

### 3,625,416 APPARATUS FOR THE SELECTION OF CODED ELEMENTS FILED AT RANDOM

L. Allan Cross, Jr., Lambertville, N.J., assignor to Random Data Systems, Inc.  
Original application Mar. 9, 1969, Ser. No. 438,216, now Patent No. 3,486,617, dated Dec. 30, 1969. Divided and this application May 9, 1969, Ser. No. 840,079  
Int. Cl. G06k 1/08  
U.S. Cl. 234-48

4 Claims



A device having a file tray in which coded cards are filed randomly combines the functions of card selection and card punching. Cards are selected by impressing a code upon a translator which shifts appropriate selector slides into code notches formed in the cards. When cards are to be punched rather

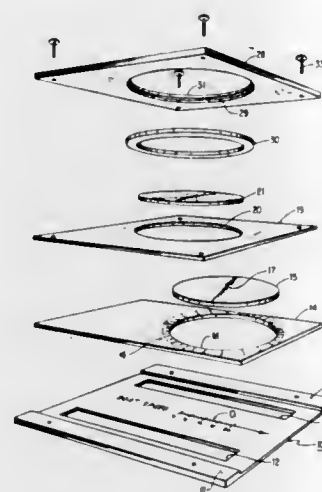
than selected, interposers individual to the several slides actuate corresponding punches to notch a card supported in a card slot outside the file tray.

### 3,625,417 CALCULATOR MEANS FOR BOATING

John W. Slauter, 5976 Wedgewood Drive, Mentor-on-the-Lake, Ohio

Filed Oct. 6, 1969, Ser. No. 864,027  
Int. Cl. G06c 1/00  
U.S. Cl. 235-61 NV

9 Claims



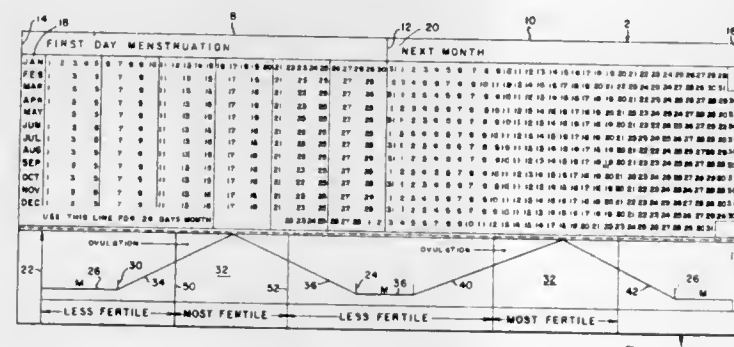
A wind velocity calculator has a primary vector member with a calibrated scale, a secondary vector member having a calibrated scale thereon movably connected with the primary vector member and a resulting vector member having a calibrated scale thereon movably connected with the primary vector member and the secondary vector member. The resulting vector member has defined regions of a pinching zone and a spinnaker zone. One embodiment of the calculator has a series of assembled plates. The two plates resting on the bottom plate have holes therein for disks to be held in the plates, these disks being rotatably held in the plates and each disk having a scale. Another embodiment has three ruler means each having a scale being pivotally and slideably connected together. Here the resulting vector member has a circular protractor means which has defined thereon a pinching zone and a spinnaker zone.

### 3,625,418 DEVICE FOR DETERMINING FEMALE FERTILITY PERIODS

Ernesto F. Colon, Mayaguez, P.R., assignor to The Government of the Commonwealth of Puerto Rico

Filed Nov. 3, 1969, Ser. No. 873,331  
Int. Cl. G06c 3/00  
U.S. Cl. 235-85 FC

2 Claims



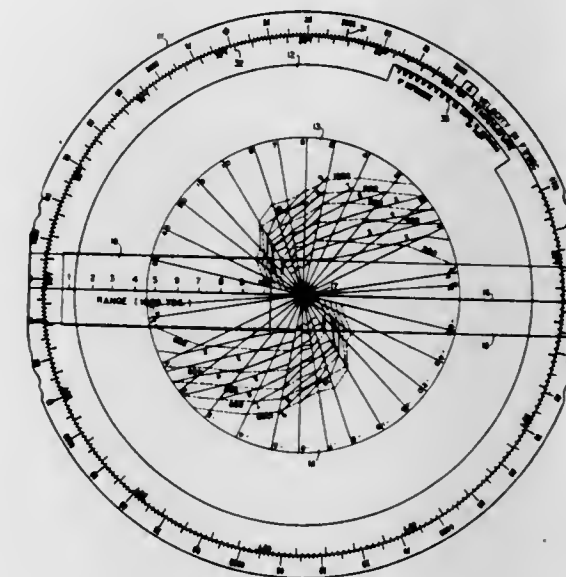
A two-part slide rule type device having in one part and on one line successive days of each two successive months throughout the year, the other part being divided into sections of greatest and less fertility. The second part is superimposed on the first with its beginning at the date of the first day of menstruation, and the divisions of the second part

### 3,625,419 SONAR SLIDE RULE

Daniel Barron, 9326 Edmonston Road, Greenbelt, Md.

Filed Apr. 30, 1970, Ser. No. 33,399  
Int. Cl. G04b 37/00  
U.S. Cl. 235-88

3 Claims



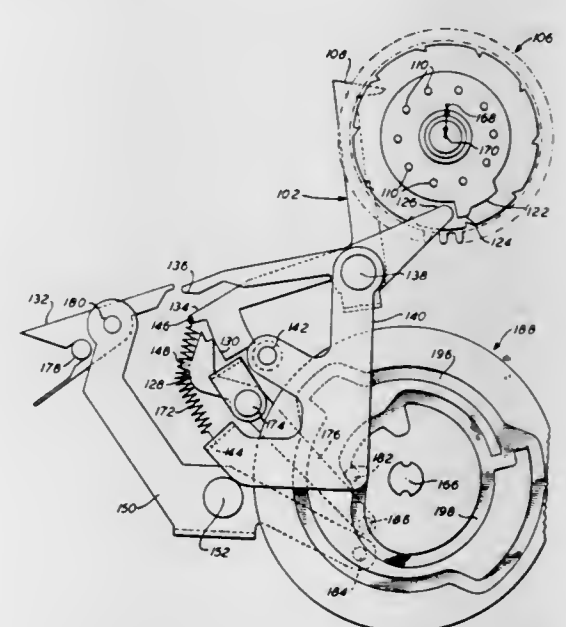
This device is for determining the sonar range to an underwater target by a sonar operator. The device comprises a plurality of discs operative relative to each other in a relationship which is a function of thermal conditions, type of equipment, wave height, probability of detection and other oceanographic conditions to determine sonar range.

### 3,625,420 TRANSFER MECHANISM

Kenneth F. Oldenburg, Arcadia, Calif., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Sept. 14, 1970, Ser. No. 71,902  
Int. Cl. G06c 15/26  
U.S. Cl. 235-137

13 Claims



A business machine such as an adding machine, cash register, or the like is provided with two accumulators which have respective sets of registers which are interleaved with one another and which are mounted on the same shaft. U-shaped bails interconnect lower order registers with associated registers representing higher digital orders. Camming surfaces and additional mechanisms operating on



each transfer bail condition the bails to provide carries under appropriate conditions as the entire accumulator assembly is moved from its operating position to its rest position. By these arrangements, positive, simultaneous transfers are accomplished subsequent to the entry of digital information, in both of the two interleaved accumulators.

3,625,421

# SYSTEM FOR CONTROLLING FURNACE TEMPERATURES WITHOUT OVERSHOOT

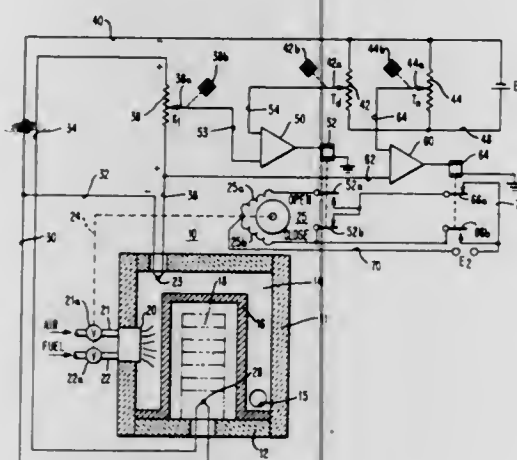
James L. Garrison, Hatboro, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed Apr. 17, 1970, Ser. No. 29,587

Int. Cl. G05b 11/32; G05d 23/22

U.S. Cl. 236—15 B

6 Claims



A temperature control system for an annealing furnace which controls to maintain a weighted average of the furnace temperature and the work temperature equal to the desired work temperature. The weighting of the average is such that the maintenance of the average in equality with the desired work temperature operates to maintain the furnace temperature so related to the work temperature as to provide an optimum heating rate for the avoidance of overshoot.

3,625,422

# MULTIVALVE THERMOSTATIC BELLOWS STEAM TRAP

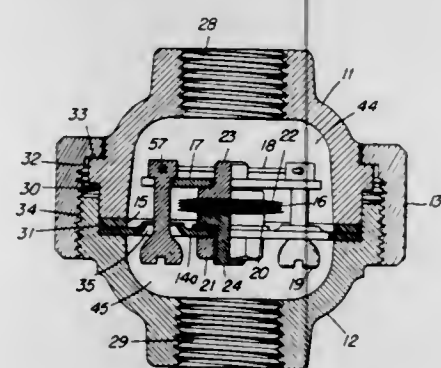
Harold L. Johnson, Southwick Drive, Hereford Estates, P.O. Box 134, Hereford, Pa.

Filed June 26, 1969, Ser. No. 836,921

Int. Cl. F16t 1/02

U.S. Cl. 236—58

7 Claims



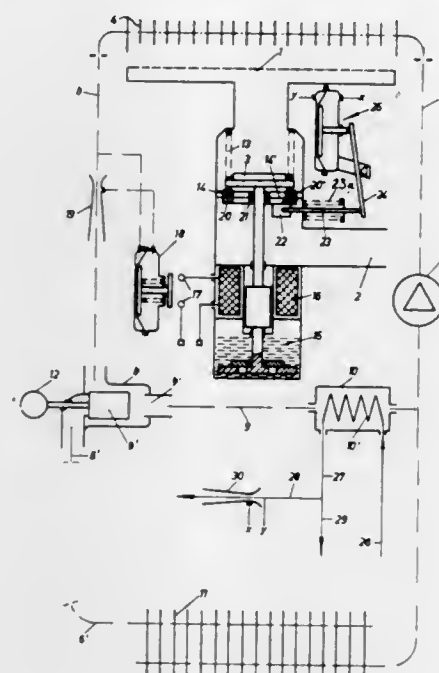
This invention is a steam trap having a thermostatic type of bellows with two or more discharge valves operated by a single bellows. The trap may also have a flexible valve operating bridge.

3,625,423  
GAS-HEATED HOT WATER HEATER  
Hans Meier, Remscheid, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany  
Filed Mar. 9, 1970, Ser. No. 17,500  
Claims priority, application Germany, Mar. 21, 1969, P 19 14 463.9

Int. Cl. F24d 3/08

U.S. Cl. 237—8

9 Claims



A shutter valve is located in the gas supply conduit of the gas burner of a water heating apparatus having several taps from which domestic water may be drawn. A venturi in the line leading to one of the taps produces a pressure differential in response to flow through that line. A diaphragm-type actuator is connected to the venturi and to the shutter valve to reduce the gas flow to the burner when that pressure differential occurs.

3,625,424  
APPARATUS AND METHOD FOR CONVERTING A PRESSURE-SUPPLIED SPRAY GUN INTO AN ELECTROSTATIC SPRAY GUN

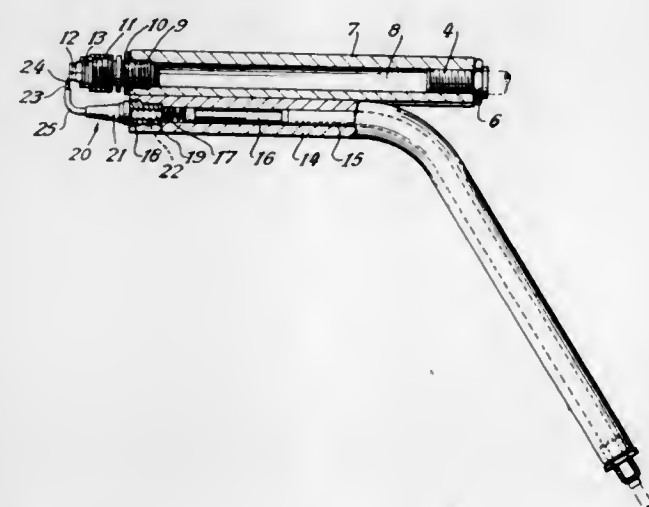
Arthur Charles Mantica, Epsom, Surrey, England, assignor to Volstatic Limited, London, England

Filed May 22, 1969, Ser. No. 826,907

Int. Cl. B05b 5/00

U.S. Cl. 239—3

10 Claims

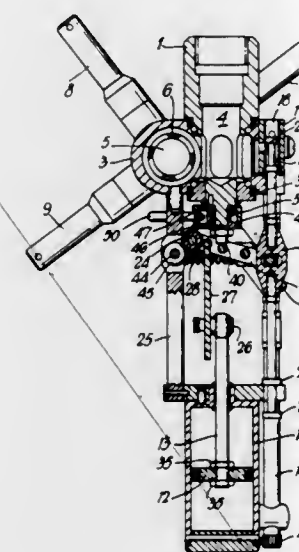


The invention described relates to an attachment to or adaptation of an existing spray gun which converts it into an electrostatic spray gun, by providing an electrically insulating extension of the original gun and an electrostatic supply thereto.

3,625,425  
TANK WASHERS  
Michael Robinson, Worcestershire, England, assignor to Streamfisher Limited, St. Peter Port, Guernsey, England  
Filed July 28, 1970, Ser. No. 58,960  
Claims priority, application Great Britain, July 29, 1969, 38,049/69

U.S. Cl. 239—227

21 Claims

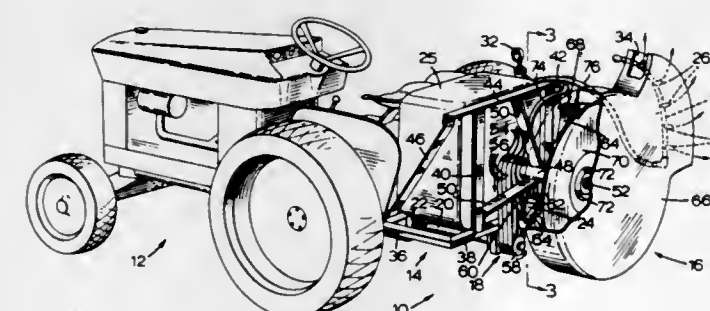


A device for washing the inside of a tank, vat or other container using cleansing liquid under pressure, the device comprising a base intended to be rotatably mounted, in the use of the device, on a pipe carrying a supply of the cleansing liquid, and also comprising at least one nozzle pivotally mounted on the base in such a way that the or each nozzle is connected to the interior of the pipe, and wherein the or each nozzle is oscillatable in a plane transverse to that in which the base rotates, the or each nozzle being oscillatable by means of a piston and cylinder assembly, and wherein the base is rotatable about the pipe by a one-way drive mechanism secured to the end of said pipe and actuated by the nozzle or nozzles.

3,625,426  
AGRICULTURAL SPRAYING APPARATUS  
Ely Swanson, 169 Bruce Street, Thornbury, Ontario, Canada  
Filed Apr. 7, 1970, Ser. No. 26,388  
Int. Cl. A01n 17/08

U.S. Cl. 239—77

11 Claims

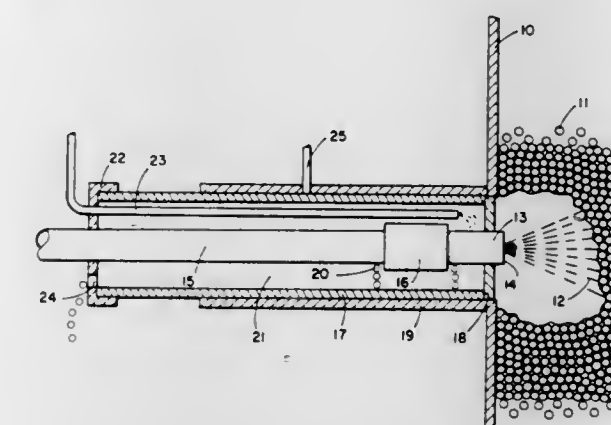


Agricultural spraying apparatus including a fan which inspires air axially and expels the air together with a liquid spray radially. The fan includes an impeller having a longitudinal extent substantially less than that of a fan casing so that as the impeller compresses air, the pressures in the air tend to equalize in the space between the fan and the casing before the air is displaced through the outlet. To facilitate assembly, contoured surfaces on the impeller and casing are engaged to locate the ring in relation to the impeller.

3,625,427  
LIQUID FEED SYSTEM FOR FLUIDIZED BEDS  
Ravindra Nadkarni, Cambridge; Frank J. Tremblay, Dracut, and Charles L. Kusk, Winchester, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.  
Filed Feb. 25, 1970, Ser. No. 13,904  
Int. Cl. B05b 9/00

U.S. Cl. 239—124

3 Claims

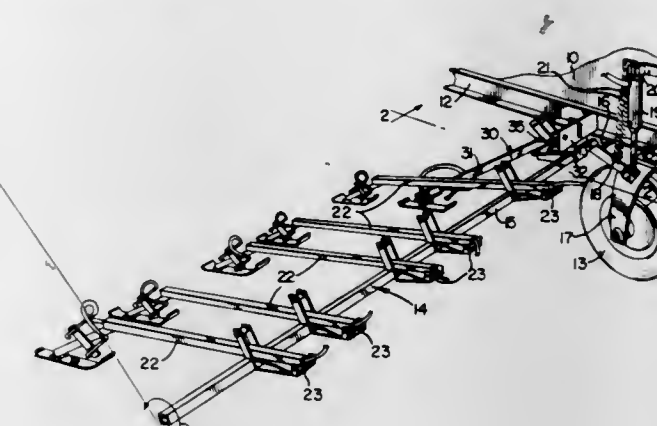


Apparatus for feeding liquid solutions by means of a nozzle into a fluidized bed used for evaporating liquids from solids in solution. The nozzle is coupled to a feed line outside the bed and a casing is provided to catch any fluid leaking from the coupling, thus preventing any fluid from leaking into the fluidized bed thereby helping to insure controlled chemical and physical properties in the solid particles thus produced.

3,625,428  
SWING AWAY GUIDE ARM  
Charles D. Mecklin, Memphis, Tenn., assignor to International Harvester Company, Chicago, Ill.  
Filed Nov. 24, 1969, Ser. No. 879,051  
Int. Cl. B05b 1/20

U.S. Cl. 239—166

2 Claims



A sprayer assembly incorporating a nozzle carrying swing away guide arm on a mobile carrier for spraying operation proximate and beneath the carrier's structure, the guide arm being pivotally mounted such that it can be positioned for optimum spraying operation proximate the carrier and yet will swing upwardly and away from beneath the carrier's structure when raised to a transport position.

3,625,429  
LAWN SPRINKLER HEAD  
Devere Turrell, 22125 Grand Lake, St. Clair Shores, Mich.  
Filed Sept. 21, 1970, Ser. No. 73,899  
Int. Cl. B05b 3/08

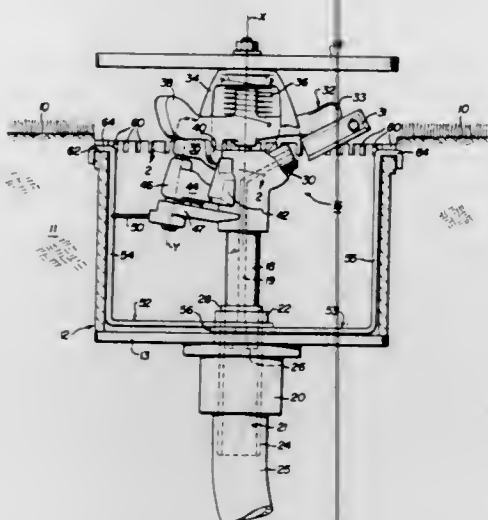
U.S. Cl. 239—206

6 Claims

A reversible short and long stroke impact sprinkler head of the popup type normally recessed in a housing set in the ground adapted to popup when water pressure is turned on;



the improvement providing a rotatably adjustable cam member disposed laterally along the inner sprinkler housing



wall, and a striker pin attached to a pivot member which extends radially outwardly to strike against the cam member.

3,625,430

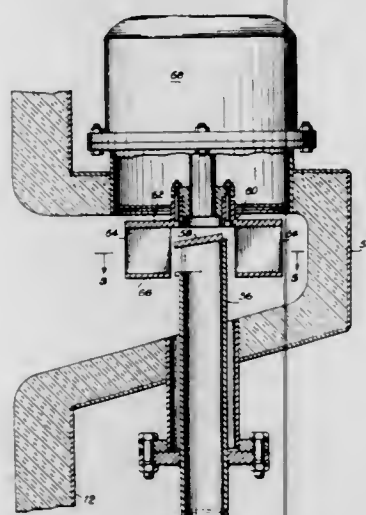
#### METHOD AND APPARATUS FOR CLEANING CONTAMINATED GASES

Orlan M. Arnold, Grosse Point Park; Victor W. Hanson, Garden City; Robert M. Jamison; Nicholas J. Panzica, both of Detroit, and Emil Umbricht, Northville, all of Mich., assignors to Ajem Laboratories, Inc., Livonia, Mich. Original application Apr. 8, 1968, Ser. No. 719,767, now Patent No. 3,475,881, dated Nov. 4, 1969, which is a continuation of application Ser. No. 586,812, Nov. 14, 1966, now abandoned. Divided and this application May 14, 1969, Ser. No. 844,695

Int. Cl. B05b 3/02; F23d 1/104

U.S. Cl. 239-222.11

8 Claims

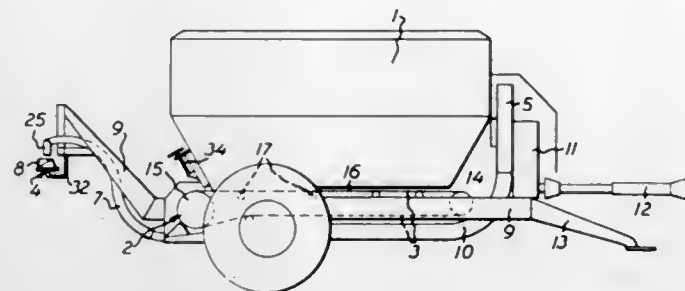


A segmentally directed rotary spray generator for creating a high-velocity intense liquid spray having a definite arcuate shape with a relatively substantial effective depth useful with air pollution control equipment. The rotary spray generator having a plurality of blades symmetrically arranged radially on a rotatable ring support structure and a liquid supply pipe fitting within the ring structure having an angular orifice opening approximately equal to the angular segment of the spray to be generated.

3,625,431  
**ARTIFICIAL MANURE SPREADER**  
Alf Helmer Andersson, Ystad, Sweden, assignor to Ystads Gjuteri & Mekaniska Verkstads Aktiebolag, Ystad, Sweden  
Filed Jan. 20, 1970, Ser. No. 4,278  
Int. Cl. B05b 3/04

U.S. Cl. 239-222.17

4 Claims

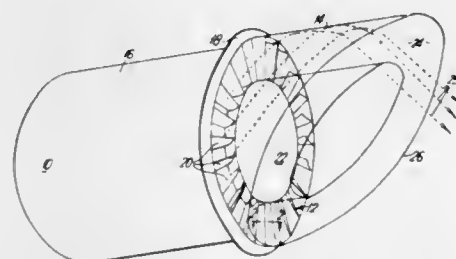


An artificial manure spreader having spreader means including an ejector fan and a number of conveying pipes from the fan to spreader units each comprising a rotational body having an inclined diametrical plane the ends of said plane being disposed each on one side of the axis of rotation of the rotational body, said inclined plane having along one longitudinal edge a wing which at the lower end of the inclined plane merges in a wing element extending obliquely to the main plane of the wing and inwardly over the inclined plane.

3,625,432  
**APPARATUS FOR DEFLECTING GAS TURBINE ENGINE EXHAUST GASES**  
Stephen L. Bragg, Findern, England, assignor to Rolls Royce Limited, Derby, England  
Filed Jan. 22, 1970, Ser. No. 5,016  
Claims priority, application Great Britain, Jan. 31, 1969, 5,544/69

U.S. Cl. 239-265.35

7 Claims



A gas turbine jet propulsion engine has its turbine gas outlet angle and discharge nozzle plane coadapted to discharge the gas efflux from the nozzle at a specific angle to the engine axis. The discharge nozzle plane angle is obtained by merely chamfering the nozzle end face. The nozzle is rotatable about the engine axis and thus, thrust direction can be changed without physical deflection of the gas efflux with its attendant thrust losses.

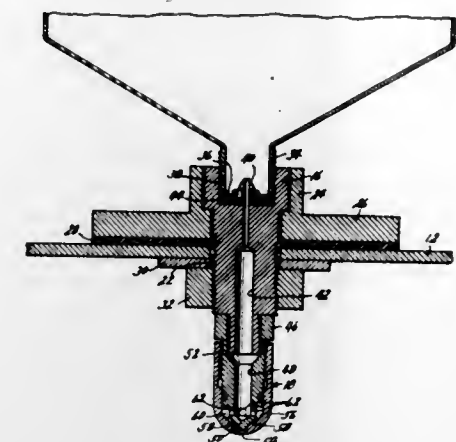
3,625,433  
**INSECTICIDE APPLICATOR FOR GRAIN BINS**  
Vaughn I. Moss, 1005 Nebraska, and Garth A. Sharp, 1301 Nebraska, both of Mound City, Mo.  
Filed Nov. 5, 1969, Ser. No. 874,333  
Int. Cl. A62c 31/22

U.S. Cl. 239-271

2 Claims

An insecticide applicator for grain bins consisting of a pipe nipple fixed in a portion of said bin to establish communication between the interior and exterior thereof, a nozzle affixed to the inner end of said nipple and positioned centrally

over the grain surface of said bin, and a pressurized insecticide container adapted to be interconnected with the exter-

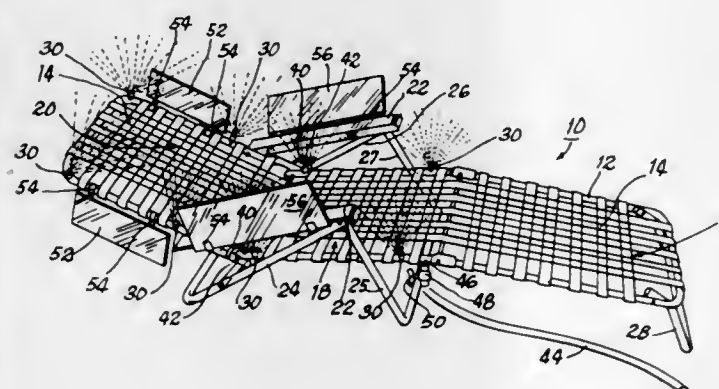


nal end of said nipple, said nozzle being adapted to apply said insecticide uniformly over the grain surface in said bin.

3,625,434  
**DEVICE FOR SUNBATHING HAVING WATER-SPRAY-COOLING MEANS**  
Earl R. Kitover, 6627 N. Lawndale Ave., Lincolnwood, Ill.  
Filed Apr. 30, 1970, Ser. No. 33,383  
Int. Cl. B05b 17/00

U.S. Cl. 239-289

7 Claims

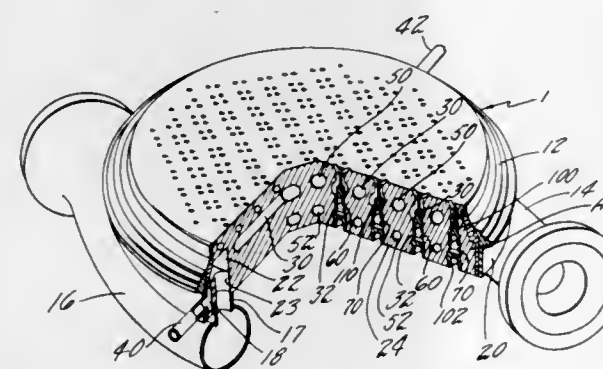


A sunbathing system is provided in which a lounge chair having a tubular frame construction carries a number of water nozzles along the frame. The water nozzles have an outlet spray pattern to direct a fine water spray toward a person lying in the lounge chair when a water hose is operatively connected to the tubular frame.

3,625,435  
**DUAL ORIFICE QUADRUPLLET IMPINGEMENT INJECTOR**  
James P. Mitchell, and Bruce T. Brown, both of North Palm Beach, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.  
Filed Feb. 14, 1967, Ser. No. 617,762  
Int. Cl. F23d 11/16

U.S. Cl. 239-422

8 Claims



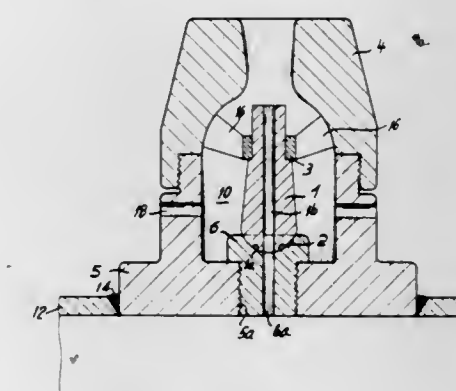
An injector head for two propellants wherein the propellants are fed through internal passageways in the injector

head and are ejected from the face of the injector in a quadruplet pattern of openings. The invention herein described was made in the course of or under a contract with the Department of the Air Force.

3,625,436  
**DEVICE FOR ATOMIZING LIQUID**  
Karl-Heinz Wirths, Menzinger Str. 36, 8 Munich 19, Germany  
Filed Dec. 19, 1969, Ser. No. 886,549  
Int. Cl. E03c 1/08

U.S. Cl. 239-428.5

8 Claims



A device for atomizing liquid, particularly sulfite liquor which is adapted to be burnt after it is atomized, includes a housing formed of upper and lower parts, the lower part being connectable to a feed pipe for the liquid to be atomized and having a threaded bore which carries an insert with a liquid flow passage therethrough. The upper part of the housing carries a support which extends into a vapor chamber defined by the interior of the upper and lower parts and which supports a liquid nozzle on a recess of the insert in a manner such that the flow passage of the nozzle is aligned with the flow passage of the insert. The insert is preferably provided with a hemispherical recess to permit the pivotal arrangement of the nozzle thereon and the alignment of the passages. The supports defined by the upper part include radial support fingers which hold a central annular collar which is adapted to engage around the upper portion of the nozzle and hold it in position over the insert.

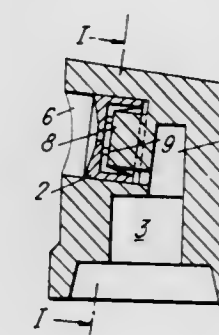
3,625,437  
**SPRAY HEAD FOR A PRESSURIZED CONTAINER**  
Gerard Claude Garrigou, Ville D'Avray, France, assignor to Deutsche Prazisions-Ventil GmbH, Hattersheim/Main, Germany

Filed Aug. 21, 1969, Ser. No. 851,830  
Claims priority, application Germany, Aug. 24, 1968, P 17 75 543.0

U.S. Cl. 239-469

Int. Cl. B05b 1/34

7 Claims



A spray head for a pressurized container, said head having a recess and a pin extending from the bottom of the recess, and also having a cup-shaped nozzle insert which is inserted into the recess and placed over the pin, the end of the pin and the bottom of the insert resting against the pin defining a swirl-chamber system, and the outer lateral surface of the insert together with the lateral surface of the recess forming a



first pair of cooperating surfaces, while the inner lateral surface of the insert together with the lateral surface of the pin forms a second pair of cooperating surfaces.

3,625,438

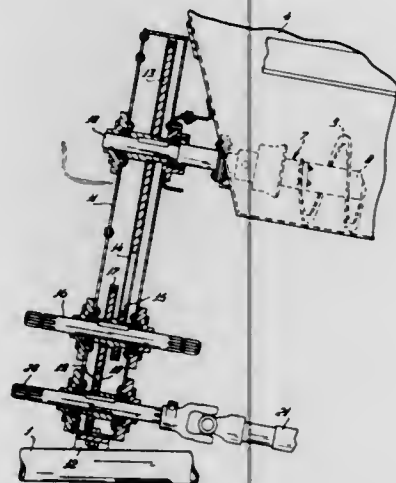
**SPREADING IMPLEMENTS WITH VARIABLE DRIVE**  
Cornells van der Lely, 7 Bruschenrain, Zug, Switzerland, and Ary van der Lely, 10 Weverskade, Maasland, Netherlands  
Filed Dec. 4, 1969, Ser. No. 882,229

Claims priority, application Netherlands, Dec. 13, 1968, 6817892

Int. Cl. A01c 19/00

U.S. Cl. 239-670

18 Claims



A spreading implement including a hopper supported on a wheeled frame, a spreader located at the lower portion of the hopper below an outlet port and a feeding member within the hopper to urge granular or powdery material towards the outlet port. A transmission is connectable to a power takeoff and has several coupling points to power the feeding member at different speeds while the spreading member can be rotated at the same speed from either coupling point. In one embodiment, the feeding member can be clutched inoperative.

3,625,439

**VEHICULAR TRAILER HAVING FLUENT MATERIAL DISTRIBUTION MEANS**

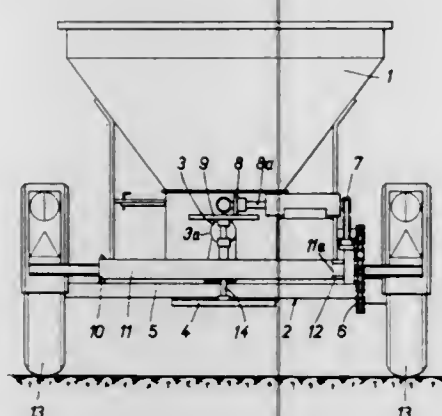
Hans Gisler, Bern, Switzerland, assignor to Firma Marcel Boschung, Ried, Schmlitten, Canton, Fribourg, Switzerland  
Filed Dec. 30, 1969, Ser. No. 889,076

Claims priority, application Switzerland, Jan. 14, 1969, 453/69

Int. Cl. A01c 17/00

U.S. Cl. 239-684

2 Claims



A vehicular trailer is disclosed particularly adapted for distributing fluent material such as salt or sand or the like upon a roadway or other surface, wherein the slinger plate is rotatably driven by means of a pair of friction wheels disposed with their axes at right angles to each other. One of the wheels is adjustable axially with respect to the other of the wheels, whereby the rotational speed of the slinger plate

may be substantially continuously adjusted regardless of the rotational speed of the driving means. The slinger plate is mounted upon a horizontally swingable arm so as to be swingable away from the discharge end of a screw conveyor, permitting access to the conveyor for cleaning or the like.

3,625,440

**METHOD FOR RECOVERING COPPER BASE METAL FROM COPPER BASE ASHES AND RESIDUES**

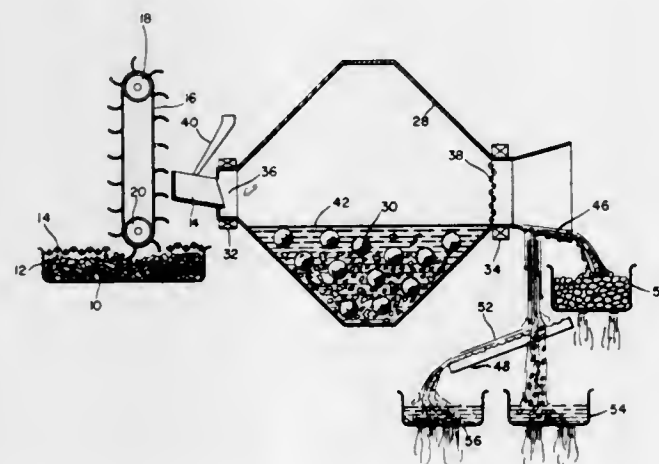
Irving Bond, Newton Highlands, Mass., assignor to Bay State Smelting Co., Inc., Somerville, Mass.

Filed Aug. 25, 1969, Ser. No. 852,554

Int. Cl. B02c 21/00, 17/10

U.S. Cl. 241-21

1 Claim



Copper base aggregates are washed with water to remove dust, are ball milled to separate oxides by shock, are screened to remove lumps for reprocessing and are cleaned by flowing with water over a vibrating table, to produce an intermediate copper base product for remelting.

3,625,441

**COUNTERROTATING REFINER**

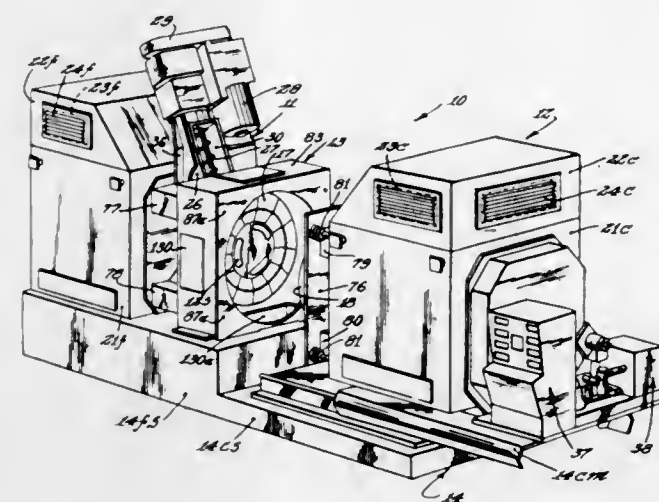
Martin O. Saltarelli, Lenox; Alexander D. Cormack, and Charles Ornstein, both of Pittsfield, all of Mass., assignors to Beloit Corporation, Beloit, Wis.

Filed Sept. 29, 1969, Ser. No. 861,581

Int. Cl. B02c 7/06, 7/14, 25/00

U.S. Cl. 241-37

16 Claims



A counterrotating refiner employs symmetrical construction of motors and the refining section to provide thermal and mechanical stability. The refiner includes a base section for fixedly mounting one portion, the feed portion, of the apparatus and a second base section for mounting another portion of the refiner for movement axially of the apparatus on controlled bearing surfaces for inspection and maintenance, and to provide for axial motion of one end of the refiner to eliminate stress concentrations upon expansion due to an in-

crease in temperature. The refiner also employs structure for sealing nonparallel flanges of the refining chamber while maintaining the refining discs in a parallel relationship to prevent distortion of the frame of the refiner.

3,625,442

**STRAND TRANSFER EQUIPMENT FOR WINDING MACHINE**

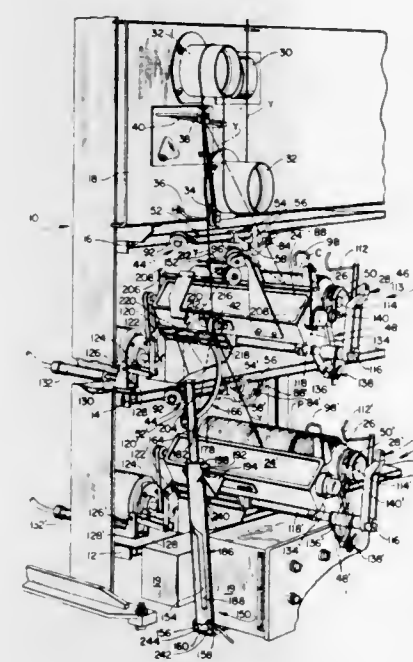
Joseph E. DiMeglio, Johnston, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed July 30, 1968, Ser. No. 748,792

Int. Cl. B65h 54/00

U.S. Cl. 242-18 A

9 Claims



A winding machine for automatically transferring a continuously advancing strand of yarn between upper and lower winding heads. In order to transfer winding of the yarn from the lower head to the upper head, a guide wheel is moved into engagement with the advancing strand and reroutes it into position for attachment to the upper head. Then a transfer arm is actuated and moves the rerouted yarn so that it is attached to the upper winding head for winding thereon, whereupon the yarn is cut and the tail of the cut yarn winds onto the lower head which may then be stopped and doffed. The strand of yarn is advanced downwardly from above the heads and in order to transfer the strand from the upper head to the lower head, a vertically moving arm first actuates a fanning interceptor which holds a run of the strand against traversing movement whereupon a guide wheel on the vertical arm engages this run of the strand and lowers it into position adjacent the lower head for engagement by a guide wheel which reroutes the advancing strand for subsequent engagement by a transfer arm and cutter, as previously described, whereupon the upper head may be stopped and doffed.

3,625,443

**BOBBIN WINDING MACHINE**

Ronald S. Knowles, Romeo, Mich., assignor to The Kemp Corporation, Armada, Mich.

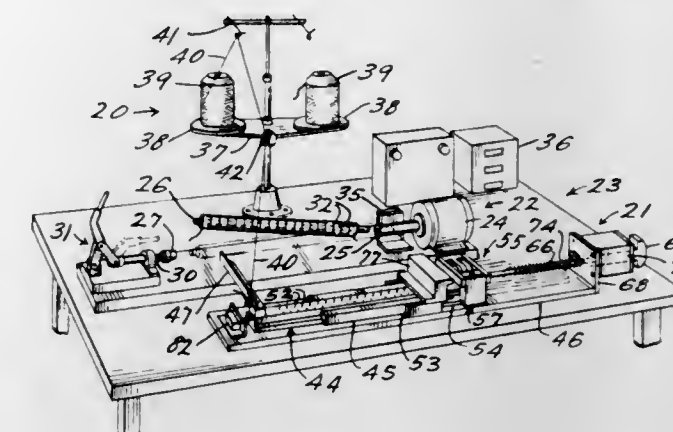
Filed July 25, 1969, Ser. No. 844,863

Int. Cl. B65h 54/12

U.S. Cl. 242-18 A

7 Claims

A machine for winding measured lengths of thread onto a series of identical bobbins or the like. The machine has a removably mounted arbor on which the empty bobbins are assembled in adjacency and which is rotated at high speed. A continuous length of thread is fed to the bobbins over a thread guide that slides along ways parallel to the axis of the arbor. When each bobbin is filled, a thread guide indexing



wound and then immediately to retract the thread guide one bobbin width to guide the thread onto the empty bobbin adjacent that bobbin just wound.

3,625,444

**THREAD SUPPLY APPARATUS FOR TEXTILE MACHINERY**

Charles George Hatay, Schaffhausen, Switzerland, assignor to Firma Fouquet-Werk Frauz & Plank, Rottenburg/Necker, Germany

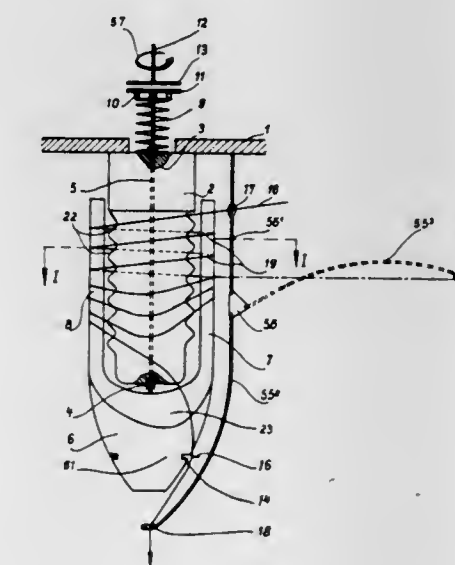
Filed July 29, 1970, Ser. No. 58,978

Claims priority, application Germany, Jan. 28, 1970, P 20 03 760.9

Int. Cl. B65h 51/20

U.S. Cl. 242-47.01

30 Claims



A cylindrical nonrotating element has a spirally progressive track formed therealong. A forked member has two tines extending on either side of the cylindrical element, and rotatable therewith, as well as being axially movable. Thread is threaded around the forked member, engaging in the spiral track, and then delivered to a using station, such as a knitting position. Upon rotation of the forked member, the thread will engage in the spiral grooves; the spiral grooves will cause spacing of the thread along the tines until an end position is reached at which point, if too much thread is wound along the tines, the thread will bunch up, causing increased axial pull, moving the forked member from the rotating thread supply; when a sufficient number of threads have been taken off the tines so that the axial pull will be overcome by a counteracting spring, the tines will again engage, causing rotation of the forked thread supply member to wind more thread on the tines. The drive can be external, or internal of the cylindrical member by individual motors, the tines can be supported from the bottom, or top of the cylindrical member and various constructions are shown.



3,625,445

**DRIVE SPOOL CONSTRUCTION**

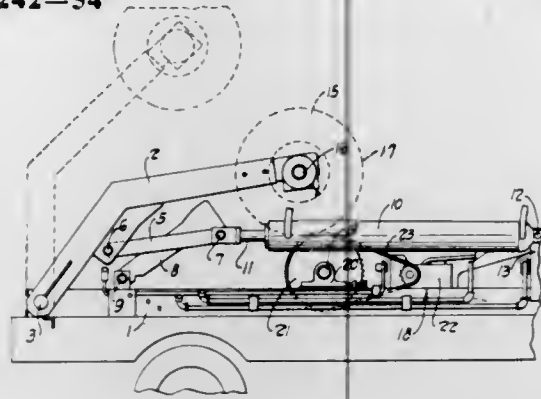
Fred C. Hall, 820 Sharon Park Drive, Menlo Park, Calif.

Filed June 17, 1969, Ser. No. 833,915

Int. Cl. B65h 75/00, 17/06

U.S. Cl. 242-54

2 Claims



The disclosure herein relates to reel driving mechanism and particularly to the actual drive arrangement which is intended to increase the life of the various components as to the usual phases thereof by making possible the adjustment of the actual drive wear surfaces with respect to reel end peripheries so that long life is obtained by shifting the wear surfaces to uniformly provide for the wear thereof. The arrangement is best availed of in a reel driving mechanism wherein the reel is lifted into position and by suitable arrangement possibly forcibly engaged with the friction drive surface, thus accentuating wear under some circumstances, but since the wearing surfaces are adjustable with respect to the drive imposed thereupon, such surfaces can be most usefully availed of and the lives extended thereby.

3,625,446

**FABRIC DISPENSER**

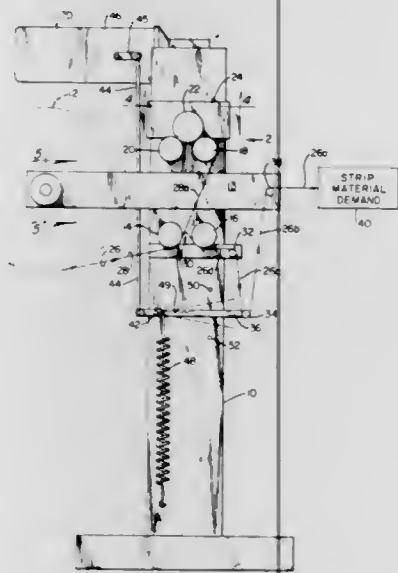
Frederick K. Floyd, 2050 S. Madison, Denver, Colo.

Filed July 11, 1969, Ser. No. 841,082

Int. Cl. B65h 17/02

U.S. Cl. 242-67.3 R

10 Claims



Apparatus for removing a flat strip of material from a flat strip of liner to which it is adhered and dispense the material under low and substantially constant outgoing tension irrespective of the velocity and acceleration of outgoing demand for the material, adhesiveness of the material, or diameter or width of a roll supply of same, characterized by a tension-establishing, spring-urged member which senses changes in velocity of the outgoing material and feeds the change signal to a variable-speed transmission to vary its speed accordingly to synchronize material velocity approaching and leaving the spring-urged member which remains within a range of motion to maintain substantially

constant tension. A liner stripping system is employed which varies the angle of wrap around a stripper roll which increases stripping force with increase in adhesiveness between the material and liner. A friction torque is also applied to a roll supply of the material and its liner which automatically varies with the change of weight resulting from reduction of diameter of the supply to maintain substantially constant tension in the material and liner leaving the supply and to prevent the supply from overrunning during deceleration. One example of the use of the apparatus resides in feeding the outgoing material to a variable-demand device, such as a machine for applying cover material to a power transmission belt.

3,625,447

**APPARATUS FOR CONTROL OF WEB TENSION IN MULTICOLOR PRINTING MACHINES**

Dietrich Hank, Leipzig, Germany, assignor to Veb

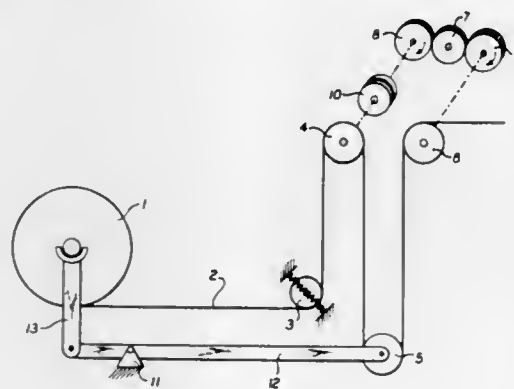
Druckmaschinenwerke Leipzig, Leipzig, Germany

Filed May 5, 1969, Ser. No. 821,709

Int. Cl. B65h 25/22

U.S. Cl. 242-75.43

1 Claim



An apparatus for damping of tensile stress variations and for control of the web tension on braked unwinding devices for webs of flexible material, as paper, plastic foils, and the like, which comprises a dancer roller disposed between a first feeding roller and a second feeding roller. The first feeding roller is arranged on the roller side and serves as a moment compensation device. The second feeding roller serves as a feeding device for the web. A gear is provided for driving the first feeding roller, and a slip coupling is operatively disposed between the first feeding roller and the gear.

3,625,448

**SCRAP TAKEUP**

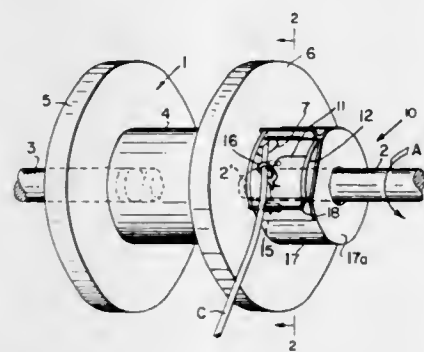
Rodney J. L. Griffiths, 4375 Avalon Street, Pierrefonds, Quebec, Canada

Filed Apr. 28, 1969, Ser. No. 819,566

Int. Cl. B21c 47/04; B65h 75/28

U.S. Cl. 242-78

9 Claims



Means for coiling cable and automatically separating defective cable at the leading end from the good remainder, comprising a rotatable main cable takeup reel and a rotatable auxiliary cable takeup reel coaxial therewith. Guide means permits the free passage of cable from the main to the auxiliary reel until good cable reaches the auxiliary reel, whereupon the two reels are rotated and the guide means entrains

the cable so that good cable is wound on the main takeup reel and defective cable is simultaneously wound on the auxiliary takeup reel.

loaded finger which engages a spring-biased plunger prior to complete unwinding of the hose.

3,625,449

**REEL-HOLDING STAND**

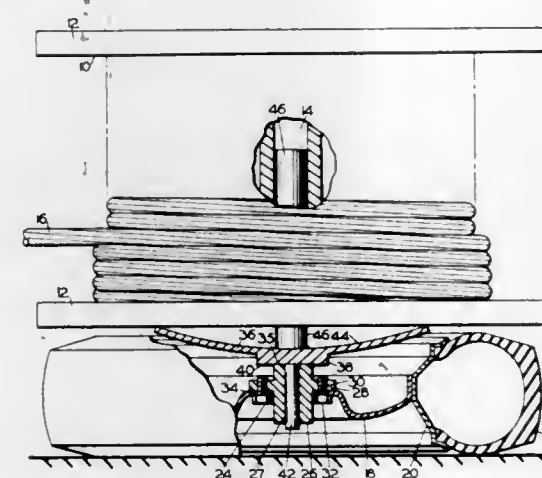
Perry E. Landsem, 45255 E. River Drive, Milwaukie, Ore.

Filed June 18, 1969, Ser. No. 834,351

Int. Cl. B65h 75/34

U.S. Cl. 242-85

2 Claims



The stand of the invention is intended to provide rotatable support for heavy reels such as reels of electric wire or telephone cable. The stand comprises a base having a peripheral tire member which serves as the ground-engaging member. A central socket member is removably secured to the base, and this socket member rotatably and detachably receives a spindle forming an integral part of a reel-supporting platform. A reel of wire or cable is adapted to be positioned flatwise on the platform, and the wire or cable can be freely unwound therefrom. The rotatable platform has an upwardly extending post for holding a reel on the platform. The base and inflated peripheral member may comprise a conventional wheel and tire.

3,625,450

**HOSE REEL WITH POSITIVE STOP**

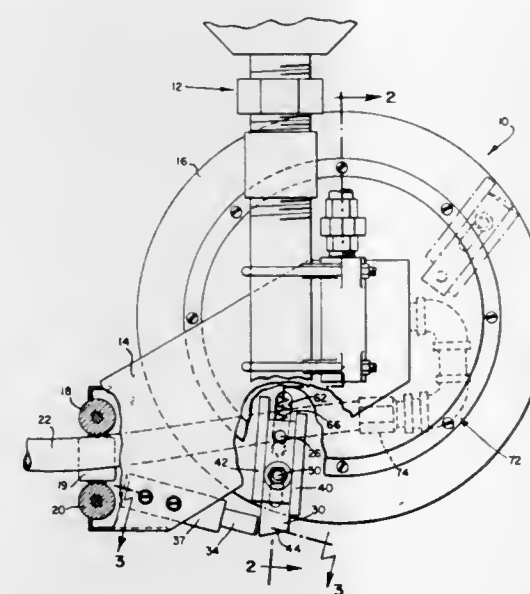
Otis S. Lloyd, Jr., Lansdale, Pa., assignor to William M. Wilson's Sons, Incorporated, Lansdale, Pa.

Filed Sept. 22, 1969, Ser. No. 859,896

Int. Cl. B65h 75/34

U.S. Cl. 242-86

7 Claims



A hose reel is provided with a mechanism for positively stopping the reel from turning and playing out the remainder of the hose and for absorbing the shock as the hose is stopped near its end. The mechanism comprises a spring-

3,625,451

**TEXTILE YARN CARRIER WITH IMPROVED STARTING MEANS**

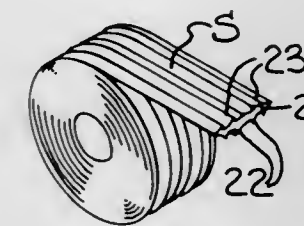
Clarence W. Anderson, Cheraw, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Sept. 11, 1969, Ser. No. 856,999

Int. Cl. B65h 75/28

U.S. Cl. 242-125.1

5 Claims



A textile yarn carrier comprising a core having a yarn-supporting surface and a yarn-receiving groove disposed in the supporting surface and extending at least partially around the core and a yarn catch insert mounted within the groove for facilitating starting of the winding of a package of yarn. Preferably, the insert comprises a base, a plurality of barbs extending outwardly from the base at an acute angle upwardly of the groove and engaging the core for securing the insert within the groove and a plurality of yarn-catching fingers extending outwardly from the base at an acute angle downwardly further within the groove to define a yarn pinch area between the base and each of the yarn-catching fingers.

3,625,452

**HOLDERS FOR BOBBINS IN SPINNING AND PREPARATORY MACHINES**

John Michael Noguera, London, England, assignor to Casablancas Limited, Salford, Manchester, England

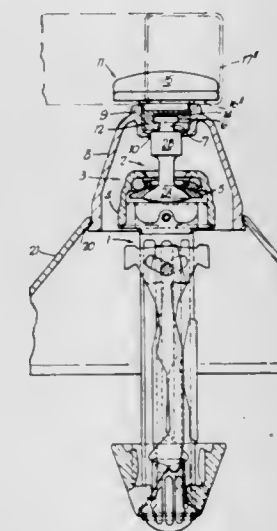
Filed July 6, 1970, Ser. No. 52,198

Claims priority, application Great Britain, July 9, 1969, 34,672/69

Int. Cl. B65h 49/02; D03J 5/08

U.S. Cl. 242-130.2

7 Claims



A bobbin holder and an associated suspension member for suspending the bobbin holder from a creel rail having a slotted base, the bobbin holder and the suspension member being connected together to form a unit that can be releasably attached to such a creel rail without disassembling the unit.



3,625,453

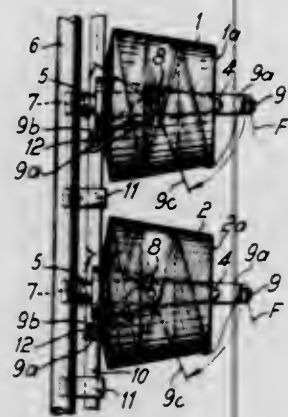
**DEVICE FOR READYING THREAD ENDS OF SUPPLY COILS IN A CREEL FOR TEXTILE MACHINES**  
Stefan Furst, 20 Peter-Nonnenmuehlen-Allee, Moenchengladbach, Germany

Filed May 7, 1968, Ser. No. 727,155

Claims priority, application Germany, May 13, 1967, R 46016

Int. Cl. B65h 49/02; D02h 1/00; D03j 5/08  
U.S. Cl. 242-131

7 Claims



Device for readying a thread end of supply coils arrayed in a creel for textile machines so that a respective end surface of the coils faces in a given forward direction includes a thread holder movably mounted for adjustment to a position in front of the end surface of a respective supply coil mounted in the creel in place of a previously depleted coil wherein the thread end of the space coil is accessible for insertion in the thread holder so as to be readied for subsequent processing, and, after removal of the thread end from the thread holder, to a position located outside of a geometric form defining a longitudinal extension of the peripheral surface of the respective supply coil.

3,625,454

**TAPE CARTRIDGE DEVICE**

Johan Van Der Maaden, and Hulbert Engel Van Lit, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

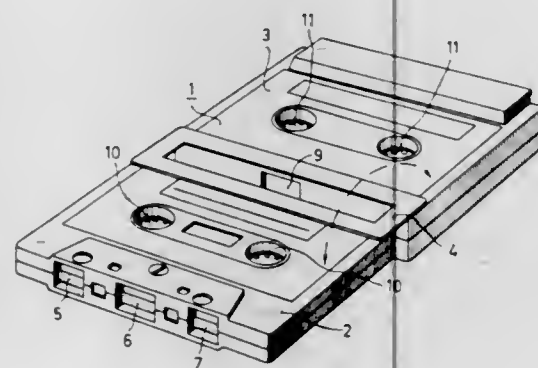
Filed Feb. 19, 1969, Ser. No. 800,429

Claims priority, application Netherlands, Feb. 23, 1968, 6802575

Int. Cl. G11b 23/10

U.S. Cl. 242-180

2 Claims



A tape cartridge device having two separate tape storing and carrier compartments, each compartment being provided with tape carrier means such as winding and unwinding cores. The separate compartments are disengageable one from the other and connected as by a hinge so that one of the compartments may be pivoted to a desired angle with respect to the other compartment. One of the tape carrier compartments is arranged for storing and playback of acoustical signals, while the other compartment is arranged for storing and playback and/or recording of optical signals such as on video tape or film. The separate compartments or tape magazines may be provided with means to synchronize the

playback and/or recording of the tape carried in each of the separate compartments. The hinged magazine arrangement is particularly suitable for use in an audio-visual recording and/or playback device.

3,625,455

**TAPE CASSETTE**

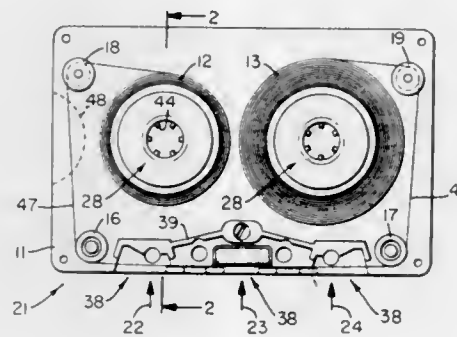
John H. Streets, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 19, 1969, Ser. No. 877,932

Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242-199

8 Claims



A tape cassette is provided with a precision baseplate for engaging the cassette-holding surfaces of a transport, a pair of precision ball bearing assemblies mounted solidly on the baseplate, and a pair of tape pack hubs mounted on the bearings and adapted to loosely engage the driving spindles of the transport, so that misalignment of the transport spindles can be tolerated while maintaining the tape packs precisely spaced from the walls of the cassette to avoid rubbing flutter and the abrasion production of oxide dust. The tape is guided with substantial lateral tolerance near the transducing and metering elements of the transport, but is precisely edge-guided near the tape packs. The guides are placed to increase the run of tape available for access.

3,625,456

**TEMPERATURE-COMPENSATED TAPE RECORDER DRIVE DIFFERENTIAL**

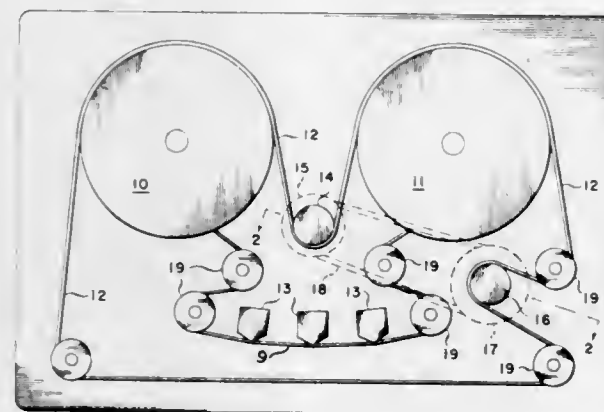
Frederick E. Hankins, Flemington, N.J., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 12, 1970, Ser. No. 45,768

Int. Cl. G03b 1/04

U.S. Cl. 242-192

10 Claims



The capstans or the driving pulleys of a magnetic tape recorder are made of different materials having different coefficients of thermal expansion, so that their effective diameters will change at different rates with temperature changes, in a direction to increase the speed differential with increasing temperature at a rate sufficient to compensate for the decrease in tensile modulus of the polyester tape backing. The effect achieved is a reduction of the peripheral speed of the slow capstan of a tape recorder with respect to the peripheral speed of the fast capstan with increasing temperatures.

3,625,457

**REEL-FEED TAPE DRIVE WITH VELOCITY COMPENSATION**

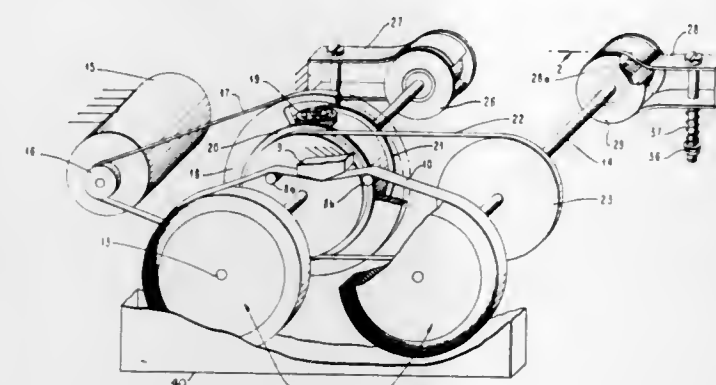
James A. Weldenhammer, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,066

Int. Cl. B11b 15/32; G03b 1/04

U.S. Cl. 242-201

3 Claims



A capstanless, reel-driven tape drive with little tape speed or recorded density variation. A differential mechanism has its carrier connected to a drive motor and its outputs connected respectively to the two reel spindles to obtain a solely reel-driven tape. A feedback for velocity control is obtained via the tensioned tape.

3,625,458

**DRIVE MECHANISM FOR SOUND RECORDING AND PLAYBACK DEVICES**

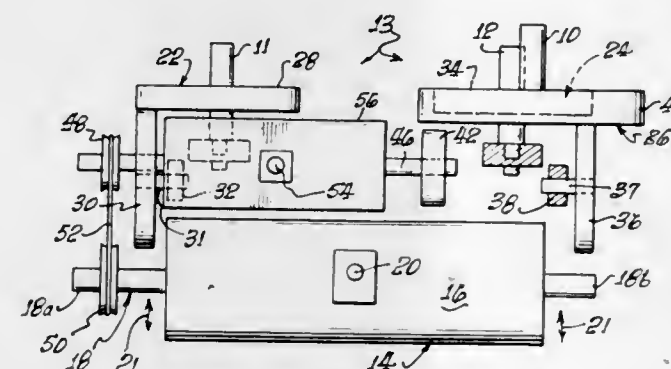
Peter Karl-Helz Fischer; Rudolph Herrmann Mesecke, and Hans-Joachim Schoening, all of Monterey Park, Calif., assignors to S. James Wild; Michael B. Montgomery, Los Angeles; Peter Karl-Helz Fischer, Monterey Park; Hans-Joachim Schoening, Monterey Park and Harold B. Guyer, Los Angeles, Calif.

Filed July 24, 1969, Ser. No. 844,573

Int. Cl. G11b 15/28, 15/30

U.S. Cl. 242-201

5 Claims



A compact drive mechanism for a tape recorder enabling the recorder to rapidly drive tape in a forward or a reverse direction or at a slower record and playback speed. The drive mechanism includes a motor having a double-ended drive shaft. A pair of friction clutch means is connected to forward and reverse tape-driving spindles of the recorder for selective coupling to opposite ends of the drive shaft to effect the rapid forward and reverse tape drive. A transmission means connects between one end of the drive shaft and the capstan of the recorder to turn the capstan at the record and playback speed. This occurs when the friction clutch couples the forward tape-driving spindle to the drive shaft. Thus, when the pinch roller of the recorder is engaged, the capstan drive overrides the clutch means of the forward tape-driving spindle causing it to slip and tape to be driven from a reel on the reverse tape-driving spindle to a reel on the forward tape-driving spindle at the playback and recording speed.

3,625,459

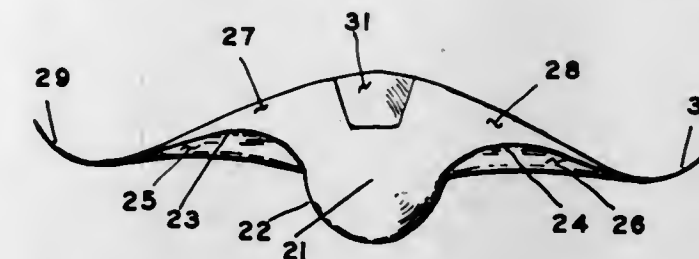
**AIRFOIL DESIGN**

Walter C. Brown, Box 278, Yeoh Road, Sparks, Md.  
Filed May 18, 1970, Ser. No. 38,006

Int. Cl. B64c 3/02

U.S. Cl. 244-35

4 Claims



A new delta-wing aircraft wherein airflow effectively alters geometry with airspeed to produce high lift at low speed and low-induced drag at high speed.

3,625,460

**ARRESTING DEVICE FOR AIRCRAFT**

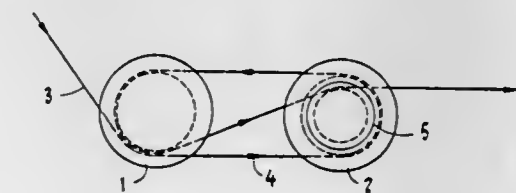
Per Borje Fonden, Hejdegatan 3, and Karl Ove Torgny Wandler, Elsa Brandstrom gata 5, both of Linköping, Sweden  
Filed Jan. 19, 1970, Ser. No. 3,767

Claims priority, application Sweden, Feb. 12, 1969, 1895/69

Int. Cl. B64f 1/02

U.S. Cl. 244-110 C

4 Claims



An arresting device for aircraft and which includes a band or cable connected to an arrestor, and which band or cable is stored in a magazine and is drawn therefrom during the arresting operation. The band engages a bollard that consists of at least two rotatable wheels or pulleys, at least one of the wheels or pulleys being coupled to a brake, the band pursuing a certain course in respect to the wheels or pulleys whereby during the arresting operation the band or cable is always drawn from an inner turn on one of the wheels, with the band leaving from that portion of said wheel which faces toward another of the wheels.

3,625,461

**LOAD-LANDING DEVICE**

Paul Francois Gulenne, Paris, and Paul Aime Lebagry, Les Clayes-sous-Bois, both of France, assignors to BERTIN & Cie, Plaisir, France

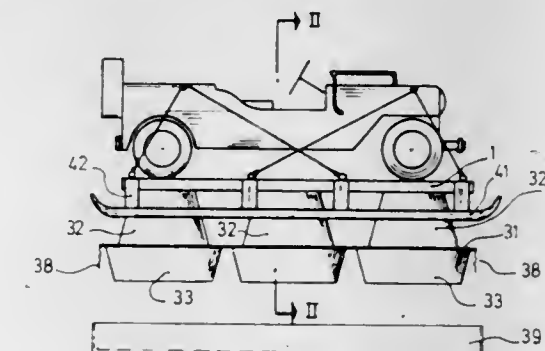
Filed Oct. 21, 1969, Ser. No. 868,018

Claims priority, application France, Oct. 23, 1968, 171003

Int. Cl. B64d 1/08

U.S. Cl. 244-138 R

7 Claims



A load-landing device wherein a load-carrying plate dropped from an aircraft carries underneath its lower surface



substantially frustoconical inflatable bags which are carried in their turn by an intermediate plate provided with perforations through which the bags communicate with the inside of skirts depending from the intermediate plate. Thus when the device is dropped, the volume confined within the skirts is fed with air out of the bags so that the cushions formed within said confined volumes sustain the device and allow it to move over the ground as long as it has not collapsed completely, after which it can progress over the shoes incorporated with it.

3,625,462

## ARTICLES OF FURNITURE

W. Noel Jordan, Sentinel Works, New Road, Sheerness, England

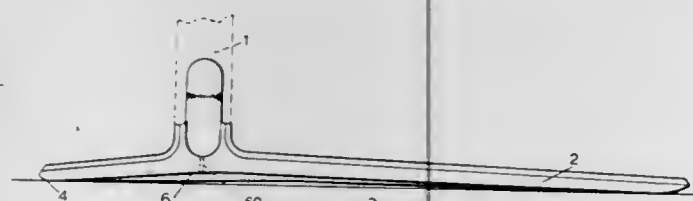
Filed May 11, 1970, Ser. No. 36,100

Claims priority, application Great Britain, May 29, 1969, May 29, 1969, June 25, 1969; 27,141/69, 27,142/69, 32,159/69

Int. Cl. A47b 13/06

U.S. Cl. 248—188.8

3 Claims



The present invention relates to furniture joints and ground-engaging i.e. foot, members of furniture associated with such joints. There is provided a joint in an article of furniture between two interengaging members, the joint having a first part with an H cross section elongated element and a second part including a pair of bosses spaced apart by a distance generally equal to the width of the H central web. These joint parts are a push fit together and are bonded by a heat-treated resin adhesive. A ground-engaging member associated with one part of the joint is so curved that in an unloaded state only the end regions of the curve engage the ground whereas in a loaded state not only the end regions but also at least some intermediate regions engage the ground. There is also provided an improved method of making a part of the joint disclosed.

3,625,463

## UTILITY BRACKET FOR POWER POLES AND THE LIKE

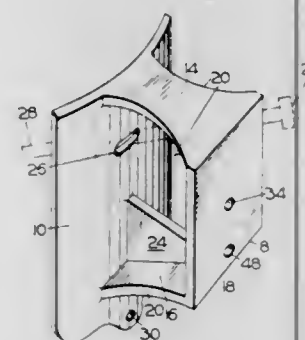
Julian W. Scholz, 6001 S.E. Laurel St., Portland, Oreg.

Filed Feb. 19, 1970, Ser. No. 12,636

Int. Cl. H01b 17/16

U.S. Cl. 248—221

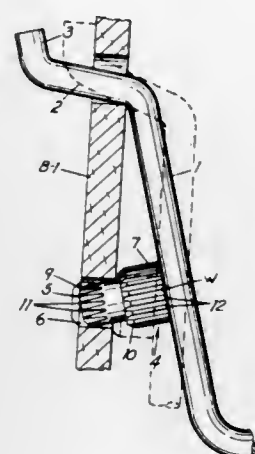
2 Claims



A utility bracket has a laterally curved base portion for securement to a power pole or the like. This base portion has an integral baseplate offset forwardly therefrom by upper and lower arms and arranged to support power pole equipment. The upper and lower arms have inwardly curved side edges arranged to receive conduit extending up the pole. The bracket is attached to the pole by suitable bolt means extending through the baseplate or if desired through both the baseplate and the support face as well as through equipment supported thereon.

3,625,464  
ARTICLE SUPPORT FOR APERTURED PANEL  
Harold J. Conran, Ravenna, Mich., assignor to Leigh Products, Inc., Coopersville, Mich.  
Filed July 10, 1970, Ser. No. 53,739  
U.S. Cl. 248—223 Int. Cl. A47i 5/00

8 Claims



A vertical wire has an inclined bend at its upper end with an upwardly extending tip to extend through and engage behind the holes in apertured panels of different thicknesses. A supporting stud is welded to a lower portion of the wire to engage in a lower hole in the board. The stud is stepped to provide a smaller rear portion engageable in smaller holes and a larger portion to fit in larger holes. The peripheries of both portions of the stud are axially serrated and their rear edges are tapered to bite into the edges of holes that vary from nominal sizes and facilitate penetration of the stud into the holes.

3,625,465

## MINE ROOF SUPPORTS

Hans-Wilm Heimburg, Recklinghausen, Germany, assignor to Gullick Limited, Lancashire, England

Filed Apr. 28, 1969, Ser. No. 819,781

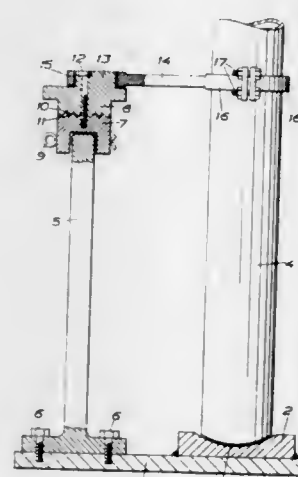
Claims priority, application Germany, Oct. 2, 1968, P 18 00

562.4

Int. Cl. E04g 25/00

U.S. Cl. 248—354 R

5 Claims



A mine roof support has a leg alignment device in the form of a resilient steady which extends from a baseplate and is connected at its upper end with the leg through a variable length device. The variable length device is an eccentric in the form of a pin on a plate rotatable and lockable on the top of the steady. The pin is connected by a connecting rod to the leg.

3,625,466  
VIBRATION ISOLATOR

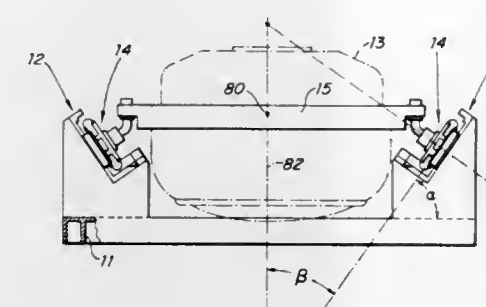
Philip Marshall, Lexington, and Joseph C. Boeggeman, Beverly, both of Mass., assignors to Marshall Research & Development Corp., Burlington, Mass.

Filed Aug. 20, 1970, Ser. No. 65,592

Int. Cl. F16f 15/04

U.S. Cl. 248—358 R

12 Claims



A vibration isolator suspension element for use in a vibration isolating system. The suspension element comprises first and second sets of parallel, spaced-apart U-springs which longitudinally extend at right angles and in parallel planes to one another. Means are provided for connecting the sets of U-springs in series relation as well as means for mounting the element to both a supporting structure and to a mass to be supported. The element is also provided with integral means for providing friction damping during both translational and rotational motion to which the mass may be subjected.

3,625,467

## MOVABLE SUPPORT DEVICE FOR AT LEAST ONE INSTRUMENT SERVING TO MEASURE THE DIMENSIONS OF AN OBJECT

Willy Schaerer, Terrassenweg 18, Bern, Switzerland

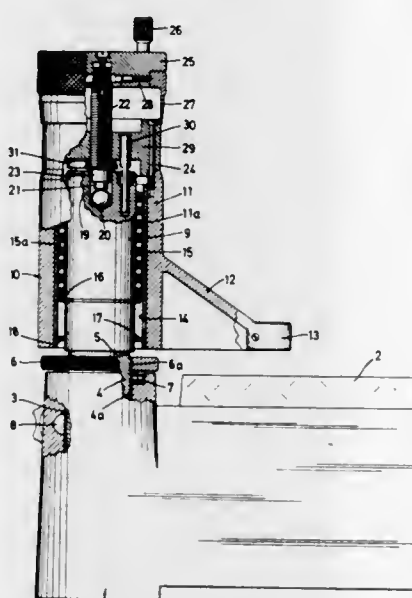
Filed Feb. 6, 1970, Ser. No. 9,269

Claims priority, application Switzerland, Feb. 17, 1969, 2342/69

Int. Cl. G01b 3/22

U.S. Cl. 248—405

11 Claims



There is disclosed a movable support device for at least one instrument serving to measure the dimensions of an object, which support device is of the type incorporating a base which carries an orientation or aligning plate and at which there is supported a movable column member. A freely disposed portion of this column member is cylindrical and carries a movable element which is provided with means for positioning at least a given measuring instrument with respect to the orientation plate. Furthermore, this element possesses a bore and by means of a sliding bearing equipped with a cage and prebiased balls is linearly guided at the freely

disposed cylindrical portion of the column member. According to an important aspect of the invention, a bushing or sleeve member is inserted in the bore of the movable element and adhesively secured and, further, possesses a perfectly smooth and cylindrical inner surface. This inner surface cooperates with the balls of the sliding bearing and the freely disposed portion of the column member, in order to insure for a perfect linear guiding of the movable element upon this column portion. In order to control the movements of this element with respect to the column member, there is further provided a mechanism which incorporates a support arrangement formed from at least two carbide metal parts having two surfaces in contact with one another, wherein of these two surfaces which contact one another of such two carbide metal parts one is formed to be substantially flat and the other spherical.

3,625,468

## PANEL FORM WITH REMOVABLE OVERHANG ABOVE WELL PORTION

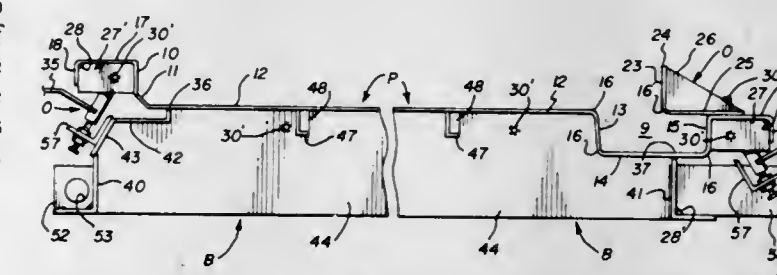
Gordon L. Marcott, 1365 Columbine St., Denver, Colo.

Filed Aug. 7, 1969, Ser. No. 848,167

Int. Cl. B28b 7/06

U.S. Cl. 249—98

6 Claims



A form for producing, by casting or molding as in concrete, a panel having a generally planar portion and a thicker portion at one edge, with a notch along the outer edge of the thicker portion. The form includes a plate conforming to one side and the edges of the panel, thus providing a well to form the thicker portion, with an adjustable overhang corresponding in contour to the notch. Reinforcement is readily placed in the mold, through the open space of the mold top. Lips extend outwardly from the opposite sidewalls of the plate to provide, respectively, striking surfaces with the upper edge of the overhang and a mounting position for the overhang. Flexing devices, which are connected between the base for the plate and the sidewalls, are mounted in a protected position beneath the lips, while the connections between the base and the underside of the plate, as by welding, are at positions spaced from the outer edges of the plate. The overhang is removable, as well as end plates which close the molding space. The end plates are removed and the overhang may be loosened before the edges of the plate are flexed to permit lifting of the cast panel from the mold, as after the concrete has initially set.

3,625,469

## APPARATUS FOR MOLDING SYNTHETIC RESINS

Haruo Nitta, and Naotoshi Sagawa, both of Yokkaichi-shi, Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Chiyoda-ku, Tokyo, Japan

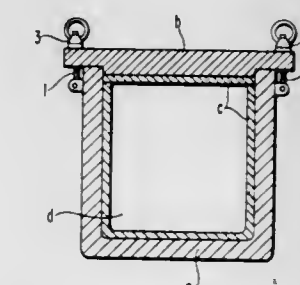
Filed Aug. 21, 1969, Ser. No. 851,914

Claims priority, application Japan, Aug. 21, 1968, 43/59395

Int. Cl. B29c 1/04

U.S. Cl. 249—115

3 Claims

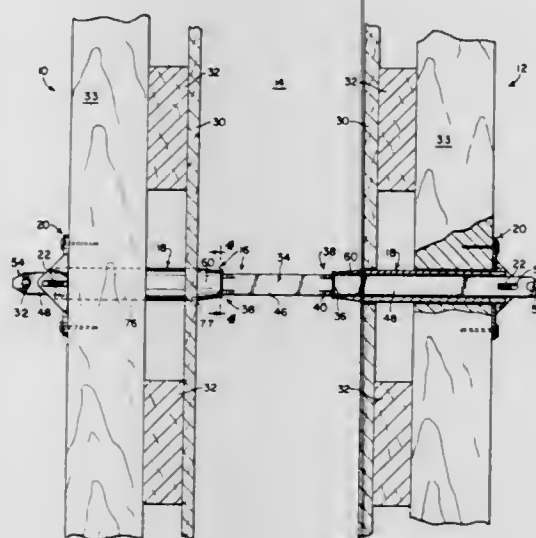


Molding a synthetic resin in a metallic mold provided with glassy layer, such as a porcelain enamel layer, on its molding



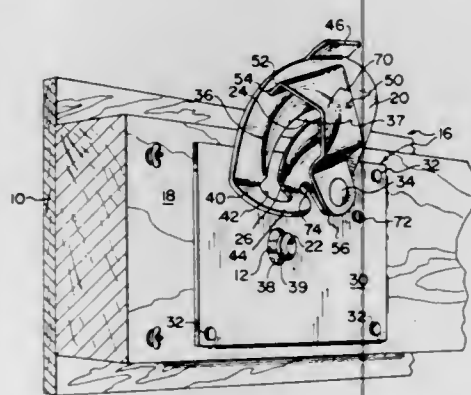
surface. The molded article is excellent in gloss and easily removed from the mold. The glassy layer is heat resistant and durable in adherence to the mold.

**3,625,470**  
**TIE ROD SECURING MEANS FOR A CONCRETE WALL FORM**  
James C. Shoemaker, Hampshire, Ill., assignor to Symons Mfg. Company, Des Plaines, Ill.  
Filed Feb. 25, 1969, Ser. No. 802,109  
Int. Cl. E04g 17/10  
U.S. Cl. 249-214



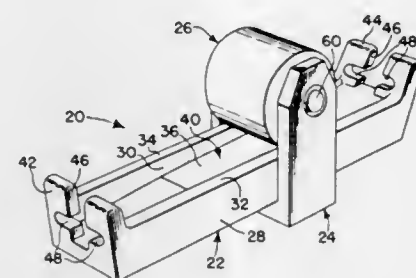
Securing means for a concrete wall form including a flat tie rod having means at its end sections for attachment to the form sides so that the medial section of the tie rod spans the form and becomes embedded in the concrete which is poured between the form sides, thus leaving outwardly projecting tie rod end sections. Elongated sleeve cones surround such tie rod end sections and have their inner ends drivingly connected to the same at regions in the immediate vicinity of the tie rod breakbacks, and also have torque-application facilities at their exposed outer ends so that the manual application of torque to the sleeve cones will impart a radial tear or shear effect at the breakbacks to thus free the projecting tie rod end sections.

**3,625,471**  
**WALER BRACKET FOR A CONCRETE WALL FORM**  
George J. Eriksson, Morton Grove, Ill., assignor to Superior Concrete Accessories, Inc., Franklin Park, Ill.  
Filed May 9, 1969, Ser. No. 823,308  
Int. Cl. E04g 19/04  
U.S. Cl. 249-219



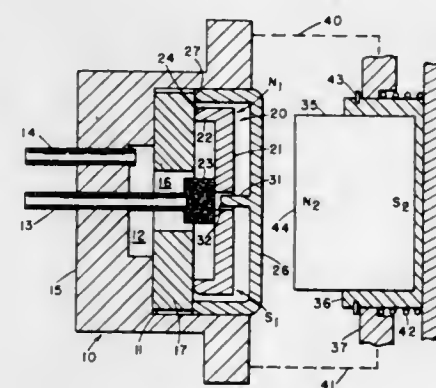
A self-contained waler bracket for attachment either directly to a waler or to a waler-reinforcing stud and including a helical split wedge which engages an inwardly facing shoulder afforded by an enlarged head on a tie rod for placing the tie rod under tension, and further including a wedge-spanning hoodlike strap which engages an outwardly facing reaction shoulder on the head to prevent inward movement

**3,625,472**  
**ROLLER CLAMP FOR FLEXIBLE TUBING**  
Frank J. Rychlik, Northbrook, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.  
Filed Sept. 19, 1969, Ser. No. 859,374  
Int. Cl. F16k 7/06  
U.S. Cl. 251-6



A variable clamp device for controlling fluid flow through resilient tubing. The clamp includes a body having a reference surface, a rigid roller maintained by resilient pressure in intimate contact against the reference surface and a channel having a varying depth relative to the axial extent of the reference surface for accepting the tubing with the roller acting on the tubing as the roller moves along the reference surface to compress the tubing within the channel.

**3,625,473**  
**PERMANENT MAGNET VALVE WITH MAGNETIC OPERATOR**  
Vladimir Ignatjev, Norwalk, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.  
Filed Apr. 16, 1969, Ser. No. 816,563  
Int. Cl. F16k 31/08  
U.S. Cl. 251-65



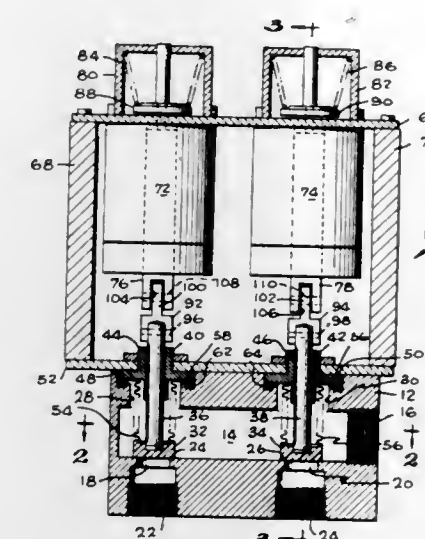
Valving means including a valving member which is movable between open and closed positions, and which is actuated between said positions by the respective interaction and noninteraction of two magnetic fields having axes that are disposed at an angle with respect to one another.

**3,625,474**  
**SOLENOID-ACTUATED HIGH-TEMPERATURE FLUID VALVES**  
Julius R. Juede, 5526 Cleon Ave., Los Angeles, Calif.  
Filed Nov. 21, 1969, Ser. No. 878,658  
Int. Cl. F16k 31/06  
U.S. Cl. 251-77

High-temperature valves are difficult to seal, and careful sealing is necessary, particularly where the fluid being valved is inflammable or, for other reasons, leakage must be minimized or eliminated. In several species disclosed herein, leakage is minimized by a properly prepared and surface-treated valve stem, for maximum smoothness and minimum wear, together with seals of organic material having the

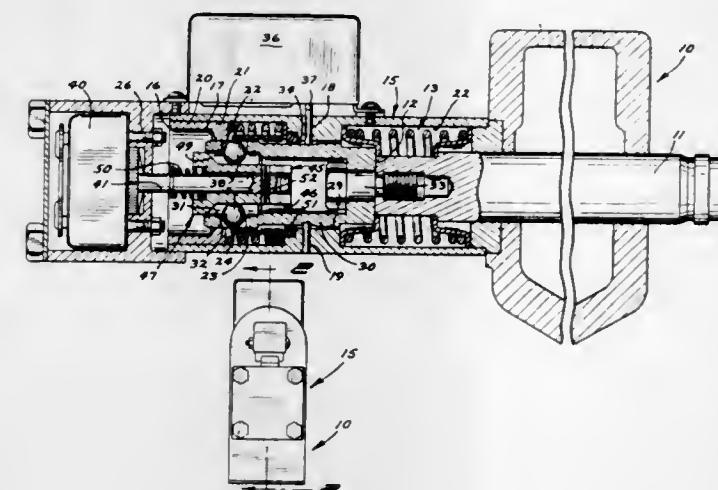
requisite temperature resistance bearing thereagainst. In the preferred species, a bellows is secured between the valve body and the valve disc, with the valve stem limited to axial

move radially outwardly into detenting engagement with the shoulder. The detenting engagement is released upon rotation of the detenting member so that the ball members may fall into the grooves in the enlarged end of the detenting member and allow the spool member to return to its normal axial position.



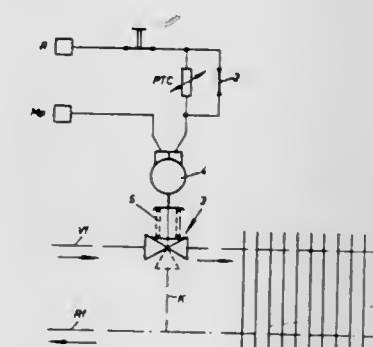
movement so complete sealing is effected. In a special case, the bellows is a synthetic polymer composition material with the bellows formed unitarily, on one end, with the synthetic polymer composition valve disc.

**3,625,475**  
**VALVE DETENT APPARATUS**  
William T. Stephens, and Ralph R. Ohnesorge, both of c/o Gresen Manufacturing Co., P.O. Box 1313, Minneapolis, Minn.  
Continuation-in-part of application Ser. No. 885,078, Dec. 15, 1969, now abandoned. This application May 11, 1970, Ser. No. 36,226  
Int. Cl. F16k 35/02  
U.S. Cl. 251-111



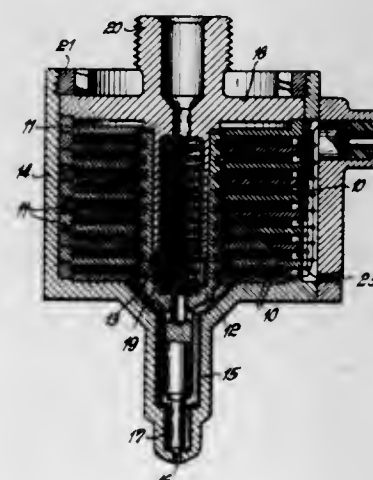
An improved detent mechanism for a hydraulic valve of the spool type. An extension of a valve spool includes a cage for axially displacing a plurality of ball members that are radially movable in a like plurality of apertures in the cage. A detenting member having a cylindrical body portion at one end and an enlarged, axially grooved cylindrical portion having an inclined ramp facing the cylindrically shaped portion and the valve spool is rotatably and reciprocally mounted with respect to the valve body. The detenting member is biased toward the valve spool and an inclined shoulder facing axially outwardly of the valve spool is provided radially outwardly of the normal position of the enlarged end of the detenting member. As the spool is moved toward the detenting member, the apertures are in radial registration with the enlarged cylindrical end portion of the detenting member. Engagement of the ball members with the ramp portions moves the detenting member axially to allow the ball members to

**3,625,476**  
**VALVING ARRANGEMENT**  
Hans Meier, Remscheid, Germany, assignor to Joh. Vaillant KG., Remscheid, Germany  
Filed Oct. 22, 1969, Ser. No. 868,411  
Claims priority, application Germany, Dec. 23, 1968, P 18 16 558.7  
Int. Cl. F26k 31/02  
U.S. Cl. 251-129



A valve operator includes an electric motor moving the valve in one direction and working against a spring which moves the valve in the other direction. The energizing circuit for the motor includes an on-off switch and a temperature-dependent semiconductor. The semiconductor is connected to provide graduated energization of the motor during one of the valve movements. In one embodiment the semiconductor is in parallel with the switch and has a positive temperature coefficient. In another embodiment the semiconductor is in series with the switch and has a negative temperature coefficient. In the latter embodiment a second switch is in parallel with the semiconductor and this switch is normally open, but is closed after the motor is energized and upon its moving the valve to the fully open position.

**3,625,477**  
**MAGNETIC VALVE WITH GROOVED ARMATURE SURROUNDED BY DISCRETE DISC-SHAPED ANNULAR WINDINGS**  
Wilhelm Vogel, Stuttgart-Bad Cannstatt, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany  
Filed Apr. 7, 1970, Ser. No. 31,046  
Claims priority, application Germany, Apr. 18, 1969, P 19 19 708.1  
Int. Cl. F16k 31/06  
U.S. Cl. 251-137



A magnetic valve has a housing provided with an aperture and a valve member movable in the housing between two



positions in which it respectively opens and blocks the aperture. An armature of ferromagnetic material is connected to the valve member for movement with the same and provided with a predetermined number of axially successive outer circumferential grooves. Winding means cooperates with the armature for moving the same when energized and has a number of discrete disc-shaped annular windings surrounding the armature, this number corresponding to the predetermined number of grooves in the armature. Each of these windings constitutes a discrete electromagnet whose magnetic field acts upon the armature.

3,625,478

## DUAL-ACTION BALL VALVE

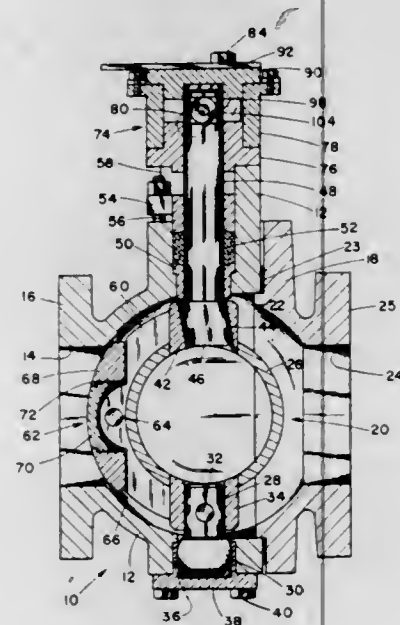
Henry R. Killian, Greensburg, Pa., assignor to Walworth Company, New York, N.Y.

Filed Oct. 7, 1969, Ser. No. 864,422

Int. Cl. F16k 5/20

U.S. Cl. 251-163

2 Claims



A rotatable valve structure, such as a ball or plug valve, wherein the plug working surface may be tilted into sealing engagement with the seat. A camming surface on the upper shaft of the rotary member slidably engages a complementary surface on the rotary member to produce transverse movement of the rotary valve member in response to axial movement of the shaft. Hence, the valve closure surface may be turned to a face-to-face position relative to the seat and then, in response to axial movement of the camming shaft, it is tilted and pressed into firm seating engagement.

3,625,479

## TOUCH CONTROL REGULATOR

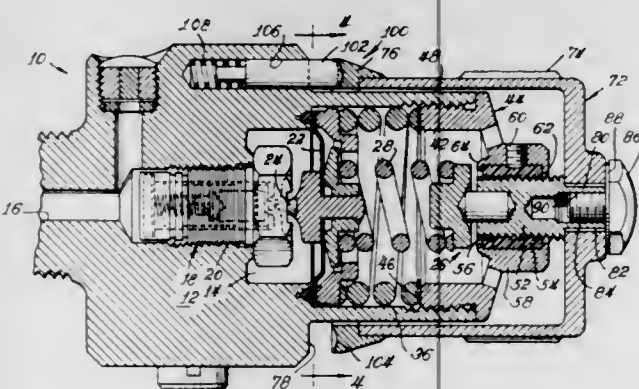
George L. Hammon, Oakland, Calif., assignor to Chemetron Corporation, Chicago, Ill.

Filed Jan. 9, 1971, Ser. No. 1,729

Int. Cl. F16k 35/04

U.S. Cl. 251-288

21 Claims



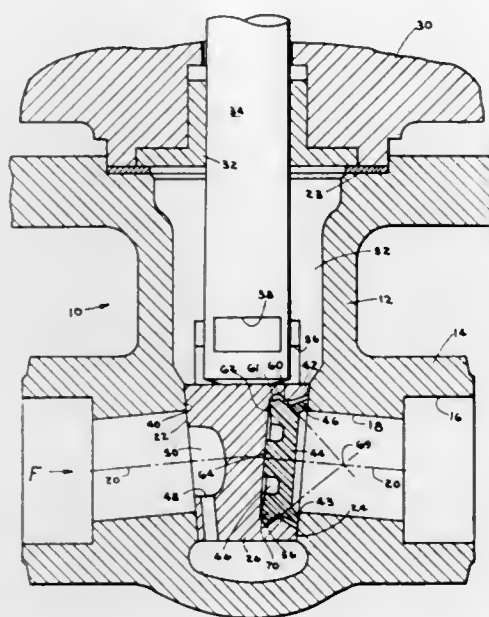
A gas pressure regulator has a touch-responsive knob or cap permitting reasonably accurate intermediate adjustment of the flow rate without reference to calibrated markings.

3,625,480  
TEMPERATURE COMPENSATED PRELOADED SEAL  
Pieter F. Hoos, Greensburg, Pa., assignor to Aloyco Incorporated, Linden, N.J.  
Continuation-in-part of application Ser. No. 758,462, Sept. 9, 1968, now abandoned. This application Mar. 17, 1970, Ser. No. 20,234

Int. Cl. F16k 3/30

U.S. Cl. 251-326

7 Claims



A valve seal assembly wherein a circular recess in the valve closure member accommodates a normally resilient circular seal member with a relatively narrow annular ridge around the outside of the front face to seal against the opposing working surface. Because of a central axial protuberance, the back of the seal engages the bottom of the recess only at the central portion in absence of distortion. However, an internal shoulder in the recess engages a radial shoulder around the seal member to rotate the sealing ridge about the protuberance toward the back of the seal recess so as to preload the seal in the nature of a Belleville spring washer. The internal shoulder in the recess is frustoconical with its projected apex located on the recess centerline and on, or outside of, the valve closure surface.

3,625,481

## SELF-LOCKING VALVE ASSEMBLIES

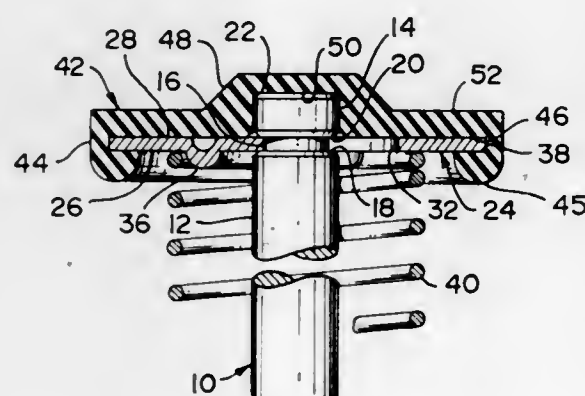
William D. Rattan, Bellflower, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 25, 1969, Ser. No. 879,725

Int. Cl. F16k 21/00

U.S. Cl. 251-356

16 Claims



Self-locking valve assemblies including a resilient valve facing having a peripheral edge gripping the outer rim of a backup plate and a central portion engaging the head of a valve stem, the backup plate having a keyhole slot therein for receiving the head of the valve stem and permitting the valve stem to be centrally disposed with respect to the backup plate when a neck of the valve stem is aligned with the slot.

backup plate. Various embodiments include backup plates having arcuate and radial strengthening ribs, L-shaped keyhole slots and keyhole slots having a link with a small width and a valve stem having a small diameter sliding portion and a larger diameter alignment portion.

3,625,482

## STAPLE REMOVER

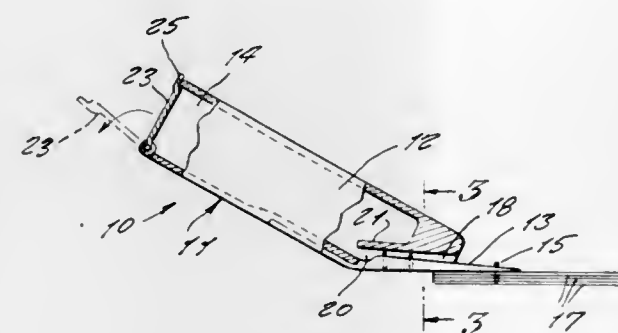
Charles F. Viel, III, Wilmington, Del., assignor to Samuel V. Abramo, Wilmington, Del., a part interest

Filed Nov. 3, 1969, Ser. No. 873,444

Int. Cl. B25c 11/00

U.S. Cl. 254-28

5 Claims



A device for removing the staples from papers stapled together, and the device including a staple storage chamber within which the used staples may be retained so to prevent the same from scattering about, and the storage chamber having a pivotally openable door so as to empty the used staples into a refuse receptacle.

3,625,483

## AUTOMATIC LEVELING SYSTEM FOR BLAST HOLE DRILLS AND THE LIKE

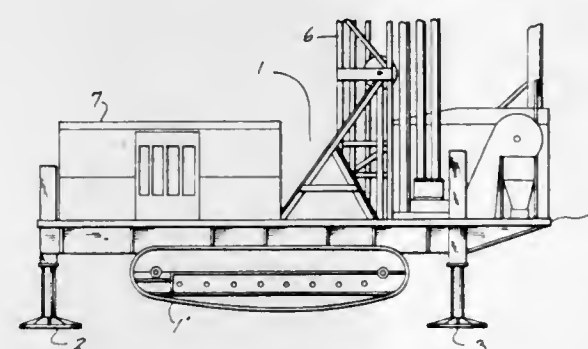
Thomas A. Stoner, Brookfield, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Feb. 24, 1970, Ser. No. 13,689

Int. Cl. B60s 9/02

U.S. Cl. 254-86 H

5 Claims



An automatic system for leveling a blast hole drill during raising and lowering includes a front jack on the longitudinal axis of the machine and a pair of rear jacks which straddle the longitudinal axis and define a transverse axis. An operating fluid line for the jacks is connected to a first proportioning valve which is controlled by a first level sensor operative along the longitudinal axis. The proportioning valve apportions flow between the front jack and the two rear jacks and alters the flow ratio as necessary to keep the machine level on the longitudinal axis. A second proportioning valve controlled by a second level sensor operative along the transverse axis is interposed in that output of the first valve which leads toward the two rear jacks. It apportions the flow between the two rear jacks to level the machine along the transverse axis. This sequential apportioning of fluid flow is used to level the machine and keep it level as it is raised and lowered to and from a working position in which it is supported by the jacks.

3,625,484

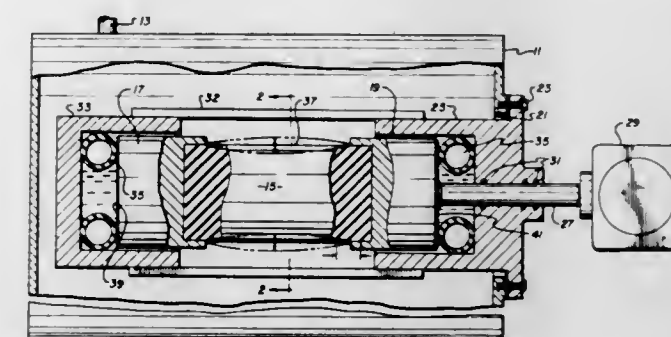
## MONOPOLE ELASTOMERIC RESONATOR

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.  
Continuation-in-part of application Ser. No. 666,398, Sept. 8, 1967, now Patent No. 3,544,073. This application June 16, 1969, Ser. No. 833,293

Int. Cl. B06b 1/16, 1/20

U.S. Cl. 259-1

7 Claims



A device for radiating elastic pressure pulses into a liquid container which comprises a preferably cylindrically shaped body of elastomeric material. A heavy mass is connected to each end of the cylinder of elastomeric material, each mass being further surrounded with a cylinder such that the mass acts as an isolated piston therein, with one mass being coupled to an orbiting mass oscillator.

3,625,485

## TEST TUBE ROCKER AND ROTATOR

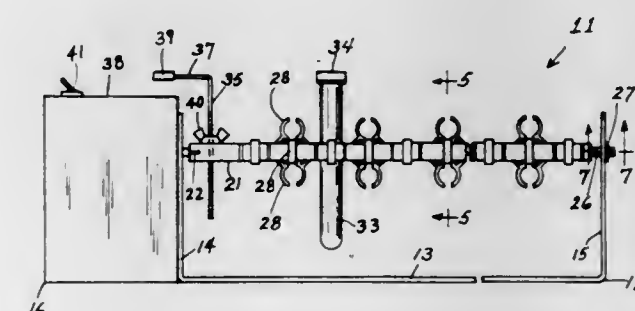
Stanford L. Adler, Monsey, N.Y., assignor to Justin J. Shapiro, Berkeley, Calif.

Filed Sept. 25, 1970, Ser. No. 75,613

Int. Cl. B01f 1/100

U.S. Cl. 259-56

10 Claims



A rotating or rocking rack device for test tubes or vials. The rack device consists of a support on which a shaft is rotatably mounted, the shaft having clips for supporting test tubes or vials. A bidirectional motor is mounted on the support and is connected directly to the shaft. The shaft has an arm which can be adjusted to engage the housing of the motor, causing the motor to oscillate the shaft, or it can be adjusted to clear the housing, whereby the motor will rotate the shaft continuously in one direction.

3,625,486

## MULTIPLE-PILLAR ELASTOMERIC RESONATOR

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.  
Continuation-in-part of application Ser. No. 666,398, Sept. 8, 1967, now Patent No. 3,544,073. This application June 16, 1969, Ser. No. 833,294

Int. Cl. B06b 1/16, 1/20

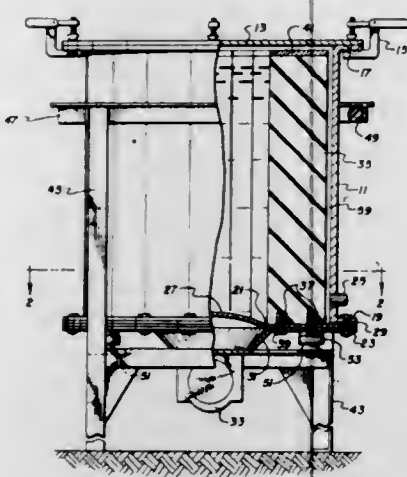
U.S. Cl. 259-72

9 Claims

A device for radiating elastic pressure pulses into a liquid container which comprises a tank for containing a liquid



therein having an orbiting mass oscillator coupled outside the bottom surface of the tank and a plurality of elastomeric pil-



lar elements affixed to the bottom surface of the tank extending within the tank about its circumference.

3,625,487

**PLACING OF CONCRETE**

Harry Spragg, Chesterfield, England, assignor to Markham & Company Limited, Chesterfield, England

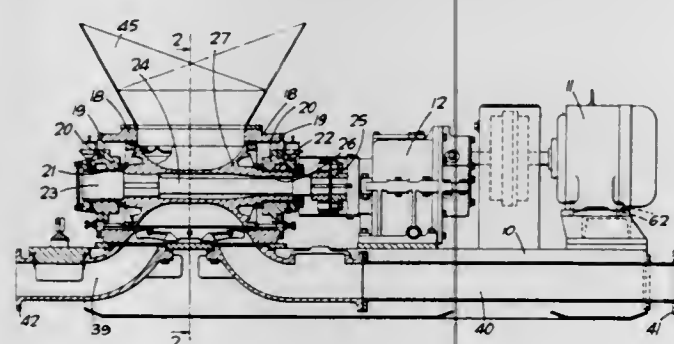
Filed Oct. 16, 1969, Ser. No. 866,860

Claims priority, application Great Britain, Nov. 13, 1968, 53,795/68

Int. Cl. B28c 7/04

U.S. Cl. 259—153

4 Claims



Apparatus for placing concrete comprises a duct to guide the concrete from a mixing station to a placing station, a pump to provide a continuous flow of air in the duct in the direction towards the placing station, a rotor at the mixing station to feed a dry concrete mix into the duct at a predetermined rate, and a ring of nozzles around the duct adjacent the placing station to inject water into the duct at a predetermined rate, the rates being set to provide a predetermined wet concrete mix.

3,625,488

**PROPORTIONING CONTROL SYSTEM FOR AN ASPHALT PLANT**

Robert E. Farnham, Naperville; Fredric W. Prill, Aurora; Donald W. Smith, Aurora, and James J. Plociennik, North Aurora, all of Ill., assignors to Barber-Greene Company, Aurora, Ill.

Filed Sept. 8, 1969, Ser. No. 856,007

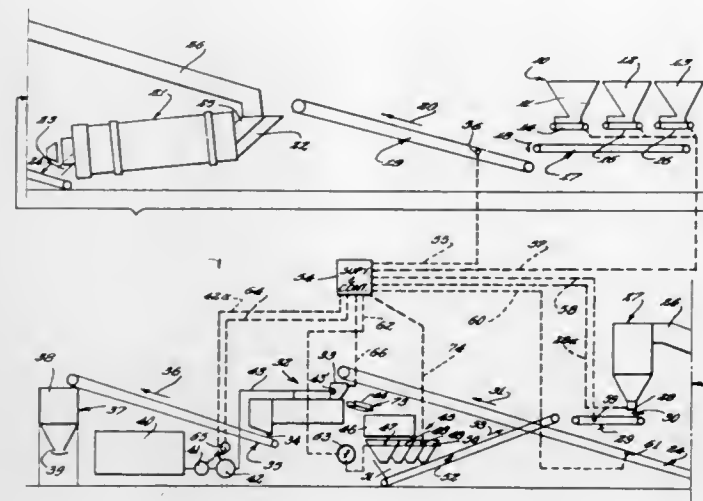
Int. Cl. B01f 15/04; G05d 11/02

U.S. Cl. 259—154

11 Claims

An asphalt plant employs a supervisory control system including weighing apparatus at different plant stations for signalling weights of flowing material in the plant for controlling the amount of material and bitumen flow. Contin-

uous supervision and control of asphalt production enables optimum operation of an asphalt plant utilizing fewer com-



ponents of production equipment than found in conventional asphalt plants.

3,625,489

**ROAD REPAIR MACHINE**

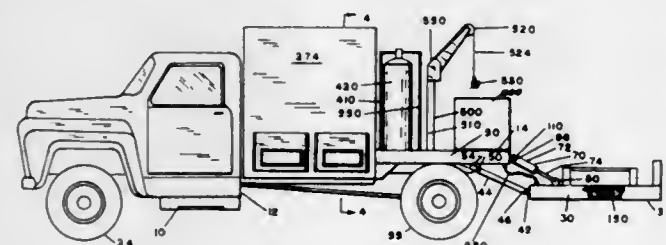
Arthur James Weaver, Omaha, Nebr., assignor to Infra-Radiant Corporation, Peoria, Ill.

Filed Aug. 7, 1970, Ser. No. 62,074

Int. Cl. B28c 1/22

U.S. Cl. 259—157

7 Claims



A road repair machine comprising a self-propelled wheeled vehicle having a heating hood assembly mounted at one end thereof, means for adjustably mounting the heating hood assembly so that it can be positioned at times in a lower operational position and at other times in an upper storage position, the vehicle having a hot-mix hopper, fuel tanks and a hoist mounted thereon.

3,625,490

**COMPACT UNIT FOR PREPARING CONCRETE**

Gustav Erik Hummelshøj, Bagsvaerd, Denmark, assignor to Thomas Schmidt, Bagsvaerd, Denmark, a part interest

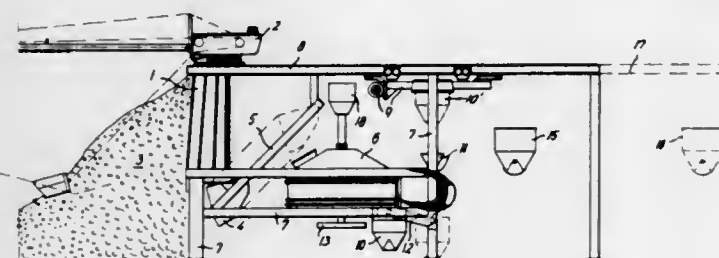
Filed Nov. 3, 1969, Ser. No. 873,434

Claims priority, application Denmark, Nov. 5, 1968, 5362/68

Int. Cl. B28c 7/16

U.S. Cl. 259—169

3 Claims



A compact concrete preparing unit having a frame which carries, besides a mixer and usual equipment for supplying cement, aggregates etc. to said mixer, an overhead runway

rail for a travelling hoisting winch with a concrete bucket to receive a charge of concrete from said mixer for transporting to a casting site adjacent a rail system, to which the runway rail of the compact unit may be connected after having been vertically adjusted to the level of said rail system.

3,625,491

**CLEANING APPARATUS FOR CONTAMINATED GASSES**

Masao Yokoi, Tokyo; Kiyoshi Uyama; Kenji Indo; Yoshiyuki Nakai, and Tetsuya Yokogawa, Yokohama-shi, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

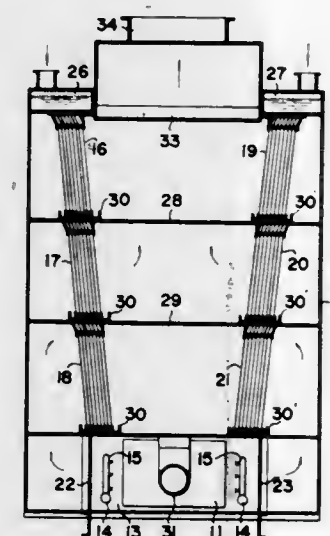
Filed Feb. 24, 1969, Ser. No. 801,665

Claims priority, application Japan, Mar. 1, 1968, Mar. 1, 1968; 43/15470, 43/15471

Int. Cl. B01d 47/12

U.S. Cl. 261—23

2 Claims



Gas-cleaning apparatus comprises a gas inlet port, a demister, a discharger port, and at least one liquid film-forming screen and liquid spray means disposed between the inlet port and screen, whereby gas passes through the liquid film-forming screen.

3,625,492

**CARBURETOR FOR SMALL INTERNAL COMBUSTION ENGINE HAVING AUTOMATIC CHOKE CONTROL**

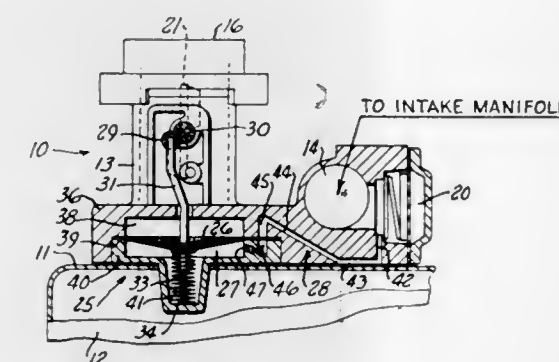
Joseph V. Reichenbach, Milwaukee; James L. Bartlett, Mequon; Paul R. Nau, Wauwatosa, and Robert G. Thompson, Milwaukee, all of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Apr. 16, 1969, Ser. No. 816,628

Int. Cl. F02m 1/14

U.S. Cl. 261—64 C

3 Claims



An automatic diaphragm-type control for the choke valve of a carburetor for small single cylinder engines by which the choke valve is continually and automatically adjusted solely by engine suction opposing a spring force, to provide the optimum air-fuel ratio for combustible mixture drawn into the engine, not only during starting but at all operating conditions.

3,625,493

**MODULAR HEATING UNIT FOR PROCESSING TIRE CORD FABRIC**

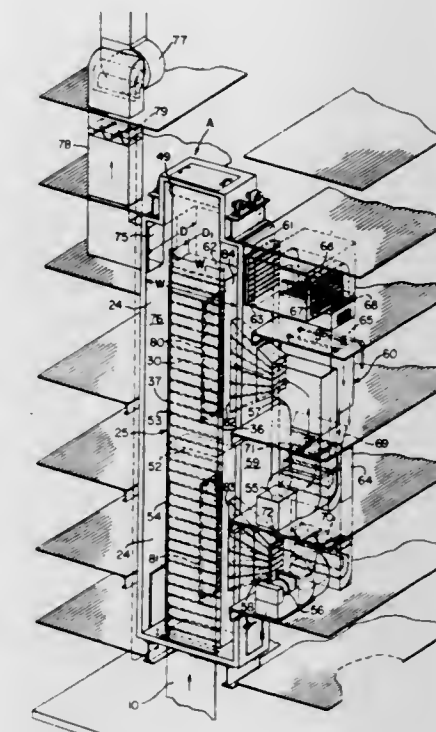
Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 20, 1970, Ser. No. 12,978

Int. Cl. F27b 9/28

U.S. Cl. 263—3

30 Claims



A large composite oven formed from a number of smaller individual modular heating units or ovens, which are disposed in side-by-side relation. The temperature of gas used in the processing of the fabric is individually controlled and regulated in each unit separate from the other units. A system is provided for moving a continuous sheet of tire cord fabric successively through adjacent modular units until the fabric is completely processed. The units each include an elongated heat chamber with means for forcibly impinging streams of temperature conditioned gas against the fabric as it moves in alternate directions through the heat chamber. A system is provided for conditioning gas and circulating it to the means for impinging the gas against the fabric.

3,625,494

**BLAST FURNACE STOVE**

John E. Allen, 606 Timber Lane, Lake Forest, Ill.

Filed Feb. 24, 1970, Ser. No. 13,329

Int. Cl. F23i 15/02

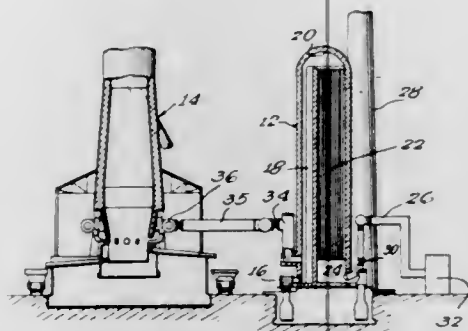
U.S. Cl. 263—19

20 Claims

A blast furnace stove or like air heater is provided in which the main stove wall, i.e., the ring wall, is an integral wall of poured refractory concrete having varying refractory properties to provide a varying degree of heat resistance increasing from the bottom to the top of the wall. The dome portion of the stove can conveniently be constructed of firebrick so that the stove shell or wall provides proper heat resistance in accordance with the temperature to which the various zones of the stove, and the checkers contained therein, are subjected. An inner liner of joined steel plates are used as a form for pouring the refractory concrete during construction of the refractory wall and plates can be retained in place if desired. An alloy steel structure supports the checker network within the stove and, as desired, heat exchange tubing or the like is provided in close proximity to the steel structure for cooling the structure below a temperature at which failure in the steel may occur. The heat exchange tubing is covered by a steel shield which provides a dead air space for further protection of the support structure. Heat exchange tubes are



also embedded in the masonry work covering a steel bottom plate of the stove and heat exchange fluid such as water is gasket which simply may be wrapped around the outer peripheries of the vessel and the closure unit and anchored in



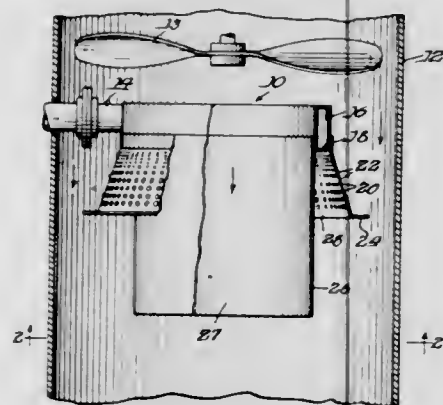
### 3,625,495 GAS BURNER

Guy R. Harter, New Castle, and Harry R. Maxon, Jr., Muncie, both of Ind., assignors to Maxon Premix Burner Company, Inc., Muncie, Ind.

Filed Mar. 9, 1970, Ser. No. 17,775  
Int. Cl. F231 9/04

U.S. Cl. 263-19 A

3 Claims



### 3,625,496

#### SEALING ASSEMBLY FOR HEAT-TREATING APPARATUS

June Richard Bornor, Rockford, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Nov. 3, 1969, Ser. No. 873,191

Int. Cl. F27b 3/02; F26b 25/00

U.S. Cl. 263-40 R

4 Claims

A gastight seal is established between a vessel and a closure unit of a heat-treating apparatus by an elongated flexible

gasket which simply may be wrapped around the outer peripheries of the vessel and the closure unit and anchored in place by a releasable clamping band adapted to contract around the gasket.

place by a releasable clamping band adapted to contract around the gasket.

### 3,625,497

#### PROCESS FOR ROASTING SOLIDS

Andre Alphonse Fritsch, Garches, and Max Hermant Hicquet, Boulogne-Billancourt, both of France, assignors to Societe D'Etudes Et de Recherches Scientifiques Et Minières, Malakoff, Hauts de Seine, France

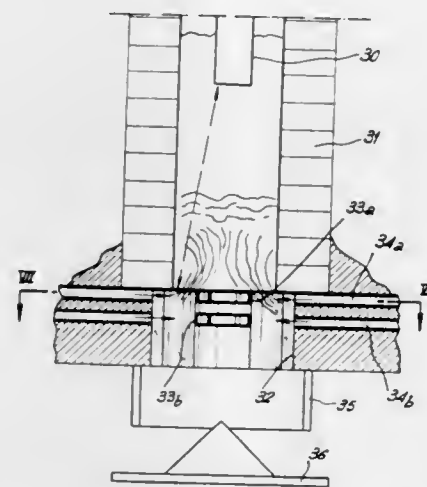
Filed July 28, 1969, Ser. No. 845,260

Claims priority, application France, July 30, 1968, July 10, 1969; 161153, 6923514

Int. Cl. F27b 1/10

U.S. Cl. 263-52

9 Claims



### 3,625,498

#### COOLING APPARATUS FOR CONTINUOUS CASTING PLANTS

Alfred Adamec, and Roland Leder, both of Vienna, Austria, assignors to Wiener Schwachstromwerke GmbH, Vienna, Austria

Filed Oct. 8, 1969, Ser. No. 864,829

Claims priority, application Austria, Nov. 15, 1968, A 11127/68

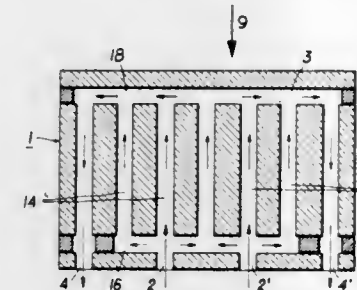
Int. Cl. C21d 9/56

U.S. Cl. 266-3

9 Claims

A continuous casting apparatus includes a mold for forming a continuous cast flat strip and which includes a plate cooler on each side, having means for circulating a cooling

medium therethrough. Each plate cooler includes at least one cooling media passage which has been admitted with a cooling medium for flow in a direction opposite the direction of the cast strip in a central zone, and then transverse to the direction of movement at the entrance end of the mold. The complete flow includes at least a partial flow along each side zone of the cooler in the direction of the travel of the strip. An alternate embodiment of the apparatus includes a single central flow passage for the cooling medium and a plurality of obliquely expanding transverse passages leading to end



### 3,625,499

#### FURNACE HAVING CONVEYOR WITH INTERMITTENT DRIVE

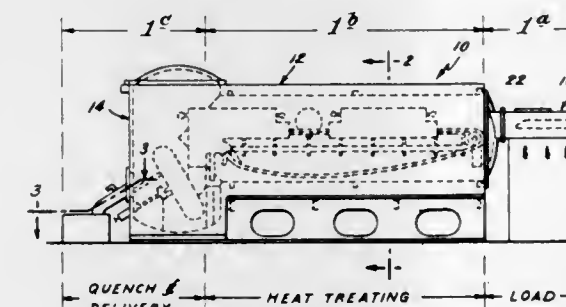
Herbert W. Western, Barrington; William H. Kimball, Providence, and Vincent Scotto, Warwick, all of R.I., assignors to C. I. Hayes Inc.

Filed Feb. 10, 1969, Ser. No. 797,832

Int. Cl. C21d 1/66

U.S. Cl. 266-4 A

18 Claims



A furnace construction for heat treating metallic articles and having a conveyor extending through the heating zone thereof, the conveyor being intermittently driven to provide for step-by-step advancement of the metallic articles through the heating zone.

### 3,625,500

#### METALLURGICAL FURNACE FUME EXHAUSTING

James D. Bell, Weirton, W. Va., assignor to National Steel Corporation

Filed Nov. 17, 1969, Ser. No. 877,197

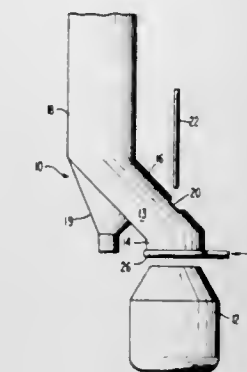
Int. Cl. C21c 5/42

U.S. Cl. 266-35

24 Claims

Metallurgical furnace fume exhaust structure has membrane walls assembled from finned, watercooled, metal tubes. Studs are mounted on the walls in a pattern for retaining and supporting a layer of slag which is splashed from the furnace, deposited on the walls, and solidified by the cooling fluid. The slag is accumulated to form a continuous protective

layer covering the portions of the walls which are subject to most severe deterioration by action of the exhaust fumes. A



coating of corrosion-resistant metal protects the tubes from attack by the slag.

### 3,625,501

#### REINFORCED RUBBER SHEAR PAD

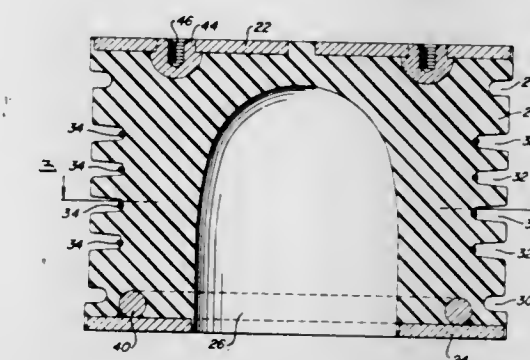
Richard D. Hein, 179 Shady Lane Drive, and Jerry D. Stringfellow, 880 Cambridge Drive, both of Wabash, Ind.

Filed Dec. 15, 1969, Ser. No. 884,930

Int. Cl. F16f 7/12; B61g 7/12

U.S. Cl. 267-153

16 Claims



### 3,625,502

#### POWER SPRING WITH KEEPER AND BRIDLE

Robert E. Joerres, Bristol, Conn., assignor to Associated Spring Corporation, Bristol, Conn.

Filed Apr. 20, 1970, Ser. No. 30,182

Int. Cl. F16f 1/06

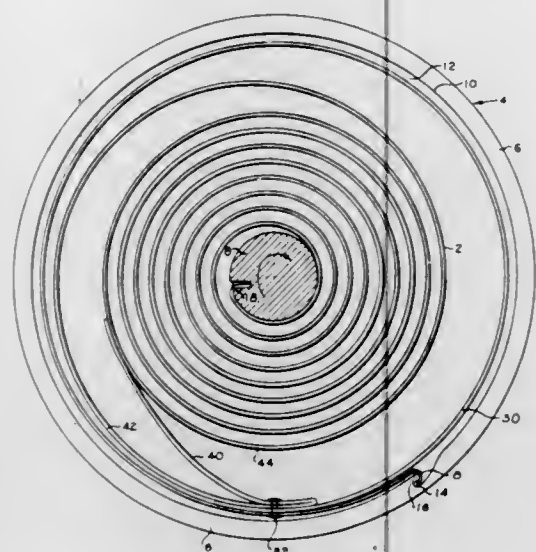
U.S. Cl. 267-167

4 Claims

A spiral power spring has a keeper comprising an external annular band formed of spring steel having overlapping ends. The outer end of the power spring is reverse bent and the reverse-bent part is positioned between the outer and next



inner spring convolutions to form a bridle. The overlapping ends of the keeper, the outer spring convolution and the entire weight of the door) turn the door to a horizontal position, reverse sides through the use of a turntable, and then



reverse-bent end part are connected together by a rivet or other connecting means.

3,625,503

## WORKPIECE HOLDER

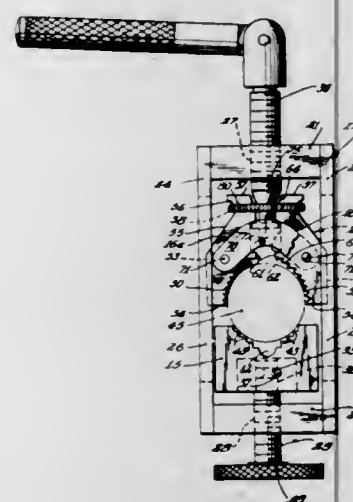
Emery L. Hall, Hinsdale, Ill., assignor to Ram Tool Corporation, Chicago, Ill.

Filed Sept. 18, 1969, Ser. No. 859,015

Int. Cl. B25b 1/08

U.S. Cl. 269-234

5 Claims



A workpiece holder or vise having opposed movable workpiece-grabbing jaws, the upper jaw consisting of two members pivotably connected by a common linkage. Each member has jaw teeth movable towards and away from the teeth of the other member whereby when the upper jaw is forced against the workpiece, the teeth exert independent pressure against the workpiece and attempted rotation of the workpiece in the jaw causes the jaw teeth to squeeze together against the workpiece.

3,625,504

## TILTING DOOR TABLE

Garvie Walker, Rt. #4, Box 877, Lufkin, Tex.

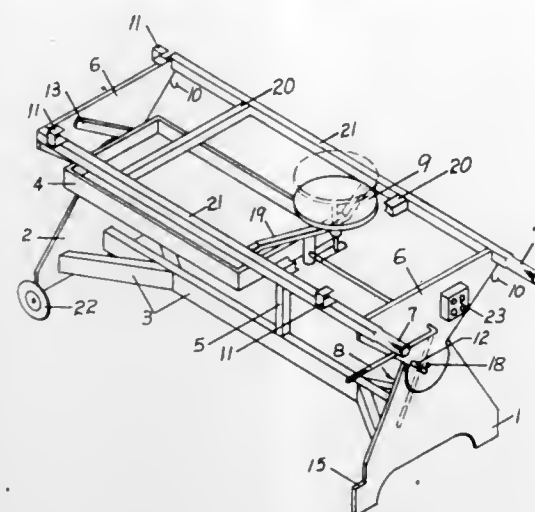
Filed Dec. 10, 1969, Ser. No. 870,233

Int. Cl. B25j 5/00

U.S. Cl. 269-55

2 Claims

A worktable relating to the act of simplifying the handling of doors while machining of hinge and lock recesses and conveying same to its installation location by one man. This device allows the door to be placed in a vertical position on its edge while machining one edge then with the use of a counterbalancing spring (which keeps one from lifting the



place the door back in a vertical position to machine the other edge. After machining is accomplished, the door can be rolled on this device to its installation location.

3,625,505

## MACHINE FOR ERECTING CARTONS

Robert F. Lense, Rockford, Ill., assignor to Riegel Paper Corporation

Original application Feb. 5, 1968, Ser. No. 703,135, now

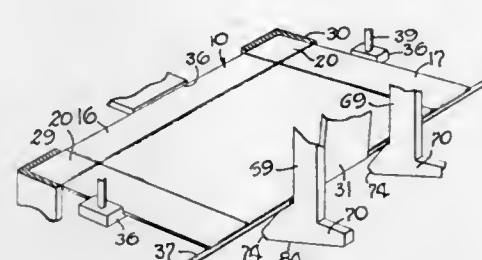
Patent No. 3,504,596. Divided and this application Dec. 4,

1969, Ser. No. 882,097

Int. Cl. B65h 3/08, 5/16

U.S. Cl. 271-14

5 Claims



Flattened cartons are opened into erected positions by a setup and control unit as the cartons are drawn downwardly from a magazine into a transfer station by a transfer device. Thereafter, the cartons are shoved laterally out of the transfer station and onto a conveyor by a pusher and, as an incident to such shoving, are shifted into and latched in over-center positions by the setup unit in order that complete control of the cartons may be maintained without danger of the cartons reassuming their flattened conditions during their transfer to the conveyor. A drive mechanism reciprocates the transfer device up and down between the transfer station and the magazine and operates with a differential action to cause the transfer device to dwell for a relatively long interval just below the cartons in the transfer station thereby to eliminate the need for precisely controlling the time of release of the cartons from the transfer device.

3,625,506

## METHOD AND APPARATUS FOR DIFFERENTIATING THE TOP FIBROUS WORKPIECE FROM A STACK OF FIBROUS WORKPIECES AND FOR SEPARATING THE DIFFERENTIATED WORKPIECE FROM THE STACK

Herman Rovin, East Norwalk, Conn., assignor to Ivanhoe Research Corporation, New York, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,769

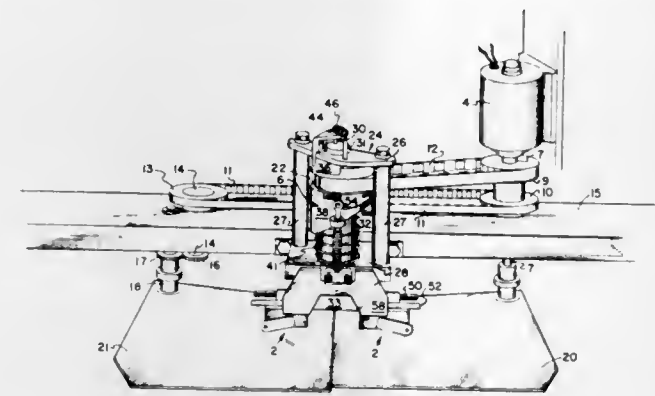
Int. Cl. B65h 3/22

U.S. Cl. 271-18

34 Claims

A method and apparatus for differentiating the top fibrous material workpiece from a stack of fibrous material work-

pieces and for separating the differentiated workpiece from the stack which operates reliably over long periods of time. A plurality of workpiece gripping means have a plurality of barblike members located thereon, the barblike members including stop surfaces on the lowest extremity and material or fiber-mass engaging elements on the outer extremity. The fiber-mass engaging elements on the barblike members on one of the gripping means extend outwardly in one direction while the fiber-mass engaging elements of the barblike members on another gripping means extend outwardly in the opposite direction. Drive means actuate the plurality of gripping means causing them to make depressed contact on the top workpiece and bulge up or mound up the surface of the material of the workpiece around the fiber-mass engaging



elements and to move relative to one another causing the fiber-mass engaging elements to engage the bulge of the material thus entering the mass or body of the material of the top workpiece and stretch or place under tension that portion of the material of the workpiece between the gripping means. The drive means causes relative movement of the gripping means away from the stack while continuing to engage the mass and the remainder of the top piece. A separator plate means moves between the top workpiece and the remainder of the stack to complete the differentiation of the top workpiece from the stack. The plurality of gripping means move from the gripping position back to the initial position to release the material and stripping means strip the gripping means from engagement with the mass of the top workpiece.

3,625,507

## AUTOMATIC SHEET FEEDER

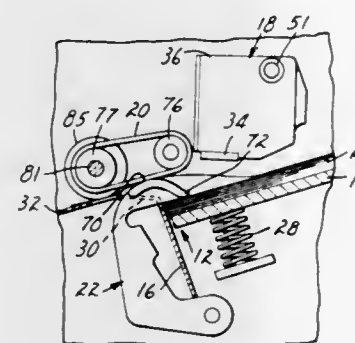
Donald B. Lucius, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 24, 1969, Ser. No. 869,125

Int. Cl. B65h 3/20

U.S. Cl. 271-33

6 Claims



An automatic sheet separator and feeder in which an end of the uppermost sheet in a stack of sheets supported on a bottom wall of a tray is lifted over an abutment wall of the tray into contact with a driven member and a shoe is moved to position its toe over the stack of sheets to separate the lifted sheet from the remaining stack of sheets and its sole engaged with a driven member to place the lifted end of the sheet in driving engagement with the driven member to feed the sheet from the stack of sheets.

3,625,508

## CARD-FEEDING APPARATUS

Yasuo Shiragai, Odawara-shi, and Mitsunori Oka, Kokubunji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

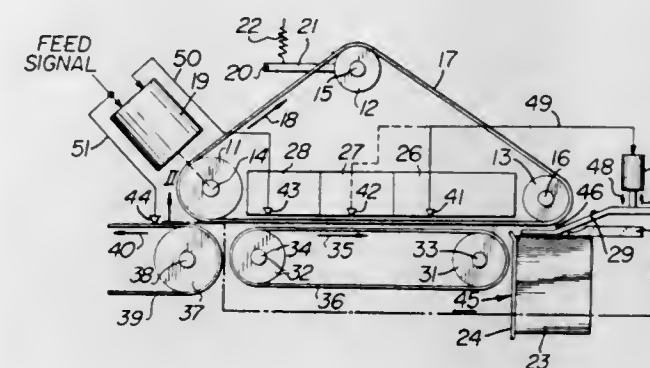
Filed May 23, 1969, Ser. No. 827,195

Claims priority, application Japan, May 24, 1968, 43/34734

Int. Cl. B65h 3/12

U.S. Cl. 271-34

9 Claims



A card-feeding apparatus operative to hold individual cards stationary in a standby position intermediate of a card-feeding path after being drawn out from a hopper, and immediately thereafter feeding the individual cards in response to a card-feed command or the like.

3,625,509

## CALIPER MECHANISM FOR LAPPED SHEETS FED TO A PRINTING PRESS OR THE LIKE

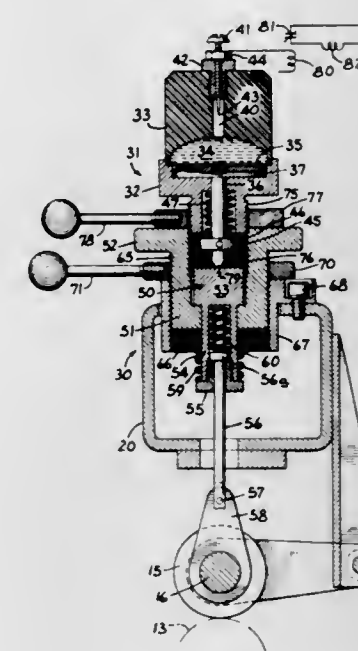
Clayton C. Claybourn, Northbrook, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 2, 1970, Ser. No. 86,188

Int. Cl. B65h 43/04

U.S. Cl. 271-57

20 Claims

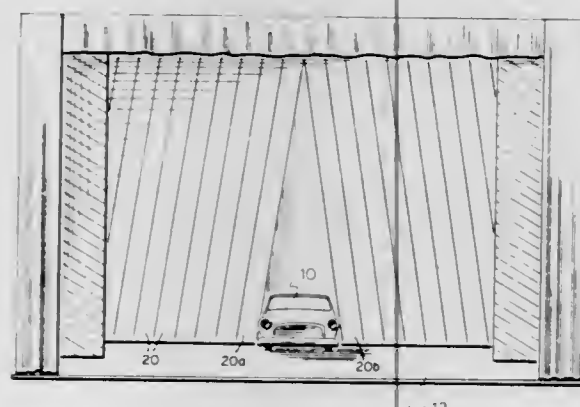


A caliper mechanism for lapped sheets which uses, as a sensor, a chamber filled with conducting liquid and enclosed by a diaphragm which is acted upon by roller riding on the moving sheets. Extending from the chamber is a neck having a contact at its upper end, the cross section of the neck being only a small fraction of the area of the diaphragm so that as the roller rises a column of liquid rises in the neck at an amplified rate for making of contact. An individual sensing mechanism is distinguished by use of a cylindrical mount which is secured to supporting framework and which, in turn, serves to support a cylindrical sensing unit, the members being threadably telescoped together to permit separate adjustment of normal roller position and the roller displacement necessary to cause contact. In the preferred construction two such mechanisms are coupled to separate rollers ar-



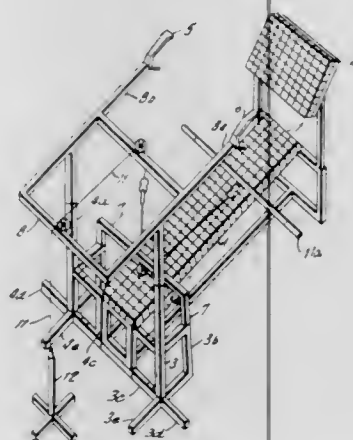
ranged end-to-end, each mechanism having a series of contacts at progressively higher level. Corresponding contacts in the two units are connected, as pairs, to output signal lines by logic circuitry so arranged that no signal is produced as long as the rollers occupy substantially the same level within the range of maximum anticipated thickness. At the end of each series is a final contact which bypasses the logic circuitry and which is capable of producing a signal for stopping the conveyor when the maximum anticipated thickness is exceeded.

**3,625,510**  
**THEATRICAL SCREEN FOR COMBINING LIVE ACTION AND PROJECTED PICTURES**  
Paul Szigety, 170 Winnick Ave., Las Vegas, Nev.  
Filed May 28, 1970, Ser. No. 41,209  
Int. Cl. A63j 5/02  
U.S. Cl. 272-21



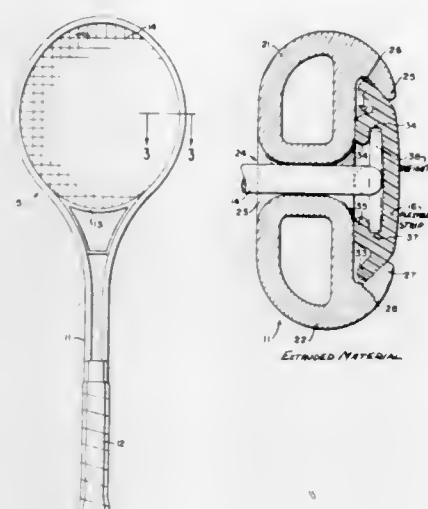
A theatrical screen for reflecting projected images and through which objects may pass comprises a plurality of substantially vertically extending elongated elastic strips the upper ends of which strips are secured to a frame while the lower ends are attached to movable guides. The guides are located within or cooperate with a guide channel and may be moved along the guide channel which extends laterally across a stage platform. A large object such as a vehicle or the like may be moved through the screen between a pair of parted elastic strips which thereafter will return to their normal substantially vertical position.

**3,625,511**  
**MULTIPURPOSE EXERCISING DEVICE**  
Willy Renneemann, Laves-Street no: 82, 3 Hannover, Germany  
Filed Feb. 17, 1970, Ser. No. 12,038  
Claims priority, application Germany, Feb. 19, 1969, P 19 08 220.3  
Int. Cl. A63b 21/06, 23/00  
U.S. Cl. 272-58



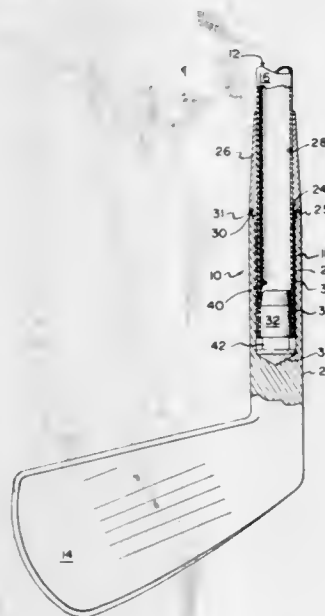
A combined sport apparatus including a flat bench, with an inclined arm support, elevated dumbbell supports and a weight-lifting pulley and line arrangement.

**3,625,512**  
**EXTRUDED RACKET HAVING TWO SEAMLESS HOLLOW TUBES FORMED WITH AN INTERCONNECTING WEB**  
Peter A. Latham, and Paul E. Brefka, both of LDA Inc., 39 Commercial Wharf, Boston, Mass.  
Filed Jan. 26, 1968, Ser. No. 700,776  
Int. Cl. A63b 49/02, 49/04, 49/12  
U.S. Cl. 273-73 C



A racket is made of an aluminum extrusion having two seamless hollow tubes formed with a web of thickness that is more than twice the wall thickness of each tube and is drilled at intervals for receiving the racket strings. The cross-sectional dimension of the extruded racket in a direction perpendicular to the stringing plane is greater than the dimension parallel to the stringing plane. The outside portion of the extrusion is formed with upper and lower grooves for receiving a strip of flexible material that functions for improved balance and weight control and protecting the strings from abrasion, dirt and moisture. The flexible strip may function to help balance and control the weight of the racket through its own weight, supplemented, if necessary, by weights that it may carry.

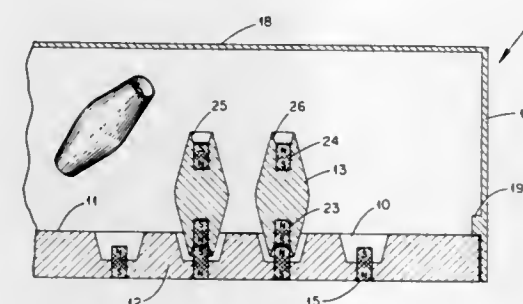
**3,625,513**  
**HEAD-TO-SHAFT CONNECTION FOR GOLF CLUB**  
James E. Ballmer, Cincinnati, Ohio, assignor to Brunswick Corporation  
Filed Aug. 2, 1968, Ser. No. 749,675  
Int. Cl. A63b 53/02  
U.S. Cl. 273-80.5



A head-to-shaft connection for a golf club wherein the end of the golf club shaft is inserted in the bore in the club head hosel and initially positioned therein by means of radial

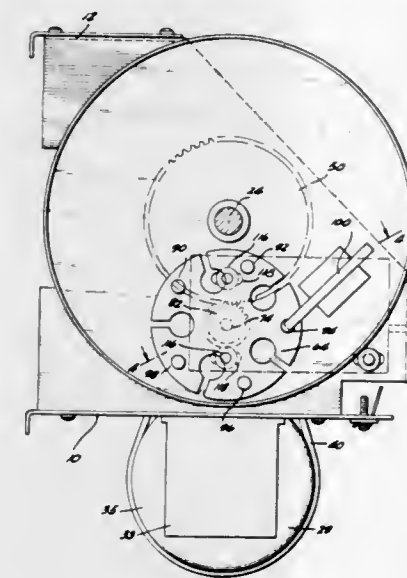
spacer elements, the shaft being secured in the bore by suitable cementitious means. After the cementing means sets, it also holds the club shaft in the desired position.

**3,625,514**  
**GAME BOARD WITH MEANS FOR PREPLACING PLAYING PIECES**  
Carsten M. Haaland, 259 East Drive, Oak Ridge, Tenn.  
Filed Aug. 13, 1970, Ser. No. 63,506  
Int. Cl. A63f 9/06  
U.S. Cl. 273-95 R



A game of skill of the type where playing pieces are moved on a playing board wherein the playing pieces are preplaced in a starting position by shaking the board to cause the playing pieces to be reoriented on the board until the proper position is attained and thereafter maintaining the piece in those proper positions by magnetic means associated with the positions and the playing pieces. A transparent removable cover prevents loss of the playing pieces during shaking and permits viewing the position of playing pieces. Thus, in addition to the skill of playing the game has been added the skill and chance of prepositioning the playing pieces.

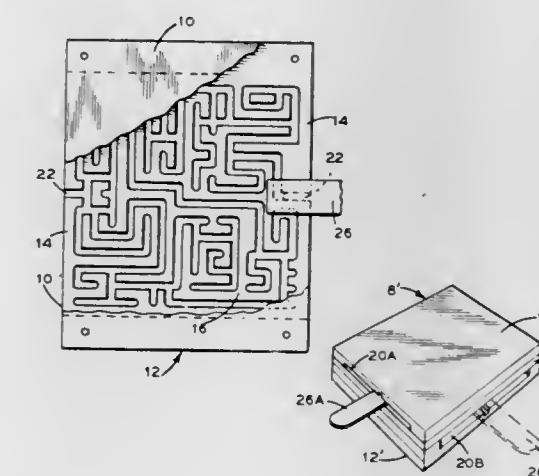
**3,625,515**  
**RANDOM GENERATOR**  
Carl D. Calos, Northridge, and Larry Lloyd Main, North Hollywood, both of Calif., assignors to Centaur Mine Computer Devices, Inc., New York, N.Y.  
Filed June 2, 1969, Ser. No. 829,183  
Int. Cl. A63f 5/04  
U.S. Cl. 273-143 C



A random generator is described which includes a plurality of rotatably mounted indicia reels. A stopping disc is mounted to rotate with each reel and has a plurality of equally spaced magnetic slugs disposed about the circumference thereof. An electromagnet is placed in close proximity of each stopping disc and adapted to be randomly energized to engage one of said plurality of magnetic slugs. The stopping disc is adapted to rotate at a rate faster than the in-

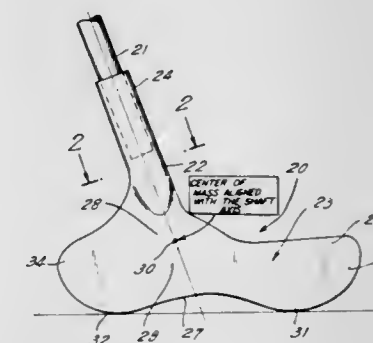
dicia reel. Adjustment is provided between the stopping disc gear and corresponding gear of an indicia reel.

**3,625,516**  
**INVISIBLE MAZE PUZZLE**  
Martin J. Handweiller, and Kenneth R. Wisner, both of New York, N.Y., assignors to Black Tulip Toy Company, Inc., New York, N.Y.  
Filed Jan. 26, 1970, Ser. No. 5,803  
Int. Cl. A63f 9/06  
U.S. Cl. 273-153 R



A maze puzzle relying on the sense of touch of the player comprises a flat container of opaque material. On the inner surfaces of the top and bottom of the container are mazes. Slots in the opposite sidewalls of the container permit the passage of a flat rod, having a stud on one end thereof, into the pathways of the mazes so that depending on how the rod is inserted a different maze puzzle is available.

**3,625,517**  
**GOLF PUTTER WITH CENTER OF MASS ALIGNED WITH SHAFT AXIS**  
John E. Durnack, 88-56 195th St., Hollis, N.Y.  
Continuation-in-part of application Ser. No. 712,849, Mar. 13, 1968, now abandoned. This application Nov. 10, 1969, Ser. No. 875,454  
Int. Cl. A63b 53/04  
U.S. Cl. 273-167 F



A golf club which includes a shaft having an upper end with a gripping surface and a lower end adapted to be mounted to the shank portion of a head. The head has the shank portion extending upwardly from its upper surface intermediate the ends thereof. The head also has a striking face thereon and an arcuate recess on its undersurface along with an upward projection extending from its upper surface. The recess and the projection are proximal to the substantially vertical axis and the extension thereof of the shank part of the head.



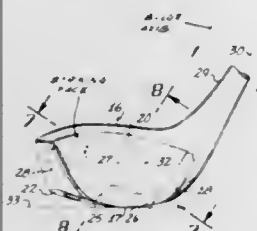
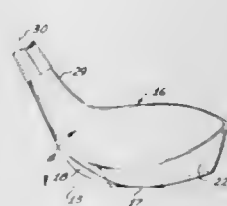
3,625,518

**GOLF CLUB HEAD WITH COMPLEX CURVATURE FOR THE SOLE AND/OR THE STRIKING FACE**Karsten Solheim, 10834 North 21st Avenue, Phoenix, Ariz.  
Filed May 23, 1969, Ser. No. 827,212

Int. Cl. A63b 53/04

U.S. Cl. 273-175

7 Claims



A golf club is provided with a uniquely curved sole for assisting the golfer in keeping the face of the club pointed in a line to the target when, as the ball is addressed, the lie of the club differs from the normal lie. The sole is curved upwardly from the central portion to the heel portion and further curved upwardly and away, at progressively greater rates, from the front face to the rear face. The face of a wood golf club is also provided with a bulge or convex curvature about an axis in a first plane parallel to a plane tangent to the center of the club face and lying in a second plane parallel to the club shaft and passing through a line between the center of the club face and the target at the time of addressing the ball, and a roll or convex curvature about an axis perpendicular to the bulge axis curvature. The radius of curvature for roll is less than for bulge. The rear of the wooden head is extended and tapered, and concentrated weights are placed as much in the toe and the extended rear portion of head as possible.

3,625,519

**RANDOM PLAYBACK MECHANISM FOR PHONOGRAPH DEVICE**

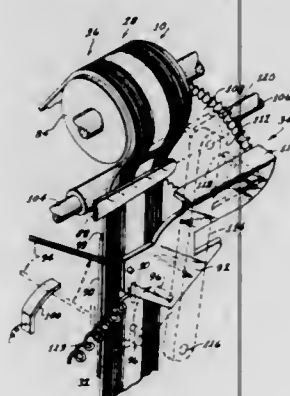
Berne E. Danielsen, Pacific Palisades; Reginald M. Dowsing, Torrance; Melvin R. Kennedy, Compton, and John W. Ryan, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Original application Jan., 1968, Ser. No. 699,653, now Patent No. 3,482,842, dated Dec. 9, 1969. Divided and this application Sept. 2, 1969, Ser. No. 854,515

Int. Cl. G11b 25/06, 21/08

U.S. Cl. 274-1 A

7 Claims



The record is a flexible endless record tape or band which has a plurality of parallel sound tracks over substantially the entire length thereof. At the juncture between the beginning and ends of these sound tracks a transition section means or guide track means cooperates with all of the sound tracks to carry the stylus to one side of the record. At least one hole is punched through the record where the guide track is at one side of the record.

The random playback mechanism has a stylus which is continuously engaged in either one of the sound tracks or the

guide track, depending upon its relative position. During normal play it is in one of the sound tracks, and when the end of play is reached, the guide track carries the stylus to one side. A pin engages the hole in the record, which pin is connected to a pawl which spins a random cam. The cam acts as a stop for transverse motion of the stylus as it is moving out of the guide track into one of the sound tracks so that, as the stylus engages the cam as a stop, the next sound track to be played is randomly selected.

3,625,520

**GRAMOPHONE RECORD PLAYERS**

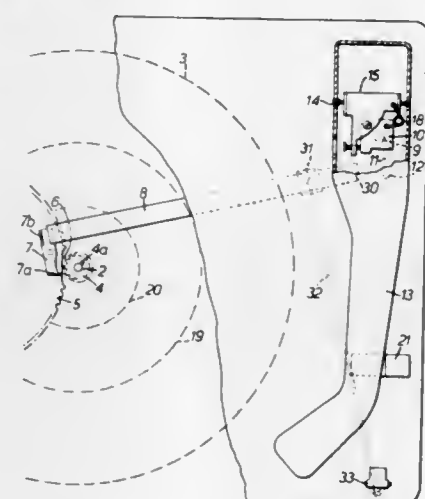
Alan W. Say, Ilford, Essex, England, assignor to The Plessey Company Limited, Ilford, England

Filed July 8, 1969, Ser. No. 839,831

Int. Cl. G11b 3/00

U.S. Cl. 274-9 R

3 Claims



A record player has a flexible arm associated with the tone arm which can be selectively interposed between an adjusting screw and a pivot structure for changing the relation between the tone arm which is suitable for playing 7 inch, 10 inch or 12 inch records to one suitable for playing 3 1/2 inch diameter records.

3,625,521

**RECORD-CHANGER GRAMOPHONES**

Edward William John Caddy, Ilford, England, assignor to The Plessey Company Limited, Ilford, England

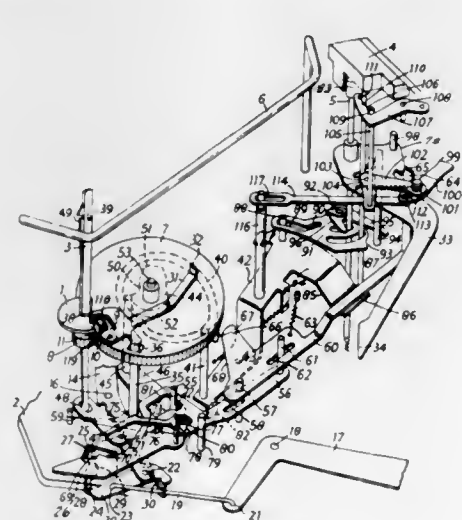
Filed Nov. 12, 1969, Ser. No. 875,611

Claims priority, application Great Britain, Nov. 12, 1968, 53,593/68

Int. Cl. G11d 15/00, 17/00

U.S. Cl. 274-10 R

4 Claims



In an automatic record changer in which the pickup-arm movements are controlled by a cam groove and the record release mechanism is operated by a circumferential cam, the engagement of the cam-trip pawl at the beginning of automatic play, the transfer of the hand-control lever from an AUTO position to a MANUAL position during the first

3,625,523

**AFT SEALING ASSEMBLY FOR STERN TUBES**

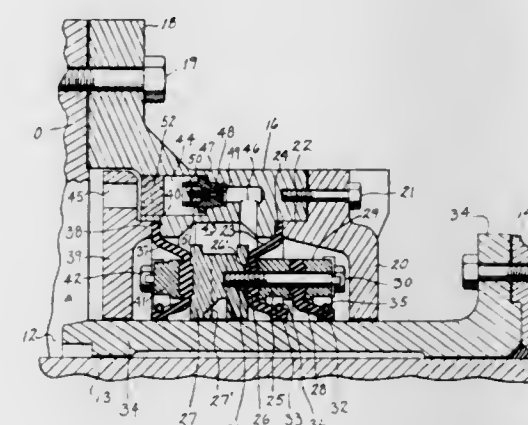
Willis W. Gardner, Waukesha, and Richard L. Rafferty, Menomonee Falls, both of Wis., assignors to Waukesha Bearings Corporation, Waukesha, Wis.

Filed Feb. 13, 1970, Ser. No. 11,098

Int. Cl. F16j 15/32

U.S. Cl. 277-59

3 Claims



revolution of the cams, and the retention of the pickup arm in the rest position and eventual switching off of the motor at the end of a revolution in which no record is available on the shoulder of the record spindle, is effected with the help of a cycle-control lever capable of pivotal movement about and longitudinal movement relative to a fulcrum pin, this lever having an edge formed with a sawtooth whose face causes the cycle-control lever to follow the longitudinal movement of a catch lever linked to the switch lever as the latter is moved by a hand lever from OFF position to a manual or auto position and retained there by steps in an aperture of the mounting plate, movement of the cycle-control lever to the latter position producing, via a resilient cam member, engagement of the trip pawl for a revolution of the cam wheel, whereafter engagement of a pin of the cam wheel with a cam acting on the cycle-control lever lifts lug 24 clear of auto step 29 causing the lug to return resiliently to the manual step. A release lever connected to the record-release pawl, after release of the last record, beyond its position of rest, engaging the cycle control lever to lift its sawtooth off the pawl of the catch lever, thereby tilting the catch lever to move the cam into the path of the cam-wheel pin which, near the end of the revolution of the cam wheel, causes return pivotal movement of the cycle-control lever, lifting the lug of the catch lever off the manual step, thus allowing resilient return of the switch lever and hand-control lever to their STOP positions.

3,625,522

**PICKUP ARM ACTUATING MECHANISM FOR AUTOMATIC RECORD CHANGERS**

Edward Thomas Humby, Ilford, England, assignor to The Plessey Company Limited, Ilford, England

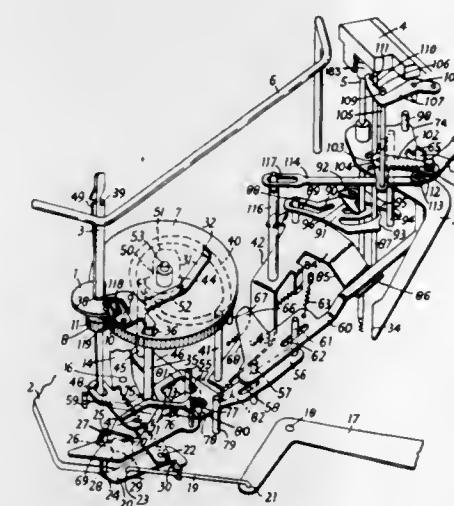
Filed Nov. 12, 1969, Ser. No. 875,612

Claims priority, application Great Britain, Nov. 12, 1968, 53,594/68

Int. Cl. G11d 15/00, 17/00

U.S. Cl. 274-10 R

7 Claims



A selector cam varies according to its setting position, the distance of the pivot of a stop lever having a stop face at end, from a pickup-positioning pin on a pickup plate pivotally movable with the pickup spindle for any given position of the pickup arm. The stop lever is lost-motion coupled to a drive lever transmitting the movement of a cam-follower to the pickup arm control lever so as to move the stop lever clear of the path of the positioning pin during the outward movement of the pickup arm and producing, before the stop face of the stop lever is withdrawn from this path to permit playing of a record, a wiping movement of this face, this face being cam-shaped to first ensure engagement of the pickup-positioning pin with the record groove and then gradually release any resilient forces built up during this initial period. Friction drive for the pickup plate during the positioning movement is effected by a return arm which is friction-pivoted to the pickup arm control plate and which, at the beginning of the inward movement, clasps a pin of the pickup plate in pincer fashion.

3,625,524

**ROTATABLE SEAL**

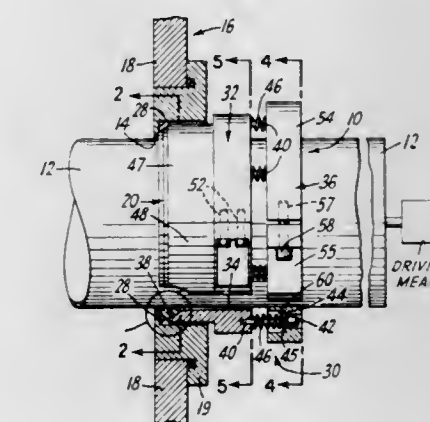
Melvin Vergales, Richmond, Va., assignor to AMF Incorporated

Filed Aug. 13, 1970, Ser. No. 63,358

Int. Cl. F16j 15/34

U.S. Cl. 277-115

8 Claims



A sealing member constructed and arranged to be abutably mounted on a rotatable shaft which extends through an opening formed in a housing, and abutably mounted against the housing, to close the space between the housing and shaft. The sealing member has shaft and housing sealing surfaces and, spaced apart from both of them, a surface which is angularly related to the sealing surfaces. The latter surface is angled such that a force applied to it to abutably mount the shaft and housing seals in place, tends to cause the sealing member to rotate with the shaft. The aforesaid latter surface is spaced apart from the sealing faces so that the sealing member may be held in place by apparatus which is also spaced apart from the sealing faces, rather than by apparatus which encloses the sealing member in a cavity adjacent the space between the housing and shaft. As a consequence, the



sealing member is constructed and arranged to allow fluid from within the housing which seeps past the sealing faces to freely flow away from the sealing member.

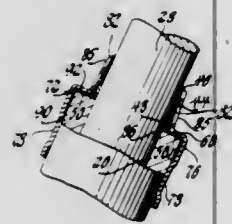
3,625,525

## VALVE STEAM SEAL ASSEMBLY

Carlisle R. Davis, Jr., Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Original application June 21, 1967, Ser. No. 647,674, now Patent No. 3,554,562, dated Jan. 12, 1971. Divided and this application Sept. 11, 1970, Ser. No. 71,398  
Int. Cl. F16j 9/06

U.S. Cl. 277-148

5 Claims



A valve stem seal assembly formed from a thin sheet of wear-resistant filled Teflon assembled with a sheet metal retainer to provide an extended lip urged to sealing engagement with the valve stem by resilient fingers of the retainer and having means to seal against and retain the assembly on the valve guide. One embodiment is installed on the valve guide in a partially formed state and the final configuration of the lip and resilient fingers is formed after assembly to correct for eccentricity of the valve guide and the seal mounting.

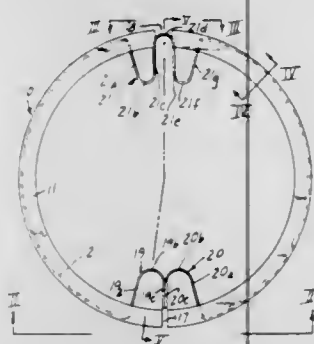
3,625,526

## UNITARY SELF-ENERGIZING OIL CONTROL RING

Harold E. McCormick, Ballwin, Mo., assignor to Ramsey Corporation, St. Louis, Mo.  
Filed Nov. 14, 1969, Ser. No. 876,889  
Int. Cl. F16j 9/06

U.S. Cl. 277-151

8 Claims



Oil control piston rings which have self-expanding properties eliminating the necessity for backup expander rings. The expansion is obtained by springs which are part of the ring structure. The preferred arrangements have hairpin springs projecting inwardly from the oil ring which, in use, extend through the oil drainage slots of the piston ring groove.

3,625,527

## ENGINE GASKET

Brian N. Brindle, Thundersley, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 26, 1970, Ser. No. 22,947

Claims priority, application Great Britain, July 15, 1969, 35,463/69

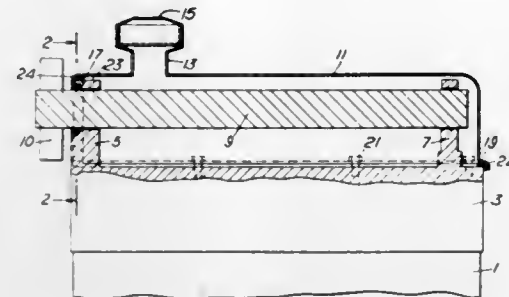
Int. Cl. F16j 15/10

U.S. Cl. 277-227

9 Claims

A gasket of particular value for use in an overhead camshaft engine. Gasket provides a seal between cylinder head boss in which camshaft is journaled and rocker cover, and between the cylinder head and rocker cover. Part of the gasket between boss and rocker cover is made of a softer

material than is part between cylinder head and rocker cover. Gasket may be made from mixtures of rubber and cork granules, the relative hardness properties being deter-



mined by proportions of rubber and cork used, and by the hardness of the rubber compounds used in the respective parts of the gasket.

3,625,528

## CHUCK ASSEMBLY WITH CENTRIFUGAL TIGHTENING MEANS

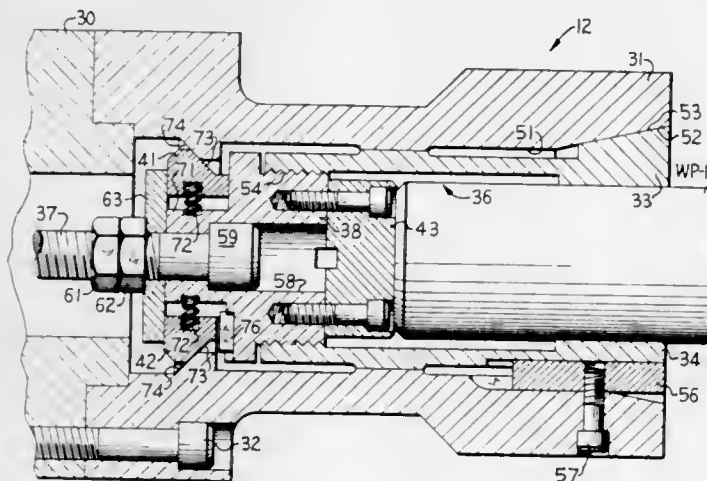
Ira H. Sage, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 20, 1970, Ser. No. 12,909

Int. Cl. B23b 31/14

U.S. Cl. 279-1 C

7 Claims



A chuck assembly including chucking means such as a collet sleeve for engaging a workpiece wherein the chucking means are tightened upon the workpiece in response to centrifugal force developed by rotation of the chuck.

3,625,529

## FREE RUNNING DRAW CHUCK

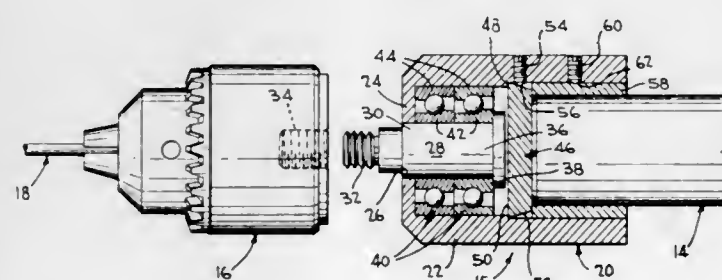
James H. Donachy, Wheaton, Md., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare

Filed Mar. 5, 1970, Ser. No. 16,894

Int. Cl. B23b 5/00

U.S. Cl. 279-1 R

7 Claims



Free running draw chuck device for use in a lathe permitting rotation of an elongated, relatively fine workpiece or

mandrel at high speeds under tension without deviation or "whipping." Use of the device in formation of fine, wire reinforced catheters is shown.

3,625,530

## COLLET ACTUATING DEVICE

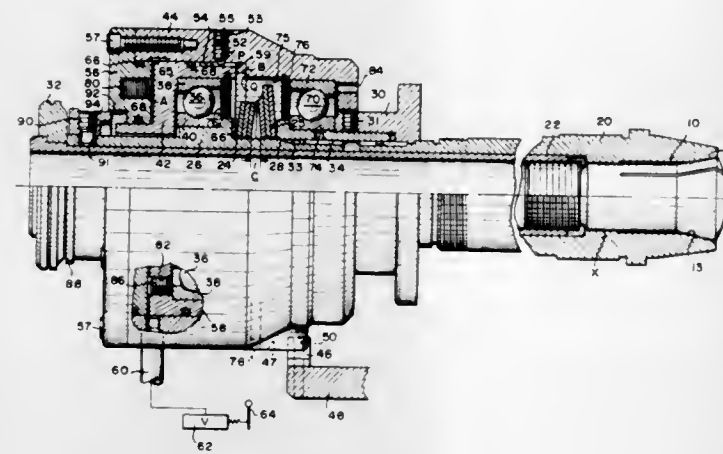
Hubert J. Parsons, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,556

Int. Cl. B23b 31/30

U.S. Cl. 279-4

10 Claims



A collet actuating device including two concentrically arranged tubular members one of which is movable axially and annularly relative to the other; a Belleville spring connected to both of the tubular members for exerting pressure axially on each of the tubular members and in opposite directions for actuating a collet; a piston connected to one end of the Belleville spring for relieving pressure exerted by the spring on one of the tubular members; and a locking means for arresting movement of the tubular members annularly relative to each other.

3,625,531

## VEHICLE STABILIZING MEANS

Raoul Ranzenhofer, Pointe Claire, Quebec, Canada, assignor to Canadian International Paper Company, Montreal, Quebec; Quebec North Shore Paper Company, Montreal, Quebec and Abitibi St. Anne Paper Ltd., Beaufort, Quebec, Canada, part interest to each

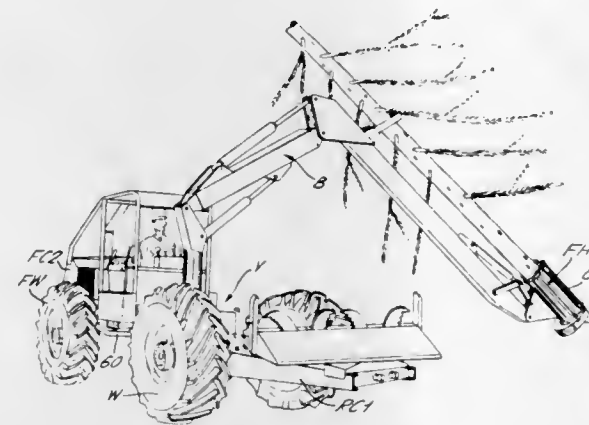
Filed Oct. 15, 1969, Ser. No. 866,655

Claims priority, application Canada, Oct. 18, 1968, 032876

Int. Cl. B60s 9/00

U.S. Cl. 280-6

3 Claims



A log-handling vehicle consisting of a felling head attached to the free end of an extendible and retractable boom carried by the vehicle which preferably is of the articulated type. To restrain tipping force the stabilizing is provided in the form of a spring or rubber pad for engagement with an abutment upon a selected degree of roll of the vehicle. The rubber pad preferably is secured to the chassis and engageable with an axle pivotally attached to such chassis and carried by ground engaging means such as wheels.

3,625,532

## HEEL BINDING FOR SKI

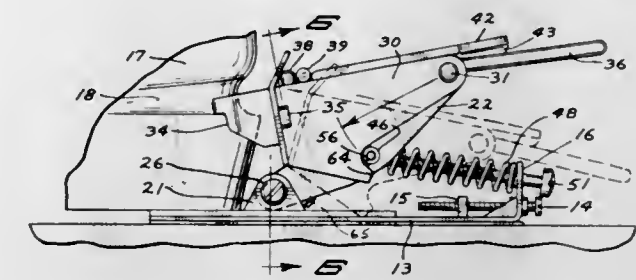
Edward A. Pauls, Excelsior, Minn., assignor to Sports Technology, Inc., South Edina, Minn.

Filed Nov. 14, 1969, Ser. No. 876,711

Int. Cl. A63c 9/084

U.S. Cl. 280-11.35 T

20 Claims



A heel binding for holding a ski boot to a ski which includes high-energy storage spring means for permitting the heel to lift from the ski during high loads, and which when the heel has lifted a predetermined amount will release completely to free the ski boot from the ski. Torsion bar means are used for energy storage, during the lifting of the heel, and separate mechanisms are utilized for the release action after the heel has lifted a predetermined distance.

3,625,533

## EASILY CARRIED TOBOGGAN-LIKE STRUCTURE

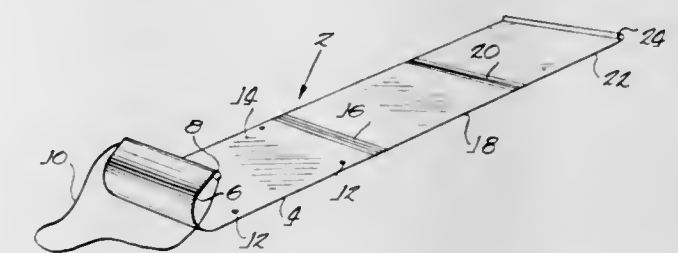
Richard Boe, Stay, Wyo., assignor to Bernard T. McManus and Gordon Shipman, part interest to each

Filed Sept. 15, 1969, Ser. No. 857,773

Int. Cl. B62b 13/16

U.S. Cl. 280-18

8 Claims



An easily transported and foldable tobogganlike structure or carryall comprising several hingedly attached panel members having a tobogganlike configuration and preferably of a lightweight material such as aluminum with a pair of carrying means which permits the structure to be easily carried on the back of a hunter, hiker or the like for use in primarily snow-covered environs.

3,625,534

## LIFT LINKAGE FOR A LOW-LIFT TRUCK

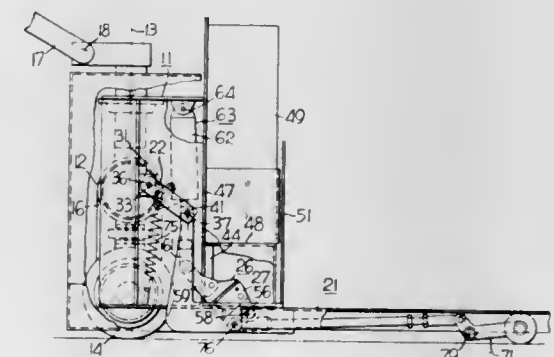
William J. Harrison, Guelph, and Dennis G. Harvey, Ancaster, Ontario, both of Canada, assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed June 10, 1970, Ser. No. 44,946

Int. Cl. B62d 21/18

U.S. Cl. 280-43.12

5 Claims



The elevating platform of a low-lift-type lift truck is connected to the frame of the truck through a pair of parallel



links which are spaced vertically and longitudinally from one another. The lower pair of links are disposed below a battery support and the upper pair of links are disposed forwardly of the battery. A single upstanding hydraulic jack is employed to raise and lower the load carrying platform through a connection with the lower pair of links.

3,625,535

## TOE IRON FOR SAFETY SKI BINDINGS

Albert Gustav Oehlmann, Garmisch-Partenkirchen, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany

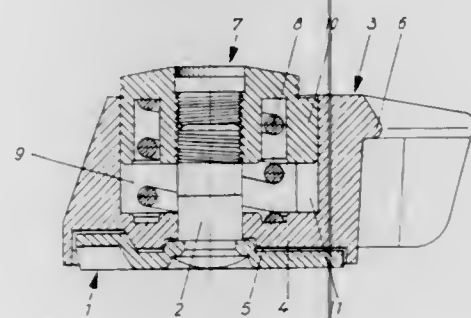
Filed Sept. 30, 1969, Ser. No. 862,335

Claims priority, application Germany, Oct. 4, 1968, P 18 01 314.4

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

5 Claims



A baseplate has a vertical pivot pin on which a pivoted member is rotatably mounted, which is releasably interlocked with the baseplate and biased by a spring, which is concentric with the pivot pin and opposes a rotation of the pivoted member in both senses beyond an angle which is limited by the interlock. A spring abutment is in screw-threaded engagement with the free end portion of the pivot pin and is held against rotation relative to the pivoted member but axially slidable relative thereto.

3,625,536

## TOE-OR-HEEL-HOLDING FOR SAFETY SKI BINDINGS

Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany

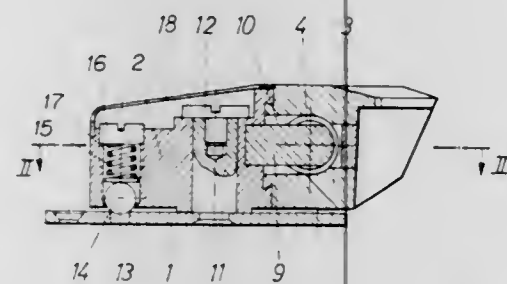
Filed Oct. 28, 1969, Ser. No. 871,909

Claims priority, application Germany, Nov. 12, 1968, P 18 08 466.7

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

3 Claims



A soleholder is movably connected to a carrying member with a shock absorber interposed. The carrying member is movably mounted on a part of the device that is fixed to the ski. When the device is in operative condition, the carrying member is immovably held by a locking device. The locking device comprises a spring, which is nonadjustably mounted in or on its holder or is at least sealed in position when it has been adjusted to determine a desired release hardness. The shock absorber comprises readily adjustable adjusting means to vary the damping.

3,625,537  
TOOLBOX IN FRAME AND FRAME STRUCTURE FOR MOWER CONDITIONER

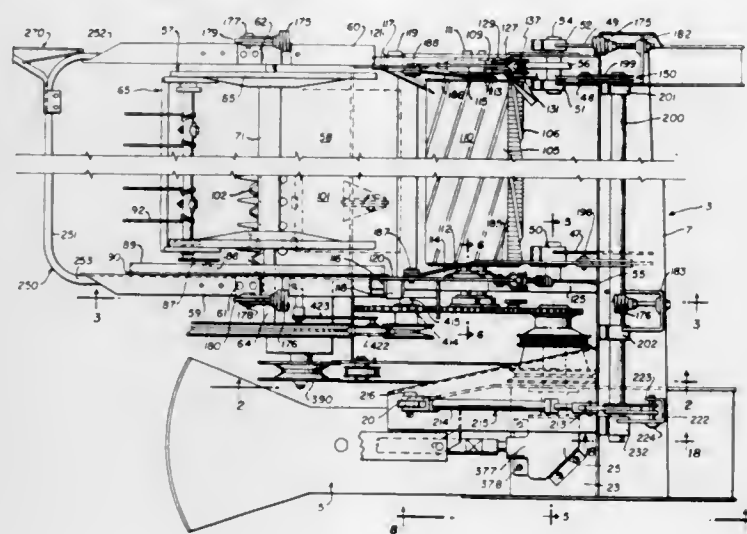
James H. Bornzin, La Grange; Arthur H. Keller, and Peter J. Peacock, both of Western Springs, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 5, 1970, Ser. No. 9,027

Int. Cl. A01d 57/00

U.S. Cl. 280-80 R

5 Claims



A frame structure for a mower conditioner having a transverse frame element with dependent arms extending downwardly and forwardly. Saddles are provided on the arms for pivotally mounting a harvesting unit thereon for pivoting about a horizontal transverse axis. The transverse frame element is integrated at one end into the upper end of a vertically disposed box section end frame structure which has an opening in the rear providing a toolbox and which in front provides an enclosure of a gearbox drive and which at its lower end is integrated with the rear end of a fore-and-aft extending box section draft frame.

3,625,538

## TRIAXLE SUSPENSION ASSEMBLY

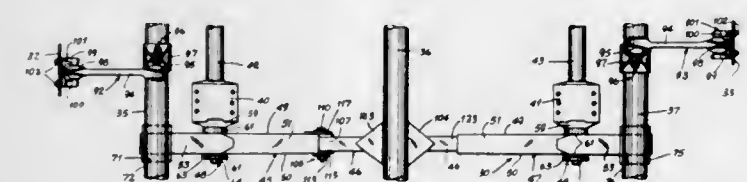
John E. Radel, Springfield, Mo., assignor to Ridewell Corporation, Springfield, Mo.

Filed Oct. 6, 1969, Ser. No. 864,136

Int. Cl. B60g 19/00

U.S. Cl. 280-104.5

10 Claims



A suspension assembly for triaxle installation having front, central and rear beams connected to the front, central and rear axles. The front and rear beams are oscillating beams pivotally mounted on pedestals depending from the vehicle frame. The central beam is free floating but is pivotally connected to the front beam and bears upwardly against the rear beam for equalization of loads through the beams to the three axles. All beams are rubber-bushing mounted for self-tracking. The front beams serve as radius rods for the central axle, eliminating the need for a separate radius rod to be connected to the central axle.

3,625,539

## VEHICLE SUSPENSIONS

Stephen J. Crouch, Warwickshire; Peter W. R. Stubbs, Warwick, and Michael W. Lewis, Warwick, all of England, assignors to The Rover Company Limited, Solihull, England

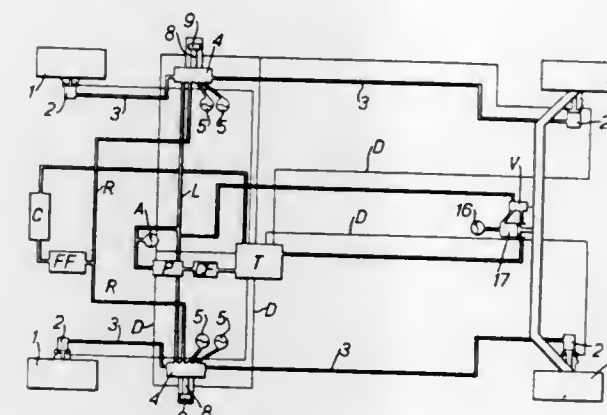
Filed Aug. 19, 1969, Ser. No. 851,392

Claims priority, application Great Britain, Aug. 20, 1968, 39,773/68

Int. Cl. B60g 17/04

U.S. Cl. 280-112 R

8 Claims



In an antiroll active vehicle suspension comprising hydraulic struts in series with springs, preferably gas springs, with the flow of fluid to and from the struts controlled by control units responsive to lateral acceleration. The struts for all the wheels on each side of the vehicle are controlled by a single unit common to that side of the vehicle. Where the vehicle is a road vehicle with steered front wheels the control units are near the front of the vehicle and respond to a feedback signal from the suspension linkage of the adjacent front wheel. The feedback signal is preferably through a spring and damper in parallel. There can be damping restrictions between the struts and air springs, and in pipes interconnecting the hydraulic systems of the different struts.

3,625,540

## HYDRAULIC SUSPENSION UNIT

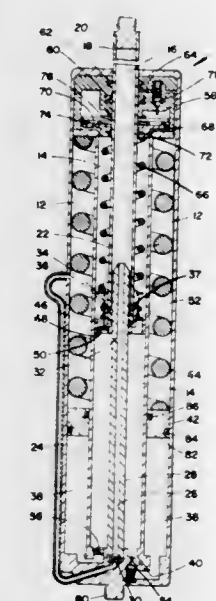
David E. Jewell, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed June 22, 1970, Ser. No. 48,347

Int. Cl. B60g 11/58

U.S. Cl. 280-124 F

3 Claims



A load-leveling hydraulic suspension unit of low spring rate having a hydraulic circuit that includes a fluid reservoir, a self-contained pumping system, a high-pressure chamber, a spring-biased pressure-regulating chamber, and interconnecting fluid passageways with flow-regulating valves and seals. A hydraulic suspension unit which provides load-leveling forces at a low spring rate.

3,625,541

## INFLATING MECHANISM FOR VEHICLE SAFETY CRASH BAG

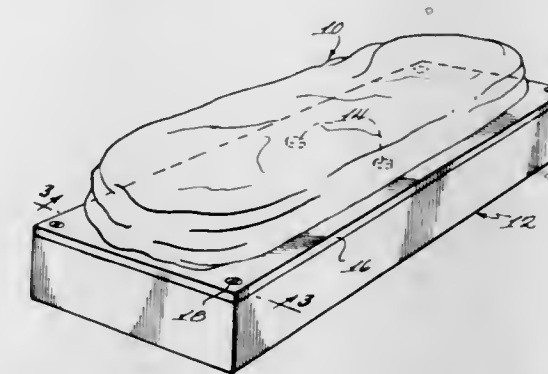
Wallace N. Frazier, 102 Highland Ave., Smyrna, Tenn.

Filed July 31, 1970, Ser. No. 59,875

Int. Cl. B60r 21/08

U.S. Cl. 280-150 AB

10 Claims



A trigger and inflating mechanism for an inflatable safety crash bag of the type which automatically inflates so as to protect a vehicle passenger in the event of a crash comprises a housing containing a rupturable source of gas pressure, a piercing element spring-biased toward the source, and a sear element restraining the piercing element in spaced relationship to the source. The sear element is a rigid projection on a movable inertia member, the latter being restrained against movement by frangible plastic tabs which break upon the inertia member's undergoing a predetermined deceleration.

3,625,542

## STABILIZER AND JACK ASSEMBLY FOR CAMPING TRAILERS AND THE LIKE

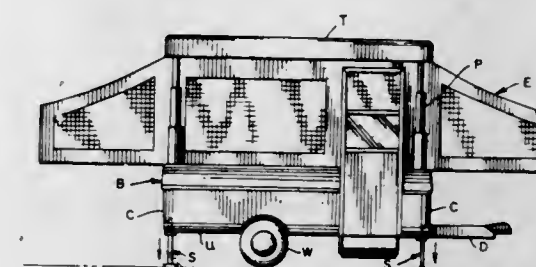
Richard D. Curtis, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed June 3, 1970, Ser. No. 43,032

Int. Cl. B60s 9/02

U.S. Cl. 280-150.5

19 Claims



The combination stabilizer and jack is designed for integration with the frame members of a vehicle adjacent its underside. The brackets for attachment to the vehicle frame includes upper and lower flanges which provide vertically aligned openings for slidably receiving an upright shaft movable from a raised storage position to lowered use positions. Upper and lower gripping plate units are mounted between the flange means for coaction with the shaft, the upper plate means being normally biased to a nongripping alignment by spring means yielding to permit it to be downwardly canted for bitingly engaging the shaft. The lower plate unit is spring biased to a downwardly canted alignment while permitting adjustment to a nongripping alignment so that the shaft can be lowered but not raised with the plate unit in its normal position. The gripping units provide tab means, the tab means of the lower unit being adapted for manual operation, and the tab means of the upper unit for actuating by a tool through a mechanical linkage. Latching means is provided for releasably securing the shaft in its raised storage position, and cover and gasket means are provided for protecting the operative mechanism within the bracket from weather and dirt.



3,625,543

## SAFETY APPARATUS

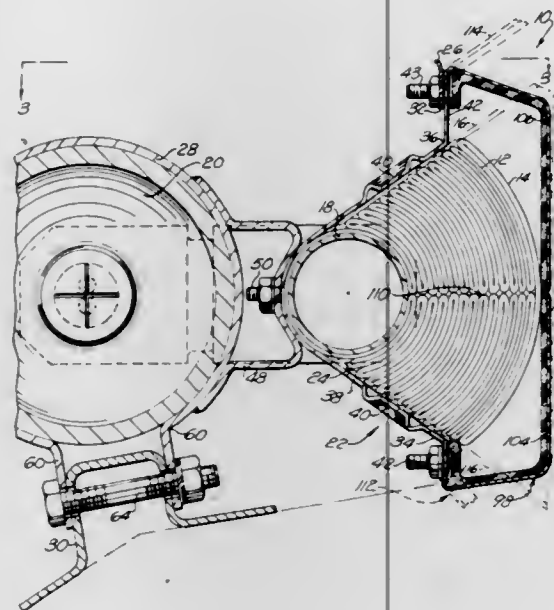
Donald H. Wolff, Farmington, Mich., assignor to Eaton Yale &amp; Towne Inc., Cleveland, Ohio

Filed Sept. 15, 1969, Ser. No. 857,774

Int. Cl. B60r 21/08

U.S. Cl. 280—150 AB

3 Claims



A safety apparatus for protecting an occupant or occupants of a vehicle during a collision includes a confinement having a collapsed condition and an expanded condition for restraining movement of the occupant during an accident. The safety apparatus also includes structure providing a fluid supply for inflating the confinement and a diffuser means in fluid communication with the structure and the confinement to direct fluid from the structure to expand the confinement from the collapsed condition to the expanded condition. The safety apparatus also has a housing means, a portion of which defines a chamber for receiving the diffuser means and the confinement when in the collapsed condition. The housing means also includes means for attaching the fluid supply externally thereof. The safety apparatus is constructed as a unitized assembly for installation in a vehicle.

3,625,544

## TRUCK-TRAILER REAR DOOR PROTECTOR

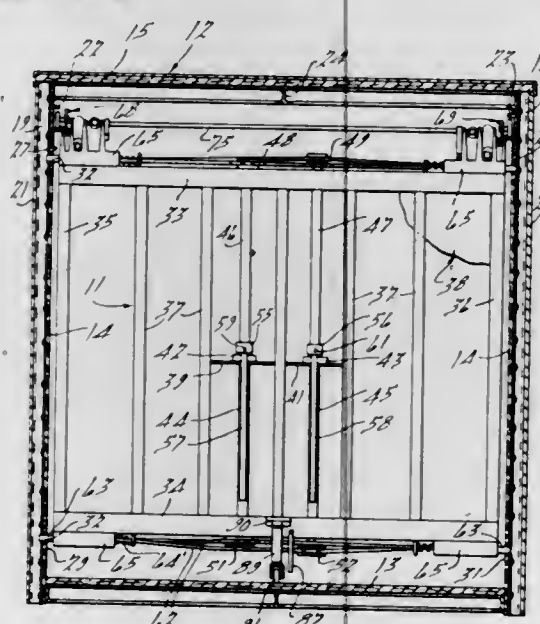
Gordon W. Goodwin, and Robert D. Downs, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Oct. 22, 1969, Ser. No. 868,488

Int. Cl. B60p 7/14

U.S. Cl. 280—179 R

7 Claims



A movable bulkhead for holding the cargo of a truck-trailer in position. The bulkhead is hinged at the top and has

latches in the four corners operable by two swinging arms mounted on the bulkhead itself. In its operative vertical position, the bulkhead rolls on a pair of upper tracks, and it stores beneath the trailer roof. The bulkhead may be released in stepwise fashion from its holding position. All parts of the bulkhead are captive and not subject to loss.

3,625,545

## MOTORCYCLE TRAILER

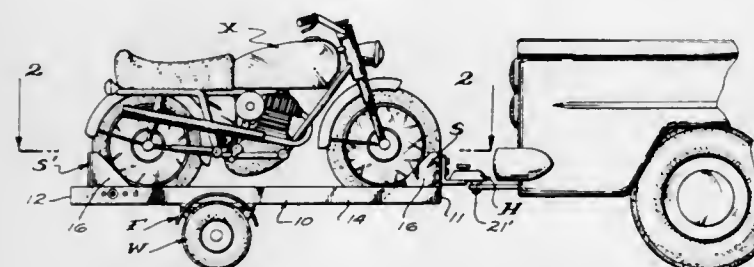
Howard Somers, and Hugh D. Wolcott, both of 6343 Geiser Ave., Reseda, Calif.

Filed June 1, 1970, Ser. No. 41,829

Int. Cl. B62d 53/00

U.S. Cl. 280—400

10 Claims



A trailer adapted to be releasably coupled with and towed by a draft vehicle and which is adapted to support and carry one or more motorcycles; the trailer comprising a foldable frame and axle assembly, removable wheel and mudguard assemblies and adjustable trailer hitch means and wheel stop means whereby the trailer can be adjusted to cooperatively receive and support motorcycles of different size, be engaged with draft vehicles with trailer hitch means at different heights and such that the trailer can be easily folded and dismantled for easy and convenient handling and storing when not in use.

3,625,546

## FORM SET

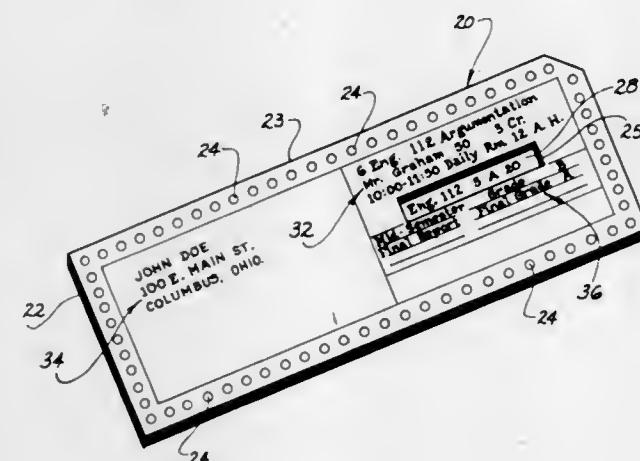
Clyde M. Evans, Box 268, Rio Grande, Ohio

Filed Apr. 29, 1969, Ser. No. 820,129

Int. Cl. B411 1/24

U.S. Cl. 282—23 R

1 Claim



A form set adapted for posting student grades or the like characterized by a plurality of cards detachably connected to one another in a superimposed relationship with each card provided with a window to expose a label portion removably mounted on the lowermost card in the set.

3,625,547

## COMPOSITE PRESCRIPTION FORM

William A. Burke, 1812 N. Cleburn, Grand Island, Nebr.

Filed May 9, 1969, Ser. No. 826,066

Int. Cl. B411 1/24

U.S. Cl. 282—23

6 Claims

A composite prescription form comprising five individual form parts which are detachably secured together at their

upper ends in a superposed relationship with respect to each other. The prescription form contains a plurality of preprinted information and the pharmacist types the form upon receiving a new prescription. The form is then separated with one portion of the first or top part being used as a prescription label and the other portion of the first part being filed for daily computation and record. The second part of the form is a sack label with the third part of the form

justed by a threaded connection between the toggle and one of the body sections.

3,625,549

## STRAP RING CONNECTOR

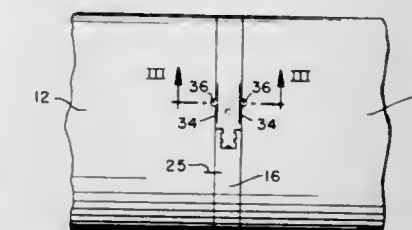
Gerrit De Vries, 2902 N. Stonehill Drive, Altadena, Calif.

Filed Feb. 9, 1970, Ser. No. 9,707

Int. Cl. F16l 21/06

U.S. Cl. 285—39

6 Claims



A strap ring connector for joining a pair of cylinder ends including: a strap which is capable of forming a ring, the strap, in its ring configuration, having internal and external surfaces; one side of the internal surface of the strap having grooves therealong and the other side of the internal surface having threads so that the grooves and the threads of the strap are capable of mating engagement with corresponding grooves and threads of the respective cylinders; and means for securing the strap in a ring configuration about the cylinder ends.

3,625,550

## UNION JOINT FOR TUBING

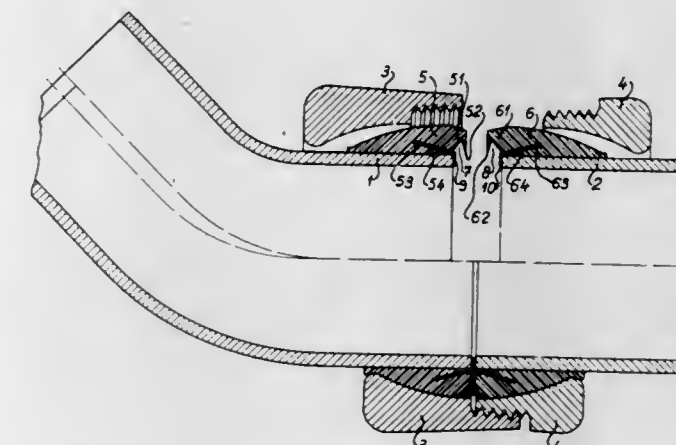
Edouard Beyeler, Chemin de la Preville 10, 1510 Moudon, Switzerland

Filed Oct. 31, 1969, Ser. No. 872,930

Int. Cl. F16l 17/00

U.S. Cl. 285—99

7 Claims



A union joint for two tubes has an annular packing member for each tube end and threadably engageable union parts fitted around the packing members for tightening the joint. The packing members each have an inwardly directed lip which extends beyond the tube end prior to tightening and an internal annular slit converging towards the tube end. Metal rings in each slit have rubber-covered flat portions extending in front of each tube end. When tightened, the lips are pressed against one another and are located adjacent the flat portions of the rings.

3,625,551

## COUPLING FOR TUBULAR MEMBERS

Donald L. Branton, Delavan, and Hugh W. Sittig, Walworth, both of Wis., assignors to Sta-Rite Industries, Inc., Delavan, Wis.

Filed Feb. 25, 1970, Ser. No. 14,079

Int. Cl. F16l 37/00

U.S. Cl. 285—305

4 Claims

A pipe connector assembly for connecting tubular members together and including a female connector and a

being the prescription itself. The fourth part of the form is identical to the third part and provides a copy of the original prescription. The fifth part of the form is a three-line part which is separable from the form so that it may be secured to a permanent patient prescription ledger card. A modification of the form is also disclosed and is designed for use as a refill prescription form. The modification utilizes three parts which are substantially identical to parts 1, 2 and 5 of the first described forms, respectively.

3,625,548

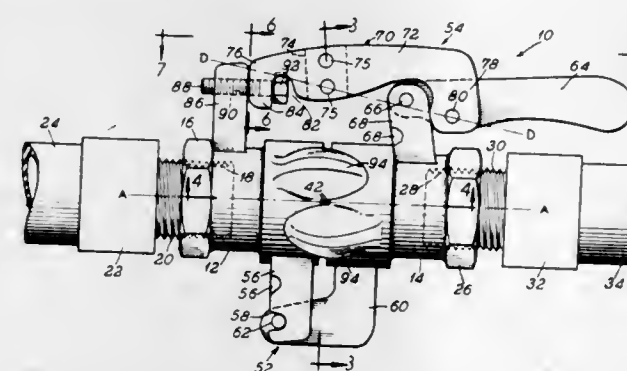
QUICK CONNECT AND DISCONNECT COUPLING  
Frank J. Boehm, St. Louis, Mo., assignor to Sharyl A. Craggs, Taylorville, Ill.

Filed Aug. 24, 1970, Ser. No. 66,280

Int. Cl. F16l 35/00

U.S. Cl. 285—27

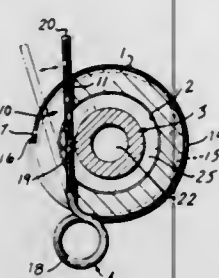
5 Claims



Coupling has two tubular body sections. When assembled, the sections are axially aligned, with abutting, coextensive, resilient, rubberlike gasket rings providing a rubber-to-rubber seal. The body sections have open areas completely surrounding the gasket rings to prevent fouling of the seal by accumulation of foreign material. A detachable pivot on one side of the coupling and a detachable toggle on the other side hold the body sections assembled. The coupling is disassembled and the body sections separated by releasing the toggle. The body sections are aligned, automatically, during assembly, by the pivot, which restrains relative movement in one transverse direction, and guide lugs which restrain relative movement in another transverse direction. Compression of the gasket rings and hence effectiveness of the seal, is ad-



cooperating male connector. A spring retainer is mounted on the female connector and includes an arm that is biased inwardly within a slot formed in the female connector and is



arranged to engage a groove in the male connector when the male connector has fully penetrated the female connector. An O-ring seal is incorporated in the assembly to produce a fluidtight pipe connection between the connectors.

### 3,625,552 COUPLING SEAL

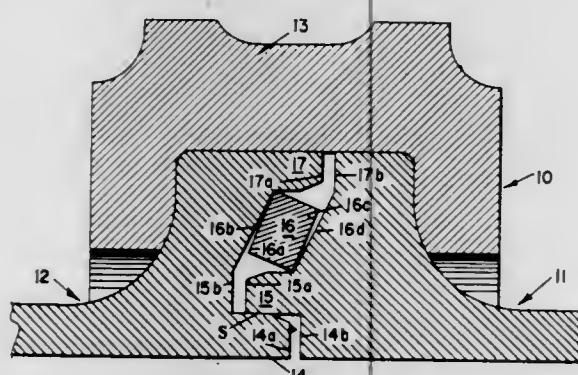
George A. Mahoff, and Leonard L. Rice, both of 1654 Lincoln Blvd., Santa Monica, Calif.

Continuation-in-part of application Ser. No. 33,437, June 2, 1960, now abandoned. Continuation of application Ser. No. 572,617, Aug. 15, 1966, now abandoned, which is a continuation of application Ser. No. 33,437, Aug. 15, 1966, now abandoned. This application May 5, 1969, Ser. No. 856,866

Int. Cl. F16I 17/00

U.S. Cl. 285—336

22 Claims



A coupling assembly for first and second tubular fluid conducting members is provided. The first and second members include respectively first and second annular stepped portions axially overlapping and radially spaced. An annular metallic seal of resilient material of suitable polygonal cross section, preferably quadrilateral and symmetrical about a midplane normal to its axis in the absence of any loading thereon, is interposed axially and radially between the first and second stepped portions. When the members are urged axially towards each other, the seal is under compression and radially loaded, only at a pair of diagonally opposite corner edges thereof to thereby provide high-unit pressure annular substantially line contact sealing between these edges and the members.

### 3,625,553

DEVICES FOR PIVOTALLY CONNECTING MEMBERS  
Luciano Mattioli, Brunoy, France, assignor to D.F.A.S. a.r.l. Diffusion Fabrications Automobiles, Paris, France

Filed June 30, 1970, Ser. No. 51,108

Claims priority, application France, July 3, 1969, 6922471

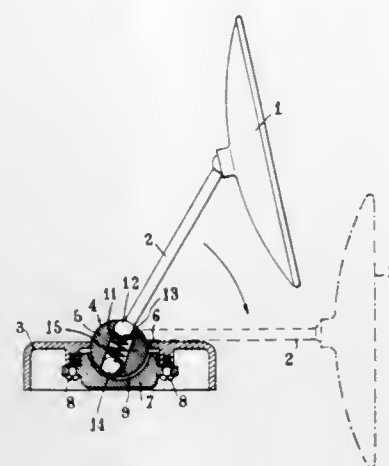
Int. Cl. F16c 11/06

U.S. Cl. 287—21

2 Claims

A device for interconnecting a first member carrying a rearview mirror and a second member, for example, the wing

of a vehicle, comprises a ball and socket connection and resilient means for urging the ball against a surface of the



socket for resisting relative movement between the ball and the socket.

### 3,625,554 DEVICE FOR RAPID FIXING OF A TOOL TO THE END OF A ROTATING SHAFT

Jean Oliver Louis Mottais, and Jean-Pierre Yves Maratray, both of Loire Atlantique, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

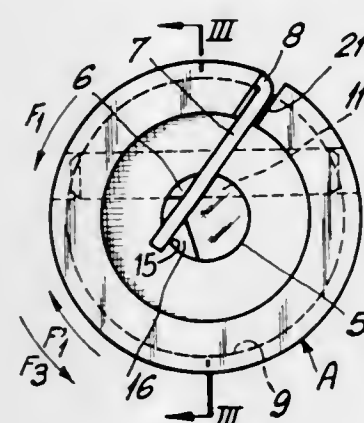
Filed Feb. 27, 1970, Ser. No. 14,979

Claims priority, application France, Mar. 5, 1969, 6906062

Int. Cl. F16d 1/06

U.S. Cl. 287—52.05

5 Claims



The invention is concerned with a device for the rapid fixing and releasing of a tool such as a countersink to the end of a rotating shaft. In accordance with the invention the tool has a transverse bore having an internal projection. A resilient device is provided within the bore and the shaft has a facet on which the resilient device can bear.

### 3,625,555

#### SPLIT NUT FOR HOUSEHOLD APPLIANCES

Robert J. Scott, Blue Springs, Mo., and Leo F. Aberer, Shawnee Mission, Kans., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Oct. 24, 1969, Ser. No. 869,203

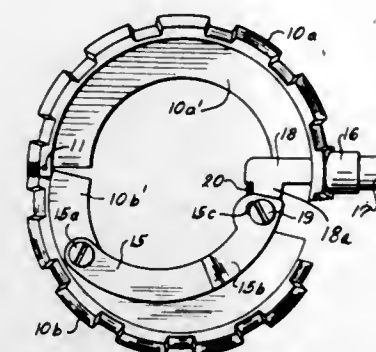
Int. Cl. F16d 1/00

U.S. Cl. 287—111

4 Claims

A split nut for household products such as electrically operated blenders has two 180° halves which are hingedly connected at one end and releasably connected at the other. The externally ribbed halves are threaded for connection with the blender base and permits same to be fixedly at-

tached to the blender power unit. An annular lipped structure below the threads cooperates with the releasable con-



nection to facilitate in an easy removal of the split nut from the blender base.

### 3,625,556 LOOPER

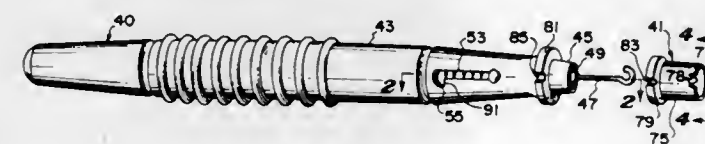
Henry K. Stromberg, 377 Lloyd St., Cary, Ill.

Filed Oct. 9, 1969, Ser. No. 865,140

Int. Cl. D03j 3/00

U.S. Cl. 289—17

6 Claims



A tool for tying loops and knots, particularly useful in tying small loops or short leaders to small fish hooks and fishing flies.

### 3,625,557

#### LATCH UNIT FOR SLIDING-TYPE DOORS

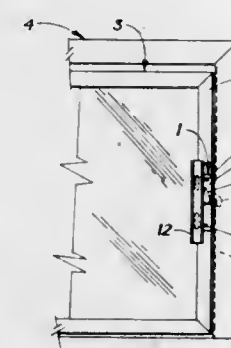
Jack H. Jensen, Danville, Calif., assignor to Rylock Company, Ltd., Union City, Calif.

Filed June 8, 1970, Ser. No. 44,424

Int. Cl. E05c 19/12

U.S. Cl. 292—128

1 Claim



A latch unit, to secure a sliding-type door to the door frame, comprising a rotatably mounted hook on a stile of the door and adapted by inside finger-lever manipulation for movement between a retracted unlatched position and an advanced latched position projecting in downwardly opening relation through a vertical slot in the adjacent doorframe jamb and engaging over the lip at the lower end of such slot; the hook being an integral part of a finger-lever operated rotary plate, such plate being camlike and having a pair of edges of predetermined position and configuration, and a leaf spring peripherally engaging the rotary plate, said spring yieldably bearing on one such edge to maintain the hook in retracted position and yieldably bearing on the other edge to maintain the hook in advanced position while spring-urging said hook downwardly against said lip to prevent escape therefrom upon the door being vertically jounced from the outside.

### 3,625,558 AUTOMATIC HOIST COUPLING DEVICE

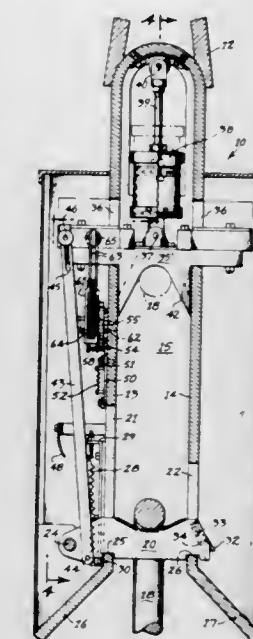
George F. Johnson, Potters Trailer Court, Waverly, Tenn.

Filed Nov. 10, 1970, Ser. No. 88,282

Int. Cl. B66c 1/34

U.S. Cl. 294—83 R

9 Claims



An automatic coupling device for attachment to a hoist line, having a throat passage for receiving the bail of an article, such as a concrete bucket; a pivoted throat latch in the throat passage yieldable to the upper movement of the bail, and adapted to support the bail for hoisting; a yoke member and actuating mechanism for automatically opening the throat latch when actuated by the bail.

### 3,625,559 LIFTING SLING

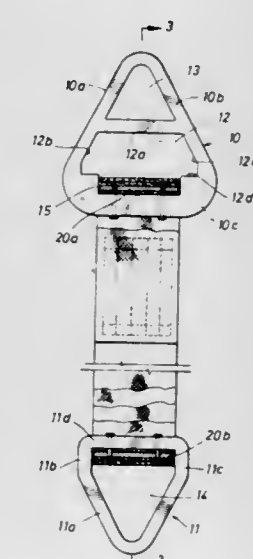
Myrtle E. Lawrence, Houston, Tex., assignor to The Lawrence M. Company, Houston, Tex.

Filed Aug. 13, 1970, Ser. No. 63,364

Int. Cl. B66c 1/18

U.S. Cl. 294—74

16 Claims



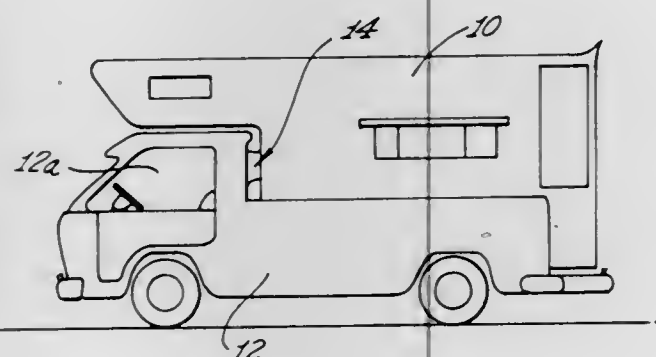
The sling comprises two end members of rigid material, such as steel, between which is connected an elongated strip of fabric, such as nylon webbing. The end members have openings through which the elongated strip is looped to connect the end members to the strip. A relatively short strip of the fabric material extends through the openings in each end member and is positioned between the elongated load-carrying strip and the end member. The short strips are clamped to the end members to keep them from shifting laterally with respect to the end member and bunching up at one side of the opening. The elongated load-carrying strip is stitched to



the relatively short strips to thereby anchor it against a tendency for for such lateral movement and bunching up when under load.

**3,625,560**  
**BOOT FOR CAMPER-TRUCK COMBINATION**  
Robert M. Bjork, 10901 Topeka Drive, Northridge, Calif.  
Filed Dec. 15, 1969, Ser. No. 885,068  
Int. Cl. B60p 3/32  
U.S. Cl. 296—23 MC

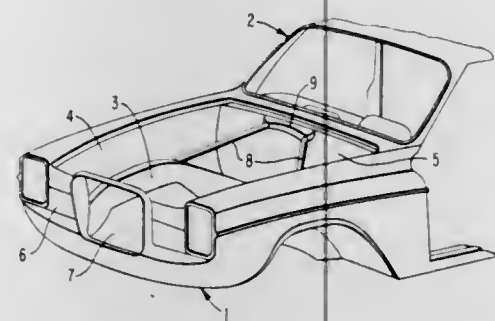
5 Claims



The invention provides a removable flexible plastic tubular member, or boot, for intercoupling the rear window aperture of a truck cab with the front facing window aperture of a camper carried by the truck, so as to afford communication between the truck and the camper. The boot assembly of the invention has an advantage in that it is capable of being coupled securely to the rim of the truck window aperture in a watertight, airtight, and dusttight joint, and yet it can be easily removed. Moreover, the boot assembly of the invention may be installed quickly and easily without the need for tools of any type, and the installation does not require holes in the truck body, or any alteration whatsoever thereto.

**3,625,561**  
**REINFORCING ELEMENTS FOR A MOTOR VEHICLE BODY**  
Guntram Huber, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany  
Filed Jan. 31, 1969, Ser. No. 795,662  
Claims priority, application Germany, Feb. 1, 1968, P 16 80 014.9  
Int. Cl. B62d 27/00  
U.S. Cl. 296—28

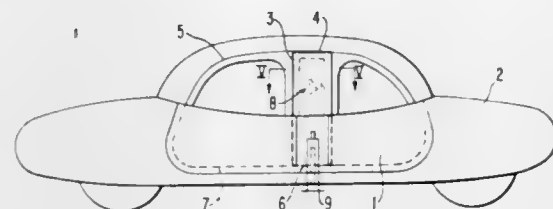
21 Claims



Reinforcing structure for the front body portion of a motor vehicle with a front engine, especially of a passenger motor vehicle, in which reinforcing elements lead from the structural elements disposed on the side of the engine to the cross-connection arranged to the rear of the engine; the reinforcing elements are so constructed and/or arranged and/or secured that they are able to transmit pressure forces only up to a predetermined limit.

**3,625,562**  
**CENTER SUPPORT COLUMN FOR MOTOR VEHICLES ROOFS**  
Bela Barenyl, Stuttgart-Vaihingen, and Karl Wilfert, Gerlingen-Waldstadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany  
Filed Feb. 20, 1969, Ser. No. 801,038  
Claims priority, application Germany, Feb. 23, 1968, Oct. 3, 1968; P 16 80 020.7, P 18 00 778.8  
Int. Cl. B62d 27/02  
U.S. Cl. 296—28 R

38 Claims



A center support column for motor vehicle roofs in which a hollow cross-sectional profile is provided within the connecting areas of the roof bearers and longitudinal bearers which is constructed relatively wide in the longitudinal direction of the vehicle; the cross-sectional profile forms one or several spaces, suitable for storing accessories whereby the spaces are accessible from within and/or without the vehicle.

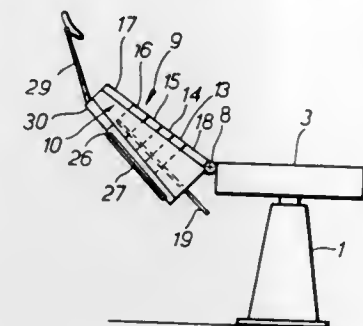
**3,625,563**  
**TANK COMMANDER'S SEAT AND FOOT PLATFORM ASSEMBLY**  
Nonnie F. Dickinson, Aberdeen, and Albert H. Tucker, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Army  
Filed May 22, 1970, Ser. No. 40,292  
Int. Cl. A47c 1/02  
U.S. Cl. 297—333

8 Claims



A combined seat and foot platform assembly to be mounted in the turret of a military tank or like vehicle and consisting of a substantially I-beam column secured between the floor and roof of the tank's turret. Spring loaded seat and foot platform assemblies are slidable along the column and are quickly adjustable in selected positions release levers which engage notches in the column. The seat and foot platform are quickly released for emergency descent from an open hatch to a combat position in the turret.

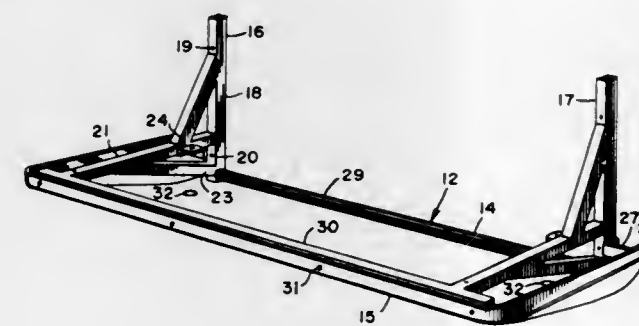
**3,625,564**  
**TREATMENT CHAIR**  
Harald Holstad, Bragerness Torv 2a, 3000 Drammen, Norway  
Filed May 5, 1969, Ser. No. 822,350  
Claims priority, application Norway, May 14, 1968, 1878/68  
Int. Cl. A47c 1/10  
U.S. Cl. 297—353



Chair for medical or dental treatments, having the back divided into a plurality of adjustable sections with means for maintaining a spacing between the sections and guides for controlling the motion of same, the length of the back being adjustable.

**3,625,565**  
**BACK-SUSPENDED CANTILEVER SEAT**  
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.  
Filed June 2, 1970, Ser. No. 42,740  
Int. Cl. B60n 1/00; A47c 5/00, 7/00  
U.S. Cl. 297—450

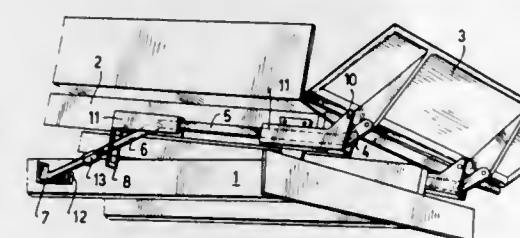
7 Claims



A longitudinal wall-supported cantilever seat has vertical posts anchored to a vehicle wall and seat-supporting arms carried by the posts and braced by diagonal struts, the arms supporting a tubular frame carrying a plastic shell seat.

**3,625,566**  
**TURNING MECHANISM FOR AN ENDBOARD OF A LORRY**  
Teuvo Suuronen, Liestuore, Finland  
Filed Jan. 27, 1970, Ser. No. 6,114  
Claims priority, application Finland, Feb. 1, 1969, 3133/68  
Int. Cl. B60p 1/26  
U.S. Cl. 298—23 D

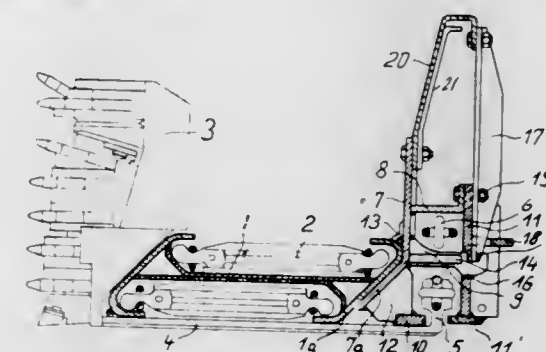
2 Claims



A turning mechanism for an endboard of a lorry comprising an operating arm displaced by means of the tilting movement of the platform of the lorry for turning of the endboard.

**3,625,567**  
**MINING MACHINE LONGWALL GUIDE STRUCTURE**  
Gunter Blumenthal, Westerholt; Heinz Kunzer, Herne/Westphalia, and Klaus Spies, Dortmund-Wellinghofen, all of Germany, assignors to Klockner-Werke Aktiengesellschaft, Duisburg, Germany  
Filed Dec. 3, 1969, Ser. No. 881,760  
Claims priority, application Germany, Dec. 4, 1968, P 18 12 552.5  
Int. Cl. E21c 35/12  
U.S. Cl. 299—43

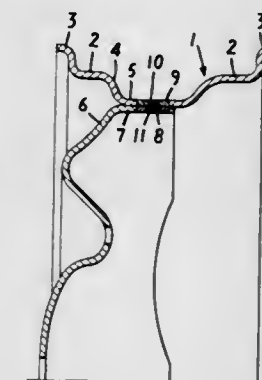
4 Claims



In a mining machine, the rear wall of each channel section of a scraper conveyor is detachably connected with a casing member of a casing section in which a chain driving the chain connectors of the cutter support of a cutting apparatus is located. The guide rail for the chain connectors is fixedly secured to the casing member and forms a rigid unit with the same on which other casing parts can be supported.

**3,625,568**  
**METHOD OF MAKING DISK WHEEL**  
Henri Verdier, Puy-de-Dome, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France  
Filed July 1, 1969, Ser. No. 838,116  
Claims priority, application France, July 2, 1968, 157608  
Int. Cl. B60b 1/06  
U.S. Cl. 301—63 R

8 Claims



A disk and a rim are assembled to form a wheel and are joined by welding spots. Punches or milling tools are simultaneously applied to opposite sides of the disk and rim and pressed together with sufficient force to form a permanent impression adjacent to each welding spot. This established a compressive reinforcement in the region of each welding spot.

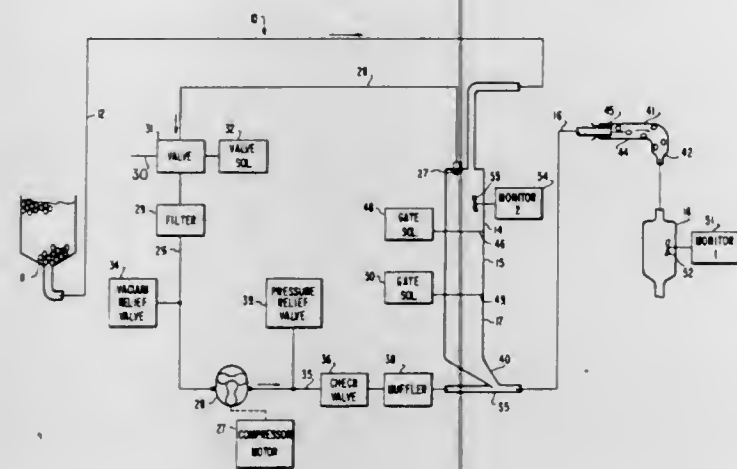
**3,625,569**  
**PNEUMATIC CONVEYOR**  
Sheldon Little, Atlanta, and Orval L. Braunbeck, Jonesboro, both of Ga., assignors to Sheldon Little Company, Atlanta, Ga.  
Filed Feb. 19, 1970, Ser. No. 12,570  
Int. Cl. B65g 53/00  
U.S. Cl. 302—2 R

8 Claims

A pneumatic conveyor for moving bottle caps or crowns from a large storage bin to a bottle-capping apparatus in a bottling line. An airflow stream is created from the crown

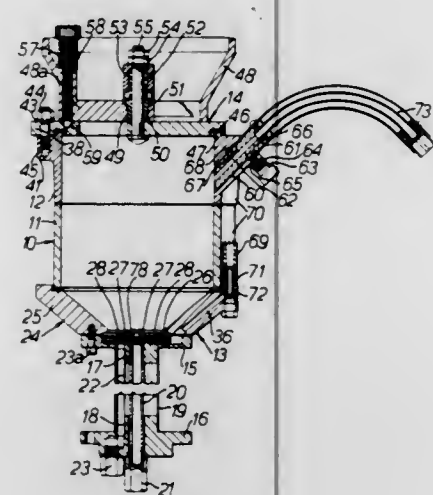


storage bin to carry crowns to and fill a first accumulation chamber, the flow stream is terminated, the crowns in the first accumulation chamber are transferred to a second accumulation chamber, and the flow stream from the storage bin to the first accumulation chamber is reestablished. A continuous airstream is maintained from the second accumulation chamber to the supply hopper of a crown dispenser in a bottling line and the crowns intermittently accumulated in



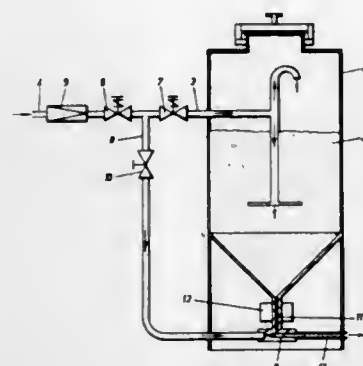
the second accumulation chamber are transported in the continuous airstream to the supply hopper. A major portion of the airstream is separated from the crowns as the crowns approach the supply hopper so as to decelerate the crowns as they approach the supply hopper. The intermittent operation of the airstream between the crown storage bin and the first accumulation chamber functions in response to the quantity of crowns present in the supply hopper for crown dispenser.

**3,625,570**  
**APPARATUS FOR DISPENSING WORKPIECES**  
Dennis Ford, Birmingham, England, assignor to Concentric Production Research Limited  
Filed Sept. 24, 1969, Ser. No. 860,754  
Claims priority, application Great Britain, Sept. 24, 1968, 45,253/68  
Int. Cl. B65g 53/00  
U.S. Cl. 302—2  
10 Claims



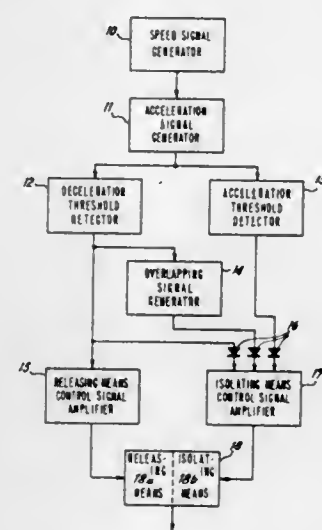
Apparatus for dispensing workpieces comprises a chamber incorporating opposed end closure assemblies one of which is provided with means for introducing into the chamber through a series of jet orifices air under pressure. Outlet means are located in the chamber at a point remote from the said one end closure assembly, and the chamber is provided with at least one normally closed opening through which workpieces are introduced into the chamber. Air issuing from the jet orifices creates a turbulence within the chamber which causes the workpieces to be directed away from the said one closure assembly and to be discharged individually at random through the outlet means under the influence of air escaping therethrough.

**3,625,571**  
**POWDER-DISTRIBUTING APPARATUS**  
Dieter Kimm, Frankfurt am Main, Germany, assignor to Messer Griesheim G.m.b.H., Frankfurt am Main, Germany  
Filed Sept. 22, 1969, Ser. No. 859,799  
Claims priority, application Germany, Sept. 25, 1968, P 17 77 217.7  
Int. Cl. B65g 53/42  
U.S. Cl. 302—53  
2 Claims



Apparatus for distributing a magnetizable metallic powder, such as iron powder, comprising an airtight container for storing the powder therein, conduit means supplying a pressurized gas to the container for creating a predetermined operational pressure therein, an injector having an inlet operatively coupled with said container and produces a gas-powder mixture from the powder upon forcing the powder into it by the pressure, a magnetic coil disposed adjacent the inlet for preventing, when actuated, entry of the powder into the inlet from the container under pressure thereby reliably sealing the outlet of the container, a valve disposed in the conduit for reliably sealing the container, when closed, whereby actuation of the magnetic device and closing of the valve reliably retains the operational pressure in the container during interruption of operation.

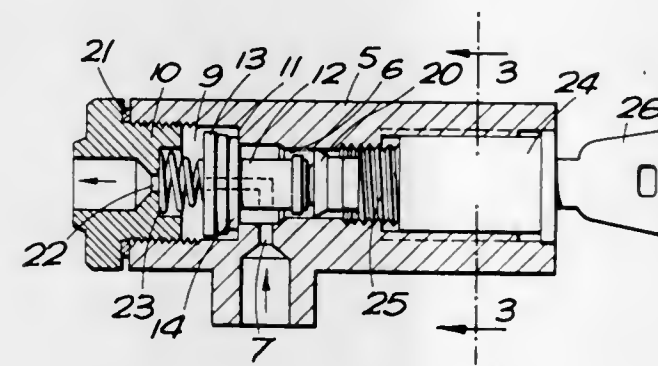
**3,625,572**  
**ANTISKID DEVICE FOR A VEHICLE-BRAKING SYSTEM**  
Guy Marouby, Neuilly, France, assignor to Societe Anonyme D.B.A., Paris, France  
Filed Sept. 17, 1969, Ser. No. 858,662  
Claims priority, application France, Oct. 10, 1968, 169427  
Int. Cl. B60t 8/04  
U.S. Cl. 303—21 BE  
1 Claim



An antiskid device for a vehicle-braking system having an electronic sensing unit selectively controlling the operation of an actuating unit formed of two components. Once the braking pressure has been applied to the braking system, one of the components is selectively activated to isolate the brake pedal from the braking system between one instant corresponding to a predetermined threshold of wheel deceleration and another instant substantially corresponding to the end of the wheel acceleration period which follows the wheel deceleration period while the other component is selectively

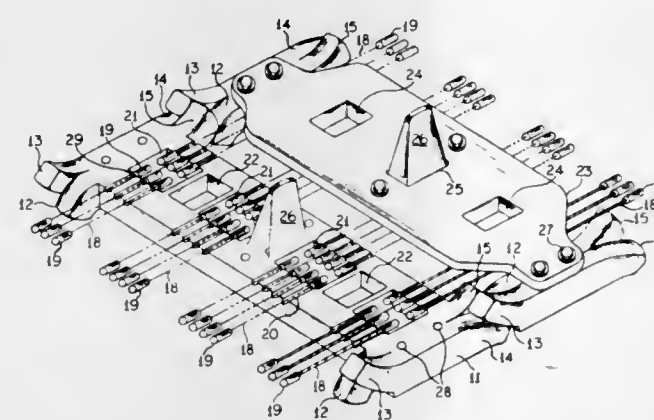
activated to progressively release the pressure in the braking system to a certain value between said one instant corresponding to said predetermined threshold of wheel deceleration and still another instant corresponding to a second predetermined threshold of wheel deceleration which is closed to the point of zero deceleration (or acceleration), the pressure in the isolated braking system being maintained to the said value until the instant substantially corresponding to the end of the wheel acceleration period which follows the wheel deceleration period, i.e. until the moment where the brake foot pedal may become again operative and may generate, due to the deceleration of the wheel, a succeeding operating cycle.

**3,625,573**  
**ANTITHIEF DEVICES**  
Jack Samuel Conn, Walton-on-Thames, England, assignor to Auto-Safe Limited, Richmond, Surrey, England  
Filed Nov. 19, 1969, Ser. No. 878,071  
Int. Cl. B60t 17/16  
U.S. Cl. 303—89  
10 Claims



In a hydraulic brake system of a vehicle having a master cylinder and brake cylinders, between the master cylinder and the brake cylinders, a device for preventing the unauthorized movement of the vehicle comprising essentially a device operable to act as a one-way valve to prevent return flow of brake fluid from the brake cylinders to the master cylinder, the one-way valve having a valve head of plastics material and including a pressure relief valve comprising a valve member spring urged against an aperture in said plastics valve head to permit passage of excess fluid from the brake cylinders to the master cylinder.

**3,625,574**  
**TRACK ELEMENT FOR SELF-LAYING TRACK-TYPE VEHICLE**  
Dominic Plastino, Montreal, Quebec, Canada, assignor to Pac-Trac Industries Limited, Ottawa, Ontario, Canada  
Filed Sept. 15, 1969, Ser. No. 857,667  
Claims priority, application Canada, July 14, 1969, 056,997  
Int. Cl. B62d 55/18  
U.S. Cl. 305—40  
9 Claims

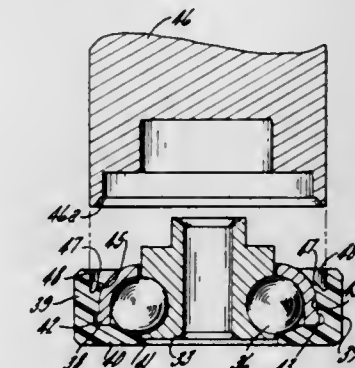


A track for a track laying vehicle in which the individual track elements are joined together by a series of separate wire rope connectors which fit into recesses in the track element and are held in place by a bolted cover plate. Each

S93 O.G.—7

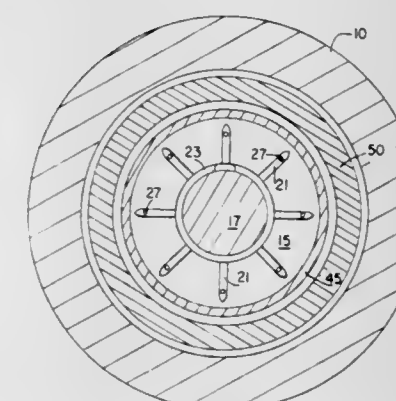
track element has a pair of cams at each of four corners. One of the cams of each pair being curved upwardly and the other being curved downwardly such that rotational movement of one track element relative to the adjacent track element results in at least one cam of one track element rolling on the surface of a cam on the adjacent track element.

**3,625,575**  
**ANTIFRICTION ROLLER**  
Lee T. Darnell, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.  
Filed Aug. 8, 1969, Ser. No. 848,563  
Int. Cl. F16c 21/00  
U.S. Cl. 308—3.8  
9 Claims



An antifriction roller for use in a drawer slide. The roller is formed by a generally cylindrical inner race, a plurality of balls seated in the inner race, an outer race telescoped over the balls and the inner race, and a cup-shaped nylon tire formed with a bottom wall and a sidewall telescoped over the outer race. A radially outwardly extending shoulder is formed around the periphery of the outer race and is seated in an annular groove in the tire with a snap fit to hold the tire on the outer race. To reduce the tendency of the tire to separate axially from the outer race, a lip is formed on the sidewall of the tire and bears against the outer race. The lip is formed from the material of the sidewall after the tire has been telescoped over the outer race. To accomplish this, a circular die is pressed against the inner portion of the end of the sidewall to deform the material of the inner portion of the sidewall and mold the deformed material in a cold operation into the lip. The lip is formed between the outer die and the outer race thus causing one surface of the lip to engage the outer surface of the outer race and to assume the shape of the outer surface of the outer race.

**3,625,576**  
**BEARING AND SEALING STRUCTURE FOR HIGH-SPEED SHAFTS**  
Kenneth H. Miller, Syracuse, N.Y., and Robert N. Zuck, Glendora, Calif., assignors to Carrier Corporation, Syracuse, N.Y.  
Filed Apr. 15, 1970, Ser. No. 28,899  
Int. Cl. F16c 17/10, 33/72  
U.S. Cl. 308—9  
2 Claims



A bearing in which the shaft is journaled is fixed in a housing and has a radial portion formed with a series of radially



disposed grooves extending outwardly from the shaft and terminating short of the periphery of the radial portion. The radial portion of the bearing is formed with a passage extending from the outer end of each groove to an oil drain chamber. A thrust disc or collar is fixed to the shaft and has running engagement with the surface of the radial portion of the bearing and has a cylindrical flange encircling the same. A seal is provided intermediate the housing and the flange to prevent or reduce to a minimum the escape of oil from within the housing.

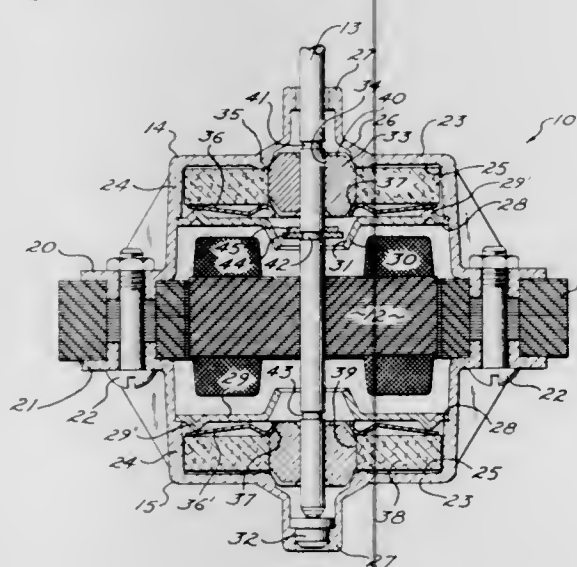
3,625,577

## LUBRICANT-RETAINING MEANS

Howard R. Coleman, Elyria, Ohio, assignor to The General Industries Company, Elyria, Ohio  
Filed Jan. 19, 1970, Ser. No. 3,873  
Int. Cl. F16c 33/78

U.S. Cl. 308—36.4

2 Claims



There is disclosed herein a small electric motor having a rotor shaft rotatably mounted adjacent to the ends thereof in self-aligning bearings disposed within lubricant reservoirs and surrounded by lubricating wicks. The rotor shaft has circumferential grooves adjacent to the ends of the bearings surrounded by frustoconical openings. A retainer ring and washer combination is associated with one of said grooves.

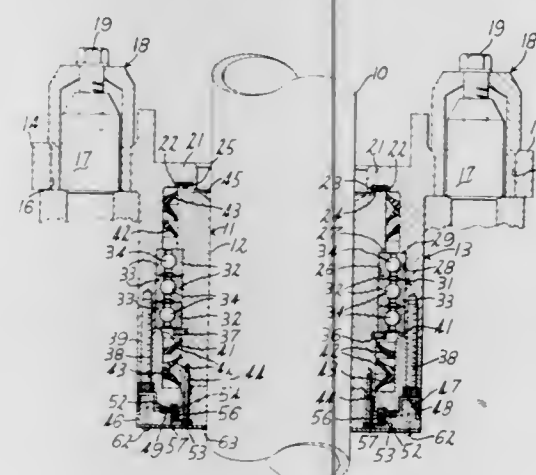
3,625,578

## GUIDE BUSHING FOR ROTARY DRILL PIPE

James B. Loftis, Remlap; David L. Moody, and James H. Phillips, both of Oneonta, all of Ala., assignors to Robbins Machinery Company  
Filed Oct. 12, 1970, Ser. No. 79,857  
Int. Cl. F16c 33/72

U.S. Cl. 308—187.1

9 Claims



Guide bushing assembly having cylindrical member with hardened inner surface of dimension to engage and rotate

with drill pipe and permit relative axial movement. Cylindrical member supported by lubricated bearing assembly between cylindrical member and outer housing. Flexible lubricant seals limit egress of lubricant and ingress of foreign materials. Cover on cylindrical member nearest hole being bored extends alongside adjacent end of housing with ring seal in oppositely disposed recesses therebetween. Resilient O-ring in one recess urges ring seal toward other recess.

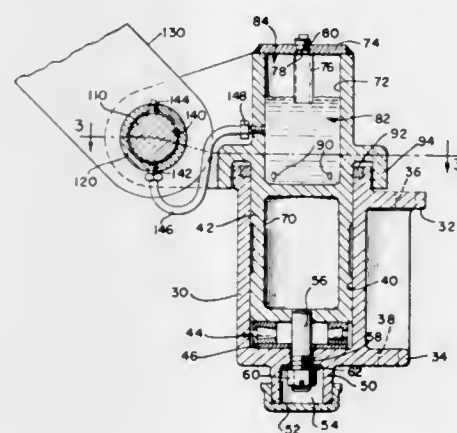
3,625,579

## BEARING STRUCTURE

Einar O. Lunde, 66 Calypso Shores, Novato, Calif.  
Filed Mar. 23, 1970, Ser. No. 21,722  
Int. Cl. F16c 19/10

U.S. Cl. 308—227

8 Claims



A support means has a recess which receives a portion of a rotatable means. A thrust bearing and a cushion pad support the lower end of the rotatable means, and a well is provided in communication with the bottom of the recess. A lubricant reservoir is provided in the upper part of the rotatable means and has lubricant therein as well as air in the upper part thereof. A pivot pin is supported by the rotatable means and a flexible conduit connects the lubricant reservoir with a groove formed in the interior of a sleeve journaled on the pivot pin. Means is provided for filling the lubricant reservoir and for venting the groove in said sleeve when filling the groove with lubricant.

3,625,580

## JOURNAL BEARING FOR FLUCTUATING LOADS

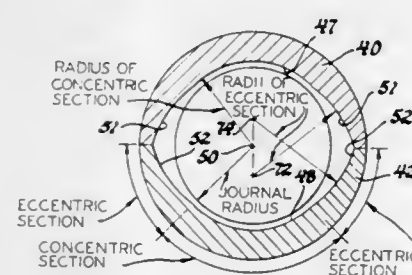
Arnold O. DeHart, Rochester, Mich., and Duane H. Harwick, Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1970, Ser. No. 12,716

Int. Cl. F16c 3/14

U.S. Cl. 308—240

4 Claims



A journal bearing adapted for use in main and connecting rod journals of internal combustion engines and like applications, wherein high-fluctuating loads result in deformation of the bearing containing member, with consequent close-in adjacent the split line between the two bearing shells. The bearing comprises a pair of bearing shells, preferably including a central concentric section having an inner surface centered on the bearing axis and connecting with eccentric end sections providing for progressively increasing clearance from the associated journal adjacent the bearing split line. The ec-

centric end sections extend sufficiently far from the split line to prevent bearing distress due to close-in. High-load capacity and low-oil flow requirements are attained by the use of a relatively large concentric central section.

3,625,581

## COMPACT OFFICE FILING CABINET

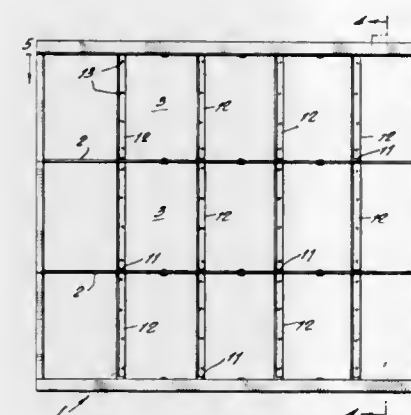
Phillip Frederick, Brooklyn, N.Y., assignor to Supreme Equipment & Systems Corp.

Filed Oct. 6, 1969, Ser. No. 864,071

Int. Cl. A47b 53/00

U.S. Cl. 312—198

6 Claims



A filing cabinet comprising a plurality of vertically spaced, substantially horizontal shelves, each shelf having no lip on the front edge. On each shelf there is provided a plurality of separators, each of which is affixed to the shelf and the vertical backing by welding or by similar means, whereby a stiff substantially rigid structure is obtained without the necessity of the lip on the front edge.

3,625,582

## CASE FOR A PORTABLE SEWING MACHINE

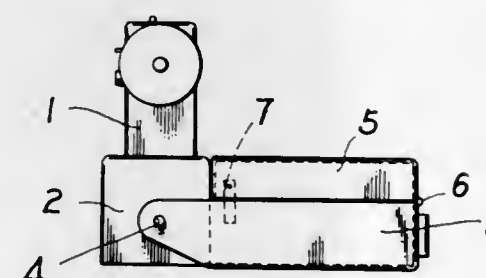
Hajime Naito, Kofu, Japan, assignor to Crystal Sewing Machine Ind. Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1969, Ser. No. 881,382

Int. Cl. A47b 21/00, 85/00

U.S. Cl. 312—208

1 Claim



A case for a portable sewing machine comprising a first cover member connected pivotally at one end thereof with a base box on which a main body of the sewing machine is mounted, and a second cover member connected pivotally at one end thereof with the other end of the first cover member. The width defined by said two cover members is similar to the height of the base box and the outer surface of the second cover member is used as a table on which the sewing is operated.

3,625,583

## ERASABLE HOLOGRAM

George J. Fan, San Jose, Calif., and James H. Greiner, Millwood, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 15, 1968, Ser. No. 745,034

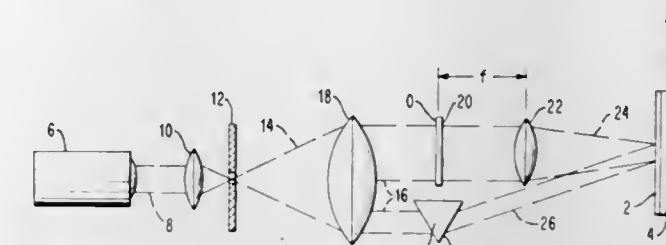
Int. Cl. G02b 27/00; G02l 1/22

U.S. Cl. 350—3.5

3 Claims

A hologram is produced that is erasable. The erasable storage medium is a thin layer of a europium chalcogenide,

i.e., europium oxide, on which the hologram is recorded. The medium chosen on which to record a hologram is erasable and shows no degradation for repetitive storage and erasures.



A powerful laser beam is employed for recording purposes in that short powerful light pulses are needed to record on materials having short thermorelaxation times.

3,625,584

## THREE DIMENSIONAL LARGE SCREEN MOVIE TECHNIQUES EMPLOYING HOLOGRAPHY AND A CYLINDRICAL OPTICAL SYSTEM

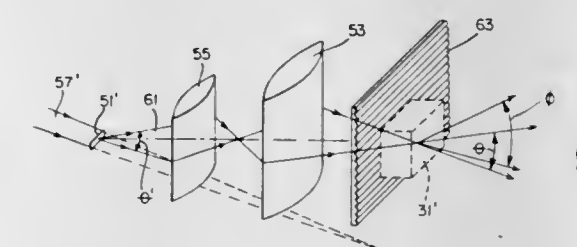
Daniel S. St. John, Hockessin, Del., assignor to Holotron Corporation

Filed Jan. 9, 1970, Ser. No. 1,603

Int. Cl. G02b 27/00; G03b 35/00, 41/00

U.S. Cl. 350—3.5

25 Claims



Holographic information-processing techniques which result in a hologram being formed on photosensitive material capable of reconstructing an image in real space many times the size of the hologram. Horizontal and vertical information components of an object scene to be holographically recorded are treated independently of each other. The horizontal informational component is reduced by an optical system and recorded across a long dimension of a rectangular hologram. In a preferred form of the invention, the horizontal informational component is dispersed prior to holographic recording in order to reduce the bandwidth of said information. Except for the possible use of light-gathering optics, the vertical informational component of an object scene to be recorded along the narrow dimension of the hologram is not processed. Successive holograms so constructed are placed on a film and drawn across their narrow direction through a shutterless continuous wave coherent light beam to reconstruct in real space successive images that appear to a theater audience to form continuous action. The horizontal information component is displayed in full three dimensions while the vertical information is projected with limited three dimensionality to each member of the audience from the hologram through a lenticular screen.

3,625,585

## PERIODIC SCAN MAGNIFICATION FOR LASER BEAM DEFLECTION

Leo Beiser, Flushing Manor, N.Y., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Filed Aug. 5, 1968, Ser. No. 750,086

Int. Cl. G02b 23/00

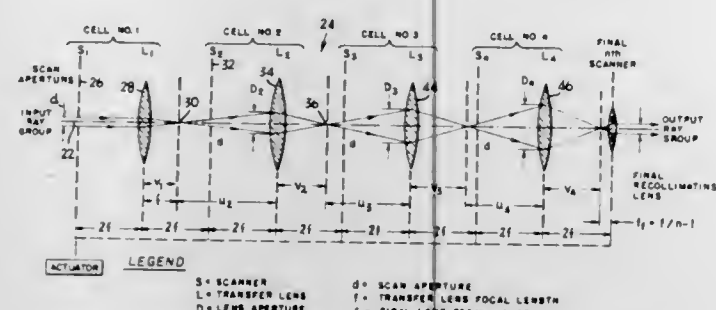
U.S. Cl. 350—54

16 Claims

Periodic scan enhancement takes advantage of iteration or summation of contributions from individual scanning sections. Vignetting at the scanning aperture is avoided, permitting employment of a multiplicity of elements whose sizes



are diffraction limited. This is achieved by the interposition of alternate optical transfer elements that reimage the aperture of one scanning element upon the aperture of the next.



The necessary progressive increase in aperture size occurs at the (static) transfer optics rather than at the (dynamic) scanning elements.

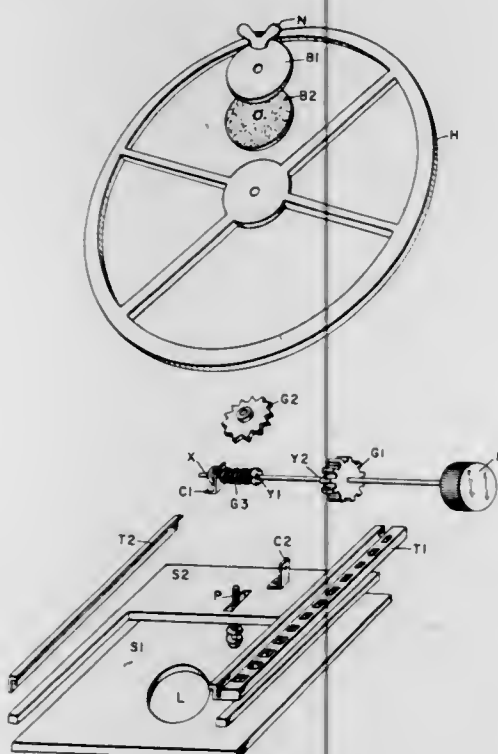
3,625,586

**LINEARLY AND ROTATIONALLY ADJUSTABLE MULTISLIDE MICROSCOPE STAGE**  
Michael T. Olexa, P.O. Box 3080 Sabraton Station, Morgantown, Va.

Filed Aug. 20, 1969, Ser. No. 851,647  
Int. Cl. G02b 2/24

U.S. Cl. 350-90

1 Claim



This invention comprises a multiple slide-carrying microscope stage, having integral mechanical means for the reproducible linear and rotational motion of the specimens thereon.

3,625,587

**VERSATILE COUPLER FOR INTERNAL REFLECTION SPECTROMETRY**

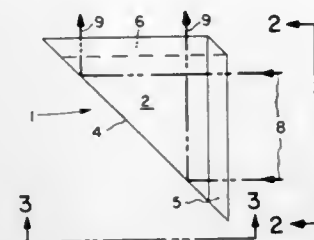
Nicolas J. Harrick, Croton Dam Road, Ossining, N.Y.  
Filed Sept. 22, 1969, Ser. No. 859,686  
Int. Cl. G02b 5/14

U.S. Cl. 350-96

10 Claims

A versatile coupler for optically coupling a beam of radiation into or out of an internal reflection element for internal reflection spectroscopy is described. The coupler comprises a generally right-triangular member which is optically transparent and two of whose sides are beveled but in opposite

directions. In use, the vertically oriented beam enters at one side of the triangular coupler, internally reflects off its major



surfaces and the hypotenuse and exits from the coupler at the opposite side from whence it enters the internal reflection element which is in optical contact with said opposite side.

3,625,588

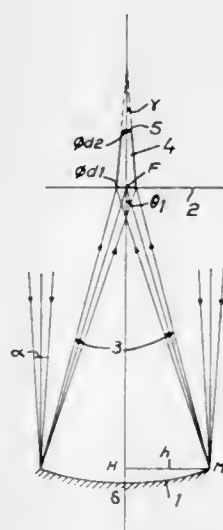
**MAXIMUM ILLUMINATION OPTICAL CONCENTRATOR**

Pierre Malifaud, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche (Anvar), Puteaux, France  
Filed June 12, 1969, Ser. No. 832,763

Claims priority, application France, June 12, 1968, 154666  
Int. Cl. G02b 5/16

U.S. Cl. 350-96 B

3 Claims



The present invention relates to an optical concentrator with maximum illumination, comprising a frontal parabolic mirror with half opening  $\theta_1$  (angle made by a straight line connecting the focus and the mirror edge with reference to the optical axis) effecting a first concentration of a flux captured from a distant source of radiation, forming an image in the smallest section of a bundle of convergent rays with half angle opening  $\theta_2$  with the optical axis, and a truncated cone mirror whose entrance section of diameter  $d_1$  is disposed to coincide with the so-called Gaussian image furnished by the said frontal parabolic mirror, and whose terminal section, of smaller diameter, is associated with a sensitive element or radiation transformer of a receiver.

3,625,589

**APPARATUS FOR CONTROLLING THE PROPAGATION CHARACTERISTICS OF COHERENT LIGHT WITHIN AN OPTICAL FIBER**

Elias Snitzer, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

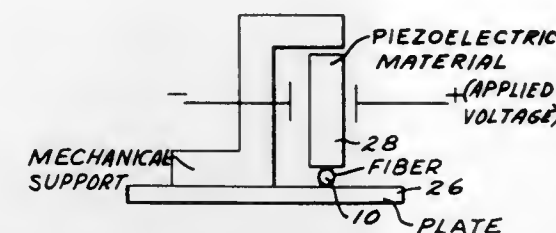
Filed Aug. 19, 1969, Ser. No. 852,977  
Int. Cl. G02b 5/14

U.S. Cl. 350-96 WG

21 Claims

A device useful in processing information comprising an

optical fiber for transmitting coherent light in a low-order mode of propagation, means for controlling characteristics,



including polarity and phase, of the coherent light as it is transmitting through the fiber.

3,625,590

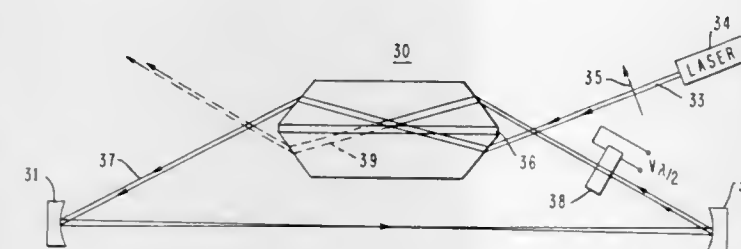
**OPTICAL CIRCULATOR AND ENERGY CONVERTER**

Millard A. Habegger, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,171  
Int. Cl. G02f 1/24

U.S. Cl. 350-150

10 Claims



Optical circulator or storage ring apparatus employing a nonreciprocal optical device and reflecting means to store optical energy. The device has the property that if a light beam is projected to it in one direction it is totally reflected and if projected to it in a second direction it is totally transmitted. By employing this device, optical energy may be coupled into and out of the circulator without optical loss. By exercising control over the polarization of the energy the circulator converts it so that it may be supplied in either continuous wave or pulse form. If a nonlinear crystal is located in the circulator in the path of the energy the apparatus acts to convert from a fundamental wavelength to a predetermined harmonic of that wavelength.

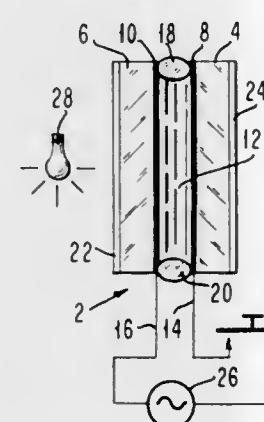
3,625,591

**LIQUID CRYSTAL DISPLAY ELEMENT**  
Marvin J. Freiser, Scarborough, and Ivan Haller, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,235  
Int. Cl. G02f 1/26

U.S. Cl. 350-150

4 Claims



An electro-optical display device employing a cell comprising a nematic liquid between two glass plates whose inner

surfaces have been coated with transparent electrodes. Such coated electrodes are rubbed with a cloth or filter paper so that the liquid crystal film becomes oriented along the direction of rubbing. Such film will be homogeneous and strongly birefringent so that when an electric field is applied to the electrodes of the cell and the latter is viewed between crossed polarizers, a marked contrast in light between the quiescent and active states, respectively, of the cell is observed, even in the presence of ambient illumination of the cell.

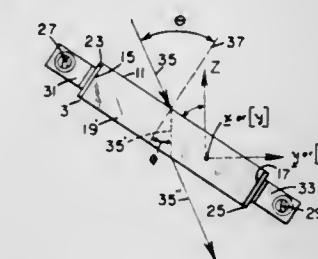
3,625,592

**ELECTRO-OPTICAL MODULATOR**  
James Donald Beasley, Cleveland, Ohio, assignor to Clevite Corporation

Filed Nov. 13, 1969, Ser. No. 876,464  
Int. Cl. G02f 1/26

U.S. Cl. 350-150

22 Claims



An electro-optical modulator employing the linear electro-optic effect, also known as the Pockels effect, in potassium dihydrogen phosphate or other P-type crystal material has the optical faces of the crystal body cut at oblique angles to the optic axis. Electrodes are arranged so that when a potential difference is applied a component of the resulting field in the body is parallel to the optic axis. In a preferred form the optical faces are so oriented that a beam of light incident on one of the faces at Brewster's angle passes through the body parallel to the optic axis. Reflections are eliminated when the incident beam is linearly polarized with the electric vector parallel to the plane of incidence, and the electric field in the body is zero.

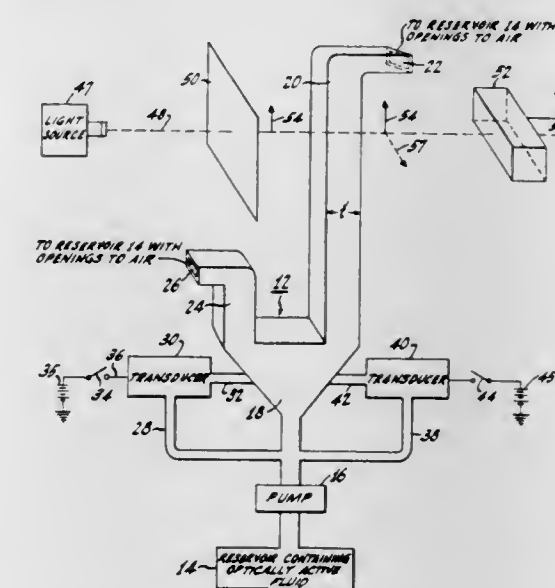
3,625,593

**ELECTRICAL CONTROL OF LIGHT POLARIZATION UTILIZING THE OPTICAL PROPERTY OF FLUIDS**  
George W. Taylor, Princeton, N.J., assignor to RCA Corporation

Filed Feb. 3, 1969, Ser. No. 795,874  
Int. Cl. G02b 27/28

U.S. Cl. 350-157

8 Claims



The electrical control of light polarization utilizing the optical properties of fluids. A container of fluid is placed in the path of a polarized light beam, and the polarization of the light is changed an amount dependent upon the effective



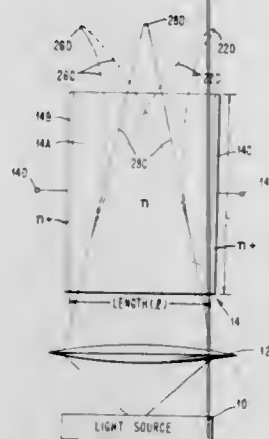
dimensions of the container and the optical characteristics of the fluid. Means responsive to the change in polarization are included for either deflecting, or varying the intensity of, the polarized light.

3,625,594

**ELECTRIC FIELD GRADIENT BEAM DEFLECTOR**  
Conrad Lanza, Putnam Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed June 30, 1969, Ser. No. 837,598  
Int. Cl. G02f 1/28

U.S. Cl. 350-160 R

8 Claims



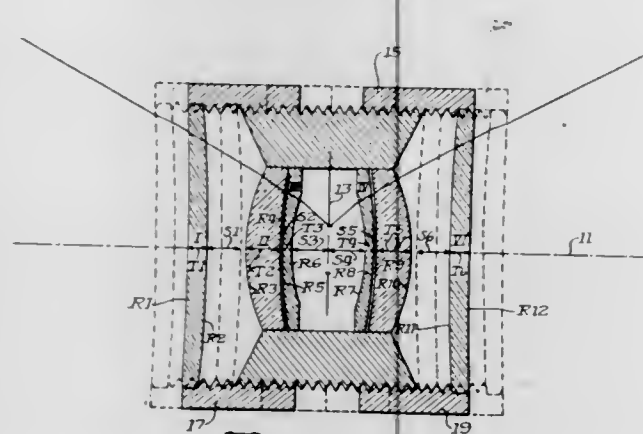
The beam deflector is formed of a body of *n*-type gallium arsenide. Ohmic contacts are made at opposite ends of the body. The doping concentration ( $n_0$ ) and the length (*l*) of the body are such that the  $n_0 l$  product is less than the critical value for inherent bulk oscillations. A voltage above a threshold value applied to the body produces a field gradient across the body. This field gradient produces a gradient in index of refraction for light at energies close to the band gap of the gallium arsenide. The source of light to be deflected is a gallium arsenide injection laser which emits light at less than band gap energy. The laser beam is passed through the gallium arsenide deflector and deflected under the control of voltages applied across the ohmic contacts.

3,625,595

**SELF-COMPENSATING SYMMETRICAL LENS SYSTEM**  
Andor A. Fleischman, Northbrook, Ill., assignor to Bell & Howell Company, Chicago, Ill.  
Filed Jan. 26, 1970, Ser. No. 5,487  
Int. Cl. G02b 7/04, 9/62

U.S. Cl. 350-215

4 Claims



This disclosure describes a self-compensating lens system for use in a photocopier. The lens system is formed of six lens elements axially arrayed along a projection axis. The lenses are symmetrical about a center point. The four inner lenses are essentially fixed in space and the outer two lenses are axially moveable to provide compensation for mechanical and optical variations in the object-to-image distance of the photocopier.

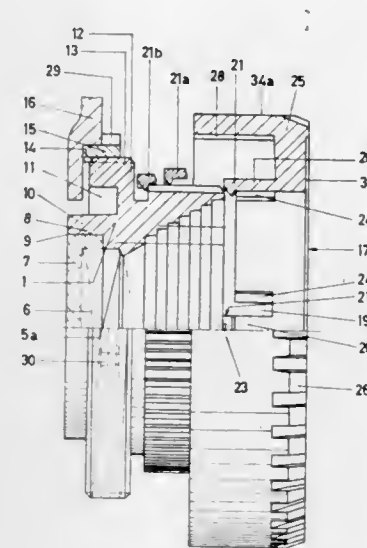
**3,625,596**  
**PLASTICS SOCKET ARRANGEMENT FOR OBJECTIVE LENSES WITH DISTANCE ADJUSTMENT FOR CAMERAS**

Karl Heinz Lange, Ennigloh, and Karl Tacke, Gohfeld-Bischhofshagen, both of Germany, assignors to Balda Werke Photographische Geräte und Kunststoff R. Gruter Kommanditgesellschaft, Bunde, Westphalia, Germany  
Filed June 6, 1969, Ser. No. 831,067  
Claims priority, application Germany, Aug. 8, 1968, P 17 97 051.3

Int. Cl. G02b 7/02

U.S. Cl. 350-255

11 Claims



An improved plastic-produced fitting of special construction of objective lenses of cameras with distance adjustment, simplifying the production and avoiding lathe-work, milling, boring a.s.o. but being instantly ready for assembly and a process of mounting and demounting for it.

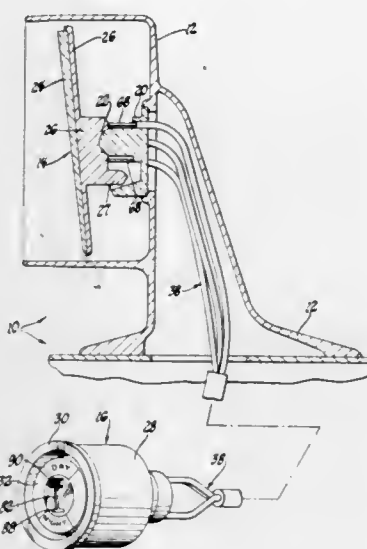
3,625,597

**REMOTELY CONTROLLED DAY-NIGHT MIRROR ASSEMBLY**

David P. Jones, Detroit, Mich., assignor to Lee Radke Associates, Inc., Detroit, Mich.  
Filed Jan. 12, 1970, Ser. No. 2,252  
Int. Cl. G02b 7/18

U.S. Cl. 350-281

17 Claims



An improved actuator means in a remotely controlled day-night mirror assembly including a movably supported mirror means having two reflecting surfaces of different reflecting power. The actuator means includes a generally cup-shaped housing with a primary actuating member supported for universal movement within the housing and a secondary actuating member supported in a semispherical cavity in the primary actuating member for movement relative to the pri-

mary actuating member between day and night positions and for moving with the primary actuating member when in either the day or night positions. The secondary actuating member is connected to the mirror by three push-pull remote control assemblies. A strip of metal defining a selector is attached to the secondary actuating member and extends through a slot in the primary actuating member and supports a knob on its distal end. By moving the knob from one end of the slot to the other, the secondary actuating member is moved between the day and night positions relative to the primary actuating member. When the knob is in either of the day or night positions, the primary actuating member may be moved to move the secondary actuating member thereby adjusting the position of the mirror.

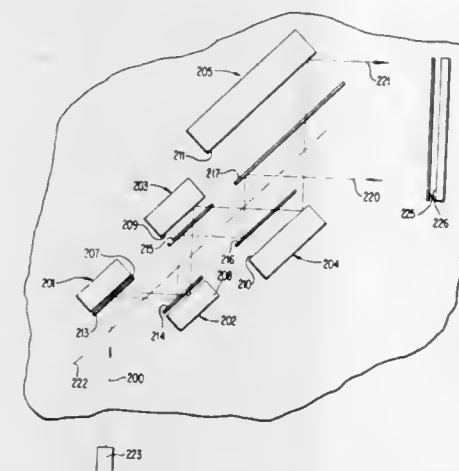
3,625,598

**LIGHT BEAM DEFLECTOR**

Byron R. Brown, San Jose; Kenneth Sanders, Campbell; Lester F. Shew, Los Gatos, and Hans J. Zweig, Mission Viejo, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Oct. 9, 1969, Ser. No. 865,088  
Int. Cl. G02b 5/08

U.S. Cl. 350-299

4 Claims



A light beam deflector system comprising parallel positioned movable mirrors, each backed by a fixed mirror, and positioned to deflect an incoming beam back and forth across a central axis. By moving the movable mirrors out of position at a selected station, the beam is permitted to pass on and be deflected by the fixed mirror, which offsets the beam position at the final station. Additionally, if desired, a series of masks may be provided between the target and the last deflecting station which finally aligns the beam with the target. The beam is larger than the size needed, and the mask blanks off the portion of the beam not needed and allows only that portion to pass through which is in direct alignment with the target area.

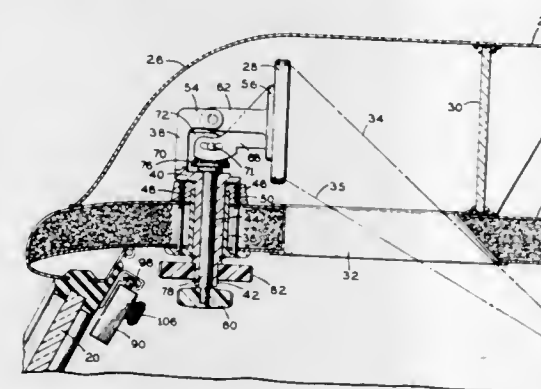
3,625,599

**COMBINED MIRROR AND VISOR**

Alfred G. Poirier, P.O. Box 19, Saratoga Springs, N.Y.  
Filed Oct. 6, 1970, Ser. No. 78,418  
Int. Cl. G02b 5/08

U.S. Cl. 350-307

4 Claims



A mirror is mounted above the roof of a vehicle at an aperture, the mirror being adjustable horizontally and vertically

by operation of concentric shafts passing through the roof. A visor is provided which cannot block the aperture, the visor including blades which fan out to block or shade the sun at the top of the windshield of the vehicle.

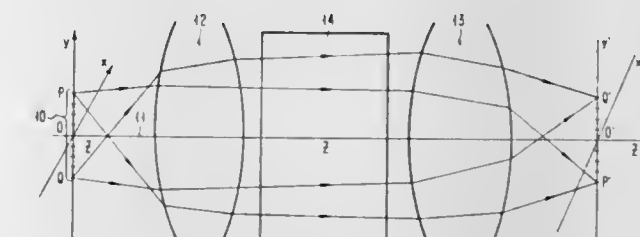
3,625,600

**ACOUSTIC LIGHT DEFLECTION METHOD**

Stephen Henry Rowe, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Mar. 31, 1970, Ser. No. 24,263  
Int. Cl. G02f 1/16

U.S. Cl. 350-161

9 Claims



An acousto-optical deflection method employing control of the wave front relationship between the acoustic waves generated in an acoustical Bragg deflector and the optical wave fronts emanating from any one of a number of light sources located along an axis normal to the generated acoustic wave fronts, so that a light beam generated by any one of a number of light sources may be deflected to any one of a desired number of positions without the necessity of adjusting each individual light source position, and without physically moving either the light sources or the acoustical deflector. The system includes in sequence at least one light source, a collimating lens, an acoustical Bragg deflector, and an imaging lens. Applications to data tracking are included.

3,625,601

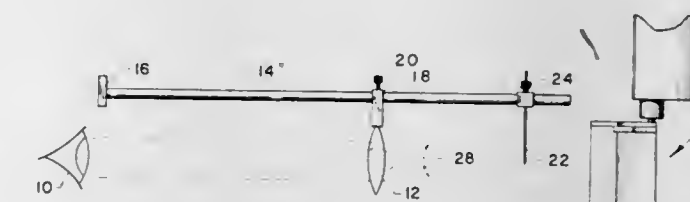
**METHOD AND APPARATUS FOR MEASURING RETINAL DEPRESSIONS AND ELEVATIONS**

Peter Augusto, Worcester, and Charles Herman Swope, Holliston, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Feb. 2, 1970, Ser. No. 7,632  
Int. Cl. A61b 3/10; G01b 11/30

U.S. Cl. 351-6

18 Claims



Retinal depression and elevation measurements are obtained with an apparatus which includes a relay lens which is placed in front of a subject's eye to form an aerial image of the area of the retina of the eye to be measured. A marker having a needle point is placed on the opposite side of the lens from the eye. The aerial image is then viewed through a stereoscopic indirect ophthalmoscope, focusing first on a reference plane, the marker needle is moved into focus in the aerial image and then the ophthalmoscope refocuses onto a secondary plane in the image. By moving the marker needle into focus in the secondary plane, the distance of movement of the marker needle determines the relative depression or elevation of the secondary plane.



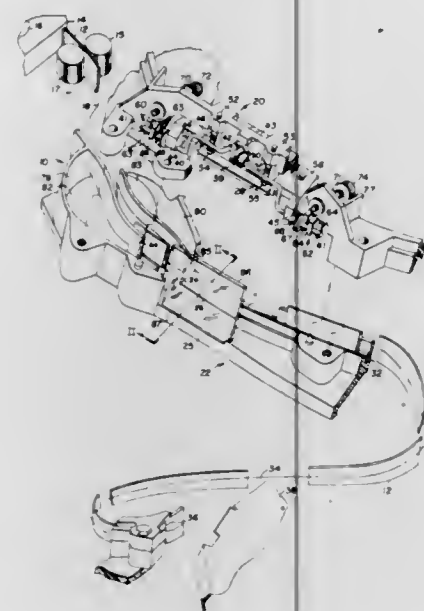
### 3,625,602 STRIP FEED GUIDE

Robert P. Grandall, and Ronald A. Phillips, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 20, 1968, Ser. No. 730,484  
Int. Cl. G03b 23/12

U.S. Cl. 353-26

10 Claims



Apparatus is disclosed for receiving a strip of photographic film and for precisely disposing the film with respect to an associated lens and radiation source, which project the images from the strip of film onto a display surface. This apparatus includes a lower guide plate having a V-shaped groove therein and a spring-biased gate having a second V-shaped groove therein between which grooves is driven the strip of film. The spring-biased gate is pivotably mounted about an axis which may be adjusted to coincide with the desired placement of the strip to ensure accurate focusing of the images contained upon the strip of film. More specifically, the gate is disposed upon a hanger by a pair of clips, whose position may be adjusted with respect to the lower guide plate.

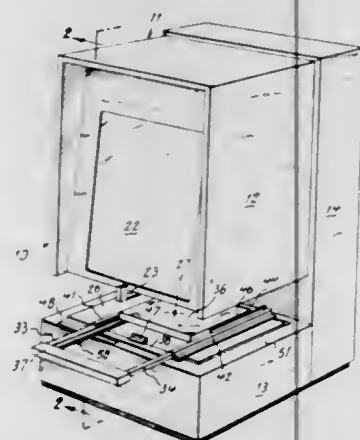
### 3,625,603 MICROFILM READER

Eric G. Jansons, Marietta, Ohio, assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 26, 1969, Ser. No. 827,687  
Int. Cl. G03b 23/08

U.S. Cl. 353-27

1 Claim



This disclosure describes apparatus for projecting photographic images on a viewing screen. An optical path intersects a plane over which a rectangular transparency holder is randomly traversed. One or more segments of filmed images are arranged in a predetermined manner in the holder, whereby manual or automatic manipulation thereof enables

an operator to position a selected image in the optical path. The images, presented in a unitized microform sheet having a common geometrical shape, are readily indexed with respect to known coordinate axes of the sheet. By placing the sheet in the holder in a predetermined manner, the sheet becomes positionable in concert with the holder with respect to the optical path. Accordingly, strips of indicia disposed in orthogonal relationship on the holder and the reader frame, and in mutually parallel relationship with the mentioned coordinate axes provide convenient referencing for image selection.

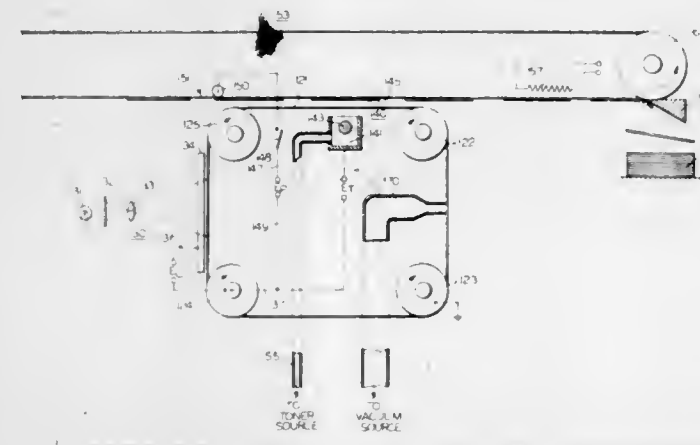
### 3,625,604 APERTURE CONTROLLED ELECTROSTATIC PRINTING SYSTEM

Gerald L. Pressman, San Jose, Calif., assignor to Electroprint, Inc., Palo Alto, Calif.

Filed Oct. 6, 1967, Ser. No. 673,499  
Int. Cl. G03g 5/00, 13/06

U.S. Cl. 355-3

11 Claims



An aperture controlled electrostatic printing device which employs a multilayer screen comprising at least a conductive layer and a superimposed insulative layer to enable the deployment of opposite electrostatic charges on the screen relative to the insulative layer. The double layer charges are modified in accordance with an image to produce blocking and nonblocking fields controlling the apertures in accordance with the image to be reproduced. The conductive screen layer is maintained at a potential usually during charging and printing, and a propulsion field is provided for directing charged printing particles toward the screen. The charged particles pass through the screen where the apertures are not blocked by the fringing fields and also pass through apertures which are partially blocked, but in fewer numbers. This device uses a charge pattern which modulates the flow of toner particles through the screen to a print receiving medium, via preferably an airgap, for subsequent fixing thereon, if necessary.

### 3,625,605 ELECTROSTATIC COPYING APPARATUS

Gunther Schnell; Herbert Engel, both of Munich, and Karl Hartwig, Unterhaching, all of Germany

Filed Dec. 10, 1970, Ser. No. 96,938  
Int. Cl. G03g 15/00

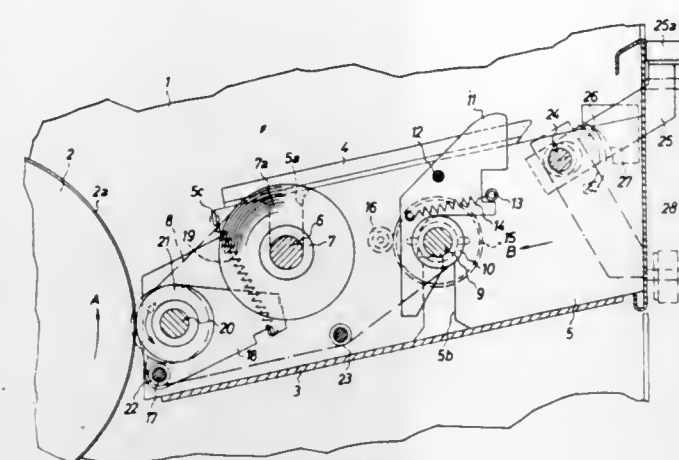
U.S. Cl. 355-15

12 Claims

A carrier is mounted for travel in a first direction and carries a photoconductive layer. A cleaning device is provided including a nip roller which is proximal to the layer and about which an elongated cleaning tape is trained in frictional contact with the nip roller and with the layer. An advancing arrangement is provided which incrementally advances the cleaning tape in a direction opposite to the direction of travel of the carrier and a biasing member acts upon the nip roller in a sense crossing the same to contact the photoconductive layer on the carrier when no portion of the cleaning tape intervenes. A detecting arrangement detects and becomes activated when the nip roller contacts the

carrier and consequently begins to rotate in the aforementioned first direction, and a signal-generating arrangement

for a camera system which gives the necessary magnification. It includes a pair of servo driven self-nulling bridge circuits.



generates a signal when the detecting device detects such rotation.

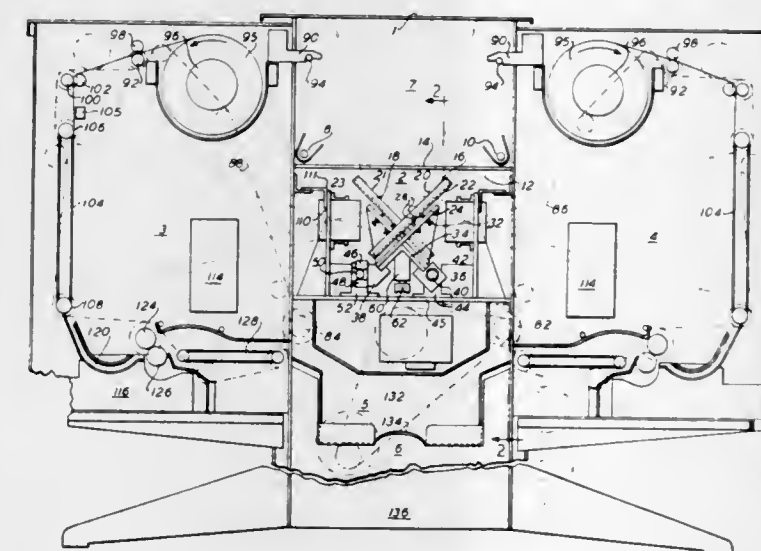
### 3,625,606 COPYING MACHINE

Paul Rosenberg, Larchmont, N.Y., and Robert F. Stewart, Hartford, Conn., assignors to Litton Business Systems, Inc., Orange, N.J.

Filed Oct. 24, 1969, Ser. No. 869,065  
Int. Cl. G03b 27/44

U.S. Cl. 355-46

5 Claims



A photocopying machine having dual exposure and developing stations which are alternatively employed to copy an image from a single original. The dual stations are operated by the use of two interconnected movable mirrors which shift from one position to another to project the original image onto one exposure and developing station and then onto the other. Each of the exposure and developing stations is separately encased and adapted for ease in removal from the machine so that it may be quickly replaced in case of a malfunction.

### 3,625,607 AUTOMATIC FOCUSING CAMERA

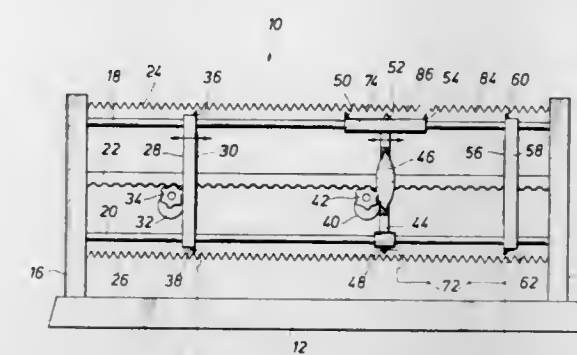
Frank R. Bravenec, Houston, Tex., assignor to Warren Childers

Filed May 22, 1969, Ser. No. 826,805  
Int. Cl. G03b 27/34

U.S. Cl. 355-56

11 Claims

A preferred embodiment of an automatic focusing device



The physical position of the lens, image source and image plane is encoded by slide rheostats.

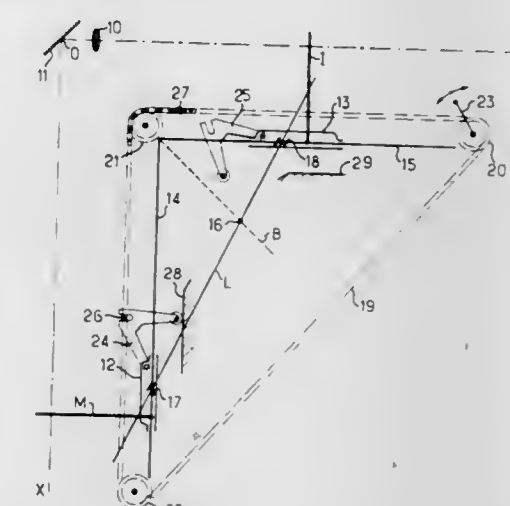
### 3,625,608 PHOTOGRAPHIC REPRODUCTION APPARATUS WITH AUTOMATIC FOCUSING

Georges Bouzard, Nogent sur Marne (Seine et Marne), France, assignor to Societe V. Bouzard & ses Fils, Paris, France

Filed July 7, 1969, Ser. No. 839,605  
Claims priority, application France, July 12, 1968, 158,931  
Int. Cl. G03b 27/36

U.S. Cl. 355-57

6 Claims



Photographic reproduction apparatus with automatic focusing includes a mobile model-carrier member and a mobile image-carrier member, a rigid pivoted coupling lever continuously coupling said both members together and ensuring accurate focusing irrespective of the scale, and a control device for varying the scale. The control device is a transmission capable of moving along the travel of the model-carrier member and along the travel of the image-carrier member, a first coupler between the transmission means and the model-carrier member, a second coupler between the transmission and the image-carrier member, an actuating device, a third coupler between the actuating device and the transmission, and a disengager associated with at least one part of the coupling means, the operation of said actuating the actuator causes the control device to effect a preferential drive of that of the two members which is the better placed mechanically, taking account of the position of the conjugation lever which drives the other member in its turn.

### 3,625,609 COMBINED FOCUSING AND PROBE DEVICE FOR PHOTOGRAPHIC ENLARGERS

Roy A. Clapp, Coon Rapids, Minn., assignor to Nord Photo Engineering, Inc., Minneapolis, Minn.

Filed Oct. 13, 1969, Ser. No. 865,860  
Int. Cl. G03b 27/74

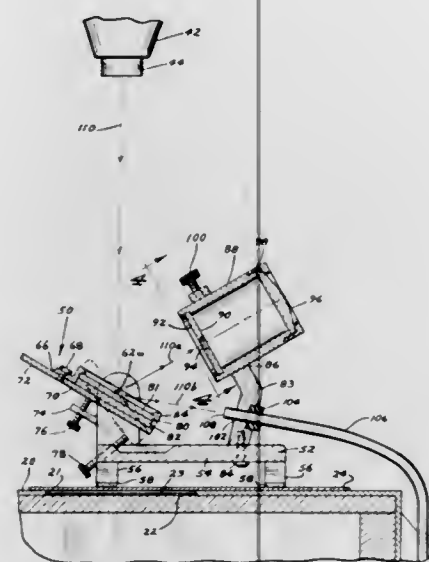
U.S. Cl. 355-60

13 Claims

A mirror is pivotable about an axis spaced a given distance from the plane in which the photosensitive paper is normally



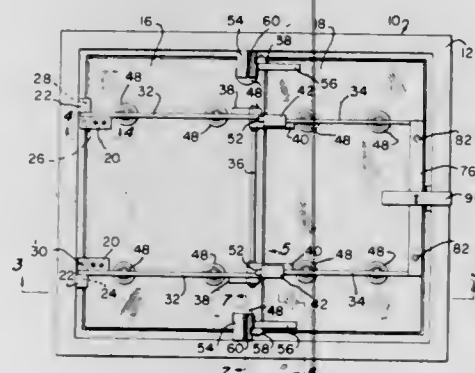
placed. The viewing screen of a focusing magnifier is placed an equivalent distance from the axis and also the light measuring probe aperture is likewise spaced an equivalent



distance from said axis. In this way, any discrepancies attributable to the so-called inverse square law are automatically eliminated.

### 3,625,610 PRINTING FRAME

Gary E. Raymond, P.O. Box 531, Kenil, N.J.  
Filed Mar. 6, 1970, Ser. No. 17,118  
Int. Cl. G03b 27/62  
U.S. Cl. 355-76



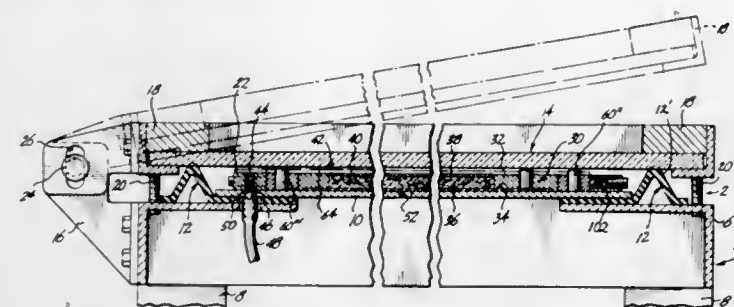
A printing frame for use in association with a camera for holding copy or photographic materials for camera viewing, has a frame with a transparent glass panel fixed therewithin, and articulated light-transmissive panels pivotally mounted to the frame for disposition upon the transparent panel to secure the copy or photographic material therebetween. The frame has arms pivotally coupled to only one side thereof for carrying the light-transmissive panels. A plurality of springs are secured at spaced-apart locations to, and along, the arms, to constrain the panels together. Components are provided for selectively adjusting the constraint of the springs to facilitate the use of the printing frame with copy or photographic materials of greater or lesser thicknesses.

The frame carries fulcrum pieces, at either sides thereof, for engagement with rollers carried by the light-transmissive panels, which pieces and rollers facilitate a removal of the light-transmissive panels from tensioned engagement with the transparent panel, so that copy or photographic materials can be inserted therebetween, and the fulcrum pieces are readily disengageable from the frame, by sliding the same out of engagement with frame-captive hardware, to allow the light-transmissive panels to be fully raised from the transparent panel, so that all said panels can be cleaned.

### 3,625,611 MASTER REGISTRY CHASE FOR USE IN A VACUUM ENCLOSURE

Alexander L. Orr, and Edward W. Hilton, both of Seattle, Wash., assignors to Renton Engineering Corporation, Kent, Wash.

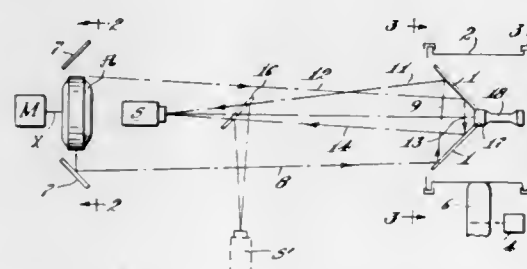
Filed Dec. 11, 1969, Ser. No. 884,235  
Int. Cl. G03b 27/20  
U.S. Cl. 355-87 16 Claims



In a vacuum enclosure having a transparent cover to enable the photoimpression of an image on a photosensitive plate therein, there is an open faced marginal frame having a stiff, hard-surfaced platen supported in free-floating condition and reciprocally guided within the opening thereof, to be applied by the vacuum against the cover, while the plate and an image-producing transparency are compressed therebetween, and indexing means on the marginal frame, in substantially the surface plane of the platen, to fix the positions of the plate and the image-producing transparency in relation to one another, while they are under compression between the platen and the cover.

### 3,625,612 OPTICAL DEROTATOR EMPLOYING MIRROR PAIRS TO VIEW A ROTATING BODY

John A. Decker, Jr., Concord, Mass.; Martin O. Harwit, Ithaca, N.Y., and Domenico S. Sarcia, Saugus, Mass., assignors to Comstock & Wescott, Inc., Cambridge, Mass.  
Filed July 11, 1969, Ser. No. 840,900  
Int. Cl. G01p 3/40  
U.S. Cl. 356-24 8 Claims



For viewing an object rotating about an axis at a predetermined angular velocity to make the object appear stationary, apparatus comprising mirrors for reflecting rays from the object to a viewing location, the mirrors comprising one or more pairs of reflectors, the reflecting surfaces of each pair including an angle less than  $180^\circ$  for reflecting incident light from one reflector to the other and thence to said location, the angle being equal to  $180^\circ$  divided by an even number, one of the pairs comprising a derotator rotatable in the direction opposite to that of the object, the sum of the absolute values of the angular velocities of all the pairs equaling one-half the absolute value of the angular velocity of the object.

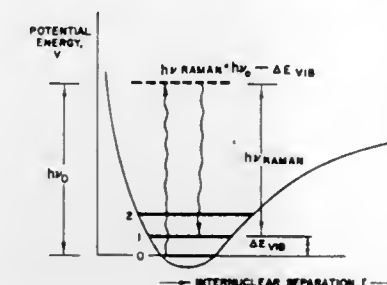
### 3,625,613 APPARATUS FOR REMOTE SENSING AND ANALYZING OF GASEOUS MATERIALS USING RAMAN RADIATION

Gordon R. Abell, West Woodstock, Conn., and Charles E. Gillespie, Acton, Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed June 28, 1968, Ser. No. 741,023  
Int. Cl. G01j 3/44  
U.S. Cl. 356-75 4 Claims

A turbomachine apparatus disclosed includes a laser transmitter for transmitting a pulsed laser beam for remote

sensing and analyzing of gaseous materials. A receiver including optical means gathers scattered light which is supplied to light beam separating means which provide light

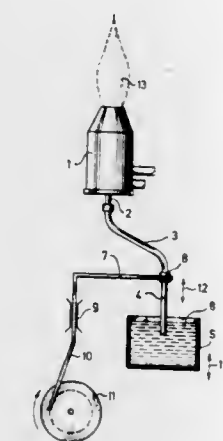


beams at the wave-number of the incident unshifted laser beam light and at the Raman-shifted wave numbers of the light scattered by the remote gaseous materials being sensed and analyzed.

### 3,625,614 METHOD OF AND DEVICE FOR THE MODULATED SAMPLE SUPPLY IN THE SPECTROCHEMICAL ANALYSIS OF A SOLUTION

Roland Herrmann, Leihgestern; Werner Neu, Reiskirchen; Kurt Rudiger, Giessen; Brigitte Gutsche, Butzbach; Hans Kirchhof, Friedberg, and Werner Trampsch, Giessen, all of Germany, assignors to Carl Zeiss-Stiftung, Heidenheim on the Brenz, Wuertemberg, Germany  
Filed Dec. 18, 1969, Ser. No. 886,098  
Claims priority, application Germany, Dec. 20, 1968, P 18 15 958.5  
Int. Cl. G01j 3/00

U.S. Cl. 356-85 7 Claims



The invention relates to a method and a device used in the spectrochemical analysis of a solution in which samples of the solution are fed periodically from a sample vessel to a vaporizer to produce in the latter a photometric signal. The fluid line between the sample vessel and the vaporizer consists principally of flexible hoses and contains at least one section of a rigid capillary tube which by means of an eccentric drive mechanism is reciprocated lengthwise to its longitudinally axis to convey individual columns of the sample solution to the vaporizer.

The sample vessel may be divided into a plurality of sections, each containing a different solution and one end of the fluid line may be periodically immersed by the action of said eccentric drive successively into these sections to convey successively a different solution to the vaporizer.

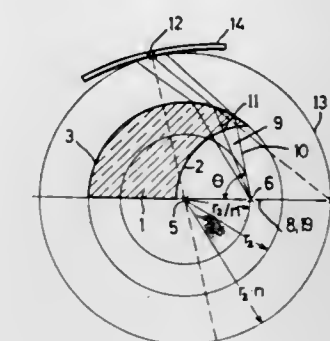
### 3,625,615 A DEVICE FOR SPECTRAL DISPERSION OF LIGHT EMPLOYING A PREDISPERSION PRISM AND A GRAFTING MONOCHROMATOR

Raymond Wilson, Heidenheim on the Brenz, Germany, assignor to Carl Zeiss-Stiftung, Heidenheim on the Brenz, Wuertemberg, Germany

Filed Mar. 30, 1970, Ser. No. 23,571  
Claims priority, application Germany, Apr. 1, 1969, P 19 16 548.1  
Int. Cl. G01j 3/12

U.S. Cl. 356-99 5 Claims

A device for spectral dispersion of light, comprising a predispersion prism arranged ahead of a grating monochromator and in which the predispersion prism is constructed as an aplanatic prism having spherical faces, one of which is concentric to the first aplanatic point which is spaced from the center of curvature of the aplanatic refractive face and at whose place the entrance slit is arranged. The grating

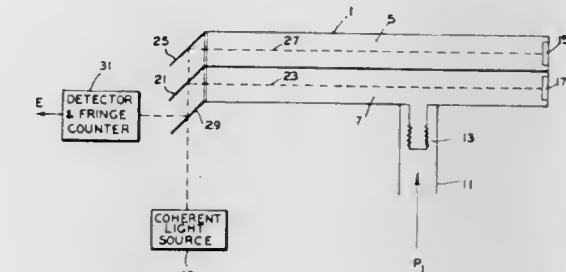


monochromator is provided with a concave diffraction screen on a Rowland circle on which is disposed not only the second aplanatic point but also the point in which the center ray of a limit beam of a predetermined aperture intersects the second aplanatic circle which is concentric to the center of curvature of the aplanatic refractive face.

### 3,625,616 INTERFEROMETRIC PRESSURE SENSOR

Walter W. Lee, Allendale, N.J., assignor to The Bendix Corporation  
Filed June 25, 1969, Ser. No. 836,351  
Int. Cl. G01b 9/02

U.S. Cl. 356-107 11 Claims

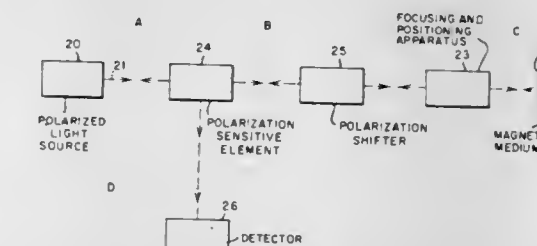


A pressure sensor having two chambers each filled to a predetermined pressure with a gas of high-refractive index and sealed. To measure pressure the gas in one chamber is subjected to the pressures to be measured by changing the volume of the chamber by a bellows. A beam of coherent light is split and passed through the two chambers and then recombined. A fringe counter detects fringe shifts caused by differences in the optical paths due to differences between the measured and predetermined pressures and provides a signal corresponding thereto. To measure differential pressure the gas in both chambers is subjected to the pressures to be measured.

### 3,625,617 KERR EFFECT READ-OUT SYSTEM FOR AN OPTICAL MEMORY

Di Chen, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 15, 1970, Ser. No. 55,045  
Int. Cl. G01n 21/44; G11b 1/10  
U.S. Cl. 356-118 7 Claims



The magnetic state of a material exhibiting the Kerr effect is monitored by a system which directs a polarized light beam



normal to the surface of the material and which includes a polarization sensitive element capable of directing light over two different paths depending on the polarization of the light and a polarization shifter located between the polarization sensitive element and the magnetic material.

3,625,618

**OPTICAL CONTOUR DEVICE AND METHOD**

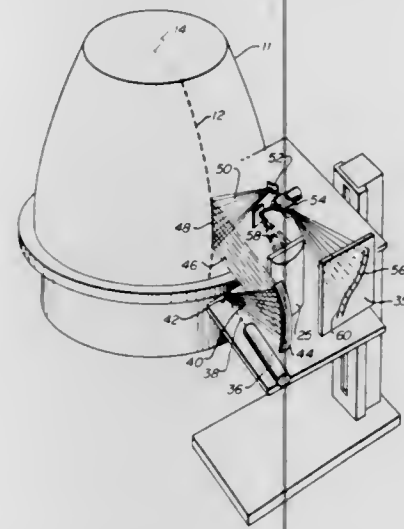
Edward Evenden Bickel, Santa Barbara, Calif., assignor to Infrared Industries, Inc., Santa Barbara, Calif.

Filed Oct. 23, 1969, Ser. No. 868,815

Int. Cl. G01b 11/24, 11/30

U.S. Cl. 356—120

11 Claims



A method and apparatus for optically measuring the contour of a surface in a given plane. A plane is generated by a narrow beam of light of low divergence, preferably the beam of light is generated by a laser, and the intersection of such a scan plane with the surface contour establishes points of intersection. Following intersection, the light rays are scattered and optically transferred to a conjugate image plane for observation, recording, comparison or measurement.

3,625,619

**REFRACTION-MEASURING APPARATUS UTILIZING COMMON OPTICAL MODULATOR**

Karl Otto Ragnar Scholdstrom, Lidings, Sweden, assignor to AGA Aktiebolag, Lidings, Sweden

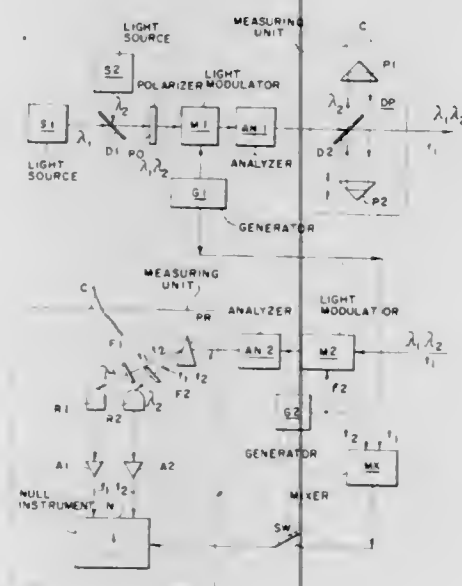
Filed Mar. 27, 1970, Ser. No. 23,237

Claims priority, application Sweden, Mar. 28, 1969, 4360/69

Int. Cl. G01n 21/46

U.S. Cl. 356—128

3 Claims



Modulated light containing components of two different wavelengths is transmitted over a path and the modulation

phase difference at the receiving end of the path is determined. A common optical modulator is used for demodulating both of the received light components in order to minimize differences in phase between these two components.

3,625,620

**REFRACTOMETER**

Herbert E. Goldberg, Concord, Mass., assignor to American Optical Corporation, Southbridge, Mass.

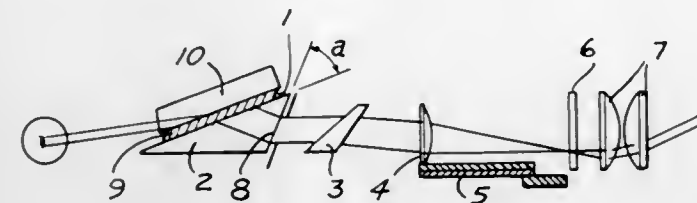
Continuation of application Ser. No. 704,309, Feb. 9, 1968.

This application Aug. 24, 1970, Ser. No. 66,572

Int. Cl. G01n 21/46

U.S. Cl. 356—135

16 Claims



There is disclosed a critical-angle hand refractometer for measuring the refractive index of an unknown substance by the position of the edge of a shadow (optical image). The refractometer comprises refracting means to linearize the refractometer scale and temperature compensating means which effect a temperature compensation by a rectilinear displacement of the scale or the objective lens of the refractometer without altering the magnification of the optical system of the refractometer.

3,625,621

**OPTICAL DENSITOMETER**

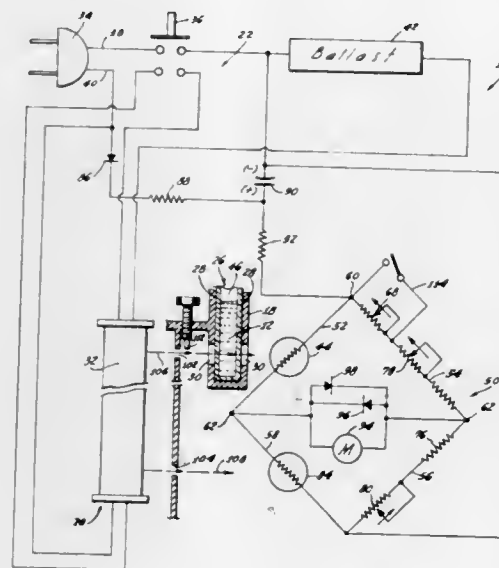
Louis G. Fields, Los Angeles, Calif., assignor to Calbiochem, Los Angeles, Calif.

Continuation of application Ser. No. 340,943, Jan. 29, 1964, now abandoned. This application July 30, 1969, Ser. No. 849,572

Int. Cl. G01n 21/24

U.S. Cl. 356—206

7 Claims



The optical densitometer of the present invention includes a photoresistive element which has a nonlinear relationship between resistance and incident light. A source of light directs light energy through the specimen to be measured and onto the photoresistive element. The intensity of the light from the specimen also varies nonlinearly in accordance with the optical density of the specimen. These nonlinear variations are correlated so that the optical densitometer of the present invention produces an output reading which is directly proportional to the optical density of the specimen which in turn is proportional to the chemical concentration

in the specimen. The present invention also includes the use of a pair of such nonlinear photoresistive cells in a bridge circuit with both cells responsive to a common light source but wherein only one cell is responsive to the light through the specimen. The use of two photoresistive cells compensates for any variation in the output from the light source. The present invention in addition includes the use of diode voltage limiting means across the indicating meter used to determine when the bridge is balanced so as to protect the indicating meter.

3,625,622

**SENSING MEANS**

Alan T. Wright, 34 Lingfield Avenue, Fordhouses, Wolverhampton, in the County of Stafford, England

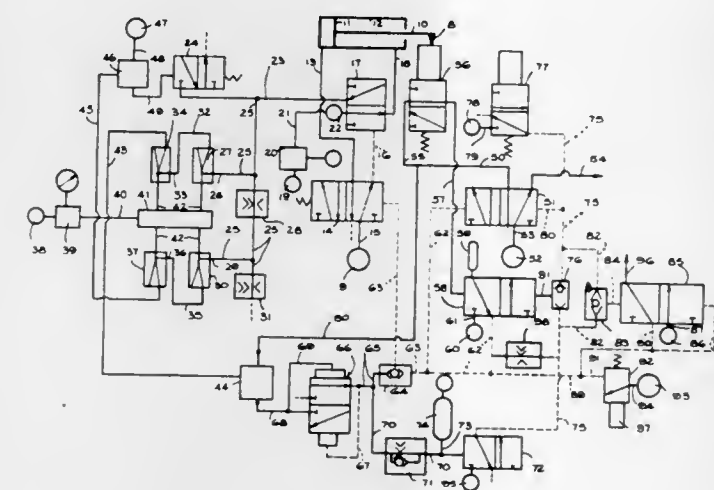
Filed Sept. 16, 1969, Ser. No. 858,472

Claims priority, application Great Britain, Sept. 17, 1968, 44,035/68

Int. Cl. B23b 47/24

U.S. Cl. 408—11

13 Claims



Apparatus for sensing movement of a member by feeding fluid, such as air, displaced as a result of movement of the member, to the control input jet of a fluid logic device so that the fluid logic device switches at a predetermined speed of movement of the member. A drilling apparatus in which the bluntness of the drill is monitored by such a movement sensing apparatus is described. The drilling apparatus also includes means for providing a pecking motion to the drill head.

3,625,623

**APPARATUS FOR BORING RADIAL HOLES IN A COAXIAL CABLE**

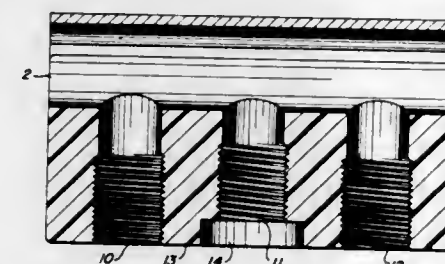
William A. Rheinfelder, Phoenix, Ariz., assignor to RJ Communication Products, Inc.

Filed Feb. 27, 1970, Ser. No. 15,162

Int. Cl. B23b 49/02

U.S. Cl. 408—97

3 Claims



Certain types of couplers utilized in tapping a coaxial cable intermediate along its length require boring a plurality of radial holes in the coaxial cable to closely regulated predetermined depths and without shorting the inner and outer conductors. Tool apparatus for boring such holes is provided and consists of a tool block having a cable-receiving channel disposed across one of its surfaces and a clamp member for securing a coaxial cable in the channel. A plurality of

threaded apertures extend from the bottom of the channel through the tool block to the opposite surface. A hollow tubular tool holder is threaded along a portion of its length and provided with a stop shoulder adjacent the thread termination such that it may be introduced into the threaded apertures and screwed down until the shoulder abuts the tool block surface. A hollow cylindrical tool provided with peripheral teeth at one end is secured within the tool holder in a predetermined position such that, when the tool holder is screwed home, a circular cut of the desired depth is directed radially in the coaxial cable. Where a cut through the inner conductor is required, the surface of the tool block against which the tool holder shoulder abuts is undercut to the desired extent to permit the necessary deeper cut. Subsequently, a second nonthreaded tool holder, used in conjunction with a modified drill bit, is introduced into the tool block apertures after the circular cut has been made and twisted to remove the core.

3,625,624

**CUTTING ASSEMBLY**

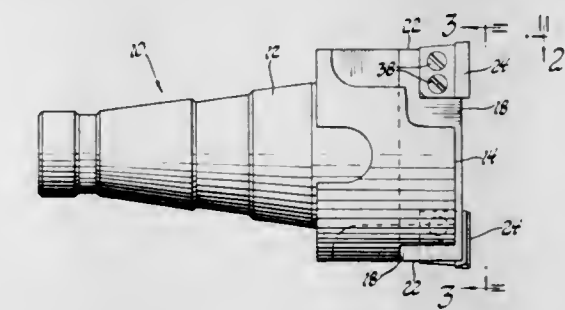
Robert Fitzsimmons, Warren, Mich., assignor to Galaxy Wedgebore Corporation, Detroit, Mich.

Filed Jan. 13, 1970, Ser. No. 2,566

Int. Cl. B23b 29/034

U.S. Cl. 408—116

15 Claims



A boring bar having an end face extending transversely to the longitudinal axis of the boring bar with a slot extending completely through the boring bar and diametrically across the end face. First and second slide blocks are disposed in side-by-side overlapping relationship in the slot. The slide blocks have first ends which are disposed in the slot and extend radially in opposite directions outwardly of the boring bar to oppositely disposed second ends. A cutting element is attached to the second end at each of the slide blocks. At least one threaded fastener extends through an elongated slot in the boring bar for attaching each slide block to the boring bar and for adjusting the radial position of each slide block independently of the other. The slot in the boring bar is generally T-shaped to define guide grooves and the slide blocks are identical in configuration and include guide flanges disposed in the grooves of the slot. In one embodiment each of the slide blocks includes a gauging recess and a gauge block having gauge ends is attached to the boring bar for radially positioning the slide bars.

3,625,625

**BORING MACHINE WITH CUTTER TOOTH ADJUSTMENT**

Jan Van Rooijen, and Kenneth M. Hull, both of Rockford, Ill., assignors to The Ingersoll Milling Machine Company, Rockford, Ill.

Continuation-in-part of application Ser. No. 706,254, Feb. 19, 1968, now abandoned. This application Apr. 7, 1970, Ser. No. 26,293

Int. Cl. B23b 39/00

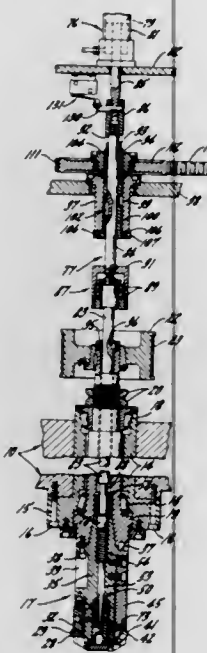
U.S. Cl. 408—158

27 Claims

A rotary and tubular spindle projects from a reciprocating tool head and carries a radially expandable and retractable tooth for finish boring the hole in a workpiece. This tooth is fixed to the free end of a cantilever bent radially by the camming action of a thin wedge acting through a pair of roller bearings to adjust the tooth radially to a position determined by a stop on the head disposed beyond the other end of the spindle and engageable with a power actuated push



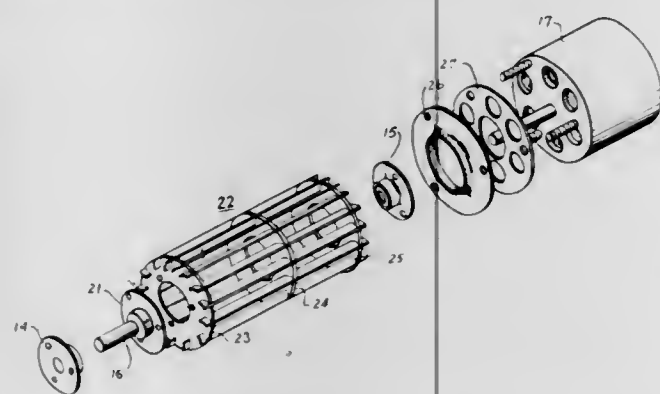
rod extending through the spindle and past the stop. The stop may be adjusted axially in fine increments by a screw and nut actuated by a reversible electric stepping motor which may be activated when adjustment of the finishing tooth is needed to compensate for wear and when the tooth is out of engage-



ment with the workpiece to be bored. The cutting tooth, cantilever and wedge surface assembly may be duplicated and disposed in transaxial planes angularly spaced around the spindle axis. The cantilever may be modified to provide for the boring of holes smaller in diameter than the supporting spindle.

**3,625,626**  
**HOUSING AND MOUNT FOR AIR MOVING APPARATUS**  
Robert W. Lester, 54 George St., Manhasset, N.Y.  
Filed Jan. 19, 1970, Ser. No. 399,400  
Int. Cl. F04d 5/00  
U.S. Cl. 415-54

3 Claims



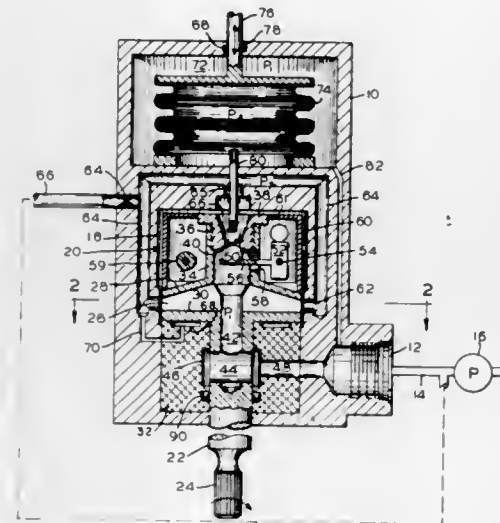
A novel improved housing for blowers and method of assembly therefor is made possible by forming a housing which is characterized by its having a uniform cross section, being formed of a single extruded body of aluminum, and being so formed as to receive end plates which can be screwed thereto, the end plates being of a shape to match the semi-in-volute form of the housing, thereby to make it possible to assemble a housing for a blower consisting of the three pieces, and the method comprising the steps involved in extruding the body stamping the endpieces and assembling the whole.

**3,625,627**  
**SPEED TO PRESSURE TRANSDUCER**  
Robert W. Statzell, South Bend, Ind., assignor to The Bendix Corporation  
Filed Aug. 3, 1970, Ser. No. 62,223  
Int. Cl. F01d 3/02; G01p 3/26; F02d 11/08  
U.S. Cl. 415-36

10 Claims

A casing slidably carries a rotatable shaft and is provided with a fluid inlet connected to a source of pressurized fluid.

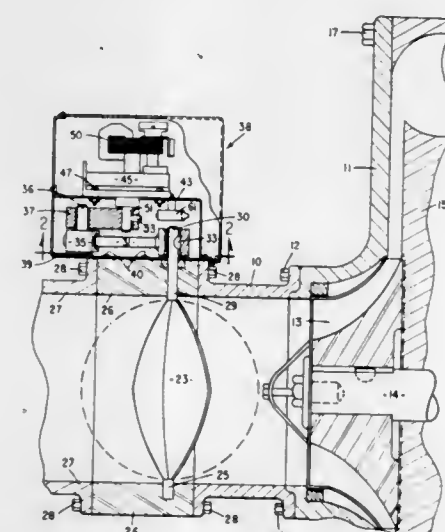
A fluid pump or impeller connected to the shaft and actuated thereby receives fluid from the inlet and discharges the same at a higher pressure as a function of the rotational speed of the shaft to a passage having a fixed restriction and a variable area valve in series flow therein and connecting the pump inlet and outlet. A centrifugal weight rotated by the shaft is connected to the variable area valve to load the same in a closing direction in opposition to a force derived from the



fluid pressure differential generated across the valve member. The fluid pressure differential across the valve member is vented to a pressure differential responsive member which provides a control force or position output as a function of the speed of rotation of the shaft. The slidable bearing surfaces supporting the shaft in the casing are vented to the passage upstream from the fixed restriction to provide fluid lubrication the pressure of which is proportional to shaft speed.

**3,625,628**  
**CAPACITY CONTROL OPERATING MECHANISM FOR CENTRIFUGAL COMPRESSOR**  
Edson H. Byrns, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.  
Filed Aug. 3, 1970, Ser. No. 60,482  
Int. Cl. F04d 27/00  
U.S. Cl. 415-150

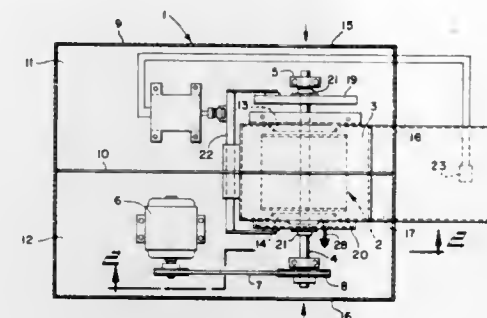
4 Claims



The capacity control means of a centrifugal gas compressor is connected to a reversible motor by motion transmitting means including a crank structure which functions to move the control member slowly as it approaches and leaves closed position. During that portion of the movement of the control member, the torque applied thereto by the motor is multiplied, permitting the use of a small motor.

**3,625,629**  
**PROPORTIONAL BLOWER**  
Thompson Morrison, Shaker Heights; Hunter Morrison, Jr., Pepper Pike, and George F. Knapp, Chagrin Falls, all of Ohio, assignors to M K M Corporation, Chagrin Falls, Ohio  
Filed June 4, 1970, Ser. No. 43,318  
Int. Cl. F01d 17/14; F24f 7/00  
U.S. Cl. 415-157

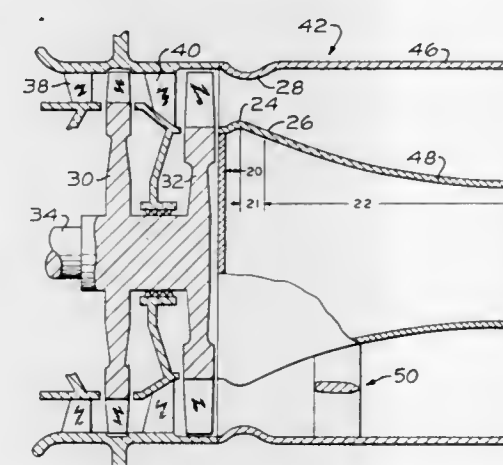
10 Claims



A proportional blower having two inlets and a single outlet, and a pair of damper plates mounted for simultaneous movement one toward and the other away from such inlets for respectively decreasing and increasing the effective cross-sectional areas of such inlets in inverse amounts. Also associated with one of the blower inlets is a fixed or variable restriction which aids in maintaining a substantially constant discharge from the blower outlet during modulation of one or both of the blower inlets.

**3,625,630**  
**AXIAL FLOW DIFFUSER**  
Shao L. Soo, Urbana, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.  
Filed Mar. 27, 1970, Ser. No. 23,320  
Int. Cl. F04d 19/00, 19/02  
U.S. Cl. 415-207

5 Claims



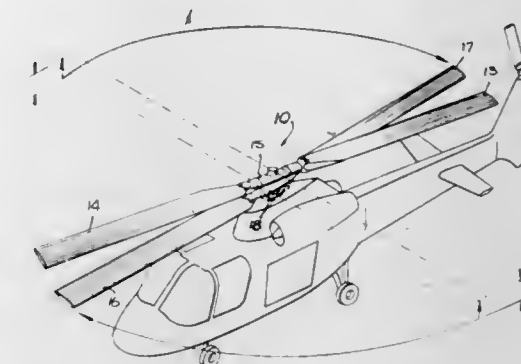
A vaneless diffuser for turbomachinery wherein a pair of spaced-apart walls form three annular diffuser portions along a generally cylindrical downstream flow path. The walls converge together within a diffuser inlet portion, then diverge within a diffuser intermediate portion with a diffuser outlet portion being configured to maintain a condition of imminent boundary layer separation established by the first two portions. Although the diffuser is particularly described with reference to a cylindrical flow path, the flow path may also be generally conical for use in mixed flow turbomachinery, for example.

**3,625,631**  
**ROTOR HUB AND BLADE FOLDING SYSTEM**  
Cecil Edward Covington, Jr., Hurst; Wesley Louis Cresap, Fort Worth, and Martin Harrison Lufkin, North Richland Hills, all of Tex., assignors to Bell Aerospace Corporation, Wheatfield, N.Y.  
Filed Nov. 3, 1969, Ser. No. 873,351  
Int. Cl. B64c 27/10, 27/50  
U.S. Cl. 416-1

18 Claims

A system for folding a first pair of rotor blades with a second pair of rotor blades in rotary wing aircraft. Each pair

of rotor blades is attached to a separate hub arrangement. The first hub is fixed to the mast for rotation therewith in the normal fashion. A second hub is mounted on the mast and is movable, along splines, up and down the mast from an upper end position to a lower end position. When the second hub is in the upper end position, the second hub is keyed, by virtue of the splines, to the mast for rotation with the mast. Thus, when in the upper end position, the second hub, like the first hub, will rotate with the mast and the rotor blades will rotate



in their normal fashion. However, the second hub may be lowered along the splines to the lower end position. When in the lower end position, the second hub is free to rotate relative to the mast. Thus, when the second hub is moved down the mast to the second end position, it may be rotated relative to the first hub to cause the second pair of rotor blades to align or fold with the first pair of rotor blades and reduce the space requirements, transverse to the rotary wing aircraft, for stowage.

**3,625,632**  
**DUAL SERVO HYDRAULIC ACTUATOR CYLINDER FOR PITCH CONTROL**  
Lesley C. Casterline, Hurst, Tex., assignor to Bell Aerospace Corporation  
Filed Oct. 13, 1969, Ser. No. 865,734  
Int. Cl. B64c 27/74; F01b 7/20, 15/04  
U.S. Cl. 416-98

12 Claims



This invention relates to the mounting of a servo hydraulic actuator for cyclic or collective pitch control of the rotor blades on a helicopter. The actuator is constructed with a cylinder barrel mounted on the frame of the helicopter with a coupling having bearing surfaces shaped to correspond to a portion of a sphere having its center substantially displaced from the coupling toward the pitch horn.

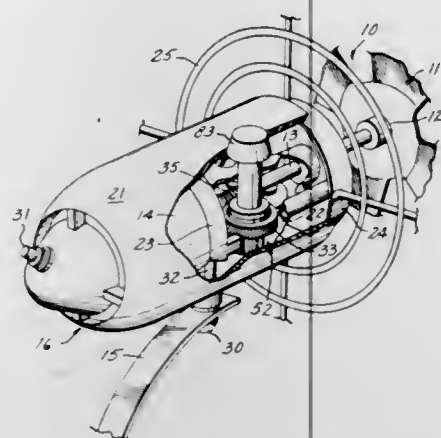
**3,625,633**  
**CLUTCH ASSEMBLY FOR COUPLING MECHANISMS**  
Thomas F. Nelson, Stratford, Conn., assignor to General Electric Company  
Filed Sept. 23, 1969, Ser. No. 860,322  
Int. Cl. F04d 25/10; F16d 19/00  
U.S. Cl. 416-169

11 Claims

A clutch assembly for a coupling mechanism between a constantly rotating driving gear and a gear to be driven. The



assembly includes a worm wheel rotatable about an axle and transversely shiftable with respect to the axle. A coupler disc is provided that is rotatable with the worm wheel. A sloppy



fit between the worm wheel and coupler disc allows lateral movement with respect to each other. The assembly also includes means, such as a movable pressure plate, to engage the coupler disc and the gear to be driven.

3,625,634

## TURBOMACHINE ROTOR

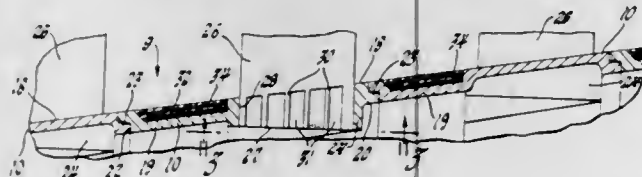
Rowland L. Stedfeld, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 10, 1969, Ser. No. 883,920

Int. Cl. F01d 5/06, 5/06

U.S. Cl. 416-198

1 Claim



A turbomachine rotor comprises a number of rings forming a drum with end bells at the ends of the drum. Each ring mounts a row of blades with roots which extend through openings in the ring and which are brazed or welded to retain them on the ring. Rings of fibrous composite wrap extend around the blade mounting rings between the rows of blades. The rings may be welded together.

3,625,635

## FAN FOR COOLING AUTOMATIC ENGINES

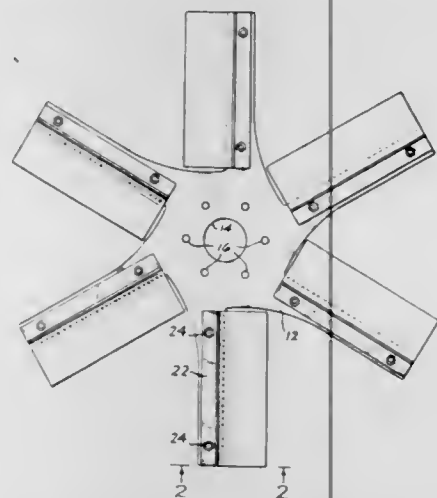
George H. Stonack, 7608 E. 85th St., Puyallup, Wash.

Filed Nov. 20, 1969, Ser. No. 878,409

Int. Cl. F04d 29/34

U.S. Cl. 416-210

2 Claims



A fan for use particularly in cooling truck engines comprises a hub having a plurality of coplanar outwardly extending arms. A plurality of fan blades are secured one on each

arm. Each blade is substantially rigid and uniformly arcuate along its entire length. Securing means secure the hub to the engine. Mounting means detachably mount the blades, one on each arm.

3,625,636

## LIQUID LEVEL REGULATING SYSTEM

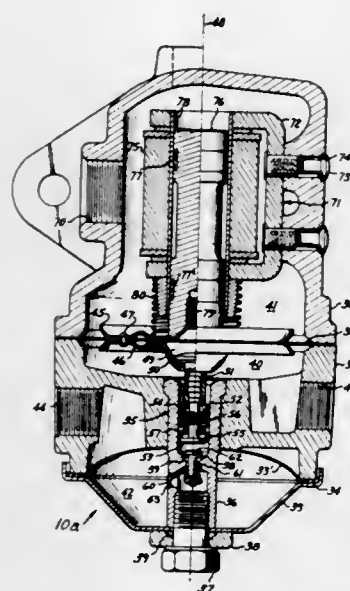
Robert E. Nelson, Rte. #1, Box 215, Rosemond, Calif.

Filed July 9, 1969, Ser. No. 840,375

Int. Cl. F04b 49/00, 35/04

U.S. Cl. 417-211.5

22 Claims



A liquid level regulating system according to this disclosure includes a duct having a termination in a container, the liquid level of which is to be regulated. The termination of the duct is normally just below the intended liquid level. A fluid displaceable element is in fluid communication with the duct. Electromechanical means is activated by a source of pulsating current to urge the fluid displaceable element into reciprocation. One feature resides in the provision of a plurality of ducts for sensing liquid level, and another feature resides in the use of a valve between the reservoir and the fluid displaceable element for controlling the flow of fluid therebetween.

3,625,637

## CONVERSION OF VARIABLE DELIVERY PUMP TO FIXED DELIVERY PUMP

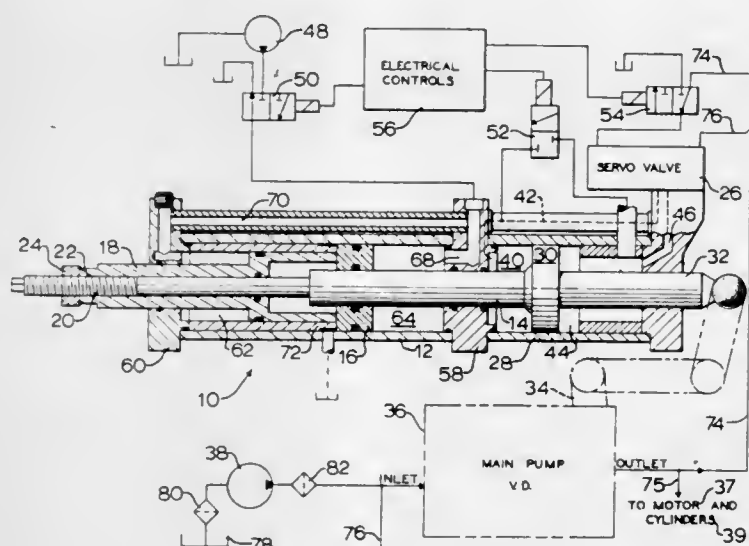
Josef Kiwalle, and Ira H. Sage, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 13, 1970, Ser. No. 27,903

Int. Cl. F04b 49/00

U.S. Cl. 417-218

5 Claims



A variable delivery fluid pump and a variable delivery fluid motor are used to accelerate the spindle of an inertia welding

machine to the welding speed, and the pump is then converted to a fixed delivery pump in order to provide a nonfluctuating pressure to power the thrust cylinders for application of the welding pressure.

3,625,638

## TIMING AND OUTPUT CONTROL DEVICE FOR FUEL INJECTION PUMPS

Claus Koster, Ditzingen; Heinz Nothdurft, Stuttgart-Degerloch, and Harald Stamm, Gerlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

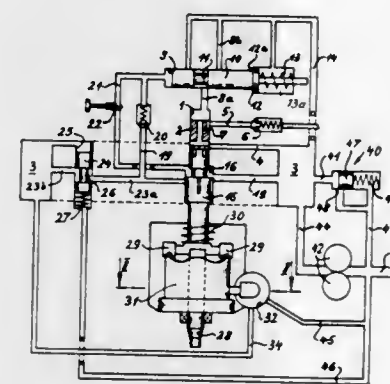
Filed Feb. 12, 1970, Ser. No. 10,918

Claims priority, application Germany, Feb. 12, 1969, P 19 06 885.0

Int. Cl. F04b 49/00

U.S. Cl. 417-253

7 Claims



In a fuel injection pump, the delivery of additional fuel quantities required for the starting operation is cut off and the timing of the injection is regulated by the r.p.m.-dependent pressure prevailing in the suction chamber of the fuel injection pump and generated by a feed pump driven by the engine. Said pressure is regulated by a control device disposed in a bypass or return conduit connecting said suction chamber with the suction side of said feed pump. For low r.p.m.'s, said control device maintains open a minimum flow passage section which is enlarged for higher r.p.m.'s. Thus, for a range of low r.p.m.'s, the pressure increase in the suction chamber in response to the r.p.m. increase is significant, while beyond said range, said response is only slight.

3,625,639

## INTERCHANGEABLE CONVEYING APPARATUS FOR PRESSURIZED VESSELS SUCH AS REACTORS

Jean Eggmann, Baden, and Ernst Sidler, Fislisbach, both of Switzerland, assignors to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland

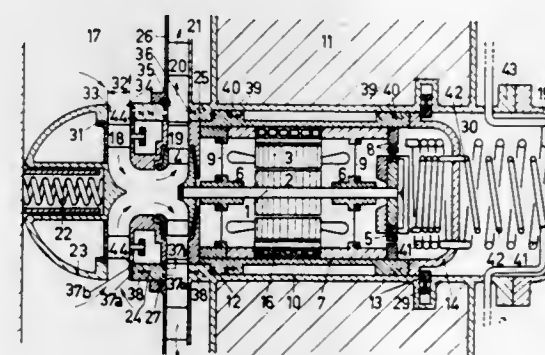
Filed June 12, 1968, Ser. No. 736,314

Claims priority, application Switzerland, June 22, 1967, 8968/67

Int. Cl. F04d 13/02; F24b 1/00

U.S. Cl. 417-360

9 Claims



An electric motor driving the impeller of a blower unit located at one end of the motor shaft is insertable in a guide

sleeve extending through a wall of a nuclear reactor vessel. As the motor unit is pushed into the guide sleeve, the leading end of the blower unit engages and pushes back a spring loaded cover plate which had sealed the wall opening to prevent loss of pressure from the reactor vessel. When the combined motor and blower unit is withdrawn from the guide sleeve in the wall, the spring loaded cover plate automatically moves back into its sealing position.

3,625,640

## PHOTOFLASH LAMP

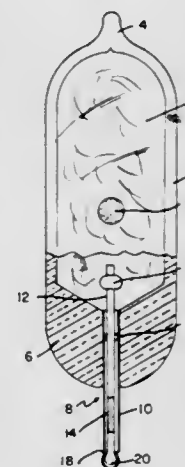
John W. Shaffer, Williamsport, Pa., assignor to Sylvania Electric Products Inc.

Filed Nov. 19, 1969, Ser. No. 878,164

Int. Cl. F21k 5/02

U.S. Cl. 431-13

3 Claims



A percussive-type photoflash lamp in which the inner wall of the lamp envelope is provided with an indicator spot containing a fluorescent dye sensitive to the combustion products of the fulminating material of the primer in order to permit automated inspection and rejection of those lamps or subassemblies thereof during manufacture in which the fulminating material has been flashed inadvertently.

3,625,641

## PHOTOFLASH LAMP

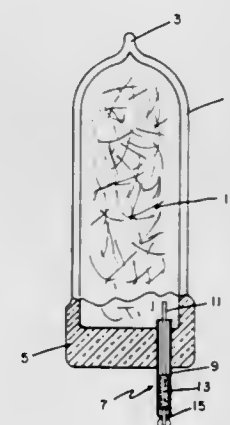
John W. Shaffer, Williamsport, Pa., assignor to Sylvania Electric Products Inc.

Continuation-in-part of application Ser. No. 670,299, Sept. 25, 1967. This application May 23, 1969, Ser. No. 827,367

Int. Cl. F21k 5/02

U.S. Cl. 431-93

2 Claims



A percussive-type photoflash lamp, the primer of which includes a charge of water-based percussive material.



## CHEMICAL

3,625,642

### PRINTED TEXTILE FIBERS AND METHOD FOR PRODUCING SAME

Feaster V. Tribble, Rock Hill, S.C., assignor to Martin Marietta Corporation

No Drawing. Filed Aug. 1, 1967, Ser. No. 657,503

Int. Cl. C09b 27/00

U.S. Cl. 8—27

7 Claims

There are disclosed herein cotton and regenerated cellulose textile fibers having printed thereon a mixture of azoic dye and the dyestuff resulting from reacting  $\text{Na}_2\text{S}_2\text{O}_4$  with certain thiosulfate dyes. There is also disclosed a printing method comprising the steps of applying to cotton or regenerated cellulose textile fibers an alkaline printing paste comprising water, thickener, dyestuff selected from the group consisting of azo, sulfur, phthalocyanine, metal phthalocyanine, perylene, dioxazine, anthraquinone, and isodibenzanthrone dyes having per dye molecule at least one pendant  $-\text{SSO}_3\text{Na}$ ,  $-\text{SSO}_3\text{K}$ ,  $-\text{SSO}_3\text{NH}_4$  or  $-\text{SSO}_3\text{H}$  group, solubilized triazene form of stabilized diazo compound, and a solubilized naphthol coupling component; drying the fibers; acid ageing the fibers with volatilized acid and aqueous steam; applying aqueous  $\text{Na}_2\text{S}_2\text{O}_4$  and either soda ash or sodium borax to the fibers; optionally exposing the fibers to air; and washing the fibers.

3,625,643

### METHODS FOR PRODUCING SHAPE HOLDING PRODUCTS OF VARIOUS SHAPES FROM SLACK MERCERIZED, STRETCHABLE COTTON FABRICS BY MOLDING THEM

Albert S. Cooper, Jr., Metairie, Albert M. Walker, New Orleans, and William G. Sloan and George F. Ruppenicker, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Mar. 29, 1963, Ser. No. 269,216

Int. Cl. D06m 13/12, 13/34

U.S. Cl. 8—116.3

8 Claims

Cellulosic fabrics are subjected to a shrinking treatment such as slack mercerization to impart elasticity thereto and then impregnated with a cross-linking agent; placed on a mold; stretch-molded and heated in the molded configuration to effect cross-linking and set the mold configuration.

3,625,644

### PROCESS FOR SIMULTANEOUSLY CLEANING AND DISINFECTING TEXTILE

Heinz Gunter Nosler, Monheim Rhineland, Richard Wessendorf, Essen-Heisingen, and Walter Feldmann, Hilden Rhineland, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,188

Claims priority, application Germany, Dec. 2, 1968, P 18 12 054.2

Int. Cl. D06l 1/00

U.S. Cl. 8—142

5 Claims

In the process of drycleaning textiles which comprises the steps of immersing soiled textiles in a cleaning liquor based on organic solvents with a low water content for a time sufficient to remove the soil from the textile and recovering cleaned textiles, the improvement which consists adding to said cleaning liquor a condensation product of substantially equimolar amounts of formaldehyde and

ethanolamine whereby the textiles are recovered disinfected as well as cleaned. Drycleaning concentrate compositions including the aforesaid condensation product are also part of the invention.

3,625,645

### PROCESS FOR THE RECOVERY OF VANADIUM FROM RAW TITANIUM CHLORIDE

Francesco Ferrero and Giuseppe Sironi, Novara, and Angelo Garberi, Cilavegna, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed May 16, 1969, Ser. No. 825,158

Claims priority, application Italy, May 20, 1968, 16,706A/68

Int. Cl. C22b 59/00; C01g 31/00

U.S. Cl. 23—17

8 Claims

A process is disclosed for recovering vanadium from solid  $\text{TiCl}_4$ -free residues obtained in the purification of raw  $\text{TiCl}_4$  with  $\text{H}_2\text{S}$ , wherein the solid residues are treated with oxygen or an oxygen-containing gas at temperatures between  $150^\circ$  and  $200^\circ$  C., thereby obtaining a  $\text{VOCl}_3$ -containing gas from which the  $\text{VOCl}_3$  is separated in a practically pure state by rectification. The solid  $\text{TiCl}_4$ -free residues are obtained from the purification sludges of the liquid raw  $\text{TiCl}_4$  by drying same at temperatures of  $150^\circ$ – $180^\circ$  C., in a stream of inert gas, preferably nitrogen.

3,625,646

### PROCESS FOR PRODUCING CRYOLITE

Roland Bachelard, Lyon, France, assignor to Ugine Kuhlmann, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 857,537, Sept. 12, 1969, which is a continuation of abandoned application Ser. No. 701,074, Jan. 29, 1968. This application Dec. 17, 1970, Ser. No. 99,243

Claims priority, application France, Feb. 1, 1967, 93,330

Int. Cl. C01f 7/54

U.S. Cl. 23—88

7 Claims

A process for producing cryolite, which is essentially free of silica, comprising reacting a mixture of particulate sodium fluosilicate, hydrated aluminum fluoride and a compound producing free gaseous hydrogen fluoride in such proportions that the amounts of NaF and  $\text{AlF}_3$  are in stoichiometric proportion to produce cryolite and the free gaseous hydrogen fluoride comprises between about 2 and 10 percent by weight of the total weight of the reactants, the mixture being heated to a temperature of about  $500$  to  $800^\circ$  C. The NaF is derived from the reactants and in all cases at least a portion of the NaF is derived from the sodium fluosilicate.

3,625,647

### METHOD OF PREPARING CALCIUM-NICKEL PHOSPHATE CATALYST

Robert A. Stowe, Ludington, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,500

Int. Cl. C01b 25/32

U.S. Cl. 23—105

10 Claims

Calcium-nickel phosphate catalyst is prepared by reacting a calcium hydroxide solution or slurry with a solution containing phosphoric acid and a nickel compound. The pH is maintained at 7–9.

DECEMBER 7, 1971

CHEMICAL

211

### RECOVERY OF FLUORINE AND $\text{P}_2\text{O}_5$ FROM DILUTE AQUEOUS ACIDIC PHOSPHATIC SOLUTIONS

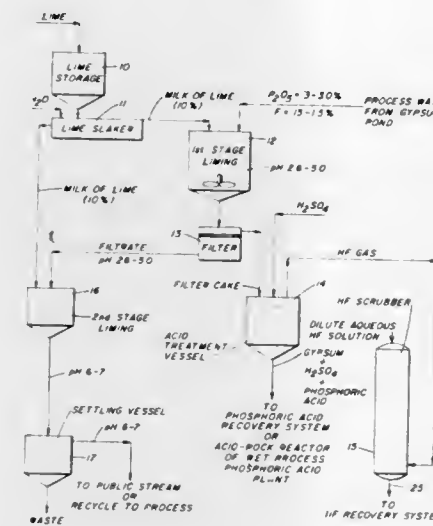
Donald Richard Randolph, Lakeland, Fla., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1969, Ser. No. 884,907

Int. Cl. C01b 25/32

U.S. Cl. 23—109

8 Claims





ular heads of styrene-divinylbenzene copolymer to adsorb the narcotic analgesics and amphetamines from human urine in a nonionic mechanism.

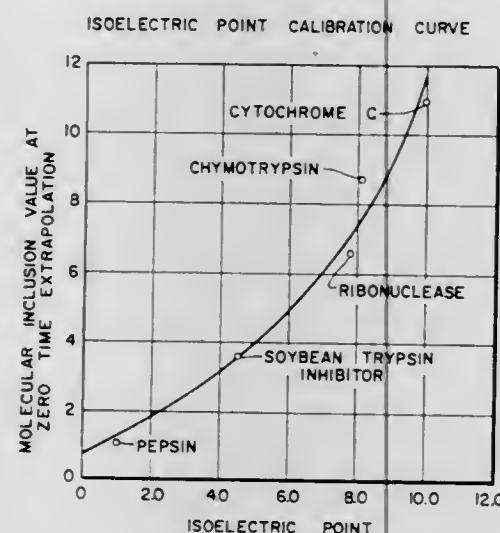
3,625,653

# DETERMINATION OF THE ISOELECTRIC POINTS OF PROTEINS

Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.  
Filed Apr. 21, 1970, Ser. No. 30,374  
Int. Cl. G01n 21/00, 27/28, 27/40

U.S. Cl. 23—230 R

4 Claims



A method for determining the isoelectric points of proteins by placing a dilute aqueous solution of the protein in contact with a porous 96% silica glass membrane. At various time intervals the percent loss of protein from solution to the membrane is calculated. After the second slope of the curve is determined, it is extrapolated to the intercept at time zero. The isoelectric point of the protein is obtained by comparing the intercept to a standard curve.

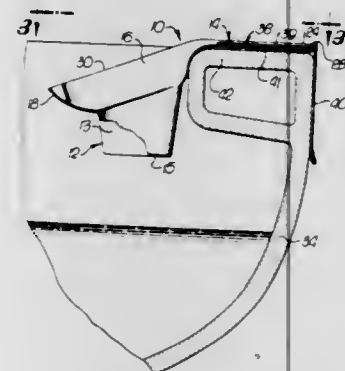
3,625,654

# URINE COLLECTION DEVICE

Charles M. Van Duyn, 235 W. Pueblo St., Santa Barbara, Calif. 93105  
Filed May 22, 1970, Ser. No. 39,662  
Int. Cl. A47k 11/12; A61b 19/00; B011 3/00

U.S. Cl. 23—253

7 Claims



A unitary device for receiving urine specimens for analysis including a collection portion and a handle portion which is adapted to contact the rim of a toilet bowl and wherein said device includes adhesive means for releasably securing said device to a toilet bowl during use.

3,625,655

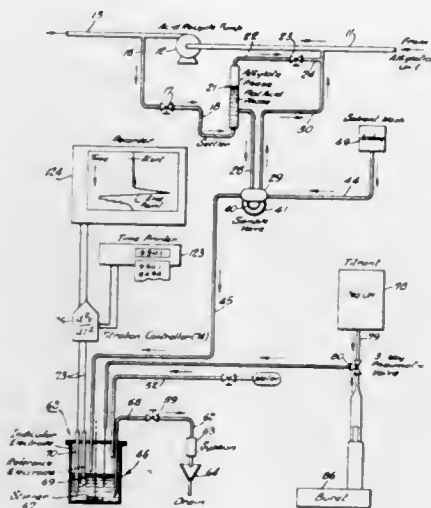
# ACID ANALYZER

Robert A. Culp, Jr., Lafayette, Ind., and Robert E. Franke, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,359  
Int. Cl. G01n 27/10; C07c 3/14

U.S. Cl. 23—253 R

14 Claims



A system that automatically analyzes acidity or basicity of a chemical process stream periodically. The system can handle a petroleum process stream that contains an acid-hydrocarbon or base-hydrocarbon emulsion. At least some of the hydrocarbons are gaseous under normal ambient conditions. The acid, under system pressure, is settled in a vertical column and subsequently sampled. The acid or basic content of the sample is determined by a potentiometric titration.

3,625,656

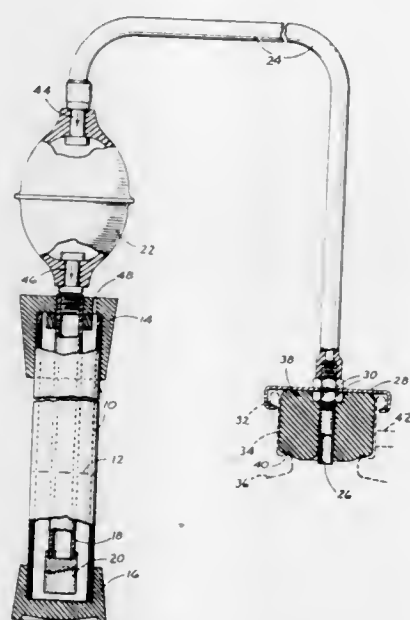
# GAS LEAK DETECTOR FOR LIQUID-COOLED INTERNAL COMBUSTION ENGINES

John K. Paulson, 14930 SW. Uplands Drive, Lake Oswego, Oreg. 97034

Filed Mar. 28, 1969, Ser. No. 811,404  
Int. Cl. G01m 3/20; G01n 31/22

U.S. Cl. 23—253 R

9 Claims



A passageway through a radiator cap communicates through an elongated tube and aspirator bulb with a delivery tube opening into a gas indicator fluid confined in a vented transparent container.

3,625,657

# APPARATUS FOR CARRYING OUT POLYMERIZATION AND DIMERIZATION REACTION BY MEANS OF AN AMALGAM

Pierre Mathis, Dombasle-sur-Meurthe, France, and Leon van Melkebeke, Wezembeek-Oppem, Belgium, assignors to Solvay & Cie, Brussels, Belgium

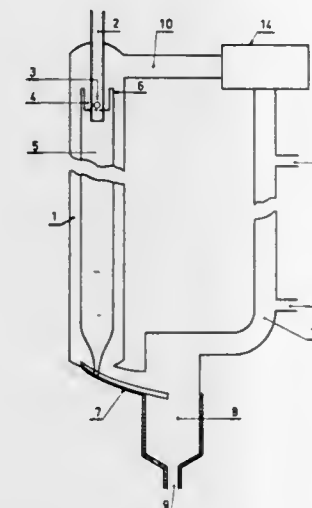
Filed May 29, 1969, Ser. No. 828,946

Claims priority, application Belgium, May 30, 1968, 59,055

Int. Cl. B01j 4/00; C07c 121/20, 121/28

U.S. Cl. 23—285

5 Claims



Polymerization and dimerization by means of an amalgam are carried out by circulating a compound to be polymerized or dimerized in a liquid phase in a reactor, circulating the amalgam in the reactor as a continuous film flowing under gravity along a smooth surface and continuously withdrawing a portion of the liquid phase from circulation in a quantity corresponding to the production in the reactor while continuously introducing into circulation, reactants and other components of the liquid phase in amounts which correspond to the quantity withdrawn. The apparatus for carrying out the process includes a closed circuit which contains the reactor. Inside the reactor a substantially smooth vertical or highly inclined surface is provided which supports the flow of a film of amalgam. Means is also provided in the closed circuit for forming the amalgam into a continuous film, flowing down the smooth surface, means for continuously taking a sample of the liquid phase and means for continuously introducing the components of the liquid phase.

3,625,658

# APPARATUS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF OLEFINS INCLUDING A CLOSED CIRCUIT TUBULAR REACTOR AND SUPPORT DEVICE THEREFOR

Andre Closon, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

Filed May 12, 1969, Ser. No. 823,765

Claims priority, application France, May 14, 1968, 152,123

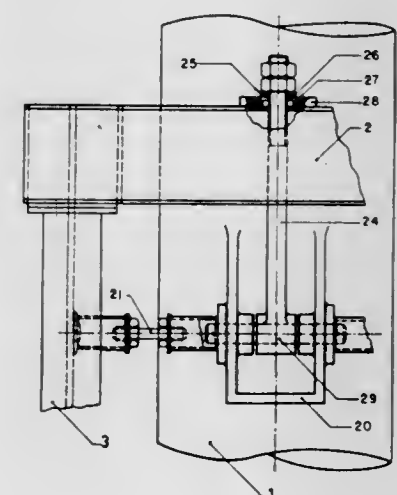
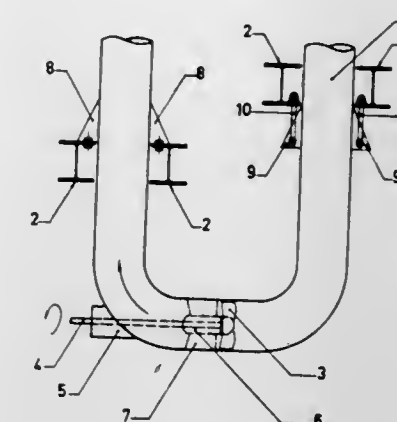
Int. Cl. C08f 1/98

U.S. Cl. 23—285

5 Claims

The apparatus for low pressure polymerization includes a closed circuit tubular reactor, a pump to circulate the dispersing medium for the polymerization or copolymerization and a support device for the reactor provided with

means for permitting free movement in the plane of the reactor. By providing for free movement in the plane of



the reactor, permanent deformations of the reactor assembly, due to heat stress are avoided.

3,625,659

# PHOSPHOR RECLAMATION FROM A SLURRY

Michael J. Hammond and Raymond F. Herner, Towanda, Pa., assignors to Sylvania Electric Products Inc.

No Drawing. Filed May 28, 1970, Ser. No. 41,593

Int. Cl. B01d 21/00, 12/00; C01f 17/00

U.S. Cl. 23—293

13 Claims

Cathode luminescent phosphors can be reclaimed from a slurry by adding a predetermined amount of a soluble periodate ion source to the slurry, while agitating, and then separating the phosphor from the slurry.

3,625,660

# METHOD AND STRUCTURE FOR GROWING CRYSTALS

Thomas B. Reed, Concord, and Edward R. Pollard, Arlington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 18, 1968, Ser. No. 713,955

Int. Cl. B01j 17/18

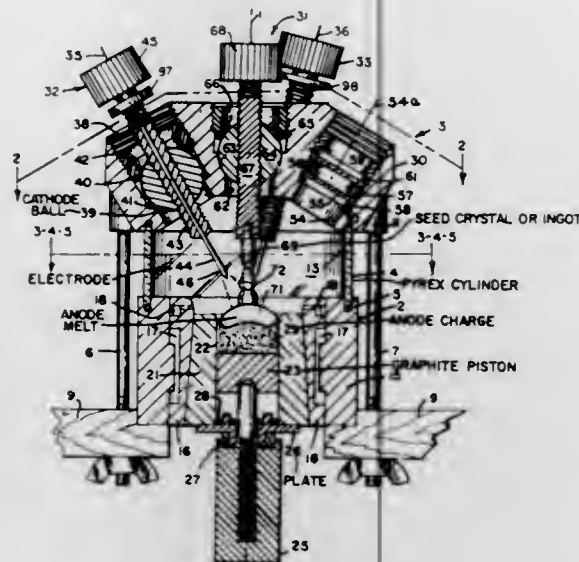
U.S. Cl. 23—301 SP

1 Claim

A melt or puddle is formed in a solid material contained in a cold crucible. The solid material acts as a



self-crucible for the melt and crystals are grown at the center of the melt. The melt is formed in the solid material by a multitude of arcs struck between the material



which may act as an anode, and a multitude of cathodes which are directed toward the material, so that the electron and plasma flow from the cathodes to the material, produces and maintains the melt.

3,625,661

# SEPARATION OF TITANIUM FLUORIDE AND NIOBIUM FLUORIDE FROM GASEOUS URANIUM HEXAFLUORIDE CONTAINING SAME

Lowell W. Anderson and Michael J. Stephenson, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Aug. 11, 1969, Ser. No. 849,200

Int. Cl. C01g 56/00

U.S. Cl. 23—337

3 Claims

This invention relates to a method of selectively removing titanium or niobium values from a gaseous mixture of uranium hexafluoride and niobium pentafluoride or titanium tetrafluoride by passing the mixture through a bed of pelletized complex fluoride at a temperature in the range of 200° F. to 400° F.

3,625,662

# SUPERCONDUCTOR

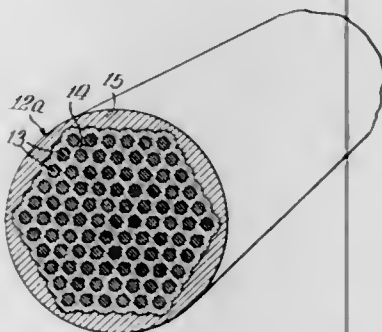
John A. Roberts, North Chelmsford, and Peter R. Roberts, Groton, Mass., assignors to Brunswick Corporation

Continuation of application Ser. No. 535,222, Mar. 17, 1966. This application May 18, 1970, Ser. No. 38,457

Int. Cl. B21c 37/00; H01b 5/08; H01f 7/22

U.S. Cl. 29—191.6

13 Claims



A superconductor formed by the physical or geometrical relationship of two or more materials comprising a composite structure; the superconductive means being located substantially within a matrix. The superconductive means includes elemental materials, solid solution metal alloys, and/or diffusion gradient metals. The matrix comprises at least one non-superconductive metal component.

## 3,625,663 THERMOSTATIC BIMETAL AND HIGH EXPANDING ALLOY

George A. Majesko, Glen Ridge, N.J., assignor to Wilbur B. Driver Company

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,838

Int. Cl. B32b 15/00

U.S. Cl. 29—195.5

2 Claims

A high expanding component for a thermostatic bimetal in the form of an alloy having as major constituents, nickel, chromium, iron and manganese. A bimetal utilizing this component together with a conventional low expanding component such as Invar can be used within a temperature range of -196° C. to 250° C. without any loss of strength or elasticity since, unlike conventional bimetals, neither of the two components used in my bimetal undergoes any type of phase information.

3,625,664

## PROCESS FOR THE PRODUCTION OF RICH FUEL TO REPLACE NATURAL GAS BY MEANS OF CATALYTIC HYDROGASIFICATION UNDER PRESSURE OF FLUID HYDROCARBONS

Carlo Padovani, Via Ampere 15, Milan, Italy

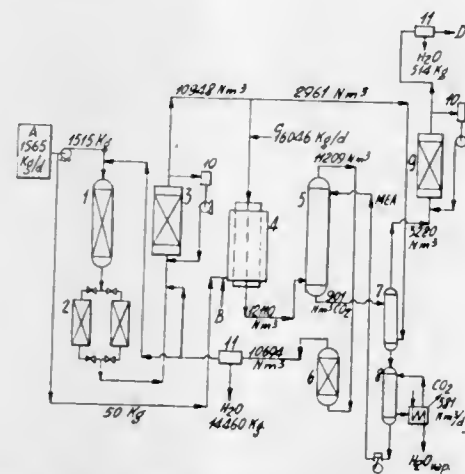
Filed Apr. 4, 1968, Ser. No. 718,860

Claims priority, application Italy, Apr. 5, 1967, 14,605/67, Patent 791,843

Int. Cl. C07c 9/04; C10g 13/02

U.S. Cl. 48—197

11 Claims



A mixture of methane and hydrogen which is interchangeable with natural gas, is obtained from liquid hydrocarbons by means of a two step catalytic hydrogenation process under pressure. In the first step a complete gasification, but not a complete hydrogenation, is effected by contacting the liquid hydrocarbons with a mild-hydrogenating catalyst in such a controlled condition of temperature, pressure, hydrogen-to-carbon ratio as to obtain a gas containing 10-60% by volume of free hydrogen. In the second step the gas obtained in the first step is practically completely hydrogenated to methane on a catalyst having high hydrogenating and methanating activity. The resultant product is essentially methane with up to 12 volume percent hydrogen.

3,625,665

## PROCESS FOR THE PRODUCTION OF METHANE CONTAINING GASES

Brian Hoyle Thompson, Solihull, England, assignor to The Gas Council, London, England

Filed Apr. 23, 1969, Ser. No. 818,561

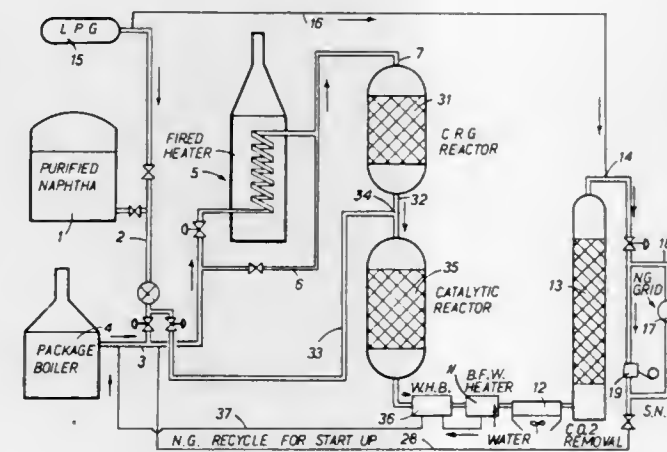
Int. Cl. C07c 9/04

U.S. Cl. 48—214

13 Claims

A process for the production of a gas containing a high proportion of methane (e.g. 90% or more) comprises: (i) introducing a preheated mixture of steam and the vapour of a predominantly paraffinic hydrocarbon feedstock having a final boiling point of not more than 300° C. (e.g. naphtha) into a first catalytic reaction zone

in which the mixture reacts in the presence of a steam reforming catalyst to give a gas containing methane, hydrogen, carbon oxides and undecomposed steam; (ii) cooling the gas produced in stage (i) by adding a further quantity of at least one of the reactants; (iii) introducing the gaseous mixture formed in stage (ii) into a second catalytic reaction zone in which the constituents of the mixture react in the presence of a catalyst to increase the proportion of methane in the mixture; and (iv) removing steam and carbon dioxide from the gas leaving the second catalytic reaction zone. The gas may be used as a synthetic natural gas.



In both stages (i) and (iii) the temperature is kept as low as possible, depending on the catalyst: for example, stage (i) may be operated at a catalyst bed temperature of 400-500° C., and stage (iii) such that the outlet temperature is 200-250° C., when a low temperature steam reforming catalyst is used in both stages. The reaction zone in stage (iii) may be internally cooled, at least at the outlet end of the zone.

The cooling in stage (ii) is preferably achieved by adding cold hydrocarbon feedstock.

3,625,666

## METHOD OF FORMING METAL-COATED DIAMOND ABRASIVE WHEELS

George S. James, Johannesburg, Transvaal, Republic of South Africa, assignor to Industrial Distributors (1946) Limited, Johannesburg, Transvaal, Republic of South Africa

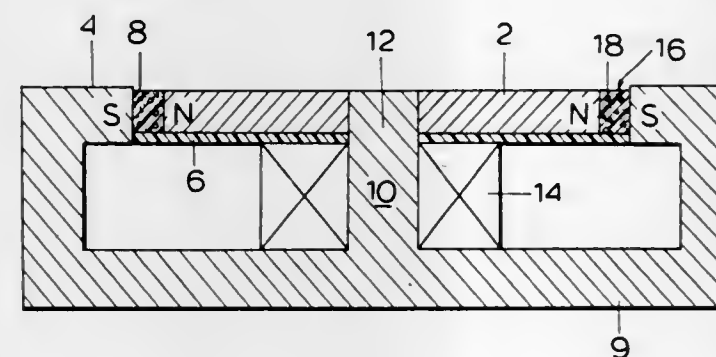
Filed June 16, 1969, Ser. No. 833,628

Claims priority, application Republic of South Africa, June 19, 1968, 68/3,910

Int. Cl. B24b 1/00; B24d 3/02

U.S. Cl. 51—295

2 Claims



The working zone of an abrasive tool is formed from nickel-coated diamond particles and a runny epoxy resin. The mixture of diamonds and resin are charged into a mould. Settling out of diamond particles is prevented and the distribution of the particles in the runny resin is controlled by applying a magnetic field or an electrostatic

field across the mould. The direction of the lines of field force is chosen to be normal to the eventual working face so that elongated particles tend to align themselves axially along lines of force.

3,625,667

## METHOD FOR COATING AND FORMING HIGH STRENGTH GLASS FIBER MAT

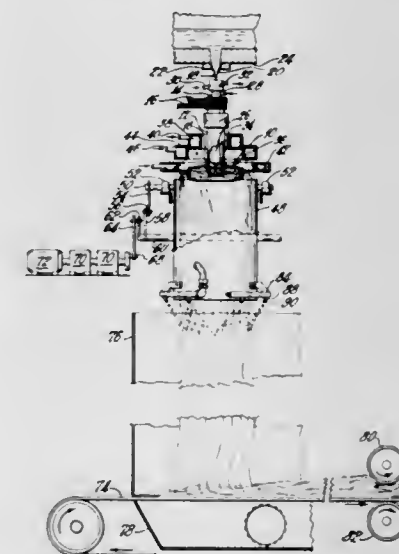
Richard E. Pitt, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation

Filed June 18, 1969, Ser. No. 834,263

Int. Cl. C03c 25/02

U.S. Cl. 65—3

3 Claims



A more uniformly bonded glass fiber mat than produced by the prior art is obtained by causing droplets of binder having a predetermined and generally uniform size to penetrate a gas flow containing the attenuated glass fibers at an angle of convergence of less than approximately 40 degrees. The droplets are unaccompanied by gas flow other than that induced by the droplets. The size of the droplets are such that they are large enough to surround the juncture of abutting fibers but are sufficiently small that they will not penetrate the veil. These droplets are projected at a velocity generally equal to the velocity of the fibers of the veil.

3,625,668

## DEVICE FOR TRAPPING AND REMOVING GAS BUBBLES FROM A GLASS MANUFACTURING CHAMBER

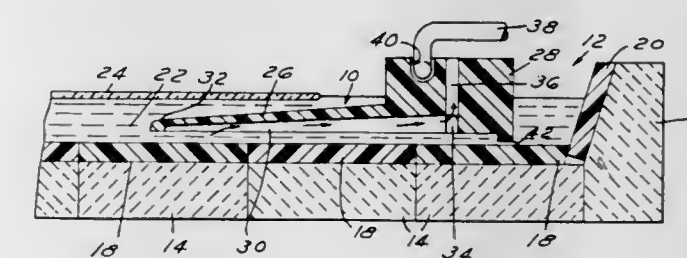
Robert J. Greenler, Monroe, Mich, assignor to Ford Motor Company, Dearborn, Mich.

Filed May 15, 1970, Ser. No. 37,794

Int. Cl. C03b 18/02

U.S. Cl. 65—182 R

9 Claims



A glass manufacturing chamber contains a refractory ceramic lining which supports thereon a molten bath over which glass may be floated to form a ribbon of glass. A device for trapping and removing gas bubbles from the chamber includes a block of material nonreactive with the molten bath and any atmosphere contained within



the chamber. The block has a first portion submerged in the molten bath at a position located above a portion of the refractory ceramic lining. The first portion of the block has a plurality of gas receiving pockets formed therein which face the refractory ceramic lining. The block of material also has a second portion to which the first portion is connected. The second portion of the block has gas collecting and gas venting openings formed therein which are interconnected with the gas receiving pockets formed in the first portion of the block. Any gas issuing from the refractory lining is caught by the gas receiving pockets and then vented through the gas collecting and gas venting openings formed in the second portion of the block.

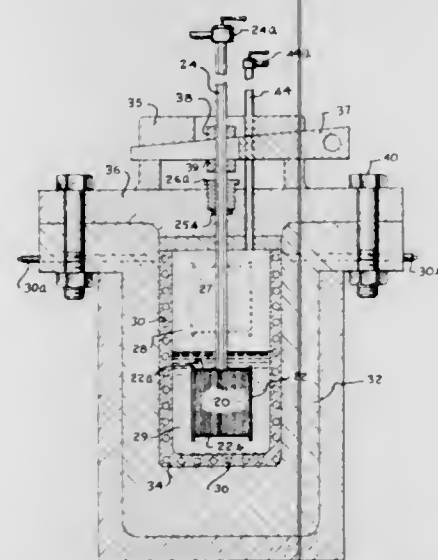
3,625,669

## FIBER OPTIC BUNDLE FUSION

Frederick H. Norton, Gloucester, Mass., assignor to American Optical Corporation, Southbridge, Mass.  
Filed June 20, 1969, Ser. No. 835,113  
Int. Cl. C03c 23/20

U.S. Cl. 65—4

4 Claims



Method and apparatus for making fused image-conducting fiber optic face plates and the like which are impervious to gases and free from gas inclusions and such therein.

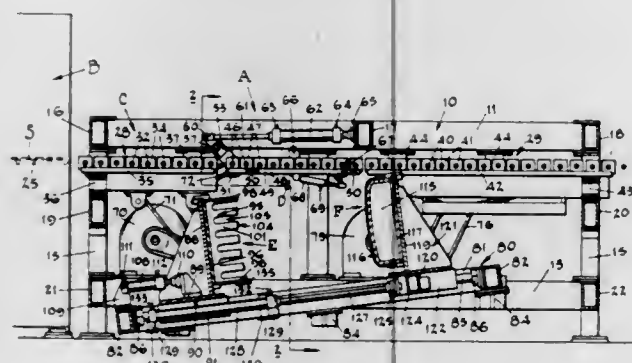
3,625,670

## GLASS SHEET BENDING METHOD AND APPARATUS

George F. Ritter, Jr., Toledo, Ohio, assignor to Libby-Owens-Ford Company, Toledo, Ohio  
Filed Nov. 5, 1969, Ser. No. 874,332  
Int. Cl. C03b 23/02

U.S. Cl. 65—106

7 Claims



A method of press bending glass sheets which employs an apparatus including mold members supported for movement toward and away from one another and having complementary, curved shaping surfaces, means for

conveying flat glass sheets along a path above said mold members with a pivotal section adapted to locate a glass sheet between the mold members and to remove the same after the bending operation.

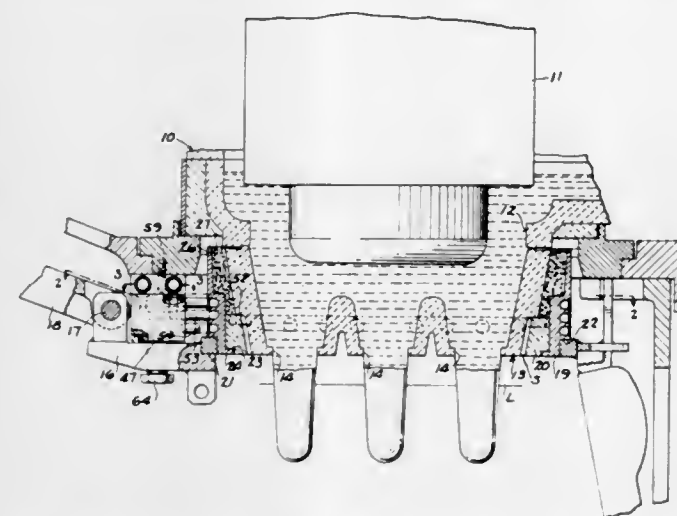
3,625,671

## APPARATUS FOR FEEDING GLASS HAVING MULTIPLE OUTLETS

Helmut T. Schirm, Toledo, and Robert O. Zeigler, Holland, Ohio, assignors to Owens-Illinois, Inc.  
Filed Jan. 6, 1969, Ser. No. 789,136  
Int. Cl. C03b 5/26

U.S. Cl. 65—326

10 Claims



An apparatus for feeding glass comprising a forehearth having an opening therein beneath which an orifice ring assembly is movably mounted. The orifice ring assembly comprises an orifice pan in which an insert is positioned that, in turn, supports an orifice ring which has a plurality of orifices through which glass is delivered. The orifice pan and insert have interconnecting passages for selectively supplying and controlling the combustion of gases provided between the periphery of each orifice in the orifice ring and the insert.

3,625,672

## METHOD FOR PREPARING AMMONIATED WET PROCESS SUPERPHOSPHORIC ACID BASE SOLUTION

Wendell D. Burch and Donald L. Whitfill, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.  
No Drawing. Filed Feb. 10, 1969, Ser. No. 798,153  
Int. Cl. C05b 11/06

U.S. Cl. 71—35

1 Claim

Precipitation of magnesium impurity in fertilizer base solution prepared from wet process superphosphoric acid is reduced by adjusting the pH of the solution to within the range of about 6.0 to 6.2 by ammoniation, and then adding concentrated nitric acid to attain a pH in the range of about 5.0 to about 5.6.

3,625,673

## PREPARATION OF METALS AND METAL ALLOYS

Robert H. Lindquist, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
No Drawing. Continuation-in-part of application Ser. No. 582,238, Sept. 27, 1966. This application Feb. 3, 1969, Ser. No. 796,222

The portion of the term of the patent subsequent to July 29, 1986, has been disclaimed  
Int. Cl. B22f 9/00

U.S. Cl. 75—5

3 Claims

Process for preparing dispersion-hardened metals and metal alloys, comprising forming a solution comprising metal chloride precursors of the continuous and dispersed

phases of the final product, adding an epoxy compound to said solutions whereby a gel comprising metal hydroxides is formed, converting said metal hydroxides to oxides, and reducing the oxide precursors of the continuous phase of the final product, and products so prepared.

3,625,674

## GOLD RECOVERY PROCESS

Albert L. Jacobs, 521 5th Ave., New York, N.Y. 10017  
Filed Apr. 10, 1969, Ser. No. 815,113  
Int. Cl. C22b 11/04

U.S. Cl. 75—101

5 Claims

Gold is extracted and isolated from gold-containing materials by reacting the gold with aqueous alcoholic iodine to form aurous iodide, AuI, which is separated and heated to break down the AuI into Au and I, thereafter isolating the Au and recovering the I for recycling to form AuI with the gold in additional gold-containing material.

3,625,675

## NOVEL IRON-CHROMIUM-BERYLLIUM ALLOY SYSTEM

Fred C. Robertshaw and Roger J. Perkins, Cincinnati, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission  
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,360  
Int. Cl. C22c 39/14

U.S. Cl. 75—126

2 Claims

The present invention relates to selected iron-beryllium-chromium alloy systems containing minor additions of at least one strength-inducing additive selected from the group consisting of tungsten, niobium, carbon, and yttrium. These alloys are characterized by high strength from room temperature to temperatures up to at least 550° C. and by a stable, body-centered, cubic structure over the full range of temperature from room temperature up to the melting point.

3,625,676

## VANADIUM-ALUMINUM-TITANIUM MASTER ALLOYS

Frederick H. Perfect, Wyomissing, Pa., assignor of fractional part interest to Reading Alloys, Inc., Robensonia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 617,031, Feb. 20, 1967. This application Mar. 28, 1969, Ser. No. 811,581

Int. Cl. C22c 1/00, 21/00, 27/00

U.S. Cl. 75—134 V

13 Claims

This invention relates to improved vanadium-aluminum-titanium master alloys free of slag voids and gross (macroscopic) nitride inclusions, by reason of which the master alloys are particularly useful in providing titanium base alloys of greater soundness. This invention also contemplates a novel process involving aluminothermic co-reduction of vanadium pentoxide and titanium dioxide to obtain such improved vanadium-aluminum-titanium master alloys.

3,625,677

## ALUMINUM ALLOYS

Howard Jones, Saffron Walden, England, assignor to T.I. (Group Services) Limited, Edgbaston, Birmingham, England

Filed Dec. 26, 1968, Ser. No. 786,956

Claims priority, application Great Britain, Dec. 30, 1967, 59,285/67

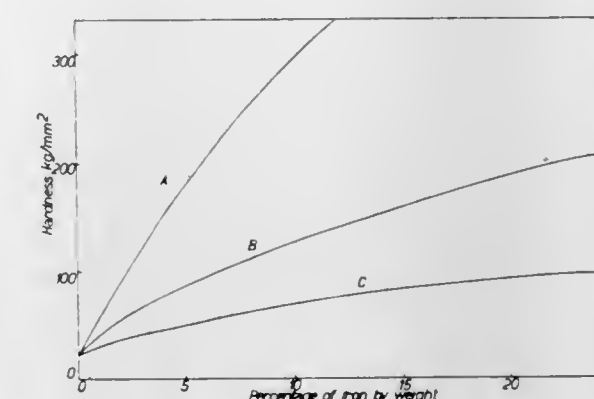
Int. Cl. C22c 21/00

U.S. Cl. 75—138

4 Claims

This invention relates to a range of aluminum alloys, and methods of preparing them. The materials are primarily binary alloys in which the minor constituent is iron,

although a third constituent may be present, or even more, apart from impurities, without departing from the scope of



the invention and the second constituent may be elements other than iron but having a similar effect, as will be further explained later.

3,625,678

## NICKEL-CHROMIUM ALLOYS ADAPTED FOR PRODUCING WELDABLE SHEET

Edward Gordon Richards, West Hagley, Peter Lindsay Twigg, Halesowen, and Alfred John Fletcher, Hollywood, near Birmingham, England, assignors to The International Nickel Company, Inc., New York, N.Y.  
No Drawing. Filed May 19, 1969, Ser. No. 825,924  
Claims priority, application Great Britain, May 21, 1968, 24,266/68

Int. Cl. C22c 19/00

U.S. Cl. 75—171

10 Claims

Nickel-base alloys containing chromium, cobalt, molybdenum carbon, hafnium and correlated amounts of aluminum, titanium, niobium, tantalum and vanadium and also boron with or without zirconium are particularly adapted for applications requiring welded sheet.

3,625,679

## METHOD OF RAISING THE CONTENT OF NITROGEN AND OXYGEN IN TITANIUM

Howard B. Bomberger, Jr., Canfield, Ohio, assignor to RMI Company, Niles, Ohio

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,400

Int. Cl. C22b 53/00; C22c 15/00

U.S. Cl. 75—175.5

4 Claims

A method of raising the content of nitrogen and oxygen in titanium by adding nitrites of nitrates of non-alloying metallic elements to the sponge before it is melted. The preferred compounds to be added are  $\text{NaNO}_2$  and  $\text{NaNO}_3$ . Modern sponge is low in nitrogen and oxygen. Additions of both these elements are needed to increase the strength of the product.

3,625,680

## METHOD FOR PRODUCING POROUS URANIUM

Joseph J. Asbury, Knoxville, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,633

Int. Cl. B22f 1/00

U.S. Cl. 75—222

4 Claims

High-purity porous uranium articles are produced by preparing an admixture of particulate calcium oxide, magnesium metal, and uranium; pressing the mixture into a compact; sintering the compact in an inert atmosphere; and thereafter contacting the compact with acid solutions for removing the calcium oxide, magnesium, magnesium oxide, and uranium oxide.



3,625,681

# METHOD OF LIQUID DEVELOPING A PHOTOCONDUCTIVE PLATE

Motohiro Takiuchi, Hirakata-shi, Yoshitaka Yamamoto, Nara-shi, and Yoshiki Hayashi, Hirakata-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Jan. 10, 1969, Ser. No. 790,234  
Int. Cl. G03g; B44d 5/00

U.S. Cl. 96—1

4 Claims

An improved electrophotographic image producing process capable of reproducing a highly resolved continuous-tone image. The process utilizes an electrophotographic plate having an insulating back layer. The process is characterized in that a uniform charge of the same polarity is given to both the top surface and the back surface of the electrophotographic plate.

3,625,682

# NONREMOVABLE DISCONTINUOUS ELECTRODE FOR ELECTROPHOTOGRAPHY

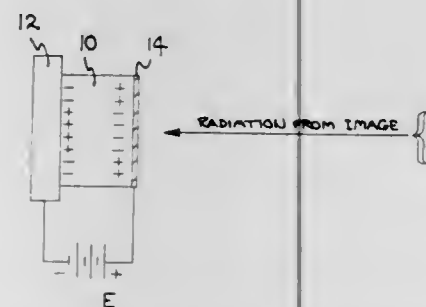
Eugene A. Oster, Toledo, Ohio, and Barnett Rosenberg, Lansing, Mich., assignors to Owens-Illinois Inc.

Filed Nov. 29, 1968, Ser. No. 779,725

Int. Cl. G03g 13/22

U.S. Cl. 96—1.4

5 Claims



A persistent internal polarization (PIP) electrophotography printing or copying system comprising stationary electrodes which are not removed during development, and wherein at least one electrode is of a discontinuous configuration, such as a foraminous conductive mesh, which is embedded in or attached to the surface of the PIP layer which is to be toned (the top layer), such that an electric field can be applied to the PIP layer while permitting radiation to reach the PIP layer, and whereby toning and transfer may be accomplished without removing either electrode.

3,625,683

# PROCESS FOR CLEANING A PHOTOCONDUCTIVE DRUM OF RESIDUAL TONER PARTICLES AND REUSE OF THE SAME

William C. Emerson, Rochester, N.Y., assignor to

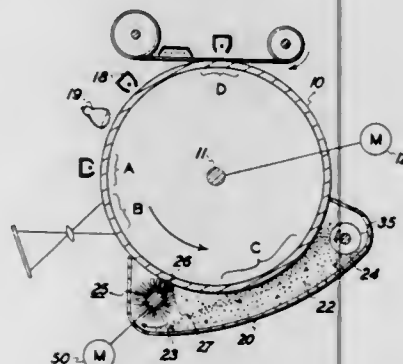
Xerox Corporation, Rochester, N.Y.

Filed Dec. 1, 1969, Ser. No. 881,043

Int. Cl. G03g 13/14; B05b 5/02

U.S. Cl. 96—1.4

2 Claims



A method for producing xerographic copies in which a photoconductor is moved in contact with a quantity of halide emulsion layers, each having a dye which is a silver

two component developer through an active development zone to create a flow pattern in the developer material, the improvement being characterized by removing the residual toner particles at the beginning of the development zone for reuse in the flow pattern.

3,625,684

# ELECTROCONDUCTIVE LAYERS FOR USE IN ELECTROGRAPHIC AND ELECTROPHOTOGRAPHIC RECORDING ELEMENTS

Albert Lucien Poot, Kontich, Jozef Frans Willems, Wilrijk, Francis Jeanne Sels, Kontich, and Johannes Josephus Vanheertum, Halle-Zandhoven, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,317

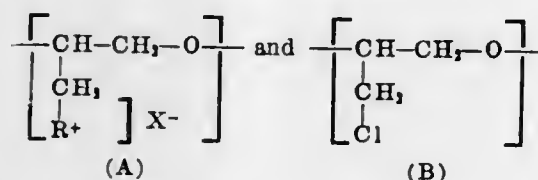
Claims priority, application Great Britain, Apr. 29, 1968, 20,256/68

Int. Cl. G03g 5/00

U.S. Cl. 96—1.5

8 Claims

An electroconductive polymeric film useful in certain recording elements, especially electrographic recording elements including a photoconductive layer or other electrostatic charge retaining layer in electrical contact with such film, is composed of randomly distributed recurring units having the following formulae:



wherein units (A) constitute between about 25–95 mole percent of the total amount of such recurring units in the polymer, R is a quaternary ammonium, phosphonium, or tertiary sulfonium group and X is an anion.

3,625,685

# PHOTOGRAPHIC COLOR DIFFUSION-TRANSFER ELEMENT COMPRISING AQUEOUS FILM-FORMING SYNTHETIC POLYMER SUSPENSION LAYERS INTERMEDIATE ITS SENSITIVE LAYERS AND PROCESSES FOR THEIR USE

James A. Avtges, Belmont, Jerome L. Reid, Natick, Lloyd D. Taylor, Lexington, and Herbert N. Schlein, Beverly, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 880,205,

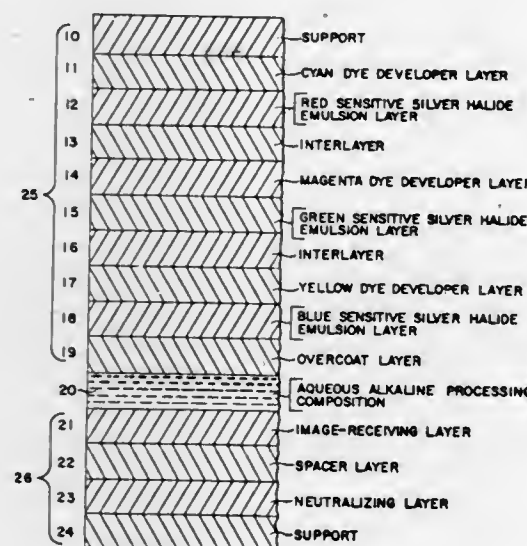
Nov. 29, 1969. This application Feb. 26, 1971, Ser.

No. 119,331

Int. Cl. G03c 1/04, 5/54, 7/00

U.S. Cl. 96—3

34 Claims



Diffusion transfer photographic products comprising a support carrying at least two selectively sensitized silver halide emulsion layers, each having a dye which is a silver

halide developing agent of predetermined color associated therewith, and a layer intermediate the emulsion layers comprising a dye impermeable coalesced essence of an aqueous film-forming polymer dispersion and a processing composition permeable material associated therewith and adapted to render said layer permeable to solubilized dye image-forming material subsequent to being contacted with processing composition.

3,625,686

# SIMULTANEOUS PHOTOPRINTING OF A PLURALITY OF REDUCED IMAGES

Ichiro Kitano, Kobe-shi, Hyogo-ken, Japan, assignor to Nippon Selfoc Kabushiki Kaisha (also known as Nippon Selfoc Co., Ltd.), Tokyo-to, Japan

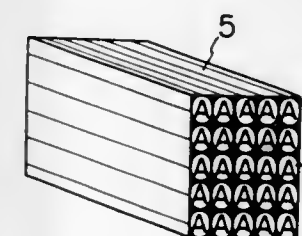
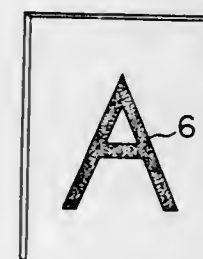
Filed Aug. 19, 1969, Ser. No. 851,269

Claims priority, application Japan, Aug. 21, 1968, 43/60,094

Int. Cl. G03c 5/04

U.S. Cl. 96—27 R

3 Claims

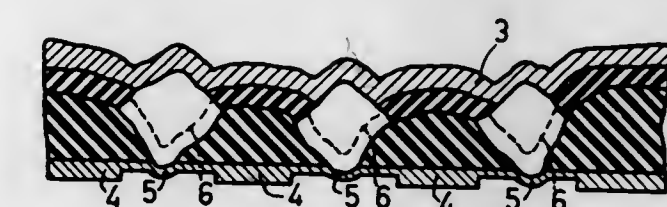
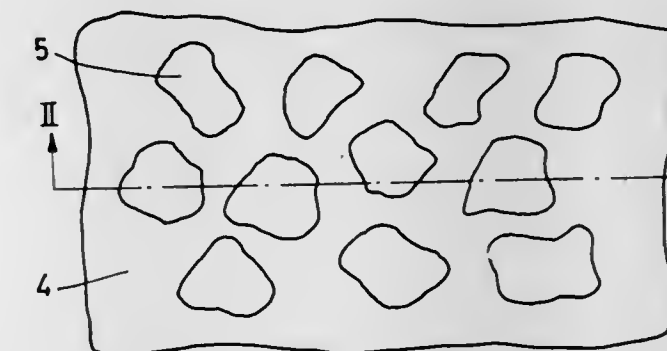


A method for simultaneously printing a plurality of reduced images of a pattern on a photosensitive material, which comprises the steps of interposing an optical fiber plate between said pattern and photosensitive material, said optical fiber plate being formed of a bundle of a plurality of optical fibers each having such a refractive index distribution in a cross section thereof as to substantially satisfy the relation

$$n = n_0(1 - ar^2)$$

where  $n_0$  represents the refractive index at the center thereof,  $n$  represents the refractive index at a radial point at a distance  $r$  from said center point, and  $a$  is a positive constant; and causing the transmission a reduced image of said pattern through each of said optical fibers forming said optical fiber plate, thereby and producing the reduced images on said photosensitive material.

Use of the method in the production of integrated circuits is disclosed.



A method of manufacturing a radiation-sensitive or electro-luminescent device in which a radiation-transparent electrode is provided on a monograin layer of electrically active grains with an electrically insulating filler material in the spaces between the grains. In this method, a porous electrode layer of relatively high electrical conductivity and relatively low permeability to radiation is provided over the monograin layer and filler after which the electrode layer is contacted with a liquid which penetrates through the pores of the electrode layer and selectively reacts with the grain surfaces in such manner as to disrupt the adhesion of the layer to the tops of the grains while leaving substantially intact its adhesion to the filler. This electrode layer is then removed from the grains to expose their tops and a second electrode layer having a relatively low electrical conductivity but a high radiation permeability is applied over the grains.

3,625,687

# PROCESS FOR MAKING NEGATIVE WORKING OFFSET MASTERS CONTAINING THIN GELATIN RELIEF IMAGES

Michael Patrick Dunkle, Matawan, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 16, 1966, Ser. No. 572,667

Int. Cl. G03f 7/02; G03c 5/00

U.S. Cl. 96—33

13 Claims

Process for making a planographic printing master which comprises (a) exposing the silver halide emulsion



3,625,689

**HIGH-CONTRAST PHOTOGRAPHIC ELEMENTS AND METHOD FOR PROCESSING SAME**

Eugene D. Salesin and Thomas E. Whiteley, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 18, 1967, Ser. No. 661,530

Int. Cl. G03c 5/26

U.S. Cl. 96—50

14 Claims

High-contrast photographic elements comprising a support coated with a silver halide emulsion which contains a dispersed polymerized vinyl compound and the halide comprises at least about 85 mole percent chloride, about 0.1 to about 5 mole percent iodide and the balance bromide, and method for processing same in a continuous transport processing machine wherein the developer contains a carbonyl bisulfite-amine condensation product.

3,625,690

**PHOTOGRAPHIC MATERIAL CONTAINING 2,4-DITHIOXO-1,2,3,4-TETRAHYDRO-1,3,5-TRIAZINES**

Jozef Frans Willems, Wilrijk, and Frans Clement Heugbaert, Kontich, Belgium, assignors to Gevaert-Agfa N.V., Mortsels, Belgium

No Drawing. Filed May 13, 1969, Ser. No. 824,289

Claims priority, application Great Britain, May 28, 1968, 25,457/68

Int. Cl. G03c 7/00, 5/30

U.S. Cl. 96—52

11 Claims

The use of 2,4-dithioxo-1,2,3,4-tetrahydro-1,3,5-triazines, or the tautomeric forms thereof as anti-bronzing agents in photographic materials and processes is described.

3,625,691

**METHOD FOR COLORING NON-DIFFUSIBLY PHOTOGRAPHIC LAYERS BY MEANS OF AN AMINO-GUANIDIZED DIALDEHYDE STARCH MORDANT**

Yasushi Ohshima, Takatsuki-shi, and Sadayuki Miyazawa, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

No Drawing. Filed May 20, 1969, Ser. No. 826,278

Int. Cl. G03c 1/40; C09b 65/00

U.S. Cl. 96—57

3 Claims

A photographic layer can be made completely non-diffusibly colored by incorporating into a binder of the photographic layer, a mordant which is a reaction product of aminoguanidine with dialdehyde starch, and coloring the photographic layer with an anionic dye.

3,625,692

**PHOTOGRAPHIC MATERIAL HAVING SLIPPAGE-IMPROVING ADDITIVE IN SURFACE COATING**

Karl-Otto Meyer, Leverkusen, and Wolfgang Himmelmann, Cologne-Stammheim, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 24, 1968, Ser. No. 770,423

Int. Cl. G03c 1/16

U.S. Cl. 96—67

3 Claims

Light sensitive photographic material having in at least one outer layer, as an anti-friction component, a water-insoluble compound of the formula:



wherein  $R_1$  is alkyl (preferably straight chain) of 8-24 carbon atoms, or aryl;  $R_2$  is alkyl of 8-24 carbon atoms;  $R_3$  is alkylene or phenylene, and  $n$  is an integer from 0 to 7.

3,625,693

**THERMALLY DEVELOPABLE DIAZOTYPE COPYING MATERIALS**

Takehiko Iwaoka, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Filed Nov. 3, 1967, Ser. No. 680,358

Claims priority, application Japan, Nov. 9, 1966, 41/73,630

Int. Cl. G03c 1/58

U.S. Cl. 96—75

2 Claims

Thermally developable diazotype copying materials comprising a support sheet and a light-sensitive layer supported thereon, said layer containing a light-sensitive diazo compound whose principal component consists of ortho-carboxy benzene diazonium chloride, said layer further containing a coupler, a thermally decomposable alkali generating agent (an agent adapted to produce an alkaline component due to the heat decomposition of said agent) and an acid stabilizer.

3,625,694

**POLYMERS, POLYMERIC MORDANTS, AND ELEMENTS CONTAINING SAME**

Hyman L. Cohen, Rochester, N.Y., James R. King, Jr., Los Angeles, Calif., and Louis M. Minsk, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 6, 1968, Ser. No. 734,873

Int. Cl. G03c 1/84, 1/72

U.S. Cl. 96—84

18 Claims

Polymers comprising units having quaternary nitrogen groups and units having reactive anchoring groups thereon which can be reacted directly with gelatin to form covalent bonds between said polymer and gelatin. Photographic dye imbibition printing blanks comprising said polymers exhibit good image definition and low matrix poisoning.

3,625,695

**ANTISTATIC PHOTOGRAPHIC FILM**

E. Scudder Mackey, Binghamton, N.Y., and Harvey Abend, Lexington, Ky., assignors to General Aniline & Film Corporation, New York, N.Y.

No Drawing. Filed May 9, 1967, Ser. No. 637,096

Int. Cl. G03c 1/82

U.S. Cl. 96—84 A

4 Claims

Antistatic agents for use with film-forming organic binders comprising the condensation product of an alkylene oxide having from 2 to 4 carbon atoms with 2,4,7,9-tetramethyl-5-decyne 4,7-diol, said condensation product having a molecular weight of at least 300.

3,625,696

**PRODUCTION OF PRINTING PLATES**

Carl Heinrich Krauch, Heidelberg, and Hans-Werner Otto, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,312

Claims priority, application Germany, Oct. 27, 1967, P 15 97 748.7

Int. Cl. G03c 1/68, 1/74

U.S. Cl. 96—86 P

7 Claims

The invention relates to plates, sheets or films applied to a highly reflective material, and which are used to prepare printing plates, said plates, sheets or films being formed from a mixture containing an indigoid dye and consisting of a polymeric base material, monomers having at least two polymerizable double bonds, photoinitiators and/or polymerization inhibitors.

3,625,697

**SENSITIZATION OF LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSIONS**

Shui Sato and Rintaro Ushiyama, Tokyo, Eiichi Sakamoto, Hanno-shi, and Sadatugu Terada and Hiroshi Yamada, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 10, 1969, Ser. No. 884,022

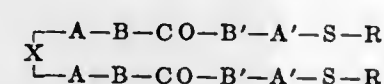
Claims priority, application Japan, Dec. 13, 1968, 43/90,990

Int. Cl. G03c 1/28, 1/34

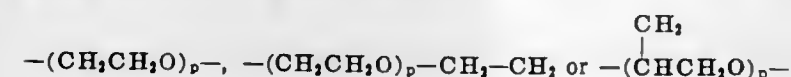
U.S. Cl. 96—107

5 Claims

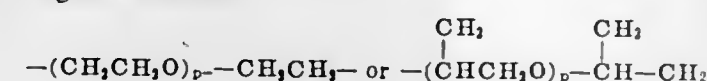
Light-sensitive silver halide emulsions are sensitized by incorporating into the emulsion, a sensitizing amount (0.1-1000 mg./kg.) of a compound of the formula:



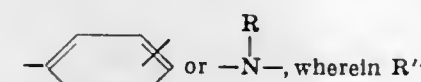
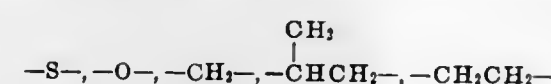
wherein A is a lower alkylene group, or a polyalkylene ether group, having the formula:



and which is not bonded through an oxygen atom to B; A' is a lower alkylene group, or a polyalkylene ether group having the formula



provided that A and A' are not both polyalkylene ether groups at the same time, and  $p$  is an integer of 2 to 30; B and B' are —NH— or —O—, provided that both are not —O— at the same time; R is a lower alkyl group, a phenyl group, an aralkyl group or —(CH<sub>2</sub>)<sub>q</sub>—COOR', wherein  $q$  is an integer of 1 to 3, and R' is a lower alkyl group; and X is a divalent group of the formula:



is a lower alkyl group.

3,625,698

**LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL SENSITIZED WITH A THIOHYDANTOIN NUCLEUS CONTAINING DYE**

Kaitchihiro Sakazume, Shigemasa Itoh, and Shui Sato, Tokyo, and Eiichi Sakamoto, Hanno-shi, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

Filed June 14, 1968, Ser. No. 737,147

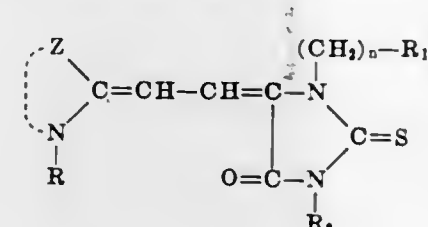
Claims priority, application Japan, June 20, 1967, 42/39,037; Aug. 25, 1967, 42/54,205

Int. Cl. G03c 1/08

U.S. Cl. 96—100

5 Claims

The photographic material emulsion layer contains a sensitizing dye. The dye has the formula:



wherein R is an alkyl group, a carboxy alkyl group or a sulfo alkyl group;  $R_1$  is hydroxy, cyano, alkoxy, carboxy, acyloxy or carbamoyl;  $n$  is an integer of 2 to 3;  $R_2$  is a substituted or unsubstituted alkyl, aryl, alkenyl

3,625,699

**SENSITIZATION OF PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING COLOR-FORMING COMPOUNDS BY 1,1-BIS-SULFONYL ALKANES**

Paul H. Stewart and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 1, 1970, Ser. No. 42,605

Int. Cl. G03c 1/28, 1/40

U.S. Cl. 96—107

17 Claims

The speed of photographic silver halide emulsions containing color-forming couplers is increased by processing in the presence of 1,1-bis-sulfonyl alkane speed increasing agents.

3,625,700

**EDIBLE COMPOSITIONS CONTAINING 2',4',6',3-TETRAHYDROXY-4-n-PROPOXYDIHYDRO-CHALCONE 4'-β-NEOHESPERIDOSIDE**

Leroy O. Krbecek, Deerfield, and George Inglett, Peoria, Ill., assignors to International Minerals & Chemical Corporation

No Drawing. Continuation-in-part of application Ser. No. 622,098, Mar. 10, 1967. Division of application 638,623, May 15, 1967. This application Oct. 23, 1969, Ser. No. 870,341

Int. Cl. A23l 1/26

U.S. Cl. 99—141 A

4 Claims

The novel compound 2',4',6',3-tetrahydroxy-4-n-propoxydihydrochalcone 4'-β-neohesperidoside is useful as a sugar substitute and sweetening agent in edible formulations.

3,625,701

**CARBOHYDRATE-GLUCONATE PRODUCTS**  
Raoul Guillaume Philippe Walon, Brussels, Belgium, assignor to CPC International Inc.

No Drawing. Filed Mar. 26, 1969, Ser. No. 810,783

Int. Cl. A23k 1/14

U.S. Cl. 99—2

2 Claims

Covers carbohydrate-gluconate products and food compositions thereof formed by selectively oxidizing the glucose in starch hydrolyzates or greens to form carbohydrate-gluconic acid and carbohydrate-gluconate mixtures. Also covers mode of formation of these compositions.

3,625,702

**PREPARATION OF SOUR MILK DRINKS**

Heinrich Exler, Ravensberger Strasse 86,

Borgholzhausen 4801, Germany

Filed July 18, 1969, Ser. No. 842,973

Claims priority, application Germany, July 20, 1968, P 17 92 084.2

Int. Cl. A23c 9/12

U.S. Cl. 99—59

6 Claims

A sour milk drink is formed by souring skimmed fresh milk, adding an aqueous solution of citric acid and concentrated flavouring, followed by a mixture of pectin and sugar, homogenising the product in a first homogeniser at a temperature of approximately 15° C. and a pressure of 150 to 160 atmospheres gauge, heating the homogenised product to a temperature of from 51 to 54.5° C. and raising its pressure to 350 to 380 atmospheres gauge, homogenising the product in a second homogeniser at the latter temperature and pressure, pouring the product into bottles and pasteurising it for 20 to 30 minutes at an elevated temperature.



### 3,625,703 COFFEE ADDITIVE

John A. Ericson, 732 Market St.,  
Youngstown, Ohio 44502

No Drawing. Filed July 6, 1970, Ser. No. 52,686  
Int. Cl. A23f 1/04, 1/12

U.S. Cl. 99—65

3 Claims

A coffee additive mixed with ground roast coffee beans prior to brewing coffee therefrom includes dried yeast, dehydrated mustard, watercress, parsley and alfalfa greens and acts to reduce the acid and oil content of the brewed coffee.

3,625,704

### INSTANT COFFEE FLAKES

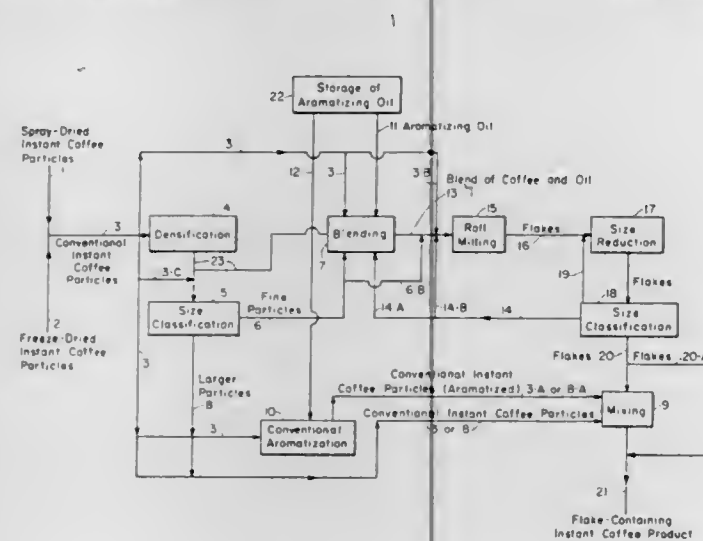
James R. Andre, Leawood, Kans., and Frederick M. Joffe, Cincinnati, and David A. Strang, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 732,479, Apr. 26, 1968, which is a continuation-in-part of application Ser. No. 638,858, May 16, 1967. This application Dec. 4, 1968, Ser. No. 786,539

Int. Cl. A23f 1/00

U.S. Cl. 99—66

22 Claims



An instant coffee composition containing thin, dense flakes of instant coffee. The flakes are formed by roll milling instant coffee particles. Preferably, an aromatizing oil is contained in the flakes.

3,625,705

### THERMOGRAVITATIONAL COFFEE EXTRACT CONCENTRATION

Charles W. Ehrigott, Rumson, N.J., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,347  
Int. Cl. A23f 1/08

U.S. Cl. 99—71

4 Claims

Coffee extract is passed through a narrow channel and a temperature differential is set up across the channel. The thermal difference thus imposed across the extract causes diffusional concentration of the extract, and the more concentrated extract separates out at the bottom of the channel, while dilute extract rises to the top of the channel.

3,625,706

### SHORTENING AND CULINARY MIXES CONTAINING GLYCOLIPID EMULSIFIERS

David V. Myhre, Wyoming, and John E. Hunter, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed July 23, 1968, Ser. No. 746,774  
Int. Cl. A21d 2/14; A23g 3/00; A23d 5/00

U.S. Cl. 99—94

8 Claims

Bakery compositions containing glycolipids, e.g., sugar glycosides esterified with long chain (C<sub>16</sub>-C<sub>22</sub>) fatty acids,

are disclosed. The glycolipids are useful as oil/water emulsifiers in bakery and shortening compositions.

3,625,707

### SYSTEM FOR HYDRATING DATES

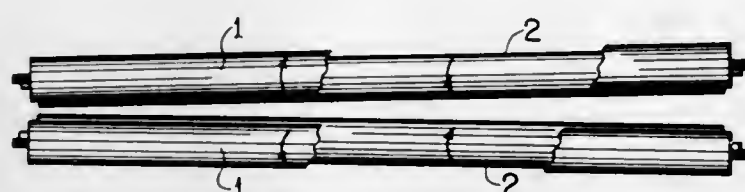
David Reznik, Berkeley, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

Filed Nov. 22, 1968, Ser. No. 778,165

Int. Cl. A23b 7/00

U.S. Cl. 99—100

3 Claims



Apparatus and process are disclosed for hydrating dates in order to render them plump and tender. The system of the invention involves first a fissuring of the skin of the fruit, followed by a vacuum hydration operation by which the moisture content of the fruit is rapidly increased without alteration of its natural flavor.

3,625,708

### TREATMENT OF FLESH FOR FOOD

John H. Mahon, Scott Township, Allegheny County, and Kermit F. Schlamb, Pittsburgh, Pa., assignors to Calgon Corporation

No Drawing. Continuation-in-part of application Ser. No. 611,805, Jan. 26, 1967. This application Aug. 28, 1970, Ser. No. 68,044

The portion of the term of the patent subsequent to Dec. 29, 1987, has been disclaimed

Int. Cl. A22c 18/00, 21/00, 25/00

U.S. Cl. 99—107

4 Claims

This invention relates to the treatment of flesh in an aqueous slurry of sodium tripolyphosphate to prevent the formation of high concentrated areas of phosphate known in the trade as "fish eyes." The slurry is preferably formed by mixing sodium tripolyphosphate having a major portion in the size range 20 mesh to 80 mesh in water to form a very fine creamy suspension, preferably completely hydrated.

3,625,709

### ACETALDEHYDE CARBOHYDRATE COMPLEX

William A. Mitchell, Lincoln Park, N.J., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Feb. 18, 1969, Ser. No. 800,246

Int. Cl. A23l 1/22, 1/26

U.S. Cl. 99—140 R

11 Claims

Formation of an acetaldehyde-carbohydrate composition is effected with a chloride salt catalyst. The resulting material has excellent room temperature stability over wide ranges of ambient humidities and has application as a food flavoring and aroma enhancer.

3,625,710

### ALDIMINES AS CHOCOLATE-LIKE FLAVORS

George P. Rizzi, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 25, 1969, Ser. No. 836,606

Int. Cl. A23l 1/22

U.S. Cl. 99—140 R

8 Claims

Aldimines are useful as chocolate-like or cocoa-like flavors. Examples of the compounds are N-isobutylidenefurfurylamine, N-isopentylidenefurfurylamine, and N-isopentylidenisopentylamine.

3,625,711

**CYCLAMATE-FREE ARTIFICIAL SWEETENER**  
Marvin E. Eisenstadt, Belle Harbor, N.Y., assignor to Cumberland Packing Corporation, Brooklyn, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 822,024, May 5, 1969, which is a continuation-in-part of application Ser. No. 794,767, Jan. 28, 1969, both now abandoned. This application Nov. 5, 1969, Ser. No. 874,413

Int. Cl. A23l 1/26

U.S. Cl. 99—141 A

8 Claims

This invention relates to a saccharine artificial sweetening composition, and more particularly to a sweetening composition, which is free of cyclamate and contains only saccharine as the artificial sweetener but which contains additives which eliminate the undesired bitter aftertaste of saccharine. The additives which are used according to this invention, and which must be used in combination because the only sweetening agent is saccharine, are lactose or dextrose, but preferably lactose, and cream of tartar powder.

3,625,712

### CONTROL OF DIFFUSION OF GASES IN POUCHES

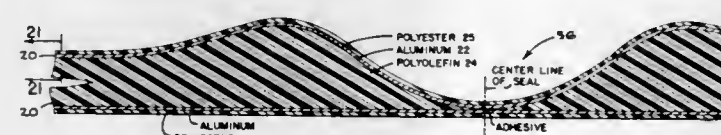
Donald C. Wilson, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Nov. 20, 1969, Ser. No. 878,503

Int. Cl. B65b 39/00

U.S. Cl. 99—171 H

16 Claims



Method, apparatus, and article of manufacture for controlling the diffusion of gases such as hydrogen out of sealed laminated pouches and the diffusion of gases such as oxygen into the sealed pouches, which pouches include an aluminum layer bonded to at least an inner layer of heat sealable plastic. During formation and sealing of the pouches the sealed edges of the pouches are compressed between opposed heated sealing bars, with at least one of the bars having a convex pouch contacting surface, the sealing force and temperature being sufficient to extrude the plastic sealant away from the sealed area allowing the aluminum layers of the two pouch walls to be moved substantially into aluminum to aluminum contact with each other and to establish a substantially continuous aluminum envelope around the contents of the pouches. The pouches are also filled with a water containing product and are heated to a sterilizing temperature which forms aluminum oxide on the aluminum surfaces which oxide prevents diffusion of gases out of or into the pouches by providing a substantially continuous gas inhibiting barrier or envelope around the contents of the pouches.

3,625,713

### METHOD FOR PACKAGING MEAT

George A. Mixon, Fort Lauderdale, Fla., assignor to Mol-Pak Corp., Fort Lauderdale, Fla.

Application Oct. 25, 1968, Ser. No. 770,530, now Patent No. 3,526,077, dated Sept. 1, 1970, which is a continuation-in-part of application Ser. No. 479,949, Aug. 16, 1965. Divided and this application May 1, 1970, Ser. No. 33,808

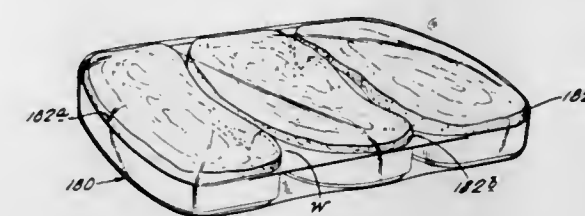
Int. Cl. A23b 1/06; B65b 25/06

U.S. Cl. 99—194

1 Claim

A method for packaging meat products and the like consisting of the steps of slicing a cut of meat of pre-

determined size and shape, positioning the cut of meat in a tray having at least one cavity section with a sidewall slightly smaller than the thickness of the cut and a base



conforming generally to the cross section of the cut so that the cut of meat fits snugly therein, enveloping the tray and cut in a heat shrinkable filmy material and freezing the packaged meat product.

3,625,714

### TOASTER BASE WITH INTEGRAL BAFFLE PLATES

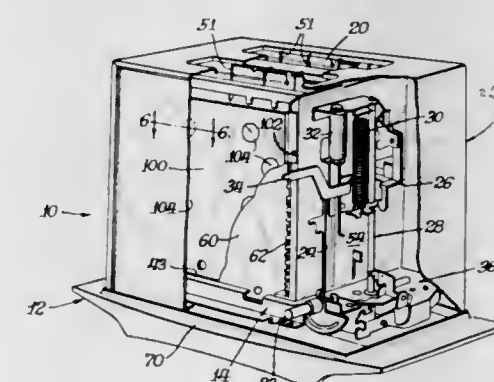
Franklin C. Hitzeroth, Centerville, and David B. Walitzer, Appanoose County, Iowa, assignors to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 12, 1970, Ser. No. 2,139

Int. Cl. A47j 37/08

U.S. Cl. 99—389

7 Claims



A toaster having an insulating phenolic base to which the toaster chassis and case are secured, the base including integral upstanding baffles which serve in part to separate the toasting chambers from end compartments formed between the case and chassis, and further having plates selectively secured to the chassis between the heating elements and the inner face of the case for rendering immaterial the case construction, be it of a highly polished chrome or a duller finished porcelain material.

3,625,715

### POLYETHYLENE OXIDE DAMPENING SYSTEM FOR LITHOGRAPHIC PRESSES

Salvatore Nasca, 74 Birch Lane, Woodmere, N.Y. 11598

No Drawing. Filed July 1, 1970, Ser. No. 51,694

Int. Cl. C09d 5/00; C09k 3/00

U.S. Cl. 106—2

2 Claims

The volatility and atmospheric contamination of alcoholic dampening solutions is avoided by the use of an aqueous solution of polyethylene oxide of molecular weight 50,000 to 150,000 with isopropyl alcohol, diethylene glycol, glycerine, a silicone-glycol copolymer surfactant and as an antifforming agent preferably a silicone emulsion. The solution may be substituted for conventional alcohol solutions without change in operating procedures.



3,625,716

**METHODS OF INHIBITING CORROSION WITH EPOXY ETHANE POLYPHOSPHONATE COMPOSITIONS**

Thomas M. King, St. Louis, and Howard L. Vandersall, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

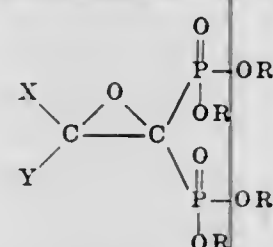
No Drawing. Filed Apr. 13, 1970, Ser. No. 27,987

Int. Cl. C09d 5/08; C23f 11/10

U.S. Cl. 106—14

19 Claims

Epoxy ethane polyphosphonates having the formula



wherein X and Y are hereinafter defined and R is hydrogen or a metal ion, alone or in combination with zinc, dichromate, certain thiols and 1,2,3-triazoles and mixtures thereof, are disclosed as inhibiting the corrosion of metals by oxygen-bearing waters.

3,625,717

**SPRAY COATING COMPOSITIONS**

Donald C. Grubba, Westboro, and John D. Peterson, North Grafton, Mass., assignors to AVCO Corporation, Cincinnati, Ohio

Filed Apr. 29, 1968, Ser. No. 724,906

Int. Cl. C04b 33/00

U.S. Cl. 106—39 R

4 Claims

The invention relates to a spray coating composition. The composition includes a ceramic matrix material which has been reacted with additives to form an additional phase within the matrix; the combination of matrix material and additional phase material improving coat-ability and coating properties. A preferred example of such a composition is an alumina ( $Al_2O_3$ ), zirconia ( $Zr_2O_3$ ) and chromia ( $Cr_2O_3$ ) matrix with an additional phase formed from alumina, zirconia or chromia with iron oxide ( $Fe_2O_3$ ) and titanium dioxide ( $TiO_2$ ). Silicon dioxide ( $SiO_2$ ) is also a candidate additive for forming a glassy phase or mullite when reacted with the alumina.

3,625,718

**NEW THERMALLY CRYSTALLIZABLE GLASSES AND LOW EXPANSION TRANSPARENT, TRANSLUCENT AND OPAQUE CERAMICS MADE THEREFROM**

Richard W. Petticrew, Perrysburg, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Continuation of application Ser. No. 630,507, Apr. 13, 1967. This application Oct. 13, 1969, Ser. No. 866,168

Int. Cl. C04b 33/00

U.S. Cl. 106—39 DV

10 Claims

The present patent application discloses compositions of matter in the form of glasses composed mainly of silica and alumina and containing other essential ingredients. The glasses of the invention are quite refractory and thermal shock resistant, having annealing point temperatures of at least  $1100^\circ F$ . and coefficients of thermal expansion in the range  $30$  to  $50 \times 10^{-7}/^\circ C$ . over the range zero to  $300^\circ C$ ; they also have liquidus temperatures of less than  $2550^\circ F$ . The refractory glasses can be formed in the usual ways by pressing, blowing, etc., to make a variety of useful articles such as tableware and ovenware. Other essential ingredients of the glasses include lithium oxide and zinc oxide; these ingredients provide the necessary viscosity reduction so that the said forming processes can be employed. After the desired glass articles are formed they can be used as such. However, another product disclosed in the application is the product of heat

treatment of the glasses of the invention. The remaining two ingredients of the present compositions, zirconium dioxide and titanium dioxide, contribute to the reduction in viscosity of the glass melts. They are also important in aiding in formation of the products of heat treatment of the present glasses, which are low-expansion crystalline ceramics that contain a multiplicity of very fine crystals dispersed in a glassy matrix. The following specification describes in more detail (1) how to carry out the heat treatment, (2) the properties of the glasses and (3) the properties of the ceramics which are derived from the glasses.

3,625,719

**PORCELAIN ENAMEL COVER COAT MILLING**

Francis C. Ellinger, Warrensville Heights, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

No Drawing. Continuation of application Ser. No. 668,168, Sept. 15, 1967. This application Apr. 29, 1970, Ser. No. 31,821

Int. Cl. C03c 5/02

U.S. Cl. 106—48

4 Claims

An improved acid resistant titania opacified porcelain enamel cover coat for application to metal substrates by conventional process methods, comprising, in combination, an acid resistant titania opacified frit milled for wet process application with in excess of 5% clay, said frit containing at least 10%  $B_2O_3$  said enamel milled to an extremely fine particle size.

3,625,720

**METHOD OF PRODUCING HIGHLY GAS-PERMEABLE REFRACTORY MATERIAL HAVING OPEN PORES**

Hiroshi Ohba and Kiyoshi Sugita, Kitakyushu, and Kohei Shimada, Miyako-gun, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

No Drawing. Filed Oct. 23, 1967, Ser. No. 677,045

Int. Cl. C04b 35/42

U.S. Cl. 106—59

4 Claims

The present invention relates to a method of producing highly gas-permeable refractory material having open pores characterized by mixing unfired chrome ore grains and dead-burnt magnesite grains in the ratios of chrome ore/magnesite of 80/20 to 30/70 to prepare a mixture, which contains fine grains of both materials in an amount less than 20% of the total and forming the mixture to bricks, which are then fired at a temperature ranging from  $1,650$  to  $1,750^\circ C$ .

3,625,721

**PERMEABLE REFRACTORIES**

Gordon E. D. Snyder, Baltimore, and Wate T. Bakker, Severna Park, Md., assignors to General Refractories Company, Philadelphia, Pa.

No Drawing. Filed Jan. 5, 1970, Ser. No. 829

Int. Cl. C04b 35/10

U.S. Cl. 106—65

24 Claims

Permeable refractories are prepared from a refractory brick batch mix consisting essentially of about 85 to 95 percent alumina, about 3.99 to 13.99 percent silica, about 0.01 to 0.5 percent of at least one lithium compound capable of oxidizing to lithium oxide and about 1 to 5 percent bentonite. About 65 to 85 percent by weight of the particles in the mix should be in the range of about 8 to 200 mesh and at least 10 percent of the particles should be 325 mesh or smaller. A major portion of the particles in the 8 to 200 mesh range should be of a size such that the ratio of the diameter of the largest particles of the major portion to the diameter of the smallest particles thereof is in the range of 3:1 to 1:1. These refractories have a permeability of at least 500 centidarcys at 25 p.s.i. back pressure.

3,625,722

**PROCESS FOR THE PREPARATION OF STABILIZED ALKALI METAL SILICATE SOLUTIONS**

Helmut v. Freyhold, Dusseldorf, Oberkassel, and Volker Wehle, Hilden Rhineland, Germany, assignors to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,880

Claims priority, application Germany, Jan. 13, 1967, H 61,550

Int. Cl. C09d 1/04

U.S. Cl. 106—74

18 Claims

This application describes a process for preparing stable alkali metal silicate solutions with silica contents of from 10 to 35% and mole ratios ranging between 4:1 and 12:1  $SiO_2$ :alkali metal oxide. Stability is obtained by incorporating sufficient amounts of certain quaternary ammonium compounds so that the mole ratio of silica to quaternary compound (calculated as quaternary ammonium oxide) ranges from 35:1 to 1000:1.

3,625,723

**FOAMED CERAMIC COMPRISING FLY ASH AND PHOSPHORIC ACID**

Richard W. Slicka, Brecksville, Ohio, assignor to Horizons Incorporated, a division of Horizons Research Incorporated

No Drawing. Filed Aug. 5, 1969, Ser. No. 847,720

Int. Cl. C04b 1/00

U.S. Cl. 106—86

7 Claims

A lightweight foamed ceramic containing fly ash, an acidic phosphate and a filler which sets hydraulically with the phosphate without heating.

3,625,724

**CELLULAR CONCRETE AND METHOD FOR PRODUCING THE SAME**

Jesus S. Alvero, Quezon City, Republic of the Philippines, assignor to Altrona Corporation, Paco Manila, Republic of the Philippines

Filed Sept. 23, 1968, Ser. No. 761,551

Int. Cl. C04b 13/124, 21/02

U.S. Cl. 106—87

24 Claims

Cellular concrete, and a method and apparatus for producing the same in which a multitude of substantially closed cells are produced. During production of the concrete, the cells have a substantially impervious coating or "shell" thereon to permit hardening of the concrete to occur without interference from the production and expansion of the cells.

3,625,725

**SATIN WHITE-CLAY COMPOSITIONS AND METHODS OF MANUFACTURE**

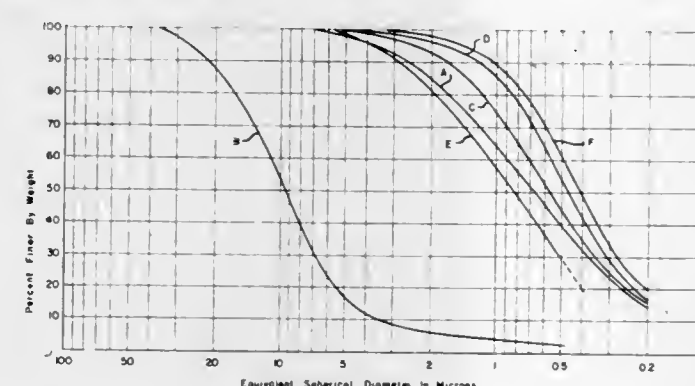
Robert F. Conley, Scotch Plains, and Mary Kate Lloyd, Westfield, N.J., and Billy Reid Catherwood, Macon, Ga., assignors to Georgia Kaolin Company

Filed Apr. 24, 1969, Ser. No. 818,877

Int. Cl. C09c 1/02

U.S. Cl. 106—306

6 Claims



A coating pigment composition of kaolin and satin white is provided in which the kaolin is classified from

S93 O.G.—8

3,625,726

**CLUSTERED ACICULAR PIGMENTS**

Hugh C. Gullledge, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,220

Int. Cl. C09c 1/36

U.S. Cl. 106—299

5 Claims

Previously-formed fibrous materials which are suspended in a liquid are subjected to mechanical shear under controlled conditions to produce clustered acicular pigments characterized by, for example, an average diameter of from about 5 to 500 microns and an average density of from about 7 to 40 percent of the theoretical density wherein the individual acicular particles have an average diameter of from about 0.1 to 5 microns and a length-to-diameter ratio of from about 10 to 1000.

3,625,727

**PROTECTIVE COATINGS**

David Reginald Lightfoot, Clarksville, Md., and Roy Henry Sowden, St. Neots, England, assignors to W. R. Grace &amp; Co., New York, N.Y.

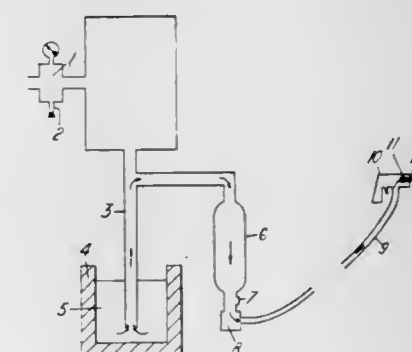
Filed May 20, 1969, Ser. No. 826,144

Claims priority, application Great Britain, May 20, 1968, 23,967/68; Dec. 4, 1968, 57,701/68

Int. Cl. B44d 1/08, 1/34

U.S. Cl. 117—6

11 Claims



A strippable protective coating is formed on a substrate, especially a vehicle body, by spraying from a molten composition onto it. The molten composition preferably contains a mixture of a film-forming copolymer of ethylene and vinyl acetate and an auxiliary polymer, preferably another ethylene/vinyl acetate copolymer, of molecular weight below 10,000.

3,625,728

**HARD SURFACE TRANSPARENT MASK**

Eugene R. Blome, San Jose, and Samuel S. M. Fok, Palo Alto, Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Filed Nov. 13, 1967, Ser. No. 682,458

Int. Cl. C03c 17/22; B44c 1/50

U.S. Cl. 117—37

3 Claims



A mask comprising a hard surface layer formed into a desired pattern is provided for use in photo fabrication.



The layer is visually transparent but opaque to the range of wave lengths used to expose the photopolymer on the part being photo fabricated.

3,625,729

**DISCONTINUOUS POLYCARBONATE COATINGS**

Thomas S. Grabowski, Vienna, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

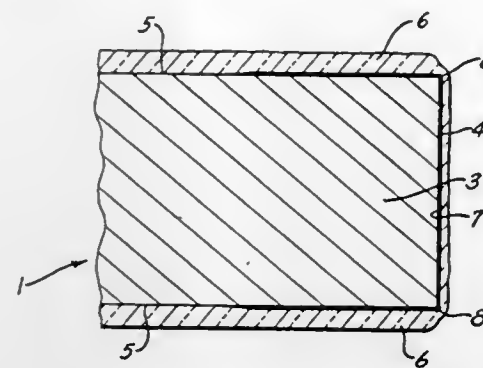
No Drawing. Filed June 12, 1968, Ser. No. 736,255

Int. Cl. B44d 5/00

U.S. Cl. 117—37

3 Claims

A method of making a discontinuous polycarbonate coating on a thermoplastic substrate comprising the steps of dissolving a polycarbonate resin in a solvent containing at least some developing solvent, applying the polycarbonate-solvent solution to the thermoplastic substrate to form a coating and evaporating the solvent from said polycarbonate coating to thereby form a discontinuous coating surface.



glass, to melt the glass and the molten glass flows to completely fill the voids in the porous metal coating.

3,625,730

**CONDUCTIVE DESIGNS AND PROCESS FOR THEIR MANUFACTURE**

Sung Ki Lee, Niagara Falls, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed May 6, 1968, Ser. No. 727,045

Int. Cl. B44d 1/18; H05k 1/00

U.S. Cl. 117—38

16 Claims

Printed circuits, integrated circuits, resistors, thermocouples, condensers, superconductors, electroformed materials, and the like are produced by providing a plastic or substantially non-metallic substrate with a metal phosphide; applying a resist; removing the unprotected metal phosphide; dissolving the resist; and subjecting the substrate to electroless or electrolytic treatment.

3,625,731

**STAINING PLASTIC SURFACES**

Lynn J. Taylor, Haslett, Mich., assignor to Owens-Illinois, Inc.

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,127

Int. Cl. B44d 1/24

U.S. Cl. 117—38

9 Claims

Plastic articles are provided with sub-surface markings which are scuff-proof and resistant to acid, alkali and solvent attack; a staining composition which includes a penetrating dye and a carrier medium comprised of a water-soluble or water-dispersible resin or polymer is applied to a plastic surface in a desired pattern, the surface and staining composition are then suitably processed to effectuate at least a partial diffusion of the dye beneath the surface and the residual composition is removed from the surface by treatment with water or an aqueous medium, thereby resulting in a durable and resistant sub-surface pattern.

3,625,732

**METHOD OF PROTECTING SHARP CORNERS AND EDGES OF CARBON STEEL SUBSTRATES**

Forrest W. Nelson, Pewaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 474,003, July 22, 1965. This application July 5, 1966, Ser. No. 563,947

Int. Cl. C23c 7/00; C23d 5/00

U.S. Cl. 117—43

7 Claims

A method of protecting the sharp corners or edges of a carbon steel base from corrosion. A corrosion resistant metal is sprayed onto the edges of the carbon steel to be protected to provide a corrosion resistant coating on the edges. Subsequently a glass slip is applied to the article

and over the porous metal coating. The article is then fired at an elevated temperature, above the melting point of the

3,625,733

**SUBSTRATE COATING PROCESS**

Fred E. Mansur, Toledo, Ohio, assignor to Owens-Illinois, Inc.

No Drawing. Filed May 16, 1969, Ser. No. 825,410

Int. Cl. C23l 5/02; C23c 17/00

U.S. Cl. 117—46 CA

5 Claims

There is disclosed a process for coating a substrate which comprises applying to the substrate a polymeric based composition comprising a finely divided, particulate inorganic material dispersed in a cyclic isoprenoid solvent and a low molecular weight, low vapor pressure, liquid polymer, said polymer consisting of a poly (alpha substituted) styrene and having a relatively constant viscosity and thixotropic character and capable of being decomposed or pyrolyzed completely to gaseous products at a relatively low temperature without forming a carbonaceous or like residue having a deleterious effect(s) in the application of the composition to the substrate.

3,625,734

**ULTRA-THIN LIQUID MEMBRANE CONSTRUCTION**

William J. Ward III, Schenectady, N.Y., assignor to the United States of America

No Drawing. Filed Oct. 16, 1969, Ser. No. 867,088

Int. Cl. B44d 1/14; B23d 27/08

U.S. Cl. 117—46 CA

5 Claims

A method for the preparation of a stable immobilized liquid membrane having a thickness of 0.1 mil, or less, is described. The preparation of such a membrane construction comprising polyethylene glycol supported on a porous polymer membrane (rendered non-wetting by the deposition of sub-micron size particles of polytetra-fluoroethylene thereover) is described, the particular membrane having specific application to the separation of sulphur dioxide from gas mixtures.

3,625,735

**YARN SIZING PROCESS**

George A. Fernstrom, Alfred J. Strohmaier, and Robert W. Whitman, Seaford, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 31, 1968, Ser. No. 772,080

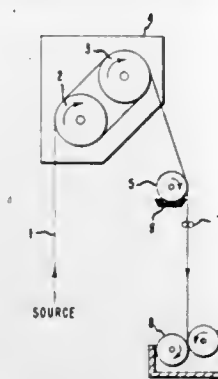
Int. Cl. B44d 1/02; D06m 13/00; D06p 7/00

U.S. Cl. 117—47 A

6 Claims

A process for applying a thin solid adherent polymeric coating to an elongated flexible structure wherein the structure while moving at high speed to a packaging means is first heated to a temperature below its softening point and then while still hot, coated with an unheated liquid mixture comprising an inert, high-boiling solvent and an adherent polymeric coating material. The rela-

tionship of speed, temperature and thickness of the liquid mixture applied being such to allow vaporization of the



solvent and drying of the polymeric material on the flexible structure before packaging.

3,625,736

**PRESSURE-SENSITIVE COPYING UNIT CONTAINING GRANULAR RESINOUS MATERIAL AND METHOD OF MAKING**

Hiroharu Matsukawa, Shizuoka, and Keitaro Ohe, Daijiro Nishio, and Nobuo Tsuji, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,366

Claims priority, application Japan, Oct. 27, 1967, 42/69,045

Int. Cl. B41m 5/22

U.S. Cl. 117—36.2

17 Claims

A process for reinforcing microcapsules used in pressure sensitive copying papers which comprises incorporating a granular resinous polymer in a coating liquid containing the microcapsules and coating the liquid on a paper support to prepare a pressure sensitive copying paper. The microcapsules contain an adsorbable colorless organic compound which forms a color dyeing contact with an electron receptive adsorbent material. Specific resinous materials are defined in the specification. A pressure sensitive copying paper and a pressure sensitive copying unit utilizing the above materials is also described.

3,625,737

**PROTECTIVE COATING AND METHOD OF MAKING**

Edmund N. Ricchezza, deceased, late of Henderson, N.C., by Barbara C. Ricchezza, executrix, Henderson, N.C., and Robert H. Doremus, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,888

Int. Cl. B44d 1/44

U.S. Cl. 117—62

10 Claims

Protective silicate coating on aluminum reflector with aluminum oxide film on its surface is treated with ammonium fluoride solution and thereafter with nitric acid to remove substantially all the alkali metal ions in the silicate coating to avoid formation of haze in the coating when exposed to the atmosphere.

3,625,738

**PROCESS FOR STABILIZING ORGANOPHOSPHORUS SOLUTIONS AND IMPARTING ROT AND FLAME RESISTANCE TO ORGANIC TEXTILE MATERIALS**

Darrell J. Donaldson, Metairie, and Donald J. Daigle, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 28, 1969, Ser. No. 845,562

Int. Cl. C09k 3/28; B44d 1/44; D06m 13/26

U.S. Cl. 117—63

7 Claims

Copper salts were found to stabilize tetrakis(hydroxymethyl)phosphonium hydroxide (THPOH)-ammonium hydroxide solutions by formation of a complex thereby making it possible to apply THPOH to cotton fabric from a single bath without the use of gaseous ammonia.

3,625,739

**METHOD OF MAKING FORAMINOUS FORMING CONVEYOR**

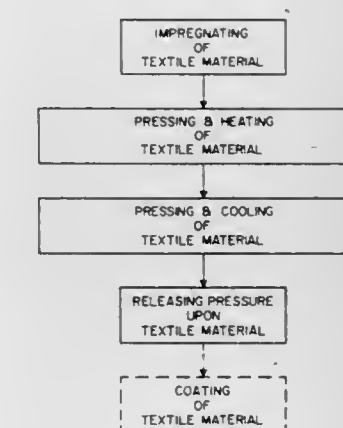
Peter D. Kaspar, Earl C. Francis, and Clifton H. Hubbard, Jr., Dover, Del., assignors to International Playtex Corporation, Dover, Del.

Filed Feb. 16, 1968, Ser. No. 706,067

Int. Cl. B44d 1/44

U.S. Cl. 117—65.2

13 Claims



A method of making a foraminous forming conveyor from textile sheet material having a lace-like design by treating such material so as to provide a dimensionally stable conveyor having flexibility sufficient to allow it to travel in straight and curved paths and further having a flat forming surface for receiving deposited solidifiable material; such deposited material, after solidification, being easily stripped from the forming surface in a continuous and effective manner.

3,625,740

**PROCESS FOR COATING AN ALPHA-ALUMINA BODY WITH AN EPOXY RESIN**

George F. Hurley, Acton, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

No Drawing. Filed Mar. 24, 1970, Ser. No. 22,393

Int. Cl. B44d 1/092; B32b 27/38

U.S. Cl. 117—47 R

11 Claims

Improved sapphire reinforced epoxy composites and method of making same. The sapphire reinforcing elements are coated with an organic silane to promote adhesion between the sapphire elements and the epoxy matrix. Absorption of the silane by the sapphire reinforcing elements is achieved by contacting the sapphire elements with a nonaqueous solution comprising the silane and an acid.

3,625,741

**METHOD OF BONDING POLYMERS OF GLYCOL ACRYLATES AND METHACRYLATES TO HYDROPHOBIC SURFACES**

Vladimir Stoy, Karel Kliment, Miroslav Stol, and Jiri Vodnansky, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed May 8, 1968, Ser. No. 727,674

Claims priority, application Czechoslovakia, May 12, 1967, 3,440/67

Int. Cl. B44d 1/14; B32b 15/08

U.S. Cl. 117—75

8 Claims

Layers of hydrophilic polymers of glycol acrylates and methacrylates, which swell and shrink under varying ambient humidity, are firmly bonded to dimensionally stable substrates by an interposed primer film of mixtures or copolymers of the same materials with hydrophobic constituents, the latter being present in a sufficient amount to reduce the moisture-induced swelling and shrinking of the primer to less than that of the hydrophilic polymer.



3,625,742

**DIMETHYL FORMAMIDE SOLUBLE POLYURETHANE BONDED TO METAL USING AN EPOXY-POLYAMIDE PRIMER**

Philip Nixon Baldwin, Jr., Villa Park, Ill., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
 Filed May 22, 1968, Ser. No. 731,307  
 Int. Cl. B32b 15/08

U.S. Cl. 117-75

1 Claim

Polyurethane soluble in dimethylformamide, dimethylsulfoxide, or mixtures of these solvents is bonded to metal by means of an adhesive consisting of an epoxy resin and a polyamide.

3,625,743

**METHOD FOR IMPREGNATING RUNNING PAPER WITH MOISTURE**

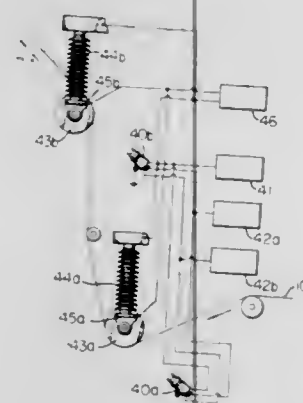
Tamotsu Watanabe, Rm. 606, Marunouchi Bldg., Marunouchi, Chiyoda-ku, Tokyo, Japan

Filed Sept. 19, 1968, Ser. No. 760,815

Claims priority, application Japan, Dec. 12, 1967, Apr. 23, 1968; 42/79217, 43/26797

Int. Cl. B05b 5/02

U.S. Cl. 117-93.4 NC



Electrostatically impregnating sprayed liquid particles onto a moving sheet of paper. An attracting electrode, electrically insulated from ground, is maintained at a high potential. A predetermined number of spray nozzles are connected to a liquid supply source maintained at ground potential, and these spray liquid onto the moving paper while the paper is moved along the electrode, the nozzles and electrode being on opposite sides of the paper. The nozzles are spaced from the electrode, and they are arranged in parallel across the paper so as to cover the full paper width with liquid particles.

3,625,744

**METHOD OF COATING USING ACTINIC RADIATION**

Kiyoshi Juna; Hiroyuki Nakayama, and Kiyohiko Asada, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Amagasaki-shi, Hyogo-ken, Japan

Filed Mar. 4, 1970, Ser. No. 16,592

Claims priority, application Japan, Mar. 7, 1969, 44/16826

Int. Cl. B44d 1/50

U.S. Cl. 117-93.31

10 Claims

A method of coating comprising the steps of applying a photosensitive catalyst or a mixture of a combination of said catalyst and a photosensitizer or a combination of said catalyst, said photosensitizer and polymeric materials on a substance to be coated, irradiating actinic light rays upon said substance while said substance being contacted with a vaporized ethylenically unsaturated compound or compounds, and thereby forming a polymer film of said ethylenically unsaturated compound or compounds.

3,625,745

**ANTITHROMBOGENIC ARTICLE AND PROCESS**

Archibald N. Wright, and Hans-Dieter Becker, both of Schenectady, N.Y., assignors to General Electric Company

Filed Mar. 18, 1970, Ser. No. 20,817

Int. Cl. B44d 1/50

U.S. Cl. 117-93.31

13 Claims

A thin, continuous adherent coating is formed on a substrate by ultraviolet surface photopolymerization of a

synthetic organic antithrombogenic compound in the gaseous phase. The resulting coated article exhibits antithrombogenic behavior and is suitable for prosthetic use.

3,625,746

**STARCH/POLYVINYL ALCOHOL/N-METHYLOL ACRYLAMIDE PAPER SURFACE COATING COMPOSITION**

Yaichi Ayukawa, 1168, Okamoto-cho, Setagaya-ku, Tokyo; Seishi Shinya, Maebara-cho, Funabashi-shi; Teiko Kakegawa, Ohwada, Yachiyo-cho, both of Chibaken, and Masako Ito, Jingumae, Shibuya-ku, Tokyo, all of Japan  
 Filed Sept. 8, 1969, Ser. No. 856,175  
 Int. Cl. C08b 25/02; C08f 1/24; D21h 1/24

U.S. Cl. 117-93.31

30 Claims

A paper coating comprising the reaction product of a starch material, polyvinyl alcohol and an N-methylol acrylamide, plus a clay.

3,625,747

**PHOTOCONDUCTIVE POWDERS AND A METHOD FOR PRODUCING THE SAME**

Hiroyuki Kaneko; Keitaro Ohe; Shigeru Sadamatsu, and Daijiro Nishio, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan  
 Filed Feb. 9, 1968, Ser. No. 704,270

Claims priority, application Japan, Feb. 9, 1967, Feb. 9, 1967; 42/8553, 42/8554

Int. Cl. G03g 5/08

U.S. Cl. 117-100 R

3 Claims

A manufacturing process for producing an electrophotographic photoconductive power material comprising the steps of dispersing synthetic resin monomer and powdered photoconductor particles in a liquid dispersion medium which is not compatible with the said monomer, and while maintaining such dispersed condition, polymerizing the monomer to form polymer particles containing the photoconductor particles therein.

3,625,748

**PROCESS FOR SEALING STRUCTURES**

Anton Aregger, Mutschellen; Reinhard Rutz, Neuenhof (Aargau), and Lutz Zabel, Zurich, all of Switzerland, assignors to Kaspar Winkler & Co., Zurich, Switzerland  
 Filed Oct. 20, 1969, Ser. No. 867,889

Claims priority, application Switzerland, Oct. 23, 1968, 15859/68

Int. Cl. B44d 1/08, 1/02

U.S. Cl. 117-105.5

7 Claims

A process is disclosed for sealing leaks due to the existence of a liquid-permeable discontinuity or overall porosity in a structure such as a foundation or tunnel. The process disclosed involves the steps of initially introducing a polymer or mixtures thereof, preferably in powdered or granulated form, together with a filler and a liquid gelling agent, separately, into a device which is suitable for transporting, mixing and spraying the mixture when so admixed. Optional ingredients disclosed which are also useful include metallic oxides, for instance. The mixtures are applied to a structure and are particularly valuable for preventing the penetration of water through such structure.

3,625,749

**METHOD FOR DEPOSITION OF SILICON DIOXIDE FILMS**

Satoshi Yoshioka, Nishinomiyashi, and Shigetoshi Takayanagi, Kyoto, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan  
 Filed Mar. 31, 1967, Ser. No. 627,407

Claims priority, application Japan, Apr. 6, 1966, 41/27607

Int. Cl. C23c 11/08, 11/00

U.S. Cl. 117-106 A

5 Claims

An improved method for depositing silicon dioxide film on surfaces of substrates, which are stable at temperatures of 730° C. and above, by passing onto the surfaces thereof maintained at 730° C. or above, a gaseous hydrogen-carbon dioxide-silicon tetrafluoride mixture wherein the silicon tetrafluoride concentration is 0.005-0.1 percent by volume and the carbon dioxide concentration is 8 to 92 percent by

volume. The film is useful for diffusion-masking films for selective diffusion in fabrication or for passivating films.

3,625,750

**COATING PROCESS**

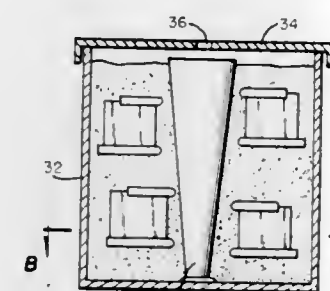
Sanford Baranow, Woodbridge, and William R. Freeman, Jr., Easton, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Jan. 9, 1970, Ser. No. 1,750

Int. Cl. C23c 11/00, 13/00, 17/02

U.S. Cl. 117-107.2 P

9 Claims



This invention provides a method for producing uniform or nonuniform coatings of aluminum intermetallics on articles consisting of nickel- or cobalt-base alloys, using a reduced pressure pack coating technique in which the coating is derived from an alloy containing at least 40 percent by weight of aluminum.

3,625,751

**TRANSPARENT ASTATIC PLASTIC ARTICLES HAVING AMMONIUM SULFONIC ACIDS GROUPS ON THE SURFACE THEREOF AND METHOD FOR THEIR PRODUCTION**

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 686,715, Nov. 29, 1967, now abandoned. This application Nov. 6, 1968, Ser. No. 773,969

Int. Cl. B44d 5/12; B32b 27/06

U.S. Cl. 117-118

6 Claims

A method for the rapid rendering of transparent polymer articles astatic by treating the articles with dilute gaseous sulfur trioxide followed by treatment with ammonia and water or dilute aqueous ammonia. The articles are rendered permanently astatic without affecting their transparency by this process.

3,625,752

**PRECURED ADHESIVE TAPE**

Ralf Korpman, East Brunswick, N.J., assignor to Johnson & Johnson

Continuation-in-part of application Ser. No. 720,811, Apr. 12, 1968, now abandoned, Continuation-in-part of application Ser. No. 720,955, Apr. 12, 1968, now abandoned.

This application Oct. 7, 1969, Ser. No. 864,334

Int. Cl. C09j 7/02

U.S. Cl. 117-122 P

7 Claims

A precured pressure-sensitive adhesive tape possessing superior high-temperature properties over a wider range of curing conditions than normally employed. This tape is based on a diene adhesive wherein a major proportion by weight of the elastomers is an elastomeric and thermoplastic block polymer of the structure ABA, wherein A is a thermoplastic polymer block of a vinyl arene with a glass transition tem-

perature above normal room temperature and B is an elastomeric polymer block of isoprene. The elastomers are combined with a tackifier and a curing agent, coated on a



backing to form a tape, and then cured in situ to provide a precured adhesive tape having the desired range of high-temperature properties.

3,625,753

**FLAME RETARDANT FOR TEXTILES**

Samuel James O'Brien, Dunellen, and Robert George Weyker, North Plainfield, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 14, 1969, Ser. No. 866,402

Int. Cl. C09k 3/28; D06m 13/26

U.S. Cl. 117-137

5 Claims

Aqueous solutions of dimethylol dicyandiamide and phosphoric acid useful as durable finishes on cellulosic textile materials to impart flame retardance and the cellulosic textile materials treated therewith.

3,625,754

**SURFACE-MODIFIED POLYESTER ARTICLE**

Richard L. Dunn, Raleigh, N.C., assignor to Beunit Corporation, New York, N.Y.

Filed Feb. 2, 1970, Ser. No. 8,072

Int. Cl. B32b 27/08, 27/36

U.S. Cl. 117-138.8 F

4 Claims

Surface-modified polyester articles are provided having soil-release properties and improved dispersed dyeability comprising a copolyester comprising at least 85 percent by weight of ethylene terephthalate units and about one to 15 percent by weight of ethylene dimerate units, and having cocrystallized on the surface thereof a copolymer comprising at least 40 percent by weight of polyoxyalkylene groups, at least 9.5 percent by weight of ethylene terephthalate units and at least 0.5 percent by weight of ethylene dimerate units. The surface-modified polyester articles are prepared by applying a copolymer comprising polyoxyalkylene groups, ethylene terephthalate units, and ethylene dimerate units to the copolyester comprising ethylene terephthalate units and ethylene dimerate units and subjecting the surface treated copolyester article to a temperature of at least 80° C. for a time sufficient to cause cocrystallization to take place on the surface of the treated copolyester.

3,625,755

**SUPPORTED METAL SALT/PHOSPHINE COMPLEXES AND METALLIZED PRODUCTS THEREFROM**

Earle M. Potrafke, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 540,517, Apr. 6, 1966, now Patent No. 3,438,805, dated Apr. 15, 1969. This application Apr. 14, 1969, Ser. No. 816,122

Int. Cl. C23c 3/04

U.S. Cl. 117-160

12 Claims

Metal salt/phosphine complexes deposited within and/or on a metallic or nonmetallic support or substrate, said complexes being derived from one mole of a nonorganometallic salt of a normally solid heavy metal of the Deming Periodic Table, for example, gold or palladium chloride, and 1 to 4 moles of a triorganophosphine, for example, a trihydrocarbyl or trihydrocarbylamino phosphine such as a trialkylphosphine, and metallized metallic and nonmetallic substrates prepared therefrom.



3,625,756

## METHOD FOR MAKING A GAS-SENSING ELEMENT

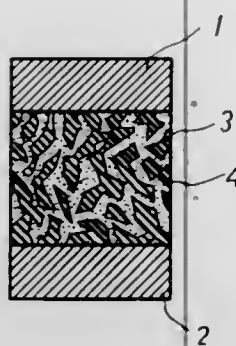
Naoyoshi Taguchi, 1-2 Uemachi Ikeda Nagata-ku, Kobe, Hyogo-ken, Japan

Filed Jan. 21, 1969, Ser. No. 800,798

Int. Cl. G01n 33/00; H01c 13/00

U.S. Cl. 117-201

3 Claims



A gas-sensing element including a semiconductor material which changes its electroconductivity when it adsorbs a gas. In manufacture of the element, the semiconductor material is mixed with a material such as stearic acid which evaporates, sublimates or burns away when heated and produces a number of pores therein. When the mixture is applied to a suitable supporting material between a pair of electrodes and then heat-treated, the resultant gas-sensing element has an improved rate of change of electroconductivity.

3,625,757

## COATED CONSUMABLE GUIDE TUBE FOR ELECTROSLAG WELDING

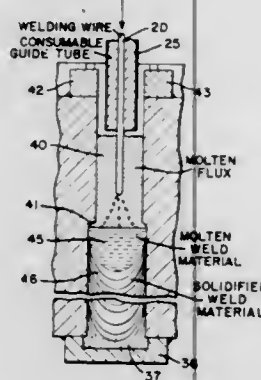
Albert Edward Wiehe, and Lowell W. Mott, both of Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio

Filed Apr. 23, 1969, Ser. No. 818,722

Int. Cl. B23k 9/18, 35/22

U.S. Cl. 117-202

10 Claims



A consumable guide tube for use in electroslag welding includes a coating which, when heated, forms a conductive molten flux having a composition such that relatively long welds in confined areas may be made with the physical properties of the resultant weld being substantially constant throughout the length of the weld. The flux contains titanium dioxide, potassium oxide, and sodium oxide.

3,625,758

## BASE MATERIAL AND METHOD FOR THE MANUFACTURE OF PRINTED CIRCUITS

Fritz Theodor Stahl, Krefeld; Hedwig Maria Steffen, Geldern, Germany; Frederick W. Schneble, Jr., Oyster Bay, and John F. McCormack, Roslyn Heights, N.Y., assignors to Photocircuits Corporation, Glen Cove, N.Y.

Filed Feb. 21, 1967, Ser. No. 617,502

Claims priority, application Germany, Feb. 22, 1966, P 38829

Int. Cl. H05k 3/10; C23c 5/00

U.S. Cl. 117-212

14 Claims

This invention relates to metallizing insulating base materials and more particularly to rendering insulating materials

sensitive to electroless metal deposition and then depositing electroless metal on the sensitized material, and to the resulting new and improved metallized articles, including printed circuit boards.

3,625,759

## PROCESS FOR MAKING OXIDE CATHODES HAVING IMPROVED THERMAL EMISSIVITY

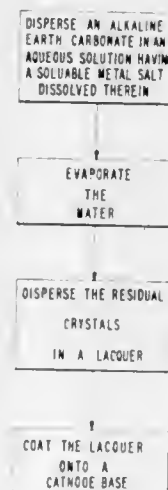
Paul D. Williams, Portola Valley, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 627,689, Apr. 3, 1967, now abandoned. This application Aug. 27, 1969, Ser. No. 853,452

Int. Cl. H01j 1/14; H01k 1/04

U.S. Cl. 117-224

15 Claims



A process for making an oxide cathode having metallic powders finely and evenly interspersed with alkaline earth oxides. An alkaline earth carbonate is dispersed in an aqueous solution having a soluble metal salt dissolved therein. The water is evaporated leaving carbonate crystals coated with the metal salt. The coated crystals are then dispersed in a lacquer which in turn is coated onto a cathode base.

3,625,760

## MAGNETIC RECORDING MEDIUM WITH LUBRICANT

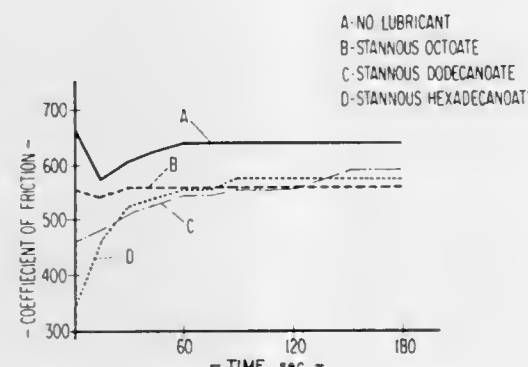
Manuel Slovinsky, Woodridge, Ill., assignor to RCA Corporation

Filed Feb. 27, 1970, Ser. No. 14,944

Int. Cl. H01f 10/02

U.S. Cl. 117-235

7 Claims



A magnetic recording media, such as magnetic tape, includes as a lubricant a stannous salt of an aliphatic acid containing at least eight carbon atoms.

3,625,761

## METHOD FOR THE TREATMENT OF ALKALINE EARTH METAL SULFATE SCALE

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,721

Int. Cl. C23g 1/08, 1/20

U.S. Cl. 134-3

3 Claims

Method for the treatment of alkaline earth metal sulfate scale using sodium ethylenediaminetetraacetate and recovery of the sodium ethylenediaminetetraacetate.

3,625,762

## CLEANING SOLUTION AND METHOD AND APPARATUS FOR USING THE SAME

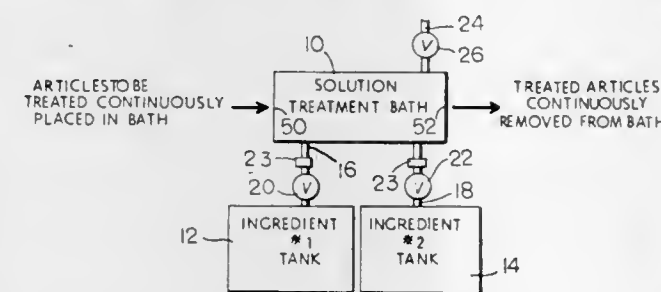
Nick Kappas, 5486 Madison St., Gary, Ind.

Filed July 2, 1969, Ser. No. 838,406

Int. Cl. B08b 3/04

U.S. Cl. 134-10

5 Claims



A cleaning solution comprising water, about 2.5 to about 4.0 liquid ounces of a caustic and water solution having a density of about 11.67 pounds per gallon for each gallon of water, and about 1.5 to about 4.0 liquid ounces of a sodium silicate and water solution having a density of about 12.67 pounds per gallon for each gallon of water. The apparatus of the invention includes a bath, two separate tanks separately connected to the bath and having separate valves for independently metering the contents of the tanks into the bath as desired. The bath is preferably stationary and the tanks are preferably portable and easily attached and detached from the bath. A specific tank for use with the bath has a fill opening, a vent and a valve attached to the tank. Articles to be treated by the solution are placed within the solution in accordance with the method of the invention and the concentrations of hydroxide and silicate are periodically determined in a sample of the solution, and both additional caustic solution and the sodium silicate solution are metered into the bath to maintain desired concentration levels.

3,625,763

## CONFORMAL COATING STRIPPING METHOD AND COMPOSITION

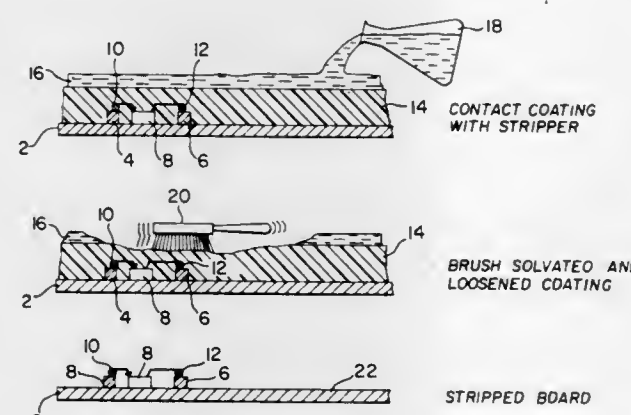
Manlio B. Melillo, Inglewood, Calif., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Filed Dec. 4, 1968, Ser. No. 780,998

Int. Cl. B08b 7/00; C09d 9/00; C23g 5/02

U.S. Cl. 134-38

8 Claims



A liquid composition for stripping resin coatings such as epoxy embedment or conformal coatings from substrates

such as printed circuit boards. The composition is a substantially anhydrous combination of organic liquids comprising on a volume basis above about 60 percent of a halogenated hydrocarbon liquid, a minor amount below 12 percent but above 4 percent of an alcohol and below 5 percent but at least 1 percent of a ketone. The resin coating is contacted with the composition for a period sufficient to loosen and solvate said resin. The removal of the softened resin may be facilitated by brushing.

3,625,764

## ELECTRODE FOR ELECTRIC STORAGE BATTERIES CONTAINING ZINC HALIDE IN AQUEOUS SOLUTION, OF THE TYPE HAVING A SOLUBLE CATHODE AND A DISSOLVED ANODE

Mario DeRossi, Rome, Italy, assignor to Consiglio Nazionale Delle Ricerche, Rome, Italy

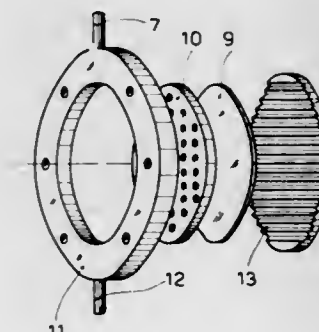
Filed Sept. 9, 1969, Ser. No. 856,408

Claims priority, application Italy, Apr. 23, 1969, 36614 A/69

Int. Cl. H01m 35/02

U.S. Cl. 136-22

1 Claim



An electrode for use in zinc halide-halogen cells comprising a graphite mass in electrical contact with a dispersion of powdered graphite and a perchlorate salt of tetramethyl- or tetrabutylammonium is disclosed along with various cell constructions.

3,625,765

## PRODUCTION OF BATTERY ELECTRODE

Frank C. Arrance, Costa Mesa, and Albert G. Rosa, Placentia, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed July 22, 1969, Ser. No. 843,610

Int. Cl. H01m 35/06

U.S. Cl. 136-75

8 Claims

Production of a sintered metal matrix which is uniform, and maintains its shape without collapse or distortion, for use particularly as an electrode matrix for a high-rate, high-energy density battery, by a process which comprises, according to one embodiment, dipping a spongelike material such as a polyurethane sponge in a slurry of a plastic binder which decomposes at a higher temperature than the spongelike material, such as polyphenylene oxide, dissolved in a solvent such as chloroform, and containing a sinterable metallic constituent such as a mixture of silver and silver oxide, air-drying the resulting coated spongelike material, heating the dried and coated spongelike material to a temperature causing decomposition of the spongelike material, leaving a matrix of the plastic binder and sinterable metallic constituent, further heating at a higher temperature the latter remaining matrix, causing a partial sintering of the metallic constituent followed by decomposition of the plastic binder, the partially sintered metallic matrix being sufficiently well formed to avoid slumping or distortion of the matrix, and further heating and sintering the remaining matrix to provide a strong porous matrix. The porous matrix itself can be used as an electrode, or the pores of the matrix can be filled with active battery electrode material such as zinc, by suitable means as by application of pressure, to form a high-strength high-capacity electrode for a high-rate high-energy density battery.



3,625,766

**ELECTRIC STORAGE BATTERY**

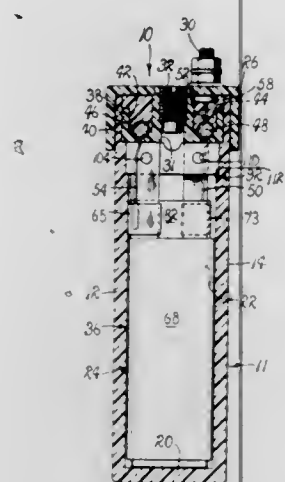
T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Thomas H. Purcell, Jr., and Alfred W. Jordan, both of Raleigh, N.C.

Filed Nov. 26, 1969, Ser. No. 880,250

Int. Cl. H01m 1/04

U.S. Cl. 136—79

5 Claims



An electric storage battery particularly suited for resisting forces experienced in an impact environment, characterized by a plurality of flexible, narrow battery plates, of opposite polarities, suspended within a sealed housing having therein provided a pair of parallel internal surfaces including a plurality of grooves extending to define therebetween commonly dimensioned lands, a feature of the storage battery being an employment of said grooves for supporting the plates of one polarity along opposed vertical surfaces, while the plates of the other polarity are suspended therebetween in a manner such that the plates of the first polarity serve to impart lateral support to the plates of both polarities in an impact environment.

3,625,767

**THERMAL BATTERY**

Robert P. Clark, and Kenneth R. Grothaus, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 17, 1969, Ser. No. 885,791

Int. Cl. H01m

U.S. Cl. 136—83

10 Claims

A high-voltage thermal battery capable of miniaturized construction including one or more heat-conductive and electrical-insulative casings having one or more internal passageways, a plurality of electrical battery cells stacked in the casing passageways in electrical series with each cell having alternating layers of cathode-anode electrodes and fusible electrolyte members, and means for generating heat disposed about the casing or casings.

3,625,768

**METHOD OF OPERATING FUEL CELL WITH MOLTEN-OXYGEN-CONTAINING ELECTROLYTE AND NON-POROUS HYDROGEN-DIFFUSING NICKEL ELECTRODE**

David McLeod-Moulton, Route 17, Church View Lane, Knoxville, Tenn., and Walter Juda, 12 Moon Hill Road, Lexington, Mass.

Continuation of application Ser. No. 431,357, Feb. 9, 1965, now Patent No. 3,356,113. This application Aug. 4, 1969, Ser. No. 850,691

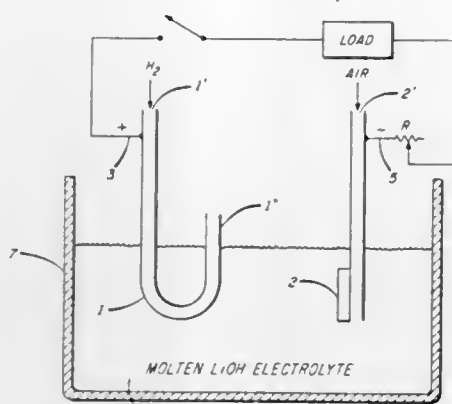
Int. Cl. H01m 27/20

U.S. Cl. 136—86 E

5 Claims

Nonporous nickel is used as a hydrogen-diffusion electrode in an elevated-temperature, molten, oxygen-containing elec-

trolyte. Hydrogen ions formed at the electrode-electrolyte interface protect the electrode from oxidation, and the poten-



tial of the electrode is adjusted to maintain the freedom from oxidation.

3,625,769

**FUEL CELL**

Arthur E. Lyall, Bridgewater, N.J., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Mar. 21, 1969, Ser. No. 809,302

Int. Cl. H01m 27/00

U.S. Cl. 136—86 A

10 Claims

A room-temperature-operated fuel cell comprising an oxygen electrode, a lithium metal-containing electrode, and an electrolyte comprising an inert, aprotic organic solvent, exemplified by dimethylsulfoxide, which contains an inorganic or organic ionizable salt sufficient in amount to attain saturation. The salt may, or may not, be an oxygen carrier. In those instances where a salt which is not an oxygen carrier is employed, lithium oxide initially is incorporated into the electrolyte.

3,625,770

**FLEXIBLE MATRIX AND BATTERY SEPARATOR EMBODYING SAME**

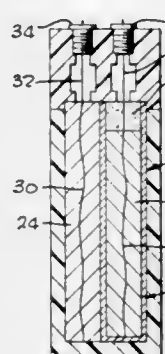
Frank C. Arrance, Costa Mesa, and Albert G. Rosa, Placentia, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed June 2, 1969, Ser. No. 829,573

Int. Cl. H01m 3/02

U.S. Cl. 136—145

12 Claims



Production of flexible matrix having high resistance to alkali attack at elevated temperature over an extended period, by contacting a chrysotile asbestos (pure fuel cell grade) mat with polyphenylene oxide, to substantially uniformly impregnate the mat with such polyphenylene oxide. The resulting polyphenylene oxide impregnated mat, e.g. in box or envelope form, can be coated with a flexible substantially inorganic film by dip-coating in a mixture preferably of a major portion of an inorganic or ceramic separator material, a minor portion of potassium titanate in short fiber form, and a minor portion of an organic polymer, e.g. polyphenylene oxide, dis-

solved in a suitable solvent such as chloroform. The resulting porous chrysotile asbestos separator uniformly impregnated with polyphenylene oxide and having a flexible coating thereon as described above, has low electrical resistivity, is smooth and uniform in thickness, is highly flexible, and has markedly improved resistance to alkali at elevated temperatures over an extended period. When formed into a box, bag or envelope, an electrode such as a zinc electrode, can be inserted into the box or bag-shaped flexible porous battery separator above, and incorporated in a battery in side-by-side relation with other electrodes, such as silver electrodes.

3,625,771

**BATTERY SEPARATOR**

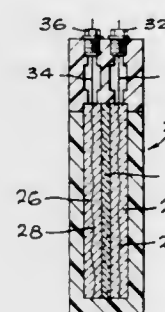
Frank C. Arrance, Costa Mesa, and Albert G. Rosa, Placentia, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Mar. 27, 1969, Ser. No. 810,945

Int. Cl. H01m 3/02

U.S. Cl. 136—145

24 Claims



Production of a flexible battery separator, according to one embodiment, by dip-coating an electrode such as a silver or zinc electrode in a mixture of a major portion of an inorganic or ceramic separator material, a minor portion of potassium titanate, and a minor portion of a mixture of organic substances including an organic polymer, e.g., polyphenylene oxide, and a material or ester derived from certain acids such as azelaic acid, e.g., di-isooctyl azelate or polypropylene polyazolate, such mixture of organic substances being dissolved in a suitable solvent such as chloroform. The electrode is placed in the mixture, preferably maintained under vibration, and stirred, the electrode and applied coating are removed from the mixture, and the coating is air-dried to remove solvent and is cured at elevated temperature. Alternatively, such a flexible separator can be formed on any suitable supporting surface, such as glass plate, and the resulting flexible separator stripped from such plate to produce a flexible porous, substantially inorganic separator membrane for incorporation between the electrodes of a battery. Alternatively, a flexible porous substrate or matrix, preferably in the form of a compartment for insertion therein of a battery electrode, can be placed in the above-noted mixture of inorganic material and organic substances, the substrate and applied coating removed from the mixture, and the coating dried to remove solvent and cured at elevated temperature. In each case, the separator film (a) applied directly on the battery electrode, or (b) cast as a flexible free film, or (c) coated on or impregnated into a flexible matrix, has improved high flexibility and low resistivity properties, and has high resistance to alkali and to elevated temperatures, and is smooth and uniform in thickness.

3,625,772

**ELECTRODE-SEPARATOR COMBINATION**

Albert Himy, Tustin, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Aug. 30, 1966, Ser. No. 576,009

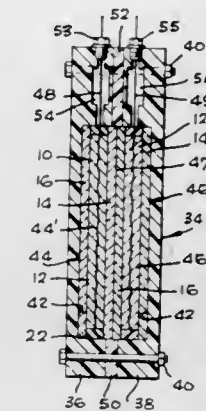
Int. Cl. H01m 17/00, 3/00

U.S. Cl. 136—100

12 Claims

A porous rigid electrode-separator unit of a wafer-type construction. The electrode is sandwiched substantially centrally between two porous rigid inorganic separators of slightly greater size than the electrode so that the separator

edges overlap the electrode edges forming a cavity completely around the electrode edges. This cavity is filled with a



filler, preferably a resin, e.g., epoxy, which upon cure bonds the separator edges together and completely seals the electrode within.

3,625,773

**METHOD OF PRODUCING BETA-ALUMINA ELECTROLYTES**

Richard J. Charles, Schenectady; Stephan P. Mitoff, Elnora, and William G. Morris, Schenectady, all of N.Y., assignors to General Electric Company

Filed Dec. 17, 1969, Ser. No. 885,961

Int. Cl. H01m 11/00; B01k 3/12

U.S. Cl. 136—153

7 Claims

High-density beta-alumina bodies having low electrical resistivity values are produced by a process including a consolidation operation such as a sintering step carried out in a dry oxygen atmosphere.

3,625,774

**BATTERY-MOUNTED RECEPTACLE MEANS**

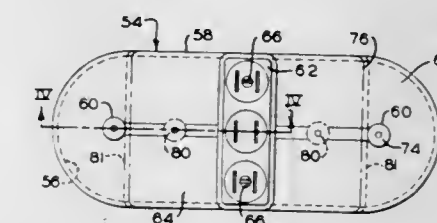
Lawrence E. Rodgers, 5618 Second Ave., Pittsburgh, Pa.

Filed Apr. 27, 1970, Ser. No. 32,309

Int. Cl. H01m 1/00; H01r 11/00

U.S. Cl. 136—181

5 Claims



I disclose a receptacle arrangement for mounting on a battery, said arrangement comprising an insulating support, receptacle means mounted on said support, conductors mounted on said support and electrically connected to said receptacle means, said conductors being disposed for electrical engagement with terminals respectively of said battery, and cooperating means on said support and on said battery terminals for securing said support to said terminals at a position of electrical engagement of said conductors with said terminals respectively.

3,625,775

**REINFORCED THERMOCOUPLE JUNCTION**

Douglas J. MacKenzie, Park Ridge; Frank Accettura, Elmwood Park, and Peter F. Hansen, Niles, all of Ill., assignors to American Standard, Inc., New York, N.Y.

Filed Dec. 29, 1967, Ser. No. 732,788

Int. Cl. H01v 1/04

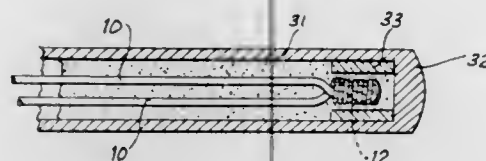
U.S. Cl. 136—233

3 Claims

A thermocouple junction comprising at least two wires in twisted or side-by-side relation, the junction being reinforced



against failure by embrittlement by another wire or ribbon the paint is applied to said coating and corrosion resistance of the coated metals.



wound thereover, the several wires being anchored at a common point by fusion.

3,625,776

### PREPASSIVATION-COLOR METHOD FOR DETECTING CRACKS IN METAL BODIES

Michael F. Henry, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 31, 1969, Ser. No. 889,694  
Int. Cl. C23F 5/02; G01n 31/00

U.S. Cl. 148—6.14

12 Claims

A nondestructive color method for detecting cracks in a metal body by selective corrosion of the surface portion within the cracks which includes prepassivation of the surface being tested to substantially reduce background indications. Specifically, a passivating solution is applied to the surface of the metal body to be tested and removed therefrom after a period of time sufficient to passivate its open surface portion but insufficient to significantly passivate the surface portion contained within cracks therein. A color-forming aqueous acid indicating solution is then applied to the thus passivated surface area. The indicating solution contains halide ions and a color-forming indicator and is formulated so that it does not corrode the open surface portion of the metal body but is sufficiently reactive to corrode the surface portion within cracks therein resulting in the formation of metallic ions. The color-forming indicator is of the type which reacts with the thus-formed metal ions to form a distinctive colored compound at the crack locations.

3,625,777

### PROCESS FOR PHOSPHATE CONVERSION COATING

Masanaga Okabe; Kakuro Muro; Masamichi Iizuka, and Sumio Sakata, all of Tokyo, Japan, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

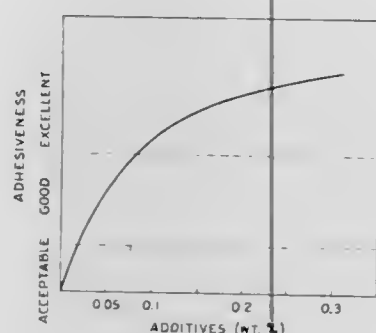
Filed Oct. 29, 1969, Ser. No. 872,022

Claims priority, application Japan, Oct. 31, 1968, 43/78918

Int. Cl. C23F 7/08

U.S. Cl. 148—6.15 Z

6 Claims



An improvement in the process of phosphate conversion coating on the surface of metals such as iron, steel, zinc or its alloy being characterized in that at least one carbohydrate selected from the group consisting of starch, starch derivatives and polysaccharides produced by acid decomposition of starch or starch derivatives, is added into ordinary acid zinc phosphate conversion coating solution, wherein a fine and dense zinc-phosphate-coating film can be obtained, and thereby improving paint bonding quality of the coating when

### 3,625,778 HEAT-TREATING ALUMINUM SILICON ALLOY

Clarence L. Hildreth, Baton Rouge, and Sebastian M. Laurent, Greenwell Springs, both of La., assignors to Ethyl Corporation, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,229

Int. Cl. C22I 1/04

U.S. Cl. 148—13

9 Claims

A method for increasing the amount of free aluminum in an aluminum-silicon-alloy-containing iron and titanium as impurities which comprises heating the alloy to a temperature of from about 400° C. to about 1,200° C. for at least 2 hours sufficient to decrease the amount of aluminum chemically bound in the form of intermetallic compounds.

3,625,779

### REDUCTION-FUSION PROCESS FOR THE PRODUCTION OF RARE EARTH INTERMETALLIC COMPOUNDS

Robert E. Cech, Scotia, N.Y., assignor to General Electric Company

Filed Aug. 21, 1969, Ser. No. 852,100

Int. Cl. H01F 1/04; C22b 59/00

U.S. Cl. 148—101

5 Claims

A reduction-fusion process for producing novel rare earth intermetallic compounds, for example, cobalt rare earth intermetallic compounds, especially compounds useful in preparing permanent magnets. A particular mixture of rare earth metal oxide and calcium hydride is heated to affect reduction of the rare earth metal oxide. The resulting rare earth metal-containing mixture is fused with cobalt or other ferromagnetic metal to form the rare earth intermetallic compound and allowed to solidify. The solid is pulverized and then treated to recover the rare earth intermetallic compound.

3,625,780

### PROCESS FOR PREPARATION OF HIGH-STRENGTH ALLOY OF TITANIUM AND FERRITIC STRUCTURE

Richard A. Bosch, and John A. Straatmann, both of Poland, Ohio, assignors to The Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Apr. 29, 1968, Ser. No. 725,136

Int. Cl. C21d 7/14, 9/46

U.S. Cl. 148—134

10 Claims

Low-alloy high-strength titanium steel and a process for preparing said steel by solution heat treating and thereafter controlling the cooling rate to the precipitation-hardening temperature range required to produce a steel characterized by a yield strength in the range of 60,000 to 120,000 p.s.i.

3,625,781

### METHOD OF REDUCING CARRIER LIFETIME IN SEMICONDUCTOR STRUCTURES

Madhukar L. Joshi, Essex Junction, Vt.; Burton J. Masters, Poughkeepsie, N.Y.; Osvaldo R. Viva, Williston, Vt., and Tsu-Hsing Yeh, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 9, 1969, Ser. No. 823,255

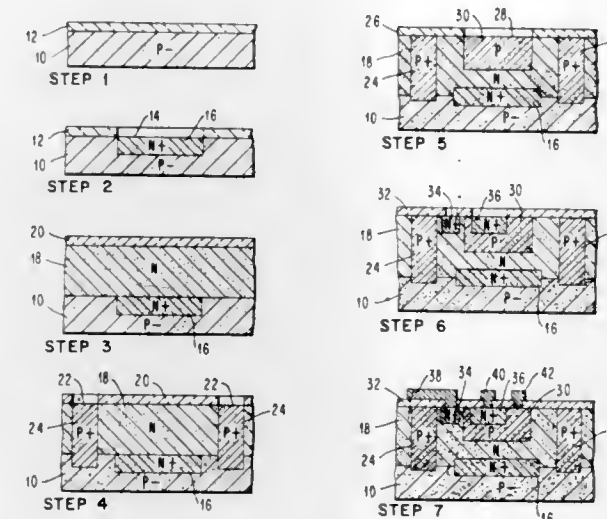
Int. Cl. H01I 7/44

U.S. Cl. 148—189

18 Claims

A method of fabricating high-speed planar transistor structures by reducing carrier lifetime through doping with carrier lifetime killers. Gold is diffused through the front surface of the silicon structure during transistor fabrication. The gold is introduced from the vapor phase in a controlled manner so that its solid solubility in silicon is not exceeded. A simultaneous gold and base diffusion is preferred.

Such a simultaneous diffusion produces a novel planar transistor structure having a gold distribution curve with an cut may be used for alignment purposes. Thermal and/or mechanical bonding energy applied through the support member bonds the plurality of lead wires to the integrated circuit.



3,625,784

### METHOD OF MAKING A TUBULAR MEMBER

Bernard Edwin Ash, Bexleyheath, Kent, England, assignor to International Standard Electric Corporation, New York, N.Y.

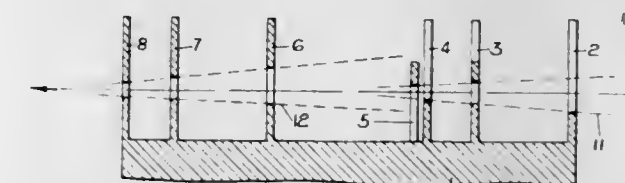
Filed Feb. 25, 1969, Ser. No. 802,087

Claims priority, application Great Britain, Mar. 7, 1968, 11,049/68

Int. Cl. H01b 13/10

U.S. Cl. 156—54

6 Claims



unexpected increased concentration peak in the region proximate to the base-collector junction.

3,625,782

### SOLID PROPELLANTS CONTAINING BURNING RATE DEPRESSANTS

Adolf E. Oberth, Fair Oaks, and Rolf S. Bruenner, Orangevale, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed May 2, 1968, Ser. No. 726,649

Int. Cl. C06d 5/06

U.S. Cl. 149—19

12 Claims

This patent described novel solid ammonium perchlorate containing propellant compositions containing powerful burning-rate depressants which are potential bases, that is, compounds which are capable of releasing free bases. The burning-rate depressants of this invention do not reduce the specific impulse of the propellant, nor do they interfere with cure reactions or adversely affect the physical properties of the cured propellant.

3,625,783

### SIMULTANEOUS BONDING OF MULTIPLE WORKPIECES

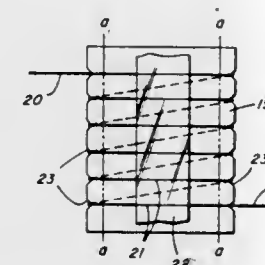
Alexander Coucoulas, Bridgewater Township, Somerset County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 7, 1969, Ser. No. 822,428

Int. Cl. B29c 27/08; B65c 9/04; B23k 31/02

U.S. Cl. 156—73

16 Claims



Methods and apparatus for simultaneously bonding a plurality of first workpieces to spaced-apart locations on at least one second workpiece. The invention is particularly suited for simultaneously bonding a plurality of lead wires to the terminal land areas of an integrated circuit or other electronic device. A deformable, compliant support member is spirally wound with a continuous metallic filament. After the spiral has been formed it is secured to the support member by any suitable adhesive means. The edges of the support member are sheared to cut the spiral windings and thus form a plurality of lead wires. The indentations which are formed on the reverse side of the support member when the spiral is

A flexible strip of material is formed into a spiral shape having two overlapping layers by passing a flat strip through a series of apertured elements having particular shaped tapered passageways and slots. The layers may be applied as insulation for conductors.

3,625,785

### METHOD OF PRODUCING A MECHANICALLY STIFF GASTIGHT PACKAGING CONTAINER

Sven Nils Hakan Holmstrom, Loberod, and Jan-Erik 'Olsen, Lund, both of Sweden, assignors to AB Tetra Pak, Lund, Sweden

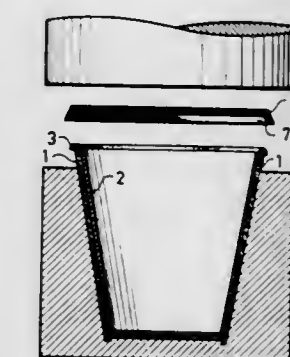
Filed Mar. 6, 1969, Ser. No. 804,900

Claims priority, application Sweden, Apr. 4, 1968, 4804

Int. Cl. B29c 27/02

U.S. Cl. 156—69

1 Claim



A method for sealing containers made of foam plastic and having a homogeneous thermoplastic lining, the top edge of the lining being initially located below the top edge of the foam plastic container, in which a lid having a thermoplastic under surface is applied to the container and pressed and heated so as to melt the top edge of the foam plastic container so that the lid can be pressed down until the thermoplastic under surface of the lid contacts and seals with the top edge of the thermoplastic lining of the container.

3,625,786

### IMPLANT CAPSULE AND APPARATUS AND METHOD FOR MAKING SAME

Whitney Lombard Pearson, Lake Bluff; John Alexander Banford, Lake Bluff, and Earl Thaddeus Szymanski, Chicago, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 2, 1969, Ser. No. 864,949

Int. Cl. B29c 27/02; B65b 7/28

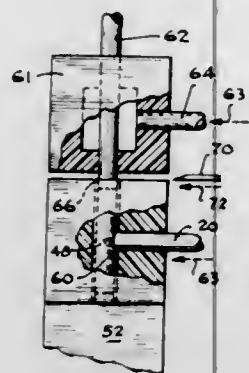
U.S. Cl. 156—69

6 Claims

A tubular capsule is sealed by forcing the tip of a rod into



the end of the capsule cavity, preferably while the volume of the capsule is reduced. Apparatus suitable for use in a multistation capsule manufacturing operation is provided.



the capsule is reduced. Apparatus suitable for use in a multistation capsule manufacturing operation is provided.

3,625,787

# METHOD OF ATTACHING WITHDRAWAL STRING TO A SPONGE TAMPON

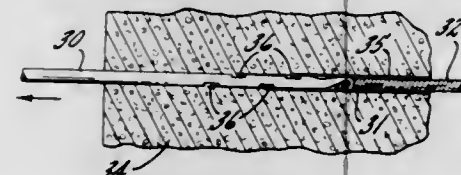
Michael Deane Radl, Appleton, and Edward E. Werner, Oshkosh, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 11, 1969, Ser. No. 849,119

Int. Cl. B29c 27/08; A61f 13/20

U.S. Cl. 156-73

5 Claims



A method for economically and efficiently securing a withdrawal string to a regenerated cellulose sponge tampon in the manufacture of menstrual tampons. A string which includes a heat-reactive adhesive element is inserted into a sponge tampon, and sonic energy is then applied to the tampon to provide a rapid and highly localized heating of the adhesive element, causing it to flow into intimate contact with the surrounding sponge material and form a secure bond between the string and sponge when cooled. The disclosure alternatively shows a means for simultaneously applying an adhesive substance to a string as it is being drawn into a sponge tampon so that an adhesive coating is applied only to the portion of the string contained within the tampon.

3,625,788

# METHOD OF MANUFACTURING A UNITARY COMPOSITE ARTICLE COMPRISED OF A CORE AND LINING

Bernard I. Bartner, 229-07 58th Ave., Bayside, N.Y.

Continuation-in-part of application Ser. No. 631,652, Apr. 18, 1967. This application Sept. 4, 1969, Ser. No. 860,150

Int. Cl. B32b 5/18

U.S. Cl. 156-78

10 Claims

A method of manufacturing a writing implement having an inner body portion of unfoamed resin. The method consists of inserting a heated probe into the inner body portion so as to cause the foamed resin to become molten, withdrawing the probe and simultaneously inserting a writing core into the cavity, and allowing the body to cool whereby foamed resin adheres and bonds to the writing core.

3,625,789

# ROOF RAIL PAD AND METHOD OF CONSTRUCTION

Richard E. Gerhardt, Birmingham, Mich., assignor to Microdot Inc.

Filed Aug. 1, 1969, Ser. No. 846,815

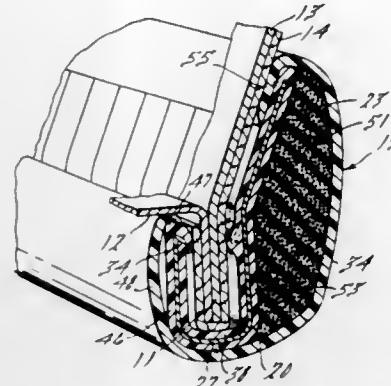
Int. Cl. B32b 5/18; E04c 2/38; E04f 19/02

U.S. Cl. 156-79

4 Claims

The roof rail pad is constructed to be applied to a pair of welded flanges by having a U-shaped section moved up-

wardly thereover and locked thereon by inwardly projecting toothlike ends. A metal carrier strip has fingers cut from the outer edges in continuous relation and formed into a channel



and an extending section. The strip is coated with a thin vinyl layer and a cover material is heat-sealed to the bottom and ends of the sections. A foamed material forms a pad under the cover material on one side of the strip.

3,625,790

# PROCESS FOR MAKING GLOVES

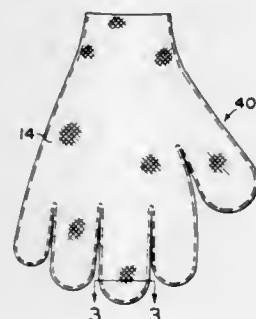
Weldon R. Ayres, R.F.D. #1, Willard, Ohio

Filed June 26, 1969, Ser. No. 836,801

Int. Cl. B32b 7/08

U.S. Cl. 156-93

11 Claims



The glove-making process includes forming a laminate from an elastic fabric and a layer of thermoplastic material, superimposing two of the laminates with the plastic layers adjacent, securing the layers of laminates together in areas thereof to form glove shells therefrom and severing such glove shells from the laminates, heating the glove shells, stretching the glove shells onto a glove form to shape the shells to individual right or left glove shapes, and heating and cooling to complete the glove.

3,625,791

# MOISTENER FOR BIAS-LAYING MACHINE

Charles A. Lee, and Warren R. Furbeck, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Continuation-in-part of application Ser. No. 719,986, Apr. 9, 1969, now abandoned. This application July 28, 1969, Ser. No. 845,477

Int. Cl. B65h 81/06

U.S. Cl. 156-194

6 Claims

A continuous cohesive multi-ply ribbon is made by forming a continuous spiral wound tube of creped tissue, flattening the tube and joining the plies of the flattened tube by embossing the plate together. After the spiral wound tube is formed, it is passed through a pressure nip formed by two rolls, thereby flattening the tube. Droplets of water are sprayed on one of the rolls. The water is carried to the pressure nip on the one roll and there transferred to the flattened tube as it enters the pressure nip. The moistened flattened tube is then passed through an embossing nip where the plies of the tube are pressed together at spaced locations with pressure sufficient to crush the fibers of the respective plies

into one another, the water thus added to the creped tissue being sufficient for the crushing of the fibers to attach the

3,625,794

# METHOD OF PREPARING LAMINATED FILMS WHILE REGULATING MOISTURE CONTENT

Shoichi Arikawa; Kouichi Hujikawa; Kyochiro Ikari, and Yukio Nishimatsu, all of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed July 15, 1969, Ser. No. 841,698

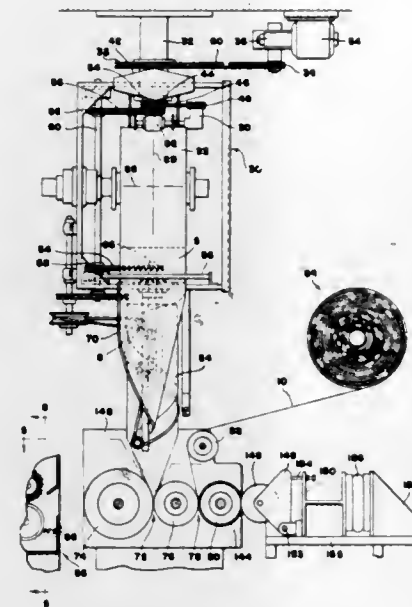
Claims priority, application Japan, July 17, 1968, 43/50335

Int. Cl. B29c 19/00

U.S. Cl. 156-244

4 Claims

Laminated films are produced by conditioning a melt of a polyvinyl alcohol resin to a moisture content of 20 to 60 percent by weight and a temperature between 50° C. and 160° C., extruding said conditioned melt in the form of a thin film through a slit onto the surface of a roller, the roller surface temperature being adjusted to between room temperature and 100° C., passing the resulting film over at least one hot roller, and laminating said polyvinyl alcohol film with a protective film while the polyvinyl alcohol film has a moisture content of 5 to 40 percent by weight.



3,625,795

# SPRAY PROCESS FOR DEPOSITING ADHESIVE AND BONDING LAMINATES

Donald P. Knechtges, Middleburg Heights, and Andrew N. Mayak, Elyria, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,946

Int. Cl. B32b 7/14; B05c 3/20

U.S. Cl. 156-291

11 Claims

A spray process for the deposition of carboxyl-containing adhesive latices as discrete droplets wherein the droplets are maintained as raised, spaced deposits on the substrate for lamination is provided. The adhesive latex is sprayed at a low viscosity but prior to contact with the substrate the viscosity of the latex droplets is increased so that upon striking the substrate the droplets remain as raised, spaced deposits rather than coalescing to form a continuous adhesive layer or being absorbed by the substrate. Laminates obtained with the present spray process have increased resistance to delamination, good flexibility and hand.

plies together at said spaced locations with a glassine-type attachment.

3,625,792

# FABRICATING GLASS-PLASTIC WINDOWS

Paul E. Shaffer, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 27, 1970, Ser. No. 32,419

Int. Cl. B32b 17/06

U.S. Cl. 156-212

15 Claims

A technique for fabricating unbalanced, transparent, glass-plastic windows incorporating a technique to compensate for distortion effects similar to the action of a bimetal during the time-temperature-pressure cycle involved in lamination.

3,625,793

# BALLOON-TYPE CATHETERS AND METHOD OF MANUFACTURE

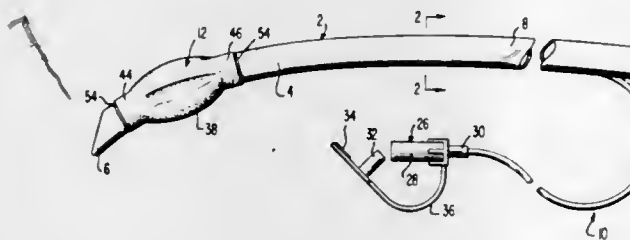
David S. Sheridan, Hook Road, Argyle, N.Y., and Isaac S. Jackson, Greenwich, N.Y., assignors to David S. Sheridan, Argyle, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,278

Int. Cl. B32b 31/00

U.S. Cl. 156-229

9 Claims



Disposable balloon-type catheters are made from tubes of extruded waterproof plastic having a major lumen and at least one secondary lumen within the tube wall. Such secondary lumens are joined for fluid flow to inflation tubes by a series of cutting and cementing steps and to elastic inflatable balloons which are fitted in special fashion to the distal end of the tube.

3,625,797

# LABELING MACHINE ATTACHMENT FOR APPLYING LABELS TO POLYGONAL CONTAINERS

John G. Wesley, 3118 South Wisconsin Ave., Berwyn, Ill. Continuation of application Ser. No. 602,296, Dec. 16, 1966, now abandoned. This application Jan. 9, 1970, Ser. No. 1,596

Int. Cl. B65c 9/30, 3/12

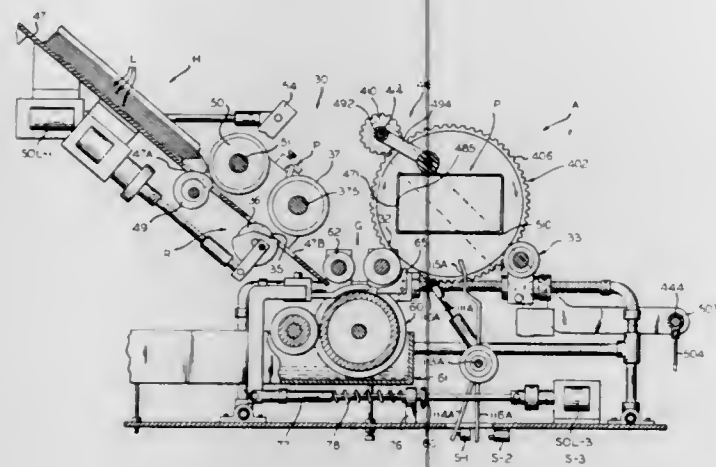
U.S. Cl. 156-446

7 Claims

An attachment for application to round container labeling machines of the type shown in U.S. Pat. No. 3,278,359,



which is in the form of a swing lever assembly adapted to be pivotally mounted on the machine adjacent its round container support rollers, with the swing lever assembly being pivotally mounted about an axis paralleling such support rollers, in which the assembly carries a pair of spaced-apart spin wheels positioned to be lowered into engagement with the support rollers for actuation thereby. The spin wheels are



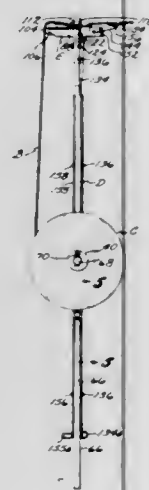
adapted to mount a polygonal-shaped container between them by engaging the ends of same, and a pressure roller carried by the assembly rides on the container to hold the label in place as it is applied thereto on actuation of the label-feeding mechanism of the basic machine, which actuation occurs when the spin wheels engage the support rollers and the rotating container grips a trip switch.

### 3,625,798 TAPING TOOL

Vincent V. Ihll, 1347 Peterson St., Long Beach, Calif.  
Filed Dec. 30, 1969, Ser. No. 889,193  
Int. Cl. B44c 7/02

U.S. Cl. 156—523

4 Claims



A device and method of using the same to apply tape of a desired length to a generally flat surface, said tape prior to application being spiral wound on a reel, and the exposed surface of the bonding material on the tape, commonly referred to as mud in the trade, covered with a thin, pliable, reusable film of a plastic material that lightly adheres thereto. The film serves the dual function of preventing the bonding material from drying prior to application of the tape to said surface, and the spiral wound layers of the tape from adhering to one another. In addition, an apparatus is disclosed for forming the tape, as well as a protective package in which it may be retailed.

### 3,625,799 DEVICE FOR DISPENSING AND APPLYING LENGTHS OF ADHESIVE TAPE

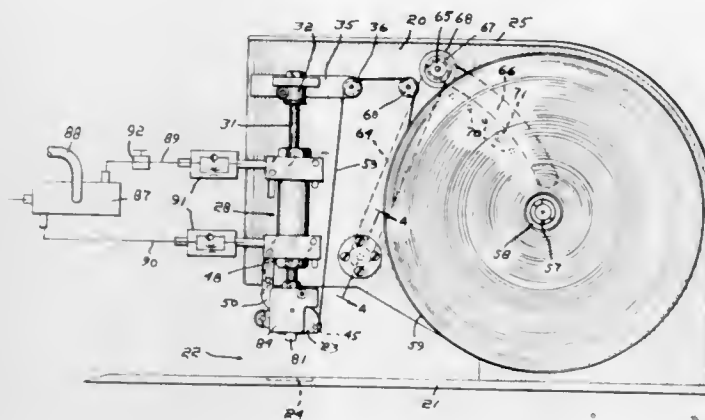
David G. Way, Boxborough, Mass., assignor to Tapeler Corporation, Newton, Mass.

Filed Aug. 28, 1969, Ser. No. 853,838

Int. Cl. B32b 31/00

U.S. Cl. 156—530

33 Claims



Devices are disclosed for applying sections of tape from a roll of tape with the tape trained about a polygonal feed block rotatably supported by a carriage under the control of means to reciprocate it between a first position and a second or tape section applying position. The device includes means turning the feed block and cutting the tape thereon to provide a severed section, neither operation being effected on movement of the carriage from the first to the second position. Carriage reciprocation is effected by various power operated means and such may include stroke adjustments and controls for varying the action of the power-operated means. Means are also disclosed enabling the spacing of the carriage relative to the work to be varied. Stripping means are also included when the tape has an interliner.

### 3,625,800 SAUSAGE BANDER

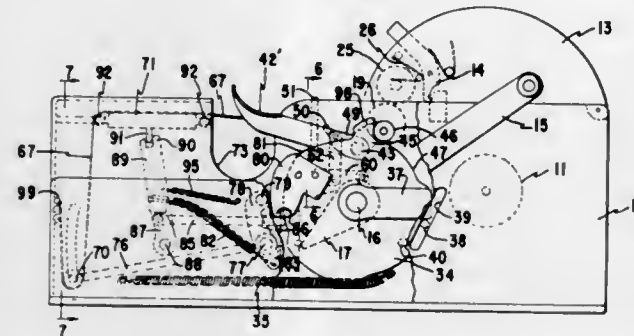
Lyle L. Hendrix, Carthage, S. Dak.

Filed Oct. 31, 1969, Ser. No. 872,888

Int. Cl. B65c 3/04; B32b 31/18

U.S. Cl. 156—540

6 Claims



A bander for sausage or similarly cylindrically shaped articles including means for dispensing and cutting a pressure-adhesive backed label, wrapping the label around the sausage, sealing the label to itself and ejecting the sausage. The preferred embodiment is operated by lever means, and may be either hand-powered or driven by external power.

### 3,625,801 LID APPLICATOR

Archie J. Reed, and August W. McKale, both of Battle Creek, Mich., assignors to Kellogg Company, Battle Creek, Mich.

Filed Dec. 3, 1969, Ser. No. 881,814

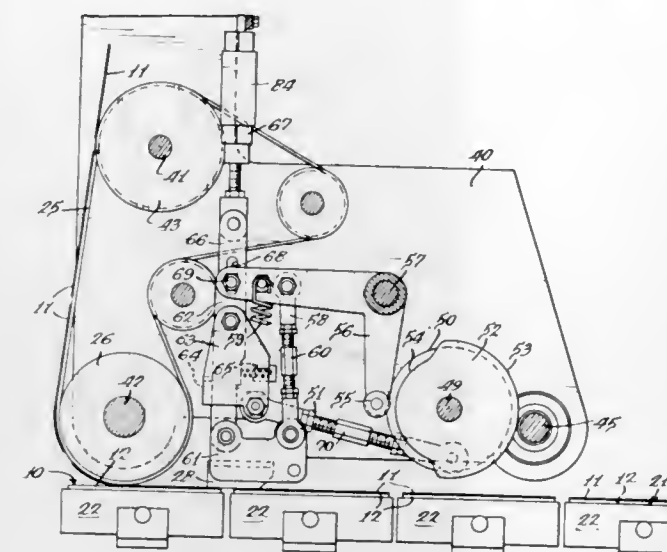
Int. Cl. B65b 57/02; B32b 31/20

U.S. Cl. 156—542

15 Claims

Method and apparatus for applying heat-sealable lids to containers characterized by the steps of and means for feed-

ing a strip of lids to a row of containers, separating the individual lids from the strip and laying a lid on each container, pressing each lid to its container and spot tacking it thereto,



and thereafter heat sealing the lids onto the containers whereby to expedite production of sealed containers; said tacking means comprising a particular feature of this invention.

### 3,625,802 PACKAGING APPARATUS

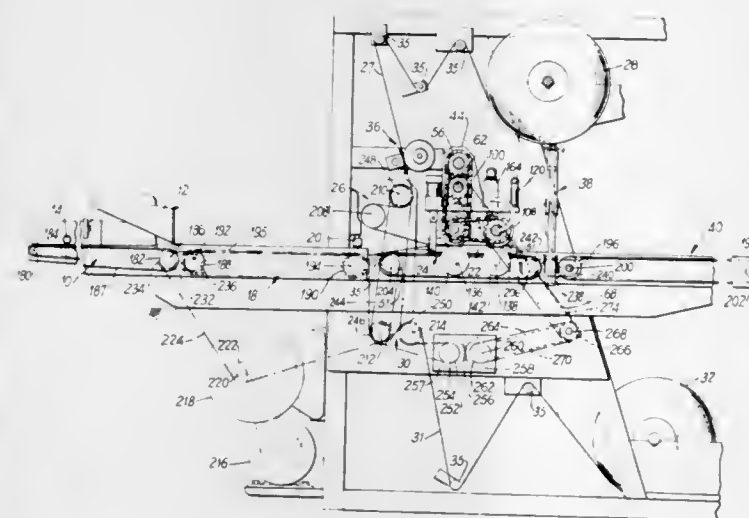
Jack C. Schniepp, Richmond, Va., assignor to AMP Incorporated

Filed Nov. 25, 1969, Ser. No. 879,768

Int. Cl. B32b 31/08, 31/20

U.S. Cl. 156—546

4 Claims



Sealing apparatus which comprises a pair of rollers mounted for receiving a plurality of sheets of thermoplastic film therebetween, means for driving at least one of said rollers to advance said thermoplastic sheets therepast, and means for heating one of said rollers to apply fusing heat to said sheets of thermoplastic film.

### 3,625,803 MULTILAYER PAD LAMINATOR

Leonard J. Masulis, Perrysburg, and Richard A. Morrette, Holland, both of Ohio, assignors to Owens-Illinois, Inc.

Filed Sept. 29, 1969, Ser. No. 861,864

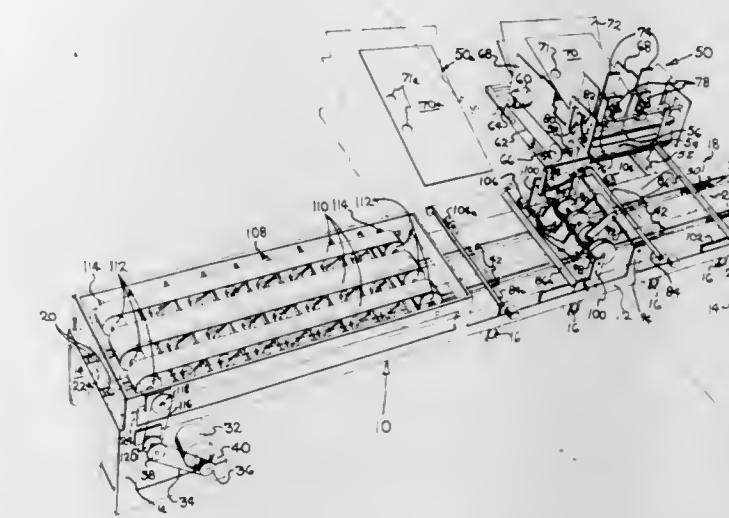
Int. Cl. B32b 31/04; G05b 6/02

U.S. Cl. 156—563

4 Claims

Apparatus designed to build up a multilayered pad by laminating a plurality of separate sheets or boards as the sheets are conveyed through the apparatus. A plurality of magazines are supported adjacent a conveyor and each is operable to feed individual die cut corrugated sheets one-at-

a-time onto the conveyor. The conveyor includes an elongated support surface having a pair of laterally spaced, longitudinally extending slots formed therein, with the individual sheets being conveyed along the surface by one of a plurality of pairs of tapered pins which project upwardly through the spaced slots above the support surface. Each of the sheets to



be laminated is formed with a pair of spaced openings for telescopically receiving a pair of the conveyor pins to accurately position the sheet on the conveyor surface and to move the sheet along the support surface by means of a chain which moves the conveyor pins. These conveyor pins provide the means for aligning and registering the various sheets as they are laminated into a multilayer pad.

### 3,625,804

### METHOD AND APPARATUS FOR APPLYING ROOFING MATERIAL

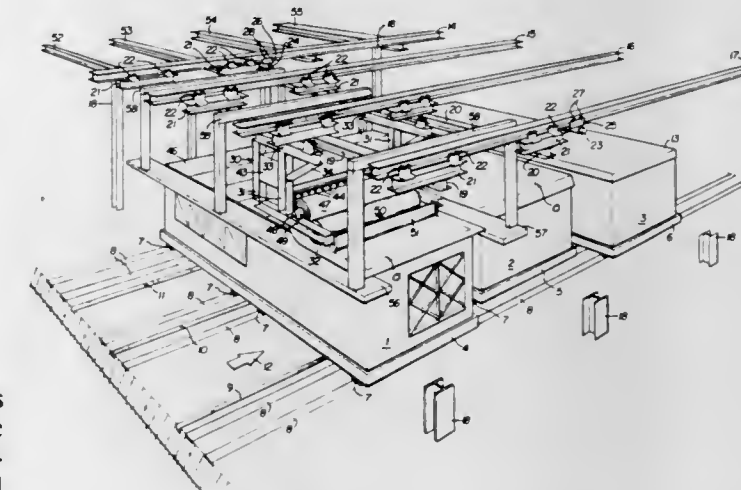
Wendell E. Losey, Lauderdale Lakes, and Evans T. Morton, Pompano Beach, both of Fla., assignors to Behring Corporation, Ft. Lauderdale, Fla.

Filed Jan. 9, 1970, Ser. No. 1,767

Int. Cl. E04f 13/20; B44c 7/02

U.S. Cl. 156—575

10 Claims



Apparatus for applying roofing membrane material to modules for homes, apartments or the like, in which an applicator for dispensing adhesive and a roll of roofing membrane material are mounted on a carriage suspended from an overhead track and runway system which provides for movement of the carriage in four directions to allow the carriage to traverse the roof of a module and also to be adjusted from one module to another. In a preferred embodiment, the modules are movable along a path relative to a roofing station, and overhead tracks are supported above the path and parallel to it. Floating runways extend transversely of the tracks and the path. The carriage is movably suspended from the floating runways for movement in two directions transversely of the module transport path so that the carriage with



its adhesive applicator and roofing membrane material can traverse the entire length of a module to simultaneously apply adhesive and membrane material to the entire roof of the module. The floating runways, in turn, are movably suspended from the overhead tracks to provide for movement of the floating runways and carriage together in two directions parallel to the module transport path to permit shifting of the carriage from one module to another and adjustment of the position of the carriage relative to a given module.

3,625,805

## APPARATUS FOR LABELING BOXES

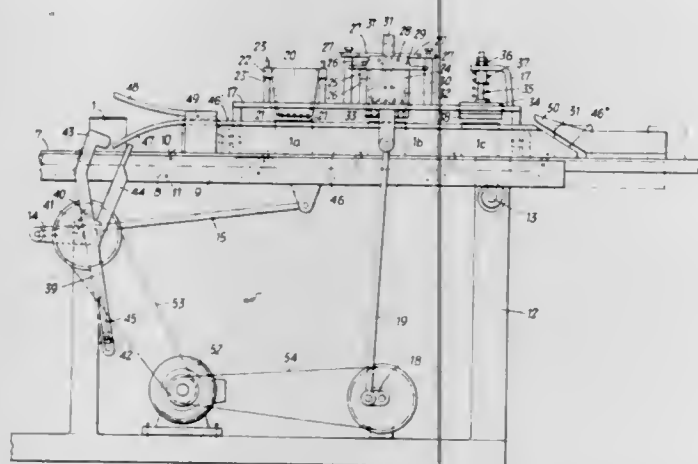
Harald Strohmeler, Potschenweg 10, and Bertram Hebenstreit, Ludwig Tullerg 4, both of Kapfenberg, Austria  
Filed Aug. 21, 1968, Ser. No. 754,280

Claims priority, application Austria, Aug. 21, 1967, A 7635/67

Int. Cl. B32b 31/20; B65c 1/02

U.S. Cl. 156—565

4 Claims



Apparatus for labeling closable boxes for welding electrodes including transporting means movable stepwise for moving the boxes into operative relationship with respect to an adhesive container, a label supply, and a pressing unit. The arrangement is such that upon cessation of movement of the transporting means, adhesive is applied to one box, a label to another box to which adhesive had previously been applied and pressing the applied label to yet another box. Upon further movement of the transporting means, the above operational steps are repeated.

3,625,806

## MACHINE FOR STRIPPING OFF THE COPPER COATING FROM A BASIC PLATE FOR THE PRODUCTION OF START SHEETS FOR ELECTROLYTIC REFINEMENT OF COPPER

Olov Carl Gustav Wennberg, Bjurbacksgatan 8, 651 05 Karlstad, Sweden

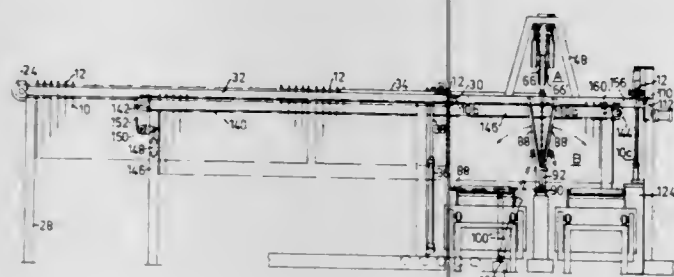
Filed Jan. 21, 1969, Ser. No. 792,686

Claims priority, application Great Britain, Jan. 30, 1968, 4,680/68

Int. Cl. B32b

U.S. Cl. 156—584

2 Claims



A machine for stripping off the copper coating from a basic plate for the production of start sheets for electrolytic

refinement of copper comprises a stripping mechanism which may include one or two reciprocating knives guided to have the edge or edges thereof moved along the side or sides of the basic plate to remove continuous pieces of sheet metal from said basic plate. The basic plates are suspended from a conveyor to be individually fed to the stripping mechanism, and there are means for applying oil to the basic plate after stripping to make said plate ready for electrolytic deposition of a fresh coating or copper thereon. Means receiving the stripped start sheet or sheets are adapted to transfer the latter to a further conveyor for transportation to a start sheet machine.

3,625,807

## TILE ADHESIVE

Paul H. Beemer, Whittier, Calif., assignor to W. W. Henry Company, Huntington Park, Calif.

Filed Oct. 2, 1969, Ser. No. 863,373

Int. Cl. B32b 27/28; C08c 13/02; C08d 11/02

U.S. Cl. 161—38

14 Claims

An adhesive especially adapted for installing flexible flooring tiles to vapor-impermeable flooring. The adhesive includes an oil-in-water emulsion containing an elastomer and an air drying tackifying resin in the oil phase and a protective colloid and an emulsifying agent in the water phase.

3,625,808

## COMPOSITE CONCRETE AND CEMENT-WOOD FIBER PLANK

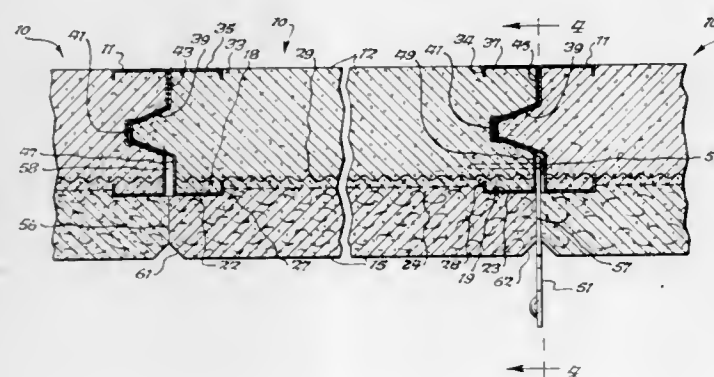
Charles A. Martin, Williamsville, N.Y., assignor to Martin Fireproofing Corporation, Buffalo, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,820

Int. Cl. B32b 3/10, 3/02

U.S. Cl. 161—37

9 Claims



A composite laminated concrete and cement-wood fiber plank consisting of a peripheral metal frame defining a substantially rectangular solid and having two edges with tongues and two edges with grooves, concrete in said frame, a cement-wood fiber plank portion having a first face extending slightly into said frame and a second face facing away from said frame and a border proximate the first face on which said frame rests, said concrete penetrating voids in the cement-wood fiber plank portion to effect a bond between the concrete and the cement-wood fiber portion, with the portion of the metal frame adjacent the cement-wood fiber plank portion being of a slightly smaller perimeter than the perimeter of the cement-wood fiber plank portion and the perimeter of the portion of the frame above the tongues and the grooves.

3,625,809

## FILAMENT BLEND PRODUCTS

Remus F. Caroselli, Cumberland, and Fred A. Mennerich, Cumberland Hill, both of R.I., assignors to Owens-Corning Fiberglas Corporation

Continuation-in-part of application Ser. No. 529,516, Feb. 23, 1966, now abandoned. This application Feb. 24, 1970, Ser. No. 14,727

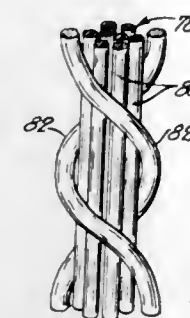
Int. Cl. B32b 5/04

U.S. Cl. 161—91

7 Claims

Composite yarns comprising relatively inextensible, but high-strength glass filaments helically overwrapped about a

core of shorter, more straight organic resin filaments which have a substantial amount of stretch, such as rayon and nylon. When tensile force is applied, the glass filaments straighten out and the organic filaments tend to overwrap.



With proper selection, both filaments will be loaded to just below the yield point at the same maximum tensile force. Thus, the combination yarn will break at a load that is approximately equal to the combined breaking strengths of the glass and organic filaments.

3,625,810

## DISPLAY LAMINATE

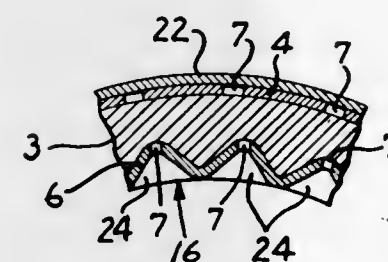
William M. Swartz, 195 Ivy Lane, Highland Park, Ill.

Filed May 28, 1970, Ser. No. 41,244

Int. Cl. B32b 3/10

U.S. Cl. 161—119

6 Claims



A display device comprises a moisture-containing sheet of paperboard with films laminated to the opposite sides thereof. In predetermined areas the film on one side forms a moisture impervious layer while at those same areas the film on the opposite sides of the sheet is moisture pervious so that upon flexing and drying of the sheet and shrinkage of the fibers thereof, the sheet will warp in a direction in which the moisture impervious film is on the outside of a flexure of curvature. In other predetermined areas the films are moisture pervious and impervious, respectively, in a reverse fashion so that in those other areas the flexed sheet will warp in a direction opposite to the first-mentioned direction. Certain other areas may be embossed with reinforcement and made water impervious at both films to inhibit warpage. The foregoing are utilized to enhance the shape of a three-dimensional display in a programmed manner.

3,625,811

## METHOD OF PREPARING YARN AND THE LIKE FROM ANIMAL HIDE

Hiroshi Okamura, Tokyo, Japan, assignor to Hisao Sato, Tokyo, Japan and Kabushiki Kaisha Fujita Shonten, Tokyo, Japan

Filed Jan. 19, 1968, Ser. No. 699,031

Int. Cl. D01c 3/00

U.S. Cl. 162—2

9 Claims

Collagen fiber is obtained from limed animal hide by a process which involves reliming, treating with an enzyme, and finally, beating to loosen the fiber structure of the hide. The fiber structure is then opened mechanically to obtain collagen fiber. The collagen fiber obtained is readily spun into yarn or string. Either the collagen fiber or the spun col-

lagen yarn or string is treated with modifying agents such as tanning agents to improve its characteristics. The collagen yarn and string may be used for a large variety of knitted and woven products.

3,625,812

## PRESIZE MOISTURE CONTROL SYSTEM FOR A PAPERMAKING MACHINE

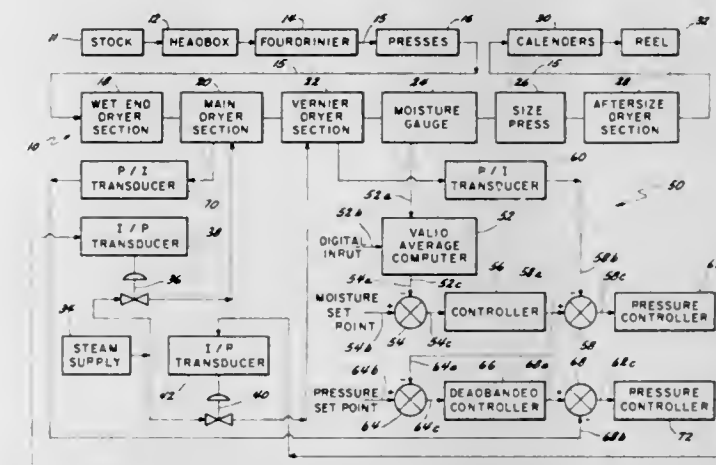
John A. Gudaz, Beloit, Wis., and Marion A. Keyes, IV, South Beloit, Ill., assignors to Beloit Corporation, Beloit, Wis.

Filed Dec. 18, 1968, Ser. No. 784,702

Int. Cl. D21f 5/04; G01m 23/16

U.S. Cl. 162—253

5 Claims



A vernier dryer section normally provides sufficient heat so as to maintain the moisture content of the paper web within a relatively narrow range as it enters the size press. When the vernier dryer section fails, or starts to fail, to maintain the prescribed moisture limits, another dryer section of larger capacity is thermally adjusted so that the moisture content of the web is closely controlled and in this way held within the specified limits.

3,625,813

## POWER-OPERATED CUTTER FOR FORMING LEAD STRIPS IN A PAPER WEB

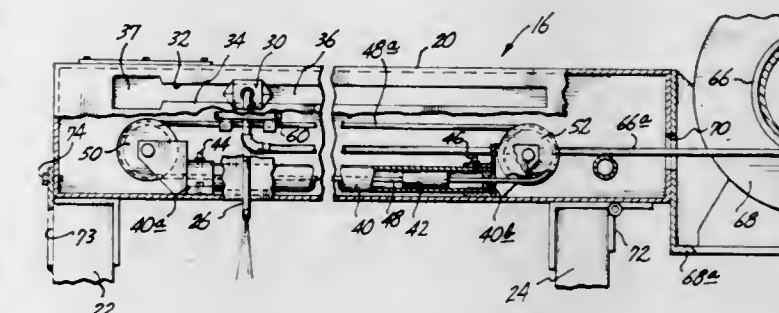
Bernard C. Eckelman, Clatskanie, Oreg., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed May 19, 1969, Ser. No. 825,811

Int. Cl. B31f 5/00

U.S. Cl. 162—286

5 Claims



A power-operated cutter for cutting paper web being prepared in a papermaking machine. The cutter includes an elongated hollow casing extending across and adjacent the face of the paper web under preparation, and an elongated cylinder disposed within and extending along the casing. A plunger movable within the cylinder under the action of fluid under pressure introduced selectively to opposite ends of the cylinder is connected by a flexible line to a nozzle-type cutter movable along a path defined along the casing. A flexible hose extending from a hose collector disposed adjacent one end of the casing extends into the casing to a connection with



the nozzle. The casing may be hingedly mounted on a support adjacent the collector, to permit it to be swung out of the way.

3,625,814

# MULTILAYER PAPERMAKING MACHINE WITH IMPERVIOUS ROLL WEB FORMER

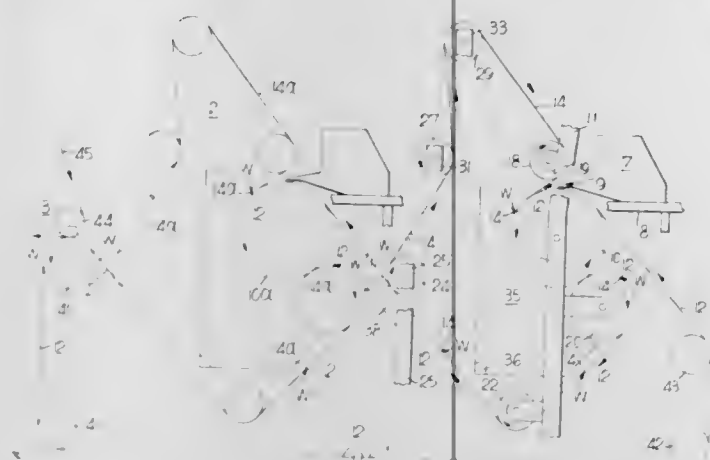
Donald B. De Noyer, Beloit, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed June 13, 1969, Ser. No. 832,911

Int. Cl. D21h 1/06

U.S. Cl. 162-299

6 Claims



A portion of a papermaking machine is disclosed having several web-forming units in series for making heavy or multilayer paper. Each forming unit includes a headbox mounted above an impervious forming roll for discharging pulp into a nip between a pair of belts coming together and lapping a down turning side of the forming roll. Both belts may be wire fabrics or, preferably, one belt is a felt fabric making contact with the forming roll and the other belt is a wire and arranged radially outward of the felt. The pulp is formed into a web sandwiched between the radially inner felt and radially outer wire and water is squeezed from the pulp web outwardly through the wire. At the bottom of the forming roll the felt is located over the web and wire, and the felt-web wire is removed from the forming roll and turned downwardly away from the forming roll and inverted to place the wire and web on top of the felt. The wire is lifted from the web and looped back to the forming roll while the web remains on top of the felt and is carried thereby through successive similar forming units for applying additional layers of pulp to the web.

3,625,815

# CONTROL SYSTEM FOR CONTROLLING A NUCLEAR REACTOR PLANT

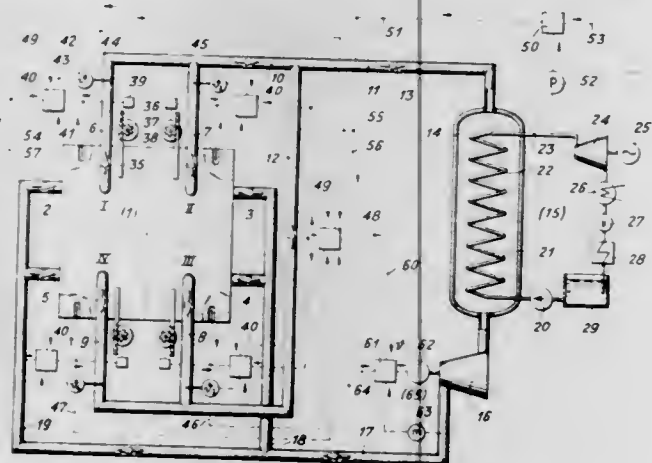
Ygal Fishman, Lausanne-Prilly, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Apr. 30, 1968, Ser. No. 725,281

Int. Cl. G21c 7/06

U.S. Cl. 176-22

9 Claims



The control rods of the different zones of the plant are moved simultaneously with or independently of the control

rods of the other zones. Control of the rod movements is made dependent on the pressure of the working medium of the plant as well as the outlet temperature of the reactor coolant. Additionally, a control of the live steam mass flow of the plant is achieved by comparison between the live steam mass flow and the overall neutron flux of the nuclear reactor.

3,625,816

# NUCLEAR REACTOR CONTROL ROD ASSEMBLY

Werner Aleite, Erlangen, and Kurt Bortolazzi, Erlangen-Bruck, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

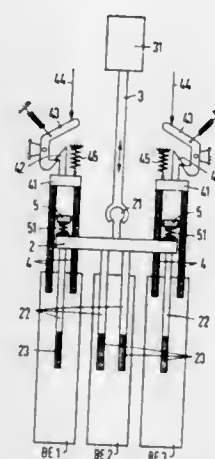
Filed June 26, 1969, Ser. No. 836,842

Claims priority, application Germany, June 28, 1968, P 17 64 577.1

Int. Cl. G21c 7/08

U.S. Cl. 176-35

6 Claims



Control rod assembly for nuclear reactors includes a plurality of finger control rods carried in common by a spider-like holder, mechanical drive mechanism for displacing the holder vertically to insert the finger control rods into a plurality of fuel elements, the finger control rods containing neutron-absorbing substance along at least part of the length thereof, means for mounting a plurality of neutron-absorbing shutoff rods outside the reactor core, the mounting means being releasable during abnormal operation of the reactor for inserting the shutoff rods into the fuel elements and entrainment means operatively connected to and displaceable with the finger control rod holder and entrainable by the entrainment means in released condition of the mounting means.

3,625,817

# BINARY POWER CYCLE FOR NUCLEAR POWER PLANTS

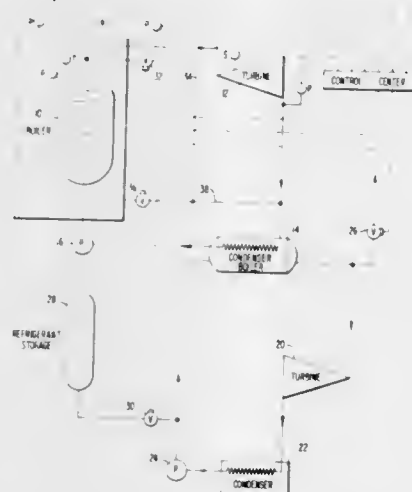
James H. Anderson, 1615 Hillock Lane, York, Pa.

Filed May 29, 1968, Ser. No. 733,160

Int. Cl. G21c 9/00

U.S. Cl. 176-38

6 Claims



An emergency heat sink for a nuclear-powered, steam-generating plant is disclosed which comprises a closed

refrigerant circuit including a boiler, a turbine, a condenser and a return pump, the boiler using as a source of heat the condenser in the steam-generating plant. When an abnormal condition occurs such as a runaway reactor, the high-pressure side of the refrigerant circuit is vented to atmosphere and additional liquid refrigerant is bled into the low-pressure side in order to absorb the excess heat and dump it to the atmosphere until reactor control is regained.

3,625,818

# FLEXIBLE CORE REACTOR

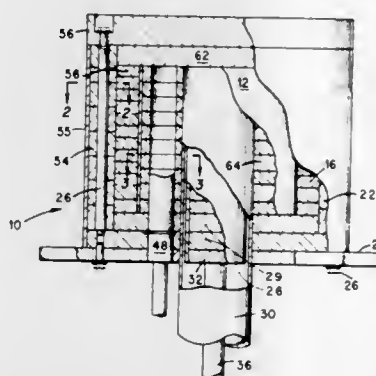
Gerard Breidenbach, New York, and Richard C. Ross, Armonk, both of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 17, 1968, Ser. No. 730,202

Int. Cl. G21c 1/00

U.S. Cl. 176-40

3 Claims



An experimental flexible core reactor with segmented fuel and reflector regions for varying height and width of the core. The segments are layered with materials comprising the fuel, cladding, coolant, and structure to simulate during operation the effect on an operating reactor utilizing such materials.

3,625,819

# ATTACHMENT MEANS FOR THE SUPERSTRUCTURE ABOVE THE CORE IN A LIGHT WATER BOILING REACTOR

Bengt Martin Sodergard, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 12, 1968, Ser. No. 704,938

Claims priority, application Sweden, Feb. 14, 1967, 2015/67

Int. Cl. G21c 15/16

U.S. Cl. 176-54

6 Claims



In a light water boiling reactor, a superstructure comprising a steam treating unit and a lid for the moderator tank is

arranged above the moderator tank and is detachable for the purpose of interchange of fuel. A shield substantially concentric with the moderator tank and having a greater diameter is attached to the tank in such a position that the upper end of the shield is at a level above the lid of the tank. The superstructure is fixed to the upper part of the shield by a detachable hook joint which transmits compressive force against the lid to force it against the top of the tank through rodlike supporting members.

3,625,820

# JET PUMP IN A BOILING WATER-TYPE NUCLEAR REACTOR

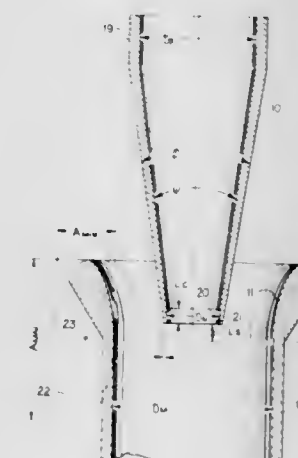
Douglas M. Gluntz, Campbell, and Robert H. Moen, San Jose, both of Calif., assignors to General Electric Company

Filed June 14, 1968, Ser. No. 737,090

Int. Cl. G21c 15/24

U.S. Cl. 176-54

3 Claims



An improved jet pump for a nuclear reactor is disclosed. A combination of novel nozzle, mixer and diffuser configurations give a jet pump of uniquely high efficiency. This jet pump is especially useful in circulating cooling water through a boiling water-type nuclear reactor.

3,625,821

# FUEL-ELEMENT COATING CONTAINING BURNABLE POISON

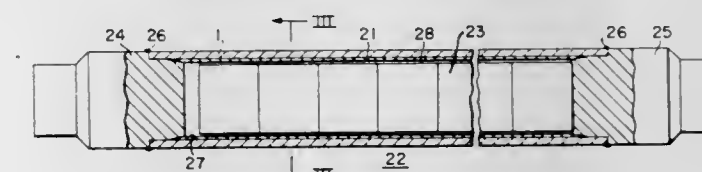
Herbert E. Ricks, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 499,407, Oct. 21, 1965, now abandoned. This application June 26, 1968, Ser. No. 740,218

Int. Cl. G21c 3/06

U.S. Cl. 176-68

4 Claims



A fuel element for a nuclear reactor having a fuel cladding tube with the inner surface of tube being coated with a retaining metal of low neutron capture cross section and having finely dispersed particles of a burnable poison disposed therein.



3,625,822

## NUCLEAR REACTORS AND TO FUEL ELEMENT ASSEMBLIES FOR USE THEREIN

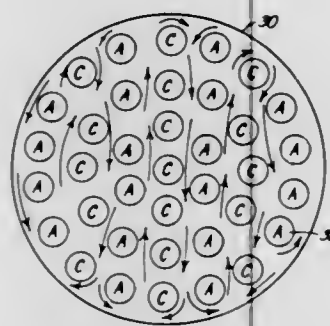
Paul Langford Mantle, Gloucester, England, assignor to Central Electricity Generating Board, London, England  
Filed May 16, 1968, Ser. No. 729,751

Claims priority, application Great Britain, May 17, 1967, 22,885/67

Int. Cl. G21c 3/32

U.S. Cl. 176-78

13 Claims



A fuel element assembly for location in a fuel channel of a nuclear reactor, through which channel coolant is passed longitudinally, comprises a cluster of fuel pins arranged parallel to one another but spaced apart so as to leave a free coolant passage extending completely around each pin for generally longitudinal flow. Some of the pins have multistart helical ribs with a left-handed helix and some have multistart helical ribs with a right-handed helix to impart transverse components to the longitudinal flow in a predetermined pattern to improve the heat transfer from the fuel elements to the coolant.

3,625,823

## NUCLEAR FUEL ROD

John M. Kerr, and Gordon C. Larson, both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed July 9, 1968, Ser. No. 743,504

Int. Cl. G21c 3/10

U.S. Cl. 176-79

7 Claims



A sheathed nuclear fuel rod sealed by end caps and having foamed zirconia plugs which separate and thermally insulate the end caps from the fuel material, and also provide internal support for the sheathing and for the fuel.

3,625,824  
MICROBIOLOGICAL PROCESS FOR PRODUCTION OF ALKANONES

Lester E. Casida, State College, Pa., and Donald A. Klein, Corvallis, Oreg., assignors to Texaco Inc., New York, N.Y.  
Continuation-in-part of application Ser. No. 738,117, June 19, 1968, now abandoned. This application Aug. 24, 1970, Ser. No. 66,658

Int. Cl. C12b 1/00

U.S. Cl. 195-28

9 Claims

Alkanones are produced by growing a species of *Athrobacter*, (ATCC 21237), aerobically in an alkane-salt aqueous medium mixture containing a nonhydrocarbon carbon source. A mixture of monoalkanones are produced from a C<sub>10</sub>-C<sub>18</sub> alkane.

3,625,825  
METHOD OF PRODUCING NUCLEOSIDES BY FERMENTATION

Hiroshi Shibai; Akira Hama, both of Kanagawa-ken; Akio Yamanol, Tokyo; Teruo Shiro, Kanagawa-ken, and Kazumoto Kinoshita, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of application Ser. No. 648,970, June 26, 1967, now abandoned. Continuation-in-part of application Ser. No. 554,322, June 1, 1966, now abandoned. This application Jan. 3, 1969, Ser. No. 788,913

Claims priority, application Japan, June 11, 1965, 40/34332; June 11, 1965, 40/34333; June 27, 1966, 41/41685

Int. Cl. C12d 13/06

U.S. Cl. 195-28

7 Claims

All strains of *Bacillus subtilis* which produce inosine or guanosine by fermentation give higher yields of these nucleosides when the culture medium contains potassium, magnesium, or calcium ions in much higher concentrations than were commonly employed heretofore.

3,625,826  
PROCESS FOR PRODUCING SPICULISPORIC ACID AND RELATED SUBSTANCES THEREOF

Tatsuyoshi Kobayashi, RA24, No. 537, Ikejiri-machi, Setagaya-ku, Tokyo, and Takeshi Tabuchi, No. 667, Iwato, Komae-machi, Kitatamagun, Tokyo, both of Japan

Filed July 22, 1968, Ser. No. 746,343

Int. Cl. C12d 1/00

U.S. Cl. 195-36 R

12 Claims

A process for producing spiculisporic acid and hydroxy-acid form thereof by fermentation which comprises the steps of: cultivating fungi belonging to *Penicillium spiculisporum* ATCC 16071 in a nutrient culture medium containing carbohydrate materials, nitrogen sources and inorganic salts; cultivating the said culture medium aerobically; controlling the pH value of the culture medium during fermentation at 1.2 to 2.5, and recovering from the cultured broth spiculisporic acid and hydroxy acid.

3,625,827  
WATER-SOLUBLE POLYMER-ENZYME PRODUCTS

Bernard S. Wildt, Kirkwood, and Thomas L. Westman, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 27, 1968, Ser. No. 763,343

Int. Cl. C12k 1/00

U.S. Cl. 195-63

19 Claims

Polymer-enzyme products wherein the enzyme is covalently bound to the polymer chain, the polymer-enzyme product being water soluble. The products have wide applicability as stable, long-acting, enzymatic materials, having same general type of activity as parent enzyme, but with different pH optimum activity and range of applicability, and are stable, substantially colorless and odorless, long acting, and remarkably less subject to autogenous deterioration or destruction by other enzymes.

3,625,828  
PROCESS FOR PRODUCTION OF GLUCOSE ISOMERASE

Charles Edward Brownnewell, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 16, 1969, Ser. No. 816,813

Int. Cl. C12d 13/10

U.S. Cl. 195-66 R

1 Claim

A novel glucose isomerase enzyme useful for the conversion of glucose to fructose can be prepared by growing under aerobic conditions a culture of *Streptomyces olivaceus* NRRL 3583 or mutants thereof in a medium containing appropriate nutrients and then recovering the enzyme therefrom.

3,625,829  
PURIFICATION OF CARBOXYPEPTIDASE B

Gunther Schmidt-Kastner, and Johann Putter, both of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 3, 1968, Ser. No. 780,903

Claims priority, application Germany, Dec. 4, 1967, P 16 42 614.5

Int. Cl. C07g 7/02

U.S. Cl. 195-66 R

7 Claims

Carboxypeptidase B is purified by treating aqueous crude solutions of the carboxypeptidase B simultaneously with cation exchangers and anion exchangers.

3,625,830  
CULTIVATING STREPTOMYCES DESDANUS VAR. DESDANUS TO PRODUCE DESDANINE

Makolm E. Bergy, Kalamazoo, and Fritz Reusser, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 20, 1970, Ser. No. 30,255

Int. Cl. C12d 9/00

U.S. Cl. 195-80

3 Claims

Microbiological process for preparing the antibiotic desdanine which does not require the addition of an  $\omega$ -alkylthio- $\alpha$ -amino acid to the fermentation medium. Desdanine can be used for preventing rot and spoilage of shell eggs caused by *Proteus vulgaris*.

3,625,831  
PRODUCTION OF (-) (CIS 1,2 EPOXYPROPYL) PHOSPHONIC ACID

Arnold L. Demain, Westfield; Raymond F. White, English-town, and Lubove D. Schnable, Fanwood, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 23, 1969, Ser. No. 793,591

Int. Cl. C12d 9/00

U.S. Cl. 195-80

10 Claims

(-) (Cis-1,2-epoxypropyl) phosphonic acid is produced in enhanced yields by growing suitable species of *Streptomyces* in fermentation mediums containing a mercapto-containing compound. The phosphonic acid and derivatives thereof, such as salts, are antibacterial substances which are active against both gram-positive and gram-negative bacteria.

3,625,832  
PROCESS FOR SEPARATING MICROORGANISMS FROM A FERMENTATION WORT

Claude Gatellier, Boulogne, and Georges Glikmans, Meudon la Foret, both of France, assignors to Institut Francais du Petrole, des Carburants Et Lubrifiant, (Hts de Seine), France

Filed May 5, 1969, Ser. No. 821,985

Claims priority, application France, May 10, 1968, 151500

Int. Cl. C12b 1/26

U.S. Cl. 195-82

10 Claims

Yeast fermentation worts containing hydrocarbon, water, and inorganic salts, are resolved by contacting the worts with

a mixed solvent system containing a dialkyl-ketone having at least four carbon atoms, e.g., methyl-ethyl-ketone, and another solvent selected from acetone, ethanol, n-propanol, iso-propanol and tert-butanol. As a result, three phases are formed, one of which is a heavy aqueous phase containing purified yeast which is then separated from the two other phases.

3,625,833  
PROCESS FOR PRODUCING ANTIVIRAL SUBSTANCE FROM STAPHYLOCOCCUS ORGANISMS

James J. Schaffer, 717 West First St., P.O. Box 1015, Bloomington, Ind.

Filed Jan. 23, 1970, Ser. No. 5,366

Int. Cl. C12d 9/20

U.S. Cl. 195-96

7 Claims

*Staphylococcus* bacteria are cultured to produce an antiviral substance having inhibitory activity against Coxsacki B virus, Semliki-Forest virus, and the like. For use in the process, a nonpathogenic strain of *Staphylococcus aureus* is selected, the strain being classifiable as *Staphylococcus aureus* or *Staphylococcus aureus* (albus variant). The strain is propagated in a culture medium containing a growth-promoting concentration of aspartic acid, preferably DL aspartic acid. The antiviral substance which can be recovered from the broth has utility in treating viral infections of animals, including transmissible gastroenteritis (TGE) in swine and distemper in dogs and cats.

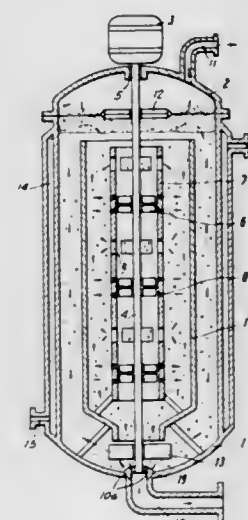
3,625,834  
METHOD OF MIXING GASEOUS AND LIQUID PHASES

Hans Muller, Allmendli 1, Erlenbach/Zuerich, Switzerland  
Original application July 3, 1967, Ser. No. 651,054, now Patent No. 3,460,810. Divided and this application Apr. 16, 1969, Ser. No. 816,747

Int. Cl. C12b 1/14; B01f 3/04

U.S. Cl. 195-109

5 Claims



A mixing method. A crude mixture of a gaseous and a liquid phase is contained in an elongated tubular inner space and in an annular outer space surrounding and communicating with the inner space. Jets of the mixture are forced from the inner into the outer space at longitudinally spaced locations of the inner space, and their intrusion into and dispersion in the mixture in the outer space effects more intimate admixture of the phases.

3,625,835  
PROCESS FOR THE RECOVERY OF CYCLOHEXANONE OXIME BY PLURAL STAGE, VACUUM DISTILLATION PER A

Adrianus Tervoort, Sittard, and Theodorus Balg, Brunssum, both of Netherlands, assignors to Stamcarbon N.V., Heerlen, Netherlands

Filed June 15, 1970, Ser. No. 046,372

Int. Cl. B01d 3/10

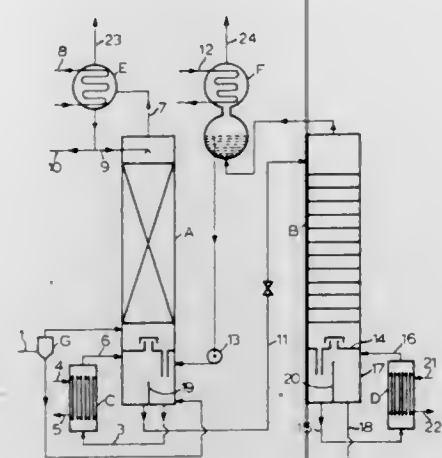
U.S. Cl. 203-78

3 Claims

There is disclosed a continuous process for preparing cyclohexanone oxime by reacting cyclohexanone with a solu-



tion of a hydroxylammonium salt derived from a weak acid, e.g. phosphoric acid. The reaction takes place in counterflow contact, and in the presence of a water-immiscible or poorly



water-miscible organic solvent for the oxime formed. An improved process for accomplishing separation of the resulting oxime from the solvent by rectification and apparatus suited for realizing this process.

3,625,836

#### PURIFICATION OF ALKOXYACETONE FROM 1-ALKOXY-2-PROPANOL BY AZEOTROPIC DISTILLATION WITH WATER

Harry A. Stansbury, Jr., South Charleston, and Harry J. Decker, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,790

Int. Cl. B01d 3/36, 3/38

U.S. Cl. 203-83

6 Claims

A method for recovering alkoxyacetones from mixtures of alkoxyacetone and the corresponding 1-alkoxy-2-propanol by adding water to the mixture and distilling to form a lower boiling alkoxyacetone-water azeotrope.

3,625,837

#### ELECTROPLATING SOLDER-BUMP CONNECTORS ON MICROCIRCUITS

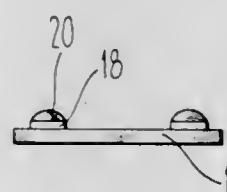
Carl W. Nelson, Palo Alto, and John F. Hinchey, Los Altos, both of Calif., assignors to The Singer Company

Filed Sept. 18, 1969, Ser. No. 860,848

Int. Cl. C23b 5/48, 5/32, 5/70

U.S. Cl. 204-15

6 Claims



A silicon wafer containing 100 to 300 microcircuits is coated with a patterned layer of glass and then a conducting layer of chromium and copper which connects, through openings in the glass, to circuit terminals and also to the silicon substrate at the scribe positions. A patterned photoresist then exposes only the terminal areas. An electroplating connection to the silicon substrate provides uniform, low-resistance current paths through the metallization at the scribe positions to the plating sites over the terminal positions for the electrodeposition of solder.

3,625,838

#### WORK-SUPPORTING DEVICE

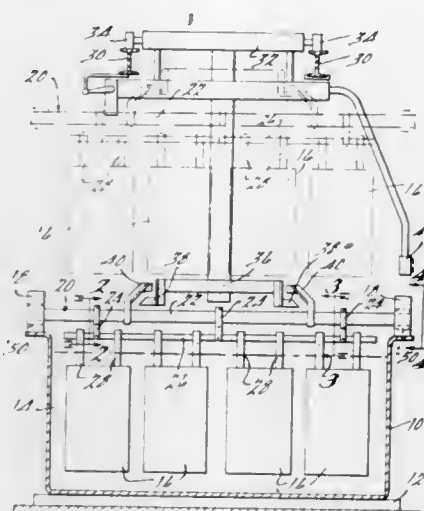
Richard J. Jessup, Bloomfield Hills, and Richard T. Wigginton, Jr., Detroit, both of Mich., assignors to The Udyllite Corporation

Filed Aug. 8, 1968, Ser. No. 751,226

Int. Cl. C23b 5/70; B01k 3/04

U.S. Cl. 204-297

9 Claims



A lightweight, high-strength work rack for supporting one or a plurality of workpieces for transfer through an electrochemical treatment having a frame including a composite electrically conductive bar consisting of an aluminum core enclosed within and disposed in electrical contact with an exterior copper sleeve.

3,625,839

#### PROCESS FOR APPLYING DEPOSITS HAVING LUBRICANT PROPERTIES TO WORKPIECES

Jean-Leon Spohner, Roger Haug, and Hans Hoffman, all of c/o Dow Corning GmbH, Munich, Germany

Filed May 11, 1970, Ser. No. 36,501

Claims priority, application Germany, May 12, 1969, P 19 24 263.8

Int. Cl. C23b 5/52

U.S. Cl. 204-37 R

5 Claims

An improved process for applying dry-lubricants to solid surfaces with control over the lubricant thickness. The process depends on an initial electrolytic degreasing step followed by electrodeposition of known molybdenum compounds under definite selected conditions. The compounds are then treated with H<sub>2</sub>S in an autoclave, at 300 p.s.i. and less than 140° C.

3,625,840

#### ELECTRODEPOSITION OF RUTHENIUM

David Roy Mason, Ross-on-Wye, and Brian R. Lerwill, Tuffley, both of England, assignors to Engelhard Industries Limited, Sutton, Surrey, England

Filed Jan. 19, 1970, Ser. No. 4,071

Int. Cl. C23b 5/24

U.S. Cl. 204-47

20 Claims

A stable, aqueous electrolyte solution, suitable for use in the electrodeposition of ruthenium, characterized in that it comprises an aqueous solution having a pH in the range 1.2 to 3.0 and contains (a) ruthenium ions complexed by an organic acid, (b) sulfamate ions, and (c) ammonium ions.

3,625,841

#### COLOR ANODIZING IN AN INORGANIC ELECTROLYTE

Bernard Ray Baker, Spokane, Wash., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 10, 1969, Ser. No. 805,825

Int. Cl. C23b 9/02

U.S. Cl. 204-58

16 Claims

A process for the color anodizing of aluminum comprising subjecting the aluminum, as an anode to electrolysis in an

aqueous electrolyte containing sulfuric acid and dichromate ions.

3,625,842

#### ALUMINA FEED CONTROL

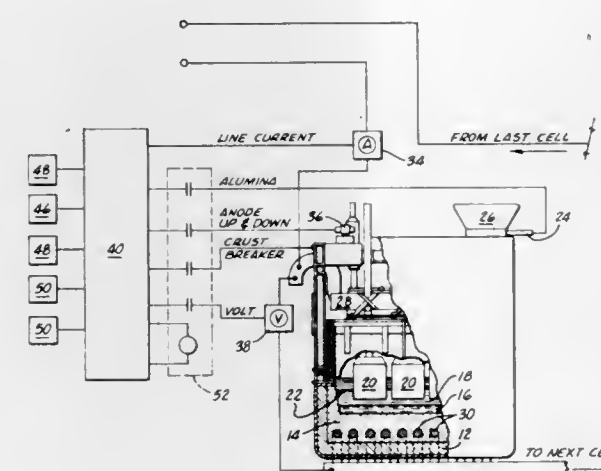
Donald R. Bristol, Orinda, Calif., and Joseph G. C. Simard, also known as J. G. Clement Simard, Ravenswood, W. Va., assignors to Kaiser Aluminum and Chemical Corporation, Oakland, Calif.

Filed May 24, 1968, Ser. No. 731,901

Int. Cl. C22d 3/12

U.S. Cl. 204-67

3 Claims



A method of controlling the feeding of alumina to a reduction cell for the production of aluminum. The method comprises obtaining several measurements of the voltage across the cell and current to the cell and deriving from the measurements an average resistance level for the cell which will be referred to as a base level. A smoothed resistance is derived from several sequential measurements of the voltage and current. When the smoothed resistance exceeds the base resistance level by more than an assigned limit, a controlled amount of alumina is added to the cell.

3,625,843

#### METHOD FOR TREATING BEER

Heinz Doeverspeck, Minden, Germany, assignor to Dr. Richard Eifer Wirtschaftsprüfungsgesellschaft und Steuerberatungsgesellschaft mit beschränkter Haftung, Luisenstrasse, Dortmund, Germany

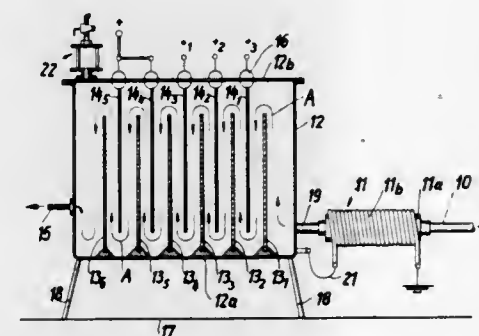
Filed Sept. 25, 1968, Ser. No. 762,492

Claims priority, application Germany, Sept. 26, 1967, P 16 67 029.4

Int. Cl. C12h 1/02; B01k 1/06

U.S. Cl. 204-139

4 Claims



The invention provides a method of and a device for treating disperse systems, preferably liquids, particularly beer, which device comprises at least one cascade container having an inlet and an outlet for the systems to be treated, a plurality of cascade barriers in the form of positive and negative carbon electrodes, and an induction coil connected to said cascade container on the upstream side of said inlet, said induction coil and said negative carbon electrodes being grounded in series.

3,625,844

#### STAINPROOFING PROCESS AND PRODUCTS RESULTING THEREFROM

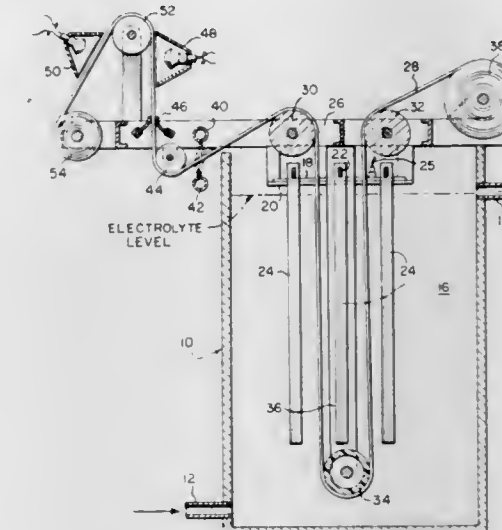
Walter A. McKean, Colonia, N.J., assignor to Circuit Foil Corporation, Bordentown, N.J.

Filed June 5, 1969, Ser. No. 830,789

Int. Cl. C23b 1/00, 5/58, 9/00

U.S. Cl. 204-140

6 Claims



An electrolytic process for imparting stain resistance to sheet copper comprising rendering the copper sheet cathodic in an electrolytic cell containing an aqueous electrolyte containing about 0.4-0.8 grams/liter of hexavalent chromium ions and subjecting said foil to a current density of about 2-4 amps/ft.<sup>2</sup> for about 6-8 seconds. Products resulting therefrom.

3,625,845

#### PARTICULATE GRAFTED CELLULOSE-POLYOLEFIN COMPOSITIONS

Yujiro Nakayama, and Masayuki Ogawa, both of Mie-ken, Japan, assignors to Mitsubishi Yuka Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 6, 1969, Ser. No. 805,005

Claims priority, application Japan, Mar. 8, 1968, 43/14640

Int. Cl. C08f 3/08, 29/50

U.S. Cl. 204-159.12

6 Claims

A composition for forming articles composed essentially of two thermoplastic polymers one of which is at least partially grafted on the other and a particle-form, cellulosic high-polymer substance impregnated with a thermoplastic polymer, and an effective method for producing such compositions which comprises imparting polymerization conditions to a mixture of a particle-form thermoplastic polymer, a particle-form, cellulosic high-polymer substance, and a vinyl monomer for producing the thermoplastic polymer.

3,625,846

#### CHEMICAL PROCESS AND APPARATUS UTILIZING A PLASMA

Henry Drummond Murdoch, and Stephen Mark Lesley Hamblin, both of Surrey, England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

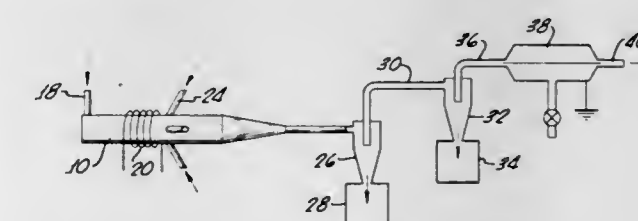
Filed June 17, 1968, Ser. No. 737,464

Claims priority, application Great Britain, July 3, 1967, 30,545/67

Int. Cl. C01b 35/00; B01k 1/00

U.S. Cl. 204-164

14 Claims



Process and apparatus for effecting chemical reaction in a plasma in which a plasma is formed by radio frequency



coupling, one reactant is fed into the plasma downstream from the center of the plasma and another reactant is fed into the plasma-forming stream or into the formed plasma. For example, very fine elemental boron can be produced by reduction of a boron halide with hydrogen.

3,625,847

# **DIRECT OXIDATION OF PROPYLENE TO PROPYLENE OXIDE**

Roland Weisbeck, Voiswinkel, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

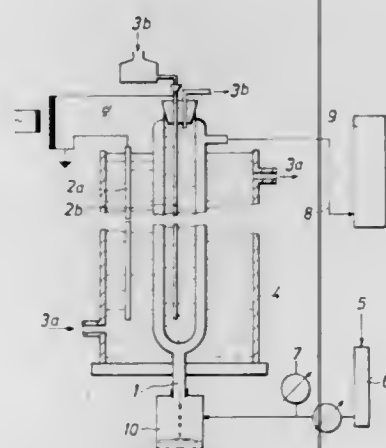
Filed Aug. 5, 1970, Ser. No. 61,130

Claims priority, application Germany, Aug. 14, 1969, P 19 41 378.6

Int. Cl. C07d 1/08; C07b 29/06; B01k 1/00

U.S. Cl. 204—169

14 Claims



Process for the direct oxidation of propylene to propylene oxide, comprising establishing an alternating electric current gas discharge in a circuit including a gap bounded on at least one side with a material of high-dielectric constant, the voltage being of such magnitude that a gas discharge plasma is established across said zone, continuously supplying to said gap a gaseous mixture of propylene and an oxygen-containing gas, and continuously withdrawing from said gap a gaseous mixture containing propylene oxide. The gap may be defined by two coaxial glass tubes. By use of particular frequencies and voltages and by inclusion of resistances and inductances in the circuit high yields and conversions can be achieved.

3,625,848

# **ARC DEPOSITION PROCESS AND APPARATUS**

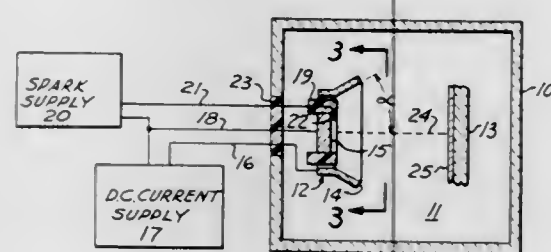
Alvin A. Snaper, 2800 Cameo Cir., Las Vegas, Nev.

Filed Dec. 26, 1968, Ser. No. 787,029

Int. Cl. C23c 15/00

U.S. Cl. 204—192

18 Claims



According to the present disclosure, a deposition process comprises emitting a beam of particles consisting of atoms and ions of source material, each particle having a kinetic energy between about 10 and 100 electron volts. The particles are deposited onto an object to coat the object with a thin film of source material. A beam gun is provided having an anode and a cathode and is supplied with current of such

magnitude as to cause an arc discharge to occur between the anode and cathode to emit the beam.

3,625,849

# **MANUFACTURE OF MAGNETIC MEDIUM**

Dietrich R. Rogalla, Boblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Sept. 24, 1969, Ser. No. 860,525

Claims priority, application Germany, Oct. 2, 1968, P 18 00 523.7

Int. Cl. C23c 15/00

U.S. Cl. 204—192

5 Claims

To make a magnetic record medium having high coercivity and low magnetostriction, an alloy consisting of a magnetic component and nonmagnetic component in a solid solution is applied by cathode sputtering to a nonmagnetic carrier, which is supported by a holder maintained at room temperature. The applied coating is heated at a temperature greater than 200° C. for more than 1 hour within an inert gas atmosphere, the assembly being annealed at a temperature of approximately 600° C.

3,625,850

# **SENSING DEVICE FOR FLUID MEDIA**

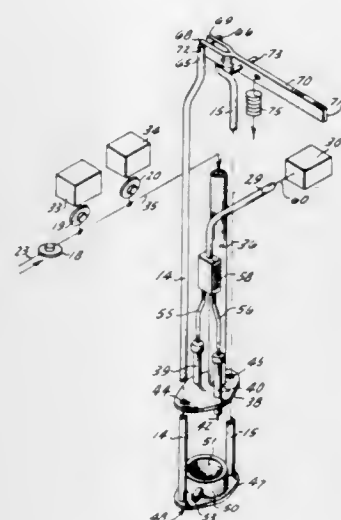
James R. Arrington, W203 S10630 North Shore Drive, Muskego, Wis.

Filed Feb. 16, 1970, Ser. No. 11,659

Int. Cl. G01n 37/30

U.S. Cl. 204—195

10 Claims



A device for sensing electrochemical conditions in a fluid media which permits the sensing electrodes to be selectively exposed to or protected from the fluid media. The device is equipped with means to deliver accessory agents such as cleaning solutions, buffering solutions and cleaning water and a cup assembly is provided at the end of the probe to seal off the electrodes from the surrounding media so that the electrodes can be cleaned and calibrated.

3,625,851

# **UNDERWATER REPLACEABLE REFERENCE ELECTRODE**

Isidore Geld, Flushing, N.Y., assignor to The United States of America as represented by the Secretary of the Navy  
Filed Nov. 24, 1969, Ser. No. 879,478

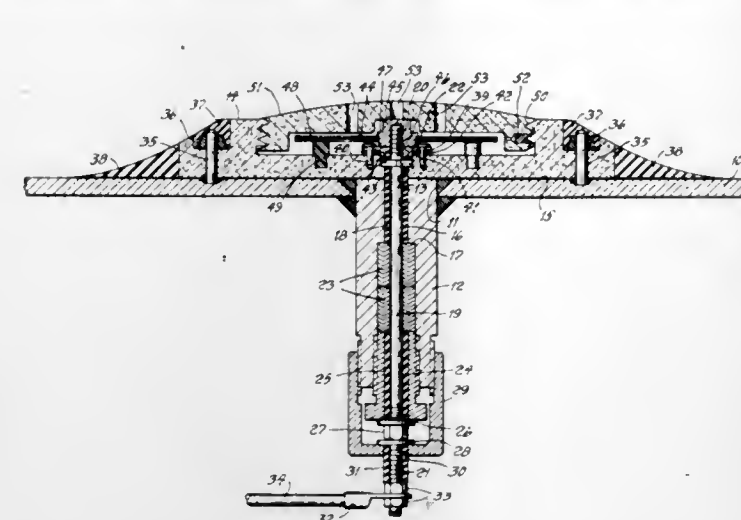
Int. Cl. C23f 13/00; G01n 27/30

U.S. Cl. 204—196

6 Claims

A series of layers of silver gauze are welded to a central silver nut to form a reference electrode. The electrode is threaded onto the end of a silver-plated phosphor bronze connecting rod which extends through a ship's hull by way of a waterproof stuffing tube. Interposed between the hull and the electrode is an insulating layer with the electrode spaced therefrom while the rod is provided with an electrically insulating outer layer to minimize the development of undesirable potentials between the rod and the stuffing tube. A

holder cover is situated over the reference electrode, permitting free flooding of the area proximate the electrode during the workpiece thickness, for example, by ultrasonic waves, and in response thereto preferentially, electrochemi-



without excessive turbulence so that the electrode can be employed to monitor and control the impressed cathodic protection system of the ship.

3,625,852

# **MARINE ANTIFOULING SYSTEM**

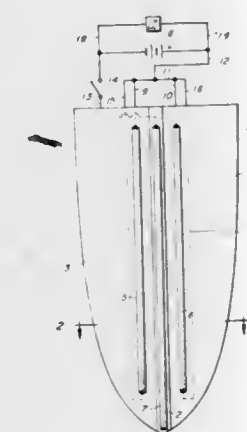
Edward P. Anderson, Livingston, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

Filed June 27, 1969, Ser. No. 837,223

Int. Cl. C23f 13/00

U.S. Cl. 204—196

3 Claims



A marine antifouling system for boat or ship hulls having a keel and sides diverging upwardly therefrom, the antifouling system comprising a pair of laterally spaced elongated anode electrode components each mounted externally on one side of the hull substantially adjacent the keel and lengthwise thereof, an elongated cathode electrode component mounted externally on and lengthwise of the keel in spaced relationship between the anode electrode components, a source of electrical current and electrical circuit means therefor for energizing the anode electrode components with a positive potential and the cathode electrode component with a negative potential with the cathode electrode component being electrolytically common to the anode electrode components.

3,625,853

# **PREFERENTIALLY SURFACE MACHINING PARTICULAR AREAS OF A WORKPIECE**

John Gowen Melvin, Deep River, Ontario, Canada; Alec Duncan McEachern, Harwell, Didcot, England, and John Gerald McManus, Ottawa, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Province of Ontario, Canada

Filed Oct. 25, 1968, Ser. No. 770,633

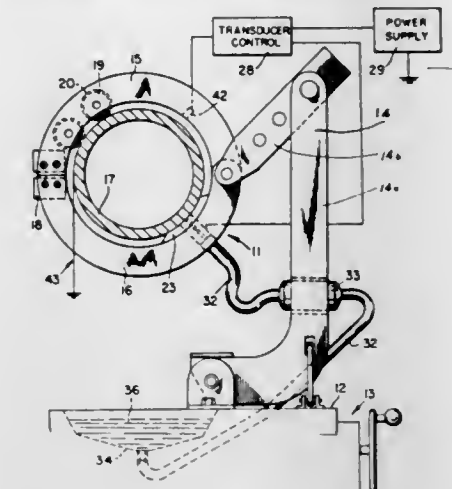
Claims priority, application Canada, Nov. 29, 1967, 6,191

Int. Cl. B23p 1/02; C23b 5/76

U.S. Cl. 204—224

4 Claims

The uniform thickness of a workpiece is achieved by mea-



cally machining the portions of the workpiece having increased thickness.

## **ERRATA**

For Classes 208—111, 208—179, 208—187, 210—10, 210—19, 210—23, 210—32, 252—1, 252—8, 252—32, 252—33, 252—49, 252—62, 252—75, 252—87, 252—89, 252—99, 252—107, 252—109, 252—121, 252—138, 252—142, 252—153 and 252—161 see: Patent Nos. 3,625,878 thru 3,625,910

3,625,854

## **OVEN-CLEANING COMPOSITION**

Bob G. Gower, Park Forest, and Hector J. Gonzalez, Hazel Crest, both of Ill., assignors to Sinclair Research, Inc., New York, N.Y.

Filed May 10, 1968, Ser. No. 728,323

Int. Cl. C09d 9/04; C11d 7/50; C23g 5/02

U.S. Cl. 252—171

6 Claims

An oven-cleaning composition comprising about 2 to 30 weight percent of an alkali metal or ammonium salt of a copolymer of styrene and maleic anhydride, the copolymer of styrene and maleic anhydride having a molecular weight of about 500 to 50,000 and a molar ratio of styrene to maleic anhydride of about 1:1 to 4:1; about 1 to 10 weight percent of a caustic material which can be an alkali metal oxide or hydroxide, an alkali metal silicate, or an alkanol amine; and about 60 to 97 weight percent water.

3,625,855

## **WHITE SMOKE COMPOSITION**

Bernard E. Douda, Bloomfield, Ind., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 3, 1969, Ser. No. 873,687

Int. Cl. C06d 3/00; C09k 3/30

U.S. Cl. 252—305

2 Claims

A composition having long burning time and producing high volume white smoke and being comprised of between 11 and 13 percent of magnesium, between 44 and 49 percent of zinc oxide, between 25 and 26 percent of a chlorinated organic compound, and between 14 and 22 percent of a nonacid-type binder.

3,625,856

## **METHOD OF PRODUCING ORGANOSOLS**

David P. Schaefer, Hinsdale, and James F. Kovarik, Berwyn, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Nov. 16, 1970, Ser. No. 90,147

Int. Cl. B01j 13/00

U.S. Cl. 252—309

12 Claims

A method of producing stable organosols, including pure metal oxide sols and coated silica sols, is accomplished by the



means of an extraction reagent and an organic, water-immiscible solvent.

3,625,857

# OIL SPILL DISPERSANT AND METHOD FOR EMPLOYING SAME

Dean R. Weimer, Ponca City, Okla., and James A. Wingrave, Emporia, Kans., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 4, 1968, Ser. No. 773,337

Int. Cl. B01j 13/00

U.S. Cl. 252-312

10 Claims

A composition for removing oil spills and a method for employing same is provided wherein the composition comprises from about 80 to 0 weight percent of an anionic surfactant or pine oil and from about 20 to 100 weight percent of a nonionic compound which contains from about 2 to 4 (CH<sub>2</sub>CH<sub>2</sub>O) units.

3,625,858

# LIQUID CONVERTER ASSEMBLY

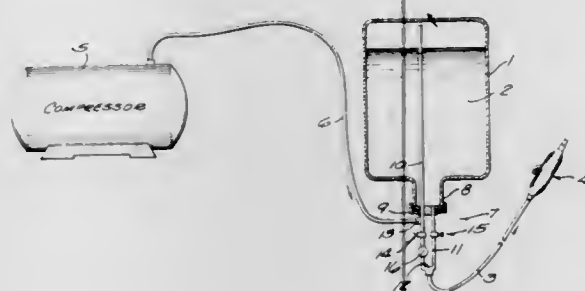
Phillip John Conn, 2526 West Brown St., Milwaukee, Wis.

Filed Aug. 8, 1969, Ser. No. 848,485

Int. Cl. B01d; B01f; B01j 13/00

U.S. Cl. 252-359 E

12 Claims



The disclosure includes a hair shampoo foam generator having a liquid shampoo within a bottle having an air tube and a liquid tube. An air compressor is connected to the air tube to pressurize the container and force the liquid out through the liquid tube. The compressor is also connected directly to the liquid tube to mix with the liquid forced outwardly through the liquid tube within a mixing length of the liquid tube, thereby generating a foam. The characteristic or wetness of the foam may be controlled by valves in the air and liquid tubes, which control the relative quantities of air and liquid introduced into the mixing tube portion.

3,625,859

# CORROSION INHIBITING COMPOSITION

Sei Hashimoto, and Kunihiro Hirose, both of Kyoto, Japan, assignors to San-Abbott Limited, Kyoto, Japan

Filed July 31, 1969, Ser. No. 846,612

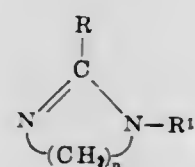
Claims priority, application Japan, Aug. 6, 1968, 43/55740

Int. Cl. C23f 11/10, 11/14

U.S. Cl. 252-392

8 Claims

Fatty acid addition salts of amines of the formula



wherein R and R' are inert radicals and together may form a methylene chain and n is 2, 3, 4 or 5, and compositions con-

taining such salts and specific extenders have been found to be effective corrosion inhibitors for aqueous and oil systems.

3,625,860

# PROCESS FOR REACTIVATING A REFORMING CATALYST

John A. Condasky, Tokyo, Japan; Robert E. Kline, Pittsburgh, and Stanley J. Kwolek, New Kensington, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 27, 1969, Ser. No. 853,487

Int. Cl. B01j 11/18, 11/80

U.S. Cl. 252-415

3 Claims

A method for activation and/or reactivation of noble metal-type catalysts employed in the reforming of hydrocarbons in the presence of hydrogen by treatment of such catalysts under particular conditions with a chloride-containing compound.

3,625,861

# REGENERATION OF ZINC HALIDE CATALYST USED IN THE HYDROCRACKING OF POLYNUCLEAR HYDROCARBONS

Everett Gorin, 439 Austin Ave., Pittsburgh, Pa.; Robert T. Struck, 2347 Morton Road, Pittsburgh, Pa., and Clyde W. Zielke, 195 Dell Ave., Pittsburgh, Pa.

Filed Dec. 15, 1969, Ser. No. 884,855

Int. Cl. B01j 11/80, 11/04

U.S. Cl. 252-416

10 Claims

Spent zinc halide cracking catalyst, prior to oxidation to remove impurities, is heated to carbonize organic residue to drive off volatiles, and to decompose zinc halide-NH<sub>3</sub> complex and drive off NH<sub>3</sub>.

3,625,862

# LIQUID COMPOSITIONS CONTAINING A PALLADIUM (II) COMPOUND AND THE USE THEREOF IN THE PRODUCTION OF VINYL ACETATE FROM ETHYLENE

Melvin J. Frearno, North Tonawanda, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 24, 1968, Ser. No. 732,000

Int. Cl. C07c 67/04

U.S. Cl. 252-429

6 Claims

A liquid composition containing acetic acid, up to 20 weight percent water, a palladium (II) compound, and copper and alkali metal salts which provide the following at specified concentrations: copper, lithium, sodium and potassium cations; and, acetate and chloride and/or bromide anions. Also, a method wherein such a composition is reacted with ethylene to produce vinyl acetate.

3,625,863

# PROCESS FOR THE PRODUCTION OF FIXED BED OXIDATION CATALYSTS

Karl-Heinz Heller, Moers; Claus Wulff, Krefeld-Bockum, Germany, and Ludwig Muller, New York, N.Y., assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 9, 1969, Ser. No. 856,496

Claims priority, application Germany, Oct. 5, 1968, P 18 01 401.2

Int. Cl. B01j 11/82

U.S. Cl. 252-437

3 Claims

Producing a precipitate from an aqueous solution of a vanadium compound and a phosphoric acid compound, drying the precipitate, calcining the product, which is not yet finally moulded, at temperatures between about 300° and 650° C. in the presence of air, then grinding and finally moulding it without applying elevated temperatures.

3,625,864

# POLYMERIZATION CATALYST SYSTEM ADDITIVES

Bertalan Horvath, Southern London, England, assignor to Phillips Petroleum Company

Filed Apr. 23, 1969, Ser. No. 818,803

Int. Cl. C08d 3/04

U.S. Cl. 252-430

10 Claims

A method of preparing a polymerization catalyst which involves impregnating a catalyst support with chromium oxide and a titanium complex formed by reacting a titanium alkoxide a compound selected from the group consisting of R'<sub>3</sub>Sn(OH) and R''<sub>3</sub>B(OH)<sub>3</sub> in which R' and R'' are selected from the group consisting of alkyl, aryl, and cycloalkyl radicals and combinations thereof.

3,625,865

# METHOD OF INCREASING HYDROCRACKING ACTIVITY AND/OR REDUCING HYDROCRACKING ACTIVITY DECLINE RATE OF CATALYST COMPRISING LAYERED CRYSTALLINE CLAY-TYPE ALUMINOSILICATE COMPONENT

James R. Kittrell, El Cerrito; Gordon E. Langlois, Lafayette, and John W. Scott, Jr., Ross, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 21, 1968, Ser. No. 769,376

Int. Cl. B01j 11/40

U.S. Cl. 252-455 R

9 Claims

The method of treating a catalyst comprising a layered crystalline clay-type aluminosilicate component, to restore thereto at least a portion of the hydrocracking activity lost by dehydration, or to prevent dehydration-caused activity decline thereof during hydrocracking process operation, which comprises adding water to said catalyst.

3,625,866

# ZEOLITIC DESICCANT BODIES AND PROCESS FOR PREPARING SAME

Robert Mark Conde, Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 24, 1969, Ser. No. 844,666

Int. Cl. B01j 11/40

U.S. Cl. 252-455 Z

8 Claims

Adsorbent bodies suitable for use in drying refrigerants comprise an agglomerate core of zeolitic molecular sieve crystals having thereon over substantially its entire outer surface a hardened permeable coating of a diaspore-clay mineral mixture, said coating being hardened by having impregnated therein cured potassium silicate.

3,625,867

# PROCESS FOR PRODUCTION OF METAL OXIDE-ANTIMONY OXIDE CATALYSTS

Takachika Yoshino, 80-3 Yamashitacho, NaKa-ku, Yokohama; Shigeru Saito, 28 Harumicho-1-chome, Fuchushi; Masukuni Sobukawa, 19, Kametakada-4-chome, Nakano-ku, Tokyo, and Tadao Shizokuishi, 447-26, Nagatacho, Minami-ku, Yokohama, all of Japan

Filed May 28, 1968, Ser. No. 740,849

Claims priority, application Japan, June 2, 1967, 42/34874

Int. Cl. B01j 11/06

U.S. Cl. 252-456

13 Claims

This invention provides an improved process for producing a metal oxide-antimony oxide catalyst, which comprises the steps of (a) heat treating an intimate mixture of the catalyst ingredients at a temperature of 200°-600° C. in the presence of a reducing gas or vapor having an electron donor character, said gas or vapor being present in an amount sufficient to make up a reducing atmosphere, (b) precalcining the resulting product at a temperature of 300°-600° C. in an oxidative atmosphere, and (c) calcining the precalcined product at a temperature of 800°-1,000° C. in an oxidative atmosphere. A precalcination and a final calcination similar to the steps (b) and (c), per se, are known; but the step (a) and the combination of steps (a), (b) and (c) are novel. The catalysts prepared by the present process are useful for oxidation and ammoxidation of olefins, and they exhibit an improved activity and an improved selectivity with respect to the objective product.

For example, iron (uranium or tin) oxide-antimony oxide catalyst supported on silica is prepared according to the present process wherein the step (a) is carried out by using NH<sub>3</sub> (H<sub>2</sub> or C<sub>2</sub>H<sub>6</sub>) with or without a diluent (N<sub>2</sub>, etc.) at 250°-400° C., and the step (b) and (c) are carried out in an airstream at 400°-550° C. and at 900°-950° C., respectively. The resulting catalyst is used for ammoxidation of propylene to acrylonitrile, and it exhibits improved conversion of propylene to acrylonitrile (≈71 percent) compared with the corresponding control catalyst not subjected to the step (a) treatment (≈66 percent).

3,625,868

# THIN SEMICONDUCTOR GROWTH LAYER ON ALUMINA DEFICIENT, CRUCIBLE-PULLED MAGNESIUM ALUMINUM SPINEL MONOCRYSTAL AS WELL AS THE METHOD FOR PRODUCING THE LAYER AND PRODUCING THE MONOCRYSTALS

Josef Grabmaier, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

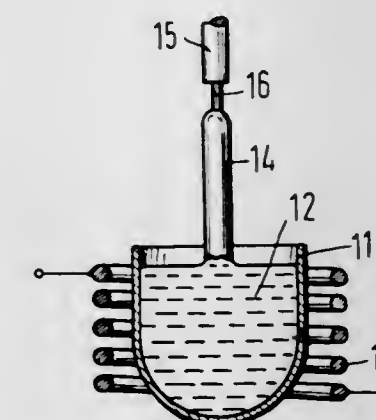
Filed June 16, 1969, Ser. No. 833,342

Claims priority, application Germany, June 20, 1968, P 17 69 635.4

Int. Cl. H01b 1/06

U.S. Cl. 252-521

11 Claims



Described are magnesium aluminum spinel monocrystals with a ratio of magnesia to alumina between 1:2.5 and 1:1. The crystals are pulled from a crucible. The surface of the crystals is used as a substrate for growing a semiconductor layer.

3,625,869

# METHOD OF INCREASING THE RESISTIVITY OF A DIPOLE SUSPENSION

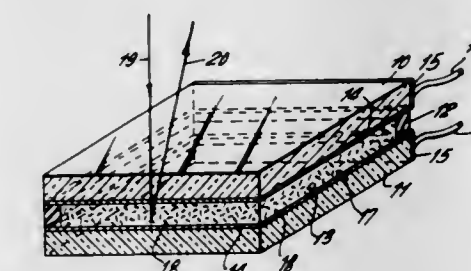
Alvin M. Marks, 153-16 Tenth Ave., Whitestone, N.Y.

Original application Aug. 28, 1965, Ser. No. 490,943, now Patent No. 3,341,274. Divided and this application July 17, 1967, Ser. No. 653,921

Int. Cl. H01b 1/00

U.S. Cl. 252-500

3 Claims



An electrically responsive light-controlling device in the form of a sealed thin tanklike member having a fluid suspension of light reflective dipoles therein. Electrically conductive layers are disposed on each major side of the tanklike



member to selectively impress an electrical potential across the suspension to align the dipoles. A method of increasing the resistivity of the dipole suspension is also disclosed.

3,625,870

# PROCESS FOR THE HALOALKYLATION OF CROSS-LINKED STYRENE COPOLYMERS

Amos Norwood, Philadelphia, Pa., assignor to Sybron Corporation, Rochester, N.Y.

Filed Mar. 4, 1969, Ser. No. 804,288

Int. Cl. C08f 27/02, 27/08, 19/12

U.S. Cl. 260—2.1 E

5 Claims

Haloalkylated aromatic compounds including polymers and copolymers having at least one substitutable nuclear hydrogen per aromatic nucleus are produced by reacting said compounds with an excess of a haloalkylating agent in the presence of a haloalkylating catalyst and zirconium tetrachloride.

3,625,871

# PROCESS FOR THE PRODUCTION OF MICROPOROUS SHEET STRUCTURES AND MICROPOROUS SHEET

Harro Traubel; Klaus König; Wolfgang Heydkamp, all of Leverkusen, and Karl Breer, Cologne, Flittard, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

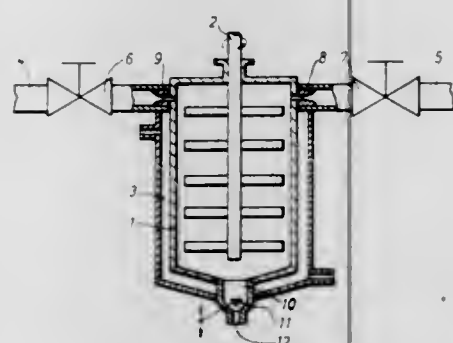
Filed May 7, 1968, Ser. No. 727,171

Claims priority, application Germany, May 12, 1967, F 52392

Int. Cl. B29d 27/04; C08g 22/00, 22/36, 22/44

U.S. Cl. 260—2.5 AY

13 Claims



Microporous sheet structures are prepared by reacting a polymeric polyamine having a molecular weight of from about 350 to about 6000 with substantially an equivalent amount of an organic polyisocyanate in the presence of a nonsolvent for the product, shaping the reaction mixture into a sheet structure before polyaddition is complete and removing the nonsolvent.

3,625,872

# FLAME-RESISTIVE POLYURETHANE FOAM COMPOSITION

Kaneyoshi Ashida, Tokyo, Japan, assignor to Nisshin Boseki Kabushiki Kaisha, Tokyo, Japan

Filed June 13, 1968, Ser. No. 736,571

Claims priority, application Japan, June 15, 1967, 42/37878

Int. Cl. C08g 22/06, 22/46, 51/10

U.S. Cl. 260—2.5 AK

8 Claims

This invention relates to flame-resistive, nonflammable foam compositions comprising a flame-resistive organic foam material and an inorganic filler. The flame-resistive organic foam material is produced by using an aromatic polyisocyanate having no ortho substituent, an active hydrogen-containing compound, a foaming agent and a catalyst and the inorganic filler is graphite, talc, or inorganic fiber or the like. The flame-resistive foam compositions are used as insulators for walls, chemical plants and tanks for storing a liquefied natural gas and other apparatus.

3,625,873

# POLYIMIDE HOLLOW SPHERES

Glenn R. Wilson, Dayton, Ohio, assignor to Monsanto Research Corporation, St. Louis, Mo.

Filed Nov. 9, 1967, Ser. No. 681,934

Int. Cl. B01j 13/02; C08j 1/14

U.S. Cl. 260—2.5 B

6 Claims

A method of making polyimide hollow spheres from a tetracarboxylic acid-ditertiary amine reaction product and an aromatic diamine in an aqueous solution.

3,625,874

# PHENOL-CYCLIC POLYOLEFIN REACTION PRODUCTS AS STABILIZERS FOR POLYMERS

Kirkwood S. Cottman, Akron; William S. Hollingshead, Cuyahoga Falls, and Ronald B. Spacht, Hudson, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 19, 1968, Ser. No. 706,656

Int. Cl. C08g 33/10, 49/04

U.S. Cl. 260—5

6 Claims

Reaction products of monocyclic and bicyclic diolefins with phenols as age resistors for polymers.

3,625,875

# ANAEROBIC ADHESIVE AND SEALANT COMPOSITIONS IN NONFLOWABLE FORM

Elliott Frauenglass, Newington, Conn., and William E. Cass, Wayland, Mass., assignors to Loctite Corporation, Newington, Conn.

Filed Feb. 29, 1968, Ser. No. 709,228

Int. Cl. C08f 3/66, 45/30

U.S. Cl. 260—17 A

10 Claims

Sheets, such as films and gasket material, and coatings which are adhesive in nature can be made from a thermoplastic polymer by plasticizing the polymer with an anaerobic adhesive, i.e., a mixture of a polymerizable liquid acrylate ester monomer and a peroxy polymerization initiator.

3,625,876

# VINYLDENE CHLORIDE POLYMER COATING COMPOSITION FOR THERMOPLASTIC FILMS

Chester W. Fitko, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 2, 1968, Ser. No. 742,027

Int. Cl. C08f 29/12

U.S. Cl. 260—23.7

6 Claims

A coating composition which has low gas transmission properties and is strongly adherent to thermoplastic film materials which comprises a solution in a volatile organic solvent of a vinylidene chloride polymer, a butadiene/acrylonitrile copolymer, an epoxidized unsaturated oil, an organic polyisocyanate and a free radical-producing catalyst.

3,625,877

# HIGH-MODULUS POLYCARBONATE COMPOSITIONS

Winston J. Jackson, Jr., and John R. Caldwell, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 561,370, June 29, 1966, now Patent No. 3,386,935, dated June 4, 1968,

which is a continuation-in-part of application Ser. No. 445,686, Apr. 5, 1965, now abandoned, Continuation-in-part

of application Ser. No. 372,093, June 2, 1964, now abandoned. This application Jan. 8, 1968, Ser. No. 696,124

Int. Cl. C08q 17/16

U.S. Cl. 260—24

13 Claims

This application discloses improved thermoplastic compositions particularly polycarbonates or polyesters prepared from aromatic dihydroxy compounds, which compositions have been modified with certain stiffening agents, which increase, for example, modulus, tensile strength and hardness, while lowering elongation. The stiffening agents are polar compounds which contain at least one atom selected from the group consisting of halogen, oxygen, nitrogen, and sulfur and wherein said polar compound contains at least two non-bridged rings, each ring containing from four to eight atoms,

and wherein said rings are either carbocyclic rings or heterocyclic rings, and wherein said polar compound has in at least 65 percent of the length of its molecule one dimension less than about 5.5 Angstrom units, and wherein said polar compound has a glass transition temperature greater than  $-50^{\circ}\text{C}$ .

3,625,878

# OXIDATION-RESISTANT MINERAL OIL

Henri Gourlaouen, Mont-Saint-Aignan; Christian Jahan, Bois-Guillaume; Robert Muths, Mont-Saint-Aignan, and Jean Taillardat, Mont-Saint-Aignan, all of France, assignors to Esso Research and Engineering Company

Filed Dec. 17, 1969, Ser. No. 885,970

Claims priority, application France, Dec. 30, 1968, 181618

Int. Cl. H01b 3/22

U.S. Cl. 208—14

19 Claims

A stable mineral oil composition comprises a base mineral oil to which has been added a synergistically acting mixture of heavy cycle gas oil and coal oil obtained from the distillation of coal tars. Preferably, at least one of the components of the composition has been subjected to mild hydrogenation.

3,625,879

# BENZENE FROM PYROLYSIS GASOLINE

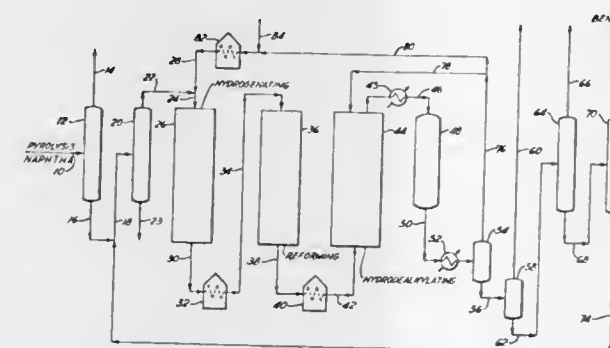
William A. Horne, Oakmont, and Ronald V. Luzar, Broomall, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 7, 1970, Ser. No. 1,099

Int. Cl. C10g 37/10, 39/00

U.S. Cl. 208—57

17 Claims



A process for the production and recovery of benzene from pyrolysis naphtha produced by high-temperature cracking of ethane, propane, naphtha or gas oil to produce ethylene. The process comprises the steps of hydrogenating a selected cut of pyrolysis naphtha to saturate olefins, reforming the hydrocarbon product from the hydrogenation step to convert benzene precursors to aromatic compounds and partially crack the nonaromatic hydrocarbons present and thereafter hydrodealkylating the hydrocarbon product from the reforming step to convert the alkyl aromatics to benzene and further crack nonaromatic compounds including those boiling at about the benzene boiling point, so that benzene may then be separated from the hydrodealkylation effluent by conventional distillation.

3,625,880

# CATALYSTS FOR THE SELECTIVE CONVERSION OF STRAIGHT-CHAIN HYDROCARBONS

Glen P. Hamner, Baton Rouge, and Ralph B. Mason, Denham Springs, both of La., assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 667,660, Sept. 14, 1967, now Patent No. 3,575,846, and a continuation-in-part of 637,911, May 12, 1967, now Patent No. 3,497,448.

This application Oct. 15, 1969, Ser. No. 866,742

Int. Cl. C10g 37/06; C07c 3/58; B01j 11/40

U.S. Cl. 208—111

16 Claims

Improved catalysts for the selective conversion of straight-chain hydrocarbons contained in a hydrocarbon feed comprise a synthetic, relatively small pore size crystalline alu-

mino-silicate zeolite. Preferably, the synthetic small pore size zeolite is combined with a metallic hydrogenation component and used in the selective conversion of low octane-producing normal paraffins to upgrade the hydrocarbon feed stock. The process is preferably conducted in the presence of added hydrogen at elevated temperatures and pressures.

3,625,881

# CRANK CASE OIL REFINING

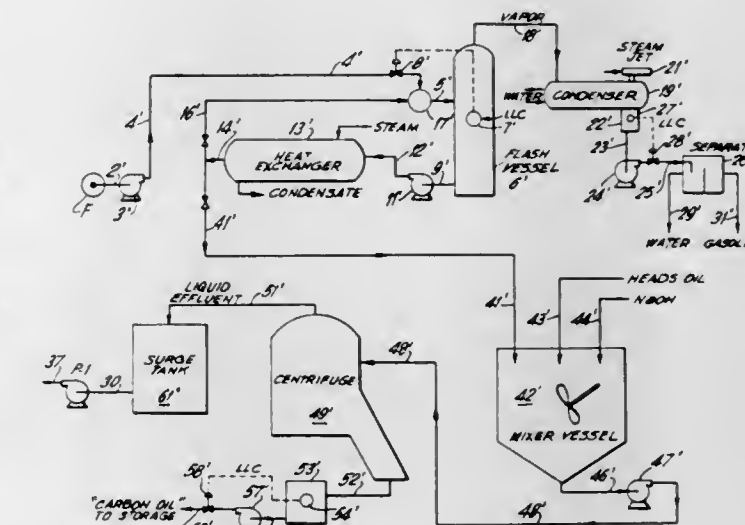
John M. Chambers, Westfield, N.J., and Herbert A. Hadley, Birdsboro, Pa., assignors to Berks Associates, Inc., Pottstown, Pa.

Filed Aug. 31, 1970, Ser. No. 68,389

Int. Cl. C10g 27/100

U.S. Cl. 208—179

14 Claims



Lubricating oils are reclaimed from used crankcase oils obtained from gasoline or diesel internal combustion engines, or mixtures thereof, by flash vaporization of substantially all the water content of the used oil at noncoking temperatures; admixing the dried oil with a hydrocarbon oil having an ASTM boiling range of about  $150^{\circ}\text{--}250^{\circ}\text{F}$ . and a 50 percent point of about  $200^{\circ}\text{F}$ ., to precipitate carbonaceous solids; said admixing taking place in the presence of a concentrated aqueous alkali metal hydroxide in a minor amount and at a moderately elevated temperature; centrifugally separating the solid precipitate from the treated liquid oil admixture; subjecting the separated treated liquid oil admixture to a first fractional distillation under conditions which will preclude coking or degradation of the lubricating components thereof; removing undesirable water-soluble components from a water-containing overhead fraction; and subjecting the bottoms fraction to a second fractional distillation to obtain lubricating oil cuts and a usable bottoms product. The water from the flash vaporization may be combined with the water-containing overhead fraction for removal of undesirable water-soluble components.

3,625,882

# CLARIFYING OIL-CONTAMINATED WATER BY FLOTATION IN A CLOSED SYSTEM

Logan C. Waterman, 3634 Locke Lane, Houston, Tex.

Filed Oct. 31, 1968, Ser. No. 772,081

Int. Cl. C10g 33/00

U.S. Cl. 208—187

5 Claims

A clarifier for oil-contaminated water from a desalter or other source, the water being clarified by gas flotation effected in a closed vessel having an upper inclined wall guiding the oily waste material to a collection zone of the vessel without the use of mechanical surface skimmers. The flota-







3,625,896

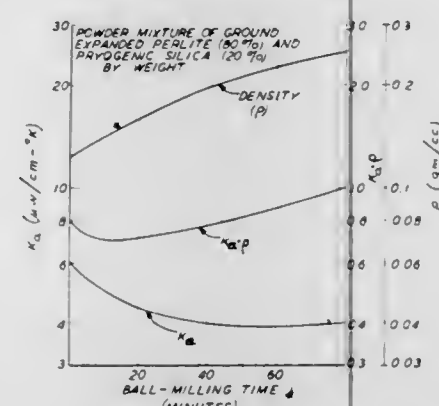
# THERMAL INSULATING POWDER FOR LOW-TEMPERATURE SYSTEMS AND METHODS OF MAKING SAME

Bradley S. Kirk, Plainfield, and Chester B. De Savigny, Millington, both of N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Filed June 7, 1968, Ser. No. 735,465  
Int. Cl. F161 59/02, 59/08; B32b 19/04

U.S. Cl. 252-62

14 Claims



A thermal insulation powder for a cryogenic-evacuated insulation system, consists of an improved mixture of an opacifying powder and a low-density powder having high resistance to heat conduction. Ground expanded perlite is a preferred example of the opacifier, and pyrogenic silica is a preferred example of the low-density powder, the latter being in the form of agglomerates between the comparatively coarse particles of the perlite, and making up about one-half or more of the mixture by volume. This preferred mixture is compatible with oxygen. More effective interposition of the agglomerates between the opacifier particles for improving thermal insulation properties is achieved by impact-milling the mixture for a definite period of time.

3,625,897

# LIQUID DEVELOPING AGENT FOR ELECTROPHOTOGRAPHY

Hazime Machida, and Zenjiro Okuno, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed June 11, 1969, Ser. No. 832,416

Claims priority, application Japan, June 19, 1968, 43/41885  
Int. Cl. G03g 9/04

U.S. Cl. 252-62.1

6 Claims

A liquid developing agent for electrophotography comprising a mixed solution consisting of an insulating carrier liquid containing an organic substance having carboxyl group and a colored solution prepared by solving or dispersing a dye and an amine in a polar solvent which is not miscible with the aforementioned carrier liquid.

3,625,898

# METHOD OF MANUFACTURING A CERAMIC, POLYCRYSTALLINE, MAGNETICALLY ANISOTROPIC SPINEL FERRITE BODY

Ferdinand Clemens Maria Driessens, Nijmegen; Henricus Franciscus Johannes Ignatius Giller, Emmasingel, Eindhoven, and Dirk Veeneman, Emmasingel, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 856,187

Claims priority, application Netherlands, Sept. 7, 1968,

6812815

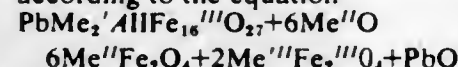
Int. Cl. C01g 49/00; C04b 35/20

U.S. Cl. 252-62.58

9 Claims

The manufacture of a ceramic, polycrystalline, magnetically anisotropic spinel ferrite bodies by sintering a mixture

containing crystals of a compound  $PbMe''Fe''O_{27}$  and/or of the compound  $PbFe_{12}''O_{19}$ , the magnetic preferential axes or magnetic preferential planes of said crystals in said mixture being, to a certain extent, oriented mutually parallel, in which the above-mentioned spinel ferrite bodies are formed as the product of a topotactical reaction which mainly occurs according to the equation



and/or according to the equation



wherein  $Me''$  and  $Me'''$  both represent at least one (possibly all the same) representative of the group formed by the bivalent elements  $Fe''$ ,  $Ni''$ ,  $Mn''$ ,  $Co''$ ,  $Zn$ ,  $Mg$ ,  $Cu''$  and the bivalent combination  $(Li' + Fe''')/2$  and wherein  $Fe'''$  may be partly replaced by  $Al$  and/or  $Cr'''$  and/or at least one of the trivalent combinations  $(Me'' + Ti''')/2$  and  $(Me'' + Sn''')/2$

3,625,899

# WATER-INSENSITIVE HYDRAULIC FLUIDS CONTAINING BORATE ESTERS

Arthur W. Sawyer, Hamden, and David A. Csejka, Orange, both of Conn., assignors to Olin Mathieson Chemical Corporation

Continuation-in-part of application Ser. No. 653,338, July 14, 1967. This application Apr. 1, 1968, Ser. No. 717,996  
Int. Cl. C09k 3/00; C10m 3/48

U.S. Cl. 252-75

24 Claims

A water-insensitive hydraulic fluid composition comprising from about 54.5 to about 92 percent by weight of at least one borate ester, from 0 to about 20 percent by weight of a polyoxyalkylene glycol and from about 3 to about 43 percent by weight of a glycol monoether or diether diluent together with minor amounts of an alkaline buffer and an antioxidant, if desired. Such water-insensitive hydraulic fluids are high boiling compositions suitable for use as brake fluids.

3,625,900

# PREFUSED DESCALING BATH CONSTITUENT AND METHOD OF MAINTAINING A CONSTANT CHEMICAL COMPOSITION OF A BATH

Robert H. Shoemaker, Royal Oak, and William G. Wood, Grosse Pointe Park, both of Mich., assignors to Kolene Corporation, Detroit, Mich.

Filed Jan. 22, 1968, Ser. No. 699,342

Int. Cl. C23b 1/06; C23g 1/28

U.S. Cl. 252-87

19 Claims

A prefused and solidified salt for use in forming a metal-conditioning bath and for additives to existing baths. The salt is a uniform solid solution of an alkali metal hydroxide, a nitrate salt, and water.

3,625,901

# SURFACE ACTIVE DISHWASHING RINSE AIDS

Larry M. Rue, Inver Grove Heights; Dale W. Groth, Bloomington; Alan W. Leipnitz, Burnsville; Thomas E. Brunelle, West St. Paul, and Samuel B. Crecelius, Mendota Heights, all of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Dec. 2, 1969, Ser. No. 881,614

Int. Cl. B01f 17/42; C11d 1/825

U.S. Cl. 252-89

1 Claim

Surfactants having a combination of foaming, defoaming and sheeting properties desired for use as dishwashing rinse aids which are comprised of condensation products of alkylene oxides with tall oil heads.

3,625,902

# METHOD OF PREPARING AGGLOMERATED DETERGENT COMPOSITION

Clark A. Sumner, Downey, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 11, 1968, Ser. No. 764,634 The portion of the term of the patent subsequent to Sept. 28, 1988, has been disclaimed.

Int. Cl. C11d 7/56

U.S. Cl. 252-99

5 Claims

A method of producing agglomerates of detergent ingredients by charging particulate detergent ingredients into an agglomeration zone and maintaining a falling curtain of said ingredients in said zone, contacting said particulate material in said falling curtain with liquid material to agglomerate said particulate material, maintaining a tumbling bed of agglomerating ingredients at the base of said falling curtain and withdrawing agglomerated material from said agglomeration zone.

3,625,903

# SOAP BAR

James Francis Davies, Bromborough, and Wai Ming Cheng, Ellesmere Port, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 16, 1968, Ser. No. 721,610

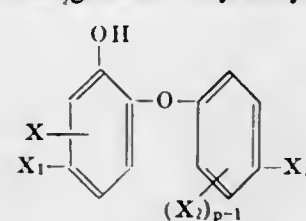
Claims priority, application Great Britain, Apr. 27, 1967, 19,548/67

Int. Cl. C11d 3/48

U.S. Cl. 252-107

3 Claims

The discoloration of certain antibacterial compounds, halogenated o-hydroxydiphenyl ethers of the general formula



where  $X_1$  and  $X_2$  are chlorine  $X$  and  $X_2$  are H or chlorine and  $p$  is a whole number from 1 to 5, in a soap bar is reduced by including in the soap bar from 1 to 15% of free  $C_{8-22}$  straight-chain fatty acid.

3,625,904

# WASHING AGENTS, WASHING ADJUVANTS AND CLEANING AGENTS CONTAINING ANTIMICROBIAL SUBSTANCES

Heinz Gunter Nosler, Monheim Rhineland; Harald Schnegeler, Hilden Rhineland; Horst Beilinger, Dusseldorf, and Kurt Rehne, Dusseldorf, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed July 8, 1968, Ser. No. 743,032

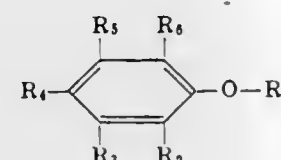
Claims priority, application Germany, July 13, 1967, H 63270

Int. Cl. C11d 3/48

U.S. Cl. 252-107

25 Claims

Antimicrobial washing and washing adjuvant preparations comprising (a) from 1 percent to 30 percent by weight of a substituted phenyl ether antimicrobial component of the formula



wherein  $R_1$  is a member selected from the group consisting of alkyl having one to four carbon atoms, alkenyl having one to

four carbon atoms, haloalkyl having one to four carbon atoms, hydroxyalkyl having one to four carbon atoms and alkoxyalkyl having one to four carbon atoms and  $R_2$ ,  $R_3$ ,  $R_4$ , and  $R_5$  are members selected from the group consisting of hydrogen, alkyl having one to four carbon atoms, halogen, trifluoromethyl, phenyl and nitro and (b) from 99 percent to 70 percent by weight of customary water-soluble components of washing and washing adjuvant preparations, wherein solvents may also be present in addition to components (a) and (b).

3,625,905

# DETERGENT COMPOSITION HAVING SOFTENING PROPERTIES

Marvin C. Weast, Anaheim, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Filed Nov. 22, 1967, Ser. No. 684,959

Int. Cl. C11d 9/10, 3/065

U.S. Cl. 252-109

19 Claims

Simultaneous cleansing and softening of fabrics is achieved by use of an aqueous solution of a mixture of synthetic organic noncationic detergent and an alkali metal salt of isostearic acid as the fabric wash water.

3,625,906

# SOAP-DETERGENT TABLETS

Allan Alsbury, and Dennis Parker Barrett, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,613

Claims priority, application Great Britain, Nov. 16, 1967, 52,254/67

Int. Cl. C11d 1/14, 9/32, 9/48

U.S. Cl. 252-121

7 Claims

Personal washing tablets consisting essentially of a soap and an alkali metal or alkaline earth metal sulfate of a primary alcohol 10-75 percent of the molecules of said alcohol being branched, and wherein the soap content is 90-40 percent by weight of the combined contents of the soap and the sulfate.

3,625,907

# CORROSION INHIBITED PAINT REMOVING COMPOSITION

Myer Rosenfeld, Baltimore, and Troy R. Nichols, Bel Air, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 1, 1969, Ser. No. 881,266

Int. Cl. C09d 9/04; C23f 1/118

U.S. Cl. 252-138

8 Claims

A paint-removing formulation comprising a mixture of: sodium metasilicate pentahydrate, trisodium phosphate dodecahydrate, monosodium phosphate monohydrate, dodecylbenzene sodium sulfonate in conjunction with a small amount of an inhibitor consisting of sodium stannate tetrahydrate or potassium stannate tetrahydrate. In the alternative, the anhydrous forms of the above components may be utilized.

3,625,908

# COMPOSITION FOR CLEANING PHOTOGRAPHIC EQUIPMENT

Irving J. Magin, Rochester, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed June 24, 1968, Ser. No. 739,173

Int. Cl. C11d 7/02, 7/08

U.S. Cl. 252-142

8 Claims

An acidic aqueous cleaning solution for removing deposits from photographic equipment, especially continuous processing photographic equipment. The composition comprises a solution and preferably an aqueous solution of hydrogen ions in a concentration of from 0.10 to 8.0 moles per liter, ammonium ions in a concentration of from 0.01 to 1.0 moles per liter, and sulfate ions in a concentration of from 0.10 to 6.0 moles per liter. The compositions of this in-



vention are especially useful for removing deposits from continuous diffusion transfer processing equipment. These deposits possibly comprise lime introduced with tap water mixed with photographic chemicals such as dissolved silver halides and gelatin.

3,625,909

# LOW-FOAMING, STAIN-REMOVING AGENTS FOR TEXTILES

Markus Berg, Dusseldorf, Holthausen, and Josef Hartenstein, Hilden, Rhineland, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany  
Filed Oct. 5, 1967, Ser. No. 672,964

Claims priority, application Germany, Nov. 18, 1966, H 61018

Int. Cl. C11d 1/18, 1/12

U.S. Cl. 252—153

5 Claims

The present invention relates to liquid, low-foaming, spot-removing agents consisting of

A. from 25 percent to 45 percent by weight of a water-soluble compound of the formula

$R_1-(O-CH_2-CH_2)_x-(O-CH-CH_2)_y-OH$  wherein  $R_1$  represents a straight-chained hydrocarbon having from 16 to 24 carbon atoms selected from the group consisting of alkyl, alkenyl and alkadienyl, and  $x$  and  $y$  represent integers of from 20 to 40,

B. from 25 percent to 45 percent by weight of a substantially water-insoluble compound of the formula

$R_2-(O-CH_2-CH_2)_x-OH$  wherein  $R_2$  represents a straight-chained hydrocarbon having from 14 to 22 carbon atoms selected from the group consisting of alkyl, alkenyl and alkadienyl, and  $x$  represents an integer of from one to eight,

C. from 2 percent to 10 percent by weight of a hydrotropic alkali metal salt of an alkylated benzenesulfonate, the alkyl groups in said alkylated benzenesulfonate having from one to three carbon atoms,

D. from 1 percent to 15 percent by weight of water, and  
E. from 2 percent to 50 percent by weight of organic solvents having boiling points between the temperatures of 50° C. and 350° C., said liquid, low-foaming spot-removing agent having a viscosity not exceeding 500 cP at a temperature of 20° C.

3,625,910

# HYDROGENATED OLEFIN SULFONATE DETERGENT BARS

William Alan Sweeney, San Rafael, and Gar Lok Woo, Tiburon, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed July 29, 1968, Ser. No. 748,188

Int. Cl. C11d 1/12

U.S. Cl. 252—554

11 Claims

Nonsoap detergent toilet bars are prepared from a complex mixture of hydrogenated olefin sulfonates containing from 10 to 24 carbon atoms and a plasticizing amount of water.

3,625,911

# POLYAMIDE/IMIDE POLYMER DERIVED FROM TRIMELLITIC ANHYDRIDE AND ORGANIC DIISOCYANATE AND THE ENAMELING OF WIRE THEREWITH

Edward G. Redman, Cincinnati, Ohio, and Jack S. Skinner, Pittsburgh, Pa., assignors to Mobil Oil Corporation  
Continuation-in-part of application Ser. No. 506,837, Nov. 8, 1965, now abandoned. This application June 28, 1968, Ser. No. 741,228

Int. Cl. C08g 22/04, 22/32

U.S. Cl. 260—30.2

6 Claims

Wire coating solutions are provided by reacting trimellitic anhydride with an organic diisocyanate in substantially equimolar proportions, the reaction being carried out at a moderate temperature up to about 275° F. in organic solvent solution medium to produce an amide reaction product having a single anhydride group and a single isocyanate group. The amide-forming reaction is continued until the theoretical

amount of carbon dioxide is removed. The reaction product is then blocked with a monofunctional blocking agent such as phenol in order to block the isocyanate functionality and convert the anhydride functionality to a carboxy ester. Polymerization is then carried out by raising the temperature to progressively unblock the isocyanate functionality for reaction with the free carboxy groups which are available. This polymerization produces an organic solvent-soluble polyamide polymer in solution in the solvents used. When the polyamide polymer is coated on a base such as wire and baked, the phenol blocking agent is removed and insolubilization takes place primarily by imide formation.

3,625,912

# POLYIMIDE LACQUERS

Gerald G. Vincent, Barrington, and Thomas E. Anderson, Palatine, both of Ill., assignors to DeSota, Inc., Des Plaines, Ill.

Filed July 26, 1968, Ser. No. 747,799

Int. Cl. C08g 51/26, 51/44, 20/32

U.S. Cl. 260—30.2

12 Claims

A bis-maleimide is reacted with a diprimary amine in organic solvent medium at a temperature of about 150° C. and present in molar proportions of about 1:1 to produce organic solvent-soluble polymers which thermoset on baking.

3,625,913

# "N'-ALKYL, AND N'-ARYL-N-FLUORENYL-P-PHENYLENE-DIAMINES AS ANTIOZONANTS IN NATURAL AND SYNTHETIC DIENE RUBBERS"

Jerry Donald Hunt, Cuyahoga Falls, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 22, 1969, Ser. No. 827,059

Int. Cl. C08f 45/28, 45/60

U.S. Cl. 260—33.6 AQ

9 Claims

N'-alkyl- and N'-aryl-N-fluorenyl-p-phenylenediamines are new compounds. They are antiozonants in natural and synthetic diene rubbers.

3,625,914

# CONTINUOUS PROCESS FOR MAKING STABILIZED DISPERSION OF POLYMER IN ORGANIC LIQUID BY POLYMERIZING ETHYLENICALLY UNSATURATED MONOMER

Morice William Thompson, Maldenhead, England, assignor to Imperial Chemical Industries Limited, London, England  
Filed June 24, 1968, Ser. No. 739,168

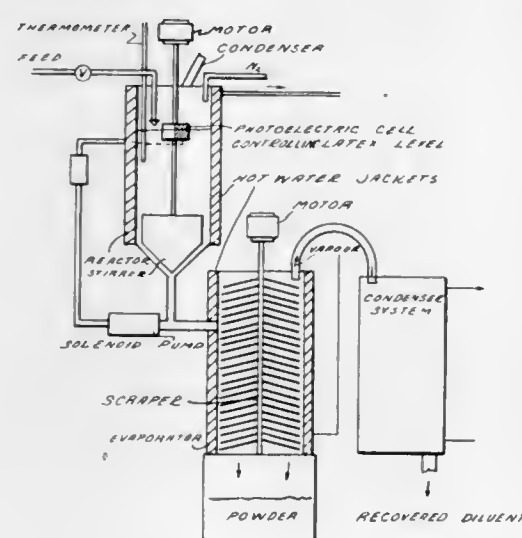
Claims priority, application Great Britain, June 30, 1967,

30,353/67

Int. Cl. C08f 47/20; C08j 1/48

U.S. Cl. 260—34.2

6 Claims



In a continuous process of making polymer in disperse form, ethylenically unsaturated monomer is fed diffusely, together with a dispersion stabilizer and an organic liquid,

into the upper portion of a reaction mixture comprising a dispersion of polymer in the organic liquid contained in a reaction vessel of greater height than average width. A corresponding amount of polymer dispersion is drawn off from the bottom of the vessel. The reaction mixture may be stirred to prevent sedimentation of the disperse polymer but the upper and lower portions of the reaction mixture should not be mixed.

3,625,915

# ANTISTATIC STYRENE/ACRYLONITRILE-TYPE INTERPOLYMER COMPOSITIONS

Michel Gubler, Meurichin, and Joseph Guillon, Henin-Lietard, both of France, assignors to Societe Monsanto, Paris, France

Filed Feb. 9, 1968, Ser. No. 704,241

Claims priority, application Great Britain, Feb. 17, 1967,

7,752/67

Int. Cl. C08f 19/18, 41/12, 45/02

U.S. Cl. 260—41 R

11 Claims

The electrostatic properties characteristically associated with styrene/acrylonitrile-type interpolymers is greatly reduced by blending with such polymers a combination of certain alkanolamines and certain polyalkylene glycols.

3,625,916

# SYNTHETIC PLASTIC DENTAL ADHESIVE

George V. Newman, West Orange, N.J., assignor to Ortho International Services Inc., Wilmington, Del.

Filed July 3, 1968, Ser. No. 742,126

Int. Cl. A61k 5/00; C08f 29/36, 45/04

U.S. Cl. 260—41 A

10 Claims

A dental adhesive for securing orthodontic appliances to the tooth which is limitedly resilient and nonfriable, which permits removal of the appliance by steady pressure without dangerous impact and which attenuates dental decay at and about the interface between the appliance and the tooth; the adhesive comprising synthetic plastics in both a liquid and solid phase which polymerize upon mixing of the phases to form a relatively rapidly setting adhesive.

3,625,917

# ORGANOSILICON MATERIALS

Bruce A. Ashby, Schenectady, N.Y., assignor to General Electric Company

Original application Dec. 16, 1963, Ser. No. 330,607, now Patent No. 3,360,538. Divided and this application Sept. 20, 1967, Ser. No. 679,948

Int. Cl. C08f 11/04; C08g 51/04

U.S. Cl. 260—46.5

3 Claims

Organopolysiloxane cyclics and polymers are provided which are substituted with fluorinated monovalent hydrocarbon radicals of the formula,  $H(C_2F_4)_nCHR-CR_2$ , attached to silicon by carbon silicon linkages, where  $R$  is selected from hydrogen and a lower alkyl radical, and  $n$  is an integer equal to from 1 to 3, inclusive. The above, organosiloxane materials substituted with fluorinated monovalent hydrocarbon radicals can be employed to make a variety of oil resistant polymers and copolymers.

3,625,918

# ADDUCTS OF POLYEPOXIDES AND CYCLOALIPHATIC DIPRIMARY DIAMINES AND AS CURING AGENTS IN EPOXY RESIN COMPOSITIONS

Alfred Heer, Basel, and Peter Ruf, Binningen, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland  
Filed June 18, 1968, Ser. No. 737,833

Claims priority, application Switzerland, June 22, 1967,

8944/67

Int. Cl. C08g 30/14

U.S. Cl. 260—47 EN

10 Claims

Process for the manufacture of new adducts of polyepoxides and polyamines suitable for use as curing agents for

3,625,919

# PROCESS FOR THE PREPARATION OF DIAZOTIZED VINYLPHENOL POLYMERS HAVING PHOTOTROPIC PROPERTIES

Hiroyoshi Kamogawa, 809, Mizonokuchi, Kawasaki-shi, and Masao Kato, 955-10, Shimonagaya-cho-Sherigaya, Minami-ku, Yokohama, both of Japan

Filed Feb. 8, 1968, Ser. No. 703,864

Claims priority, application Japan, Feb. 10, 1967, 42/8719

Int. Cl. C08f 7/10

U.S. Cl. 260—47 U

9 Claims

Polymers having optical specificity which have a saturated hydrocarbon polymer chain and pendant phenol groups which are the coupled reaction products of phenol and a diazonium salt. These polymers may be prepared by coupling a diazonium salt with vinylphenol and then copolymerizing with at least one vinyl compound. Alternatively, a homopolymer formed from the vinylphenol monomer or a copolymer formed from the vinylphenol monomer with another vinyl monomer are reacted with a diazonium salt to couple said salt with the phenol groups.

3,625,920

# PROCESS FOR THE PRODUCTION OF CARBONIC ACID POLYESTERS

Jan Borkowski, Warszawa, Poland, assignor to Instytut Tworzyw Sztucznych Warszawa, U.L., Rydygiera, Poland

Filed May 3, 1968, Ser. No. 726,544

Claims priority, application Poland, May 5, 1967, 120,392

Int. Cl. C08g 17/13

U.S. Cl. 260—47

8 Claims

Process for producing polycarbonate by transesterification reaction between aromatic monohydroxycarbonic ester and dihydroxy diphenyl alkane or phenol adduct thereof in presence of alkali metal salt of fluoroboric acid and/or hydroxyfluoroboric acid as catalysts and stabilizers.

3,625,921

# POLYURETHANE COATING COMPOSITIONS PREPARED FROM 4,4'-METHYLENE BIS(CYCLOHEXYLISOCYANATE) AND POLYETHER TRIOL BLENDS

George S. Wooster, Hamburg, and Frank M. Delgado, Tona-wanda, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 15, 1968, Ser. No. 729,378

Int. Cl. C08q 22/06

U.S. Cl. 260—77.5 AT

1 Claim

Novel polyurethane coating compositions characterized by excellent curing properties are prepared from 4,4'-methylene bis(cyclohexylisocyanate) and mixtures of polyether triols.

3,625,922

# METHOD FOR PREVENTING ELECTRIFICATION OF SYNTHETIC HIGH POLYAMIDES

Satoshi Ando, Osaka, and Kyochi Fujimura, Ibaraki, both of Japan, assignors to Kanagafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa, Milan, Italy

Filed Apr. 25, 1968, Ser. No. 724,266

Claims priority, application Japan, May 5, 1967, 42/28563

Int. Cl. C08g 20/38

U.S. Cl. 260—78 R

2 Claims

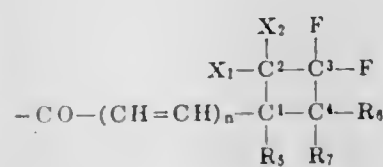
Synthetic high polymers, such as polyamides, polyolefins, polystyrenes, polyvinyl chloride, polyvinylidene chloride, copolymers thereof and polymer blends thereof can be prevented from electrification by incorporating homogeneously imidazole or its derivatives into said high polymers. The



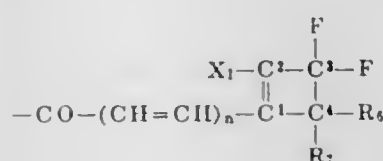




in which Pc represents phthalocyanine, tetrphenylphthalocyanine, tetrachlorophthalocyanine or the copper, cobalt or nickel compound thereof, A represents the radical  $-D-N=N-K-$  or  $-K-N=N-D-$ , in which D represents the radical of a diazo component of the benzene, naphthalene, diphenyl, diphenylether or stilbene series, and K the radical of a coupling component of the benzene, naphthalene, acetylacetacidarylamide or pyrazolone series, R<sub>1</sub> and R<sub>2</sub> each represents hydrogen or alkyl or aryl or together with the nitrogen atom an alkylene-imine ring, R<sub>3</sub> and R<sub>4</sub> each represents hydrogen or alkyl from 1 to 4 carbon atoms, a, b and c represent integers from 1 to 4, the sum of which being at most 6, and Z represents the grouping of the formula (2)



or the grouping of the formula (3)



wherein R<sub>3</sub>, R<sub>6</sub> and R<sub>7</sub> stand for hydrogen, chlorine, hydroxyl, alkyl, alkoxy, phenyl, phenoxy, cyano, nitro, sulfonic acid, carboxylic acid alkyl ester, N-monoalkylsulfonic acid amide, N-dialkylsulfonic acid, alkylsulfonyl, phenylsulfonyl, N-monoalkyl carboxylic acid amide or N-dialkylcarboxylic acid amide group, or R<sub>3</sub> and R<sub>7</sub> a double linkage between C<sup>1</sup> and C<sup>4</sup>, X<sub>1</sub> and X<sub>2</sub> represent halogen atoms, and n represents the integer 0 or 1, said dyestuffs being suitable for the dyeing or printing of fibrous materials consisting of native or regenerated cellulose, wool, silk or polyamides as well as leather, the dyeings or prints obtained on the said fibrous materials being distinguished by high tinctorial strength and by a very good fastness to wet processing and to light.

3,625,937

## CHROMIUM MIXED COMPLEX AZO DYESTUFFS

Walter Scholl, Cologne, Stammheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 19, 1968, Ser. No. 699,021

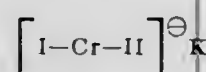
Claims priority, application Germany, Jan. 26, 1967, F 51352

Int. Cl. C09b 45/06, 45/16; D06p 1/10

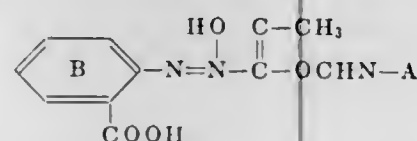
U.S. Cl. 260—145 B

6 Claims

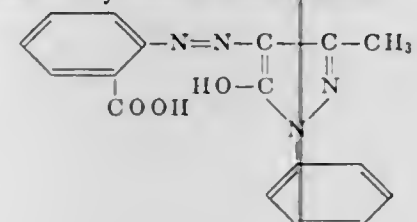
Chromium complex azo dyestuffs suitable for dyeing and printing nitrogen containing fiber materials particularly wool, silk, synthetic polyamides and polyurethanes in shades of yellow to orange color with improved fastness properties of the general formula



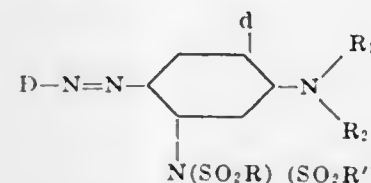
wherein K is a monovalent cation, I is a monoazo dyestuff of the formula



and II is a monoazo dyestuff of the formula



3,625,938  
PHENYL-AZO-PHENYL DYESTUFFS  
Ved Parkash Kubba, Bombay, India, assignor to Ciba Limited, Basel, Switzerland  
Filed Feb. 13, 1968, Ser. No. 705,027  
Claims priority, application Switzerland, Feb. 21, 1967, 2515/67  
Int. Cl. C07c 107/06; C09b 29/06  
U.S. Cl. 260—205  
Monoazo dyestuffs of the formula



wherein D monocyclic or bicyclic diazo residue; d is hydrogen, alkyl, or alkoxy; R is alkyl, R' is alkyl or aryl; and R<sub>1</sub> and R<sub>2</sub> are hydrogen, alkyl, alkyl-carbonyloxy alkyl, hydrogen ethyl or cyanoethyl only one of R<sub>1</sub> and R<sub>2</sub> being hydrogen at one time. The dyestuffs are useful for dyeing polyester fibers.

3,625,939

## PREPARATION OF AGAROSE BASED CATION-EXCHANGERS

Horst D. Schell, and Victor F. Ghetle, both of Bucharest, Romania, assignors to Institutul De Biochimie, Bucharest, Romania

Filed Mar. 28, 1969, Ser. No. 811,611

Claims priority, application Romania, Mar. 30, 1968, 57,503

Int. Cl. C08b 19/10

U.S. Cl. 260—209.6

3 Claims

The invention deals with the preparation of new acid ion exchangers of medium strength derived from agarose. The procedure for obtaining these derivatives, according to the invention, consists in introduction phosphate groups either into the simple agarose molecule or into agarose cross-linked by glyceric bridges by treatment in alkaline medium at about 30° C. with phosphorous oxychloride dissolved in ethyl ether.

3,625,940

## NOVEL ANTIBIOTICS OF AGRICULTURAL FUNGICIDES, POLYOXINS J, K AND L: AND PROCESS FOR PREPARING THE SAME

Saburo Suzuki, Kiyoshi Isono, and Junsaku Nagatsu, all of Tokyo, Japan, assignors to Rikagaku Kenkyusho, Oaza Shimonikura, Yamato-machi, Kitaadachi-gun, Saltama-ken, Japan

Filed June 25, 1968, Ser. No. 739,751

Claims priority, application Japan, June 30, 1967, 42/41894

Int. Cl. C07c 47/18

U.S. Cl. 260—211.5 R

3 Claims

Polyoxins J, K and L are each a novel antibiotic to be used as an agricultural fungicide for the protection of plants. Said polyoxins J, K and L are recovered from a culture obtained by cultivating in a culture medium *Streptomyces cacaoi* var. *asoensis* that is on deposit with the American Type Culture Collection (ATCC) as ATCC access numbers 19093 and 19094.

3,625,941

## ALPHA-(2-LOWER ALKYL-2-[2-(6-ALKOXY OR TERTIARY AMINO-1,2,3,4-TETRAHYDROXAPHTH-1-YLIDEN)ETHYL]-3-OXOCYCLOPENT-1-YLIDENAMINOXY OR HYDRAZINO)ALKANOIC ACIDS AND ASYMMETRIC PROCESS FOR THEIR PRODUCTION

Raphael Pappo, Skokie, and Robert T. Nicholson, Glenview, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Apr. 30, 1968, Ser. No. 725,533

Int. Cl. C07d 87/42

U.S. Cl. 260—247.2 R

11 Claims

Process for the selective manufacture of novel steroid intermediates possessing either the d or l stereo-chemical configuration.

3,625,942  
3A,12B-DIHYDRO-8H-DIBENZO[3,4,6,7]CYCLOHEPT[1,2-D]OXAZOL-8-ONES  
Albrecht Edenhof, Riehen, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.  
Filed Mar. 19, 1968, Ser. No. 714,320  
Claims priority, application Switzerland, Mar. 23, 1967, 4246/67  
Int. Cl. C07d 99/00

U.S. Cl. 260—247.5 R  
20 Claims  
3a,12b-dihydro-8H-dibenzo[3,4,6,7]cyclohept[1,2-d]oxazol-8-ones having at the 2-position an alkylated amino group and 2,3,3a,12b-tetrahydro-8H-dibenzo[3,4,6,7]cyclohept[1,2-d]oxazol-8-ones having at the 2-position an alkylated imino group are prepared, inter alia, by reacting a corresponding dibenzo-cyclohept-oxazole compound having at the 2-position an unsubstituted amino, an alkyl substituted mercapto, an unsubstituted imino or a thiooxy group, with an appropriate amine. The compounds of the invention are useful, for example, as antidepressant agents.

3,625,943

## 3-PHENOXY-PYRRIDAZINES SUITABLE FOR HERBICIDAL COMPOSITION

Saburo Tamura, Tokyo; Tetsuo Takematsu, Utsunomiya; Kozo Oyama, and Teruomi Jojima, both of Tokyo, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

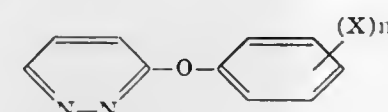
Original application Mar. 23, 1966, Ser. No. 536,613, now Patent No. 3,427,146. Divided and this application June 11, 1968, Ser. No. 736,015

Int. Cl. C07d 51/04

U.S. Cl. 260—250

5 Claims

Compounds for the control of undesired plants and for retarding plant growth, which have the formula



wherein X is methyl or chlorine and n is an integer of 1 to 5 inclusive; provided that when n is an integer of 1 to 3 inclusive, X may be the same or different and, when n is an integer of 4 or 5, each X represents chlorine. The invention relates also to some of the inorganic and trichloroacetic acid addition salts of the compounds.

3,625,944

## METHOD FOR PREPARATION OF CHLORINATED METHYL PYRAZINES

Edward J. J. Grabowski, Iselin; Edward W. Tristram, Cranford, and Roger J. Tull, Metuchen, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 10, 1968, Ser. No. 766,652

Int. Cl. C07d 51/76

U.S. Cl. 260—250

4 Claims

The direction chlorination of methylpyrazine by heating in a solvent to provide chlorinated 2-methylpyrazine compounds is described. The compounds are useful as intermediates in preparing the therapeutically active (3-aminopyrazinoyl) guanidine products which are effective natriuretic and antikaluretic compounds.

3,625,945

## METHOD OF PREPARING ACRIDINES AND INTERMEDIATES THEREFOR

Elvin L. Anderson, Moorestown, N.J., and Harold Graboyes, Philadelphia, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed May 29, 1968, Ser. No. 732,869

Int. Cl. C07d 37/16, 37/14

U.S. Cl. 260—279 R

8 Claims

Acridines are prepared by reacting a diphenylamine-2-carboxylic acid benzenesulfonylhydrazide with a base and hydrazine, semicarbazide, thiosemicarbazide or phenylhydrazine and reacting the resulting diphenylamine-2-carboxaldehyde derivative with a mineral acid. The acridines are

useful as intermediates for preparing 9-aminoalkylacridans having pharmacodynamic activity.

3,625,946

## 1,4-ENDOMETHYLENE CYCLOHEXANE-2,3-ENDO-CIO DI CARBOXIMIDO GLUTARIMIDES

Heinrich P. Koch, and Johannes F. Kottan, both of Vienna, Austria, assignors to F. Joh Kwizda, Vienna, Austria

Filed Nov. 2, 1967, Ser. No. 683,091

Claims priority, application Austria, Nov. 8, 1966, 10341/66

Int. Cl. C07d 31/32

U.S. Cl. 260—281

3 Claims

Cyclic derivatives of succinic and glutaric acids are described, which are substituted by imide groups derived from specific cyclic dicarboxylic acids. The derivatives according to the invention are free of an aromatic phthalimide grouping and exhibit a tranquilizing activity on certain parts of the central nervous system, whereas they are free of embryotoxic (teratogenous) secondary effects when administered to pregnant mammals.

3,625,947

## N HETEROCYCLIC ETHYL NAPHTHALIMIDES

Tamehiko Noguchi, Tokyo; Mitsukuni Sumitani, Soka-shi; Kenkichi Tsukamoto, Yono-shi, and Daisaku Matsunaga, Urawa-shi, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1968, Ser. No. 699,802

Claims priority, application Japan, Jan. 30, 1957, 42/5573

Int. Cl. C07d 39/00

U.S. Cl. 260—281

6 Claims

The present invention is directed to novel naphthalimide derivatives which have been quaternized or made into a salt form and a method for preparing the same. The present compound is used in fluorescent whitening of various synthetic fibers, particularly polyacrylonitrile fibers.

3,625,948

## PROCESS FOR THE PREPARATION OF HEXAHYDROMETHANOBENZAZOCINES

Jorg Haberli, Warwick, R.I., assignor to Celgy Chemical Corporation, Ardsley, N.Y.

Filed June 21, 1968, Ser. No. 738,853

Int. Cl. C07d 39/00

U.S. Cl. 260—294 A

4 Claims

3-carbamyl-1,2,3,4,5,6-hexahydro-2,6-methano-3-benzazocines are prepared from the corresponding 3-unsubstituted compounds by treatment with urea.

3,625,949

## SULFUR-CONTAINING DERIVATIVES OF 2-METHYL-4-HYDROXYMETHYL-5-METHYLENE-PYRIDINE

Gustav Schorre, and Herbert Nowak, both of Darmstadt, Germany, assignors to E. Merck A. G., Darmstadt, Germany

Filed June 7, 1968, Ser. No. 735,182

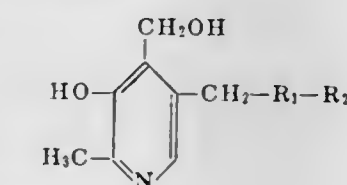
Claims priority, application Germany, June 8, 1967, M 74311

Int. Cl. C07d 31/48, 31/50

U.S. Cl. 260—294.8

8 Claims

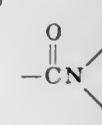
For increasing the tolerance of animals to a deficiency of oxygen, compounds of the formula:



wherein R<sub>1</sub> represents  $-S-$  or



and R<sub>2</sub> represents lower acyl,



lower unsaturated



alkyl, unsubstituted alkyl and substituted alkyl; with the provision that when  $R_1$  represents -S-,  $R_2$  is other than ethyl  $\beta$ -chloroethyl or  $\beta$ -hydroxyethyl.

3,625,950

# CERTAIN HALOPHENOXO ALKANAMIDES, HYDRAZIDES AND DERIVATIVES THEREOF

Edward J. Cragoe, Jr., and Norman P. Gould, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.  
Filed July 3, 1968, Ser. No. 742,129  
Int. Cl. C07d 31/44

U.S. Cl. 260—295 H

5 Claims

The invention relates to  $\omega,\omega$ -dimethyl- $\omega$ -(halophenoxy)-alkanamides, i.e., alkanamides bearing a halophenoxy and two methyl groups on the terminal carbon atom. The products are obtained by treating the corresponding  $\omega,\omega$ -dimethyl- $\omega$ -(halophenoxy)alkanoic acid ester or imidazole derivative thereof with an amine to form the desired amide. The said products are hypoglycemic agents, that is, they reduce the concentration of glucose in the blood.

3,625,951

# PREPARATION OF 3,4-DISUBSTITUTED-DELTA-2-1,2,4-TRIAZOLINE-5-THIONES

Tony Cebalo, Indianapolis, Ind., assignor to Air Products and Chemicals, Inc., Allentown, Pa.  
Continuation-in-part of application Ser. No. 32,715, Apr. 28, 1970, which is a continuation-in-part of application Ser. No. 835,221, June 20, 1969. This application Dec. 23, 1970, Ser. No. 101,180  
Int. Cl. C07d 55/06

U.S. Cl. 260—308 A

9 Claims

The invention relates to the method of synthesis of certain 3,4-disubstituted- $\Delta^2$ -1,2,4-triazoline-5-thiones by reacting the appropriate alkylthiosemicarbazide with certain fluoroalkyl-carboxylic acids. The reaction in its preferred embodiment is carried out by azeotropic distillation of byproduct water.

3,625,952

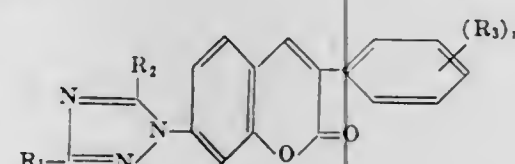
# 7-TRIAZOLYL-3-PHENYL-COUMARINS

Carl-Wolfgang Schellhammer, Opladen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Filed Jan. 15, 1968, Ser. No. 697,605  
Claims priority, application Germany, Jan. 20, 1967, F 51 305  
Int. Cl. C07d 99/04

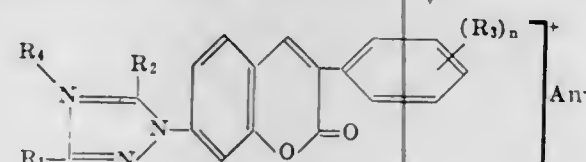
U.S. Cl. 260—308 R

5 Claims

Fluorescent compounds adapted for use as optical brightening agents in fibers, foils, filaments, fabrics, and plastics are provided as follows:  
7-[1,2,4-triazolyl-(1)]-3-phenyl-coumarin compounds of the general formula



in which  $R_1$  and  $R_2$ , independently of one another, stand for hydrogen for an alkyl radical with one to four carbon atoms, for an aralkyl radical, or for an optionally substituted aryl radical, and  $R_3$  denotes hydrogen, an alkyl radical containing one to four carbon atoms, an alkoxy radical containing one to four carbon atoms or halogen, and  $n$  stands for the numbers one to three or quaternisation products thereof having the formula



wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $n$  have the meanings given above,  $R_4$  stands for an alkyl radical with one to four carbon atoms or an aralkyl radical and  $An^-$  denotes a colorless anion.

# 3,625,953 ALIPHATIC OXAALKYL-2,4,5-TRIHALOGENO-IMIDAZOLES

Hans Rutz, Basel, and Kurt Gubler, Riehen, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Apr. 24, 1968, Ser. No. 723,903  
Claims priority, application Switzerland, Apr. 26, 1967, 5960/67  
Int. Cl. C07d 49/36

U.S. Cl. 260—309

6 Claims

2,4,5-trihalogeno-imidazoles substituted in 1-position at the imidazole nucleus by a group of the formula  $R-O-A-$  wherein  $R$  represents an optionally substituted aliphatic hydrocarbon radical and  $A$  represents an alkylene group, are described, which imidazoles are herbicidally active and useful in the control of weeds and the like undesirable plant growth; herbicidal compositions containing such imidazoles as active ingredients, and method of controlling undesirable plant growth with the aid of such compounds are also disclosed.

3,625,954

# 1-AROYL-BENZIMIDAZOLES

Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc.  
Filed Mar. 20, 1968, Ser. No. 714,416  
Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

2 Claims

1-arylbenzimidazoles and 1-arylbenzotriazoles and their use as anti-inflammatory agents in the treatment of arthritic disorders.

3,625,955

# ALIPHATICALLY SUBSTITUTED THIO-SULFINYL-AND SULFONYL-ALKYL-2,4,5-TRIHALOGENO-IMIDAZOLES

Hans Rutz, Basel, and Kurt Gubler, Riehen, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Apr. 24, 1968, Ser. No. 723,904  
Claims priority, application Switzerland, Apr. 26, 1967, 5960/67  
Int. Cl. C07d 49/36

U.S. Cl. 260—309

6 Claims

2,4,5-trihalogeno-imidazoles substituted in 1-position at the imidazole nucleus by a group of the formula  $R-S-A-$ ,  $R-SO-A$  or  $R-SO_2-A$  in which group  $R$  represents an optionally substituted aliphatic hydrocarbon radical and  $A$  represents an alkylene group, are described, which imidazoles are acaricidally active and at the same time well tolerated by cultivated plants; they are thus useful for the control of acarinae, and especially of spider mites, on cultivated plants and trees. Acaricidal compositions containing such novel imidazoles as active ingredients, and a method of controlling acarinae with the aid of such compounds are also disclosed.

3,625,956

# 1-PHENYL-4-ALKYL-2-IMIDAZOLONE DERIVATIVES

Enos C. Pesterfield, Jr., Briarcliff Manor, N.Y., assignor to Ciba-Geigy Corporation  
Filed Dec. 8, 1967, Ser. No. 689,006  
Int. Cl. C07d 49/34

U.S. Cl. 260—309.6

6 Claims

2-Imidazolones having a phenyl or substituted phenyl group in the 1-position and a lower alkyl group in the 4-position, such as 1-phenyl-, 1-(4-trifluoromethyl-phenyl)-, 1-(4-methoxyphenyl)-, 1-(fluorophenyl)-, and 1-(4-chlorophenyl)-4-methyl-2-imidazolones, are anti-inflammatory agents having analgesic and antipyretic properties and can be prepared by acid catalyzed cyclization of the urea derived from a phenyl or substituted phenyl isocyanate and an acetal of an  $\alpha$ -aminoalkylaldehyde.

3,625,957

# 4-ARYL (OR ALKYL) SULFONYL DERIVATIVES OF TETRAHYDRO-BENZODIAZEPINES

Rodney Ian Fryer, North Caldwell, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.  
Continuation-in-part of application Ser. No. 614,009, Feb. 6, 1967, now abandoned. This application Jan. 25, 1968, Ser. No. 700,348  
Int. Cl. C07d 53/06, 57/00

U.S. Cl. 260—239 BD

5 Claims

Process for preparing dihydro-benzodiazepines from tetrahydro-benzodiazepines which involves forming novel 4-aryl or alkyl sulfonyl or alkanoyl derivatives of tetrahydro-benzodiazepines and with base, converting same to dihydro-benzodiazepines. Novel benzodiazepine-2-ones having an ethylenic linkage joining positions 3 and 4 are formed as intermediates.

Dihydro-benzodiazepines are useful as muscle relaxants, sedatives and anticonvulsants.

3,625,958

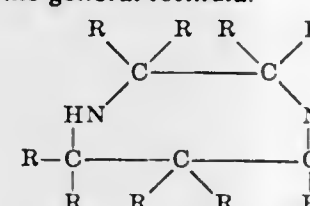
# PROCESS FOR THE SYNTHESIS OF SUBSTITUTED 1,4-DIAZA-CYCLOHEPTENES

Giuseppe Cantatore, and Alberto Bonvicini, both of Terni, Italy, assignors to Montecatini Edison S.p.A.  
Filed Oct. 10, 1967, Ser. No. 674,115  
Claims priority, application Italy, Oct. 14, 1966, 28857 A/66  
Int. Cl. C07d 53/02

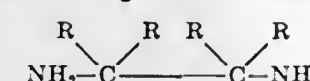
U.S. Cl. 260—239 BC

6 Claims

Process for the preparation of a substituted 1,4-diazacycloheptene of the general formula:



wherein  $R$  may be the same or different and is a hydrogen atom or an alkyl group having from about one to 12 carbon atoms. Involves reacting in the presence of an acid catalyst such as hydrochloric acid, nitric acid, acetic acid, formic acid, ammonium nitrate, p-toluene-sulphonic acid, aluminum chloride, ferric nitrate, or ethylenediamine dichlorohydrate, an ethylenediamine of the general formula:



wherein  $R$  is as defined above, with a saturated aliphatic ketone of the general formula:  
 $R-CO-R$

wherein  $R$  may be the same or different and is an alkyl group having one to 12 carbon atoms.

3,625,959

# PREPARATION OF 2,3,4,5-TETRAHYDRO-5-PHENYL-1H-1,4-BENZODIAZEPIN-4-OLS

George Francis Field, Nutley, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Original application Dec. 3, 1964, Ser. No. 415,793, now Patent No. 3,398,139, which is a continuation-in-part of application Ser. No. 358,919, Apr. 10, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 400,193, Sept. 29, 1964, now abandoned. Divided and this application Apr. 9, 1968, Ser. No. 735,480  
Int. Cl. C07d 41/08

U.S. Cl. 260—239

1 Claim

A method for preparing 2,3,4,5-tetrahydro-5-phenyl-1H-1,4-benzodiazepin-4-ols by reduction of phenyl quinazoline 3-oxides or 5-phenyl-1,4-benzodiazepine-4-oxo compounds.

3,625,960

# RIFAMYCIN SV DERIVATIVES

Nicola Maggi, Milan, Italy, assignor to Lepetit S.p.A.-Gruppo per la Ricerca Scientifica e la Produzione Chimica Farmaceutica, Milan, Italy  
Filed Oct. 16, 1967, Ser. No. 675,341  
Claims priority, application Great Britain, Oct. 25, 1966, 47,899/66  
Int. Cl. C07d 87/54

U.S. Cl. 260—239.3

7 Claims

The application discloses new rifamycin SV derivatives in which a sulfur atom links the rifamycin nucleus to radicals of various nature. A process for the preparation of the new derivatives, which show a high degree of antibacterial activity, is also disclosed.

3,625,961

# RIFAMYCINS

Nicola Maggi, Cusano Milan, Italy, assignor to Lepetit S.p.A. Gruppo per la Ricerca Scientifica e la Produzione Chimica Farmaceutica, Milan, Italy  
Filed Feb. 5, 1968, Ser. No. 702,796  
Claims priority, application Great Britain, Mar. 1, 1967, 9,755/67  
Int. Cl. C07d 41/00

U.S. Cl. 260—239.3 P

6 Claims

The invention is concerned with new pyrrolo-rifamycins, and a process for preparing the same starting from rifamycin S and an unsaturated amine carbonyl compound. The substances are highly active as antibacterials and are particularly fit for topical use, being generally of light yellow color.

3,625,962

# BENZODIAZEPINE COMPOUND

Franco De Marchi, and Gianfranco Tamagnone, both of Turin, Italy, assignors to Stabillimenti Chimici Farmaceutici Riuniti Schiapparelli S.p.A., Turin, Italy  
Filed May 7, 1968, Ser. No. 727,357  
Claims priority, application Italy, May 15, 1967, 51724-A/67  
Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 D

1 Claim

A therapeutically effective diazepam compound consisting of 7-chloro-1,3-dihydro-3-hemisuccinyloxy-5-phenyl-2H-1,4-benzodiazepine-2-one dimethylaminoethanol salt which compound is particularly effective for the treatment of anxiety in convulsive syndromes of any origin, even in the presence of depressive symptoms, and for eliminating tension and spasms of the skeletal muscular system.

3,625,963

# PROCESS FOR THE PREPARATION OF 3-METHANESULFONYL-PHENTHIAZINES

Francois Capitant, Paris; Guy Lalanne, Ris-Orangis, Essonne, and Albert Robin, Le Plessis-Trevise, Val-de-Marne, all of France, assignors to Rhone-Poulenc S.A., Paris, France  
Filed July 10, 1968, Ser. No. 743,645  
Claims priority, application France, July 11, 1967, 113935  
Int. Cl. C07d 93/14

U.S. Cl. 260—243 A

15 Claims

3-Methanesulfonyl-phenothiazines (Beilstein nomenclature) unsubstituted or substituted on the nitrogen atom of the phenothiazine nucleus are prepared by oxidizing the methylthio group of a corresponding 3-methylthiophenothiazine to a methanesulfonyl group, such procedure simultaneously causing oxidation of the sulfur atom in the phenothiazine nucleus, and reducing by the action of hydrogen the resultant 3-methanesulfonyl-9-oxophenothiazine to a 3-methanesulfonyl-phenothiazine.



3,625,964

**PRODUCTION OF METAL SALTS OF DIORGANO  
SUBSTITUTED ISOCYANURATES**

Perry A. Argabright, both of Littleton; Brian L. Phillips, Littleton, and Charles H. De Puy, Boulder, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio  
Continuation-in-part of application Ser. No. 682,545, Nov. 13, 1967, now abandoned. This application Oct. 29, 1969, Ser. No. 872,380  
Int. Cl. C07d 55/38

U.S. Cl. 260—248 NS

10 Claims

Substituted isocyanurates containing from two to three substituents per molecule are prepared from 1,3-diarylu-retediones by reacting 1,3-diarylu-retediones with metal cyanates in a reaction mixture containing a dipolar aprotic solvent. Thereafter, this metal salt of a substituted isocyanurate may be reacted with a mineral acid in aqueous solution to form a disubstituted isocyanurate as a precipitate, or, may be reacted with an organic halide to form a trisubstituted isocyanurate.

The products of the invention are useful as intermediates in the production of pharmaceuticals, insecticides, disinfectants, and in the preparation of polymers.

3,625,965

**1-CINNAMYL-4-LOWER ALKYL CARBONYL-OR 4-  
PHENYL CARBONYL PIPERIDINES**

Tsutomu Irikura; Kuniyasu Masuzawa; Keigo Nishino; Hiroaki Uchida; Masatoshi Ito, all of Tokyo; Noriko Ichino-seki, Saitama, and Hideo Okubo, Tokyo, all of Japan, assignors to Kyorin Selyaku Kabushiki Kaisha, Tokyo, Japan  
Filed Dec. 27, 1967, Ser. No. 693,786

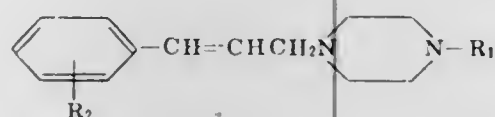
Claims priority, application Japan, Dec. 28, 1966, SHO 42-665

Int. Cl. C07d 51/70

U.S. Cl. 260—240 K

Compounds of the formula

10 Claims



wherein  $R_1$  is lower alkylcarbonyl or phenylcarbonyl (benzoyl) and  $R_2$  is H or Cl are very useful analgesics, as well as antiphlogistics because of their antiserotonic action, and are nonaddictive.

3,625,966

**BIOCIDAL TRIHYDROCARBYLTIN SALTS**

Christian H. Stapfer, Newtown, Pa., assignor to Carlisle Chemical Works, Inc., Reading, Ohio  
Filed Jan. 3, 1968, Ser. No. 695,342

Int. Cl. C07f 7/22

U.S. Cl. 260—242

2 Claims

Trihydrocarbyltin salts of oxobenzothiazine acetic acids are used as biocides.

3,625,967

**DERIVATIVES OF 1,4-DIHYDRO-3H-2,3-BENZOXAZINE**

David G. Martin, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.  
Filed Nov. 29, 1967, Ser. No. 686,733

Int. Cl. C07d 87/12

U.S. Cl. 260—244 R

6 Claims

1,6-Dihydro-4-phenyl-2,5,3-benzodioxazine (1), 1,4-dihydro-3H-2,3-benzoxazine-3-carboxamide (1'a), N-alkyl-1,4-dihydro-3H-2,3-benzoxazine-3-carboxamides (1'b), 1,4-dihydro-3H-2,3-benzoxazine-3-carboximidine (1'c) and its acid addition salts, process for the preparation thereof and novel intermediates prepared by said processes. Compounds 1, 1'a, and 1'b principally exhibit antilipemic activity. Compound 1'c is useful for preparing mothproofing agents and inhibitors that can be used in the acid pickling of steel.

3,625,968

**PRODUCTION OF TETRAHYDRO-1,2,4-OXADIAZINE-  
3,5-DIONES**

Albrecht Zschocke, Bad Duerkheim; Karl-Heinz Koenig, Ludwigshafen am Rhine, and Gustav Steinbrunn, Schwegenheim/Pfalz, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Jan. 8, 1968, Ser. No. 696,138

Claims priority, application Germany, Jan. 12, 1967, P 16 70 180.7

Int. Cl. C07d 87/52

U.S. Cl. 260—244

1 Claim

The production of substituted tetrahydro-1,2,4-oxadiazine-3,5-diones by the reaction of open-chain substituted N-( $\alpha$ -carboxy)-alkoxyureas with cyclizing agents in the form of chlorides or bromides of phosphoric acid, phosphorous acid, sulfurous acid or carbonic acid. The products of the process (some of which are new substances) are herbicides, diuretic and antiphlogistic pharmaceuticals and valuable starting products for the production of pesticides and pharmaceuticals.

3,625,969

**6-SULFAMYL-4-HYDROXY-3-CARBOXY-QUINOLINES**

Alberto Rossi, Oberwil, Switzerland, assignor to Ciba Corporation, New York, N.Y.

Filed Oct. 10, 1967, Ser. No. 674,129

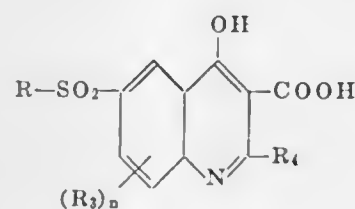
Claims priority, application Switzerland, Oct. 20, 1966, 15318/66

Int. Cl. C07d 87/46

U.S. Cl. 260—247.1

9 Claims

Compounds of the formula



in which

R = disubstituted amino group

$R_3$  = lower aliphatic hydrocarbon radical, lower alkoxy group, lower alkenyloxy group, hydroxy group, halogen, trifluoromethyl

n = integer from 0 to 3

$R_4$  = lower aliphatic hydrocarbon radical for example:

3-carboxy-4-hydroxy-6-(morpholinosulfamyl)-quinoline.

Use: anti-inflammatory agents.

3,625,970

**1-(DISUBSTITUTED PHENYL OR BENZYL)-1H-  
INDAZOL-3-YLOXYACETIC ACID**

Laszlo Ambrus, Oakland, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Apr. 17, 1968, Ser. No. 721,918

Int. Cl. C07d 49/02

U.S. Cl. 260—310 C

6 Claims

Chemical compounds in which the hydroxyl hydrogen atom of a 1-(disubstituted phenyl or benzyl)-1H-indazol-3-ol is replaced by a carboxymethyl moiety to yield 1-(disubstituted phenyl or benzyl)-1H-indazol-3-yloxyacetic acids are described.

The compounds can be prepared by forming the alkali metal salt of the indazol-3-ol and effecting a Williamson Ether Synthesis reaction with a carboxymethyl halide. The compounds possess anti-inflammatory activity as demonstrated by the Limb Volume Test procedure.

3,625,971

**LOWER ALKYLESTERS OF 1-(DISUBSTITUTED  
PHENYL OR BENZYL)-1H-INDAZOL-3-YLOXY ACETIC  
ACIDS**

Laszlo Ambrus, Oakland, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Apr. 17, 1968, Ser. No. 721,937

Int. Cl. C07d 49/02

U.S. Cl. 260—310 C

9 Claims

Chemical compounds in which the hydroxyl hydrogen atom of a 1-(disubstituted phenyl or benzyl)-1H-indazol-3-ol is replaced by a carb-lower alkoxy methyl group yielding the corresponding lower alkyl esters of 1-(disubstituted phenyl or benzyl)-1H-indazol-3-yloxy acetic acid are described. The compounds can be prepared by forming the sodium salt of the indazol-3-ol by effecting a Williamson Ether Synthesis reaction with carb-lower alkoxy methyl halide. The compounds possess anti-inflammatory activity as demonstrated by the Limb Volume Test procedure.

3,625,972

**N-PHENYLBENZANILIDES**

John W. Schulenberg, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed July 3, 1968, Ser. No. 742,161

U.S. Cl. 260—326.3

9 Claims

N-Arylanilines, further substituted on nitrogen by aroyl, aralkanoyl or aralkyl groups, and wherein one of the aryl groups has a 3- or 4-(aminoalkoxy) substituent, having hypocholesteremic activity, are prepared by a series of O-alkylation, N-acylation or -alkylation, and reduction reactions starting from the appropriate hydroxydiarylamines or benzyl ethers thereof.

3,625,973

**PREPARATION OF OXYGEN CONTAINING INDOLE  
DERIVATIVES**

Marc Julia, Paris, France, assignor to Institut Pasteur

Filed Aug. 1, 1968, Ser. No. 749,295

Claims priority, application France, Aug. 17, 1967, 118053

Int. Cl. C07d 27/56

U.S. Cl. 260—326.16

9 Claims

Method of preparing indole derivatives bearing an oxygen containing group the oxygen of which is linked with one of the carbon atoms in positions 4 and 7, which comprises cyclizing in acid medium a 4-(2'-pyrrolyl)-butyric acid or its direct derivative having optionally substitutions in its aliphatic chain or/and in its pyrrolic nucleus.

3,625,974

**DIBENZOTHAZEPINE DERIVATIVES**

Suminori Umlo, Kawani-shi, and Ikuro Ueda, Sakai, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 18, 1968, Ser. No. 722,169

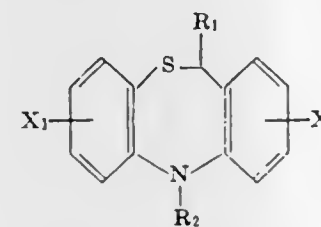
Claims priority, application Japan, Apr. 28, 1967, 42/27625

Int. Cl. A61k 27/00; C07d 93/42

U.S. Cl. 260—327

9 Claims

Compounds of the formula



wherein each of  $X_1$  and  $X_2$  is hydrogen or halogen;  $R_1$  is alkyl, haloalkyl, aralkyl or alkyl substituted with  $R_2$  in which  $R_2$  is amino, alkylamino, dialkylamino; and  $R_2$  is hydrogen, alkyl, haloalkyl, aralkyl or alkyl substituted with  $R_3$  in which  $R_3$  is the same meaning as defined above, provided that either  $R_1$  or  $R_2$  should be alkyl substituted with  $R_3$ . These compounds possess potent antiserpinelike activity which makes them useful as an antidepressant.

3,625,975

**LACTONES BY OXIDATION PROCESS**

Clifford A. Crampton, Harpenden; Charles F. Cardy, Luton; Keith G. Sampson, Clophill, and Ian R. King, London, all of England, assignors to Laporte Chemicals Limited  
Filed Sept. 28, 1967, Ser. No. 671,201

Claims priority, application Great Britain, Sept. 30, 1966, 43,880/66

Int. Cl. C07d 7/06, 7/00

U.S. Cl. 260—343

22 Claims

Lactones are prepared by a reaction between a peroxycarboxylic acid having one to eight carbon atoms and a cyclic monoketone having five to 12 carbon atoms in a ring and zero to three methyl groups as substituents by means of a novel process involving forming a vapor mixture containing said peroxy carboxylic acid, condensing said vapor mixture to the liquid state and reacting the condensed liquid with said cyclic monoketone.

3,625,976

**COUMARIN ETHER SUN-SCREENING COMPOUNDS**

Ernst Theodore Thelmer, Rumson, N.J., assignor to International Flavors & Fragrances, Inc., New York, N.Y.

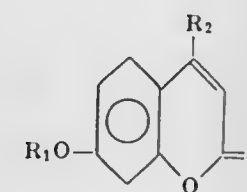
Filed Dec. 9, 1969, Ser. No. 883,239

Int. Cl. C07d 7/26

U.S. Cl. 260—343.2 R

3 Claims

The use as sun-screening agents of essentially colorless, stable, odorless, nonirritating, nonsensitizing, and oil-compatible coumarin ether compounds, such compounds having the formula:



wherein  $R_1$  is alkenyl, cycloalkenyl, alkadienyl, cycloalkadienyl, alkatrienyl, alkoxyalkadienyl, acyloxyalkadienyl, alkoxyalkenyl, cycloalkoxyalkenyl, aryl, alkaryl, or aralkyl and  $R_2$  is hydrogen or lower alkyl and such compounds having ultraviolet absorption maxima within the range of 2,900 Å. up to about 3,400 Å. The compounds wherein  $R_2$  is lower alkyl and  $R_1$  is alkadienyl or where  $R_1$  is cycloalkadienyl or cycloalkenyl are novel compounds.

3,625,977

**2-ACETAL-7-KETAL-5-NORBORNENE AND 2-ACETAL-  
7-KETALNORBORNANE COMPOUNDS**

Fredrick Lynn Hamb, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1968, Ser. No. 765,036

Int. Cl. C07d 13/02, 15/04

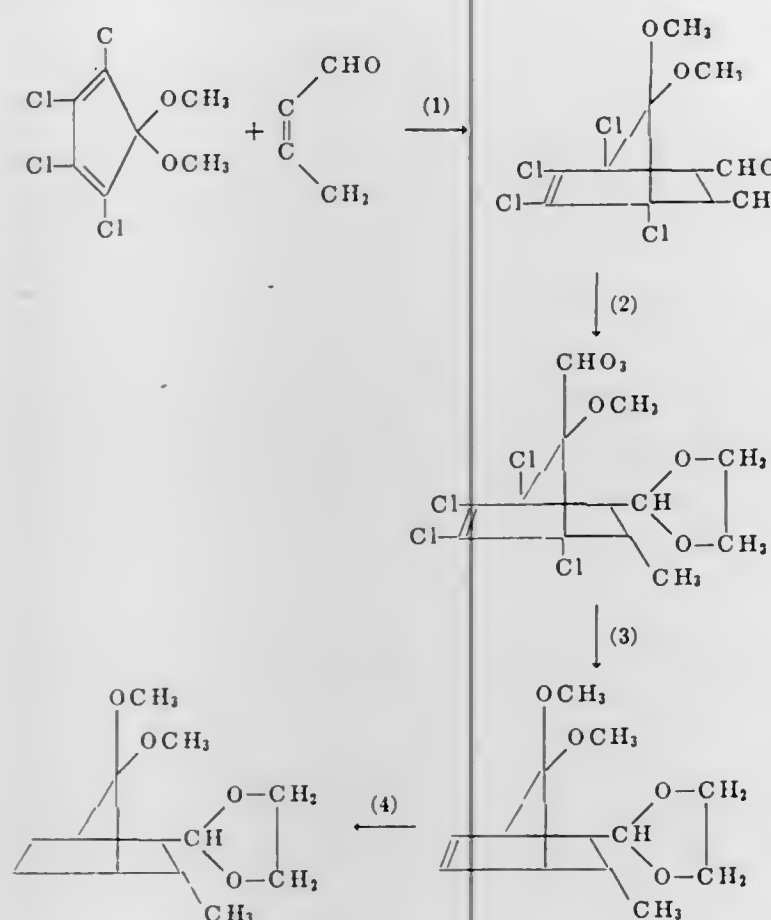
U.S. Cl. 260—340.7

15 Claims

2-Acetal-7-ketal-5-norbornene compounds, such as 2-(1,3-dioxolan-2-yl)-3-methyl-7,7-dimethoxy-5-norbornene, and the corresponding norbornane compounds, for example, 2-(1,3-dioxolan-2-yl)-3-methyl-7,7-dimethoxynorbornane, are central nervous system depressants; and in addition, the norbornene compounds exhibit anticonvulsant activity. These compounds are synthesized from 1,2,3,4-tetrachloro-5-ketal-cyclopentadienes and  $\alpha,\beta$ -unsaturated aldehydes in a plural step synthesis comprising (1) a Diels-Alder addition, (2) acetalization, (3) dechlorination and, in the case of the nor-



bornane compounds, (4) hydrogenation, as is illustrated by the following equations:



3,625,978

#### HYDROXYARYLTHIO ANHYDRIDES AND ANALOGUES AND DERIVATIVES THEREOF

Emil J. Geering, Grand Island, and Norman W. Dachs, Buffalo, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

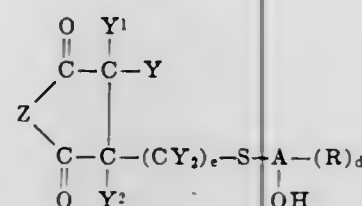
Filed Aug. 5, 1968, Ser. No. 749,952

Int. Cl. C07c 57/14

U.S. Cl. 260—347.2

14 Claims

Novel compounds of the formula:



wherein  $e$  is from zero to one and  $d$  is from zero to about six, provided that when  $e$  is zero,  $Y^1$  is hydrogen; and that when  $e$  is one,  $Y^2$  is hydrogen;  $Y$ ,  $Y^1$  and  $Y^2$  are of zero to about 20 carbon atoms and are independently selected from the group consisting of alkyl, aryl, alkaryl, aralkyl, hydrogen, cyano, and halogen;  $Z$  is selected from the group consisting of  $-N-H-$ ,  $-O-$ ,  $-S-$  and  $-CH_2CH_2-$ ;  $A$  is aryl of six to 18 carbon atoms; and  $R$  is of zero to about 20 carbon atoms and is selected from the group consisting of alkyl, aryl, alkaryl, aralkyl, carbalkoxy, carbaryloxy, alkoxy, aryloxy, alkylthio, arylthio, hydroxy, mercapto, cyano, carboxy and halogen. Said compounds have utility as polymer additives. Novel polyester derivatives of the hydroxyarylthio succinic anhydride and thioanhydride compounds and a process for preparing said polyesters.

#### 3,625,979 NOVEL BIOLOGICALLY ACTIVE SUBSTITUTED-S-TRIAZINES

Werner Helmberger, Hanau am Main, Germany, assignor to Deutsche Gold-und Silber-Scheidanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Nov. 24, 1967, Ser. No. 685,258

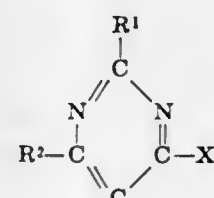
Claims priority, application Germany, Nov. 24, 1966, D 51628 The portion of the term of the patent subsequent to May 25, 1988, has been disclaimed.

Int. Cl. C07d 55/22

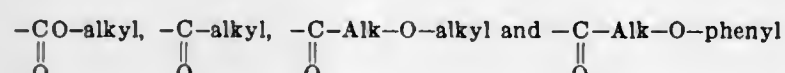
U.S. Cl. 260—247.5 R

5 Claims

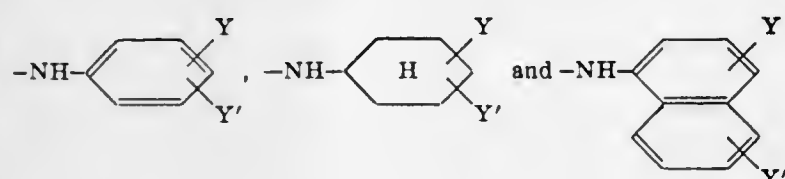
Novel biologically active substituted-s-triazines having anti-inflammatory action of the formula



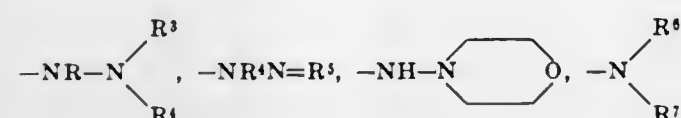
as well as their pharmacologically acceptable acid addition salts with organic and inorganic acids wherein  $X$  is an N-cycloalkyldi-imine radical, preferably, a piperazine or homopiperazine radical or their N'-alkyl, N'-alkylol or N'-acyl substitution products in which the alkyl or alkylol groups contain one to six carbon atoms and the acyl radicals are



wherein the Alk is alkylene and the alkyl and alkylene have up to six carbon atoms  $R^1$  is one of the radicals



wherein each  $Y$  and  $Y'$  is hydrogen, halogen,  $-NO_2$ ,  $-alkyl$ ,  $-O-alkyl$ ,  $-OH$  or  $-COOH$ , wherein the alkyl has up to six carbon atoms and  $R^2$  is



piperazino, homopiperazino, piperidino or pyrrolidino, wherein each of  $R$ ,  $R^3$  and  $R^4$  is hydrogen or an alkyl group of one to six carbon atoms or an aryl group,  $R^5$  is lower alkyl, cycloalkyl, alkyl aryl, each of  $R^6$  and  $R^7$  is hydrogen, alkyl of one to six carbon atoms, morpholino alkyl, piperazino alkyl, homopiperazino alkyl, hydroxy alkyl, alkylene diamine whose second nitrogen atom may be substituted by alkyl or phenyl, the alkyl and alkylene included in  $R^1-R^7$  having from one to six carbon atoms and the aryl preferably being phenyl.

3,625,980

#### HALOGENATED ANILINO COUMARIN COMPOUNDS

Gerald L. Bachman, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1968, Ser. No. 694,790

Int. Cl. C07d 7/28

U.S. Cl. 260—343.2 R

10 Claims

This disclosure covers certain halogenated anilino coumarins as new chemical compounds. These compounds have been found to be useful in the control of bacteria and fungi.

3,625,981

#### PROCESS FOR PREPARING GLYCIDOL

John Kollar, Wyckoff, N.J., assignor to Hakon International, Inc.

Continuation-in-part of application Ser. No. 419,568, Dec. 18, 1964, now abandoned. This application Apr. 18, 1968, Ser. No. 722,150

Int. Cl. C07d 1/18

U.S. Cl. 260—348.5 L

9 Claims

This invention relates to a process for preparing glycidol, by epoxidation of allyl alcohol with an organic hydroperoxide in the presence of an inorganic vanadium compound. Glycidol can be readily hydrolyzed to produce glycerine an important chemical of commerce.

3,625,982

#### (1,2-EPOXYPROPYL)PHOSPHONOUS ACID DERIVATIVES

Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 15, 1968, Ser. No. 729,388

Int. Cl. C07f 9/48

U.S. Cl. 260—348 R

6 Claims

(±) And (−)(cis-1,2-epoxypropyl)phosphonic acids are prepared by oxidation of (cis-1,2-epoxypropyl)phosphonous acid.

3,625,983

#### OXIDATION OF 2,4,6-TRI-TERT-ALKYLPHENOLS WITH AN ALKALI METAL HYDROXIDE CATALYST

John C. Wollensak, Bloomfield Hills, Mich., assignor to Ethyl Corporation, New York, N.Y.

Filed May 14, 1970, Ser. No. 037,348

Int. Cl. C07c 49/64

U.S. Cl. 260—396 R

7 Claims

Oxidation of 2,4,6-tri-tert-alkylphenols using an alkali metal hydroxide catalyst such as potassium hydroxide yields 2,6-di-tert-alkyl-p-benzoquinone. The reaction is promoted by the addition of water and a small amount of a copper halide such as cuprous chloride. The products are readily converted to p-hydroquinones by reduction. These are antioxidants and can be used as chemical intermediates.

3,625,984

#### CYCLOHEXA-1,4-DIENE-1-ACETIC ACIDS

Seymour David Levine, North Brunswick; Patrick Andrew Diassi, Westfield, and Frank Lee Welsenborn, Somerset, all of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

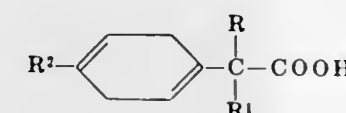
Filed Nov. 5, 1968, Ser. No. 773,640

Int. Cl. C07c 1/22

U.S. Cl. 260—396 N

2 Claims

This invention relates to new cyclohexa-1,4-diene-1-acetic acids of the formula



wherein  $R$ ,  $R^1$  and  $R^2$  each is hydrogen or lower alkyl, and salts of these acids with bases, which are useful as anti-inflammatory agents.

3,625,985

#### ADAMANTANECARBOXAMIDOALKANOIC ACIDS AND RELATED COMPOUNDS

Carl Peter Krimmel, Wauconda, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of application Ser. No. 467,749, June 28, 1965, now abandoned. This application May 8, 1968, Ser. No. 727,698

Int. Cl. C07c 13/52

U.S. Cl. 260—404

5 Claims

The present adamantanecarboxylic acid derivatives of amino acids possess antibiotic activity against a variety of or-

ganisms. Thus, they are antibacterial, antiprotozoal, and antitumor agents. The compounds are prepared by the reaction of an adamantanecarboxylic halide, preferably the chloride, with an appropriate amino acid, dipeptide, or polypeptide.

3,625,986

#### BIS 1,1-ISOCYANATOALKYL CYCLOALKANES

Julian Feldman, and Robert J. Shaw, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 28, 1967, Ser. No. 694,114

Int. Cl. C07c 119/04; C08g 22/24, 22/44

U.S. Cl. 260—453 A

5 Claims

Alkyl diisocyanates such as 1-(isocyanatomethyl)-1-(3-isocyanatopropyl) cyclohexane; 1-(isocyanatomethyl)-1-(3-isocyanatoethyl) cyclohexane; bicyclo-[2.2.1]-2-isocyanatoethyl-2-(3-isocyanatopropyl)-heptane; bicyclo [4.3.0]-2-isocyanatomethyl-2-(3-isocyanatopropyl)-nonane and polyurethanes prepared therefrom. The diisocyanates are prepared by reacting the corresponding diamines with phosgene.

3,625,987

#### CYANO CARBAMOYLOXIMES

Adolf Hubele, Riehen, Switzerland, assignor to Ciba Limited, Basel, Switzerland

Filed Nov. 7, 1967, Ser. No. 681,101

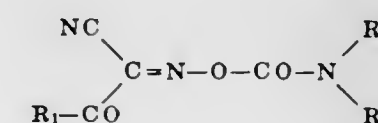
Claims priority, application Switzerland, Nov. 10, 1966, 16259/66

Int. Cl. C07c 121/40, 121/46, 121/60

U.S. Cl. 260—465 D

11 Claims

The present invention relates to carbamates of the general formula



in which  $R_1$  represents an alkoxy, aralkoxy, cycloalkoxy, aryloxy, alkylthio, aralkylthio, cycloalkylthio or arylthio radical, or in which  $R_1$  represents a secondary or tertiary amido group,  $R_2$  represents a hydrogen atom or a lower aliphatic radical and  $R_3$  represents a hydrogen atom, a lower aliphatic radical or an unsubstituted or substituted aryl radical.

These compounds can be prepared by reaction of a cyanacetic acid ester or cyanacetic acid amide with an agent yielding nitrous acid and further reaction of the resulting oxime with either an isocyanate or a carbamic acid halide. The resulting carbamates are advantageously used as active substances for combating various kinds of pests, especially in preparations for combating bacteria and fungi affecting animals and plants. Those separations may comprise, if desired, other known additives and pesticides.

3,625,988

#### REACTION PRODUCT OF CERTAIN ACID AND ALKANOLAMINE

Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 329,979, Dec. 12, 1963, now abandoned. This application Apr. 10, 1968, Ser. No. 720,339

Int. Cl. C07c 97/06

U.S. Cl. 260—468 B

17 Claims

Reaction product formed by the condensation of certain alkanolamines with polyhalopolyhydrocycloaliphaticdicarboxylic acids of the formula hereinafter given, its corresponding anhydride, corresponding diol or ester. These compounds have utility as stabilizers against deterioration of organic substances, such as lubricants, hydrocarbon oils and plastics, as well as possessing insecticidal properties.



3,625,989

**PROCESS FOR PREPARING METHYL ANTHRANILATES**  
Ellis K. Fields, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Aug. 25, 1967, Ser. No. 663,245  
Int. Cl. C07c 101/54

U.S. Cl. 260—471 R

9 Claims

This invention relates to the intramolecular oxidation and reduction of aromatic hydrocarbons containing at least one methyl group and a nitro group ortho to the methyl group. Further, it relates to preparing methyl o-amino arylcarboxylates and aromatic amines. The process comprises reacting aromatic hydrocarbons having at least one methyl group and a nitro group ortho to the methyl group in a solvent at a temperature of about 450° to 750° C. When the solvent is methanol, methyl o-amino arylcarboxylates useful in anesthetics, printing inks for polyethylene, and useful in the manufacture of azo dyes are produced. Novel substituted methyl anthranilates have been produced which have the foregoing uses. When the solvent is benzene, cyclohexane or toluene, aromatic amines are produced. The aromatic amines are useful as pesticides, antioxidants and as pickling inhibitors for aluminum and zinc and as curing agent for epoxy resins.

3,625,990

**O-ACYLBENZOHYDROXAMATES**

Teruhisa Noguchi, Fujisawa-shi; Mitsuo Asada, Naka-gun; Reiji Sakimoto, Takaoka-shi; Yoshiyasu Aoki, Kaminikawa-gun, and Mikio Sawaki, Takaoka-shi, all of Japan, assignors to Nippon Soda Katsushiki Kaisha, Tokyo-to, Japan

Filed Apr. 24, 1968, Ser. No. 723,652

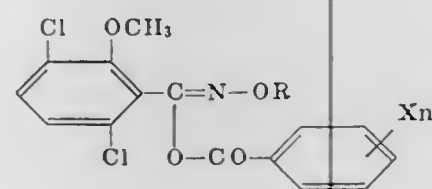
Claims priority, application Japan, May 2, 1967, 42/27706

Int. Cl. C07c 93/00

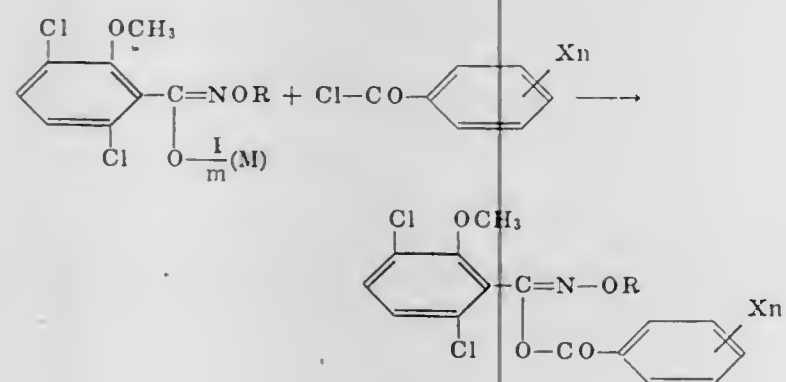
U.S. Cl. 260—471 R

9 Claims

The compound having formula;



wherein, R represents alkyl having one to six carbon atoms and X represents hydrogen, halogen, alkyl having one to three carbon atoms or alkoxy having one to three carbon atoms and n is an integer of 0-5 prepared in accordance with the following equation:



wherein M represents hydrogen or metal atom and m represents valency of M and R, X and n, each have the aforesaid meanings. The novel compounds have superior acaricidal activities without mammalian toxicity.

3,625,991

**BENZOYLOXYETHYL-AMINO PROPANE COMPOUNDS**  
Laszlo Beregi, Boulogne; Pierre Hugon, Rueil-Malmaison, and Jean-Claude Le Douarec, Suresnes, all of France, assignors to Societe en nom collectif Science Union Et Cie, Societe Francaise De Recherche Medicale, Suresnes, France

Filed Apr. 30, 1968, Ser. No. 725,484

Claims priority, application Great Britain, May 12, 1967, 22,249/67

Int. Cl. C07c 95/08

U.S. Cl. 260—477

7 Claims

1-phenyl-2-(β-benzoyloxyethyl-amino) propane, mono- or disubstituted on the phenyl radical by chlorine, bromine, fluorine, lower-alkyl or lower-alkoxy having up to four carbon atoms inclusive, in the form of racemic compounds and optical isomers, and acid addition salts thereof. These compounds possess anorexic and lipid metabolism regulating properties.

3,625,992

**N-METHYL PHENYL CARBAMATES**

Dieter Duerr, Bottmingen, and Ladislaus Pinter, Basel, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Nov. 28, 1967, Ser. No. 686,342

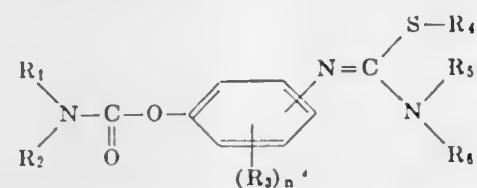
Claims priority, application Switzerland, Dec. 1, 1966, 17181/66

Int. Cl. C07c 157/14

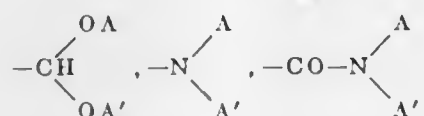
U.S. Cl. 260—479

2 Claims

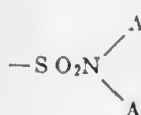
The present invention relates to carbamates of the general formula



in which R<sub>1</sub> is a substituent selected from the group consisting of hydrogen and an aliphatic radical, R<sub>2</sub> represents a substituent selected from the group consisting of an aliphatic, an araliphatic and an aromatic radical, R<sub>3</sub> is a substituent selected from the class consisting of a halogen atom, a lower alkyl, a lower alkoxy, a lower alkylthio, a lower alkylsulfinyl, a lower alkylsulfonyl radical, the group —NO<sub>2</sub>, —CN, —SCN, —CHO,



and the group



(in which A and A' are identical or different and each represents a hydrogen atom or a lower alkyl radical and/or a carbalkoxy group), n represents an integer selected from 0, 1 and 2, R<sub>4</sub> represents a substituent selected from the class consisting of a hydrogen atom, an aliphatic and an araliphatic radical, R<sub>5</sub> represents a substituent selected from the class consisting of a hydrogen atom, an aliphatic radical, an aliphatic radical linked with the nitrogen atom through oxygen, with the proviso that when R<sub>4</sub> represents a hydrogen atom, the phenolic group must be in p-position relatively to the nitrogen-containing group as well as to pesticidal preparations containing, as active ingredients, such carbamates as defined above.

3,625,993

**PROCESS FOR PRODUCING CARBAMATES**

Hans Peter Horn, Orinda, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Continuation-in-part of application Ser. No. 674,758, Oct. 12, 1967, now abandoned. This application Apr. 22, 1968, Ser. No. 723,286

Int. Cl. C07c 125/06

U.S. Cl. 260—479 C

16 Claims

Carbamates are produced by reacting alkyl amines with phosgene, directly admixing the resultant reaction mixture containing N-alkyl-carbamoyl chloride and alkyl isocyanate with an active hydrogen containing compound selected from the group consisting of aliphatic alcohols and thioalcohols, phenols and thiophenols, alicyclic alcohols and thioalcohols. The produced carbamate is recovered from this mixture in high-yield and purity.

3,625,994

**PROCESS FOR MAKING POLYESTERS CONTAINING ETHER GROUPS**

Herbert Eck, and Hellmuth Spes, both of Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Bavaria, Germany

Filed July 19, 1967, Ser. No. 654,354

Claims priority, application Germany, July 22, 1966, W

42065

Int. Cl. C07c 69/66

U.S. Cl. 260—484 R

5 Claims

This invention relates to the manufacture of polyesters containing ether groups, and it has for its object to provide a novel and improved process for this purpose.

3,625,995

**PRODUCTION OF ESTERS OF METHACRYLIC ACID**

Donald N. Brattesani, La Habra, Calif., assignor to Union Oil Company, Los Angeles, Calif.

Filed May 1, 1968, Ser. No. 725,941

Int. Cl. C07c 69/54

U.S. Cl. 260—486 AC

11 Claims

Esters of methacrylic acid or acrylic acid are produced by the oxidative carbonylation of propylene or ethylene by contacting the olefin, oxygen and carbon monoxide in the presence of an alcohol, a Group VIII noble metal catalyst and, as a cocatalyst, an alkyl, cycloalkyl, aromatic or heterocyclic compound containing an oxide of nitrogen preferably in an aromatic or heterocyclic ring. The oxidation can also be performed in the presence of a redox agent. In a typical embodiment the olefin, carbon monoxide and oxygen are contacted with an alcoholic solution of Group VIII noble metal at a concentration from 0.001 to 1.0 molar, a nitrogen oxide compound, pyridine 1-oxide, at a concentration from 0.01 to 25 weight percent and a redox agent, cupric chloride, at a concentration from 1 to about 35 weight percent. The carbon monoxide partial pressure used is from 10 to about 70 percent of the total pressure which is from 300 to 3,000 p.s.i.g. Under these conditions a substantial portion of the product comprises the desired ester of methacrylic acid.

3,625,996

**PREPARATION OF OLEFINIC ACIDS AND ESTERS**

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed July 19, 1968, Ser. No. 745,991

Int. Cl. C07c 69/54

U.S. Cl. 260—486 R

13 Claims

A process for preparation of olefinic acids or esters from dicarboxylic acids or esters comprising contacting the dicarboxylic acid or ester with a complex catalyst comprising a Group VIII noble metal and a ligand from the group consist-

ing of organic phosphines, arsines and stibines. The olefinic acids and esters are useful as monomers in preparation of a wide variety of polymeric or copolymeric resins.

3,625,997

**3-OXO-A-NOR-B-HOMO-PREGNADIENES AND A**

**PROCESS FOR THEIR MANUFACTURE**

Georg Anner, Basel; Hellmut Ueberwasser, Riehen, and Peter Wieland, Oberwil, Basel-Land, all of Switzerland, assignors to Ciba Corporation, New York, N.Y.

Filed Apr. 29, 1968, Ser. No. 725,182

Claims priority, application Switzerland, May 3, 1967,

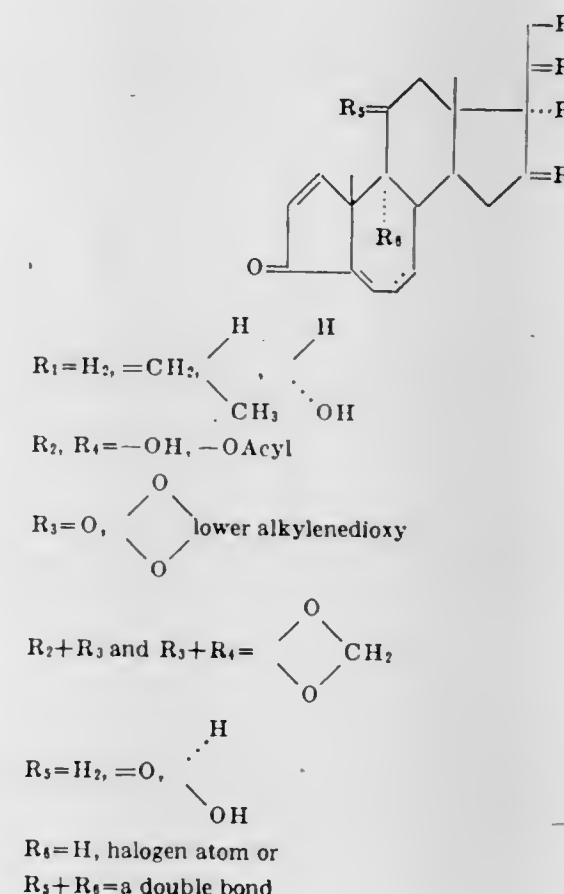
May 3, 1967; 6440/67, 6441/67

Int. Cl. C07c 69/02

U.S. Cl. 260—488

14 Claims

Compounds of the formula



for example: 3,20-dioxo-11β,17-dihydroxy-21-acetoxy-A-nor-B-homo-pregna-1,5-diene or 3,11,20-trioxo-17-hydroxy-21-acetoxy-A-nor-B-homo-pregna-1,5,7-triene.  
Use: anti-inflammatory agents.

3,625,998

**PROCESS FOR THE MANUFACTURE OF VINYL ESTERS OF CARBOXYLIC ACIDS**

Hans Fernholz, Fischbach, Taunus; Hans-Hoachim Schmidt, Frankfurt am Main, and Friedrich Wunder, Florsheim am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Feb. 27, 1968, Ser. No. 708,509

Claims priority, application Germany, Aug. 10, 1967, F

53201

Int. Cl. C07c 67/04

U.S. Cl. 260—497 A

14 Claims

Preparation of vinyl esters of carboxylic acids in the gaseous phase by reacting ethylene, oxygen and carboxylic acids at elevated temperatures in the presence of a catalyst consisting of a salt of a noble metal of the eighth group of the periodic system and 0.01 to 200 g. cadmium in the form of a cadmium salt of a carboxylic acid, this catalyst being supported on a carrier.



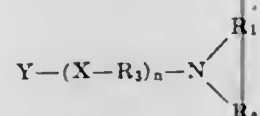




3,626,011

**$\beta$ -DIALKYLAMINOALKYL ETHERS AND THIOETHERS**  
 Carl Bordenca, Ponte Vedra Beach, and John M. Derfer, Jacksonville, both of Fla., assignors to SCM Corporation, Cleveland, Ohio  
 Original application, Ser. No. 607,876, now Patent No. 3,446,843, Continuation-in-part of application Ser. No. 479,009, now abandoned. Divided and this application July 26, 1968, Ser. No. 747,830

Int. Cl. A01n 9/20; C07c 87/40, 87/127  
 U.S. Cl. 260—583 EE 8 Claims  
 Insecticidal  $\beta$ -dialkylaminoalkyl ethers and thioethers of alcohols and mercaptans, for example, of the formula



wherein Y is oleyl or di-isobutenyl carbonyl, R<sub>3</sub> is lower alkylene, R<sub>1</sub> and R<sub>2</sub> are lower alkyl, n is an integer of 1 to 3, X is oxygen or sulfur, and when n is 1, X is sulfur, and when n is 2 or 3, X represents at least one oxygen.

3,626,012

# **NAPHTHYL ACETALDEHYDES AND DERIVATIVES THEREOF**

John H. Fried, and Ian T. Harrison, both of Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama  
 Filed July 2, 1968, Ser. No. 741,900  
 Int. Cl. C07c 47/52

U.S. Cl. 260—599 8 Claims  
 $\beta$ -(2-Naphthyl) acetaldehydes optionally substituted at the  $\beta$  position and/or positions C—1, 4, 5, 7 or 8; and/or position C—6 possess anti-inflammatory analgesic, antipyretic and anti-pruritic activity.

3,626,013

# **PROCESS FOR PRODUCING NITROACETYLENES**

Volker Jager, Brussels, and Heinz Gunter Viehe, Linkebeek, both of Belgium, assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 13, 1968, Ser. No. 775,502  
 Int. Cl. C07c 79/06

U.S. Cl. 260—644 3 Claims  
 Nitroacetylenes are prepared by contacting a 1-nitro-2-haloethylene with a strong base in a heterogeneous reaction system. The nitroacetylenes are useful reaction intermediates, for instance, they can be reacted with dienes to produce useful compounds.

3,626,014

# **PROCESS FOR PREPARATION OF ORGANIC PEROXIDES**

Robert J. Harvey, Teaneck, N.J., assignor to Halcon International, Inc.

Filed Mar. 11, 1968, Ser. No. 711,845  
 Int. Cl. C07c 73/00

U.S. Cl. 260—610 11 Claims  
 This invention relates to an improved process for the production of organic peroxides by reaction between organoboron compounds and organic hydroperoxides or alcohols. The process of this invention is applicable to the manufacture of symmetrical as well as asymmetrical peroxides and in many embodiments is able to produce peroxide from the starting materials in almost quantitative yields. In particularly preferred embodiments this invention relates to the preparation of di-tertiary-alkyl peroxides such as, for example, di (t-butyl) peroxide and di-t-amyl peroxide and to the preparation of di-alkyl peroxides such as, for example, di (alpha-phenylethyl) peroxide and di-cumyl peroxide.

3,626,015

# **NOVEL PHOTOCHEMICAL REACTIONS OF TRANS- $\alpha$ -SANTALATE AND NOVEL COMPOUNDS RESULTING THEREFROM**

Ronald G. Lewis, Dayton, and William F. Erman, Springfield Township, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 26, 1968, Ser. No. 700,752  
 Int. Cl. C07c 35/02; C11b 9/00; C11d 3/065

U.S. Cl. 260—631.5 12 Claims  
 Ultraviolet irradiation of ethyl trans- $\alpha$ -santalate to obtain, initially, (1) ethyl trans- $\alpha$ -santalate and ethyl cis- $\alpha$ -santalate and, on further irradiation, to obtain the novel compounds, (2) ethyl trans- $\Delta^{11,12}$ - $\alpha$ -santalate and ethyl cis- $\Delta^{11,12}$ - $\alpha$ -santalate; and the subsequent reduction of these compounds to obtain, with (1), trans- $\alpha$ -santalol and cis- $\alpha$ -santalol and, with (2), novel compounds, trans- $\Delta^{11,12}$ - $\alpha$ -santalol and cis- $\Delta^{11,12}$ - $\alpha$ -santalol.

3,626,016

# **ALKYNYLATION OF KETONES AND ALDEHYDES USING COMPLEXES HAVING UTILITY THEREFOR**

Kenneth R. Martin, Gastonia, N.C., assignor to Lithium Corporation of America, New York, N.Y.

Filed Jan. 24, 1968, Ser. No. 700,023  
 Int. Cl. C07c 33/04, 33/06, 35/02

U.S. Cl. 260—638 Y 13 Claims  
 Ketones and aldehydes are alkynylated, particularly ethynylated, by reacting certain complexes of monoalkali metal alkynyls, such as monolithium acetylide-dimethylsulfoxide complex  $[(LiC \equiv CH)_2 \cdot CH_3 \cdot SO \cdot CH_3]$ , with a ketone or aldehyde. Novel complexes, such as the foregoing, are also disclosed including a method for the preparation thereof, as by reacting a dimethyl ether complex of methylsulfynylmethyl lithium  $(LiCH_2 \cdot SO \cdot CH_3 \cdot CH_3 \cdot O \cdot CH_3)$  with acetylene.

3,626,017

# **BRIDGEHEAD BROMO-CHLORO ADAMANTANES AND THEIR PREPARATION**

Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Dec. 7, 1967, Ser. No. 688,679  
 Int. Cl. C07c 17/20, 23/18

U.S. Cl. 260—648 R 3 Claims  
 Novel adamantane compounds having a bromo and a chloro substituent at bridgehead positions are prepared by reacting a dibromadamantane with a chloro donor in the presence of a Lewis acid. For example, 1,3-dibromo-adamantane is reacted with carbon tetrachloride in the presence of a mixed Lewis acid catalyst of  $BBr_3$  and  $AlBr_3$ . The product was a mixture of the 1,3-dibromo-1,3-dichloro and 1-bromo-3-chloro-adamantane.

3,626,018

# **CHEMICAL PROCESSES USING ORGANOTALLIUM COMPOUNDS**

Edward C. Taylor, 1500 Spring Garden St., Philadelphia, Pa., and Alexander McKillop, East Anglia, Norwich, England

Filed Jan. 25, 1968, Ser. No. 700,352  
 Int. Cl. C07c 15/14

U.S. Cl. 260—670 7 Claims  
 Thallous salts of  $\beta$ -dicarbonyl compounds, prepared by reaction of the  $\beta$ -dicarbonyl compounds with a thallous alkoxide, are treated with alkyl halides to give C-alkyl products in high yield, with acyl halides at room temperature to give C-acyl products, and with acyl halides at low temperatures to give O-acyl products. Thallous phenolates are esterified with acyl or aroyl halides. Anhydrides are also prepared, as are bi-aryls and bi-sec-alkyls. N-Heterocyclics, including purines and pyrimidines, are N-alkylated. Lactams are O-acylated or N-alkylated.

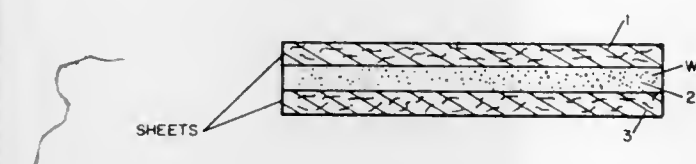
3,626,019

# **ADHESIVE COMPOSITION MADE OF A TELEMER OF ETHYLENE ON PSEUDOCUMENE**

Ernest P. Black, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Apr. 12, 1968, Ser. No. 720,832  
 Int. Cl. C07c 3/00

U.S. Cl. 260—671 2 Claims



Laminating wax of high adhesive characteristics especially useful in the production of intercalated products is obtained by solvent fractionation of a telomer resulting from a telomerization reaction employing pseudocumene as the telogen and ethylene as the taxogen. The reaction producing said telomer is effected by means of a catalyst which is a combination of lithium alkyl with certain types of non-aromatic tertiary amines.

3,626,020

# **SEPARATION OF PARAXYLENE FROM MIXTURE OF C AROMATIC UTILIZING CRYSTALLINE ALUMINOSILICATE ADSORBENT**

Richard W. Neuzil, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 739,176, June, 1968, now Patent No. 3,558,730, dated Jan. 26, 1971. This application Mar. 12, 1969, Ser. No. 806,735  
 Int. Cl. C07c 7/12; C10g 25/04

U.S. Cl. 260—674 SA 20 Claims

A process for the separation of paraxylene from a mixture of at least one other xylene isomer using a synthetically prepared crystalline aluminosilicate adsorbent. A feed mixture comprising at least two xylene isomers is passed through a bed of faujasite adsorbent wherein one xylene isomer is preferentially adsorbed within the adsorbent. A subsequent desorption step is then used to desorb the selectively adsorbed feed component.

3,626,021

# **DEHYDROGENATION OF ALIPHATICS OVER ALKALI METAL OXIDE-CHROMIA-ZINC ALUMINATE SPINEL CATALYST**

Glenn O. Michaels, South Holland; John Mool, Homewood, and LaVern H. Beckberger, Harvey, all of Ill., assignors to Atlantic Richfield Company

Continuation of application Ser. No. 445,778, Apr. 5, 1965, now abandoned. This application July 1, 1968, Ser. No. 741,323

Int. Cl. C07c 5/18, 3/28; B01j 11/22

U.S. Cl. 260—683.3 10 Claims

Branched chain, aliphatic hydrocarbons of five to 10, preferably five to eight, carbon atoms, with the longest continuous carbon-to-carbon chain being four or five carbons long, are dehydrogenated with the aid of a catalyst composition consisting essentially of zinc aluminate spinel, chromia and alkali metal oxide. Vapor phase conditions are employed, including a temperature of about 900° to 1250° F. The dehydrogenation proceeds with a minimum of skeletal isomerization to yield an olefinically unsaturated product having the same skeletal carbon atom arrangement as the hydrocarbon being dehydrogenated. Thus, for example, using the catalyst of the invention neohexane can be dehydrogenated to neohexene in high yields and with a minimum of byproducts.

3,626,022

# **HARDENABLE EPOXY RESIN CONTAINING CHELATES FROM METAL HALIDES, MONOEPOXIDES, AND CHELATE FORMING COMPOUNDS**

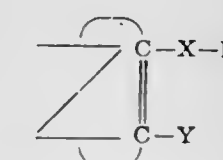
Hiroshi Suzuki, and Yasuji Nakamura, both of Tokyo, Japan, assignors to Asahidenka Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1968, Ser. No. 720,360  
 Claims priority, application Japan, Apr. 13, 1967, 42/23561

Int. Cl. C08g 45/00, 45/12

U.S. Cl. 260—830 TW 9 Claims

An epoxy resin composition hardenable at a temperature of from about 0 to 5° C. is made by mixing (A) one or more epoxy compounds containing on the average more than one adjacent epoxy group per molecule, with (B) a hardener produced by reacting (1) at least one compound selected from the group consisting of boron halide, aluminum family metal halides, ferric halide and functional derivative thereof with (2) at least one liquid mono-1, 2-epoxide and (3) at least one aromatic chelate-forming compound having the formula



wherein X is an oxygen atom or a sulfur atom, Y is an organic radical containing an oxygen atom, a sulfur atom and a nitrogen atom and which can co-ordinate to said metal and Z is an organic radical which will make



so as to represent a divalent aromatic radical.

3,626,023

# **URETHANE COMPOSITIONS**

Bernardas Brizgys, Southgate, Mich., assignor to BSAF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 1, 1967, Ser. No. 679,615

Int. Cl. C08g 37/32

U.S. Cl. 260—849 9 Claims

The subject matter of the present application relates to polyurethane compositions. As disclosed herein, the polyurethane compositions are prepared by heating a composition which comprises polyoxyalkylene polyol, organic polyisocyanate, alkoxyalkylamino compound, acid catalyst, and metallo-organic catalyst.

3,626,024

# **STABILIZED POLYACETALS AND PROCESS FOR THEIR MANUFACTURE**

Klemens Gutweiler; Edgar Fischer, both of Frankfurt am Main, and Klaus-Dieter Asmus, Hofheim, Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Mar. 26, 1968, Ser. No. 715,954

Int. Cl. C08g 37/32

U.S. Cl. 260—849 10 Claims

Stabilization of polyacetals with the use of a homocondensate of hydroxymethyl cyanoguanidine as stabilizer in combination with known oxidation stabilizer.



### 3,626,025 COMPATIBLE POLYMERS

Harry D. Ansporn, Pittsburgh, Pa., and Richard L. Alexander, Greensburg, Ind., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 443,045, Mar. 26, 1965, now Patent No. 3,427,296. This application Apr. 22, 1968, Ser. No. 723,047

Int. Cl. C08g 41/04; C08f 15/02

U.S. Cl. 260—857

2 Claims

Blended polymer compositions containing random inter-polymers of ethylene and 1-vinyl-2-pyrrolidinone.

### 3,626,026 HOTMELT ADHESIVE COMPOSITIONS

Masuo Fukumura, Tokyo-to; Haruo Takahashi, Hiratsuka-shi; Shihoko Kawabe, and Hajime Fukke, both of Tokyo-to, all of Japan, assignors to Kabushiki Kaisha Hitachi Seisakusho, Tokyo-to, Japan

Continuation-in-part of application Ser. No. 594,681, Nov. 16, 1966, now abandoned. This application Aug. 1, 1968, Ser. No. 749,312

Int. Cl. C09j 3/26

U.S. Cl. 260—857

1 Claim

An adhesive composition composed of 50–95 parts by weight of at least one ethylene copolymer such as ethylene vinyl acetate copolymer, or ethylene-ethylacrylate copolymer, and 5–50 parts by weight of thermoplastic resin such as chlorinated polyethylenes, polyamides, polyesters, phenoxy resins, polyvinylbutyral, or ionomer resins. The adhesive composition can further contain a conditioning agent, or it can be composed of 25–85 parts by weight of one or more ethylene copolymer such as ethylene vinyl acetate copolymer or ethylene-ethylacrylate copolymer, 5–50 parts by weight of thermoplastic resin such as chlorinated polyethylene, polyamides, polyesters, phenoxy resins, polyvinylbutyral, or ionomer resins, and 10–70 parts by weight of the conditioning agent such as low-molecular-weight polyethylenes, turpentine resins, or petroleum resins.

### 3,626,027 PROCESS FOR PRODUCING A GRAFT COPOLYMER COMPOSITION HAVING A POLYETHER AS ONE COMPONENT

Atsushi Tanaka; Hideo Sawada, and Hirotaka Toba, all of Iruma-gun, Japan, assignors to Dacel Limited

Filed Aug. 5, 1968, Ser. No. 749,947

Claims priority, application Japan, Aug. 4, 1967, 42/50104

Int. Cl. C08g 43/02

U.S. Cl. 260—874

2 Claims

A process is disclosed and claimed for producing a graft copolymer composition, (e.g., polyether). The composition is prepared by adding and mixing more than an equivalent of an aliphatic polyether polymer with a polymer having an acid ester, acid anhydride, alcohol ester or acetal or alcohol group side chain, in the presence of a solvent solution. The mixture is then heated and a Lewis acid is added under agitation. The graft copolymer compositions are useful in molding applications.

### 3,626,028 THERMOPLASTIC, RIGID RESINOUS COMPOSITION AND METHOD OF MAKING SAME

Elmer J. De Witt, 3154 Prior Drive, Cuyahoga Falls, Ohio

Filed May 13, 1968, Ser. No. 728,848

Int. Cl. C08f 29/12, 29/22

U.S. Cl. 260—878

7 Claims

A rigid, thermoplastic resinous blend comprises a rigid vinyl chloride base resin such as polyvinyl chloride and from about 0.5 percent to about 8 percent/wt., based on the weight of the base resin, of an amorphous, low molecular weight polypropylene. The blend has greatly improved melt flow properties and also a resistance to distortion by heat which is essentially equal to or superior to those of the base resin. The preferred method of making such a blend involves dissolving an amorphous polypropylene soluble in vinyl chloride in the base resin monomeric mixture and carrying

out the polymerization thereof in aqueous suspension to produce a granular vinyl chloride resin in which the polypropylene, normally highly incompatible with vinyl chloride resins, is uniformly dispersed in a physical sense.

### 3,626,029 POLYMER COMPOSITION OF SUPPRESSED ELECTROSTATIC CHARGES

David W. Young, Homewood, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Apr. 26, 1968, Ser. No. 724,607

Int. Cl. C08f 45/58

U.S. Cl. 260—889

5 Claims

A solid polymer composition of an ethylenically-unsaturated, aliphatic hydrocarbon wherein electrostatic charges are suppressed which comprises a polymer of an ethylenically-unsaturated, aliphatic hydrocarbon and a minor amount, sufficient to suppress the accumulation of electrostatic charges, e.g. about 0.05 to 5 wt. percent, based on the solid polymer, of a polyhydroxy polymer of a 1,3-diene of four to about 12 carbon atoms. The polyhydroxy polymer has an average of at least about 1.8 predominantly primary, terminal allylic hydroxyl groups per molecule, a viscosity at 30° C. of about 5 to 20,000 poises and a number average molecular weight of about 400 to 25,000.

### 3,626,030

#### STABILIZED MACROMOLECULAR POLYACETALS AND PROCESS FOR MAKING THE SAME

Ernst Wolters, and Michael Lederer, both of Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Continuation-in-part of application Ser. No. 634,487, Apr. 28, 1967, now Patent No. 3,531,451, Continuation-in-part of application Ser. No. 679,517, Oct. 31, 1967, now abandoned.

This application Feb. 17, 1970, Ser. No. 12,144

Claims priority, application Germany, May 17, 1966, F 49223

Int. Cl. C08f 33/08

U.S. Cl. 260—895

10 Claims

Improved stabilization of polyacetals against thermal and oxidative degradation, particularly stabilization of homopolymers of formaldehyde or its cyclic oligomers and of copolymers of trioxane with cyclic ethers or cyclic acetals is obtained by using a stabilizing agent which is a homopolymer of a poly-N-vinyl-azetidinone or a copolymer of an N-vinyl-azetidinone and a minor amount of an olefinically unsaturated comonomer or mixtures of such homopolymers and copolymers. The stabilizing agents may be used in an amount of 0.05 to 10 percent by weight. Further improvement in stabilization is achieved by using the poly-N-vinyl-azetidinone stabilizing agents in combination with conventional phenolic stabilizers in that a synergistic effect between the two types of stabilizers is obtained.

### 3,626,031

#### VINYL HALIDE POLYMER STABILIZED WITH PARTIAL ESTER SALT OF MALEIC ANHYDRIDE-VINYL COMPOUND POLYMER

Robert R. Chambers, Scarsdale, N.Y.; Henry V. Isaacson, Minneapolis, Mich., and David W. Young, Homewood, Ill., assignors to Atlantic Richfield Company

Continuation-in-part of application Ser. No. 607,150, Jan. 4, 1967, now Patent No. 3,472,772. This application June 4, 1968, Ser. No. 734,202

Int. Cl. C08f 29/22

U.S. Cl. 260—899

6 Claims

Novel tin salts of partial esters of vinyl monomeric anhydride polymers, (e.g. styrene-maleic anhydride polymers), esterified with a thioalcohol or a hydroxythioether are formed by combination of the ammonium salt of said

thioester and stannous chloride. Vinyl halide polymers are stabilized by incorporation of small amounts of these tin salts.

### 3,626,032 PREPARATION OF POLY- $\alpha,\alpha,2,3,5,6$ -HEXAFLUORO-P-XYLYLENE

William P. Norris, Chino Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 24, 1968, Ser. No. 723,908

Int. Cl. C08f 3/00

U.S. Cl. 260—91.5

3 Claims

A method for the preparation of new highly fluorinated p-xylylene monomers and polymers which have excellent chemical and thermal properties.

### 3,626,033 VINYL CHLORIDE RESINS WITH HIGH HEAT DEFORMATION AND IMPACT

Henno Keskkula, Midland, and Arthur A. Pettis, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 12, 1968, Ser. No. 775,100

Int. Cl. C08f 29/24, 41/12

U.S. Cl. 260—876 R

8 Claims

High heat deformation and high impact vinyl chloride resins are prepared by blending a resin such as polyvinyl chloride or copolymers of vinyl chloride containing at least about 80 percent vinyl chloride with a polydiene rubber nitrile graft copolymer such as a styrene/acrylonitrile polybutadiene graft copolymer and an anhydride containing copolymer such as styrene-maleic anhydride.

### 3,626,034 DIALKYL PHOSPHORYL N-ALKYLTAURINATES

Ralph B. Fearing, Bardonia, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

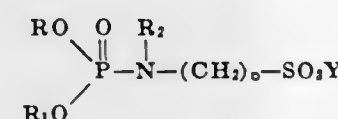
Filed Nov. 29, 1967, Ser. No. 686,747

Int. Cl. C07f 9/24; D06f 1/04

U.S. Cl. 260—947

1 Claim

A composition of matter useful in the process of dry cleaning consisting essentially of the formula:



wherein R is an alkyl group containing from six to 16 carbon atoms; R<sub>1</sub> is an alkyl group containing from six to 16 carbon atoms; R<sub>2</sub> can be hydrogen, an alkyl group containing from one to eight carbon atoms or an aryl group containing from one to eight carbon atoms; Y is selected from the group consisting of sodium, potassium, ammonium and mixtures thereof, and n is an integer from one to four.

### 3,626,035 SURFACE ACTIVE NONIONIC 2-HYDROXYALKYL 3-ALKOXY-2-HYDROXYALKYL PHOSPHATE ESTERS

Robert Ernst, Los Angeles, Calif., assignor to Textilana Corporation, Hawthorne, Calif.

Filed Nov. 5, 1968, Ser. No. 773,627

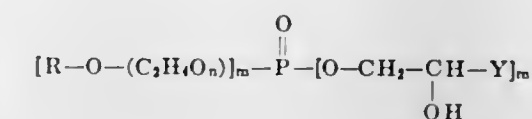
Int. Cl. C07f 9/08

U.S. Cl. 260—951

10 Claims

Surface active nonionic 2-hydroxyalkyl and 3-alkoxy-2-hydroxyalkyl phosphate esters having one or two higher al-

cohol or alkylphenol oxyethylate radicals, and conforming to the following general formula:



where R is a linear or branched alkyl group having eight to 18 carbon atoms, of which at least six are in an uninterrupted carbon-to-carbon chain, or an alkylphenyl group having eight to 15 carbon atoms in a linear or branched alkyl group, of which the alkyl substituent has at least four carbon atoms in an uninterrupted carbon-to-carbon chain, which may be branched but is Y is hydrogen or an alkyl group with an uninterrupted carbon chain of one to 16 carbon atoms, or a methoxyalkyl group  $-\text{CH}_2-\text{O}-\text{R}'$ , where R' is an alkyl radical having one to 18 carbon atoms; n is a number of two to 20; m is a number of one or two; m' is a number of one or two; and m + m' equals 3. Such compounds being useful as detergents, drycleaning agents, wetting agents, emulsifiers and lubricants.

### 3,626,036 O-METHYL-O-(2,2-DICHLORO-VINYL) PHOSPHORIC ACID ESTER MONOCHLORIDE AND METHOD OF PREPARATION

Wilhelm Sirrenberg, Sprockhoevel; Wolfgang Behrenz, and Ingeborg Hammann, both of Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 1, 1967, Ser. No. 687,162

Claims priority, application Germany, Dec. 13, 1966, F 50914

Int. Cl. A01n 9/36; C07f 9/20, 9/24

U.S. Cl. 260—957

5 Claims

Reacting O,O-dimethyl-O-(2,2-dichloro-vinyl)-phosphoric acid ester with phosphorus pentachloride, or with phosphorus trichloride and chlorine, e.g. at about 40°–130° C., to form O-methyl-O-(2,2-dichloro-vinyl)-phosphoric acid ester monochloride, and reacting said monochloride with ammonia or a primary or secondary amine, e.g. at a temperature up to about room temperature, in the presence of an acid binding agent to form the corresponding O-methyl-O-(2,2-dichloro-vinyl)-phosphoric acid ester amide, some of which are known, and which possess arthropodocidal properties.

### 3,626,037 MONO-2-HALOETHYL ESTERS OF 2-HALOETHANEPHOSPHONIC ACID

David I. Randall, and Robert W. Wynn, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

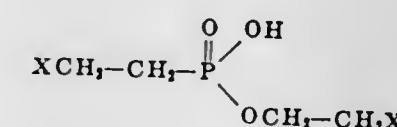
Filed Mar. 5, 1968, Ser. No. 710,652

Int. Cl. A01n 9/36; C07f 9/40

U.S. Cl. 260—961

2 Claims

Mono-2-haloethyl esters of 2-haloethanephosphonic acid represented by the formula:



wherein both X's represent the same halogen, i.e. either bromine or chlorine, preferably chlorine. The compounds are plant growth regulators comparable to 2-chloroethanephosphonic acid.



3,626,038

**PROCESS FOR PREPARING DIESTERS OF CIS-PROPENYL-PHOSPHONIC ACID**

Nathan G. Steinberg, Plainfield, N.J., assignor to Merck &amp; Co. Inc., Rahway, N.J.

Filed May 15, 1968, Ser. No. 729,448

Int. Cl. C07F 9/40; A01N 9/36

U.S. Cl. 260-968

4 Claims

A method for the preparation of a diester of cis-propenyl-phosphonic acid which comprises treating a diester of ethynyl phosphonic acid with tetramethyl diborane to afford a transdiester of [2-dimethylboryl]vinyl phosphonic acid, which intermediate, upon treatment with iodine in the presence of a base, yields the desired product. The product thus obtained is an intermediate which may be converted to cis-propenylphosphonic acid and then to the antimicrobially active (-) (cis-1,2-epoxypropyl) phosphonic acid and its salts.

3,626,039

**PROCESS FOR THE PREPARATION OF CHLOROALKYL-S-ALKYL-AND ARYL- (DI) THIOL-PHOSPHORIC ACID DIESTER AND ESTER AMIDE CHLORIDES**

Hellmut Hoffmann, Wuppertal-Elberfeld, Germany, assignor to Farbenfabriken Bazar Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of application Ser. No. 704,515, Feb. 12, 1968, now abandoned. This application May 8, 1968, Ser. No. 727,738

Int. Cl. C07d 105/04; C07F 9/24, 9/26

U.S. Cl. 260-971

12 Claims

Reacting 2-chloro-(optionally 4-chloro lower alkyl)-1,3-(dioxo, oxa-thia or oxa-aza)-2-(phospholanes or phosphorinanes) with alkyl, oxo-alkyl (i.e. carbonyl-alkyl or aldehydo-alkyl), halo-alkyl, phenyl or alkyl-, halo- and/or nitro-substituted phenyl sulfonylchlorides, for example at about -20 to +50° C., optionally in the presence of an inert organic solvent, to form the corresponding (O-, S- and N-chloro-substituted alkyl)-S-(alkyl, oxo-alkyl, haloalkyl, phenyl and alkyl-, halo- and/or nitro-substituted phenyl)-diester chlorides and ester amide chlorides, which are known intermediates usable in the known way for producing known insecticides, fungicides and other plant protection agents.

3,626,040

**METHOD OF MAKING FUSED BUNDLES OF LIGHT-CONDUCTING FIBERS**

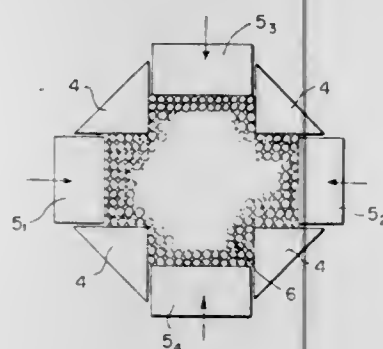
Kazuyoshi Nagao, and Akihiko Katsura, both of Yokohama, Japan, assignors to American Optical Corporation, Southbridge, Mass.

Filed Oct. 6, 1969, Ser. No. 863,962

Int. Cl. B29d 11/00

U.S. Cl. 264-1

3 Claims



Forming a vacuum-tight fused bundle of light-conducting fibers in a compression mold. An elongated mold having a cross cavity with a plunger closing each of the four sides thereof is filled with light-conducting fibers extending along the length of the cavity in side-by-side parallel relationship with each other. The fibers are heated to fusing temperature and the plungers are all simultaneously forced against the fibers toward a central axis through the cavity under uniform

high pressure whereby a substantially uniform pattern of individual fiber distortion is produced throughout the resulting fused bundle of fibers.

3,626,041

**APPARATUS AND PROCESS FOR MAKING CONTINUOUS FILAMENT**

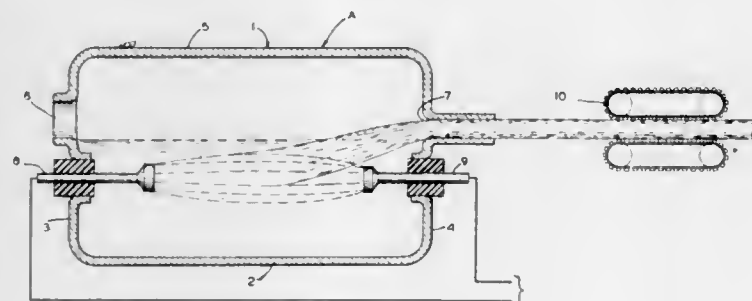
Joseph E. Fields, and Edward H. Mottus, both of Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 13, 1968, Ser. No. 775,243

Int. Cl. B29h 1/02; B06b 1/02; B01d 13/02

U.S. Cl. 264-24

11 Claims



A process for making a continuous filament from discrete particulate matter including particles and fibers and mixtures thereof which may be initially packed and oriented in any random fashion. The particulate matter is added to a reaction vessel having a pair of electrodes therein. A strong electrokinetic field is established in this vessel and this electrokinetic field will untangle and properly orient the various random fibers and particulate matter through its influence. This action will cause close packing of the particulate matter in a desired pattern. Furthermore, the orientation is made to take place in a polymeric composition or resin matrix system so that the particulate matter is not only oriented, but held in the oriented position without the aid of the electrokinetic field. During the process of alignment and polymerization or partial polymerization, the continuous filament is formed and simultaneously removed outwardly from the vessel and then fully cured.

3,626,042

**MANUFACTURE OF VITREOUS CARBON BODIES**

Harry Appleby, and Frederick Claud Coward, both of Ilford, England, assignors to The Plessey Company Limited, Ilford, Essex County, England

Filed July 1, 1969, Ser. No. 838,326

Claims priority, application Great Britain, July 12, 1968, 33,490/68

Int. Cl. C01b 31/02

U.S. Cl. 264-29

4 Claims

Vitreous carbon bodies are produced by assembling a plurality of phenol-formaldehyde resinous bodies into a unitary composite body having a layer of a curable phenolic resin adhesive interposed between the contiguous surfaces, curing the adhesive while the surfaces are maintained in contact by external pressure, and firing the composite body to convert it to a unitary vitreous carbon body.

3,626,043

**LUBRICATION PROCESS**

Alfred Jean P. Flipo, Geel, and Armand Georges Smolders, Olmen, both of Belgium, assignors to Belgonucleaire, S.A. and Centre d'Etude de l'Energie Nucleaire, Bruxelles, Belgium

Filed June 25, 1969, Ser. No. 836,343

Claims priority, application Belgium July 5, 1968, July 5, 1968; 717646, 717647

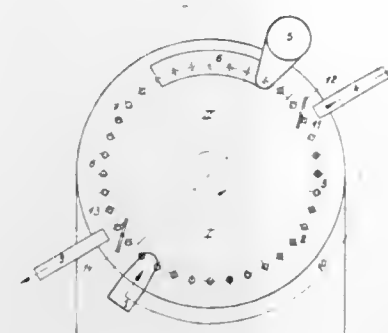
Int. Cl. B29c 1/04

U.S. Cl. 264-37

5 Claims

The specification discloses processes for lubricating com-

paction presses, including automatic presses having double-form filaments followed by stretching of the filaments. Tubular filaments with increased wet modulus and a tendency to



sided rotary press heads, with solid lubricants.

3,626,044

**PROCESS FOR MANUFACTURING A CURVED COMPOSITE FOAMED PANEL**

Guy Arnaud, Route de Peney, Satigny, Switzerland

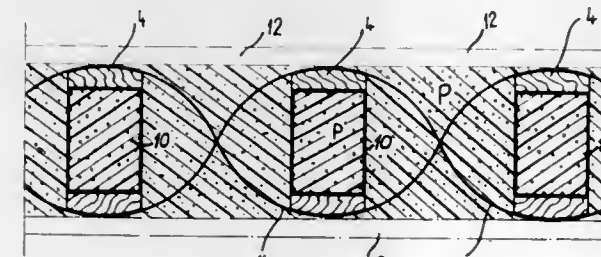
Filed Nov. 10, 1969, Ser. No. 875,598

Claims priority, application Switzerland, Nov. 8, 1968, 16700/68

Int. Cl. B29d 27/04

U.S. Cl. 264-45

10 Claims



A partition or panel is formed of a plurality of reinforcing elements interlaced with bands of glass cloth and embedded in a polymerized resin foam. The reinforcing elements comprise a core of polymerized resin encased in a layer of glass fabric between a pair of laths. The reinforcing elements can be made with curved shapes by moulding between flat surfaces. The partition can be given a complex curvature by placing the reinforcing elements and interlaced glass cloth in a shuttering composed of a supple plastic sheet outwardly reinforced with laths transverse of the reinforcing elements and pouring an expansible resin foam, thereby eliminating the rigid conventional mould.

3,626,045

**PROCESS FOR MAKING TUBULAR FILAMENTS**

Calvin R. Woodings, Nuneaton, England, assignor to Coustauids Limited, London, England

Filed Dec. 15, 1969, Ser. No. 884,808

Claims priority, application Great Britain, Dec. 20, 1968, 60,676/68

Int. Cl. D01f 3/10

U.S. Cl. 264-54

4 Claims

A controllable commercial process for producing tubular regenerated cellulose filaments comprises extruding a viscose of a specific composition and containing sodium carbonate into a sulfuric acid spin bath of a specific composition to



crimp are produced by stretching the filaments by an amount approaching their breaking stretch.

3,626,046

**METHOD OF MAKING A SOLIDIFIED DISC FROM MATERIAL WHICH IS A GAS AT ROOM TEMPERATURE**

Horst Krause, and Richard Sigel, both of Garching, Germany, assignors to Institut für Plasmaphysik G.m.b.H., Munich, Germany

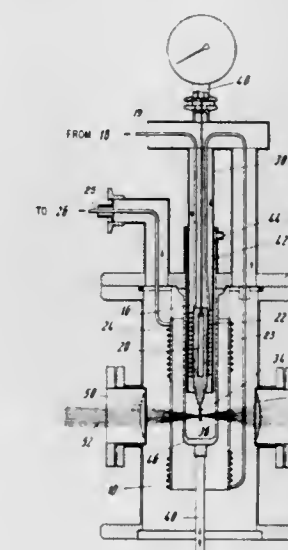
Filed Dec. 16, 1969, Ser. No. 885,545

Claims priority, application Germany, Dec. 16, 1968, P 18 14 884.4

Int. Cl. B29c 13/00; B29d 3/00

U.S. Cl. 264-81

3 Claims



A method for making a thin, self-supporting disc from a substance, such as hydrogen, which is a gas at room temperature said disc being eventually located in a vacuum. A metal member is provided which defines a hole having a diameter small enough that at a sufficiently low temperature a liquid film of the substance will form in or across the hole due to surface tension. The atmosphere surrounding the hole is first reduced to a high vacuum and then the space or zone surrounding the hole is made smaller. A predetermined quantity of the gas to be solidified is brought into this lesser space and a cryogen cools the gas below its boiling point. This causes the gas to condense on the surface of the metal member and form a liquid film in the hole. The liquid film is further cooled until it solidifies in the form of a thin, self-supporting



disc. An apparatus including a diffusion pump, a vacuum chamber, and a reciprocating glass bell within the vacuum chamber is provided to carry out the method.

3,626,047

# METHOD OF PRODUCING A WAX MATCH SHAFT

Cecil Illovo Kessler, Johannesburg, South Africa, assignor to Chet Industries (Proprietary) Limited

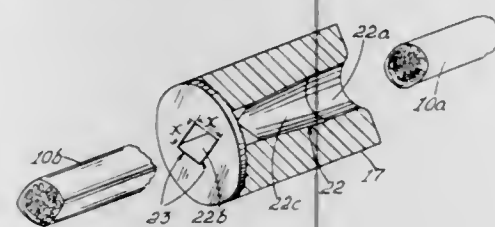
Filed Oct. 6, 1969, Ser. No. 863,948

Claims priority, application South Africa, Oct. 14, 1968, 68/6627

Int. Cl. B29c 17/02, 17/10; B29d 23/10

U.S. Cl. 264—136

7 Claims



A method of producing a shaft for a wax match which comprises the steps of continuously coating a web of combustible sheet material, such as paper, with a suitable impregnating material, such as wax; continuously compacting the web of sheet material into an elongated element of generally rounded cross-sectional configuration; progressively deforming the rounded element to present a poly lateral, preferably a quadrilateral, cross-sectional configuration with concave sides; allowing the deformed element to expand radially to reduce the concavity of the sides and preferably form a rectilinear poly lateral cross-sectional configuration; and severing the element into individual match shafts.

3,626,048

# METHOD FOR MANUFACTURING MOLDED ARTICLES OF POLYVALOLACTONE RESIN WHICH ARE SUPERIOR IN RIGIDITY AND TOUGHNESS

Tohru Kitazawa, Osaka-shi, and Masao Onaga, Kobe-shi, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

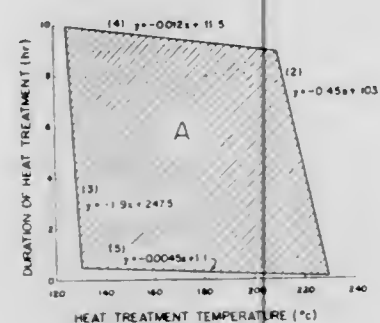
Filed Feb. 2, 1968, Ser. No. 702,642

Claims priority, application Japan, Feb. 10, 1967, 42/8731

Int. Cl. B29f 3/08

U.S. Cl. 264—176 R

10 Claims



A method for manufacturing molded articles of polypivalolactone resin which have highly increased mechanical properties, especially in toughness, said cell comprising subjecting highly crystalline molded plastic articles of polypivalolactone resin having an intrinsic viscosity  $[\eta]$  in the range of 1.5–4 to heat treatment under the treatment conditions consisting of temperature and duration which are both in ranges specified.

# PROCESS FOR PRODUCING CROSS-LINKED ACRYLIC FIBERS OR FILMS

Akira Yamamoto; Kunio Nakaoji; Kunio Oohara; Zenjiro Momiyama; Heichiro Murakami, and Akira Tomita, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha

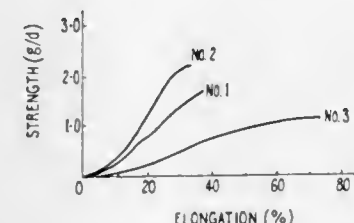
Filed Aug. 19, 1968, Ser. No. 753,515

Claims priority, application Japan, Sept. 2, 1967, 42/56502

Int. Cl. B28b 11/00; D01f 7/00

U.S. Cl. 264—236

14 Claims



Cross-linked acrylic fibers or films which are of improved hot water-resistance and have a silky hand or feel, are obtained by (i) preparing an acidic solution of a copolymer obtained by copolymerizing in an acidic medium (a) a vinyl monomeric material consisting mainly of acrylonitrile and (b) a polymerizable unsaturated monomer having a halogenated s-triazinyl group or halogenated pyrimidinyl group in the presence of (c) a polymerizable unsaturated monomer having a group containing active hydrogen, a pyridyl group, a pyrazinyl group or quinolyl group, and/or (d) protein, and then (ii) extruding a very stable acidic solution of the resulting polymer into the form of fibers or films, and then heat-treating. The obtained fibers, for example, are useful in making woven or knitted fabrics of correspondingly superior properties.

3,626,050

# METHOD OF MAKING BOWLING PINS

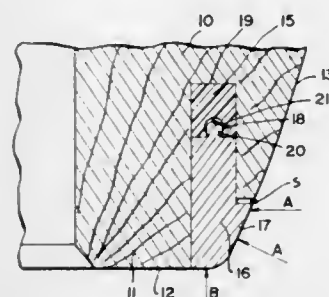
Fred E. Satchell, Chesterfield, Mo.; Anton W. Rytina, Grand Haven, and Louis J. Trier, Muskegon, both of Mich., assignors to Brunswick Corporation

Original application Oct. 9, 1968, Ser. No. 772,450, now Patent No. 3,477,721, Continuation-in-part of application Ser. No. 520,974, Jan. 17, 1966, now abandoned. Divided and this application Aug. 20, 1969, Ser. No. 851,615

Int. Cl. B29d 3/00; B29h 9/00; B29b 3/00

U.S. Cl. 264—263

4 Claims



A method of manufacturing a pin bottom for use in combination with a bowling pin which has a central reduced shank at its butt end formed by an undercut at the juncture of the bottom surface and side surface of the pin, with the undercut forming a downwardly facing annular groove. The pin bottom comprises a flexible upper base member which embraces the shank and is positioned entirely at the uppermost areas of the groove and bonded thereto. A wear-resistant lower base member extends at its upper end into the groove and terminates at its lower end in a shoulder which defines a continuation of the bottom and side surfaces of the bowling pin. The two base members are mechanically interlocked to form the pin bottom and to releasably secure the lower base member on the bowling pin.

3,626,051

# INJECTION MOLDING ENCAPSULATION OF PAPER-WOUND FLYBACK TRANSFORMERS AND THE LIKE

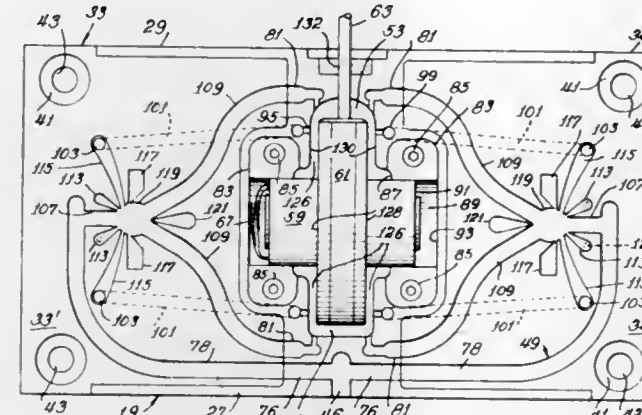
James P. Liautaud, 141 Grissom Lane, Hoffman Estates, Ill.

Filed Sept. 19, 1969, Ser. No. 859,361

Int. Cl. B29c 6/02; B29f 1/08

U.S. Cl. 264—272

2 Claims



High speed, high pressure, close tolerance plastic encapsulation of electrical and electronic articles having fragile portions is accomplished by an injection molding method which includes dividing the incoming stream of plastic into a plurality of substantially equal streams prior to entry of plastic into the mold cavity, and directing the equal streams into the cavity along injection lines which pass through channels between the sides of the article and the cavity walls. These lines are parallel to the sides of the article, and are not directed against the fragile portion. In a preferred embodiment air, venting from the cavity being filled, is employed to automatically assist in the equalization of the streams. In this preferred embodiment, not only are incoming streams at the same side of the article equalized, but moreover the technique assists in equalizing the pressure and quantity of material being injected along opposite sides of the article.

3,626,052

# POLYISOPRENE-NEOPRENE METEOROLOGICAL BALLOONS

Nicholas A. Sisco, 96 Loker St., Wayland, Mass., and Andrew J. Kelly, 32 Vogel St., West Roxbury, Mass.

Filed June 24, 1969, Ser. No. 836,167

Int. Cl. B64b 1/40

U.S. Cl. 264—301

9 Claims

A polyisoprene-neoprene latex in combination with a plasticizer is used to fabricate meteorological balloons.

3,626,053

# METHOD OF MOLDING THERMOPLASTIC SHEET MATERIAL

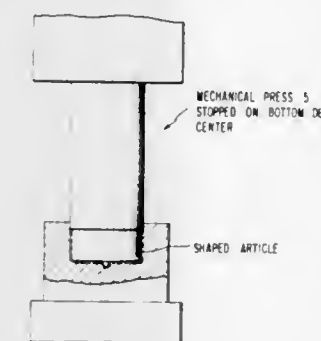
Peter H. Hofer, Berkeley Heights, N.J., assignor to Union Carbide Corporation

Filed Mar. 19, 1968, Ser. No. 714,205

Int. Cl. B29c 5/00

U.S. Cl. 264—322

8 Claims



This invention relates to a method of molding thermoplastic sheet material by heating the thermoplastic sheet

material to its softened state, forming the heat softened material into a shaped article and then allowing the shaped article to undergo a shrinkage with respect to its thickness while maintaining the length and width of the shaped article substantially constant.

3,626,054

# LUPUS ERYTHEMATOSUS SKIN TEST

Richard O. Ores, Leonia, N.J., assignor to Bard-Hamilton Company, Inc., East Paterson, N.J.

Filed Oct. 25, 1967, Ser. No. 677,868

Int. Cl. G01n 31/00, 33/16

U.S. Cl. 424—9

3 Claims

The invention pertains to an aqueous intradermal injection composition containing deoxyribonucleic acid and 0.36–0.7 percent of alkali metal chloride and a buffer, preferably a phosphate buffer. The pH is in the range of 6.9–8. Intradermal injection of the composition evokes induration encircled by erythema at the area surrounding the injection site on persons suffering from systemic lupus erythematosus. The deoxyribonucleic acid may be sterilized by contact with ethylene oxide prior to preparation of the aqueous composition.

3,626,055

# METHOD FOR PRODUCING ANTIBIOTIC T-2636

Eiji Higashide, Kawamo, Takarazuka; Motoo Shibata, Toyonaka, Osaka; Setsuo Harada, Suita, Osaka; Toyokazu Kishi, Nara, Nara, and Komei Mizuno, Settsu, Osaka, all of Japan, assignors to Takida Chemical Industries, Ltd., Osaka, Japan

Filed May 17, 1968, Ser. No. 730,113

Claims priority, application Japan, May 18, 1967, May 8, 1968; 42/31613, 43/31080

Int. Cl. A61k 21/00

U.S. Cl. 424—120

11 Claims

Antibiotics T-2636-A, T-2636-B, T-2636-C and T-2636-D, produced by fermentative culturing of *Streptomyces rochei* var. *volubilis* or a mutant or variant thereof, are useful, e.g. in topical preparations for the treatment of infections due to *Staphylococci*, e.g. *Staphylococcus aureus*.

3,626,056

# ORAL ANTIBIOTIC PRODUCT

Alphonse Peter Granatek, Baldwinsville; Bernard Charles Nunning, Liverpool; Nicholas George Athanas, East Syracuse; Robert Lewis Dana, Liverpool; Edmund Stanley Granatek, Baldwinsville, and Raymond George Daoust, De Witt, all of N.Y., assignors to Bristol-Myers Company

Filed Nov. 2, 1967, Ser. No. 680,008

Int. Cl. A61k 27/00

U.S. Cl. 424—35

25 Claims

An aqueous penicillin suspension comprising coated particles of certain penicillins such as dicloxacillin, the coating comprising ethylcellulose and a pharmaceutically acceptable wax, an aqueous pharmaceutical vehicle and kaolin or colloidal magnesium aluminum silicate when administered orally to animals including man is useful in the treatment of bacterial infections.

3,626,057

# METHOD OF PRODUCING TETANUS ANTITOXIN

Malik M. Sarwar, Cincinnati, Ohio, assignor to The Immune Milk Company of America, Inc., Cincinnati, Ohio

Continuation-in-part of application Ser. No. 747,106, July 24, 1968, now abandoned, Continuation-in-part of application

Ser. No. 505,023, Oct. 24, 1965, now abandoned. This application Sept. 24, 1969, Ser. No. 860,815

Int. Cl. A61k 27/00

U.S. Cl. 424—87

4 Claims

A method of producing tetanus antitoxin from the milk system of a cow by hyperimmunization of cows, which are free from Brucellosis and Tuberculosis, with tetanus toxoid and subsequently with toxin, collecting the milk from said hyperimmunized cows, extracting the tetanus antitoxin from said milk by the ammonium sulfate precipitation method and



determining the potency of the antitoxin by a toxin-antitoxin neutralization test.

3,626,058

# ANTHELMINTIC USE OF 4-PHENYLAZOPHENYLISOTHIOCYANATE

Robert J. Balske, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

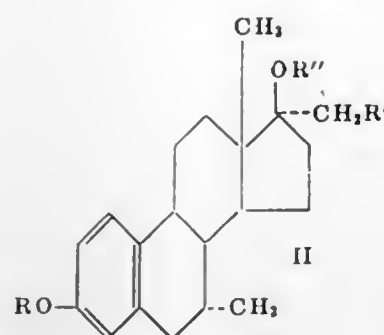
Filed Mar. 9, 1970, Ser. No. 17,905

Int. Cl. A61k 27/00

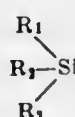
U.S. Cl. 424-226

5 Claims

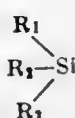
Usage of 4-phenylazophenylisothiocyanate in combating helminthiasis in animals, particularly ruminants and the monogastric animals.



wherein R is selected from the group consisting of hydrogen, the acyl radical of a hydrocarbon carboxylic acid containing from one through 12 carbon atoms, an alkyl radical containing from one through 8 carbon atoms, tetrahydrofuranyl, tetrahydropyranyl, 5-substituted tetrahydropyranyl, and a silyl



selected from the group consisting of alkyl of one through eight carbon atoms and phenyl, R' is selected from the group consisting of hydrogen, methyl, ethyl and 1-propynyl, and R'' is selected from the group consisting of hydrogen, the acyl radical of a hydrocarbon carboxylic acid containing from one through 12 carbon atoms, and a silyl radical of the formula



It also relates to 7 $\alpha$ -methyl-17 $\alpha$ -alkenylestradiols (11a) and their preparation.

3,626,062

# COMPOSITION COMPRISING 7 $\alpha$ -METHYL-17 $\alpha$ -ALKYLATED ESTRADIOLS

John C. Babcock, and J. Allen Campbell, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

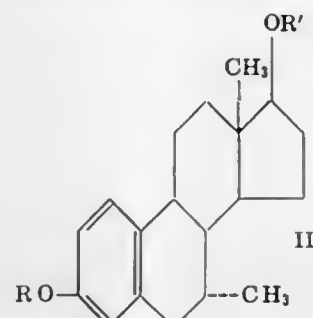
Continuation-in-part of application Ser. No. 114,621, June 5, 1961, now Patent No. 3,341,557, which is a continuation-in-part of application Ser. No. 69,557, Nov. 6, 1960, now abandoned. This application Sept. 8, 1967, Ser. No. 666,490

Int. Cl. C07c 169/08

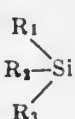
U.S. Cl. 424-238

5 Claims

This invention relates to novel steroid compounds and processes for their preparation; more particularly to those compounds embraced by the formula (II)



wherein R is selected from the group consisting of hydrogen, the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms, an alkyl radical containing from one through eight carbon atoms, tetrahydrofuranyl, tetrahydropyranyl, 5-substituted tetrahydropyranyl, and a silyl radical of the formula



3,626,059

# TRIHIDROXYPHENYLALANINE FOR TREATMENT OF HYPERTENSION

Balthasar Hegedus, Binningen, Switzerland; Hans Thoenen, Bethesda, Md., and Marcel Scheer, Basel, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed July 22, 1968, Ser. No. 746,311

Claims priority, application Switzerland, July 27, 1967, 10768/67

Int. Cl. A61k 27/00

U.S. Cl. 424-319

2 Claims

3,4,5-Trihydroxyphenylalanine, its acid and base addition salts and optical isomers thereof are useful as oral therapeutic agents for the treatment of hypertension.

3,626,060

# AGRICULTURAL COMPOSITIONS AND PROCESS FOR UTILIZING SAME

Nathaniel Grier, Englewood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of application Ser. No. 733,748, May 29, 1968, which is a continuation of application Ser. No. 417,506, Dec. 10, 1964, now abandoned.

Continuation-in-part of application Ser. No. 758,555, Sept. 2, 1958, now abandoned. Continuation-in-part of application Ser. No. 231,813, Oct. 19, 1962, now Patent No. 3,297,525. This application Jan. 12, 1970, Ser. No. 2,388. The portion of the term of the patent subsequent to Jan. 10, 1984, has been disclaimed.

Int. Cl. A01n 9/22

U.S. Cl. 424-232

6 Claims

Antimicrobial compositions containing salts of an organic carboxylic ester of an hydroxyquinoline and a salicylic acid are useful antimicrobials for agricultural applications.

## ERRATUM

For Class 424-238 see: Patent No. 3,625,194

3,626,061

# COMPOSITIONS COMPRISING 7 $\alpha$ -METHYL-17 $\alpha$ -ALKYLATED ESTRADIOLS

John C. Babcock, and J. Allen Campbell, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 114,621, June 5, 1961, now Patent No. 3,341,557, Continuation-in-part of application Ser. No. 69,557, Nov. 6, 1960, now abandoned.

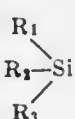
This application Sept. 8, 1967, Ser. No. 666,466

Int. Cl. C07c 169/08

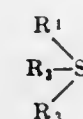
U.S. Cl. 424-238

6 Claims

This invention relates to novel 7 $\alpha$ -methyl-17 $\alpha$ -alkylated estradiols and processes for their preparation; more particularly to those compounds embraced by the formula (I)



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are selected from the group consisting of alkyl of one through six carbon atoms and phenyl and R' is selected from the group consisting of hydrogen, the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms, and



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> have the same meaning as above.

3,626,063

# THERAPEUTIC COMPOSITIONS COMPRISING 6-FLUORO-16-METHYL PREDNISOLONE, THE 21 ACYLATES AND SALTS THEREOF

Frank H. Lincoln, Kalamazoo; William P. Schneider, Kalamazoo Township, Kalamazoo County, and George B. Spero, Kalamazoo, all of Mich., assignors to Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 753,157, Aug. 4, 1958, now Patent No. 3,499,016. This application Aug. 11, 1959, Ser. No. 832,898. The portion of the term of the patent subsequent to Mar. 3, 1987, has been disclaimed.

Int. Cl. C07c 169/32

U.S. Cl. 424-243

8 Claims

This invention relates to therapeutic compositions and more particularly to therapeutic compositions comprising a 6 $\alpha$ -fluoro-11 $\beta$ ,17 $\alpha$ ,21-trihydroxy, 16 $\alpha$ -methyl-1,4-pregnadiene-3,20-dione and 21-acylates and water-soluble salts thereof as an essential active ingredient in combination with a pharmaceutical vehicle.

3,626,064

# TREATMENT OF HYPERURICEMIA WITH 4-AMINO-6-HYDROXY-1-H-PYRAZOLO(3,4-D)PYRIMIDINE

George H. Hitchings, Yonkers, and Elvira A. Falco, New Rochelle, both of N.Y., assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.

Continuation-in-part of application Ser. No. 574,576, Mar. 29, 1956, now abandoned. Continuation-in-part of application Ser. No. 22,394, Apr. 15, 1960, now abandoned. Continuation-in-part of application Ser. No. 221,357, Sept. 4, 1962, now abandoned. Continuation-in-part of application Ser. No. 524,873, Feb. 3, 1966, now abandoned. This application Apr. 25, 1967, Ser. No. 633,399

Claims priority, application Great Britain, Aug. 10, 1955, May 23, 1962, Aug. 23, 1962, 23055/55; 19863/62; 32519/62

Int. Cl. A61k 27/00

U.S. Cl. 424-251

2 Claims

The method of treatment and prophylaxis for hyperuricemia, which comprises administering to a mammal a therapeutically effective amount of a compound 4-amino-6-hydroxy-1-H-pyrazolo(3,4-d)pyrimidine.

3,626,065

# STABLE AQUEOUS MULTIVITAMIN PREPARATIONS

Hideyuki Maekawa, Osaka-shi, and Shohei Egawa, Amagasaki-shi, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed May 24, 1968, Ser. No. 731,978

Claims priority, application Japan, May 25, 1967, 42/33243

Int. Cl. A61k 15/00

U.S. Cl. 424-255

2 Claims

This invention relates to stable aqueous multivitamin preparations in which the vitamin A ingredient is isolated together with the vitamin C and nicotinamide ingredients from other ingredients including the vitamin B<sub>1</sub> ingredient.

3,626,066

# ARYLPYRIDINYL-ALKYL ALCOHOL DERIVATIVES IN COMPOSITIONS AND METHODS FOR TRANQUILIZING MAMMALS

Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

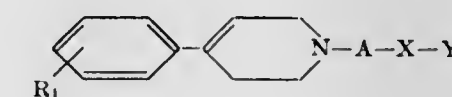
Original application Dec. 13, 1967, Ser. No. 690,097, now Patent No. 3,523,950. Divided and this application Jan. 19, 1970, Ser. No. 4,092

Int. Cl. A61v 27/00

U.S. Cl. 424-263

9 Claims

There are disclosed compositions of matter classified in the art of chemistry as derivatives of arylpyridinyl-alkyl alcohols as well as processes for making and using such compositions. The novel chemical compounds are represented by the following formula:



wherein R' represents hydrogen, lower alkyl, lower alkoxy or trifluoromethyl; A represents alkylene having two to four carbon atoms; X represents —O—C(O)—; Y represents phenyl, trifluoromethylphenyl, lower-alkoxyphenyl, and NHR<sup>2</sup> wherein R<sup>2</sup> represents hydrogen, lower alkyl, phenyl, trifluoromethylphenyl and lower-alkoxyphenyl.

The pharmaceutically acceptable acid addition salts of the arylpyridinyl-alkyl alcohol derivatives embraced by the above formula are also included within the scope of this invention.

3,626,067

# SUBSTITUTED OXAZOLINES, USEFUL AS PHARMACEUTICALS

John Harvey, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

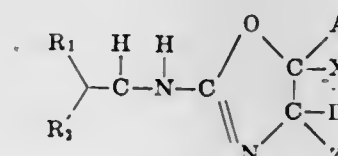
Filed July 1, 1965, Ser. No. 468,999

Int. Cl. A61k 27/00; C07d 85/00

U.S. Cl. 424-272

15 Claims

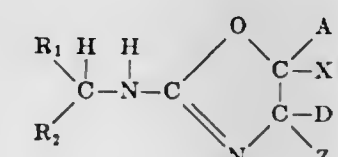
1. A compound of the formula



wherein

R<sub>1</sub> is phenyl, 2-thienyl, 3-thienyl, 2-furanyl or 3-furanyl; R<sub>2</sub> is methyl, ethyl, or cyclopropyl; A, X, D and Z are each separately hydrogen or alkyl of one through four carbon atoms with the limitation that the total number of carbon atoms added together in A, X, D and Z is less than nine.

14. A pharmaceutical composition containing an inert pharmacological diluent and a pharmacologically active amount of a compound of the formula



R<sub>1</sub> is phenyl, 2-thienyl, 3-thienyl, 2-furanyl or 3-furanyl; R<sub>2</sub> is methyl, ethyl, or cyclopropyl; A, X, D and Z are each separately hydrogen or alkyl of one through four carbon atoms with the limitation that the total number of carbon atoms added together in A, X, D and Z is less than nine.



3,626,068

**DERIVATIVES OF 3,4-DIHYDROBENZOTHIENO [2,3-C]PYRIDINE AND 3,4-DIHYDRO-5H-BENZOTHIENO[2,3-C]AZEPINE IN PHARMACEUTICAL COMPOSITIONS TO ENDUCE CENTRAL NERVOUS SYSTEM DEPRESSION**

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of application Ser. No. 621,421, Mar. 8, 1967, now abandoned. This application Mar. 5, 1968, Ser. No. 710,633

Int. Cl. A61k 27/00

U.S. Cl. 424-263

4 Claims

The compounds are 1-substituted-3,4-dihydrobenzothieno[2,3-C]pyridines and 1-substituted-3,4-dihydro-5H-benzothieno[2,3-C]azepines which in the form of pharmaceutical compositions are useful as antihypertensive and antipsychotic agents. They are preferably prepared by treating an amide of a corresponding  $\beta$ - or  $\gamma$ -(3-thianaphthenyl)alkylamine with phosphorous oxychloride and phosphorus pentoxide under reflux conditions in an inert organic solvent to effect ring closure. Compounds disclosed include 1-propyl-3,4-dihydrobenzothieno[2,3-C]pyridine and 1-phenyl-3,4-dihydro-5H-benzothieno[2,3-C]azepine.

3,626,069

**GROWTH PROMOTION**

Walther H. Ott, Westfield, and George Olson, Fanwood, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of application Ser. No. 768,885, Oct. 18, 1968, now abandoned. This application Dec. 30, 1970, Ser. No. 102,970

Int. Cl. A61k 27/00

U.S. Cl. 424-273

4 Claims

Growth promotion in animals is achieved by administration of 1-methyl-5-nitroimidazol-2-methyl carbamate in feed and/or water.

3,626,070

**SUBSTITUTED 2-AMINOBENZIMIDAZOLES AS ANTHELMINTICS**

Edward John Soboczenski, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

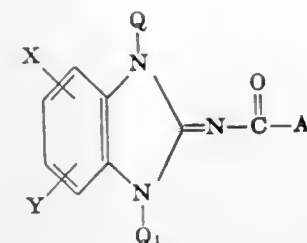
Filed Mar. 20, 1968, Ser. No. 714,440

Int. Cl. A61k 27/00

U.S. Cl. 424-273

6 Claims

Substituted 2-aminobenzimidazoles of the general formula:



where X, Y, A, Q<sub>1</sub> and Q are as defined hereinafter; are useful as anthelmintics. Q<sub>1</sub> includes groups such as carbamoyl and perhaloalkylmercapto while Q includes such groups as hydrogen, carbamoyl, acyl, perhaloalkylmercapto, methyl, and an exemplary species of the general class is the compound: methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate.

3,626,071

**COMPOSITIONS AND METHODS FOR REDUCING CHOLESTEROL IN THE BLOOD**

Takashi Kariya; Alfred Richardson, Jr., and Johann Martin Grisar, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

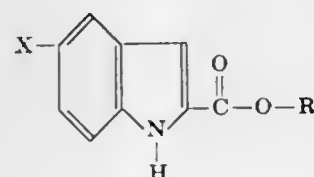
Filed Mar. 8, 1968, Ser. No. 711,491

Int. Cl. A61k 27/00

U.S. Cl. 424-274

9 Claims

Pharmaceutical compositions and methods for reducing the concentration of cholesterol in the blood with an indole derivative of the formula:



wherein X is a halogen and R is hydrogen or lower alkyl; and pharmaceutically acceptable salts of the above indole carboxylic acids with organic or inorganic bases. Illustrative of a compound of the above formula is: 5-chloroindole-2-carboxylic acid.

## ELECTRICAL

3,626,072

**METHOD AND A DEVICE FOR CONTINUOUS SLAGGING OF ELECTRIC AND REVERBERATORY FURNACES, OPERATING WITH A DEEP SLAG BASIN**

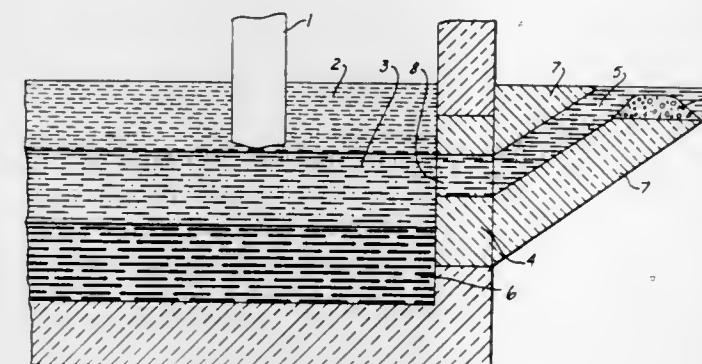
Georgi Alexandrov Haralamplev; Nicola Pentchev Shopov; Ivan Dimitrov Entchev; Kiril Metodiev Balevski, and Bolyarka Stefanova Balkandjeva, all of Plovdiv, Bulgaria, assignors to Nautchno-Izskledovatel'ski Institut PO Tzvetna Metalurgia, Plovdiv, Bulgaria

Continuation-in-part of application Ser. No. 708,247, Feb. 26, 1968, now abandoned. This application Apr. 1, 1970, Ser. No. 24,570. Claims priority, application Bulgaria, Feb. 27, 1967, 1-261

Int. Cl. F27d 3/15

U.S. Cl. 13-9

8 Claims



A method and a device for continuously removing slag from electric and reverberatory furnaces having deep slag basins, which are used for melting ores, concentrates, roasting residues and agglomerates of nonferrous metals. An inclined channel passes through the furnace wall, and the lower end of the channel is located inside the furnace at the depth of the quiet slag layer, while the outer outgoing end is at the level of the slag surface inside the furnace and is located on the outer side of the furnace. The slag is removed from the slag basin through this channel, running off through it with a velocity of flow lower than 10 cm./sec. The runoff of the slag from the depth of the quiet layer, combined with the low velocity of outflow through the inclined channel and the slow motion of the slag upwards—in a direction opposite the action of the sedimentation forces of gravity, provides a reduction of the loss of metal with the slags. The constant level of the slag inside the furnace stabilizes the thermal conditions of the furnace. The low velocity of flow of the slag through the inclined channel and the invariable thermal loading of the refractories reduces the wear of the latter.

3,626,073

**MEANS FOR HEATING AND TREATING MOLTEN METAL UNDER VACUUM**

Gunther Sindelar, Dusseldorf; Edgar Steier, Mulheim-Ruhr, and Horst Stockman, Bredenscheid-Stuter, all of Germany, assignors to Friedrich Kocks

Filed May 20, 1970, Ser. No. 39,071

Claims priority, application Germany, May 22, 1969, P 19 26 290.9

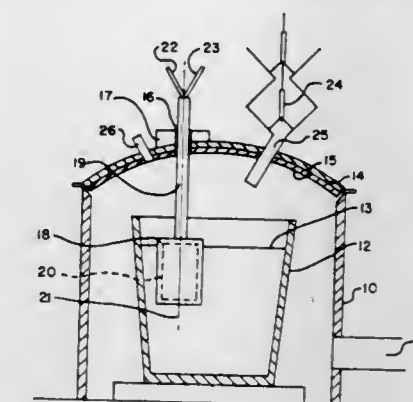
Int. Cl. F27d 3/00, 3/10

U.S. Cl. 13-31

7 Claims

An apparatus is provided for heating and treating molten metals under vacuum which includes a container for a charge

of molten metal, a cover removably sealing said container, at least one rotatable heated stirrer journaled in said cover and



extending into said container, means for rotating said stirrer and means for heating the stirrer.

3,626,074

**TOUCH-RESPONSIVE TONE ENVELOPE CONTROL CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS**

Ryu Hiyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

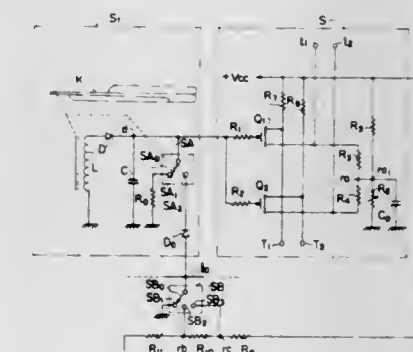
Filed June 16, 1970, Ser. No. 46,682

Claims priority, application Japan, June 24, 1969, June 24, 1969, 44/49952, 44/49953, 44/49954

Int. Cl. G10h 1/00

U.S. Cl. 84-1.01

10 Claims



In a keying system for an electronic musical instrument in which an individual keyer is adapted to be controlled in response to the intensity of depression of a corresponding playing key so that a keyed tone signal has an amplitude in accordance with the key depression intensity, a common DC supply means with a voltage selector is provided to additively control the keyer irrespective to the key depression intensity. The voltage selector determines which one of said two controls should prevail. The system is simple in construction and operation and inexpensive and easy to manufacture as well as provides a variety of excellent tonal effects.

3,626,075

**TOUCH-RESPONSIVE TONE ENVELOPE CONTROL CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS**

Ryu Hiyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed July 8, 1970, Ser. No. 53,218

Claims priority, application Japan, July 12, 1969, July 12, 1969, 44/55355, 44/55356

Int. Cl. G10h 3/00

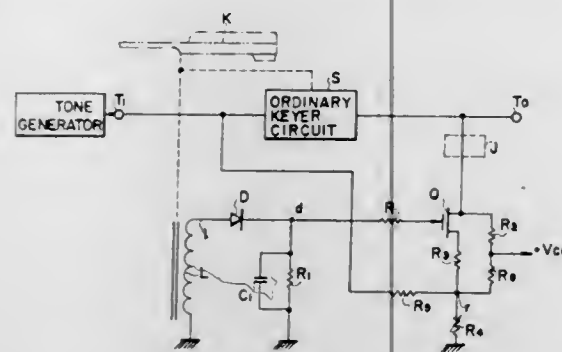
U.S. Cl. 84-1.13

15 Claims

In a keying system for an electronic musical instrument in which an individual keyer is operative by the actuation of a corresponding playing key but a keyed tone signal has a predetermined amplitude irrespective to a key depression intensity, there is provided in combination with the keyer a corresponding circuit means producing a tone signal of an envelope pattern or abrupt buildup and subsequent decay, a



so-called attack signal, in response to the key depression intensity. The touch-responsive attack signal gives forth an ef-



fective touchresponsive auditory sensation of the total sound.

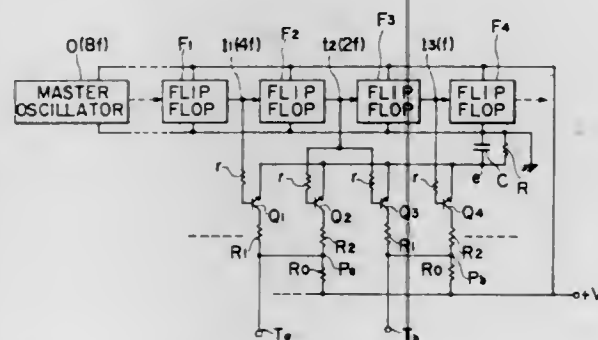
3,626,076

**MIXER CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENT PROVIDING STAIRCASE TONE SIGNAL**  
Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan  
Filed May 19, 1970, Ser. No. 38,795

Claims priority, application Japan, May 21, 1969, May 21, 1969; 44/39379, 44/39380  
Int. Cl. G10h 5/06

U.S. Cl. 84-1.23

7 Claims



Disclosed is a tone generator circuit for use in an electronic musical instrument, in which respective output terminals of a plurality of cascaded flip-flop circuits are connected to control electrodes of active elements such as transistors, said active elements are adapted to effect a switching action with their predetermined on-state resistances in response to magnitudes of signal potentials applied to the control electrodes from the outputs of the flip-flop circuits, other electrodes of the elements are connected as groups at common connection points at each of which a load means is connected, and in each said group of the active elements, a signal is derived across the load means in the form of summed potentials from the commonly connected other electrodes, whereby tone signals each having a sawtooth-approximating staircase wave and a different fundamental frequency are provided. The tone generator circuit minimizes the use of passive elements such as capacitors and resistors, etc. and thus allows it to be constituted only by active elements without using many passive elements and therefore, an integration of the circuit is facilitated. Further, said active elements function to reduce the loads of said flip-flop stages and provide buffer effects between said stages, to insure reliability in the operations of the tone generator circuit.

3,626,077

**ORGAN TONE MODULATION SYSTEM**  
Walter Munch, Jr., William S. Wagner, and Dale M. Huettrecht, all of c/o D. H. Baldwin Co., 1801 Gilbert Ave., Cincinnati, Ohio

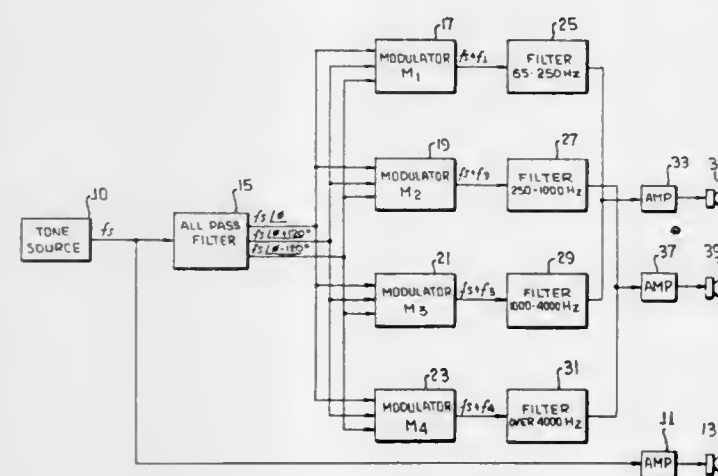
Filed May 26, 1970, Ser. No. 40,536  
Int. Cl. G10h 1/02

U.S. Cl. 84-1.24

7 Claims

Organ output, comprising a band of audio frequencies, is divided into four frequency subbands, each of which is shifted in frequency by one of four respective diverse incre-

ments. The first and third subbands are acoustically transduced and radiated via a rotary loudspeaker and the second and fourth subbands via a stationary loudspeaker. These radiations are acoustically mixed with the radiated unmodified organ output to produce desired tonal effects. Frequency shifting of the subbands can be inhibited at will, means being provided automatically to maintain the acoustic signal level the same whether or not frequency shifting is in force, for a given setting of the expression pedal. Each of the four subbands can be shifted by either of two respective frequency increments, or inhibited, to permit selective variation of the overall acoustic effect. Frequency shifting for each subband is achieved by dividing the organ tone into



three components of equal magnitude and 120° phase difference. To obtain the 120° spaced components, the input tone signal is applied to two-phase shift filters which provide two of the components, the third component being derived by summing the first two components and inverting the resulting signal. Each component is applied to a respective section of four three-section modulators, each section comprising a transistor pair connected to form a DC differential amplifier with one input at AC ground. The emitter currents of each transistor pair are varied at the shift frequency by a three-phase oscillator, each modulator section being controlled by a respective oscillator phase. The outputs of each section of the modulator are combined to cancel the oscillator components provided at each section.

3,626,078

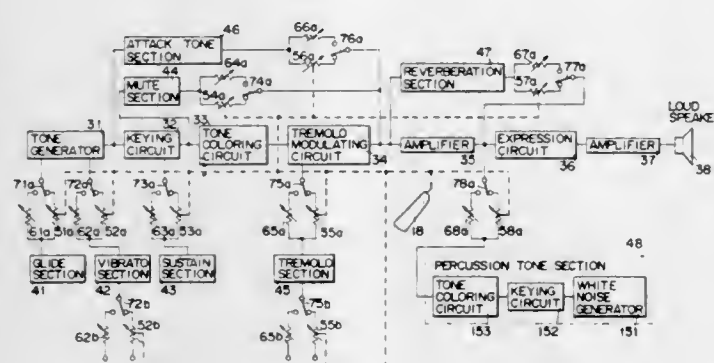
**COMBINATION OF MUSICAL EFFECT SYSTEM AND KNEE CONTROL**

Tomoaki Sekiguchi, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan  
Filed Sept. 3, 1968, Ser. No. 757,082

Int. Cl. G10h 1/02

U.S. Cl. 84-1.24

4 Claims



A musical effect system for an electric organ using knee control. A tone generator circuit for generating a tone signal having a frequency according to the selective operation of a plurality of keys is connected with other circuits for attaining special musical effects. Associated with these circuits are variable resistors for simultaneously and continuously varying the individual factors producing such musical effects. The variable resistors interlock with a knee-operated lever so as to effect continuous variations in accordance with the mag-

nitude of the displacement of the knee-operated lever. Selector switches are provided to determine which of such musical effects are rendered operative in connection with the knee-operated lever.

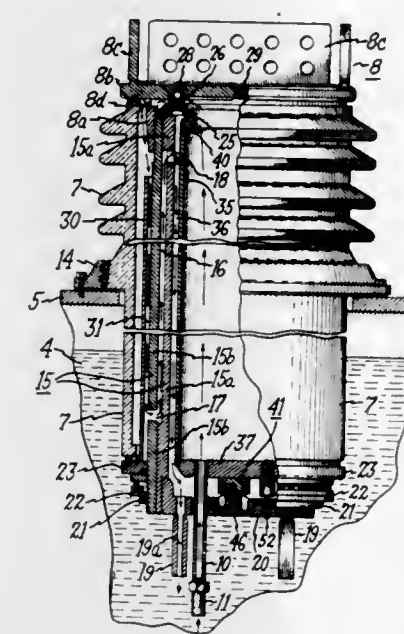
3,626,079

**ELECTRICAL BUSHING WITH COOLING MEANS**  
William A. Keen, Jr., Cheshire, and Joseph F. Lynch, Pittsfield, both of Mass., assignors to General Electric Company

Filed Aug. 10, 1970, Ser. No. 62,284

Int. Cl. H01b 17/54, 17/26

U.S. Cl. 174-15 BH



Electrical insulating oil-cooled bushing for transformers and the like. The inner tubular current-carrying conductor of the bushing is formed of a pair of concentric tubes forming an annular cooling duct therebetween with inlet and outlet apertures at opposite ends. Baffle tubes are arranged on opposite sides of the composite conductor to form two additional cooling fluid ducts so that cooling fluid introduced under pressure into the bushing is directed in three passes along the surfaces of the composite conductor. Cooling fluid leaving the interior of the bushing passes through apertured terminal blades for cooling the latter.

3,626,080

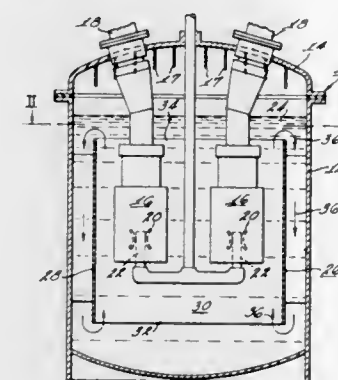
**MEANS FOR CIRCULATING LIQUID COOLANTS**  
Ronald A. Pierce, West Allis, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Dec. 10, 1969, Ser. No. 883,971

Int. Cl. H01b 7/34

U.S. Cl. 174-15 R

9 Claims



An electric circuit interrupter comprises a tank in which arc-interrupting devices are located. The tank contains a cooling liquid comprising oil and liquid freon in which the devices are submerged. A tubular baffle completely submerged in the cooling liquid and spaced from the tank wall surrounds the devices. Heat generated by current flow

through the devices causes heating of the cooling liquid and vaporization and bubbling of some of the liquid freon within the baffle. This, in turn, causes the cooling liquid to flow upward inside the baffle, over the top edge of the baffle, downward outside the baffle, and around the bottom edge of the baffle. The vaporized freon recondenses on exposed surfaces inside the tank and flows back into the cooling liquid. Thus, circulation of the cooling liquid is achieved and more efficient cooling of the devices results.

3,626,081

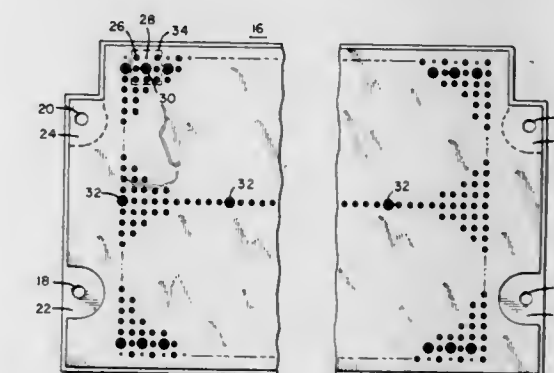
**SANDWICH-TYPE VOLTAGE AND GROUND PLANE**  
Richard L. Little, Minneapolis, Minn., assignor to Comcet Incorporated, St. Paul, Minn.

Filed Dec. 22, 1969, Ser. No. 887,208

Int. Cl. H05k 1/04

U.S. Cl. 174-68.5

12 Claims



A unitary sandwich-type ground and voltage plane consisting of a first and second layer of conductive material separated by an insulator and having therein a plurality of spaced apertures in a pattern to conform to the spacing of connector terminals and having etched patterns on said first and second layers for enabling electrical connections to be made between appropriate terminals and the first and second conductive layers.

3,626,082

CORRUGATED PIPE BUSLINE

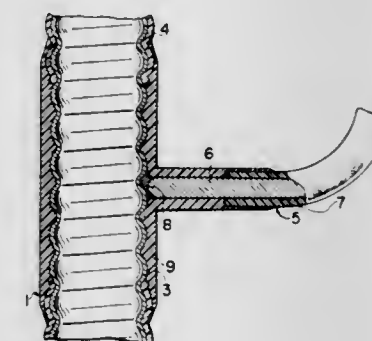
Kenji Kasai, Tokyo; Nobunori Kuroki, Saltama-ken; Takaji Takel, and Sigeru Kanda, both of Kanagawa-ken, all of Japan, assignors to Furukawa Denki Kogyo Kabushiki Kaisha, Tokyo and Kajima Corporation, Tokyo, Japan  
Filed May 2, 1969, Ser. No. 830,906

Claims priority, application Japan, May 30, 1968, Nov. 25, 1968, Dec. 18, 1968; 43/44439, 43/102115, 43/92327

Int. Cl. H02g 3/00, 1/00

U.S. Cl. 174-72 R

5 Claims



A long corrugated pipe bus conductor to be laid vertically in a high-storied building has the conductors of branching lines bonded thereto at predetermined intervals. The interval



may be so selected as to correspond to the height of one story of the building. Each of the branching lines leads to an electrical equipment such as a switchboard on each story.

### 3,626,083 HIGH-VOLTAGE INSULATION AND INSULATED HIGH-VOLTAGE APPARATUS

Herbert F. Minter, Pittsburgh; Richard D. Buckley, Stoneboro, and Martin P. Seidel, Sharon, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 355,382, Mar. 27, 1964, now abandoned. This application Jan. 12, 1968, Ser. No. 724,646  
Int. Cl. H01b 3/02

An admixture of (1) from 55 to 70 percent by weight of hydrated alumina and (2) from 30 to 45 percent by weight of a petroleum oil extended ethylene-propylene-diene terpolymer, containing from 20 to 100 phr. of oil, is molded about electrical apparatus to provide insulation for components thereof. The hydrated alumina is advantageously finely divided so that a major portion or substantially all particles are less than 2 microns. The terpolymer is derived from the reaction of an admixture of (I) from about 85 to 99 molar percent of a mixture of (a) about 30 to 70 molar percent of ethylene and (b) about 30 to 70 molar percent of propylene and (II) from about 1 to 15 molar percent of a diene having isolated or nonconjugated double bonds, at least one of the double bonds of the diene being terminally located.

### 3,626,084 DEFORMOGRAPHIC STORAGE DISPLAY TUBE

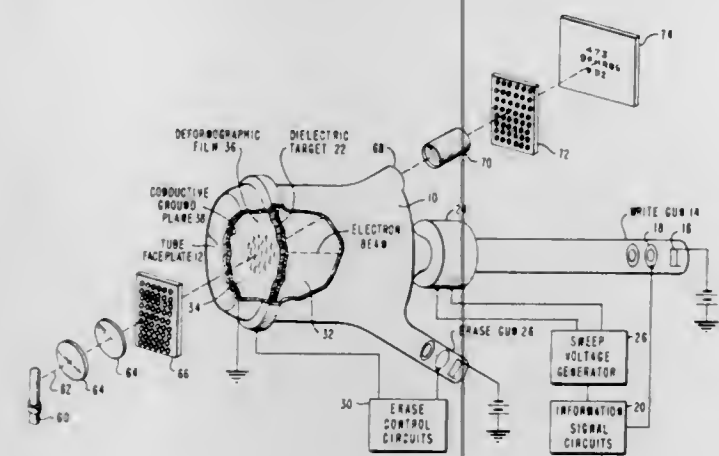
Robert J. Wohl, San Jose; Frank A. Hawn, Los Gatos, and Harold C. Medley, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 683,292, Nov. 15, 1967, now abandoned. This application June 12, 1970, Ser. No. 48,862

Int. Cl. H04n 5/74

U.S. Cl. 178—7.5 D

17 Claims



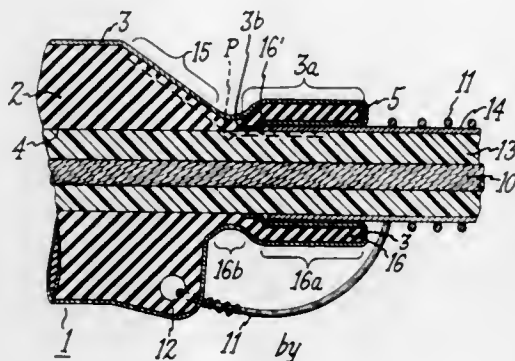
A display tube is provided in which a dielectric target is charged by an information modulated electron beam, and the resulting electrostatic field between the target and a conductive ground plane deforms a dielectric film. The film is located in a separate chamber of the tube at the side of the target opposite the electron beam generating equipment. The film deformations behave as point light valves, and a visible image of the information contained therein is provided by transmissive or reflective optical systems.

### 3,626,085 CABLE TERMINATION HOUSING HAVING MEANS FOR PREVENTING CORONA AND UNIFORMLY GRADING VOLTAGE

Richard H. Arndt, Lenox, and Henry N. Tachick, Pittsfield, both of Mass., assignors to General Electric Company  
Filed Apr. 13, 1970, Ser. No. 27,497  
Int. Cl. H02g 15/02

U.S. Cl. 174—73 R

10 Claims



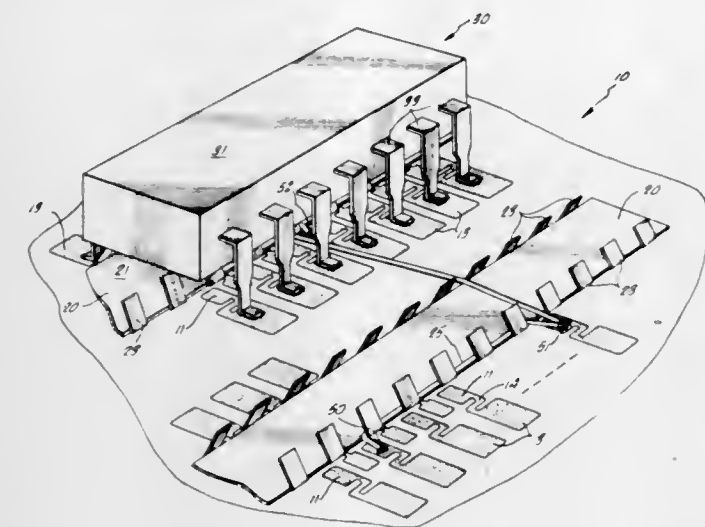
A modular termination housing, of a type adapted to be slipped onto a power distribution cable to afford a voltage-grading connector for the cable, is characterized by having a unique anticorona configuration. The unique anticorona feature of the termination housing is afforded by providing the housing with a flexible sealing means that assures continuous, uniform contact between a conductive coating on the outer surface of the housing and a conductive coating of a cable on which the housing is mounted.

### 3,626,086 WIRE-ROUTING SYSTEM

Ulysses Ray Rubey, Denton, Tex., assignor to Computer Industries, Inc., Sherman Oaks, Calif.  
Filed Apr. 28, 1970, Ser. No. 32,576  
Int. Cl. H05k 1/18

U.S. Cl. 174—68.5

8 Claims



An improved wire-routing system for use with reflow wiring machines is disclosed in which the system includes a single-sided printed circuit board having a plurality of wire land pads and integrated circuit land pads located thereon. Wire routing fixtures are also adapted to be positioned on the circuit board; each fixture having a plurality of longitudinally spaced guides positioned near adjacent land pads for receiving portions of the insulated wire as it is strung or routed from one wire land pad to another. Each of the guides ex-

tends upwardly on a slant to enable the wire to be directed downwardly flush with the base of the fixture when routed thereby so as not to interfere with subsequent wiring in that area. Power busses are also provided for connection to any desired integrated circuit land pad. The power busses are formed as flat strips and are positioned beneath the fixtures in such a manner that they also do not interfere with the wire-routing operation.

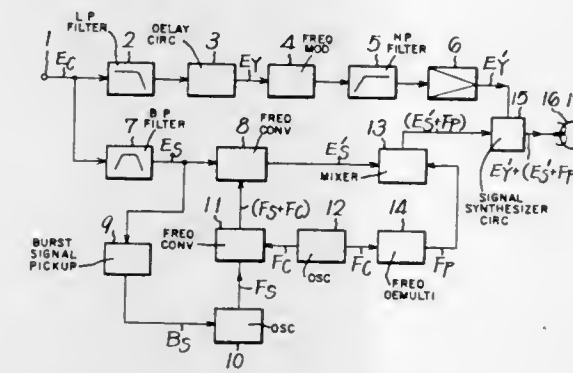
### 3,626,087 MAGNETIC RECORDING AND REPRODUCING DEVICE FOR COLOR VIDEO SIGNALS

Masao Tomioka, Urawa-shi, Japan, assignor to Sony Corporation, Tokyo, Japan  
Filed Oct. 7, 1969, Ser. No. 864,330

Claims priority, application Japan, Oct. 7, 1968, 43/72977  
Int. Cl. H04n 5/78, 7/12, 9/44

U.S. Cl. 178—5.4 CD

6 Claims



A magnetic-recording device for video signals has means for discriminating between a composite color video signal and a monochrome video signal and means for driving an oscillator which generates a pilot signal of a chrominance signal only when a composite color video signal is being recorded so that no pilot signal is recorded to interfere with the reproduction of a monochrome video signal.

### 3,626,088 REGULATING ARRANGEMENT FOR COLOR CAMERAS

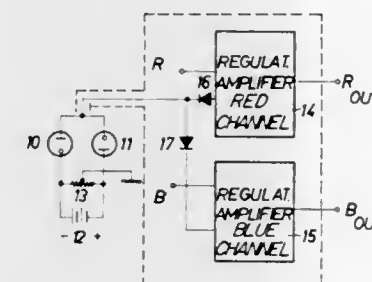
Hans-Dieter Schneider, Gross-Gerau am Bruckelchen, Germany, assignor to Fernseh GmbH, Darmstadt, Germany  
Filed July 10, 1969, Ser. No. 840,673

Claims priority, application Germany, July 11, 1968, P 17 62 576.2

Int. Cl. H04m 9/04

U.S. Cl. 178—5.4 R

12 Claims



A regulating arrangement for use in color cameras in which the individual chrominance channels are provided with amplifiers. Photoelectric cells emit signals as a function of the color temperature of the light impinging upon the cells. The amplification balance of the chrominance channels is adjusted as a function of the signals provided by the photoelectric cells, so that the amplifiers in the individual chrominance channels are adapted to the color temperature of the prevailing lighting conditions.

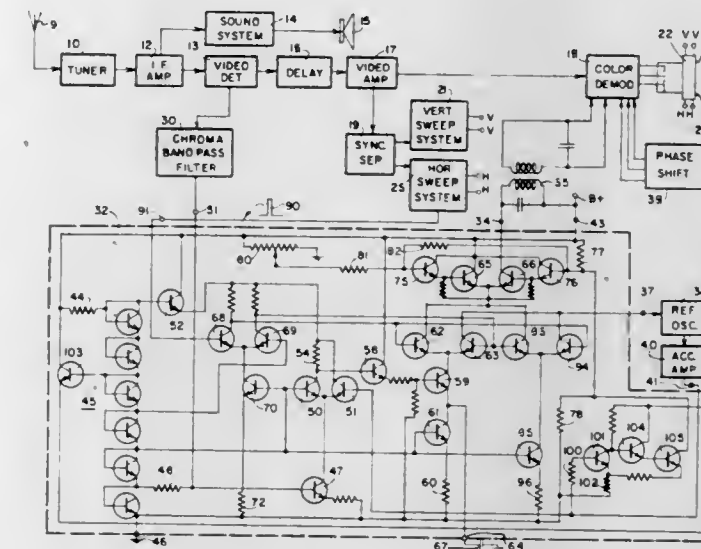
S93 O.G.—10

### 3,626,089 CHROMA SIGNAL PROCESSING CIRCUIT FOR A COLOR TELEVISION RECEIVER

Gildo Cecchin, Niles, and Francis H. Hilbert, River Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.  
Filed Nov. 26, 1969, Ser. No. 880,059  
Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 AC

13 Claims



A color television receiver has an integrated circuit chroma amplifier and burst-separating circuit using a pair of differential current-steering gates as the output and separating stage thereof with switching of the steering gates being utilized to gate the chroma signals to a chroma output during the scan portions of the cycle of operation of the receiver, and to gate the burst signals to an output coupled to a reference oscillator, with a substitution of a corresponding DC operating level being provided at each of these outputs when the signal is being switched to the other output. In addition, the chroma amplifier DC operating point is determined by a constant current source which is immune to variations in the DC level of the signals caused by variations in the ACC gain control signal.

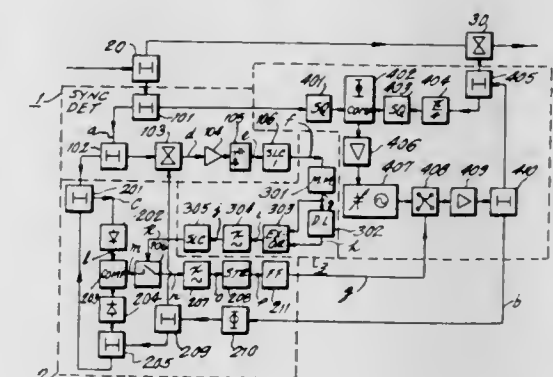
### 3,626,090 AUTOMATIC PHASE CONTROL SYSTEM FOR USE IN SUPPRESSED CARRIER TELEVISION TRANSMISSION

Susumu Akiyama, and Mitsuaki Naganuma, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan  
Filed Mar. 2, 1970, Ser. No. 15,333

Int. Cl. H04n 5/44; H04b 1/16

U.S. Cl. 178—7.3 R

3 Claims



An automatic phase control system specially adapted for use in receiving and demodulating television signals which are transmitted with the carrier effectively suppressed. The automatic phase control system includes a carrier wave generator whose phase is either maintained or reversed by 180°. The need for phase reversal is determined by combining the received television signal with the synchronized carrier and performing amplitude comparison between the su-



perimposed signals and the synchronized carrier to generate an output control signal whenever the amplitude of the superimposed signals is lower than the amplitude of the synchronized carrier wave. This control signal is passed only during the vertical blanking period, and is applied to a phase reversal circuit coupled to the output of the synchronizing carrier wave generator so that the appropriate in-phase carrier will be used to demodulate the carrier suppressed television signal.

3,626,091

## IMAGE CONVERTER

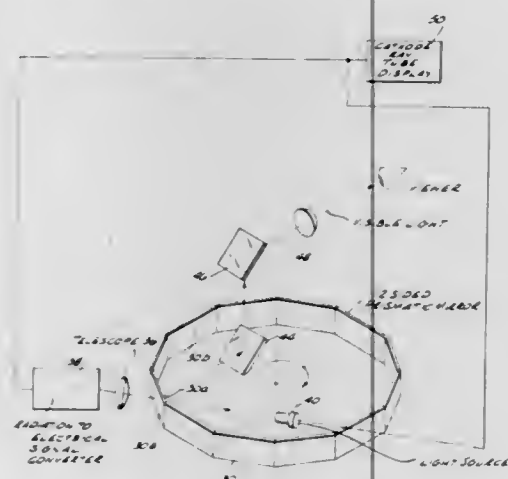
Robert P. Casper, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 11, 1969, Ser. No. 884,088

Int. Cl. H04n 3/08

U.S. Cl. 178-7.6

16 Claims



Real time raster scanning of a field is provided by rotating an N-sided prismatic mirror about its axis of symmetry. N may be any integer equal to or greater than two. Mirror faces on the prism are aligned with respect to the axis of rotation such that each face deviates the look angle of a detector by an amount equal to one resolution element (for contiguous scan lines). Rotation about the axis of symmetry produces a scan pattern similar to that of a TV system. The scan pattern is reconstructed by converting the output of the detector, into modulated light which is directed upon a rotating N-sided prismatic mirror with the restriction that the mirror face upon which the light is directed has the identical angle with respect to the axis of rotation as the mirror face which the detector sees at that time.

3,626,092

## VIDEO AMPLIFIER FOR OPTICAL SCANNERS

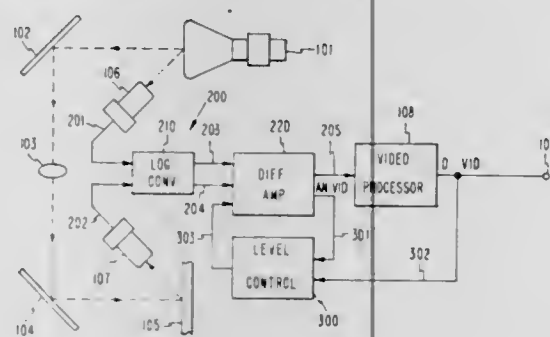
Melvin G. Wilson, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 15, 1969, Ser. No. 841,823

Int. Cl. H04n 5/38

U.S. Cl. 178-7.1 R

19 Claims



To correct for intensity variations in an optical scan generator, a first photodetector receives a light input directly from the generator, while a second photodetector receives light reflected from a document. A converter produces

logarithmic representations of both photodetector outputs, and feeds them to a differential amplifier for subtraction. A video processor then produces a digitized video signal from the amplifier output. A low-frequency level control feeds the amplifier output back to its input to provide drift compensation by referencing the average background to a specified output level. The level control may be disabled by certain values of the digitized video signal.

3,626,093

## IMPLOSION-RESISTANT CATHODE-RAY TUBES

James Inglis, London, England, assignor to Thorn Radio Valves and Tubes Limited, London, England

Filed Sept. 10, 1970, Ser. No. 71,077

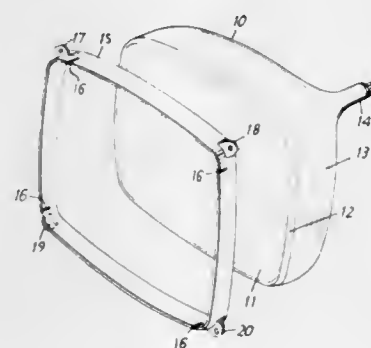
Claims priority, application Great Britain, Oct. 15, 1969,

50762/69

Int. Cl. H01j 29/02

U.S. Cl. 178-7.8

6 Claims



An implosion-resistant cathode-ray tube includes a metal frame encircling the flange of the face plate and a tension band encircling the frame, in which a plurality of spaced-apart slots are formed in the front portion of the frame with one end of each slot opening at the front edge of the frame.

3,626,094

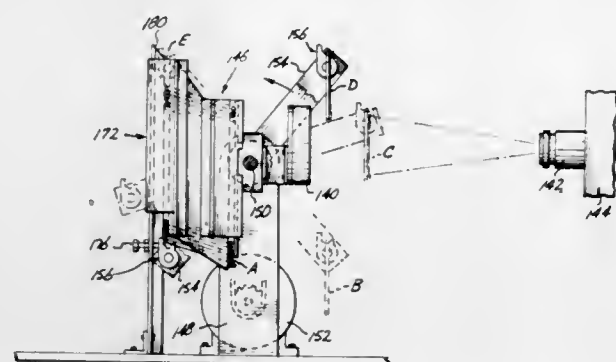
MESSAGE DISPLAY SYSTEM FOR TELEVISION  
Milton K. Wldekink, Seattle, and William A. Lee, Puyallup, both of Wash., assignors to Electronic Systems Development, Inc., Seattle, Wash.

Filed Jan. 8, 1969, Ser. No. 789,740

Int. Cl. H04n 5/24

U.S. Cl. 178-7.88

6 Claims



A camera having a lens is positioned so that the lens has a predetermined line of view. An indexing unit is located at a position remote from said camera and selectively positions a plurality of cards into a position in which the cards on their images are viewable by the lens. Each card bears a written message. A clock or other viewable object is located remote from said indexing unit and is positioned so that it or its image may be viewed by said lens. In the preferred form the image from the cards or the clock is selectively positioned in the line of view of the lens by the selective rotation of a mirror. In modified forms the clock is directly in the lens line of view and the cards are selectively positioned into the lens line of view between the clock and the lens. In one modified form the cards are carried in an arcuate path about a horizontal axis whereas in the other modified form the cards

are carried about a vertical axis. A control unit includes a system of various length tabs on the cards for breaking a light beam to one of three photocells. The tab length determines the length of time that a card is viewed and whether or not the mirror is rotated.

3,626,095

## REGENERATING REPEATING SYSTEM FOR START-STOP TELEGRAPH SIGNALS

Yukio Nakagome, and Yasuo Fukata, both of Tokyo-to, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

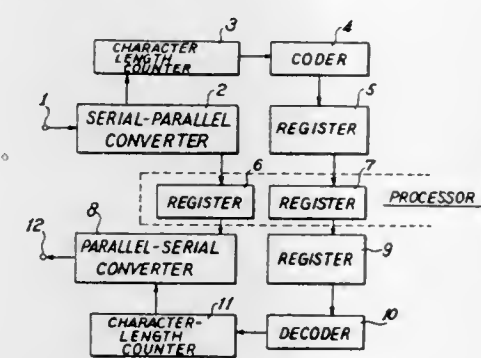
Filed May 15, 1969, Ser. No. 824,908

Claims priority, application Japan, May 18, 1968, 43/33398

Int. Cl. H04l 25/52

U.S. Cl. 178-70 R

3 Claims



Disclosed herein is a regenerative repeating system for start-stop serial telegraph signals of a plurality of channels by the use of a time-divisional serial-parallel signal converter and a time-divisional parallel-serial converter connected to the serial-parallel converter through a data processor, in which control information is transferred from the serial-parallel converter to the parallel-serial converter to determine timerdivisions durations of stop elements of the start-stop telegraph signals so that the duration of each stop element is equal to one of a plurality of predetermined durations which correspond respectively to divided  $n$  parts of the remainder of the regular duration of the stop element except a minimum duration determined so as to secure normal reception of the stop element, where  $n$  is a positive integer.

3,626,096

## MICROPHONE FOR DIGITAL SPEECH TRANSMISSION

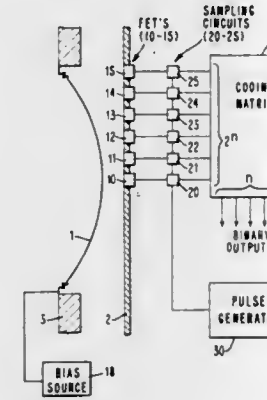
Waldemar Kurt von Muench, Aachen, Germany, and Ernst H. Rothauser, 8832 Wollerau, Schwyz, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,384

Int. Cl. H04r 23/00

U.S. Cl. 179-1 R

13 Claims



An arrangement for transforming mechanical or acoustical waves into digital electrical signals is disclosed. The arrangement includes a converter which in principle is a condenser microphone having a diaphragm which is flexible and electrically biased. Also included is a plurality of switching ele-

ments (FET's) disposed in a stiff plate which forms a portion of the condenser microphone and arranged so that they are electrically actuated by the electric field associated with the diaphragm depending on the distance of the diaphragm from an individual switching element. Sampling circuits associated with each of the switching elements apply the outputs of the switching elements to a coding matrix and a binary output representative of the condition of the switching elements at any instant is provided. The arrangement of the switching elements along the radius of the diaphragm and the use of exclusive OR circuits in the sampling circuits are also disclosed.

3,626,097

## ACCESSING CONTROLLER FOR MULTIPLE-INPUT PLURAL OUTPUT SIGNAL CONTROL CONSOLE DEVICE

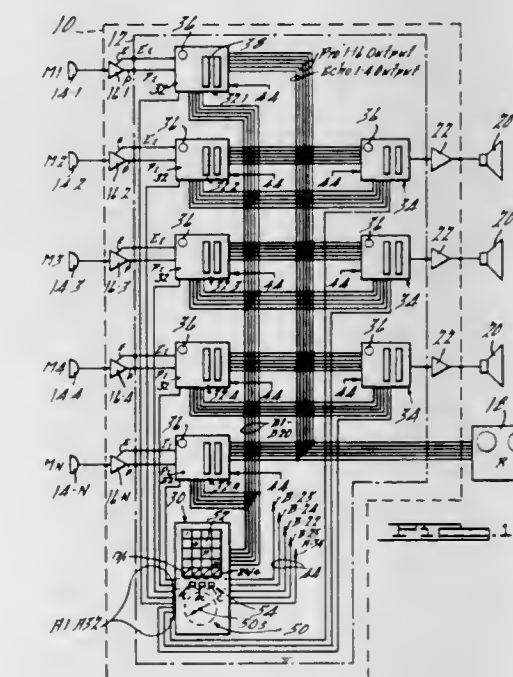
Robert A. Bloom, Oak Park, and Don E. Haddock, Warren, both of Mich., assignors to Audio Designs and Manufacturing, Inc., Roseville, Mich.

Filed Sept. 26, 1969, Ser. No. 861,347

Int. Cl. G09b 5/04

U.S. Cl. 179-1 B

24 Claims



An accessing controller for a signal control console device having a multiplicity of signal input channels selectively and variously connectable through said controller to a plurality of signal output channels of the console device and featuring both channel interlocked or cancellation type and channel accumulating or cumulative-type switching units selectively activated from a single keyboard switching unit selector also affording a selection of the activated signal channel or channels of a switching unit selected thereby as well as a selection of any one or more of a plurality of clearing function controls exercised by the controller over the several switching units.

3,626,098

## ALARM SYSTEM

John H. Lee, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 25, 1969, Ser. No. 852,600

Int. Cl. H04m 11/04

U.S. Cl. 179-5 R

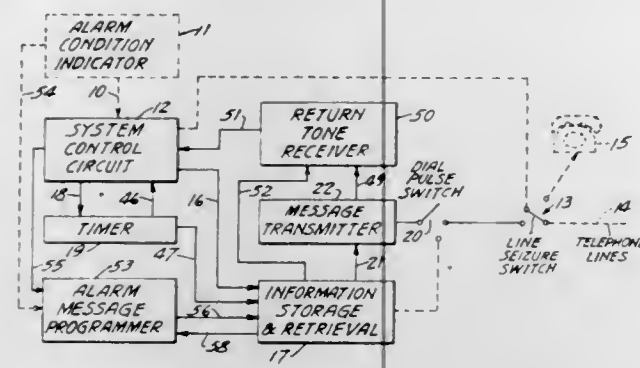
18 Claims

A timer is included in an alarm system for enabling termination of message transmission from the alarm system. In an alarm system of the type wherein in response to a sensed alarm condition an information storage and retrieval unit operates a dial pulse switch to dial a telephone number stored in the information storage and retrieval unit and causes a message also stored therein to be repetitively transmitted over telephone lines, the timer is coupled to the information storage and retrieval unit and actuated to operate simultaneously therewith. Upon completion of a predetermined interval, the timer provides a signal to the information



storage and retrieval unit for enabling termination of the message transmission. Transmission is thereafter terminated

with subscriber subsets serially inserted into said loop at various points along its length. The subset encodes signals within



upon the provision of an end-of-message indication from the information storage and retrieval unit.

3,626,099

## TELEPHONE CHARGING DEVICE

Christian S. Le Bellec, 2 rue de Roud-ar-Roch, Lannion, France

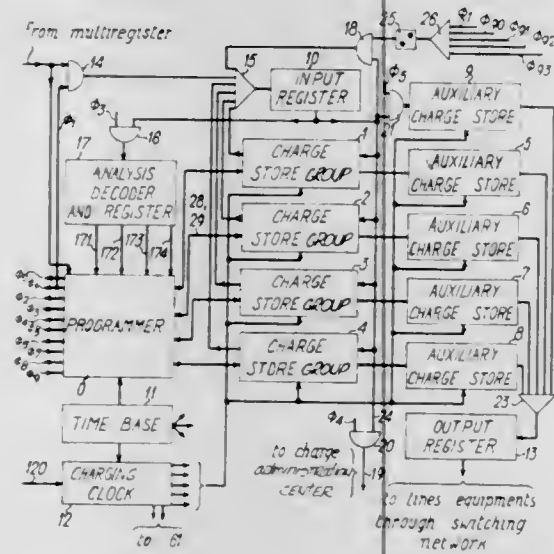
Filed Aug. 28, 1970, Ser. No. 67,925

Claims priority, application France, Aug. 29, 1969, 6929728

Int. Cl. H04m 15/00

U.S. Cl. 179-7 R

2 Claims



Charging device associated with a telephone exchange and receiving from the multiregister of the telephone exchange at the beginning of each call a charging word including the address of the caller, the charge rate and the charging mode assigned to the call and, at the end of the call, an end of call word. The charging word is received in an input register, then transferred into one of a plurality of charge circulating stores sequentially looped through a common processor. The processor selectively receives, from a charge clock, bits of predetermined frequency, said frequency depending upon the charge rate written in the charging word and accumulates these bits in the charging word. Means are provided to process differently the calls whose charge is independent of time and the calls involving the transmission of charge signals on the subscriber lines.

3,626,100

## SUBSCRIBER SUBSET FOR A PCM-LOOP SYSTEM

Joseph Hood McNeilly, Harlow Essex, and Roger Alan Man-ship, Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 21, 1969, Ser. No. 826,416

Claims priority, application Great Britain, June 21, 1968, 29,773/68

Int. Cl. H04j 3/08

U.S. Cl. 179-15 AL

7 Claims

A subset for use in a pulse code modulated telephone system is provided which system employs a transmission loop

A loop extender for use with telephone lines exhibiting line resistance in excess of normal telephone lines is disclosed. The loop extender is located at the central office and operates in conjunction with central office equipment that is designed to obtain information such as dial pulses from a subscriber. One portion of the central office equipment exhibits a saturated condition in response to a predetermined shunt across the telephone pair. Means are provided in the loop extender for recognizing dial pulses over the telephone lines from the subscriber and responding thereto by alternately open circuiting and shunting the telephone pair whereby the central office equipment obtains the information transmitted from the subscriber.

3,626,101

## LOOP EXTENDER FOR SUBSCRIBERS CONNECTED TO A CENTRAL OFFICE BY ABNORMALLY LONG TELEPHONE LINES

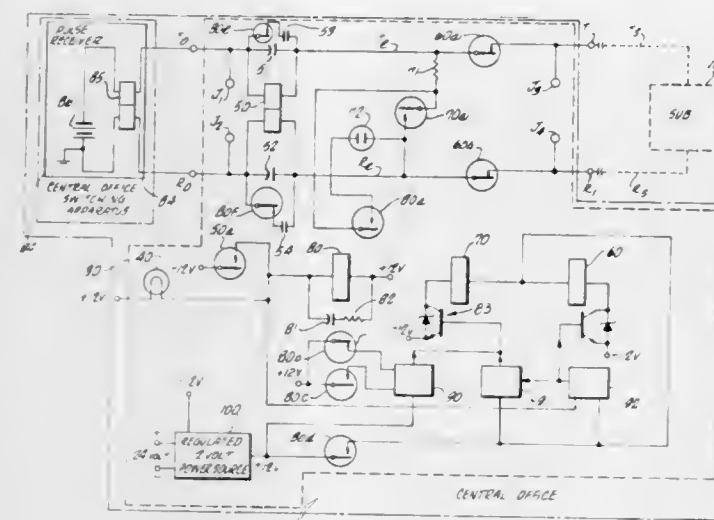
Alan R. Fitzsimons, Laguna Beach, and Robert John Phelps, Anaheim, both of Calif., assignors to San-Bar Electronics Corporation, Long Beach, Calif.

Filed June 2, 1969, Ser. No. 829,583

Int. Cl. H049 1/30

U.S. Cl. 179-16 F

10 Claims

3,626,102  
ELECTRONIC CIRCUITRY FOR A TELEPHONE MONITORED ALARM SYSTEM

Robert J. Cameron, Winnipeg, Manitoba, Canada, assignor to Leonard P. Keg, Winnipeg, Manitoba, Canada, a part interest

Filed Oct. 25, 1968, Ser. No. 770,605

Int. Cl. H04m 11/04

U.S. Cl. 179-5 P

6 Claims



Electronic circuitry including a tape recorder and condition-responsive means, such as burglar alarms, fire alarms, etc., adapted to be connected to telephone lines and a suitable source of power for automatically dialing and providing a voice message at a remote telephone upon the occurrence of a condition and for resetting the system upon receipt of a return call, as well as notifying the caller that the system is reset.

3,626,103

## ROUTE SELECTOR ARRANGEMENT WITH ALL-TRUNK AVAILABILITY

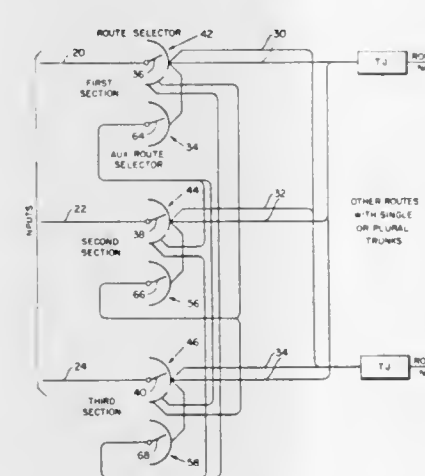
Ramses R. Mina, and Gunter F. Neumeier, both of Rochester, N.Y., assignors to Stromberg Carlson Corporation, Rochester, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,496

Int. Cl. H04q 3/06

U.S. Cl. 179-18 AG

1 Claim



A step-by-step telephone switching system in which the trunks are permanently connected to the outputs of the first selectors. The selectors are arranged in groups with a small number of auxiliary selectors included in each group. The outputs of the auxiliary selectors are connected to the same trunks as are the outputs of the regular first selectors in the respective groups to which they are assigned. Auxiliary outputs on each of the regular first selectors are connected to the inputs of auxiliary selectors in each of the other groups. Each of the inputs has access to all of the trunks of the

exchange, and no more than two selectors, one regular and one auxiliary, are used on any call.

3,626,104

## SWITCHING STAGE WITH MOS CROSSPOINTS

Marc Jean Pierre Leger, Issy-les-Moulineaux; Claude Paul Henri Lerouge, Maurepas, and Marc Andre Regnier, Aulnay-sous-Bols, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

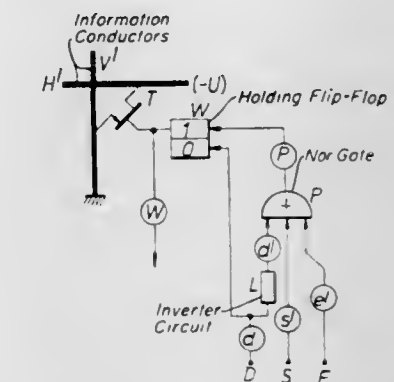
Filed June 19, 1969, Ser. No. 834,673

Claims priority, application France, June 25, 1968, 156405

Int. Cl. H04q 3/00

U.S. Cl. 179-18 FH

6 Claims



A switching stage is provided which employs multiselectors formed by MOS crosspoints. The operations of path search, subscriber test and call detection are made by a cyclic exploration of all the possible paths between a junctor and one (or all) subscriber(s). The supervision data ("off-hook" condition and "path established" condition) are obtained by monitoring the DC levels on the two speech conductors.

3,626,105

## INTERFACE UNIT FOR A TELEPHONE EXCHANGE

Jacques Henri De Jean, Ris-Orangis, Essonne; Marc Jean Pierre Leger, Issy-Les-Moulineaux, Hauts-de-Seine, and Claude Paul Henri Lerouge, Maurepas, Yvelines, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

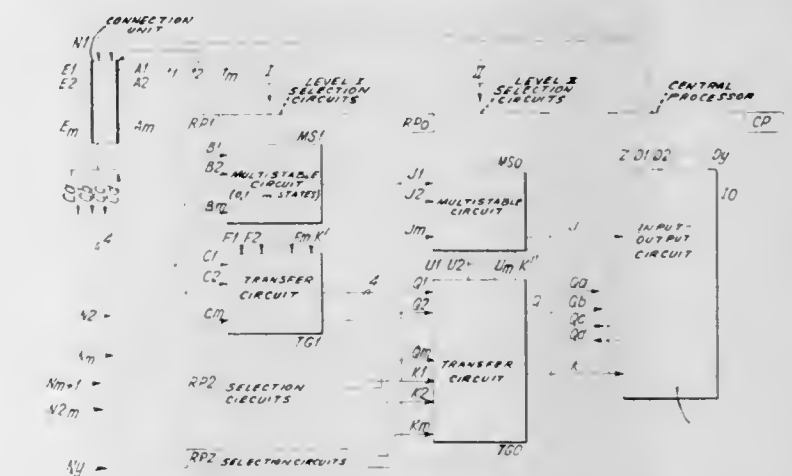
Filed June 23, 1969, Ser. No. 835,541

Claims priority, application France, June 28, 1968, 157201

Int. Cl. H04q 3/54

U.S. Cl. 179-18 ES

11 Claims



An interface unit is provided for connection between each of a plurality of peripheral devices and a central processing unit. The peripheral devices include such things as subscribers lines, trunks and junctors. The interface unit includes a temporary memory for storing status information or instructions regarding the peripheral devices. A permanent memory delivers regulating signals for scanning current test inputs and comparing them with data stored in the temporary memory. When there is a discrepancy in the data in the memories, the unit calls the central processor and sends its information to the central processor, where it is processed and new data is sent back to the unit.







3,626,114

**THERMOMAGNETIC RECORDING AND MAGNETO-OPTIC PLAYBACK SYSTEM**

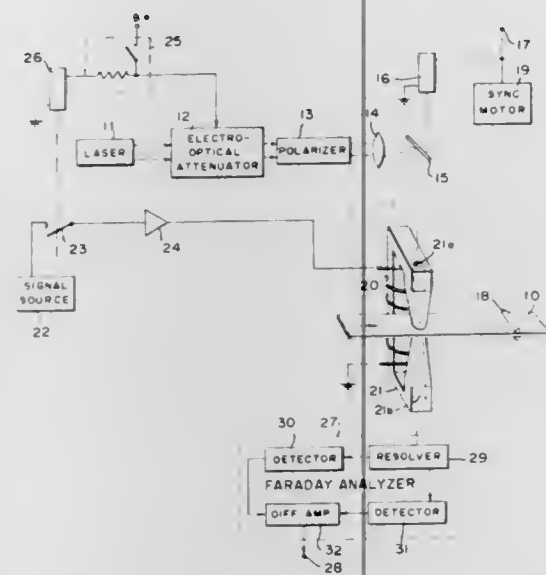
George W. Lewicki, Studio City, and John E. Gulsinger, Altadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 10, 1969, Ser. No. 805,549

Int. Cl. G11b 11/10, 5/32

U.S. Cl. 179—100.2CH

9 Claims



A magnetic recording and magneto-optic playback system is disclosed wherein thermomagnetic recording is employed. A transparent isotropic film is heated along a continuous path by a focused laser beam. As each successive area of the film is heated locally to the vicinity of its Curie point in the presence of an applied magnetic field, a magneto-optic density is established proportional to the magnetic field and fixed in place as the area cools once the laser beam moves on to an adjacent area. The magnetic field is varied by an input signal so that the magneto-optic density established in a given area of the film is proportional to the amplitude of the input signal being applied. To play back the recorded data, the intensity of the laser beam is reduced to avoid reaching the vicinity of the Curie point of the film as it is scanned by the laser beam in the same manner as for recording. A Faraday effect analyzer and photo detector are employed as a transducer for producing an output signal.

3,626,115

**TRACKING SYSTEM FOR A VIDEO RECORDER USING AN AUXILIARY DC MOTOR COUPLED TO THE CAPSTAN**

Yoshimi Watanabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

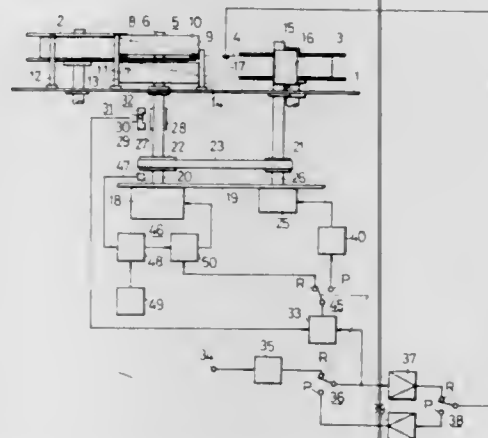
Filed Apr. 29, 1969, Ser. No. 820,133

Claims priority, application Japan, May 9, 1968, 43/30528

Int. Cl. G11b 15/52, 5/52; M04n 5/78

U.S. Cl. 179—100.2 S

1 Claim



A magnetic recording and reproducing apparatus for video signals which is adapted to record a video signal on a magnetic tape which is transported by a capstan and reproduce

the recorded video signal by means of a rotary magnetic head device, said apparatus including a main motor common to said capstan and the rotating shaft of said rotary magnetic head device, said main motor being mechanically coupled to the rotating shaft of said rotary magnetic head device and to said capstan through an elastic belt which has a viscosity and is adapted for expansion and contraction, and an auxiliary motor mechanically coupled to said capstan, said auxiliary motor being adapted to be controlled in accordance with a phase-comparison signal obtained by phase comparing a frequency signal resulting from the rotation of the rotating shaft of said rotary magnetic head device and a control frequency signal reproduced from said magnetic tape during the reproducing operation, whereby each one field of video signal is recorded in exact correspondence to each one magnetic track and reproduced therefrom.

3,626,116

**IGNITION DISTRIBUTORS**

William Harold Cooksey, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 4, 1969, Ser. No. 847,253

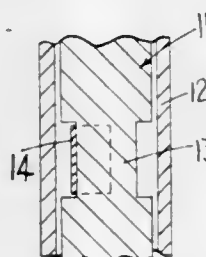
Claims priority, application Great Britain, Aug. 22, 1968,

40,175/68

Int. Cl. H01h 19/00

U.S. Cl. 200—19

1 Claim



An ignition distributor for a road vehicle, including a casing and a driven shaft rotatably mounted within the casing, the driven shaft being adapted to be driven by the engine of the vehicle. A contact breaker assembly is mounted within the casing and a hollow cam shaft is mounted for limited angular movement of the driven shaft. The cam shaft is rotatable with the driven shaft to operate the contact breaker assembly, and the cam shaft is moved angularly relative to the driven shaft by a centrifugal mechanism to vary the ignition timing of the distributor. Interposed between the driven shaft and the cam shaft is a resilient member which damps angular movement of the cam shaft relative to the driven shaft while permitting the required angular movement of the cam shaft under the action of the centrifugal mechanism.

3,626,117

**ESCAPEMENT AND TIMER UTILIZING SAME**

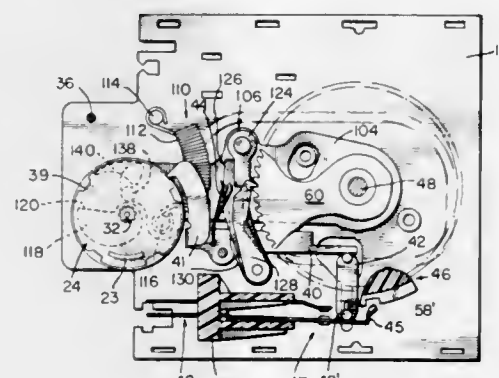
Richard W. Stafford, Clayton, Ind., assignor to P. R. Mallory &amp; Co. Inc., Indianapolis, Ind.

Filed Jan. 21, 1969, Ser. No. 792,578

Int. Cl. H01h 7/08

U.S. Cl. 200—38 F

11 Claims



An escapement means for a timer utilizes a constant force coil spring such that the minimum force required to activate

a ratchet means coupled to the timer cam stack can be set and maintained during the operation of the timer.

3,626,118

**RADIAL ARM SAW WITH A DEPRESSIBLE KEY FOR UNLOCKING A SWITCH-ACTUATING TRIGGER**

Harold R. Botefuhr, c/o Portable Electric Tools, Inc., 1200 E. State Street, Geneva, Ill.

Original application Nov. 14, 1966, Ser. No. 594,084, now

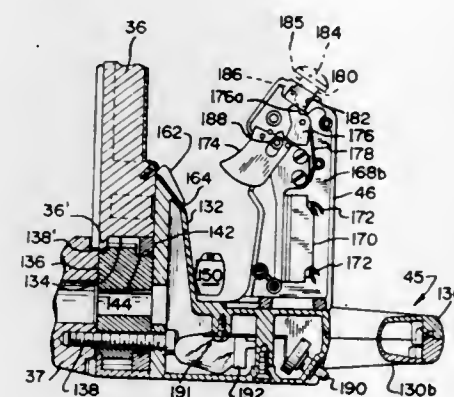
Patent No. 3,482,610, dated Dec. 2, 1969. Divided and this

application Aug. 13, 1969, Ser. No. 849,821

Int. Cl. H01h 27/06, 9/06

U.S. Cl. 200—42 R

5 Claims



A handtool is provided with a manipulating handle and includes a key-operated structure such that the tool cannot be operated without the key being in position in the tool. In addition, in one form of the invention the tool will not operate unless the key is depressed to a predetermined position against a force tending to return the key to the inoperative position.

3,626,119

**CONTROL UNITS FOR VALVE ACTUATORS**

Jeremy J. Fry, Bath, England, assignor to Rotork Limited

Filed Mar. 11, 1970, Ser. No. 18,609

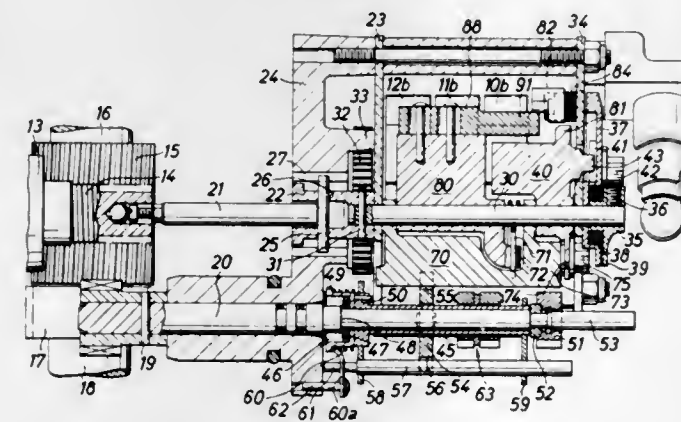
Claims priority, application Great Britain, Mar. 13, 1969,

13,260/69

Int. Cl. H01h 21/00

U.S. Cl. 200—47

5 Claims



This invention relates to a unit for controlling electrical circuits. The control unit comprises a switch striker plate 40 which is mounted between a pair of switches 10a, 10b positioned opposite each other, the plate being movable to operate one or other of the switches to energize the appropriate circuit. A locking pawl 82 is pivotally urged downwardly to move a finger 85 into the path of movement of a projection 81 on the plate 40 so as to prevent its return movement to operate the other switch after one switch has been operated. The locking pawl is raised to release the plate 40 by means of a cam 92 on the end of a member 88, the cam 92 engaging a cam surface 87 formed on the pawl 82 adjacent the finger 85. The member 88 is carried by an auxiliary striker blade 80 pivotally movable with the switch-striker plate 40 in response to an output movement of associated apparatus.

The invention is particularly applicable for the control of the electric motor of an actuator with the switches controlling the electric circuit. The arrangement prevents operation of the opposite motor switch until the actuator begins to move in an opposite direction.

3,626,120

**KEY-LOCKING ASSEMBLY**

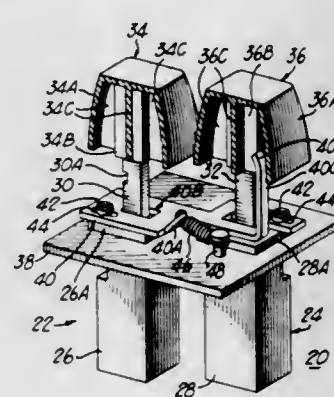
Duane H. Wright, Coeur D'Alene, Idaho, assignor to Clare-Pendar Co., Post Falls, Idaho

Filed Sept. 30, 1970, Ser. No. 76,718

Int. Cl. H01h 9/26

U.S. Cl. 200—50 C

12 Claims



A key-locking assembly for a keyboard using manually depressed keys with key stems and skirted key buttons includes a movably mounted latching member resiliently biased against the stem of the key to be locked. This stem includes a notch normally disposed above the latching member which is moved into alignment with and receives the latching member when the key is depressed. The latching member includes an actuator arm extending upwardly adjacent the stem of the release key so that its free end is disposed adjacent an internal cam surface on the skirted button on this key. Depression of the release key causes the cam surface to engage the actuator and shift the latching member to release the locked key. This latching member is pivotally mounted in one embodiment, and is slidably mounted in another embodiment.

3,626,121

**CENTRIFUGAL ACTUATOR**

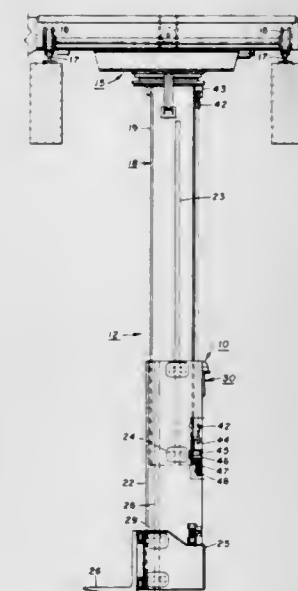
Walter A. Paulsen, Spring Lake, Mich., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 21, 1970, Ser. No. 56,792

Int. Cl. H01h 35/10

U.S. Cl. 200—80

12 Claims



A device for mechanically actuating a control mechanism on a predetermined velocity being attained between relatively moving parts of an apparatus on which the control mechanism is operative. The device comprises an input section rotatably responsive to movement of the apparatus on which the control mechanism is supported. An output section



juxtaposed to the input section is normally disengaged therefrom and operatively detains the control mechanism against actuation. In response to excessive velocity increase, a plurality of balls inwardly detained in radially extending slots of the input section are centrifugally slung outward to rotatably couple the input and output sections for the latter to release the control mechanism for its actuation.

3,626,122

**PRESSURE EQUALIZATION VALVE AND SWITCH**

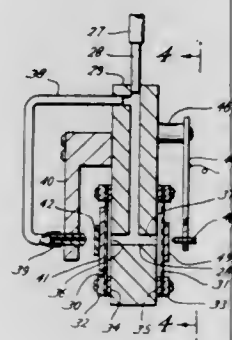
Dee D. Horton, and Dee D. Horton, Jr., both of Corpus Christi, Tex., assignors to Horton Automatics, Inc., Corpus Christi, Tex.

Continuation-in-part of application Ser. No. 834,985, June 20, 1969, now abandoned. This application July 2, 1970, Ser. No. 51,993

Int. Cl. H01h 35/40; F15b 7/00; F16k 21/16

U.S. Cl. 200-83 E

5 Claims



Apparatus for selectively venting a pressure-sensitive fluid system. Fluid pressure of the system is directed through a first conduit into a chamber having an expandable wall portion and through a second conduit which terminates in an opening adjacent and facing the external surface of the expandable wall. Small system pressure fluctuations are vented through the opening of the second conduit and large pressure changes cause the expandable wall portion to extend into sealing contact with the termination of the second conduit, thereby closing the vent opening. System fluid pressure may also be directed through a third conduit into a second expandable wall fluid chamber and the expansion of that wall utilized to actuate an electrical switch.

3,626,123

**VACUUM-TYPE ELECTRICAL DEVICE**

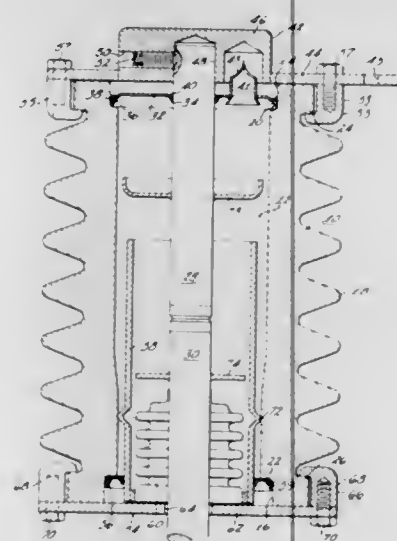
Herbert M. Pflanz, Westwood, and William E. Harper, Walpole, both of Mass., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 19, 1970, Ser. No. 91,001

Int. Cl. H01h 33/66

U.S. Cl. 200-144 B

8 Claims



A vacuum interrupter comprises a hollow cylindrical housing having openings at opposite ends and is made of vacuum-tight ceramic. An integrally formed shoulder is provided in-

side the housing near each opening. A thin metallic end seal having a central opening abuts each shoulder and is sealed in place thereon. A stationary electrode extends from the exterior of the housing through the central opening in one end seal into the interior of the housing and is sealed to its end seal. A vacuum pinch-off tube is provided in the said one seal. A tubular metallic arc shield extends through the central opening in the other end seal into the interior of the housing, surrounds a portion of the stationary electrode and is sealed to its end seal. The tubular shield is immobilized by an external bead thereon which engages the inner wall of the housing. A movable electrode for cooperation with the stationary electrode extends into the housing through the tubular arc shield. A flexible bellows seals the space between the tubular arc shield and the movable electrode. Each electrode is provided with a disk-type arc shield to confine arc products within the tubular shield and to protect the bellows. Metal end or mounting plates are clamped against respective ends of the housing by detachable clamping means which engage an exterior flange on the housing. One of the end plates is electrically connected to its associated stationary contact.

3,626,124

**ARC AND SPARK EXTINGUISHING CONTACTS UTILIZING SINGLE DOMAIN MAGNETIC PARTICLES**

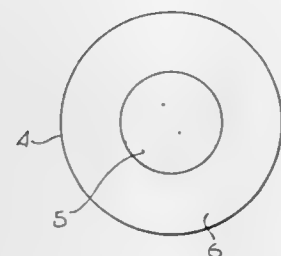
Peter A. Denes, 9101 Crestwood Ave. N.E., Albuquerque, N. Mex.

Filed Nov. 17, 1969, Ser. No. 877,261

Int. Cl. H01h 9/30, 33/00

U.S. Cl. 200-144 C

23 Claims



This invention relates to contacts which have about 0.001 to 96 percent by weight of ferromagnetic or ferrimagnetic permanent magnetic particles embedded in the contacts such that the magnetic particles are distinguishable from the basic contact material. The Curie temperature of the magnetic particles used in the contacts are greater than about 250° C. and the magnetic particles have an average spontaneous magnetic energy product greater than about 5,000 Gauss.Oersted. The magnetic particles having spontaneous magnetic energy can also be incorporated in certain contact configurations to also obtain excellent noise suppression characteristics.

3,626,125

**LEAK DETECTING MEANS FOR VACUUM SWITCHES**

Akira Tonegawa, Yokohama-shi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha (a/k/a Tokyo Shibaura Electric Co., Ltd.), Kanagawa-ken, Japan

Filed Nov. 18, 1969, Ser. No. 877,811

Claims priority, application Japan, Nov. 22, 1968, 43/85893

Int. Cl. H01h 33/16

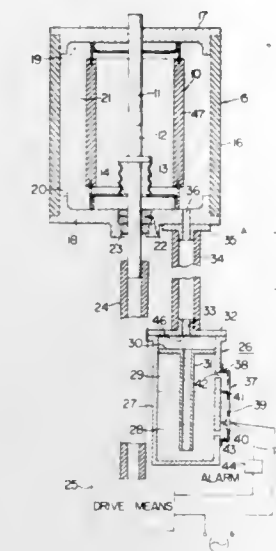
U.S. Cl. 200-144 B

6 Claims

In a vacuum switch having a highly evacuated envelope and a pair of separable electrodes located within the envelope, the vacuum switch is positioned within an oiltight enclosure such that a space defined between the enclosure and the envelope of the vacuum switch is filled with an insulating

oil. The oil within the enclosure may penetrate into the envelope of the vacuum switch when a leak occurs in the

arc displacement secondary electrodes spaced apart above the primary electrodes such that, upon opening of the circuit breaker contacts, the circuit breaking arc is generated initially between the open contacts and thereafter jumps between the contacts and the primary electrodes and a proximal secondary electrode as well as between the secondary electrodes to form an arc path consisting of a substantially regular hexagon at approximately 0.01 second subsequent to



vacuum switch. The enclosure communicates with a detector which detects any leak that may occur in the vacuum switch.

3,626,126

**HIGH-VOLTAGE DISCONNECTING SWITCH**

Hermann Pesch, Witten, Germany, assignor to Wickmann-Werke Aktiengesellschaft, Witten-Annen, Germany

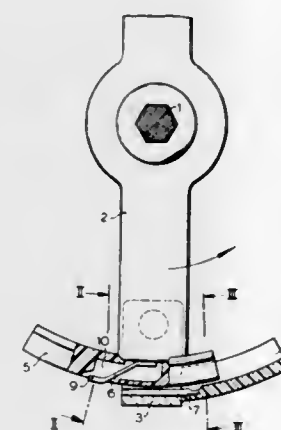
Filed Oct. 13, 1969, Ser. No. 865,732

Claims priority, application Germany, Oct. 23, 1968, P 18 04 661.2

Int. Cl. H01h 33/12

U.S. Cl. 200-146 R

5 Claims



A high-voltage rotary switch having a stationary main contact, a rotary main contact and an auxiliary arcing contact in electrical parallel with the rotary main contact. The arcing contact is the final circuit breaking element and is surrounded when the circuit breaks and arcing occurs by an arc-extinguishing chamber formed by two interacting arcuate elements one of which is stationary and the other of which is carried on the rotary contact.

3,626,127

**ARC-BREAKING AND QUENCHING UNIT FOR ELECTRIC CIRCUIT BREAKERS**

Enrico Baldini, Bergamo, Italy, assignor to Magrini-Fabbriche Riunite Magrini Scarpa e Magnano-M.S.M.-S.p.A., Milan, Italy

Filed Mar. 9, 1970, Ser. No. 17,621

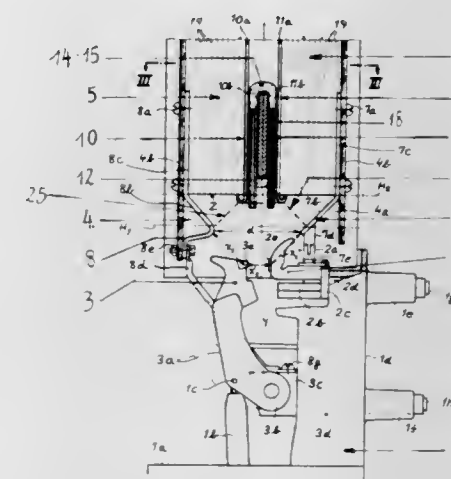
Claims priority, application Italy, Mar. 10, 1969, 13872 A/69

Int. Cl. H01h 33/18

U.S. Cl. 200-147 R

6 Claims

An arc-quenching system of the magnetic blast type for electric circuit breakers wherein a pair of cooperating circuit breaker contacts are disposed in an arc-quenching chamber and are juxtaposed with respective arc-splitting primary electrodes located on opposite sides of the chamber and a pair of



3,626,128

**MERCURY SWITCH, INCLUDING A LIQUID ETHER FILLER HAVING A LOW-FREEZING POINT AND A HIGH-BOILING POINT**

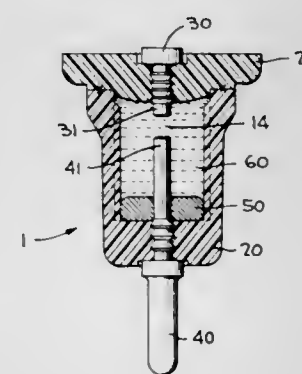
Gideon A. Du Rocher, Mt. Clemens, and Gerald L. McClure, Warren, both of Mich., assignors to Essex International, Inc.

Filed Feb. 4, 1970, Ser. No. 8,513

Int. Cl. H01h 29/00

U.S. Cl. 200-152

11 Claims



A mercury switch having a nonconductive housing within which is mounted a pair of spaced apart electrodes and a quantity of mercury in an amount sufficient to bridge the space between the electrodes depending on the position or movement of the switch. Also included in the housing is a filler of liquid ether, preferably butyl Cellosolve (ethylene glycol monobutyl ether), having a freezing point lower than that of mercury and a boiling point at least as high as 100° C., the liquid filler having a viscosity which changes little, if any, between the freezing temperature of mercury and 100° C.



3,626,129

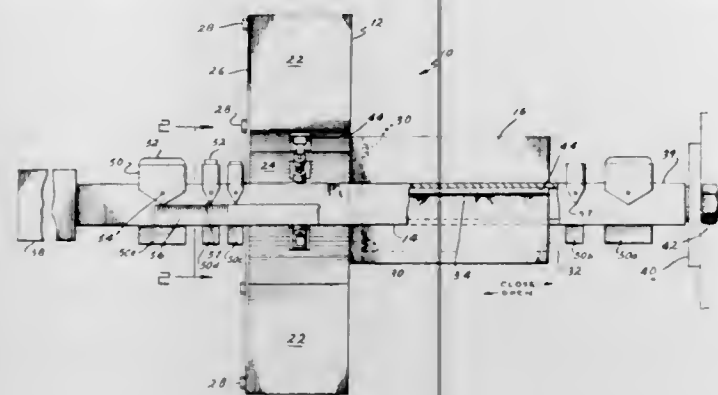
**POSITION CONTROL DEVICE**

Cornelius E. Daly, Springfield, Mass., assignor to Koehring Company, Milwaukee, Wis.

Filed Jan. 21, 1970, Ser. No. 4,510  
Int. Cl. H01h 3/42

U.S. Cl. 200—153 LA

7 Claims



A position control device wherein a supported track is affixed to and movable with a part of an apparatus on which the control device is used. Said movement by said track actuates switches radially disposed at a fixed position about said track by the contact of said switches by switch-actuating means adjustably disposed along said track and movable therewith.

3,626,130

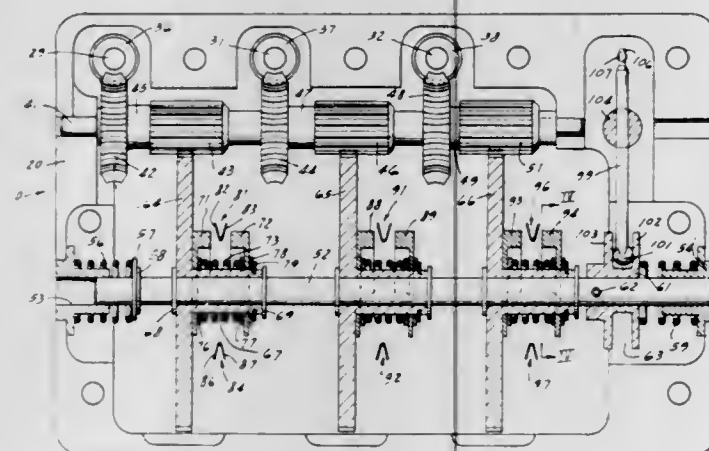
**MEMORY AND CONTROL DEVICE WITH CAMS WHICH ACT IN BOTH RADIAL AND AXIAL DIRECTIONS**

Burton L. Siegal, Skokie, Ill., assignor to Peter C. Granata, Jr., Chicago and Edward P. Andrychowski, Jr., Franklin Park, Ill., part interest to each

Filed Sept. 11, 1970, Ser. No. 71,460  
Int. Cl. H01h 3/42, 3/54

U.S. Cl. 200—153 LB

16 Claims



A memory and control device for positioning a power seat to preset positions and selectively repositioning it to such preset positions and also providing manual control of the seat to place the seat in any position. The present invention utilizes the same switches for setting different preset positions and utilizes cams on both sides of said switches which may be moved axially to selectively engage the switches to energize the power seat to the selected preset position.

3,626,131

**PUSHBUTTON SWITCH**

Charles Azel Barney, Stow, and Julian Joseph Bishop, Jr., Belmont, both of Mass., assignors to Ark-Les Switch Corporation, Watertown, Mass.

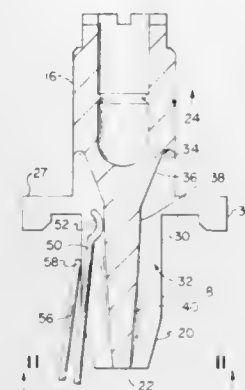
Filed Jan. 2, 1970, Ser. No. 358  
Int. Cl. H01h 3/12, 3/14

U.S. Cl. 200—159 A

5 Claims

A momentary pushbutton electric switch featuring an elongated plunger, contained in a casing, and having one or more longitudinally extended grooves, cut more deeply into the

plunger at the lower end, and tapering outward at the top of the groove, the floor of the groove providing a cam surface. In one or more of the grooves rides an inner terminal, while an outer terminal lies across and outside the same groove, both terminals extending upward from the bottom of the casing. The plunger is biased upwardly and outwardly of the casing by a spring, and when the plunger is in its upward, inoperative position, the inner terminal lies in the deeper part



of the groove and the outer terminal is thus prevented from contacting it. When the plunger is depressed against the upward bias of the spring to its operative position, the inner terminal rides against the cam surface and is forced outwardly of the groove toward the circumference of the plunger until it contacts the outer terminal. The casing may be assembled in either of two ways, one way providing an upright pushbutton, the other providing a pushbutton tilted at an angle to the supporting surface.

3,626,132

**SWITCH CONTACTS**

Franz Jungels, Frittlingen, Germany, assignor to Hedderheimer Metallwarenfabrik AG-Werk Fluorn, Fluorn, Germany

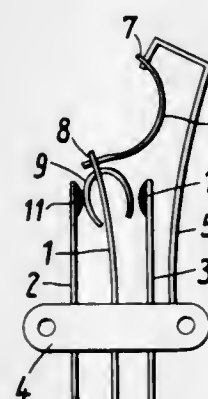
Filed Jan. 14, 1970, Ser. No. 2,800

Claims priority, application Germany, Jan. 16, 1969, P 19 01 965.9

Int. Cl. H01h 1/34

U.S. Cl. 200—166 J

10 Claims



A switch mechanism in which the movable contact spring and/or the fixed contact is provided with a pivotally mounted yoke forming at least one of the contact surfaces. The yoke is arcuate having a U-shaped cross section and mounted on a bearing edge formed from the contact spring so that when the spring is deflected, the yoke acts in sliding, rolling and frictional engagement with the opposing contact face.

3,626,133

**PRESS SWITCH HAVING A SNAP FIT FORK BETWEEN THE BODY AND CONTROL MEMBER**

Angelo Teruzzi, Milan, Italy, assignor to Breter S.P.A., Milan, Italy

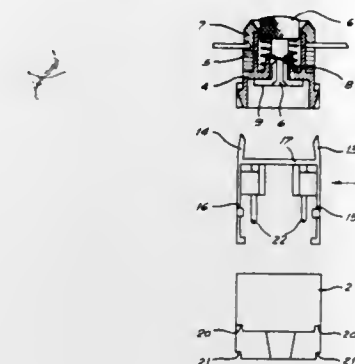
Filed Mar. 16, 1970, Ser. No. 19,723

Claims priority, application Italy, Mar. 26, 1969, 14597 A/69

Int. Cl. H01h 9/02, 13/04

U.S. Cl. 200—168 R

7 Claims



A press switch comprising a control assembly, at least one body for containing the electrical contact elements of the switch, and at least a fork means for snap fitting with said control assembly and said at least one body, respectively.

3,626,134

**ROTARY ACTUATOR FOR SLIDE SWITCH**

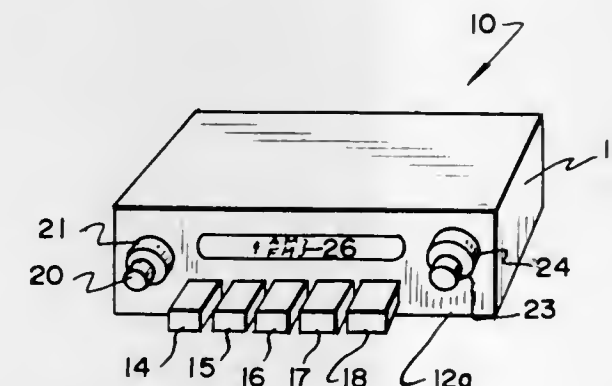
Norbert J. Kazyk, Norridge, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 4, 1970, Ser. No. 8,671

Int. Cl. H01h 3/02

U.S. Cl. 200—172

7 Claims



A switch-actuating device is mounted within a housing to convert rotary movement of a selector knob into linear movement to actuate a slide switch mounted within the housing. The shaft which carries the knob outwardly of the housing has a crank extending rearwardly behind the wall of the housing to engage a pivotal member which pivots about an axis transverse to the axis of rotation of the shaft. The pivotal member is loosely coupled to the crank at one end thereof and has the other end thereof coupled to a slide actuator on the switch body to move the actuator linearly between its two selectable positions.

3,626,135

**ELECTRONIC OVEN WITH FERRITE RF REJECTION FILTERS**

Louis H. Fitzmayer, Louisville, Ky., assignor to General Electric Company

Filed Nov. 19, 1969, Ser. No. 877,989

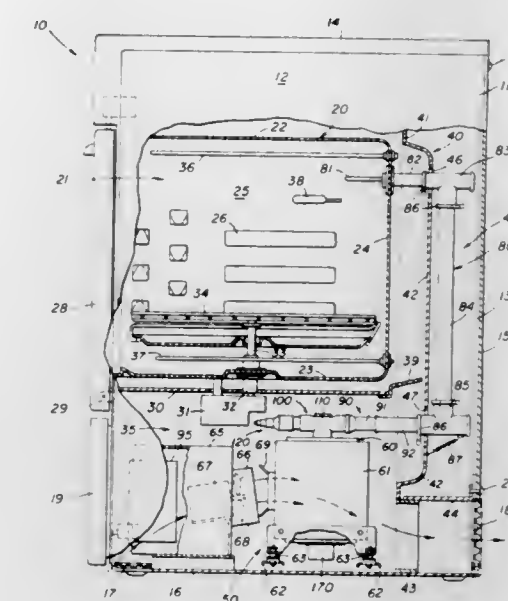
Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

8 Claims

There is disclosed an electronic oven comprising a generator of microwave energy of a predetermined frequency coupled to a cooking cavity and to a source of DC and 60 cycle operating potentials by a coupling structure, the coupling structure including an RF rejection filter comprising coaxial

inner and outer conductors insulated from each other, the inner conductor having a cylindrical ferrite member and a cylindrical metal slug therein of such diameter that the filter



operates as a lossy transmission line, terminated in a capacitance for highly attenuating the predetermined frequency and all harmonics thereof up to the seventh harmonic.

3,626,136

**HIGH-FREQUENCY HEATING APPARATUS**

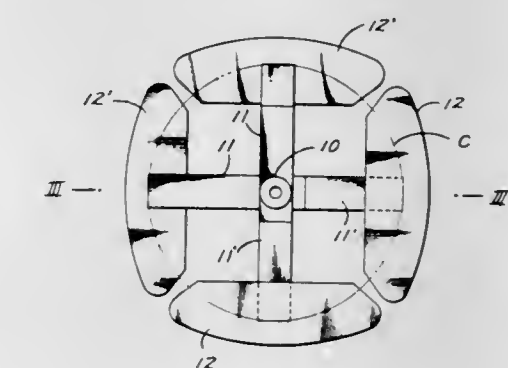
Michio Funahashi, Otsu, Japan, assignor to Sanyo Electric Co., Ltd., Osaka-fu, Japan

Filed May 11, 1970, Ser. No. 36,007

Claims priority, application Japan, May 14, 1969, 44/44857  
Int. Cl. H05b 9/06, 1/00

U.S. Cl. 219—10.55

12 Claims



A high-frequency heating apparatus includes a supply source for supplying high-frequency energy into a conductive heating chamber. Two pairs of stirring blades mounted on a rotary shaft inside the chamber are positioned relatively to the supply source so that a substantial portion of the radiated energy is intercepted and reflected by the blades to afford more uniform heating of materials within the chamber. The generally elongated stirring blades are mounted tangentially of the circumference of an imaginary circle lying in a plane normal to the rotary shaft and concentric with the shaft axis. The blades of each pair lie in parallel planes inclined at an angle of 45° with respect to the plane of the imaginary circle and thus are oppositely inclined with respect to the axis of the rotary shaft. As the blades are rotated, high-frequency energy from the source, in a first mode, is reflected from the upper surface of one of the blades of the pair in a centrifugal direction and, in a second mode, from the upper surface of the other blade in a centripetal direction toward the first blade of the pair and reflected downwardly from the lower surface of the latter. Continuous rotation of the shaft effects a continuously alternating sequence of the modes thus established by each pair of blades.



3,626,137

**METHOD OF ELECTRICAL DISCHARGE MACHINING**

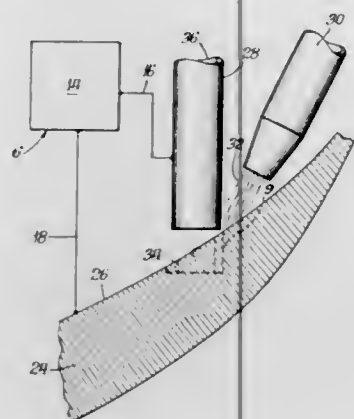
Robert Bernard Bertolasi; Douglas Martin Hood, and Walter Avery Strange, all of Rockford, Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Mar. 25, 1970, Ser. No. 22,591

Int. Cl. B23p 1/08

U.S. Cl. 219—69 D

11 Claims



In electrical discharge machining, material is eroded away from a workpiece by electrical discharges occurring between an electrode and the workpiece. Coolant, that will change from a liquid to a gaseous state at a temperature and pressure below the temperature and pressure around the workpiece, is introduced in its liquid state into the gap between the electrode and the workpiece at the same time electrical discharges are passed across said gap. The liquid coolant experiences a temperature increase and a pressure decrease in the gap and flashes into its gaseous state thereby increasing in volume. Such volumetric increase results in a rapid gas flow away from the gap into the area around the workpiece that removes eroded particles. The change of state from a liquid to a gas is also accompanied by a decrease in temperature of the surrounding area including the electrode and the workpiece.

3,626,138

**METHOD AND APPARATUS FOR WELDING AN OVERLAY ON A METAL BASE**

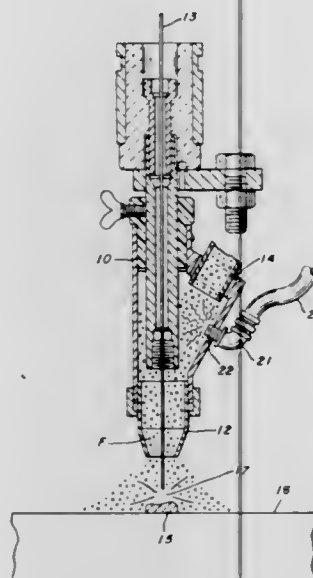
Forbes M. Hurley, Merrillville, Ind., assignor to United States Steel Corporation

Filed Mar. 20, 1970, Ser. No. 21,321

Int. Cl. B23k 9/04

U.S. Cl. 219—76

1 Claim



A method and apparatus for welding an overlay on a metal base. The welding apparatus contains a supply of granular flux which feeds through a nozzle and covers the weld. An inert gas is introduced to the flux supply to purge it of air. The gas discharges through the nozzle and assists in protecting the weld. Particularly useful for welding an overlay of a nickel tantalum alloy.

3,626,139

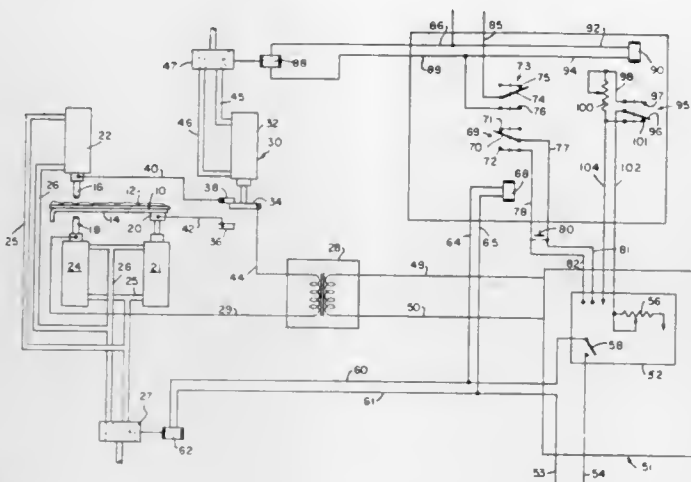
**WELDING APPARATUS**

Oran J. Sands, c/o Arvin Industries, Inc., Columbus, Ind.  
Original application Feb. 20, 1969, Ser. No. 801,065, now Patent No. 3,578,940. Divided and this application June 29, 1970, Ser. No. 50,682

Int. Cl. B23k 9/28, 11/10

U.S. Cl. 219—86

8 Claims



A welding apparatus and method for spot-welding a first metal workpiece having a plastic covered surface to a second metal workpiece. The two workpieces are placed in metal-to-metal engagement and clamped between the electrodes of two aligned welding guns, a first electrode engaging the plastic surface of the first workpiece and a second electrode engaging the second workpiece. At a point spaced from the second electrode, the metal of the second workpiece is engaged by a contact member between which and the second electrode an electric current can flow through the metal. The second electrode is connected to one terminal of a welding-current source the other terminal of which is connectable through appropriate switch means alternatively to the contact member or to the first electrode. With the contact member connected to the current source heat generated by current flow through the metal of the workpieces softens the plastic to enable the first electrode to penetrate it and engage the metal substrate. Thereupon, the switch means is operated to disconnect the contact member from the power source and connect the first electrode thereto, thus permitting welding current to flow between the two electrodes through the metal. A timing mechanism is provided to control automatically the supply of current and the operation of the welding guns and switch means.

3,626,140

**WELDING IN DEPTH**

Jean-Pierre Peyrot, 8, domaine du Bel-Abord, Chilly-Mazarin, Essonne, France

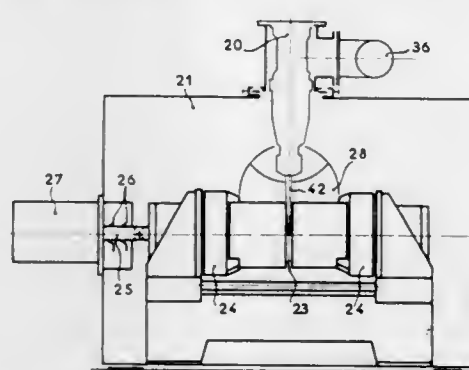
Filed Oct. 9, 1969, Ser. No. 865,139

Claims priority, application France, Oct. 10, 1968, 169492

Int. Cl. B23k 9/00

U.S. Cl. 219—121 EB

3 Claims



A method of welding together two elements with an electron bombardment beam, comprising the following steps: preparing each of the two parts to be welded with a support-

3,626,143

**SCORING OF MATERIALS WITH LASER ENERGY**

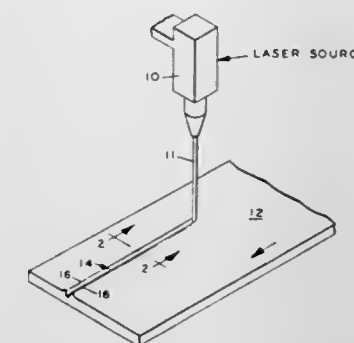
Franklin Hornor Fry, Appleton, Wis., assignor to American Can Company, New York, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,764

Int. Cl. B23k 9/00

U.S. Cl. 219—121

3 Claims



A process in which a groove or score is generated in a thermoplastic substrate. A focused continuous beam of laser light is directed against the substrate and relative motion is applied between the beam and the substrate. The laser beam is generated and focused with suitable optics so that the beam has sufficient energy density to degrade the plastic material. The relative velocity between the beam and the substrate is such that the beam degrades the substrate without cutting through the substrate and thereby forms a groove in the substrate with a bead bordering the groove.

3,626,141

**LASER SCRIBING APPARATUS**

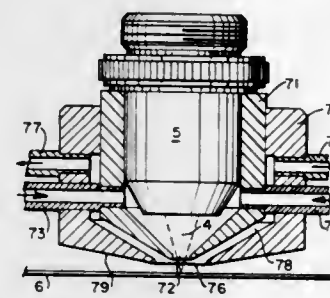
Richard T. Daly, Huntington, N.Y., assignor to Quantronix Corporation, Farmingdale, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,245

Int. Cl. B23k 9/00

U.S. Cl. 219—121 L

7 Claims



Apparatus for scribing semiconductor wafers including a laser, focusing optics and a drive mechanism for moving the focal spot of the laser beam along a prescribed path on the surface of a semiconductor wafer. Globules of material ejected from the wafer by the action of the laser beam are prevented from falling back upon the surface of the semiconductor wafer or from depositing on the focusing optics by a vacuum device which draws in air from the region of the focal spot together with entrained globules of semiconductor material, or by a transparent film disposed parallel to and slightly spaced apart from the surface of the semiconductor wafer to catch the molten globules of semiconductor material, or by coating the semiconductor wafer with a substance which prevents the ejected globules from sticking.

3,626,142

**ELECTRON BEAM MACHINE**

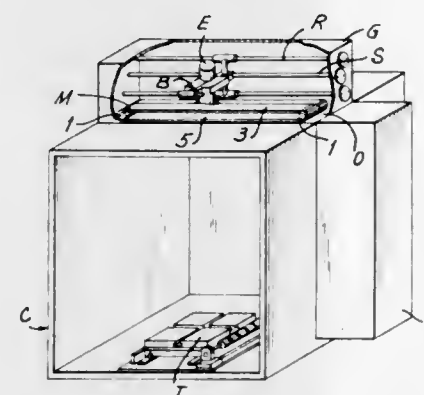
James R. King, Tustin, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 1, 1970, Ser. No. 33,685

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EB

2 Claims



An electron beam machine wherein the electron gun is housed in a gun chamber separate from the vacuum chamber housing the work. A moveable seal is maintained around the gun and between the gun chamber and the vacuum chamber.

3,626,145

**MAGNETIC CONTROL OF ARC ENVIRONMENT**

James F. Jackson, Franklin, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Feb. 2, 1970, Ser. No. 7,946

Int. Cl. B23k 9/08

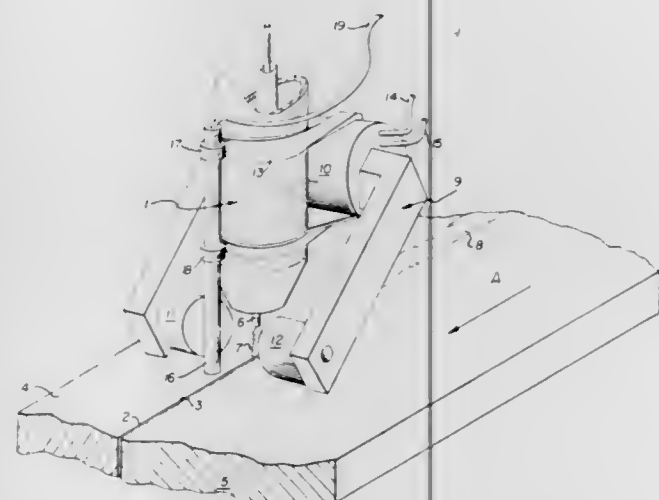
U.S. Cl. 219—123

7 Claims

Control means for the arc of an automatic DC electric welding device comprising an electromagnet with its mag-



netic poles aligned perpendicular to the arc and the seam to be welded and providing a preselected and optimized magnetized environment for the arc. A Hall-effect probe is located immediately ahead of the welding arc to detect the magnitude and direction of the effect on the magnetic environment of detrimental magnetic fields in the immediate vicinity of the welding operation. The Hall-effect probe is



connected through a detector circuit and a control circuit to the power supply for the electromagnet. Upon detection of the magnitude and direction of the effect of a detrimental magnetic field by the Hall-effect probe, appropriate adjustment is made of the power supplied to the electromagnet through the detector and control circuits, enabling the electromagnet to nullify the effect of the detrimental field on the preselected magnetic environment.

3,626,146

**WELD CURRENT CONTROLLER**

Colin Francis Greening Smith, Chancellors Ford, England, assignor to International Standard Electric Corporation, New York, N.Y.

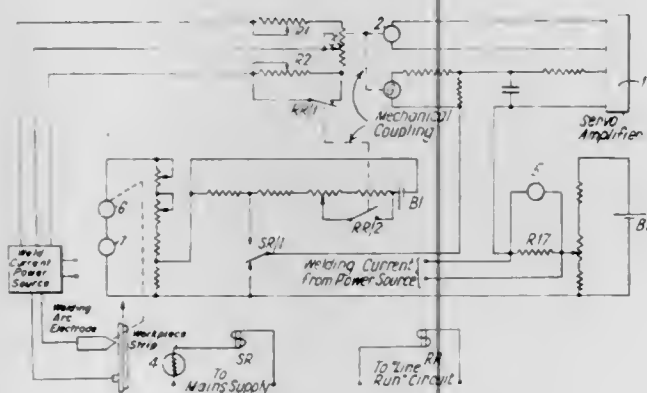
Filed Aug. 7, 1969, Ser. No. 848,274

Claims priority, application Great Britain, Aug. 28, 1968, 41,145/68

Int. Cl. B23k 9/10

U.S. Cl. 219—131 R

7 Claims



An arc welding current control system establishes predetermined operating current levels during deenergized, starting and running conditions. Switching circuits provide signals to a servoamplifier which drives a motor and potentiometer to control the current to a weld current power source. Changes from the desired level are detected and compensated for. A protective circuit automatically reduces the current level when the welding arc is off and provides an operating current only when the arc is on.

3,626,147  
**UNDERWATER ARC WELDING APPARATUS WITH PIVOTAL BASE**

Sadao Sato, Tokyo, Japan, assignor to Kakumaru Industry Company Limited, Tokyo, Japan

Filed Sept. 10, 1969, Ser. No. 871,002

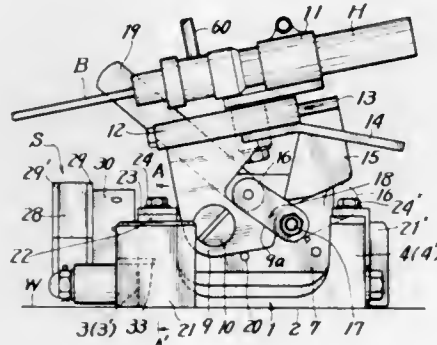
Claims priority, application Japan, June 30, 1967, 42/55823

June 14, 1967, 42/37530

Int. Cl. B23k 9/00

U.S. Cl. 219—136

6 Claims



An underwater arc welding apparatus in which a composite consumable welding electrode, which transmits gas to the arc zone, is mounted in a support mechanism for pivotal movement and automatic underwater welding.

3,626,148

**ELECTRIC ENGINE COOLANT HEATER**

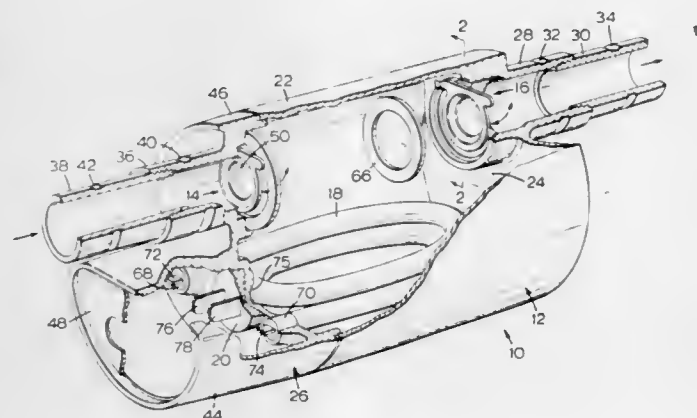
Walter J. Woytowich, Deep River, Ontario, and Charles G. Shepherd, Oakville, Ontario, both of Canada, assignors to Bardon Research and Development Limited, Toronto, Canada, a part interest

Filed May 26, 1969, Ser. No. 827,767

Int. Cl. F02n 17/04; F24h 1/10; H05b 1/02

U.S. Cl. 219—208

7 Claims



A heater for warming coolant in a liquid-cooled engine, including a reservoir for coolant, the reservoir having an inlet and an outlet, a one-way inlet valve to permit coolant to enter the reservoir, a one-way outlet valve to permit coolant to leave the reservoir, a heating element in the reservoir, and a thermostat for controlling the heating element. The thermostat cuts out when the temperature of the coolant in the reservoir is above the boiling point of the coolant, so that the coolant is vaporized. After the heating element is turned off, the remaining vapor in the reservoir condenses, and the resulting partial vacuum draws in a fresh charge of coolant through the inlet, some of which proceeds immediately through the outlet to ram the heated coolant through the cooling system. The heating element is again energized and the cycle is repeated.

3,626,149  
**THERMALLY CONDUCTIVE CONCRETE WITH HEATING MEANS**

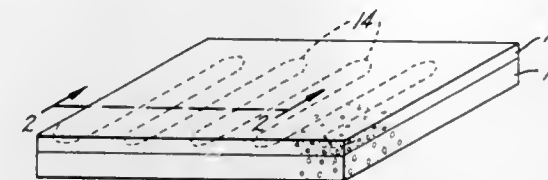
Peter R. Carney, Lake Forest, and Raymond F. Stevens, Stickney Township, Cook County, both of Ill., assignors to Superior Graphite Company, Chicago, Ill.

Filed Jan. 2, 1970, Ser. No. 65

Int. Cl. H05b 1/00

U.S. Cl. 219—213

8 Claims



An improved ground covering and heating means is constructed by formulating graphited concrete containing about 35-85 percent graphite, based on the weight of the dry mix. The concrete is laid in combination with a suitable heating element beneath the upper surface. In the preferred embodiment, the graphited concrete is sandwiched with a lower layer of nongraphited concrete for added strength. In preparing the sandwich, the graphited concrete is preferably poured over the nongraphited concrete while the latter is still in a green state.

3,626,150

**CARRYING CASE AND DISPENSER FOR ELECTRICALLY HEATED HAIR CURLERS**

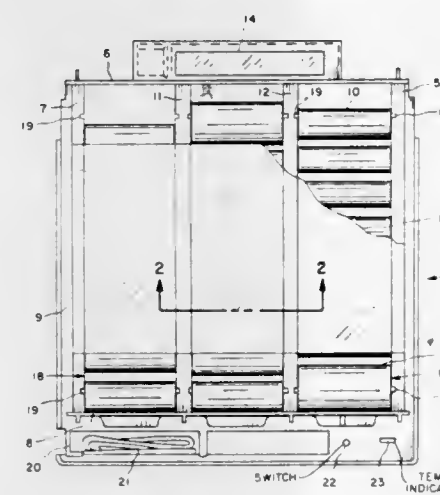
Richard Q. Kress, Greenwich, Conn., assignor to U.S. Phillips Corporation

Filed Oct. 29, 1969, Ser. No. 872,247

Int. Cl. A45d 2/36, 4/16; H05b 1/00

U.S. Cl. 219—222

6 Claims



A combination carrying case and dispensing unit for storing and dispensing electrically heated hair curlers of the type having a self-contained electric heating element and terminal projections at each end. The unit includes a dispensing tray arranged to be supported in an upright position by its cover. Parallel guide tracks are provided in the tray for accommodating a plurality of curlers in stacked relation. A loading station and a removal station are provided at the upper and lower ends, respectively, of the guide tracks whereby curlers inserted into the guide tracks at the upper loading station will be gravitationally supplied to the lower removal station whereat they can be removed for use. Electrically conductive rails within the guide tracks conductively engage the terminal end projections of the stacked curlers and permit electric power to be simultaneously applied to an entire stack of curlers to heat the same. A temperature indicator is provided for indicating when the curlers have been sufficiently heated and are ready for use. A lighted makeup mirror is provided across the front of the dispensing tray.

3,626,151  
**PROTECTOR SHIELD**

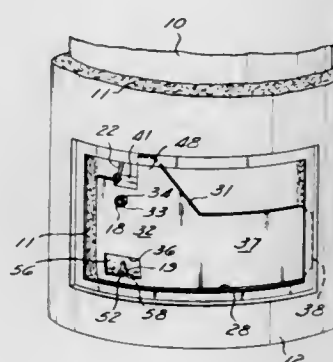
Edward G. Them, and Bernard S. Deubel, both of Mansfield, Ohio, assignors to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed Oct. 15, 1970, Ser. No. 80,908

Int. Cl. F24h 1/00

U.S. Cl. 219—328

10 Claims



A protective shield for the terminals of thermostats mounted on water heaters is disclosed. The shield is formed of heavy fish paper shaped to provide access to the thermostat controls while preventing accidental contact with the terminals and connecting leads. Mounting portions are provided on the shield for removably mounting the shield in place.

3,626,152

**RADIANT ENERGY WARMER-DRIER FOR TEXTILE ARTICLES**

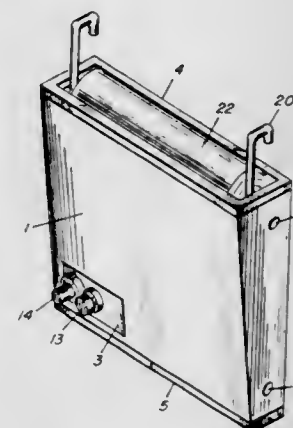
Anthony J. Governale, Manhasset, and Rolf A. Zurwelle, Port Washington, both of N.Y., assignors to Elektra Systems, Inc., Farmingdale, N.Y.

Filed Feb. 6, 1970, Ser. No. 9,222

Int. Cl. F26b 23/06; H05b 3/02

U.S. Cl. 219—342

2 Claims



A hollow, generally rectangularly shaped, heat reflecting enclosure, open at top and bottom, has a radiant-heating panel mounted at its center. The heating panel comprises a conductive sheet, which may be an asbestos sheet impregnated with electrically conductive particles, such as graphite, sandwiched between a pair of insulating sheets. The panel is substantially coextensive in size with the area of the larger sides of the enclosure. Top and bottom mounting brackets connected to the sides of the panel support the panel in spaced parallel relation to the larger sides of the enclosure, whereby textile articles such as towels, hosiery and undergarments may be hung over the heating panel within the enclosure for quick, safe drying and warming. An off-on switch and thermostat are connected in series with the heating panel for regulating the energization thereof.



3,626,153

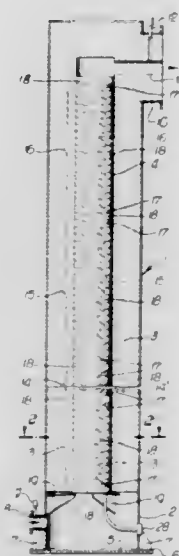
**ELECTRIC HALIDE VAPOR HEATER**

Anthony Horton, Welwyn Garden City, England, assignor to Laporte Titanium Limited, London, England  
 Filed Mar. 25, 1969, Ser. No. 810,190  
 Claims priority, application Great Britain, Apr. 3, 1968, 15,983/68

Int. Cl. H05b 3/00; F24h 3/04

U.S. Cl. 219—374

2 Claims



A process and apparatus for heating the vapor of a halide of an element selected from the group consisting of titanium, silicon, aluminum, zirconium and iron and mixtures of such halides. The vapor to be heated is passed through a plurality of ducts which are arranged in parallel relation with one another and in which the vapor comes into contact with a plurality of resistance elements provided in the ducts. The resistance elements are formed of platinum or an alloy of platinum with rhodium, ruthenium or iridium. The inner surface of the ducts are formed of a nonmetallic refractory material which is inert with respect to the halide vapor to be heated. The vapor, in passing through the ducts, is heated by convection from the resistance elements and by radiation from the walls of the ducts.

3,626,154

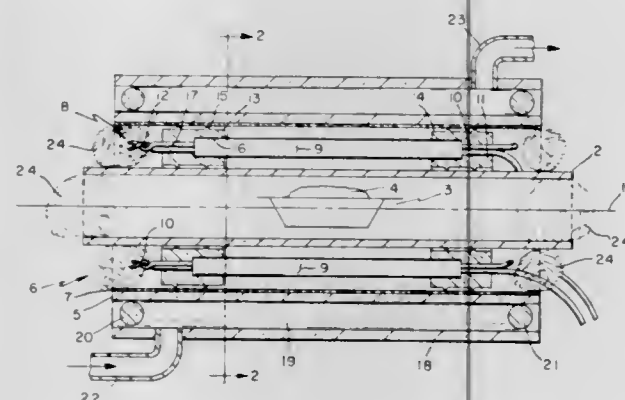
**TRANSPARENT FURNACE**

Thomas B. Reed, Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.  
 Filed Feb. 5, 1970, Ser. No. 8,936

Int. Cl. F27d 11/02

U.S. Cl. 219—411

15 Claims



A furnace which heats by infrared radiation includes a wall portion of material transparent to visible radiation having a layer of selected material on the inside thereof, which reflects substantially all infrared radiation and yet transmits sufficient visible radiation so that the inside of the furnace can be viewed from the outside.

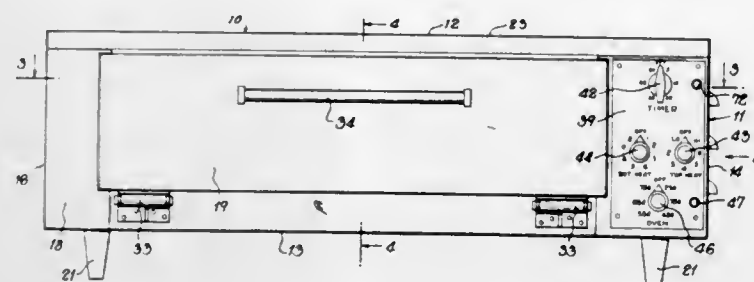
3,626,155

**ELECTRIC OVEN**

Stanley V. Joeckel, Wayne, N.J., assignor to Irex Corporation, Riverdale, N.J.  
 Filed Nov. 30, 1970, Ser. No. 93,762  
 Int. Cl. F27d 11/02

U.S. Cl. 219—411

4 Claims



An electric oven for rapidly heating therein frozen convenience food in containers placed on plates having a thermal conductivity approximately equivalent to that of the food and means for pulsing heat energy upwardly through the plate and container into the food mass at timed intervals, pulsing infrared heat downwardly into the food mass at a predetermined wavelength range while reflecting a portion of the infrared heat to produce a required ambient condition, and regulating the air temperature within the oven, whereby a maximum tolerable rate of temperature rise in the food by conduction, radiation, and convection is provided.

3,626,156

**TEMPERATURE CONTROL OF A JACKETED-CHAMBER OF MELT SPINNING MACHINE**

Haruki Takizawa, and Nobuo Muramatsu, both of Matsuyama-shi, Japan, assignors to Teijin Limited, Kita-ku, Osaka, Japan

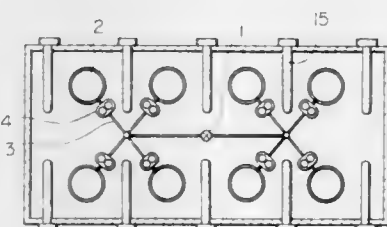
Filed Nov. 14, 1969, Ser. No. 876,877

Claims priority, application Japan, Nov. 26, 1968, 43/86488

Int. Cl. H05b 3/02

U.S. Cl. 219—480

2 Claims



The heating powers of the heaters positioned at the both ends of a hermetically sealed and heat-insulated chamber enclosing a group of spinning heads and having electric heaters for heating a heating medium therein, wherein every spinneret assembly is positioned between said heaters, are reduced to 30-90 percent of those of the others, the currents supplied to said heaters being all at once on-off operated by means of a temperature controller.

3,626,157

**FIELD-EFFECT PERFORATED MEDIA READER**

William R. Smith, and Neal L. Walters, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1969, Ser. No. 828,545

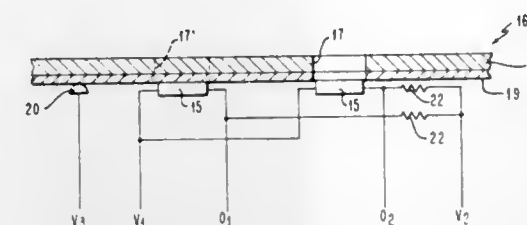
Int. Cl. G06k 7/06; G11c 13/00; H03k 17/60

U.S. Cl. 235—61.11 A

10 Claims

A perforated media reader using field-effect devices for

sensors in which the media acts as one electrode of selected sensors as a function of the perforation pattern, thereby



generating discrete signals indicating the location of the perforations.

3,626,158

**ANTI-JAMMING APPARATUS FOR MAGNETIC CARD READER**

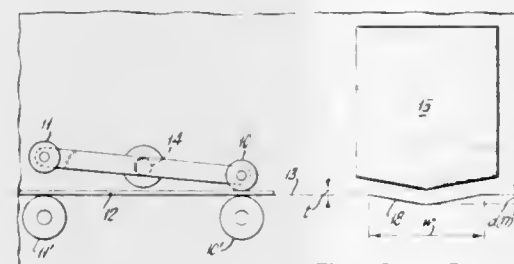
Murray D. Lawrence, Kings Park, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,491

Int. Cl. G06k 7/08; G11b 5/58

U.S. Cl. 235—61.11 D

3 Claims



A data processing system utilizes a magnetic transducer to sense a binary-coded pattern on a card or the like and produces an electrical output representative of the information encoded. The transducer contacts the card and there is a recess in the machine bed located directly beneath the transducer head to prevent jamming of a card between the bed and the transducer head.

3,626,159

**HOLDDOWN DEVICE FOR ENCODED MEMBER READER**

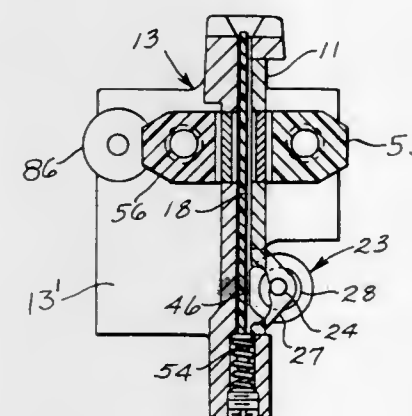
Calvin L. Chumley, Glendale, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 11, 1969, Ser. No. 884,081

Int. Cl. B65h 23/16; G06k 7/00, 21/00

U.S. Cl. 235—61.11 R

5 Claims



An encoded card reader is disclosed which includes a chamber for receiving an encoded card to be scanned by a reading mechanism, and a holddown mechanism including resiliently compressible rollers movable between a first position wherein the peripheral surfaces of the rollers facing the

encoded card are shaped to permit insertion of the encoded card past the rollers, and solenoid means for rotating the rollers into a second position wherein other peripheral portions of the rollers resiliently engage and urge the card into a desired predetermined position for scanning.

3,626,160

**MAGNETIC RECORD SENSING DEVICE**

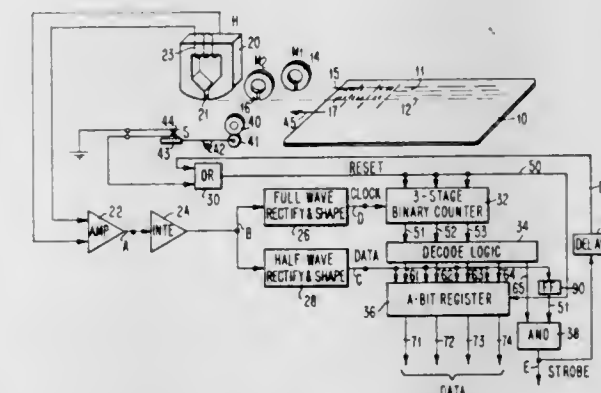
Jacob John Hagopian, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,629

Int. Cl. G06k 7/08; G11b 5/00

U.S. Cl. 235—61.11 D

5 Claims



A single channel processing system for reading magnetic credit cards having two parallel tracks of discrete complementary data bits. Two prebiasing magnets bias the data bits and complementary bits in opposite directions, and a single read back head scans both tracks simultaneously.

3,626,161

**METHOD OF PRODUCING A CHARACTER OR PATTERN ORIGINAL FOR USE IN QUANTIZING A CHARACTER OR PATTERN AND OBTAINING DIGITAL DATA THEREFROM BY PHOTOELECTRICAL SCANNING**

Roman Koll, Kiel-Wellingdorf, Germany, assignor to Dr.-Ing. Rudolf Hell Kommandit Gesellschaft, Kiel, Germany

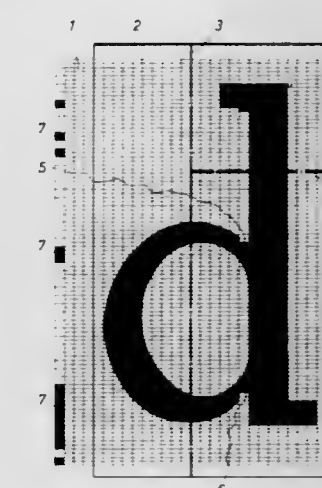
Filed Nov. 12, 1968, Ser. No. 774,767

Claims priority, application Germany, Nov. 29, 1967, P 15 97 775.0

Int. Cl. G06k 19/00

U.S. Cl. 235—61.12 N

6 Claims



Method of producing a character or pattern original for use in the quantization and production of digital data corresponding thereto, by photoelectrical scanning, in which the initial pattern or character representation is initially adapted to a registered lined grid by so disposing a transparent sheet carrying the pattern or character representation with respect to the grid that as many as possible vertical and horizontal straightedge lines of the character or pattern coincide with



the corresponding raster lines, and as many as possible curvilinear edge lines thereof touch raster lines, and eliminating deviations still existing between edge and raster lines by removing the part of the character extending beyond the raster line or filling in the raster field in which it extends, making such selection on the basis of which would result in the smallest possible change in shape of the character or pattern.

3,626,162

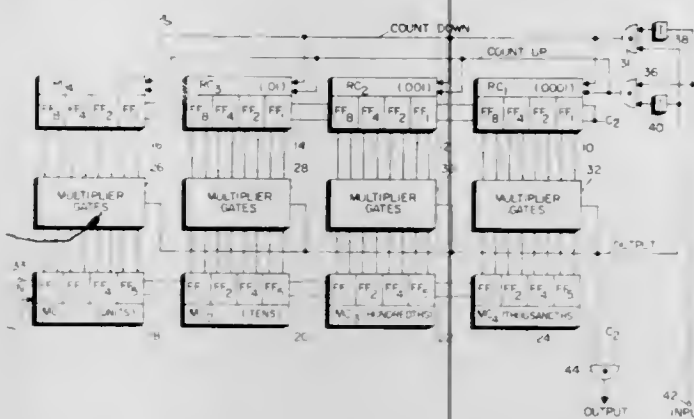
**AUTOMATIC DIGITAL TIME CONSTANT SYSTEM**  
John M. Rhoades, Waynesboro, Va., assignor to General Electric Company

Filed Mar. 27, 1969, Ser. No. 811,003

Int. Cl. G06m 3/14

U.S. Cl. 235—92 DM

5 Claims



A digital system for providing a smoothing effect to changes in the rate of digital information being supplied. The system includes a reversible counter and a rate multiplier. The system performs a function analogous to an RC circuit in an analog system.

3,626,163

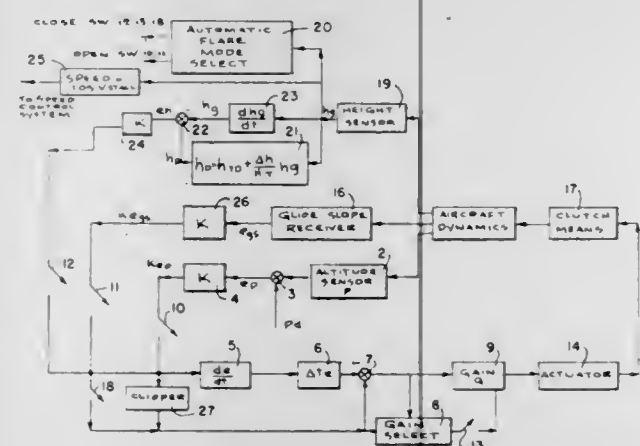
**AUTOMATIC LANDING SYSTEM**  
Daniel O. Dommasch, Blawenburg, N.J., assignor to The United States of America as represented by the Secretary of the Army and/or the Administrator of the Federal Aviation Administration

Filed Jan. 28, 1970, Ser. No. 6,637

Int. Cl. B64c 19/00

U.S. Cl. 235—150.22

6 Claims



A simple and inexpensive multimode automatic landing system comprising altitude hold means, glide slope control means, and flare control means. Air data sensing means are utilized in all systems, and the systems use common logic circuitry. Control of altitude is through the throttle and speed control is obtained by operation of the aircraft longitudinal control surfaces. The automatic landing system is designed to operate in parallel with the pilot so that it can be manually overridden at any time; however, when the controls are left free, the system will land the aircraft independently of the pilot.

### 3,626,164 DIGITALIZED COINCIDENCE CORRECTION METHOD AND CIRCUITRY FOR PARTICLE ANALYSIS APPARATUS

Jacques A. Pontigny, Montmorency, and Claude J. Collineau, Epinay/Seine, both of France, assignors to Coulter Electronics, Inc., Hialeah, Fla.

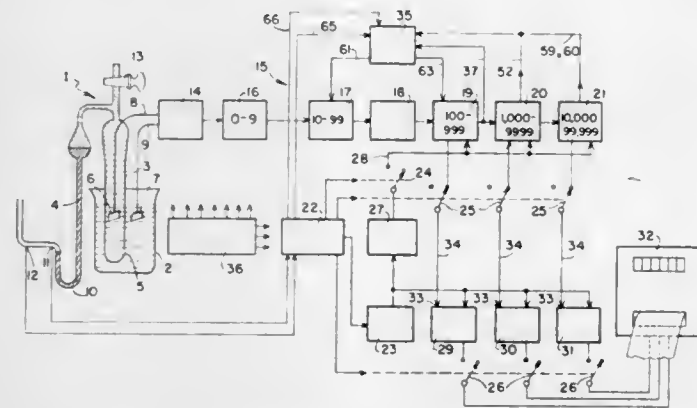
Filed June 16, 1969, Ser. No. 833,646

Claims priority, application France, June 19, 1968, 155649, 155650

Int. Cl. G06f 15/36

U.S. Cl. 235—151.3

42 Claims



So as to generate a correct count of particles from apparatus which progressively loses individual counting pulses primarily due to the physical coincidence of two particles in the detecting transducer of the apparatus, the subject method enables digitalized addends to be progressively added to the augend formed by the detected count so as to yield, as a continuously forming sum, a corrected count which closely approximates the true particle count. The subject circuitry includes a series of decade counters which receive the detected, augend, pulses and, at progressive count levels, such as increments of one thousand, enable, and/or trigger a selected one of a plurality of correction establishing circuits, to deliver one or more addend related signals to a selected one of the decade counters. Depending upon the number of such related signals and the numeric rank of the receiving decade counter, a predetermined addend is supplied. This trigger and feedback relationship increases the increments of addend as the detected count increases.

3,626,165

**CONTROL SYSTEM**

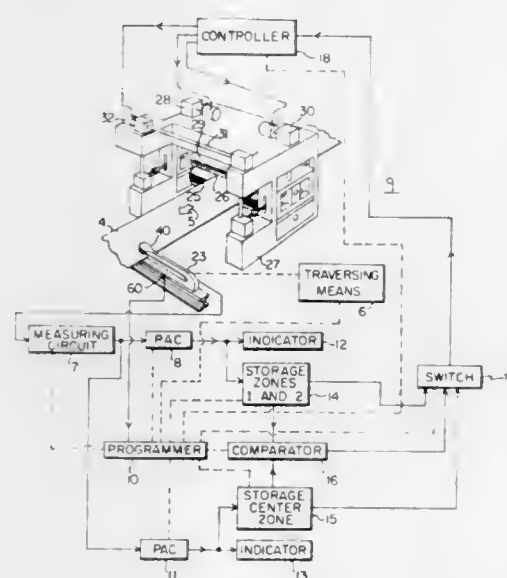
Robert E. McCall, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

Filed Jan. 10, 1969, Ser. No. 790,380

Int. Cl. G01d 21/00

U.S. Cl. 235—151.3

6 Claims



A control system for a rubber calender incorporates features that improve profile and machine direction thickness control. In one embodiment a single gauge scans continu-

ously across the rubber sheet and is coupled to a first profile average computer (PAC) to average the thickness of one edge zone. While the gauge is scanning the first zone the gauge is also coupled to a second PAC that averages the thickness of a center zone including contiguous portions of the edge zones. The first PAC is used to average the other edge zone. Each averaged edge zone includes substantially the entire half of the sheet width, so that the average of the edge zones is substantially the average of the sheet width and more representative of the portions controlled by adjustment of the respective screwdown motors. The control actions are initiated at points in the operation that decrease the scan cycle duration, and make possible more frequent control actions.

3,626,166

### PARTICLE PULSE ANALYZING APPARATUS EMPLOYING LINEAR AMPLIFICATION AND LOGARITHMIC CONVERSION

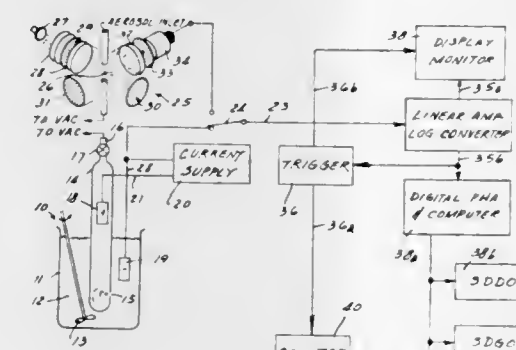
Robert H. Berg, Elmhurst, and Lynn E. Ellison, Crystal Lake, both of Ill., assignors to Robert H. Berg, Elmhurst, Ill.

Filed Apr. 15, 1970, Ser. No. 28,703

Int. Cl. G06f 15/46; G06g 7/24

U.S. Cl. 235—151.35

10 Claims



Analysis of particle populations on a logarithmic size basis is provided by electronic apparatus including a linear amplifier for receiving particle size pulses and a logarithmic converter for providing corresponding logarithmically scaled pulses to a pulse monitor oscilloscope and other signal processing and display devices. The linear amplifier includes a plurality of amplifying stages which increase signal strength and enhance signal quality, one of the stages having selectively switched resistors therein for providing a geometric progression of amplifier gain steps for the pulses being processed so that upon logarithmic conversion a display on the oscilloscope or other readout device may be adjusted through a like progression of display to greatly facilitate analysis of particle size pulses at all size levels.

3,626,167

### SCALING AND NUMBER BASE CONVERTING METHOD AND APPARATUS

LeRoy R. Guck, La Verne; Lawrence G. Hanson, Temple City, both of Calif., and Donald E. Knuth, Princeton, N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 7, 1969, Ser. No. 848,263

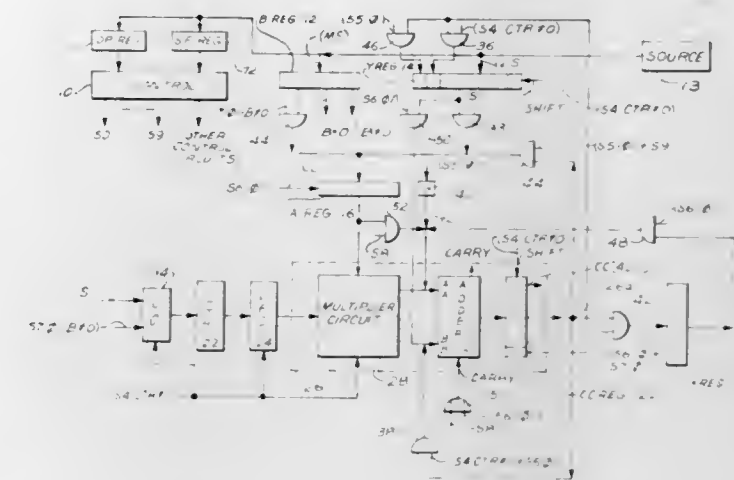
Int. Cl. H04l 3/00

U.S. Cl. 235—155

35 Claims

Data processing apparatus for shifting a binary signal coded in a first number base by digits coded in a second number base. A first register stores an operator identifying a shift. A second register stores a scale factor signal identifying the number of required digit shifts. Data processing ap-

paratus is responsive to the stored shift operator and the stored scale factor for shifting the binary signal coded in the



first number base by the number of digits in the second number base identified by the stored scale factor.

3,626,168

### MEASURING CORRELATION, AMPLITUDE PROBABILITY AND PROBABILITY DENSITY DISTRIBUTIONS, AND SIGNAL RESPONSE AVERAGING

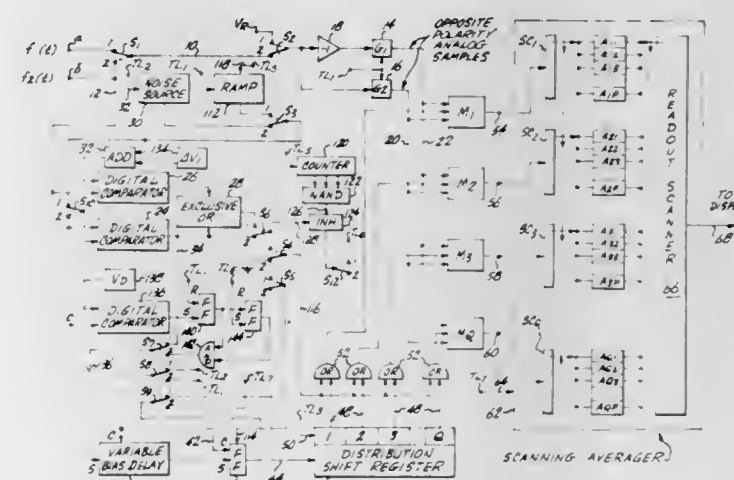
Keith H. Norsworthy, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed July 7, 1969, Ser. No. 839,340

Int. Cl. G06f 15/34; G06g 7/19

U.S. Cl. 235—181

16 Claims



An online real-time instrument for measurement of auto and cross correlation, amplitude probability distribution and amplitude probability density distributions of random analog signals and for measurement of average signal response characteristics. A scanning averager utilized in all the measurements includes capabilities for adapting its time constant to differing clock rates and for selecting its time constant at will for longer and shorter averaging times and for controlling the range of self-adaptivity. The correlation circuitry includes special timing controls for both basic and high frequency modes and combines analog and digital circuit design. The latter is accompanied by provision of a synchronized pseudorandom noise source to assure uniform probability density distribution for the full scale range of the input signal. Conservation of circuitry is achieved through use of the same circuitry for the different measurements of which the instrument is capable. Special logic is included for enhancement of amplitude probability distribution measurements.



3,626,169

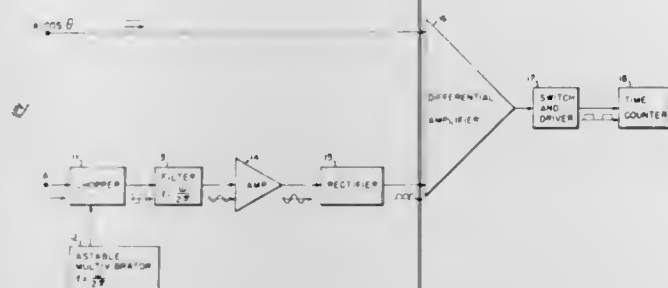
## TRIGONOMETRIC ANGLE COMPUTER

Louis R. Rudolph, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 5, 1970, Ser. No. 8,796  
Int. Cl. G06g 7/22

U.S. Cl. 235-186

4 Claims



Apparatus to calculate an angle  $\theta$  of a value  $A \cos \theta$ , where  $A$  is known. Compare a generated signal  $A \cos \omega t$  with  $A \cos \theta$  in a differential amplifier such that when  $A \cos \omega t > A \cos \theta$  there is an output pulse on an electronic time counter, the length of the pulse being directly proportional to the angle  $\theta$ .

## ERRATUM

For Class 240-47 see:  
Patent No. 3,626,424

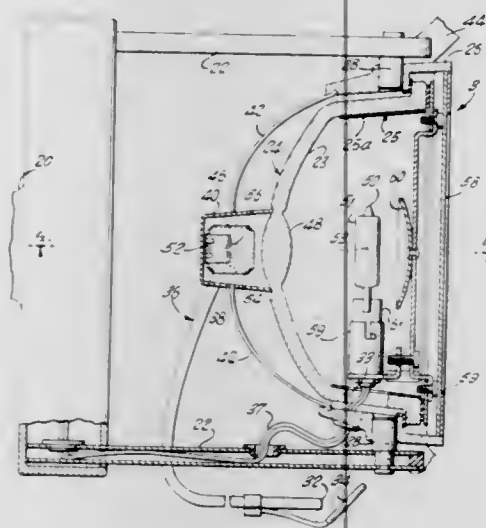
3,626,170

## DENTAL OR SURGICAL OPERATING LIGHT

Alexander Schwan, Toledo, Ohio, assignor to McKesson Co.  
Filed Oct. 18, 1968, Ser. No. 768,703  
Int. Cl. F21v 7/00

U.S. Cl. 240-1.4

7 Claims



An improved operating light which provides both a general horizontally oriented light pattern of limited vertical and horizontal dimensions for generally illuminating a desired region and an intense but cool source of localized illumination which can be pinpointed in a specified area such as the oral cavity of a patient. The localized illumination is achieved by providing a convex lens in the main reflector of the light, which lens focuses light through a right angle prism onto one end of a fiber-optic bundle, which then transmits the light to the area wherein spot illumination is desired.

3,626,171

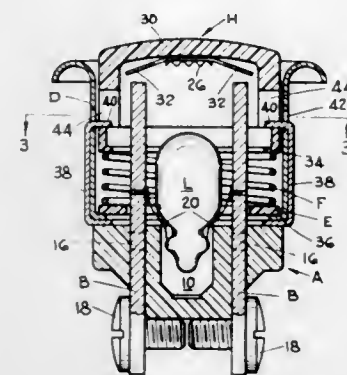
## ILLUMINABLE PUSHBUTTON SWITCH

Mark H. Abramowitz, Cresskill, and Harry G. Shapiro, Upper Montclair, both of N.J., assignors to Lee Electric, Inc., West New York, N.J.

Filed June 16, 1970, Ser. No. 46,726  
Int. Cl. F21v 33/00

U.S. Cl. 240-2

13 Claims



Illuminable pushbutton switch in which the button is guided and retained within a tubular shell by fingers extending from a ring interposed between the shell and a base, the fingers having tips extending transversely through openings in the shell and the button. The contact elements of the switch comprise a simple resilient plate within the button adapted to abut the ends of elongated fixed contacts which also serve as switch terminals.

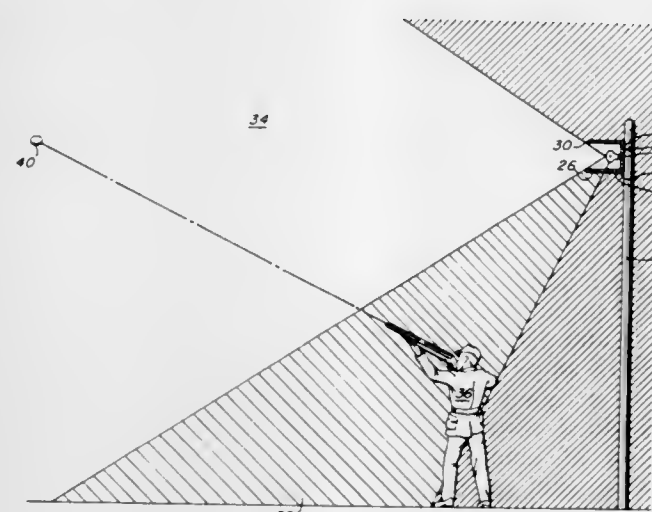
3,626,172

## LIGHTING STRUCTURE FOR NIGHT TRAP SHOOTING AND THE LIKE

Richard Mysko, 2786 Ater Drive, Xenia, Ohio  
Filed Dec. 29, 1969, Ser. No. 888,586  
Int. Cl. F21p 1/00

U.S. Cl. 240-3

4 Claims



Lighting structure which is particularly adapted for night trap shooting activities or the like. The lighting structure includes a source of light, such as a lamp, or a bulb, or the like. Adjacent the source of light is a panel or the like which includes means for attenuation of light from the lamp, so that attenuated light from the source of light illuminates a region within which a trap shooter is disposed. Other light from the source of light is also permitted to flow without attenuation to a target region within which targets move. Thus, some of the light rays from the source of light flow directly to a target region, while some of the light rays from the source of light flow through means which greatly reduce the intensity thereof in a region in which a person who shoots the targets is disposed.

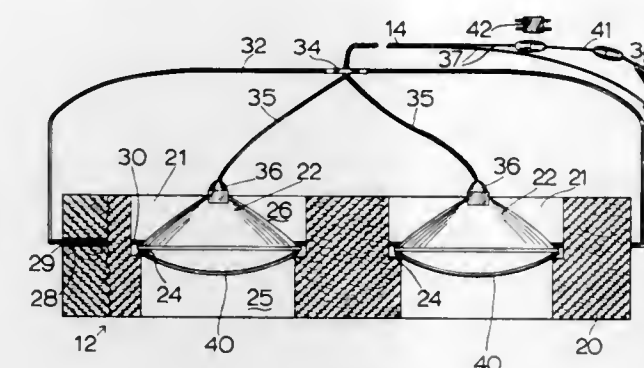
3,626,173

## FLOAT LIGHT

George H. Harvey, 6408 Thunderbird Drive, Nashville, Tenn.  
Filed Nov. 14, 1969, Ser. No. 876,854  
Int. Cl. F21v 21/00

U.S. Cl. 240-26

4 Claims



An illuminating device including a floating body and a sealed beam lamp supported face down in the body for projecting a light beam from the bottom of the body. Support means are provided in the body to prevent the lamps from dropping down, and flexible retainer members are provided in the body for lateral movement above the lamp to releasably retain the lamp in place.

A light having motor means for accurately directing the light beam.

3,626,176

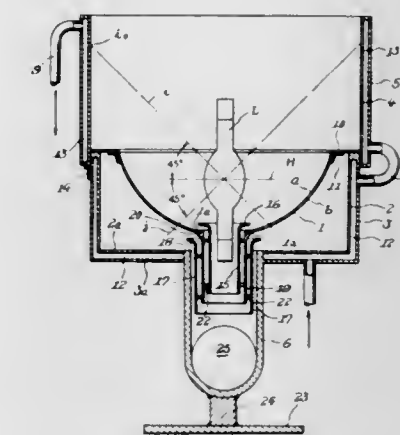
## COOLING DEVICE FOR FILM-PROJECTOR LIGHT-UNITS

Taisuke Tsugami, 1-415 Shimoochiai, Shinjuku-ku, Tokyo, Japan

Filed Feb. 9, 1970, Ser. No. 9,649  
Int. Cl. F21v 29/00; G03b 21/18

U.S. Cl. 240-47

1 Claim



A cooling device designed to eliminate the danger of glass breakage of the reflector mirror and exfoliation of the film coating thereon as caused under heat radiation from the light source such as a xenon lamp. The device includes air-cooling means for the reflector mirror and a double-wall construction of the light-source casing defining water jackets therein. Cooling air supplied to the bottom of the casing is directed through inner and outer concentric annular passages formed in the supply duct and, owing to the particular formation of the outlet ends of the respective air passages, opening close to the central aperture formed in the reflector mirror, flows radially along the inner and outer surfaces of the mirror. Cooling water is supplied to circulate through the water jackets formed in the bottom and sidewalls of the casing.

3,626,177

## FAIL-SAFE VEHICLE BRAKE ASSURING

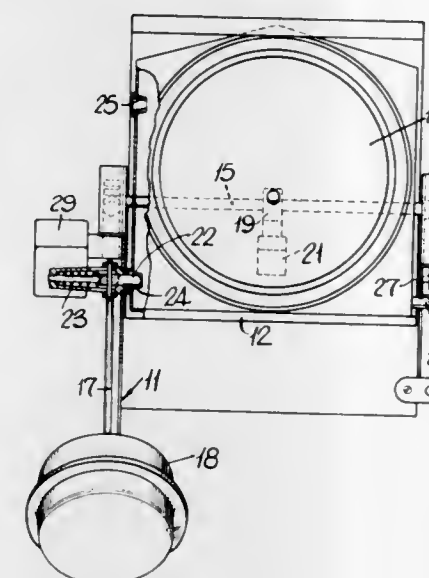
Raymond C. Franke, Glenshaw, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed May 22, 1970, Ser. No. 39,790  
Int. Cl. B60t 13/00

U.S. Cl. 246-1

9 Claims

This invention relates to a fail-safe vehicle brake assuring circuit for assuring that a vehicle is decelerating at a sufficient rate to a predetermined speed along a predetermined path. The circuit comprises a speed measuring device coupled to the vehicle and electrically coupled to a redundant



3,626,174

## HEADLAMP ASSEMBLIES

John Webster Cranmore, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
Filed July 24, 1969, Ser. No. 844,288

Claims priority, application Great Britain, Aug. 9, 1968,

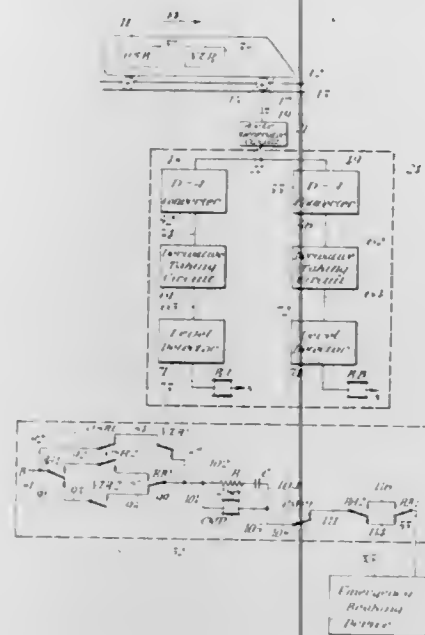
38,066/68  
Int. Cl. B60q 1/00

U.S. Cl. 240-7.1

3 Claims



channel deceleration detection network, which is, in turn coupled to an interlocking circuit having an output. The interlocking circuit also receives a vehicle overspeed signal input and a zero velocity input signal. The absence of an out-



put signal on the output of the interlocking circuit is indicative of insufficient vehicle deceleration or of any speed condition coupled with a component failure in the brake assuring circuit.

3,626,178

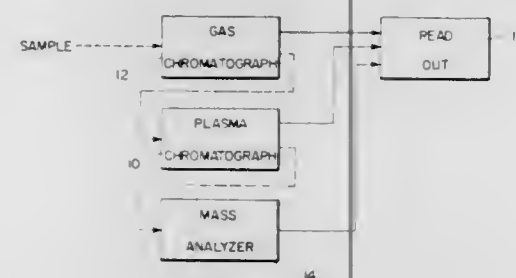
### GAS OR LIQUID CHROMATOGRAPH WITH DETECTOR EMPLOYING ION-MOLECULE REACTIONS AND ION DRIFT

Martin J. Cohen, W. Palm Beach, Fla., assignor to Franklin GNO Corporation, West Palm Beach, Fla.

Filed Feb. 20, 1970, Ser. No. 13,030  
Int. Cl. H01j 39/34; B01d 59/44

U.S. Cl. 250-41.9 TF

23 Claims



Components of the effluent of a gas or liquid chromatograph are detected by reacting molecules of the components with primary ions to produce secondary ions which may be segregated in accordance with their drift velocity in a drift field. In certain embodiments, the ions are analyzed in a mass spectrometer, which may include an electron multiplier coupled to a signal averaging computer. Molecular and/or ionic concentrators may be employed to increase the concentration of the sample, and liquid samples may be analyzed after preliminary vaporization. Ion formation and drift take place under atmospheric or higher pressure conditions, while mass analysis is performed under high-vacuum conditions.

3,626,179

### HIGH TEMPERATURE METHOD AND APPARATUS FOR ANALYZING GASEOUS SAMPLES

Martin J. Cohen, West Palm Beach, Fla., assignor to Franklin GNO Corporation, West Palm Beach, Fla.

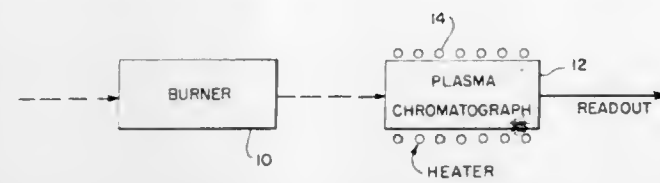
Filed Apr. 3, 1970, Ser. No. 25,516  
Int. Cl. H01j 39/34; B01d 59/44

U.S. Cl. 250-41.9 TF

20 Claims

Analysis of gaseous samples containing inorganic trace substances which may be accompanied by organic inter-

ferents. The sample is passed through a high temperature pyrolyzer or oxidizing burner to convert the complex organic materials to more simple organic materials or inorganic products of combustion. Components of the effluent of the burner are involved in ion-molecule reactions, which produce secondary ions that may be detected and measured.



The ions may be segregated in accordance with their velocity in a drift chamber maintained at atmospheric pressure, may be analyzed in a mass spectrometer, or detected by condensation nuclei techniques. A measure of total organics in a sample is obtained by comparing instrument readings for a sample portion subjected to preliminary burning and another sample portion analyzed without preliminary burning.

3,626,180

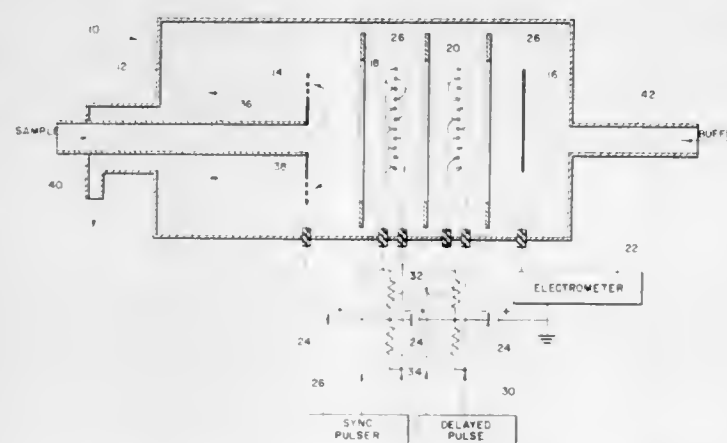
### APPARATUS AND METHODS FOR SEPARATING, DETECTING, AND MEASURING TRACE GASES WITH ENHANCED RESOLUTION

David I. Carroll, Lantana; Martin J. Cohen, West Palm Beach, and Roger F. Wernlund, Lake Worth, all of Fla., assignors to Franklin GNO Corporation, West Palm Beach, Fla.

Filed Dec. 3, 1968, Ser. No. 780,851  
Int. Cl. H01j 39/34

U.S. Cl. 250-41.9 TF

22 Claims



Apparatus and methods for sorting and detecting trace gases which undergo ion-molecule reactions, trace ions being formed in a reactive gaseous medium and being analyzed in a nonreactive gaseous medium. The ions are classified in accordance with their velocity in an electric drift field.

3,626,181

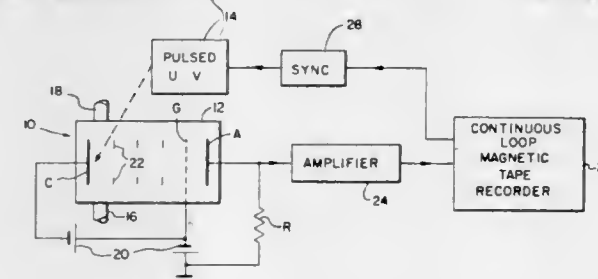
### GAS DETECTING APPARATUS WITH MEANS TO RECORD DETECTION SIGNALS IN SUPERPOSITION FOR IMPROVED SIGNAL-TO-NOISE RATIOS

Roger F. Wernlund, Lake Worth, Fla., assignor to Franklin GNO Corporation, West Palm Beach, Fla.

Filed Feb. 11, 1969, Ser. No. 798,399  
Int. Cl. H01j 39/34; B01d 59/44

U.S. Cl. 250-41.9 TF

16 Claims



Ions produced from a gaseous sample, including ions of trace gases to be detected, are separated in a drift cell in ac-

cordance with their velocity in an electric drift field and produce output currents which vary as a function of real time. In one embodiment a passive grid shields the output circuit from ion displacement currents, and the output signals are recorded on a continuous loop magnetic tape recorder synchronized with the production of the ions. In another embodiment an active shutter grid ion gate is opened at a predetermined time after the production of the ions and passes all ions with velocity less than a predetermined value to the output circuit. A square wave generator produces asymmetrical square waves for operating the shutter grid and a pulsed ionizer. The output signals are amplified by an electrometer amplifier, and output signals produced for different opening times of the shutter grid may be compared to produce a difference signal.

3,626,182

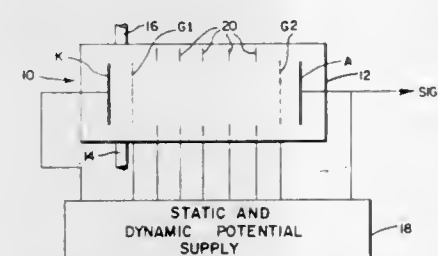
### APPARATUS AND METHOD FOR IMPROVING THE SENSITIVITY OF TIME OF FLIGHT ION ANALYSIS BY ION BUNCHING

Martin J. Cohen, West Palm Beach, Fla., assignor to Franklin GNO Corporation, West Palm Beach, Fla.

Filed Apr. 1, 1969, Ser. No. 812,284  
Int. Cl. H01j 39/34; B01d 59/44

U.S. Cl. 250-41.9 TF

15 Claims



Apparatus and methods for sorting and detecting ions in a drift cell, the electric fields applied to different regions of the cell being controlled at appropriate times to ensure the rapid withdrawal of the ions from a reaction region to an analysis region, the bunching of the ions in the analysis region, and thereafter the separation of the bunched ions in accordance with ion drift velocity, and detection of separated ion species.

3,626,183

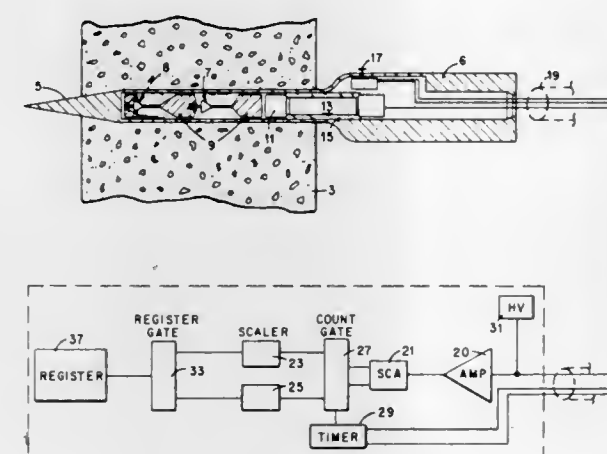
### RADIOISOTOPE ANALYTICAL INSTRUMENT FOR CEMENT ANALYSIS OF CONCRETE

Peter Francis Berry; James D. Hall, and Tomihiko Furuta, all of Austin, Tex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed July 15, 1970, Ser. No. 54,951  
Int. Cl. G01t 1/20; G01n 23/10

U.S. Cl. 250-43.5 D

10 Claims



A portable radioisotope instrument has been developed for field cement analysis yielding an accuracy of 1 to 2 percent cement in wet concrete. The instrument consists essentially of a cylindrical depth probe unit in which a pair of  $\gamma$ -ray sources of different energy and a detector are arranged in

coaxial alignment and the output of the detector is coupled to a portable scaler. The detector is shielded from the source so that only the  $\gamma$ -backscattered radiation is detected and through proper calibration of the device as to the aggregate type the operator can radially analyze a wet mix by inserting the probe into the mix and measure the two radiation intensities with reference to the proper calibration curve to determine the cement content.

3,626,184

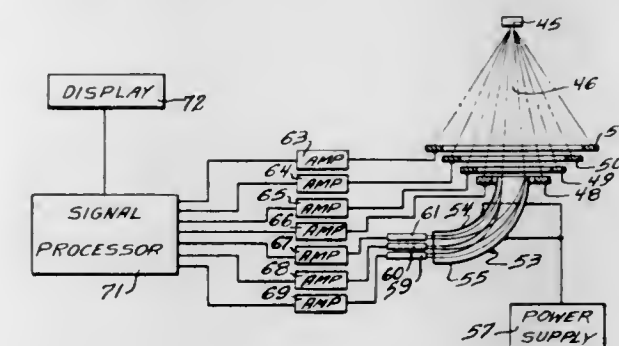
### DETECTOR SYSTEM FOR A SCANNING ELECTRON MICROSCOPE

Albert V. Crewe, Palos Park, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 5, 1970, Ser. No. 168,020  
Int. Cl. H01j 37/28

U.S. Cl. 250-49.5 A

7 Claims



In an electron microscope transmitted electrons are detected according to whether they are unscattered, elastically scattered or inelastically scattered by the specimen. The elastically scattered electrons are further separated according to the magnitude of the scattering. Signals from the separate detectors can be used separately or combined as desired to enhance the information obtained from a specimen.

3,626,185

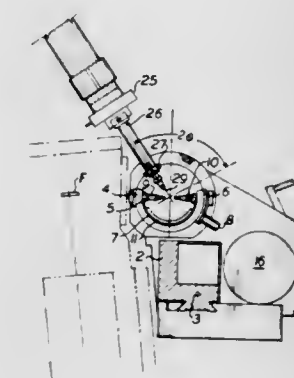
### X-RAY POWDER CAMERA HAVING A SEMICYLINDRICAL FILM HOLDER AND MEANS TO SIMULTANEOUSLY ROTATE A SPECIMEN ABOUT TWO MUTUALLY PERPENDICULAR AXES

William Parrish, Stamford, Conn., and Imre E. Vajda, Yonkers, N.Y., assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Oct. 10, 1968, Ser. No. 766,585  
Int. Cl. G01n 23/20

U.S. Cl. 250-51.5

5 Claims



A camera for X-ray diffraction studies of small single crystal or polycrystalline specimens is disclosed. The camera provides a means of accurately centering the specimen, a collimator and a semicylindrical film mount. The specimen is simultaneously rotated around its mounting axis and pivoted around the camera axis to provide an X-ray powder photograph.



3,626,186

## MOBILE X-RAY CHAIR

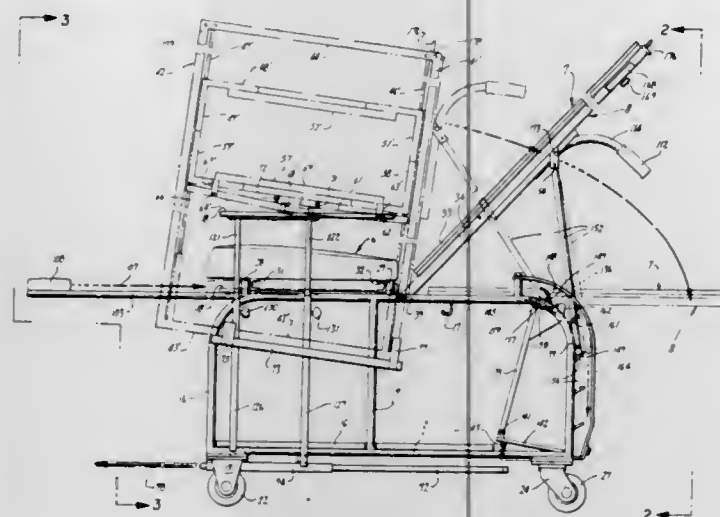
Charles D. Allard, 1620 Hickory Ave., San Leandro, Calif., and Eugene R. Allard, 1809 A Pearl, Alameda, Calif.

Filed Oct. 3, 1969, Ser. No. 863,649

Int. Cl. G01n 23/04

U.S. Cl. 250-50

5 Claims



A wheeled carrier for patients designed so that X-rays of almost every description may be taken without moving the patient out of the very chair in which he was transported to the X-ray department including a frame, a back, a seat, wheels mounted on the frame, means on the back for holding a film cassette, means on the side for releasably holding a film cassette, and means on the other side for releasably holding a film cassette.

3,626,187

## PULSE-HEIGHT ANALYSIS IN SCINTILLATION COUNTING

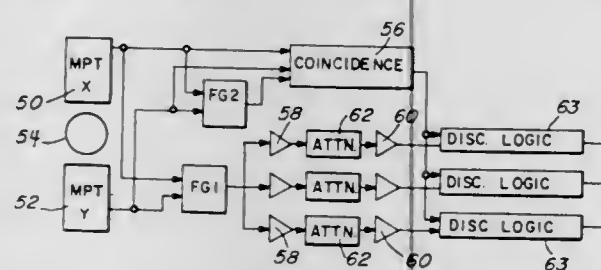
Barton H. Laney, Deerfield, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Jan. 21, 1969, Ser. No. 792,717

Int. Cl. G01t 1/20

U.S. Cl. 250-71.5 R

31 Claims



Coincident output pulses of a plurality of photomultipliers are selected for counting on the basis of relative amplitude as well as sum. Improvement in background and isotope resolution is obtained in liquid scintillation counting. Pulse-height analysis circuits incorporating the improvement are described.

3,626,188

## LIGHT DETECTOR EMPLOYING NOISE QUENCHING OF AVALANCHE DIODES

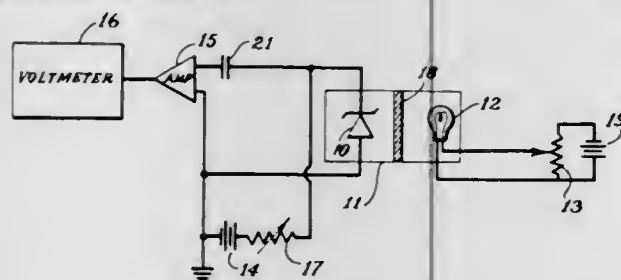
George E. Chilton, 144 Valley Road, Haworth, N.J.

Filed Nov. 4, 1968, Ser. No. 773,141

Int. Cl. G01t 1/16

U.S. Cl. 250-83.3 R

2 Claims



The semiconductor diode devices are operated in an

avalanche mode. The diode is subjected to external light energy. The degree of the resulting reduction in noise is a function of the light intensity.

3,626,189

## COSMIC DUST SENSOR

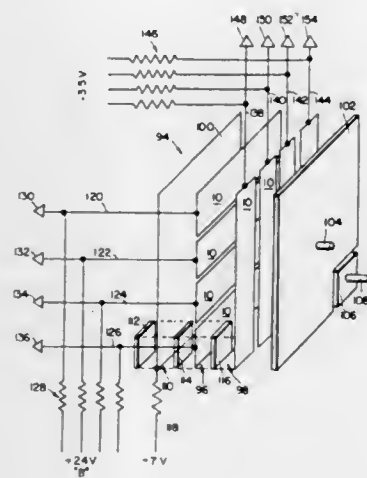
Otto E. Berg, Forest Heights, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1968, Ser. No. 789,044

Int. Cl. G01t 1/18

U.S. Cl. 250-83.6 R

15 Claims



A sensor for detecting and measuring the energy, velocity and direction of travel of a cosmic dust particle, comprises an array of electrodes. Some of the electrodes are arranged in columns and spaced in close proximity to other electrodes that are disposed in rows. Together the columns and rows define a plurality of sectors through which a cosmic particle may traverse. Each electrode includes electrically biased conductor layers supported on an optically transparent matrix. Ions and electrons from an impacting cosmic dust particle compose an ionized plasma for collection on the electrically biased conductors, creating an electrical output pulse which may be amplified. A second array of electrodes in columns and grids in rows is included in spaced relationship from the first array. An impacting cosmic dust particle on the second array produces an electrical output pulse in the same manner as described. Should a particle penetrate the first array and impact upon the second spaced array, a pair of time spaced electrical outputs will result, the time spacing of the pulses being proportional to the velocity of the particle. The direction of the particle's travel, and thereby its origin in space is determined by the alignment of respective sectors traversed by the particle. Behind the second array is placed a microphone plate which arrests further penetration of the particle. The microphone output amplitude is an indication of the momentum of a particle. At least one of the sectors in each of the arrays is bounded by an epoxy coating rendering it impervious to plasma collection. Accordingly, a pulse output originated from the impervious sector gives an indication of noise or other interference collected by the sensor. Additionally, a second microphone of small area is segregated from the first-described microphone and is provided with a separate output. Accordingly, electrical signals from the small microphone which are disproportionate with respect to the small area of the second microphone are indicative of interfering noise as well as particle impact.

3,626,190

## SAMPLE CHANGING ELEVATOR AND LIGHT SEALING MECHANISM FOR SCINTILLATION COUNTING

Raymond E. Cannon, San Diego, Calif., assignor to Beckman Instruments, Inc.

Filed Apr. 11, 1966, Ser. No. 541,654

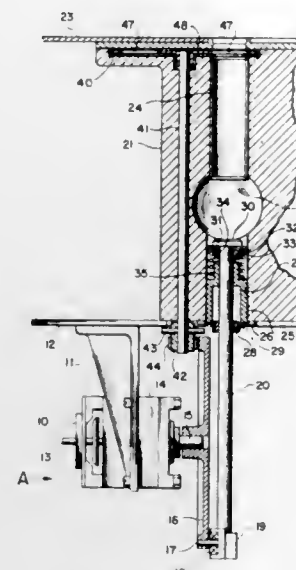
Int. Cl. G01t 1/20, 7/02

U.S. Cl. 250-106

14 Claims

Describes a sample handling system for a liquid scintillation counter or the like having a sinusoidal drive for a sample changer elevator with a positively interlocked upper shutter

mechanism and a cooperating lower light seal carried by the elevator which overlaps the lower end of the elevator passage to a signal causing the interference fringes to be modulated in accordance with the signal. Photodetectors sense the fringe modulation and provide modulated outputs which are



while the shutter is open. The mechanism is driven by a unidirectional motor.

3,626,191

## ION EXCHANGE VESSEL HAVING HOLLOW CYLINDRICAL RING CONSTRUCTION FOR THE TRANSFER OF A RADIOACTIVE SUBSTANCE

Rene Antony Pierlas, and Jean Marie Courouble, both of Orsay, France, assignors to Commissariat A L'Energie Atomique, Paris, France

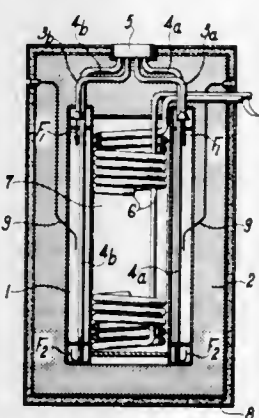
Filed Feb. 20, 1969, Ser. No. 801,093

Claims priority, application France, Feb. 28, 1968, 141696

Int. Cl. G21f 5/02; G21h 5/00

U.S. Cl. 250-108 R

5 Claims



A vessel for the purpose of transferring a radioactive substance which is adsorbed on an ion exchanger in the granular state, said vessel being characterized in that it comprises on the one hand a column in the form of a cylindrical ring which is intended to contain an ion exchanger in the granular state and is surrounded by a shield having good thermal conductivity and on the other hand at least one pipe for the supply of radioactive solution which penetrates into said column and at least one pipe for the discharge of irradiated liquid.

3,626,192

## INTERFEROMETRIC DAYLIGHT STAR TRACKER

Daniel N. Held, New York, N.Y., assignor to The Bendix Corporation

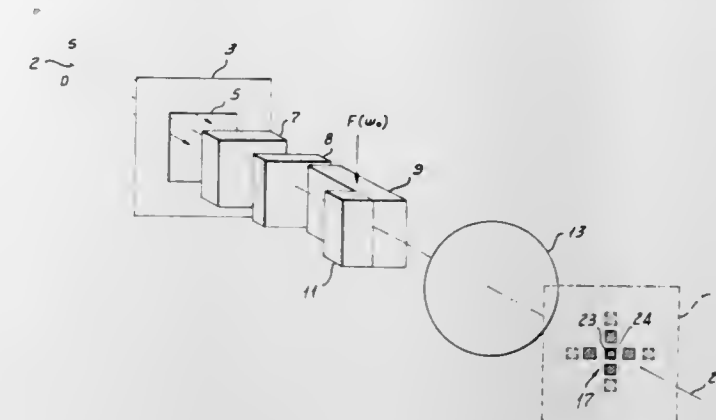
Filed Aug. 15, 1969, Ser. No. 850,552

Int. Cl. G01c 3/08; H01j 39/12; G01b 11/26

U.S. Cl. 250-203

13 Claims

A star tracker having an aperture for receiving and diffracting starlight and daylight. Interference fringes are formed from the starlight because of its coherent nature. A phase shifter is positioned to intercept a portion of the diffracted light and phase shift the intercepted light in response



demodulated to provide DC voltages corresponding to the intensity of the detected interference fringes. The DC voltages are subtracted and the remainder used to energize a servo to aim the star tracker at a star.

3,626,193

## RANDOM ACCESS SOLID-STATE IMAGE SCANNER

Yasuo Ishihara; Takao Ando, and Takasa Akahoshi, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

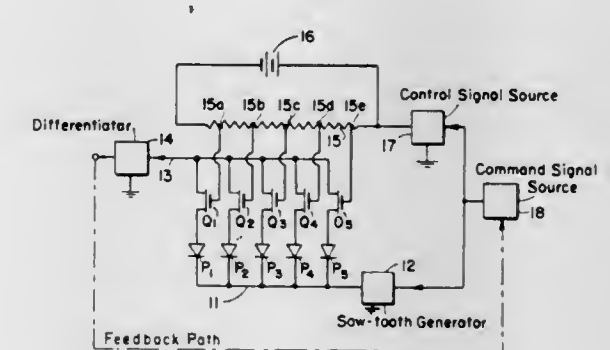
Filed July 22, 1970, Ser. No. 57,291

Claims priority, application Japan, July 29, 1969, 44/60242

Int. Cl. H01j 39/12

U.S. Cl. 250-209

14 Claims



An image scanner adapted for random-access and semirandom-access scanning (of a document, e.g.) comprises an array of photodiodes each having one terminal respectively connected to a plurality of field-effect transistors and another terminal receiving a sawtooth wave. The gates of the transistors receive control voltages according to a predetermined voltage gradient. The voltage gradient is in turn selectively controlled by a control signal, to thereby establish the point at which scanning begins.

3,626,194

## PHOTOELECTRIC CONVERTER INCLUDING CONVERGENT LENS WITH REFRACTIVE INDEX DISTRIBUTION

Jiro Hirano, Kobe-shi; Hidetoshi Togo, Itami-shi, and Katsuhiko Nishida, Tokyo-to, all of Japan, assignors to Nippon Selfoc Kabushiki Kaisha, also known as Nippon Selfoc Co., Ltd., Tokyo-to, Japan

Filed Aug. 26, 1969, Ser. No. 853,118

Claims priority, application Japan, Aug. 30, 1968, 43/62607

Int. Cl. G02b 5/14

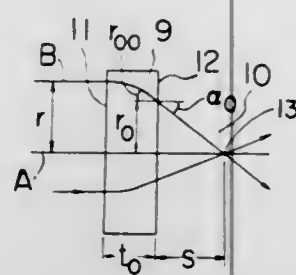
U.S. Cl. 250-216

10 Claims

Disclosed herein is a photoelectric converter including a convergent lens with a transparent member having a refractive index distribution, in a cross section perpendicular to a travelling axis of light, so as to substantially satisfy the equation:



$n_r = n_0(1 - ar^2)$   
when a refractive index at the center of the cross section is



$n_0$ , a refractive index at a distance  $r$  from the center is  $n_r$ , and a positive constant is  $a$ .

3,626,195

### RADIATION SENSITIVE APPARATUS FOR MEASURING WORKPIECES

Antony Brian Fitzjohn; Ian Thompson, and Anthony Wilson, all of Sheffield, England, assignors to British Steel Corporation, London, England

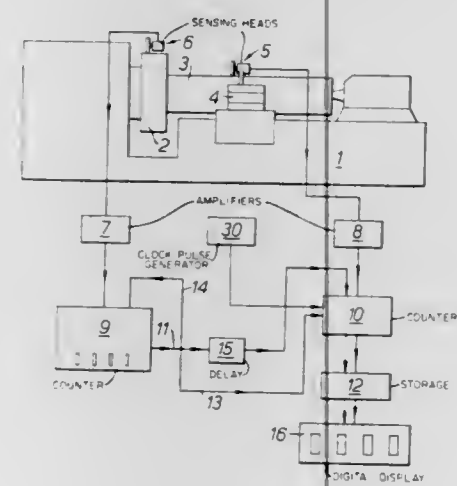
Filed July 14, 1970, Ser. No. 54,740

Claims priority, application Great Britain, July 23, 1969, 37,018/69

Int. Cl. G01b 7/12

U.S. Cl. 250—219 S

11 Claims



Apparatus for measuring a diameter of a workpiece comprises two sensors each of which has a wheel and a pulse generator controlled by the wheel. The wheel on one sensor makes contact with a portion of the workpiece the diameter of which is to be measured and the wheel on the other sensor makes contact with a reference body of known diameter rotatable in synchronism with the workpiece, e.g. a chuck or faceplate. Counter circuitry is provided which is responsive to the outputs from the pulse generators and is operative to determine the ratio of these outputs whereby, knowing the diameter of the reference body, the diameter of the workpiece can be derived therefrom.

3,626,196

### RADIATION SENSITIVE HOLIDAY DETECTOR FOR COATED STRANDS

Edwin H. Arnaud, Jr., Marion; Wilbert H. Christiansen, Indianapolis, and Robert M. Hazelett, Jr., Marion, all of Ind., assignors to Anaconda Wire and Cable Company

Filed Nov. 4, 1969, Ser. No. 873,811

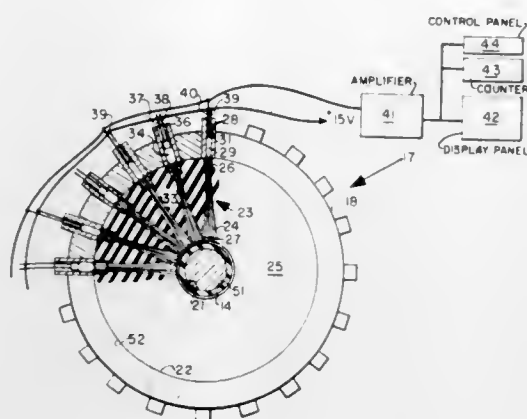
Int. Cl. G01n 21/32

U.S. Cl. 250—219 S

6 Claims

An apparatus for the detection of holidays in the wall of a coating on a curved elongated surface, such as that of an

electrical conductor strand, employs light-transmitting fibers,



3,626,197

### MOTOR GENERATOR WITH AUTOMATIC SPEED AND IDLING CONTROL

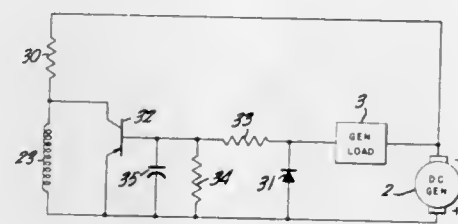
Anthony Zanzarella, Ardsley, N.Y., and Joseph B. Gag, Stamford, Conn., assignors to Textron Inc., Providence, R.I.

Filed July 30, 1970, Ser. No. 59,578

Int. Cl. H02p 9/04

U.S. Cl. 290—40 C

9 Claims



An automatic control for an internal combustion engine driving an electric generator supplying a variable and intermittent load comprises a speed responsive governor controlling the throttle of the engine to maintain it at a constant operating speed as long as there is load on the generator regardless of the amount of load and an automatic override which reduces the engine speed to a selected idling speed when there is no load on the generator.

### ERRATUM

For Class 307—262 see:  
Patent No. 3,626,425

3,626,198

### PROCESS AND APPARATUS FOR OPTIMIZING THE PRODUCT OF TWO PHYSICAL MAGNITUDES

Andreas Boehringer, Friedrichshafen, Germany, assignor to Dornier System GmbH, Friedrichshafen, Germany

Filed Sept. 24, 1969, Ser. No. 860,653

Claims priority, application Germany, Oct. 19, 1968, P 18 04 130.0

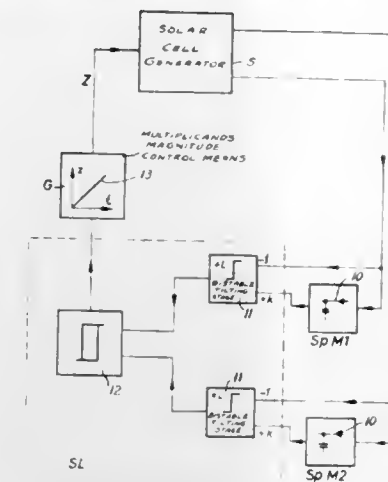
Int. Cl. H02j 1/10

U.S. Cl. 307—52

9 Claims

The product of the two interdependent physical magnitudes is regulated by comparing measured instantaneous values of each magnitude in alternating manner with a stored part value of a previously measured peak value of the same

magnitude and of switching over the magnitude from a decreasing to an increasing value while reversing the other



magnitude from an increasing to a decreasing value upon the instantaneous value algebraically equaling the stored value.

3,626,199

### TUNABLE VISIBLE OR ULTRAVIOLET FREQUENCY SHIFTER

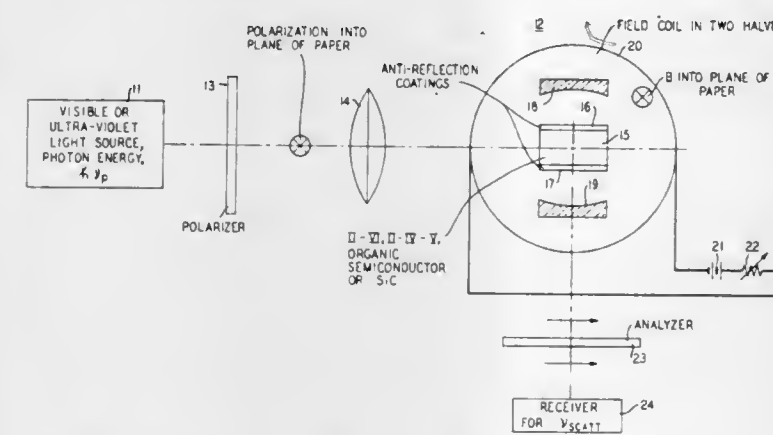
Paul Aime V. Fleury, Middletown, and James Floyd Scott, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 1, 1970, Ser. No. 41,922

Int. Cl. H03f 7/04

U.S. Cl. 307—88.3

7 Claims



The disclosed broadly tunable visible or ultraviolet frequency shifter employs magnetic field tuning of Raman scattering from spin-reversal transitions of electrons or holes in semiconductors having parabolic conduction bands. Such frequency shifting is achieved in semiconductors having bandgaps in the visible and ultraviolet portions of the spectrum. The semiconductors employed are II-VI semiconductors, II-IV-V semiconductors, silicon carbide and organic semiconductors. The pumping light preferably has a frequency just below the bandgap frequency of the semiconductor.

3,626,200

### ELECTRIC PULSE GENERATOR MEANS

Takao Sasayama, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

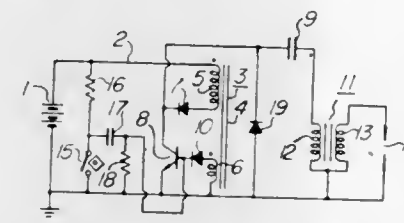
Filed Sept. 30, 1969, Ser. No. 862,327

Claims priority, application Japan, Oct. 2, 1968, 43/71122

Int. Cl. H03k 3/00; F02p 1/00

U.S. Cl. 307—106

22 Claims



A closed series circuit is composed of a plurality of circuit elements, i.e. a DC current source, an inductive reactor, a

transistor. The conduction of the transistor is chosen to take place for a predetermined interval at a predetermined frequency. A capacitor is provided for being charged by a voltage induced across the inductive reactor at the time of the cutoff of the transistor. And the charge stored in the capacitor is discharged to a load simultaneously with the initiation of the conduction of the transistor.

3,626,201

### POLARITY RESPONSIVE CIRCUIT FOR TELEPHONE SYSTEMS

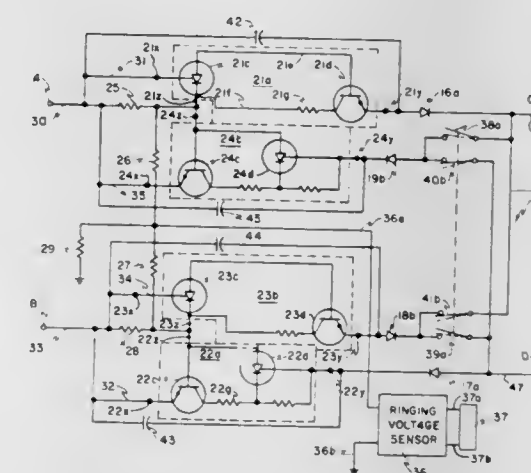
Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation

Filed June 5, 1970, Ser. No. 43,751

Int. Cl. H04m 19/00

U.S. Cl. 307—127

12 Claims



A circuit for providing a unidirectional DC output voltage from a reversible DC input voltage (for example, talking power in a telephone circuit) and for providing an AC output voltage (for example, ringing power in a telephone circuit) from an AC input voltage. A plurality of diodes are connected in a rectifying configuration between a pair of input terminals and a pair of output terminals when a mode control circuit is in a first operative state in the absence of an AC voltage at the input terminals. A controllable switching network is connected in series with each diode to control the conduction thereof in accordance with the polarity of the voltage at the input terminals. This prevents the uncontrolled conduction of the diodes when the DC voltage at the input terminals is less than the voltage of a DC source which may be connected in series with the output terminals. An AC voltage sensing circuit changes the operative state of the mode control circuit when an AC voltage appears at the input terminals. This change in state causes the mode control circuit to reconnect the diodes in a nonrectifying configuration between the input and output terminals and thereby permit the free flow of an AC current therebetween.

3,626,202

### LOGIC CIRCUIT

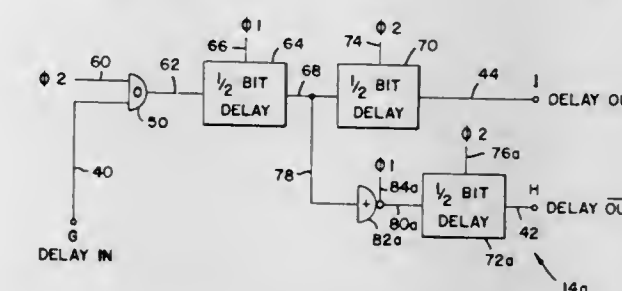
Alan E. Pound, Sunnyvale, Calif., assignor to American Micro-Systems, Inc., Santa Clara, Calif.

Original application Aug. 23, 1967, Ser. No. 662,761, now abandoned. Divided and this application July 13, 1970, Ser. No. 61,028

Int. Cl. H03k 19/08

U.S. Cl. 307—208

6 Claims



A logic circuit is disclosed comprised of two separate but connectable sections, namely a complex gate section and a



delay section. The gate section has five input terminals for receiving data and/or control input signals and a single output, the delay section having a single input and two outputs providing a one-bit delay output and a complemented one-bit delay. By means of various interconnections the circuit can provide a wide range of functional devices including various flip-flop arrangements with clear and load capabilities.

3,626,203

## MECHANICAL SWITCH INTERFACE

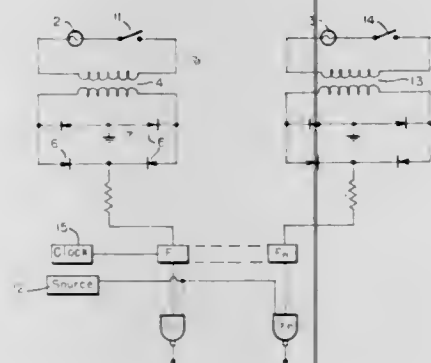
Peter G. Bartlett, Davenport, Iowa, assignor to Struthers-Dunn, Inc., Pitman, N.J.

Filed June 11, 1970, Ser. No. 45,384

Int. Cl. H03k 19/12

U.S. Cl. 307—208

3 Claims



An interface is provided to allow signals from a relatively low-speed mechanical or electromechanical system to be used in a high-speed electronic system. Each of the input signals is fed to a rectifying circuit and then the signal is transmitted to a gated flip-flop. The output of the gated flip-flop is coupled with an inhibiting signal and applied to an output inverter. The output is a high-speed, small rise-time signal usable in electronic computing or control systems.

3,626,204

## FREQUENCY-BIASED RATEMETER

Martin Brandon, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

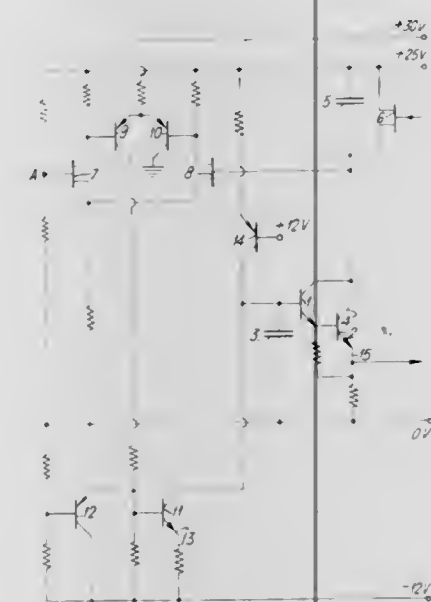
Filed Mar. 27, 1970, Ser. No. 23,135

Claims priority, application Great Britain, Apr. 23, 1969, 20,646/69

Int. Cl. H03d 13/00

U.S. Cl. 307—233

9 Claims



A frequency-biased ratemeter or frequency-to-voltage converter wherein a capacitor is continuously charged at a first

constant rate and discharged at a second constant rate for a period of time which is determined by the frequency of an input pulse signal. The ratio of charge time to discharge time can be altered to bias the ratemeter so as to make it more responsive to high or low frequencies of input signal.

3,626,205

## ARRANGEMENT FOR INDICATING THE EXCEEDING OF A CERTAIN FREQUENCY OF A PERIODICAL SIGNAL

Heinrich Rudolf Sturm, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

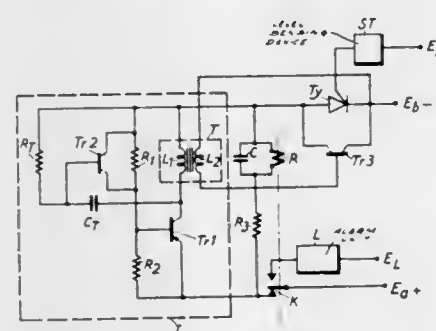
Filed Sept. 4, 1969, Ser. No. 855,333

Claims priority, application Sweden, Sept. 26, 1968, 12974/68

Int. Cl. H03k 5/20

U.S. Cl. 307—233

4 Claims



An arrangement for indicating when a periodic signal exceeds a certain frequency. The periodic signal is supplied to the gate of a thyristor, the anode and cathode of which are connected between the poles of a direct voltage source in series with a time delayed indication relay. An integration circuit comprising a capacitor is connected in parallel with the relay. At a certain phase angle, the periodic signal makes the thyristor conductive and, if the capacitor is mainly uncharged, starts the charging of the capacitor. The termination of the charging causes a pulse to be fed to the base of a transistor that short circuits the thyristor before the relay is activated and the short-circuiting of the thyristor initiates a discharging of the capacitor. The time constant of the discharging process is chosen in such a way that if the frequency of the periodic signal is higher than a certain predetermined value, the capacitor is still charged when the thyristor is made conductive so that no charging process is started and consequently no pulse is supplied to the transistor and the indication relay is activated.

3,626,206

## CIRCUIT MEANS FOR CYCLICALLY MONITORING AND INDICATING THE CONDITION OF A FUNCTION

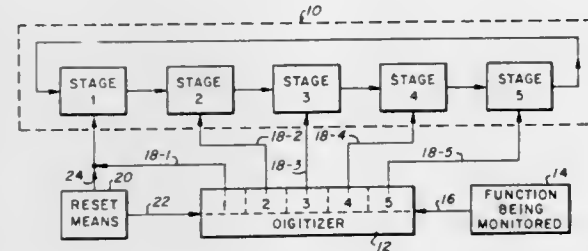
Russel T. Stebbins, Mountain View, Calif., assignor to Itek Corporation, Lexington, Mass.

Continuation of application Ser. No. 690,647, Dec. 14, 1967, now abandoned. This application Sept. 16, 1970, Ser. No. 72,897

Int. Cl. H03k 5/20

U.S. Cl. 307—235

13 Claims



A stepping chain-type digitizer for monitoring the condition of a function and for converting the condition into true and false conditions of the steps of the chain whereby any change of the monitored condition produces a change in the condition of the steps. The steps of the stepping chain are

utilized to control inhibitor gates placed in the stages of the normally free-running ring counter. Any stage of the ring counter controlled by a step in a selected condition remains in the "on" position after the counter advances to turn it "on," and thereby stops any further advance of the ring counter. The stage of the ring counter which remains locked in the "on" position provides the indication of the condition of the monitored function.

3,626,207

## SOLID-STATE POWER SWITCH

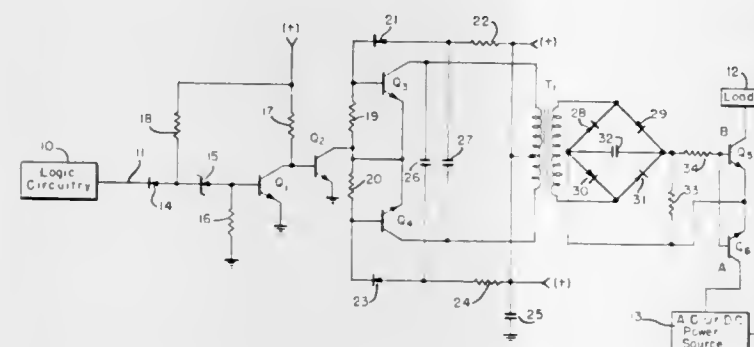
Peter G. Bartlett, Davenport, Iowa, assignor to Struthers-Dunn, Inc., Pitman, N.J.

Filed June 5, 1970, Ser. No. 43,877

Int. Cl. H03k 17/66

U.S. Cl. 307—250

1 Claim



A solid-state, power-switch for selectively controlling the energization of a load with either alternating or direct current in response to a low-level signal. The switch comprises an amplifier, an oscillator, a rectifier for converting the output of the oscillator to a direct current signal, and a pair of interconnected power transistors connected in series with the load and the alternating or direct current power supply, and with the latter transistors being responsive to the output of the rectifier to permit a flow of current from the power supply to the load irrespective of the instantaneous polarity of the power supply.

3,626,208

## DOUBLE-POLE DOUBLE-THROW DIODE SWITCH

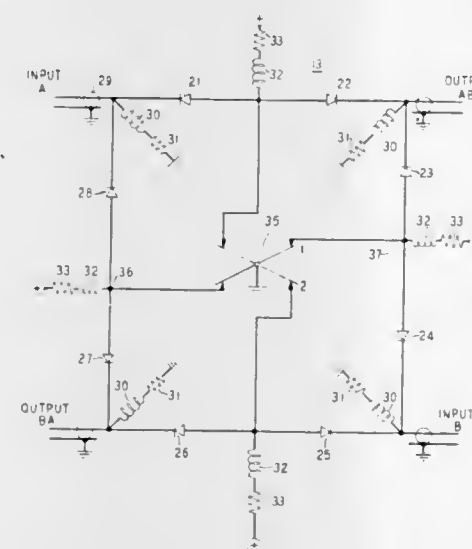
Richard T. Cooney, Salem, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 21, 1969, Ser. No. 868,010

Int. Cl. H03k 17/74

U.S. Cl. 307—257

6 Claims



A reversing gate that allows the exchange of two radio frequency signal inputs between each of two outputs in

response to a direct current switch command. Eight diodes are arranged in pairs in a bridge so that the ON pairs back bias OFF pairs thus simplifying the driving currents required. A plurality of gates can be compounded to achieve more complicated switching functions.

3,626,209

## SQUARE WAVE GENERATING CIRCUIT

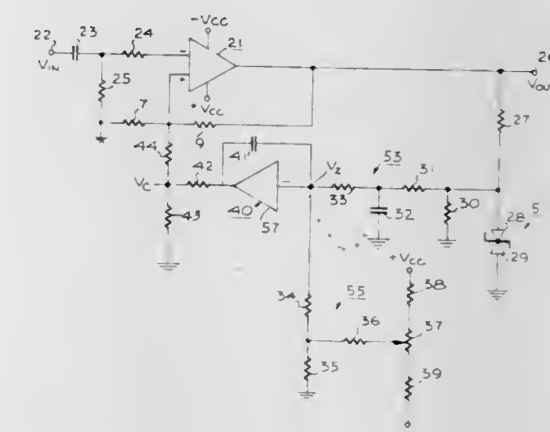
Robert E. Chandos, Santa Barbara, Calif., assignor to Electro-Optical Industries, Inc.

Filed Apr. 6, 1970, Ser. No. 26,038

Int. Cl. H03k 5/00

U.S. Cl. 307—268

9 Claims



A square wave generating circuit for automatically deriving a 50—50 square wave output signal of constant amplitude from a random but repetitive input signal. An operational amplifier utilized as a Schmitt trigger converts the input signal into a rectangular output waveform which is clipped by a back-to-back zener diode arrangement and fed to an operational integrator. The output of the operational integrator controls the threshold levels of the Schmitt trigger in response to the duty cycle of the Schmitt trigger output signal in order to produce a square waveform output from the Schmitt trigger.

3,626,210

## THREE-PHASE CLOCK SIGNAL GENERATOR USING TWO-PHASE CLOCK SIGNALS

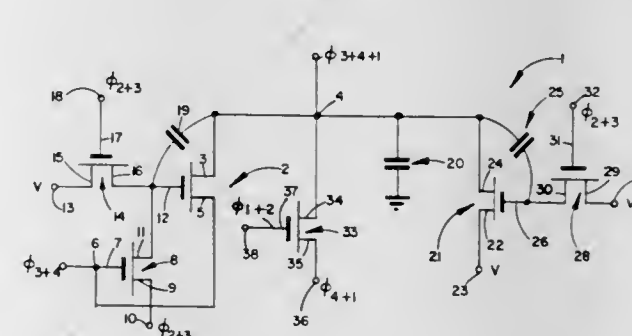
John R. Spence, Villa Park, Calif., assignor to North American Rockwell Corporation

Filed June 25, 1970, Ser. No. 49,885

Int. Cl. H03k 17/60

U.S. Cl. 307—269

5 Claims



A first bootstrapped field effect transistor drives the output to a true voltage level during a first phase of a (two-phase) multiple phase clocking scheme. A second bootstrapped field effect transistor, turned on when the output was driven true, remains on for a second consecutive phase for maintaining the true voltage level at the output. During a third consecutive phase, a third field effect transistor is turned on. The second and third field effect transistors maintain the output at said true voltage level during the third consecutive phase. The third field effect transistor drives the output to a false voltage level during a fourth consecutive phase. Thereafter



the cycle is repeated. The field effect transistors comprising the generator are gated by the major (double width, or two-phase) clock signals which have overlapping phases.

3,626,211

## PULSE MODULATOR

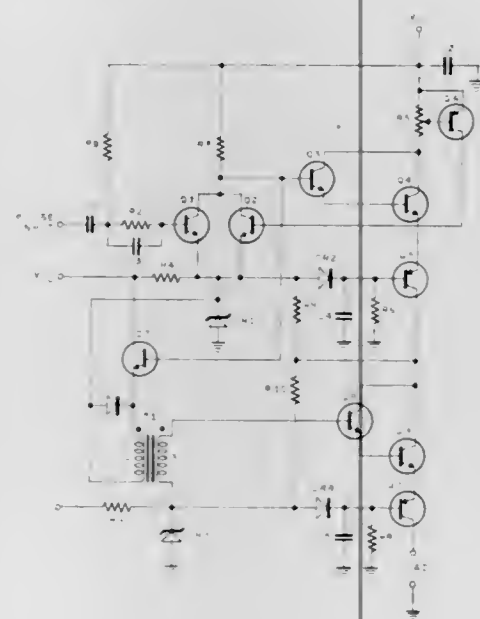
Richard B. Formeister, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Dec. 16, 1970, Ser. No. 98,519

Int. Cl. H03k 1/14, 5/08, 6/02

U.S. Cl. 307—270

11 Claims



High-speed high-current low-voltage elements are used to generate high-speed high-current pulses having an amplitude approaching twice the breakdown voltage rating of the active elements. A plurality of circuits may be stacked to provide absolute pulse amplitudes that are multiples of the active element breakdown voltage rating. The circuit may also be prebiased at a level independent of the active element voltage rating.

3,626,212

## PULSE GENERATING CIRCUIT

Fumio Watase, Tokyo, Japan, assignor to Tohoku Oki Electric Company

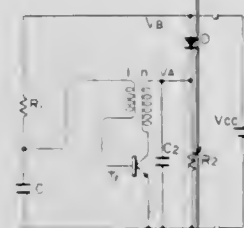
Filed Oct. 18, 1967, Ser. No. 676,178

Claims priority, application Japan, Oct. 14, 1966, 41/70094

Int. Cl. H03k 3/30

U.S. Cl. 307—275

1 Claim



A pulse generating circuit such as a monostable multivibrator, an astable multivibrator and a blocking oscillator is comprised by a first and second transistors, a source of current energizing collector electrodes of transistors and a temperature sensitive element serially connected with the collector resistors and the difference between the voltage drop across the temperature sensitive element response to the variation in the ambient temperature and the source voltage is applied to the base and collector resistors.

### 3,626,213 CIRCUIT EMPLOYING CHARGE STORAGE DIODE IN FAST DISCHARGE MODE

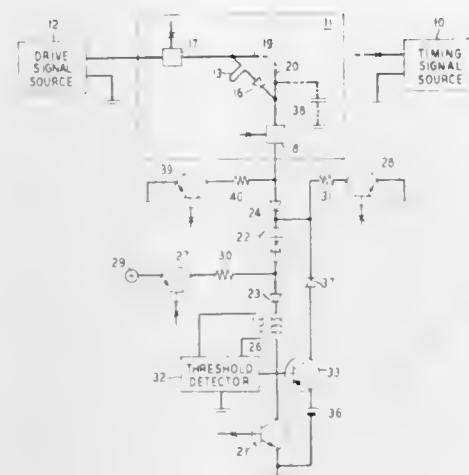
Sigurd G. Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 4, 1968, Ser. No. 781,167

Int. Cl. H03k 3/26, 17/74

U.S. Cl. 307—281

6 Claims



The current output amplitude of a charge storage diode in its reverse conducting condition is absolutely limited by detecting the attainment of a predetermined output level and in response thereto applying an aiding feedback to the diode to terminate the current rapidly by purging the remaining carriers at a much faster rate. This mode of diode operation is employed with current detection in a memory drive circuit. One aspect of the fast diode discharge mode is also employed in a time shared sample and hold circuit.

3,626,214

## BIPOLAR INPUT BISTABLE OUTPUT TRIGGER CIRCUIT

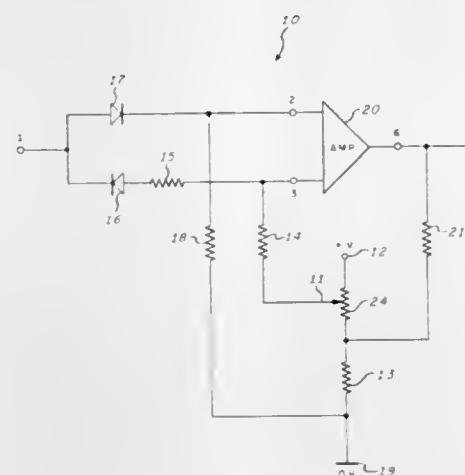
Charles R. Wesner, Crozet, Va., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Mar. 3, 1970, Ser. No. 16,118

Int. Cl. H03k 3/15

U.S. Cl. 307—290

5 Claims



A bistable trigger circuit responsive to bipolar input signals having a bias network coupled to the inputs of a basic operational amplifier for providing bistable output signals. The biasing network includes a single variable resistor which provides adjustment of the bistable trigger reference voltage. The output of the operational amplifier changes state for positive or negative variations of the bipolar input signal, greater or less than the preset value of the variable reference voltage.

### 3,626,215 CIRCUIT ARRANGEMENT FOR AUTOMATIC ELECTRONIC FREQUENCY TRIMMING IN A RECEIVER

Eckart Schatter, Munich, Germany; Hans Ulrich Renk, deceased, late of Munich, Germany; Johanna Elisabeth Renk, nee Johnel, Wurzburg; Sibylle Freia Bergmann, nee Renk, New-Isenberg-Gravenbruch, and Ingo Wolfram Renk, heirs, Frankfurt am main, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

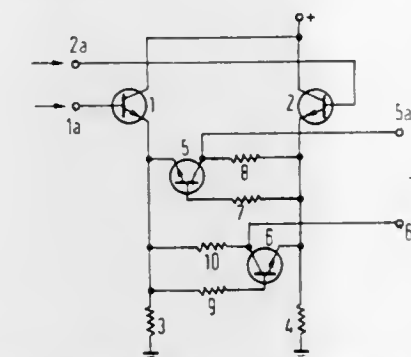
Filed Aug. 24, 1970, Ser. No. 66,539

Claims priority, application Germany, Aug. 28, 1969, P 19 43 819.8

Int. Cl. H03k 1/16

U.S. Cl. 307—295

4 Claims



Two directional voltages in mutual phase opposition corresponding to the degree and direction of detuning are applied to the base electrodes of corresponding ones of first and second input transistors. Each of the first and second input transistors has a collector electrode connected to a source of supply voltage and an emitter electrode connected to a source of reference voltage via a corresponding one of a pair of ohmic emitter resistors. First and second output transistors are connected in parallel with each other in opposite conductance directions between the emitter electrodes of the input transistors. Each of the first and second output transistors has an emitter electrode directly connected to the emitter electrode of a corresponding one of the input transistors, a collector electrode connected to the emitter electrode of a corresponding one of the input transistors via a corresponding one of two pairs of ohmic resistors and a base electrode connected to the emitter electrode of a corresponding one of the input transistors via a corresponding one of the other of the two pairs of ohmic resistors. An output magnitude corresponding to the trimming voltage is derived from the collector electrodes of the output transistors.

3,626,216

## PHASE SHIFTING CIRCUIT

Tage Ake Silverth Bergman, Partille, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

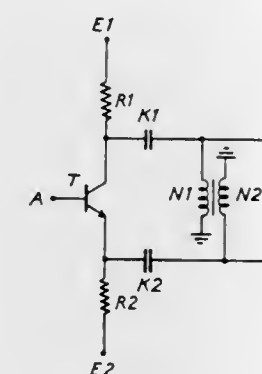
Filed Apr. 14, 1969, Ser. No. 815,872

Claims priority, application Sweden, May 22, 1968, 6924/68

Int. Cl. H03f 3/26

U.S. Cl. 307—295

1 Claim



From the collector and the emitter respectively of a transistor amplifier, signals with a phase difference of 180° are obtained. Upon increasing frequency the phase difference decreases due to the frequency dependence of the parameters of the transistor. By connecting the respective windings of a transformer between ground potential and the

583 O.G.—11

collector and the emitter respectively of a transistor amplifier, output signals with a phase difference of 180° over a wide frequency range will be obtained.

3,626,217

## SOLID-STATE CODERS

Carl Peter Sandbank, Grailands, Bishop's Stortford; John Stuart Heeks, and Edward Albert Feuell, both of Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

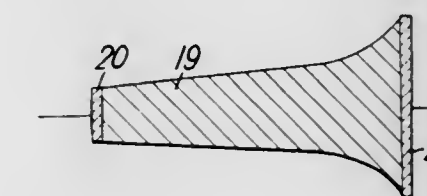
Filed Nov. 30, 1966, Ser. No. 597,975

Claims priority, application Great Britain, Jan. 14, 1966, 1,857/66

Int. Cl. H01l 9/00

U.S. Cl. 307—299

7 Claims



A solid-state device comprising a specimen of multivalley semiconductor material and electric field applying means connected to ohmic contacts attached at one surface of the specimen. The semiconductor material has the innate property of being responsive to electric fields in excess of a critical intensity to cause a redistribution of electric fields so as to nucleate a high electric field region, or domain, and responsive to electric fields in excess of a sustaining intensity, to propagate such high electric field region. A field-sustaining point whereat the electric field intensity is less than a sustaining intensity is defined along an intermediate portion of the specimen. High electric field regions are nucleated and propagated in cyclic fashion such that current through the specimen varies periodically in time in the form of coherent oscillations. The location of the field-sustaining point and, therefore, the frequency of the coherent oscillations in the specimen is continuously controlled by the voltage applied across the ohmic contacts.

3,626,218

## SHOCK WAVE CONVERGENCE APPARATUS

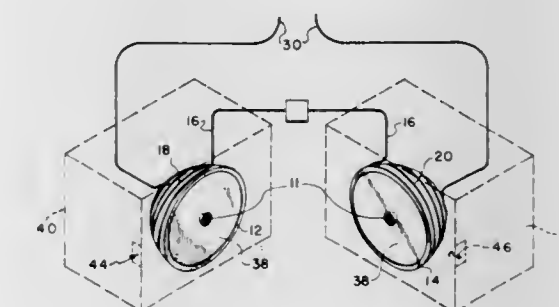
Edward L. Shriver, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1970, Ser. No. 103,229

Int. Cl. H02k 41/00

U.S. Cl. 310—11

5 Claims



An electrical device developing converging spherical shock waves which are used to treat materials placed inside two



hollow dielectric hemispheres which are fastened together. The device can be used to create phase transformation in crystals, to cause chemical reactions between materials, or to create implosive forces which may be used to compact materials or for other purposes. Wire conductors are wound spirally on the outside of the hemispheres. The device uses a high-voltage, high-current power supply to create a sudden surge of current through the conductors. This sets up radially converging spherical shock waves in electrical conducting material filling the hemispheres. These shock waves converge on the material to be treated in the center of the cavity created by the two hollow hemispheres.

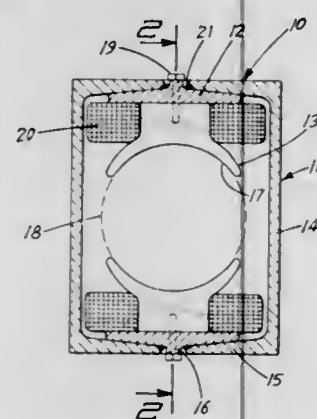
3,626,219

**DYNAMO ELECTRIC MACHINE AND METHOD OF MAKING SAME**

Leon R. Lease, 708 Bellwood Drive, Mankato, Minn.  
Filed May 21, 1970, Ser. No. 39,443  
Int. Cl. H02k 15/02

U.S. Cl. 310-42

19 Claims



Generators and motors whose housings are formed economically from readily available structural iron. The housings for two-pole units are made from segments of structural channel iron or cold rolled flats. The housings for four-pole units are made from segments of structural angle iron or cold rolled flats. The pole assemblies are precisely positioned by means of an appropriate jig. While the pole assemblies are so positioned, the structural iron members are wedged or otherwise disposed against the pole assemblies and secured, as by welding, to maintain the precise spatial relationships. The units are completed by end plates in which an armature structure is journaled. The housings are formed with a minimum of labor and a minimum of precision metal working operations.

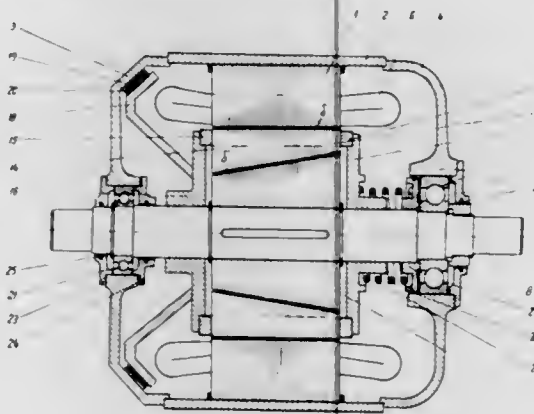
3,626,220

**ELECTRIC MOTOR WITH BRAKE**

Eugen Niculescu, Bucharest, Romania, assignor to Uzina de Masini Electrice Bucuresti, Bucharest, Romania  
Filed Apr. 14, 1970, Ser. No. 28,418  
Claims priority, application Romania, Apr. 18, 1969, 59771  
Int. Cl. H02k 7/10

U.S. Cl. 310-77

6 Claims



Electric motor consisting of a stator, a cylindrical rotor and a brake. Both the stator and the rotor are provided with

windings and are in functional relation one to another. The rotor may turn inside the stator being separated from it by a small airgap.

The rotor consists of two concentric parts, that is, a central conical core, without winding and an outer crown, including the rotor winding, and having an inner hollow of the same conicity as the central core, the central core entering and filling the inner hollow.

One of the two rotor parts is fixed and the other one is free for a small axial shifting with respect to the first one, the other part being also fixedly attached to the brake movable part.

When the motor is not connected to the supply, it is braked, a small inner airgap  $\delta'$  being thus formed between the two rotor parts. When the motor is connected to the supply, the two rotor parts are brought into contact, the brake is unlocked, and the motor operates as a normal motor.

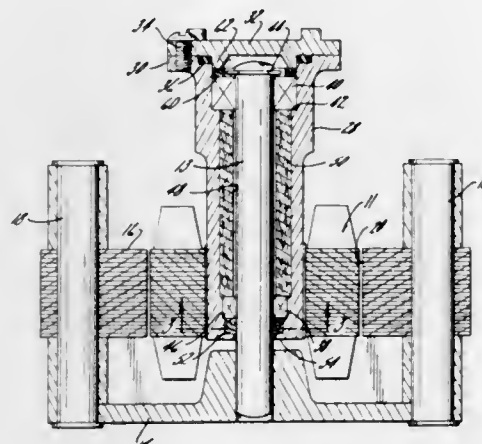
3,626,221

**ELECTRIC MOTOR WITH PERMANENTLY LUBRICATED BEARINGS**

Gordon R. Anderson, and Gordon R. Anderson, Jr., both of Roscoe, Ill., assignors to Airtrol Corporation, Roscoe, Ill.  
Filed Sept. 14, 1970, Ser. No. 71,747  
Int. Cl. H02k 5/16

U.S. Cl. 310-90

2 Claims



The rotor of a shaded-pole motor includes a central sleeve supported on a stationary shaft by axially spaced inner and outer bearings which are lubricated by an oil impregnated tubular liner telescoped into the sleeve and sandwiched between the two bearings. An oil storage ring disposed in contact with the outboard face of the inner bearing includes angularly spaced fingers which engage the shaft to prevent oil from leaking out of the sleeve and along the shaft. An additional ring is disposed in contact with the outboard face of the outer bearing to return oil to such bearing.

3,626,222

**ELECTROMAGNETICALLY CLUTCHED PRESS**  
Helmut Dischler, Neuss-Uedesheim, Germany, assignor to Becorit Grubenaubau GmbH, Recklinghausen, Germany  
Filed Apr. 10, 1970, Ser. No. 27,212  
Claims priority, application Germany, Apr. 12, 1969, P 19 18 637.9

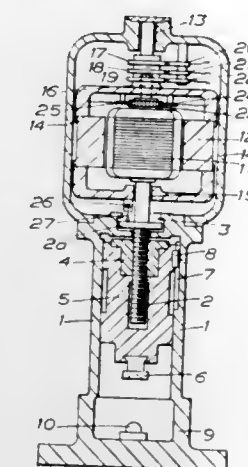
Int. Cl. H02k 7/11

U.S. Cl. 310-96

14 Claims

A spindle press drive assembly using an electric motor's rotor as an energy storing flywheel is characterized in that the electric power drives a second rotor acting as an energy storing flywheel and which is electromagnetically coupled to the first rotor so as to provide rotational energy therefor from the kinetic energy stored in the second rotor. The two rotors are disconnected at the end of the working stroke so that the second rotor remains rotating and only the energy of the first rotor is used during pressing. The two rotors may be coaxial or concentric and the second rotor may be indepen-

cently rotated or rotated by electromagnetic forces between the two rotors. The disconnection can be achieved by a



3,626,225

**WHEEL SPEED SENSOR FOR AN ADAPTIVE BRAKING SYSTEM HAVING A ROTATABLE TONE WHEEL AND ELECTROMAGNETIC PICKUP MEANS**

Edward M. Pauwels, South Bend, Ind., assignor to The Bendix Corporation  
Filed June 1, 1970, Ser. No. 42,112  
Int. Cl. H02k 19/20

U.S. Cl. 310-168

10 Claims

switch which senses the axial force occurring during deformation of a workpiece.

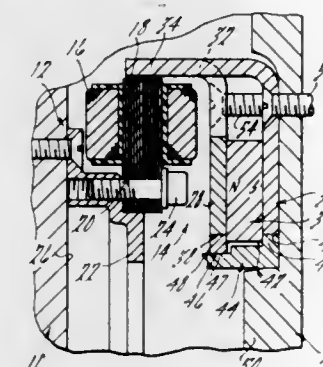
3,626,223

**GENERATOR CONSTRUCTION**

Richard J. Maier, Pontiac, Mich., assignor to Syncro Corporation, Oxford, Mich.  
Filed Mar. 19, 1970, Ser. No. 20,911  
Int. Cl. H02k 21/22

U.S. Cl. 310-153

4 Claims



A generator having a pair of armature bodies with interdigitating fingers on each of the armature bodies defining magnetic poles of opposite polarity with one of the armature bodies being nested in the other and with the fingers of each extending in the same axial direction.

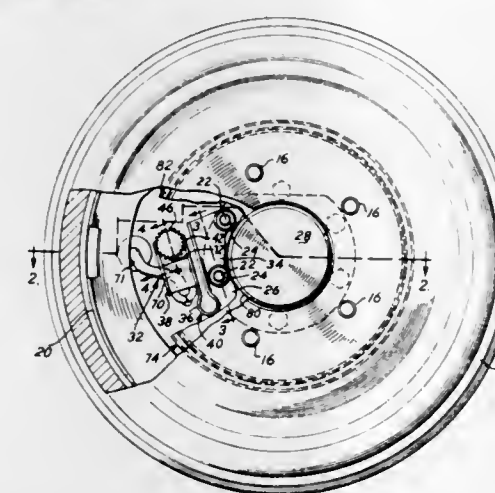
3,626,224

**WHEEL SPEED SENSOR FOR AN ADAPTIVE BRAKING SYSTEM HAVING A ROTATING TONE WHEEL AND ELECTROMAGNETIC PICKUP MEANS**

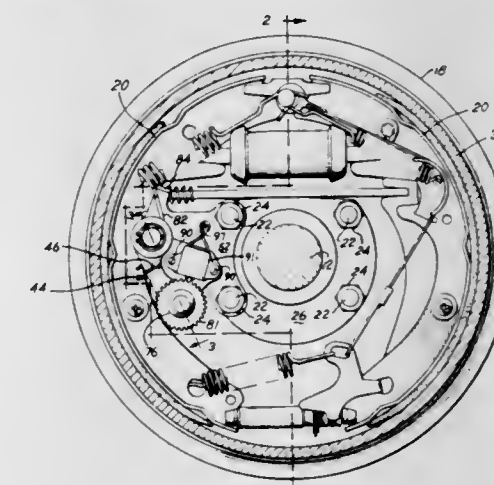
John G. Vigneault, and Francis A. Horning, both of South Bend, Ind., assignors to The Bendix Corporation  
Filed June 1, 1970, Ser. No. 42,111  
Int. Cl. H02k 17/42

U.S. Cl. 310-168

7 Claims



The tone wheel is a heavy walled steel stamping having a flanged central opening adapted for pressing on to a pilot turned on the outside surface of the wheel hub, and a cylinder



A compact driven wheel, tone wheel and pickup assembly mounted on a unitary housing. The assembly has a leaf spring section which urges the driven wheel into contact with an elastomeric portion of a drive wheel mounted on the vehicle axle or wheel hub. The pickup generates an electric signal which is representative of the rotational speed of the vehicle wheel. The drive wheel can be mounted without removing the axle shaft from the axle housing.

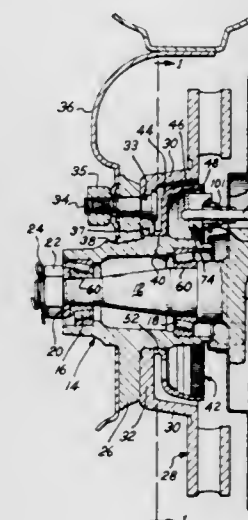
3,626,226

**WHEEL SPEED SENSOR FOR AN ADAPTIVE BRAKING SYSTEM**

Edward M. Pauwels, and David D. Jordan, both of South Bend, Ind., assignors to The Bendix Corporation  
Filed June 1, 1970, Ser. No. 42,168  
Int. Cl. H02k 17/42

U.S. Cl. 310-168

4 Claims





drical flange contiguous to the usual offset portion of the brake disc and having teeth formed on its inside surface. The spaces between the teeth are filled with adhesive nonmagnetic material so that the tooth tips and the nonmagnetic material provide a smooth unbroken cylindrical surface. A radial adjustment for establishing a predetermined clearance between a pickup and the tone wheel is provided by a generally rectangular projection on the back of the pickup which fits into an elongated slot in the pickup bracket. The output of the pickup is used to control the adaptive braking system.

3,626,227

# WHEEL SPEED SENSOR FOR AN ADAPTIVE BRAKING SYSTEM

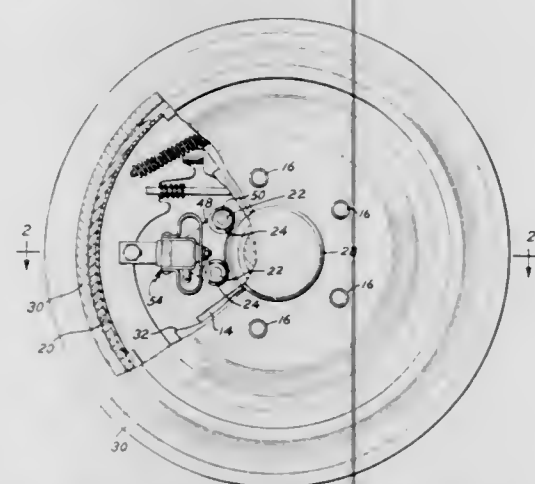
Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation

Filed June 1, 1970, Ser. No. 42,181

Int. Cl. H02k 17/42

U.S. Cl. 310-168

9 Claims



The tone wheel and the electromagnetic pickup are mounted with a running clearance less than the known deflections which occur during severe braking. Both elements are provided with smooth abrasion resistant bearing surfaces and the pickup is spring mounted so that no damage results during the occasional brief rubbing contacts. The projecting elements of the pole piece of the pickup are covered to a predetermined depth by the bearing material so that a minimum clearance is maintained during the periods of contact.

3,626,228

# WHEEL SPEED SENSOR FOR AN ADAPTIVE BRAKING SYSTEM

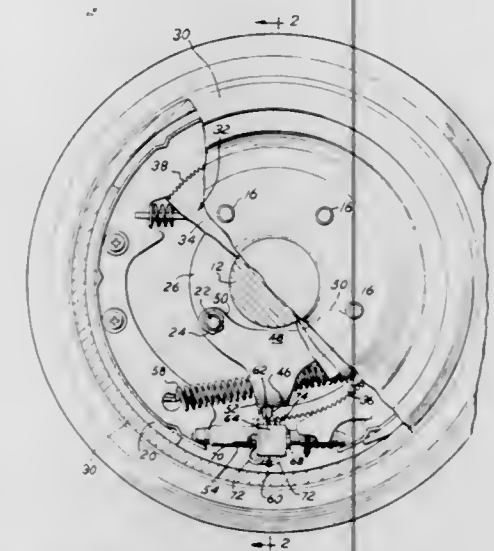
David D. Jordan, and Ward C. Suttle, both of South Bend, Ind., assignors to The Bendix Corporation

Filed June 1, 1970, Ser. No. 42,397

Int. Cl. H02k 19/20

U.S. Cl. 310-168

7 Claims



A wheel speed sensor for use in an adaptive braking system comprising a magnetic pickup and a tone wheel. The tone

wheel of a so-called "frictionless"-type wheel speed sensor is formed in two pieces, one of which is a low mass disk or cup adapted to be mounted on the outside of the axle flange and be clamped between the brake drum and said flange. The other is a rather massive cross section ring of ferromagnetic material secured to the outer margin of the disk and formed with evenly spaced gearlike teeth. The toothed portion may be formed by rolling a straight rack element into a circular shape.

3,626,229

# JACKETED ALKALI METAL HALIDE VAPOR LAMP WITH GETTER

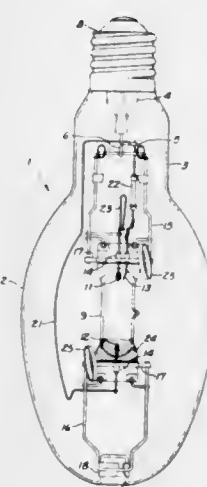
Henry S. Spacil, Schenectady, N.Y.; Wayne R. Hellman, Euclid, and Peter R. Buccilli, South Euclid, all of Ohio, assignors to General Electric Company

Filed Apr. 29, 1970, Ser. No. 32,927

Int. Cl. H01J 61/52

U.S. Cl. 313-25

10 Claims



In a jacketed alkali metal halide vapor lamp, loss of alkali metal takes place by the reaction of water vapor in the outer jacket with alkali metal ions which pass out of the inner arc tube through the silica wall to form gaseous metal hydroxide and protons (positively charged hydrogen ions). The protons pass into the arc tube through the silica wall and react with the metal halide to form metal ions and hydrogen which diffuses out. When the ratio of  $H_2/H_2O$  in the jacket reaches a sufficiently high value, direct reaction of alkali metal ions with hydrogen can continue indefinitely the transfer of alkali metal from the arc tube to the jacket. It is prevented by a getter in the interenvelope space holding the hydrogen pressure down to about  $10^{-7}$  atmospheres or lower, preferably about  $10^{-9}$  atmospheres. A suitable getter is zirconium operating in the temperature range from 350 to 450° C. in sufficient quantity and with low enough initial hydrogen content that its hydrogen content during operation stays below a maximum of about 1,000 p.p.m. (atomic).

3,626,230

# THERMALLY CONDUCTIVE ELECTRICAL INSULATOR FOR ELECTRON BEAM COLLECTORS

Robert E. Stewart, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Oct. 2, 1969, Ser. No. 863,107

Int. Cl. H01J 25/34

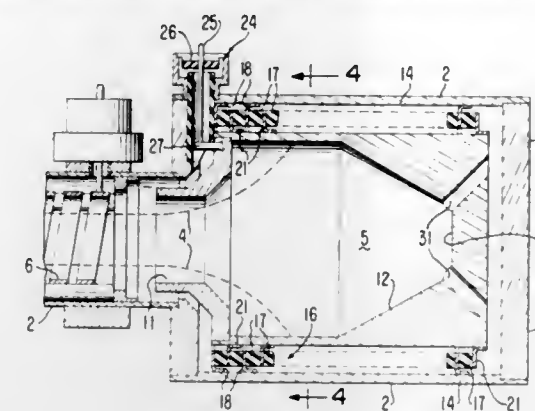
U.S. Cl. 313-30

7 Claims

A beam collector for an electron beam tube includes a hollow metallic beam collector surrounded by a metallic sheath forming a portion of the vacuum envelope of the tube. An electrical insulator structure is disposed in the annular space intermediate the beam collector and the surrounding sheath. The insulator structure includes an array of electrical insulator members with a first array of flexible metallic frame structures joined to said sheath and projecting inwardly to the insulator members. A second array of flexible metallic

frame structures are joined to the collector and project outwardly therefrom to the insulators. The flexible frame structures are joined to the insulator members in electrical insula-

mental attached to the funnel portion of the tube and through which both an anode voltage and a convergence voltage are supplied to the tube.



tive relation with respect to each other and provide parallel thermally conductive paths for conduction of thermal energy from the collector to the sheath, while allowing for thermal expansion and contraction of the collector.

3,626,231

# THERMAL SHUNT FOR A CATHODE STRUCTURE

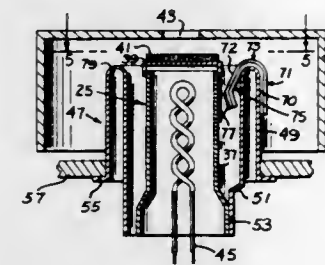
Maurice Kahl, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.

Filed Mar. 5, 1969, Ser. No. 804,513

Int. Cl. H01J 7/24, 1/02

U.S. Cl. 313-37

10 Claims



Means for regulating the operating temperature of an indirectly heated cathode in an electron discharge device wherein at least one selected bimetallic member is positioned adjacent the cathode in a manner to allow movement of a portion of the member to make thermal conductive contact with the cathode when influenced by increased temperature resultant from high-voltage cathode heater operation to provide a thermal shunt for reducing cathode-operating temperature to a desired level.

3,626,232

# COAXIAL CONNECTOR FOR FINAL ANODE AND CONVERGENCE VOLTAGES

Akio Ohgoshi, Tokyo, and Keito Nakazawa, Yokohama-shi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

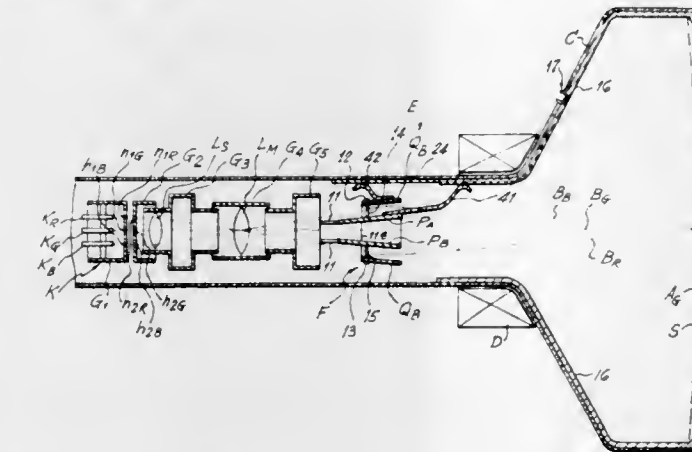
Filed Dec. 29, 1969, Ser. No. 888,339

Claims priority, application Japan, Dec. 27, 1968, 44/130

Int. Cl. H01J 29/00, 31/20, 31/00

U.S. Cl. 313-64

7 Claims



A gun structure for a picture tube of the single-gun, plural beam type is provided with a common voltage supplying ter-

# 3,626,233 CHANNEL MULTIPLIER OF ALUMINUM OXIDE PRODUCED ANODICALLY

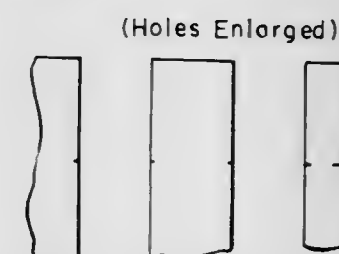
Eugene Wainer, Shaker Heights; Selwyn H. Rose, Beachwood, and Theodore M. Harkulich, Chagrin Falls, all of Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated

Filed Sept. 20, 1968, Ser. No. 764,370

Int. Cl. H01J 43/06, 43/22

U.S. Cl. 313-105

3 Claims



Microchannel plates prepared from anodized aluminum layers etched to increase the pore volume to approximately 50 percent and then treated to exhibit suitable electrical properties for use as a channel plate.

3,626,234

# GLOW DISCHARGE TUBE

Werner Grimm, Grossauheim, Germany, assignor to RSV Präzisionsmessgeräte GmbH, Hechendorf/Pilsensee, Germany

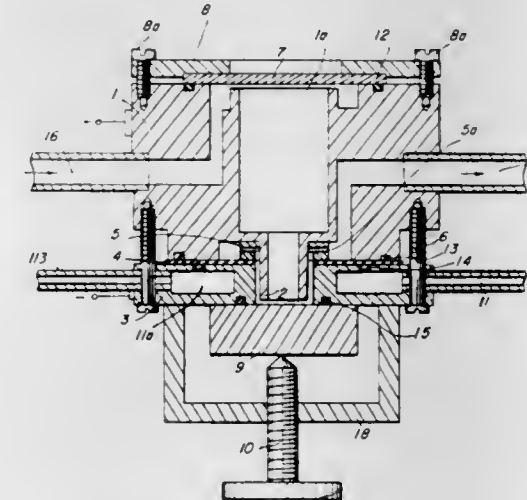
Filed July 28, 1970, Ser. No. 58,847

Claims priority, application Germany, Mar. 1, 1969, P 19 10 461.1

Int. Cl. G01J 3/12; H01J 17/04, 17/26

U.S. Cl. 313-210

2 Claims



A glow discharge tube with a tubular anode extending into an annular cathode body has clamped against the outer face of the cathode a test body in the form of a thick circular disk which in the surface engaging the cathode body is provided with one or more bores arranged in a circular area opposite and smaller than the end of the tubular anode. The bore or bores are adapted to receive the samples of the material to be analyzed, such as short pieces of wires or wire-shaped metal bodies, the ends of which project just a little distance, if any, beyond the surface of the test body engaging the cathode body.

3,626,235

# DISPLAY PANEL WITH DOUBLE CATHODE

George A. Kupsky, Millford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 13, 1970, Ser. No. 19,299

Int. Cl. H01J 61/66

U.S. Cl. 313-210

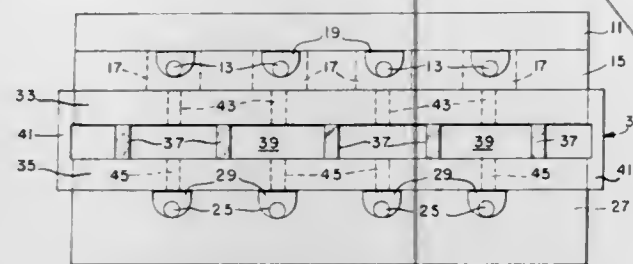
4 Claims

A display panel including first and second layers of gas-filled cells with cathodes in common between the layers and



with separate anodes associated with each layer. Tiny apertures in the cathodes interconnect respective cells in each

predetermined diameter spaced from the line electrode forms a discharge gap.



layer. Double-layered cathodes are used to prevent spurious transfer of ionized gas (cathode glow) from the cells in one layer to the respective cells in the other layer.

3,626,236

## TUNGSTEN-HALOGEN LAMPS

Kenneth Buckley Robinson, and Henry Alfred Fenn, both of London, England, assignors to Thorn Lighting Limited, London, England

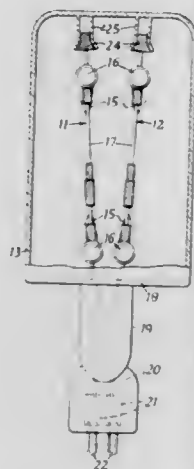
Filed Feb. 25, 1970, Ser. No. 14,011

Claims priority, application Great Britain, Mar. 25, 1969, 15,596/69

Int. Cl. H01k 9/00

U.S. Cl. 313-316

13 Claims



A tungsten halogen incandescent lamp having two planar filaments which are spaced further apart at one pair of edges of the planes than at the other pair, one filament being of lower efficiency than the other filament so that in use the lamp can be orientated with the filaments further apart at the upper edges and the filament of lower efficiency uppermost whereby the temperature gradient between the top and the bottom of the filaments is reduced.

3,626,237

## LINE ELECTRICAL SURGE ARRESTOR

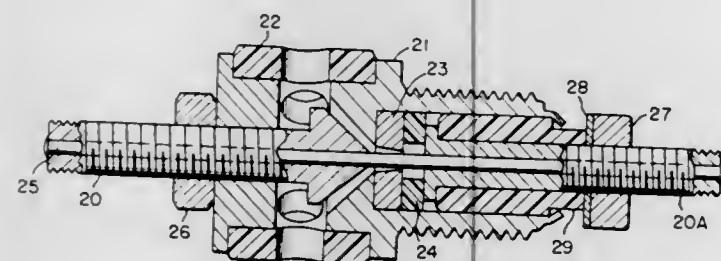
Norman A. Bolton, Rochester, and John H. Auer, Jr., Fairport, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Dec. 12, 1968, Ser. No. 783,238

Int. Cl. H01t 1/14, 3/00

U.S. Cl. 313-325

8 Claims



An electrical surge arrester in which a line electrode is serially connected in the line and a second electrode of

### 3,626,238 THYRISTOR CONTROLLED POWER SUPPLY CIRCUITS AND DEFLECTION CIRCUITRY ASSOCIATED WITH A KINESCOPE

Gerhard Forster, Wuenos, Switzerland, assignor to RCA Corporation

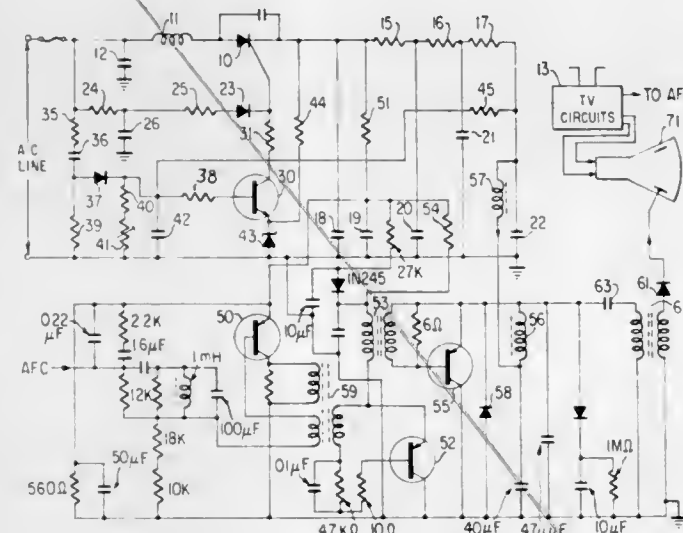
Filed Aug. 25, 1969, Ser. No. 852,766

Claims priority, application Great Britain, Aug. 27, 1968, 40,978/68

Int. Cl. H01j 29/76, 23/34; H02m 7/52

U.S. Cl. 315-1

8 Claims



A thyristor power supply is directly coupled to the AC power line thus eliminating the power transformer. Regulation of the supply is dependent upon both the AC potential and the DC output voltage. Other combinations of control voltage for the thyristor are described which, in turn, affect the internal impedance of the power supply of control regulation thereof.

3,626,239

## HEADLAMP DEENERGIZATION DELAY SYSTEM

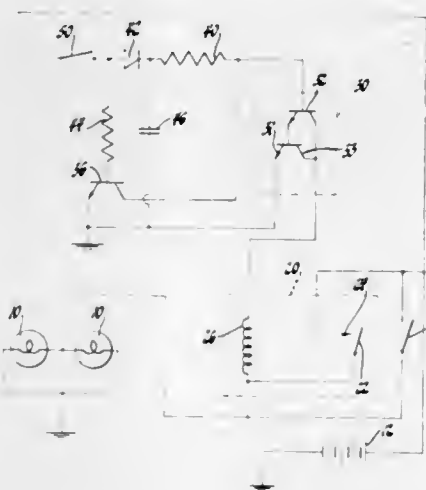
Eugene W. Brock, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 25, 1970, Ser. No. 40,092

Int. Cl. B60q 1/06, 1/08

U.S. Cl. 315-83

3 Claims



A vehicle headlamp control circuit used in conjunction with the conventional vehicle headlamp control switch and comprising a relay in parallel with the headlamp switch, an RC charge storage and timed discharge network and a transistor switch controlled by the headlamp and vehicle ignition switches to cause the RC network to charge through the ignition switch and to discharge and actuate the relay to delay headlamp deenergization if and only if the headlamp switch is opened after the ignition switch is opened.

3,626,240

## PRESSURE-SENSITIVE INDICATING SWITCH

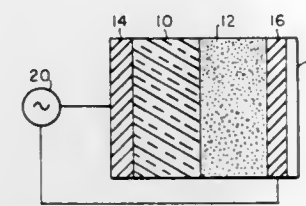
Alfred J. MacIntyre, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Dec. 12, 1969, Ser. No. 884,530

Int. Cl. H05b 37/02

U.S. Cl. 315-149

14 Claims



A pressure-sensitive indicating switch comprises an electroluminescent lamp assembly having a pressure-sensitive variable resistance layer interposed between the phosphor and one conductor thereof. Depression of the switch compresses the pressure-sensitive layer, reducing its resistance and allowing current flow through the phosphor thereby illuminating the lamp. Additional provisions include an optical feedback means and means for remotely activating the lamp assembly.

3,626,241

## GRAY SCALE GASEOUS DISPLAY

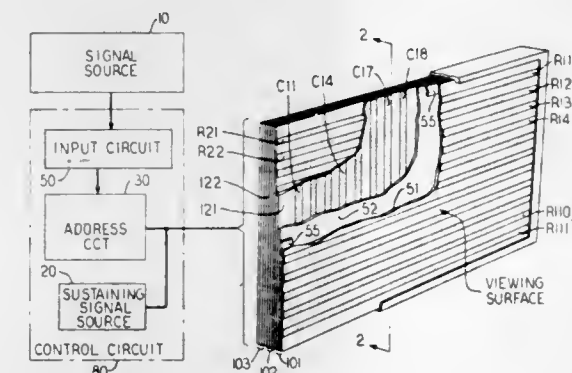
Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1969, Ser. No. 887,994

Int. Cl. H05b 37/00

U.S. Cl. 315-167

15 Claims



An improved gaseous display arrangement is disclosed in which a 2<sup>n</sup> level gray scale is provided by stacking *n* conventional gas discharge display devices separated by respective light attenuating layers, each layer attenuating the display light reaching the viewing surface by a factor of two. The display devices in the stack are addressed in common, respective bits of an *n*-bit gray scale codeword determining the ON-OFF character of the individual display devices. Multicolor displays are achieved by the use of different gases in the several devices or by the use of appropriate filters between the devices.

3,626,242

## POWER SUPPLY CIRCUITS

Seymour Reich, Livingston, N.J., assignor to RCA Corporation

Filed Oct. 20, 1969, Ser. No. 867,451

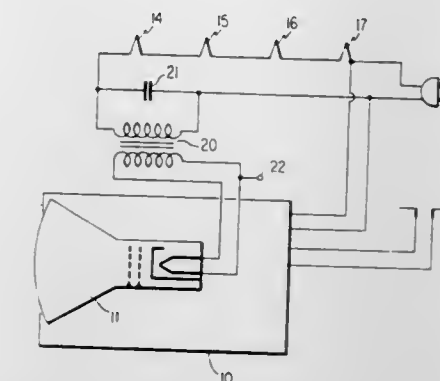
Int. Cl. H01j 31/00

U.S. Cl. 315-96

5 Claims

The filaments of a plurality of vacuum tubes and the primary winding of a transformer are connected in series across an AC energizing source. The voltage drop across the primary winding is equal to the difference in the voltage of the AC

source and the rated voltage drop across the series connected filaments. The voltage developed across the transformer



secondary winding is coupled to utilization means such as the filaments of the kinescope for energizing the same.

3,626,243

## INSTANTANEOUS STARTER DEVICE FOR A DISCHARGE LAMP EMPLOYING A DIODE THYRISTOR

Shigeo Koyama, Neyagawa-shi; Masao Yasuda, Higashiosaka-shi; Toru Takei, Osaka; Yasutaka Kawal, Higashiosaka-shi, and Takeshi Matsushima, Nara-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

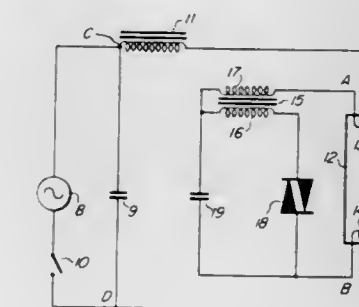
Filed Aug. 21, 1969, Ser. No. 852,009

Claims priority, application Japan, Aug. 27, 1968, Nov. 4, 1968; 43/74511, 43/97146

Int. Cl. H05b 41/18

U.S. Cl. 315-101

4 Claims



A starter device for a discharge lamp instantaneously lighting a fluorescent discharge tube; connecting in parallel with said fluorescent discharge tube a starter circuit consisting of a pulse transformer, a capacitor, and a symmetrical diode thyristor or a reverse blocking diode thyristor having a breakover voltage  $V_{BO}$  lower than the rated power source voltage but higher than the tube voltage of said fluorescent discharge tube.

3,626,244

## SUSTAINING SIGNALS OF SPACED-APART POSITIVE AND NEGATIVE PULSES FOR MAINTAINING THE GLOW IN MATRIX GAS DISPLAY DEVICES

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of application Ser. No. 668,550, now abandoned, and a continuation of 824,725, Apr. 25, 1969, now abandoned. This application Dec. 29, 1969, Ser. No. 888,971

Int. Cl. H05b 41/29

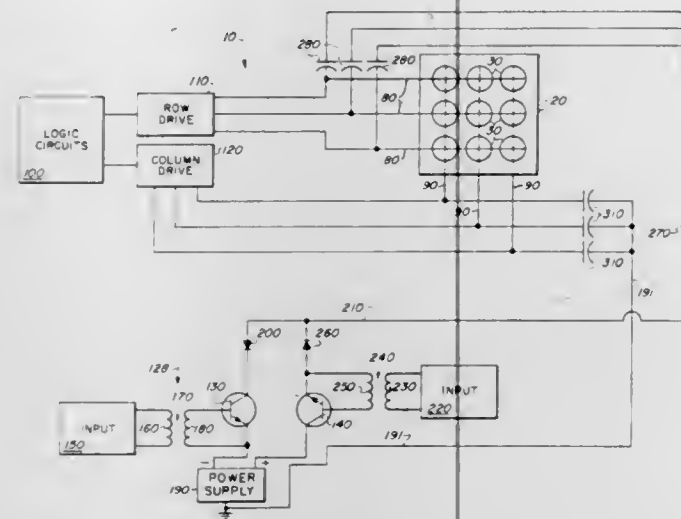
U.S. Cl. 315-169 R

21 Claims

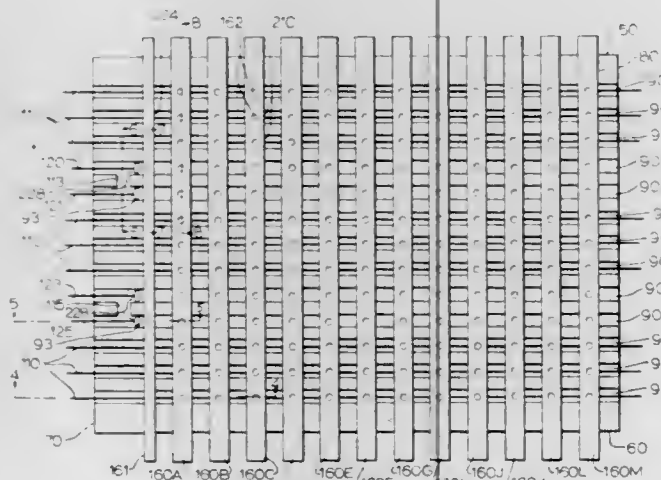
The disclosure is of an information display system including a display panel which comprises a plurality of gas-filled cells, each of which is operated by a pair of leads which, when properly energized, causes the gas in the cell between them to glow. After a cell is energized and the energizing signals have been removed from the leads, a sustaining signal is applied which maintains the glow. The sustaining signal is made up of spaced-apart positive and negative waves which are produced by two separate transistor and diode pairs



operating a series L-C circuit made up of an inductor and panel cells. The spacing between and the two waves is controlled by the spacing between input pulses which energize the two transistor and diode pairs.



**3,626,245**  
**DISPLAY PANEL HAVING A PLURALITY OF DISPLAY REGISTERS**  
Gerald S. Rosenberg, Edison, and Robert E. Kollmyer, Middlesex, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.  
Filed Apr. 8, 1970, Ser. No. 26,504  
Int. Cl. H01j 17/16  
U.S. Cl. 313-220 3 Claims

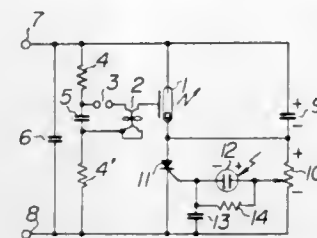


A display panel includes a base plate carrying a plurality of slots in which anode electrodes are positioned. The slots are arrayed in groups with spacing slots exposed between the groups. Cathode electrodes are disposed on the surface of the base plate and operate with the anode electrodes to form scanning gas cells. Auxiliary anode and cathode electrodes are provided in selected spacing slots and are operated as keep-alive cells for the scanning cells.

**3,626,246**  
**STROBE DEVICE FOR PHOTOGRAPHY**  
Masaru Higuchi, Osaka, Japan, assignor to West Electric Co., Ltd., Osaka, Japan  
Filed May 9, 1969, Ser. No. 823,440  
Claims priority, application Japan, May 15, 1968, 43/33304  
Int. Cl. H05b 37/00 10 Claims

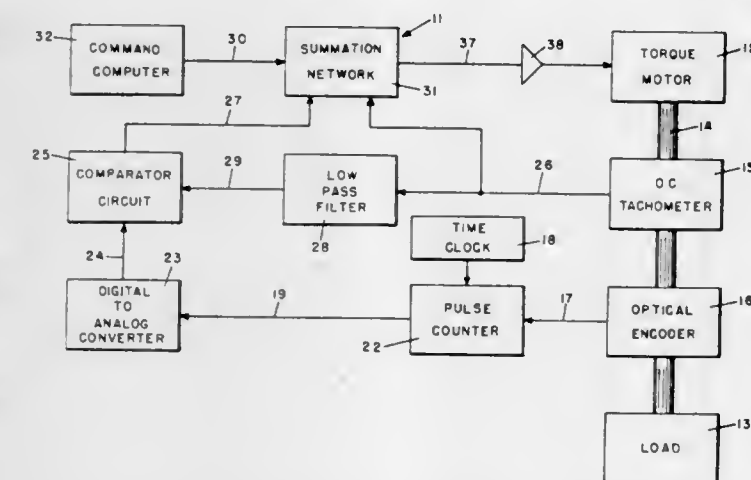
A strobe device for photography, wherein there is provided a main discharge capacitor and light intensifying capacitor, that portion of the light resulting from the light emission of the main discharge capacitor which has been reflected by an object to be picked up is received by a photosensitive ele-

ment, a silicon controlled rectifier is controlled by the output energy of the photoconductive element, and charges at the



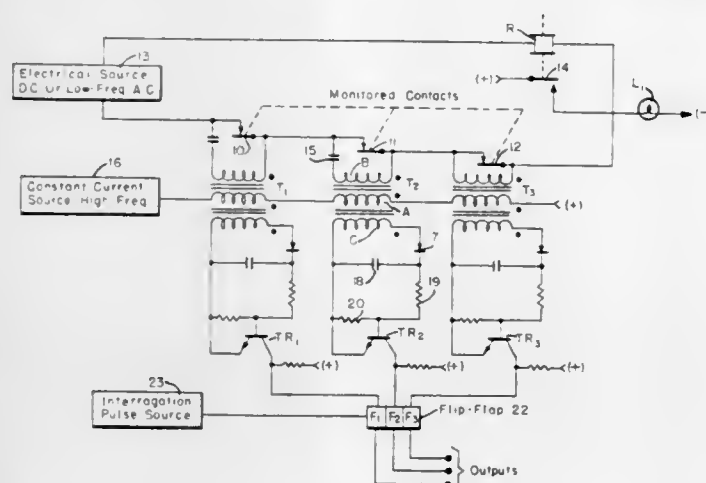
light-intensifying capacitor are discharged to a xenon discharge tube as occasion demands.

**3,626,247**  
**ANGULAR VELOCITY MEASUREMENT APPARATUS**  
Edward P. Morse, Norwood, Mass., assignor to Itek Corporation, Lexington, Mass.  
Filed July 3, 1969, Ser. No. 839,019  
Int. Cl. G01p 3/56  
U.S. Cl. 317-5 11 Claims



A system for measuring extremely slow angular velocities including both a DC tachometer and an optical encoder. The encoder output is converted into an average velocity indicating analog signal that is combined with the transient components of the tachometer output. The resultant control signal possesses both the average velocity indicating accuracy of the encoder and the instantaneous response of the tachometer.

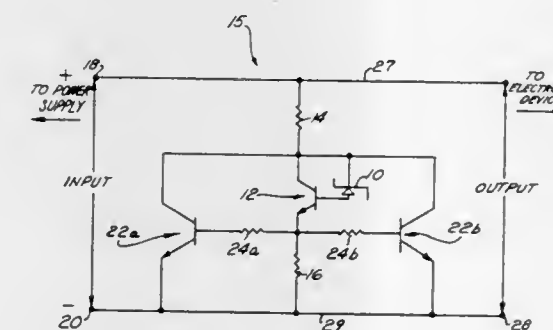
**3,626,248**  
**CONTACT MONITORING SYSTEM**  
Peter G. Bartlett, and Donald E. Henry, both of Davenport, Iowa, assignors to Struthers-Dunn, Inc., Pittman, N.J.  
Filed Feb. 6, 1970, Ser. No. 9,167  
Int. Cl. H02h 3/04 4 Claims



Circuit means for monitoring the conditions of a plurality of contacts, thereby making it possible to determine at each

instant which contact is open and which is closed. The output of each contact monitoring circuit is electrically isolated from all of the monitored contacts and also from any circuit in which a monitored contact is included. The monitoring circuit comprises a three-winding transformer for each monitoring contact, with the primary windings of the transformers connected in series and energized from a constant current source of relatively high frequency. A secondary winding of each transformer is connected in shunt with a respective one of the monitored contacts, and a second secondary winding of each transformer has its output voltage rectified and used to control the conductive state of an associated transistor, with the latter transistor, by its conductive state, providing a manifestation of the closed or open condition of the associated monitored contact.

**3,626,249**  
**TRANSIENT VOLTAGE PROTECTION CIRCUIT**  
Marion L. Snedeker, Cleveland, Ohio, assignor to Victoreen Leece Neville, Inc., Cleveland, Ohio  
Filed Mar. 12, 1970, Ser. No. 18,961  
Int. Cl. H02h 3/22 15 Claims

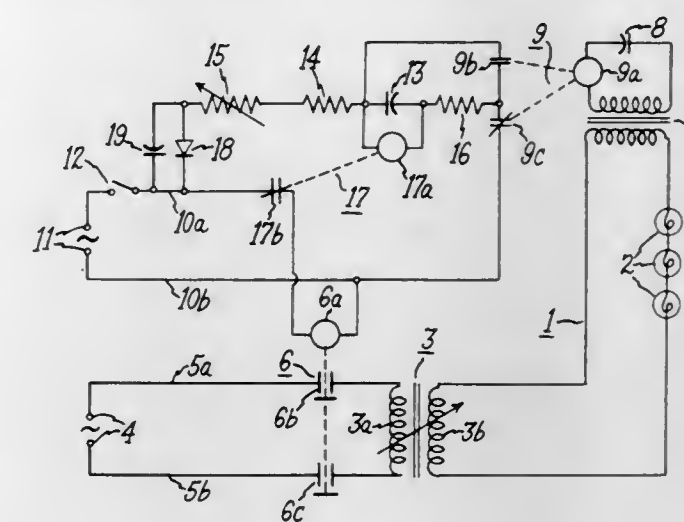


A transient voltage protection circuit protects electronic devices coupled across a DC voltage source from transient voltages. A voltage breakdown device is employed to sense the voltage transients which appear across the voltage source. The voltage breakdown device is connected across the collector and the base junctions of a control transistor. A transient voltage above a predetermined magnitude will cause the voltage breakdown device to switch into impedance state thereby turning on the control transistor. The current flowing through the collector-emitter path of the control transistor is supplied as a control current to the bases of two parallel-connected shunting transistors which are driven into saturation when the control transistor is turned on. The shunting transistors are in a low impedance path across the source which includes a current limiting resistor and which loads the transient voltage in order to reduce its peak amplitude. When the shunting transistors are turned on, the voltage across the control transistor and the voltage breakdown device is reduced and the circuit elements are reset.

**3,626,250**  
**PROTECTIVE CIRCUIT FOR CURRENT REGULATOR**  
Clair A. Nodurft, East Flat Rock, N.C., assignor to General Electric Company  
Filed Oct. 16, 1970, Ser. No. 81,411  
Int. Cl. H05b 37/02; G01n 19/16 8 Claims

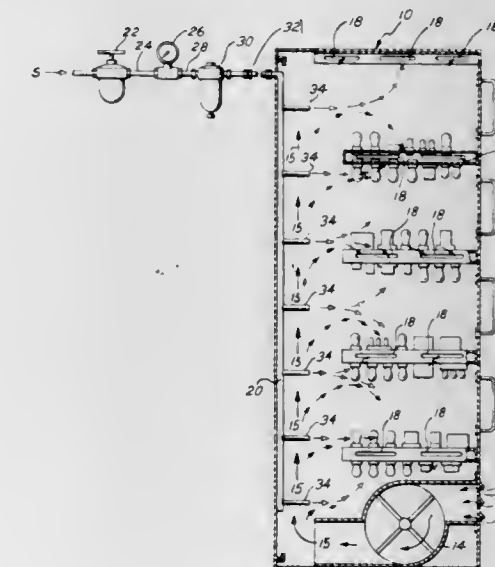
Current regulator device comprises constant current transformer having lighting circuit in its secondary and an open

circuit protective device with time delay means connected to the transformer primary. The time delay means includes an



RC circuit for delaying turnoff of the regulator in the event of a break in the lighting circuit.

**3,626,251**  
**AIR COOLING SYSTEM FOR CABINET MOUNTED EQUIPMENT**  
Edward G. Vigue, Mishawaka, Ind., assignor to The Bendix Corporation  
Filed Jan. 19, 1970, Ser. No. 3,706  
Int. Cl. H05k 7/20 6 Claims



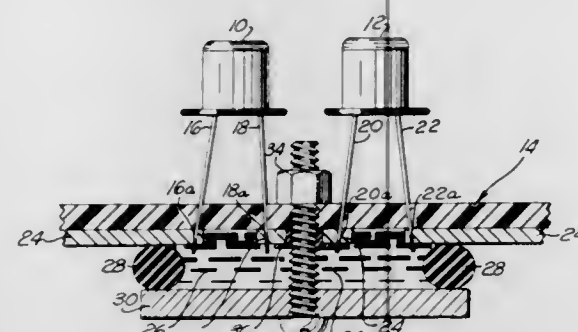
A cooling system for cabinet-mounted electrical equipment with a large air stream being controlled by a smaller high pressure air stream. A blower located in the bottom of the cabinet forces the main air stream upward. A smaller high pressure air stream is discharged from nozzles to direct the large air stream toward hot spots in the electrical equipment. Outlet ducts located near the electrical equipment provide a path for the large air stream to flow over the hot spots and the component parts and out of the cabinet.

**3,626,252**  
**TEMPERATURE EQUALIZATION FOR PRINTED CIRCUITS**  
Pieter G. Cath, Aurora, Ohio, assignor to Keithley Instruments, Inc., Solon, Ohio  
Filed Jan. 21, 1970, Ser. No. 4,475  
Int. Cl. H05k 1/02, 7/20 16 Claims

Leads of various electronic devices which are mounted on a printed circuit board each form a junction with the conductive pattern on the printed circuit at a different location, and



temperature variations at these junctions may cause undesirable effects in the electrical circuit in which the devices are employed. Thermally-produced effects that result when the junctions of a printed circuit are at different temperatures are substantially eliminated by a thermally-conductive, electrically-insulating substance, such as silicone grease,



which contacts the leads and the conductive pattern. The thermally-conductive silicone grease is contained in a grease container formed of a rubber "O" ring and an aluminum disk. The rubber "O" ring encircles the grease and is pressed against one side of a printed circuit board, which contains a conductive pattern, by the aluminum disk which is secured to the board.

3,626,253

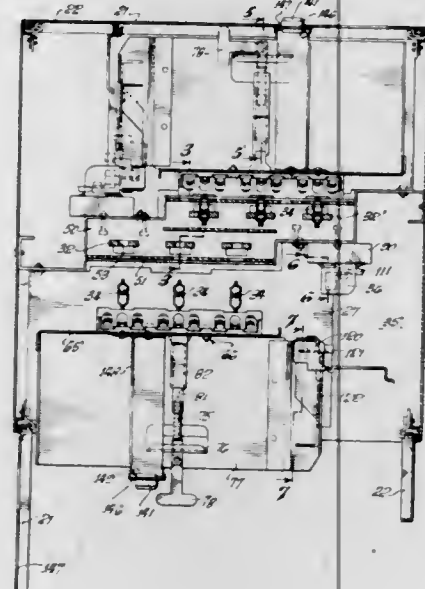
#### CELL CONSTRUCTION FOR MOTOR CONTROL CENTER FOR SEPARATE DISENGAGING OF TERMINAL BLOCKS AND BUS STABS

Rex E. Sturdivan, Jackson, Miss., assignor to Zinsco Electrical Products, Los Angeles, Calif.

Filed May 6, 1970, Ser. No. 35,046  
Int. Cl. H02b 1/20

U.S. Cl. 317-118

14 Claims



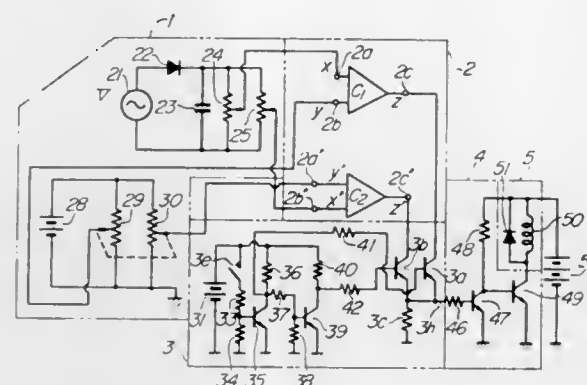
A cabinet for electrical controls of the like, typically a motor control center, having cubicals for slidably receiving control units with conductors for engaging bus bars and terminal blocks for engaging mating terminal blocks in the cabinet. A sliding plate on the control unit carrying the control unit terminal block for manually engaging and disengaging the terminal blocks without requiring moving of the control unit. A terminal block design permitting a sliding installation of terminal blocks and a sliding installation of contacts within the terminal blocks. A hinged plate installation on the control unit for positioning push buttons and the like at the front of the cabinet. A pressure conductor stab for engaging bus bars behind the control unit cubicals.

#### 3,626,254 AUTOMATIC SHIFT LINE SWITCHOVER SYSTEM FOR AUTOMATIC TRANSMISSION

Mamoru Kawakubo, and Shigehiko Ito, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Aug. 17, 1970, Ser. No. 64,317  
Claims priority, application Japan, Aug. 18, 1969, 44/65225  
Int. Cl. H01h 47/32; B60k 19/00, 21/00  
U.S. Cl. 317-148.5 R

1 Claim



An automatic shift line switchover system for use in an automatic transmission for a vehicle which is responsive to electrical signals representative of the load on the engine and the vehicle speed to provide a shift signal most suitable for the specific shifting condition thereby to operate brake band means and multiple disc clutch means through a hydraulic actuating circuit for carrying out the desired shift.

3,626,255

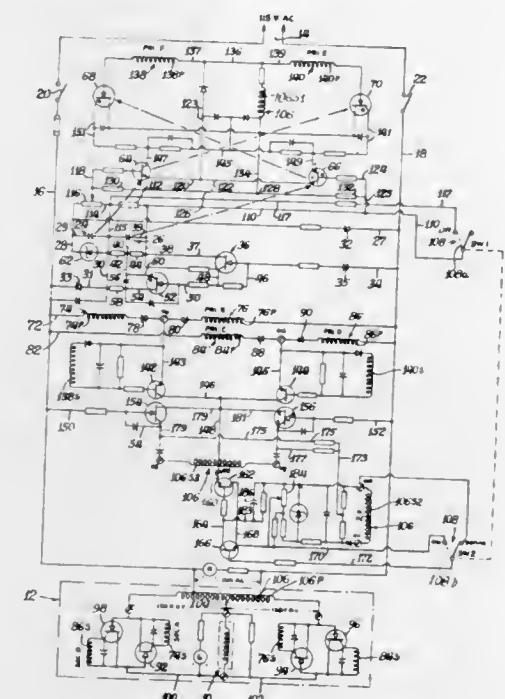
#### DEMAGNETIZER, SOLID STATE

Arthur K. Littwin, Lincolnwood, Ill., assignor to Littwin Family Trust No. 1, Chicago, Ill.

Filed Sept. 1, 1970, Ser. No. 68,625  
Int. Cl. H01f 13/00

U.S. Cl. 317-157.5

11 Claims



A completely solid state demagnetizer including: a circuit including the object to be demagnetized and including a portion for applying DC to the object, and including portions operable for so applying the DC in successively opposite polarities; a first condenser of fixed capacity chargeable substantially instantaneously, and charged constantly by the power source; a second condenser progressively chargeable, of variable capacity, and having limits above and below that of the first condenser; the first condenser, when the second condenser is charged to a value less than itself, energizing the

circuit portion operable for applying DC of a first polarity to the object; and the second condenser, when charged to a value greater than that of the first condenser; energizing the circuit portion operable for applying DC of the opposite polarity to the objects; an additional condenser means providing a decaying action for progressively and continuously reducing the value of the voltage applied to the object.

3,626,256

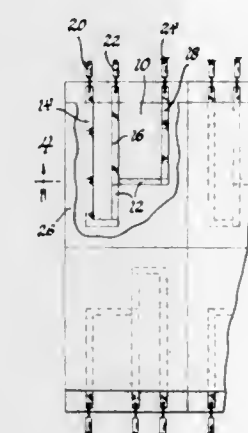
#### THIN FILM SEMICONDUCTOR STRAIN GAUGES AND METHOD FOR MAKING SAME

Verne R. Brown, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.

Filed Oct. 16, 1970, Ser. No. 81,409  
Int. Cl. H01l 5/00

U.S. Cl. 317-234

17 Claims



The strain gauge of this invention comprises a film of a high temperature resistant electrically insulative organic resin, specifically polyimide resin, having deposited thereon a piezoresistive semiconductor thin film with electrical leads bonded to the semiconductor film, and a coating of high heat resistant electrically insulative resin over the semiconductor film. Further in accordance with the preferred embodiment of the invention, such a strain gauge is manufactured by depositing the film of heat resistant organic onto a plate of ceramic, preferably aluminum oxide ceramic, sequentially depositing first the semiconductor film and then the electrical leads onto the organic resin and thereafter applying the coating of heat resistant organic resin over the deposited film of semiconductor. As the last step in manufacture suitable electrically insulated metal wires are soldered or otherwise bonded to exposed portions of the deposited electrical leads. Prior to use the strain gauge, i.e. the film of organic resin having the resin coated semiconductor film and electrical leads with associated wires thereon, can be easily peeled from the ceramic plate and suitably bonded to the structural member which is to be measured for strain.

3,626,257

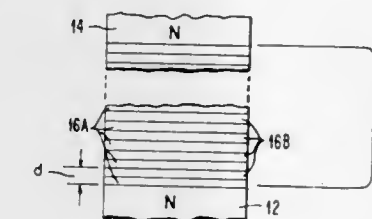
#### SEMICONDUCTOR DEVICE WITH SUPERLATTICE REGION

Leo Esaki, Chappaqua; Rudolf Ludeke, Katonah, and Raphael Tsu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

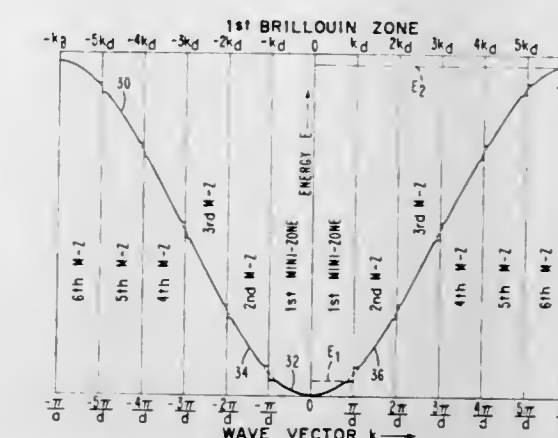
Filed Apr. 1, 1969, Ser. No. 811,871  
Int. Cl. H01l 5/00

U.S. Cl. 317-234 R

22 Claims



The semiconductor device has two highly N-type end portions to which ohmic contacts are made, and a central por-



gies. The period of the spatial variation is less than the carrier mean free path, and is such as to form in momentum space a plurality of periodic mini-zones which are much smaller than the Brillouin zones. The device exhibits a bulk negative resistance and is used in oscillator and bistable circuits.

3,626,258

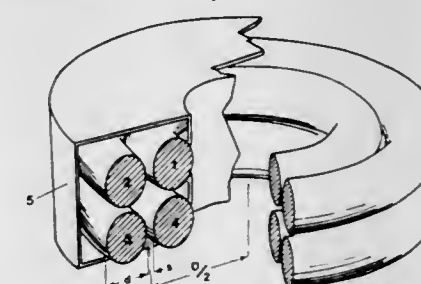
#### STANDARD CAPACITOR

David M. Makow, 14 Davidson Crescent, Ottawa 9, Ontario, Canada

Filed Oct. 28, 1970, Ser. No. 84,737  
Int. Cl. H01g 1/02

U.S. Cl. 317-242

9 Claims



Structures forming capacitors are described which consist of four suitably positioned electrodes closing on themselves so that end effects are eliminated. The mean of the two values of capacitance, represented by two pairs of diagonally opposite electrodes, is influenced to a very small degree only by the cross-sectional geometry of the electrodes. These properties permit construction of very accurate and stable capacitors. An example of one embodiment utilizes four rings as electrodes; the rings being enclosed by an external shield.

3,626,259

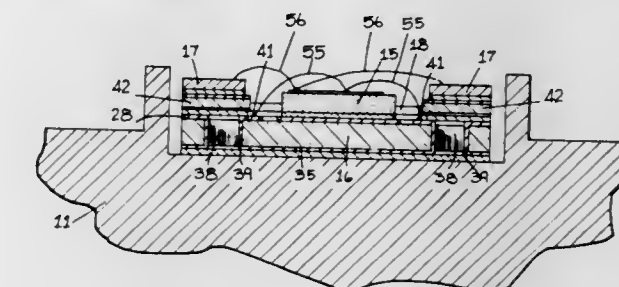
#### HIGH-FREQUENCY SEMICONDUCTOR PACKAGE

Vahan Garboushian, Torrance, and Herbert Ruzinsky, Manhattan Beach, both of Calif., assignors to TRW Inc., Los Angeles, Calif.

Filed July 15, 1970, Ser. No. 54,904  
Int. Cl. H01l 5/00

U.S. Cl. 317-234 R

21 Claims



A package for a high-frequency semiconductor device. A semiconductor wafer having interdigitated active regions



formed therein is mounted upon a portion of a metallized thermally conducting ceramic member. A conducting member is mounted upon and insulated from a second portion of the metallized ceramic member via a second ceramic member. The active regions of the device are contacted by interlaced, stitch bonded contacts. The metallized thermal conducting ceramic member is mounted upon a metal header, the semiconductor device being encapsulated thereon.

**3,626,260**  
**METHOD AND APPARATUS FOR APPLYING VOLTAGE IN ELECTROPHOTOGRAPHY**

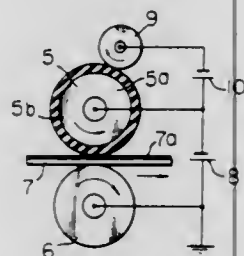
Takuhei Kimura, and Masahiro Takeda, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan  
Filed Mar. 18, 1969, Ser. No. 808,132

Claims priority, application Japan, Mar. 19, 1968, July 4, 1968, Aug. 9, 1968; 43/17722, 43/46742, 43/68379

Int. Cl. H01b 1/00

U.S. Cl. 317-262

20 Claims



In an electrophotographic operation, a method and apparatus for applying voltage continuously without accumulating an electric charge in a surface layer of a dielectric resulted from applying voltage thereon while sandwiching a sensitive paper or plate or a transcription paper by the dielectric and an earth member.

**3,626,261**  
**PORTABLE MULTIRATE ELECTRIC IMPULSE GENERATOR EMPLOYING A PLURAL MOTOR DIFFERENTIAL GEAR DRIVE**

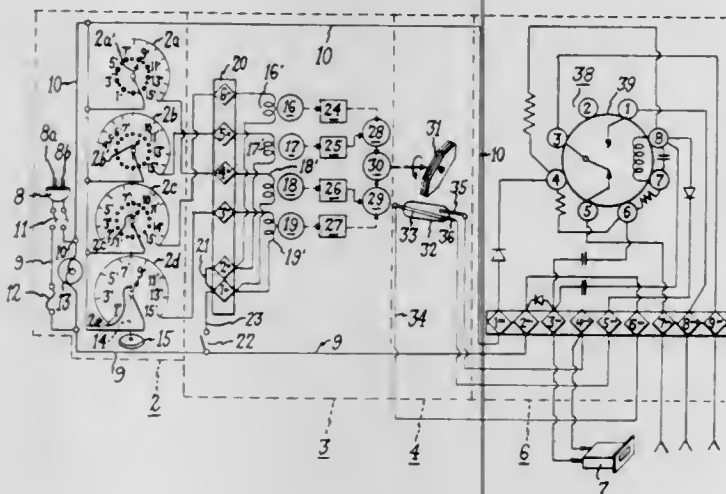
Donald M. Ham, Rochester, N.H., assignor to General Electric Company

Filed Oct. 23, 1970, Ser. No. 83,395

Int. Cl. H02p 7/68

U.S. Cl. 318-8

11 Claims



A portable electric impulse generator is provided having an impulse triggering reed switch that is actuated by a rotatable magnet which, in turn, is driven at various preselected rates of speed by a differential gear train. The differential gear train is driven at a rate determined by the selective energization of a plurality of synchronous motors that are operatively coupled to input gears of the gear train.

**3,626,262**  
**NO-LOAD TORQUE COMPENSATION SYSTEM AND THE APPLICATION THEREOF IN ADAPTIVE CONTROL**

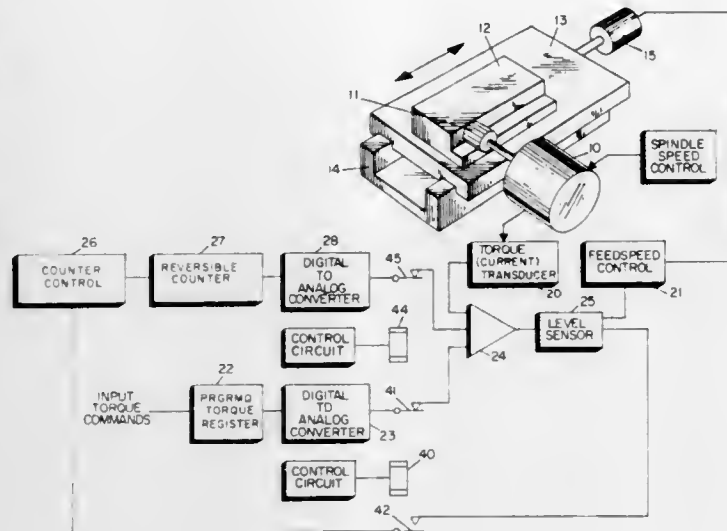
Leroy U. C. Kelling, Waynesboro, Va., assignor to General Electric Company

Filed Aug. 22, 1969, Ser. No. 852,412

Int. Cl. B23q 5/10; G06g 7/00, 7/12

U.S. Cl. 318-39

5 Claims



The torque losses in the spindle drive of a cutting tool rotating under no-load conditions are measured and stored in digital form. The stored value is used to modify programmed torque values during a later cutting operation so as to achieve the programmed torque at the cutting tool rather than merely at the spindle drive.

**3,626,263**  
**ELECTRIC STEPPING MOTOR AND REMOTE REGISTER OPERATED THEREBY**

Maurice Graham McBride, Barnet, England, assignor to Sangamo Weston Limited, Enfield, England

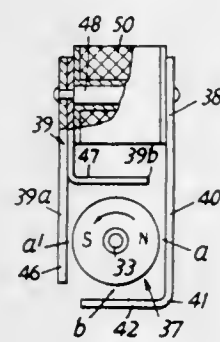
Filed Mar. 6, 1970, Ser. No. 17,084

Claims priority, application Great Britain, Oct. 7, 1969, 49,260/69

Int. Cl. H02k 37/00

U.S. Cl. 318-138

6 Claims



Electric stepping motor and a remote meter register operated by a stepping motor in which the motor comprises a cylindrical permanently magnetized rotor with diametral poles of opposite polarity located between a pair of diametrically opposed main stator poles and at least one subsidiary pole forming part of a stationary flux system embraced by an operating winding for supply with stepping current pulses of alternating polarity, each subsidiary pole being more widely separated from the adjacent surfaces of the rotor than the main poles to ensure constant direction of rotation through an arc of 180° for each operating current pulse.

**3,626,264**  
**VELOCITY SERVOSYSTEM**

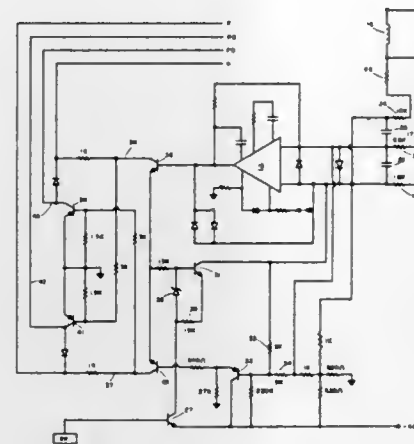
Martin O. Halfhill, and Frank J. Sordello, both of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed Aug. 20, 1969, Ser. No. 851,695

Int. Cl. H02p 5/16

U.S. Cl. 318-331

5 Claims



A velocity servocircuit for retracting the access mechanism of a disk storage drive independently of the normal position servo, including a summing amplifier connected to deliver a motor drive signal to the access motor, means providing a velocity command input to the amplifier from a signal source and means providing a velocity feedback to the amplifier derived from the back EMF of the motor.

**3,626,265**  
**VANE PUMP OR MOTOR**

Hillebrand Johannes Josephus Kraakman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

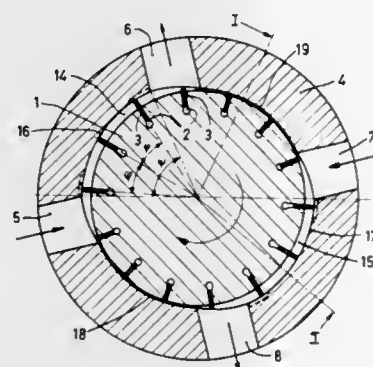
Filed Sept. 16, 1969, Ser. No. 858,411

Claims priority, application Netherlands, Sept. 18, 1968, 6813309

Int. Cl. F01c 1/00; F03c 3/00; F04c 1/00

U.S. Cl. 418-266

1 Claim



A vane pump or motor having a rotatable cylindrical disc incorporated in a housing. The disc has radial grooves provided with radially movable vanes. The housing has at least one pair of associated inlet and outlet apertures, and the part of the inner wall of the housing situated between said apertures is cylindrical and has a larger diameter than the disc. The inner wall between the apertures also forms a boundary for a working space. The number of vanes in a disc is relatively large so that at least two vanes are present between an inlet aperture and an associated outlet aperture.

**3,626,266**  
**NUMERICALLY CONTROLLED MACHINE TOOL INCLUDING ZERO OFFSET CONTROL**

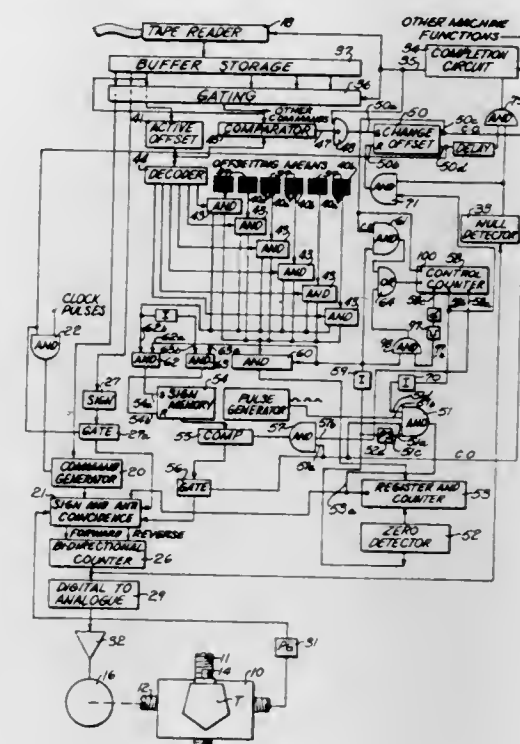
Emmett F. Sindelar, Parma, and John Klein, Fairview Park, both of Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed July 25, 1969, Ser. No. 844,803

Int. Cl. G05b 19/24

U.S. Cl. 318-572

20 Claims



A numerically controlled machine tool having offset storage means separate from the stored program for controlling the movement of a slide with the offset storage means being responsive to coded data in the stored program to introduce an offset in the position of the slide by supplying pulses to a pulse-responsive circuit which is part of a servo means for moving the slide. The offsetting means is operable to first remove existing offset and then to introduce a new offset and to render electronic controls normally operable in response to the stored program to position the slide ineffective until the change in offset is effected when the latter is called for by the stored program.

**3,626,267**  
**DIGITAL PHASE-CORRECTING SERVO FOR CONTROLLING THE PHASE OF AN ANALOG DRIVE SIGNAL**

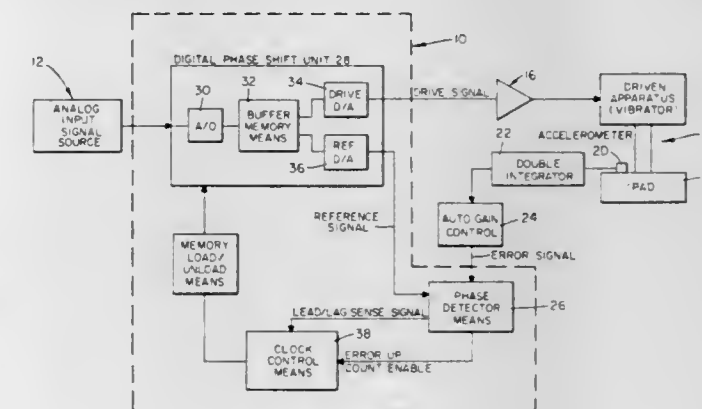
John T. Bobblitt, Houston, Tex., assignor to Mandrel Industries, Inc., Houston, Tex.

Filed Nov. 6, 1970, Ser. No. 87,390

Int. Cl. G05b 19/28

U.S. Cl. 318-686

9 Claims



An analog drive signal for driving a vibrator, motor, or like driven apparatus, is converted to a digital signal and is delayed in a digital buffer memory. The memory is unloaded



at two separate discrete times and the resulting digital signals are converted to provide an analog reference signal and an analog drive signal. The reference signal is unloaded at a constant rate relative to the input load rate but is displaced in time by a selected number of total memory locations. The drive signal is unloaded at a programmable rate. The phase relation, i.e., error signal, and signals indicative of the lead or lag of the error signal relative to the reference signal, are sensed and any phase difference detected is counted in units of sample rate time and stored. Associated digital control logic is programmed to cause the drive signal to move the detected number of samples in the memory, in the commensurate direction, to correct the phase of the driven apparatus output, i.e., to provide a zero phase difference relative to the phase of the reference signal. The servo may be preset for minimum initial phase shift by noting the maximum error at the beginning of a test sweep, and by presetting the system correspondingly to test it in phase.

3,626,268

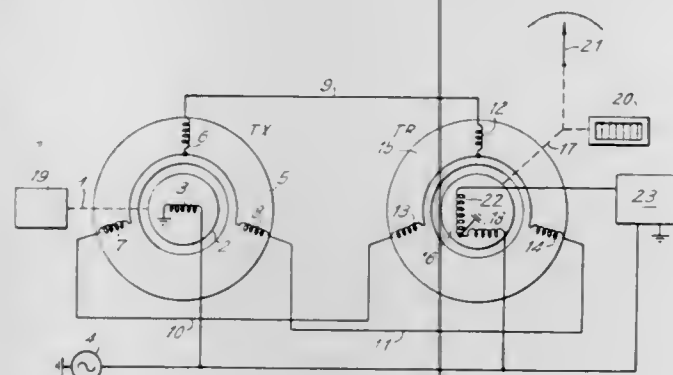
## SYNCHRO SYSTEMS

Dennis William Dudley, Tewkesbury; Keith Russell Oakey, Cheltenham; George Martin Warner, Cheltenham, and John Clement Wright, Stevenage, all of England, assignors to Smiths Industries Limited, London, England  
Filed May 25, 1970, Ser. No. 40,282  
Claims priority, application Great Britain, May 23, 1969, 26,468/69

Int. Cl. G05b 1/12

U.S. Cl. 318—691

17 Claims



A synchro torque receiver has its rotor wound with an additional winding at right-angles to its existing, continuously energized rotor-winding. The three-phase stator-windings of the receiver are energized conventionally from the corresponding windings of a synchro torque transmitter. A control unit detects signals induced in the additional rotor-winding of the receiver and energizes this to create torque aiding the normal reactive torque that drives the receiver-rotor to maintain rotational correspondence between the receiver- and transmitter-rotors. The induced signal is sampled alternately with energization of the additional winding, at a frequency lower than, or the same as, that of the receiver- and transmitter-energization. Alternatively detection and energization of the additional winding can take place concurrently using phase or frequency as the discriminant for detection of the induced signal. Large current-flow into the normal rotor-winding of the receiver, accompanying large deviation from correspondence, is detected to energize the additional winding independently of the induced signal.

3,626,269

## STEPPING MOTOR DRIVE

Donald O. Stanley, San Jose, Calif., assignor to Calma Company

Filed Aug. 25, 1969, Ser. No. 852,591

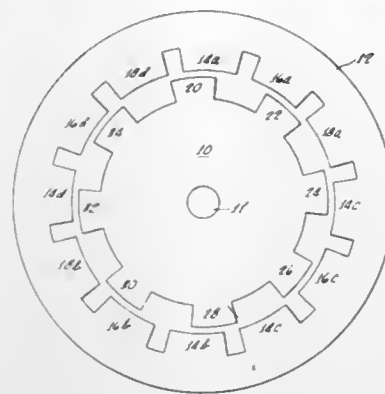
Int. Cl. H02k 37/00

U.S. Cl. 318—696

8 Claims

Apparatus and method for efficiently driving an incremental motor at high or low speeds utilizing two different driving

voltages, the higher of which drives the motor from one increment to the next, and the lower of which establishes de-



tent positions; the lower voltage being utilized only when the motor is driven at low speed.

3,626,270

## BATTERY CHARGER FOR SINGLE CELLS

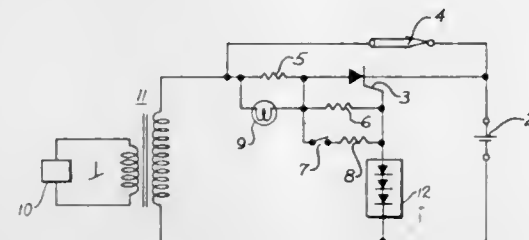
Wilford B. Burkett, Pacific Palisades, and John H. Bigbee, III, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed Mar. 20, 1970, Ser. No. 21,438

Int. Cl. H02j 7/10

U.S. Cl. 320—35

13 Claims



A method and circuit for rapid charging batteries, and in particular single cells wherein a battery is charged by imparting a progressively increasing charge to the battery by subjecting the battery to alternating charging and discharging intervals after a first interval in which a net discharge takes place through a path including a thermal switch which opens the current path in response to current flow therethrough. During a charging interval charge current pulses are applied to the battery being charged through a current path including a unilateral impedance element, such as a silicon-controlled rectifier, and during each discharge interval, a charge-discharge path is applied in parallel with the unilateral impedance element to effect a net discharge of the battery. The rapid charging of the battery is terminated by monitoring a terminal characteristic of the battery such as the quiescent battery terminal voltage or the temperature of the battery being charged and converting to a trickle charge in response to the attainment of a predetermined value of the monitored terminal characteristic.

3,626,271

## HVDC MATRIX DESIGN

Clyde G. Dewey, Drexel Hill, Pa., assignor to General Electric Company

Filed Dec. 29, 1969, Ser. No. 888,432

Int. Cl. H02m 7/00; H03r 17/06

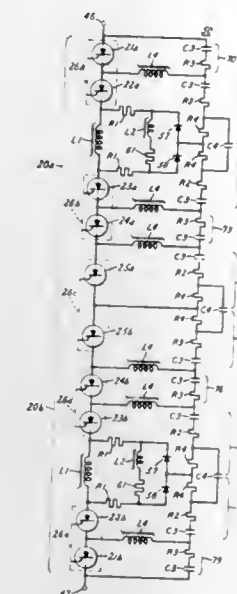
U.S. Cl. 321—11

20 Claims

An improved commutation transient suppressing circuit for a thyristor composed matrix. The circuit includes an auxiliary saturable core inductor for absorbing a portion of available stray capacitance energy. Further saturable core inductors are provided to limit discharge current from associated resistance-capacitance voltage-dividing subcircuits. A capacitor is utilized shunting a portion of the resistance of certain adjoining voltage dividing bypass subcircuits to control the order of turn on of the matrix thyristors in response to a volt-

age surge. A switching matrix having an odd number of serially connected thyristor sections per main saturable core in-

of both thyristors. Therefore, they fire in turn, causing a substantially uninterrupted short circuit across both windings



ductor is also disclosed and can be placed in series with other similar matrices to use mechanically paired thyristor sections.

3,626,272

## VOLTAGE REGULATOR ARRANGEMENT

Peter Pfeffer, Lauffen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

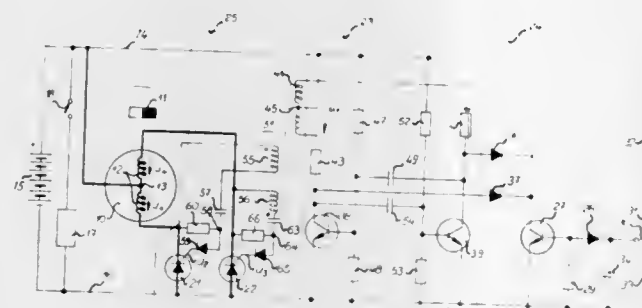
Filed May 18, 1970, Ser. No. 38,270

Claims priority, application Germany, May 23, 1969, P 19 26 332.2

Int. Cl. H02p 9/30

U.S. Cl. 322—28

12 Claims



A first and second thyristor are connected to the output winding of an alternating-current generator for rectification purposes. The thyristors are switched to a conducting position by control signals furnished by an oscillator alternately to each of the thyristors when the DC output voltage is below a predetermined value.

3,626,273

## VOLTAGE REGULATOR ARRANGEMENT FOR PREVENTING OVERVOLTAGES

Peter Pfeffer, Lauffen, and Edgar Kuhn, Gerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 18, 1970, Ser. No. 38,378

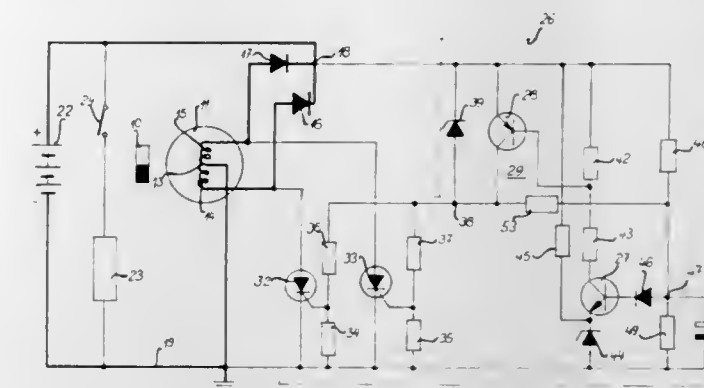
Claims priority, application Germany, May 23, 1969, P 19 26 317.3

Int. Cl. H02p 9/00

U.S. Cl. 322—28

9 Claims

Two closely coupled output windings of an AC generator have a common point. A first and second thyristor are connected across the windings, the voltages across each having opposite polarity. When the load voltage drops below a predetermined value, control pulses are applied to the gates



because of the close magnetic coupling between the windings.

3,626,274

## TWO-WIRE MILLIVOLT TO MILLIAMPERE SIGNAL CONVERTER

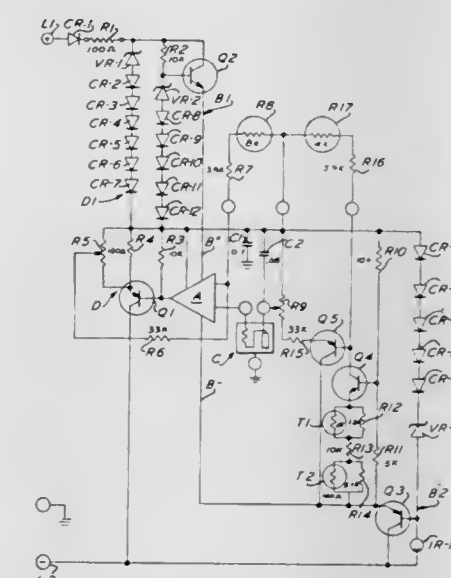
Wolfgang F. Christofzik, Lake Hiawatha, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sept. 17, 1970, Ser. No. 72,932

Int. Cl. G05f 1/44; G08c 1/04

U.S. Cl. 323—1

12 Claims



A circuit system for converting small DC signals into milliampere signals in which the signals from a voltametric sensing device are converted into standard level current signals for transmission over the same two-wire power lines that supply voltage to the circuit. A current sensor imposed across the output load of an operational amplifier provides fractional feedback to the input thereof and produces a voltage swing of approximately 30 volts, over the power lines. The power supply to the amplifier is regulated and temperature compensated and is fully compensated for zero shift.

3,626,275

## MAGNETIC FIRING CIRCUIT FOR THYRISTORS

Kosuke Harada, Fukuoka Prefecture, Japan, assignor to Seibu Denki Kogyo Kabushiki Kaisha, Fukuoka, Japan

Filed July 8, 1969, Ser. No. 839,841

Claims priority, application Japan, Aug. 6, 1968, 43/56296

Int. Cl. G05f 1/44, 1/38

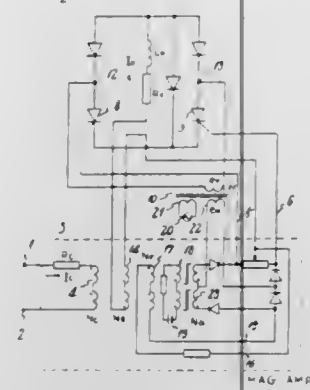
U.S. Cl. 323—4

3 Claims

A novel control circuit for constant current applications. The circuit comprises a thyristor bridge which is fired by a magnetic amplifier. The DC output current of the thyristors flows through the feedback winding of the magnetic amplifier to cancel the effect of the input ampere-turns, and to keep the output current constant through the equal ampere-turns



characteristic of the conventional saturable reactor. Because thyristors are used in the output stage, the new circuit can control a large amount of output power with a device of light



weight and small size. The principle of the new circuit is also effectively applied to parallel operation of multithyristors, in which individual currents can be adjusted to various desired values.

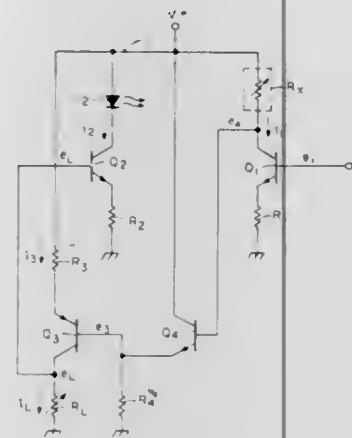
3,626,276

### LIGHT-COUPLED, VOLTAGE-CONTROLLED CONSTANT-POWER SOURCE

Robert Louis McGill, Jr., Fallston, and Norman Green, Timonium, both of Md., assignors to The Bendix Corporation

Filed Sept. 29, 1969, Ser. No. 861,782  
Int. Cl. G05f 1/56, 1/66

U.S. Cl. 323-4



A solid-state circuit for supplying constant power to a varying resistive load in response to a control voltage includes a light source and a photosensitive resistor. Load current is generated by a load current generator operating in response to a control signal. Resultant voltage drop across the load controls a second current generator which is serially connected with a light source. A third current generator, controlled by an independent control voltage, is serially connected with a photosensitive resistor exposed to the light source. Voltage on the photosensitive resistor comprises the control signal which controls the load current generator.

3,626,277

### CURRENT REGULATOR SUITABLE FOR MERCURY LAMP BALLAST

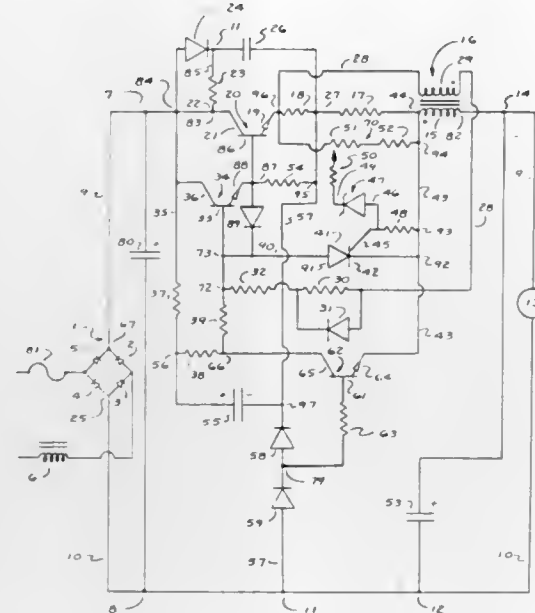
Robert D. Munson, St. Louis County, Mo., assignor to Emerson Electric Co.

Filed July 27, 1970, Ser. No. 58,235  
Int. Cl. H02m 7/24; H05b 41/14; G05f 1/64

U.S. Cl. 323-17

An electrical circuit has a quick-acting switch electrically connected in series between a variable load and a rectified power input. A switch control circuit is provided which connects the switch in its power on position when circuit current is a minimum and disconnects it as current reaches a predetermined maximum. A transformer primary winding is utilized to maintain current in the load during switch off

times while its secondary winding is used to commutate a silicon-controlled rectifier in the switch control circuit. The



switch is held in the off position until current in the transformer primary approaches zero, at which time the switch is recycled.

3,626,278

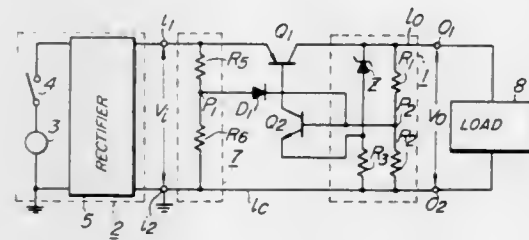
### COLLECTOR FOLLOWER-TYPE TRANSISTORIZED VOLTAGE REGULATOR

Koji Matsumura, Kodaira, and Kunko Seki, Higashimurayama, both of Japan, assignors to Hatachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1970, Ser. No. 17,077  
Claims priority, application Japan, Mar. 12, 1969, 44/18324  
Int. Cl. G05f 1/56, 1/64

U.S. Cl. 323-22 T

10 Claims



A starting circuit is required in the voltage regulator of the so-called collector follower type, in which a voltage source is connected to an emitter input circuit of a regulating transistor and a load to its collector output circuit. In the voltage regulator of this invention, the starting circuit consists of a diode connected between the emitter input circuit and the collector output circuit of the regulating transistor. The diode supplies a starting current to the regulating transistor at a starting moment when an operating voltage is applied to the emitter input circuit of the regulating transistor, and it is reversely biased in the normal operating state of the regulating transistor, being electrically cut off. This invention attains effective voltage regulation even for a load current at a low level.

3,626,279

### METAL DETECTOR UTILIZING RADIO RECEIVER AND HARMONIC SIGNAL GENERATOR

Charles D. Walden, 31145 E. Hwy 99, Redlands, Calif.

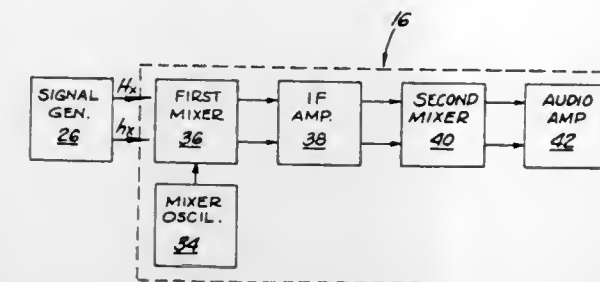
Filed May 15, 1970, Ser. No. 37,636  
Int. Cl. G01v 3/12

U.S. Cl. 324-3

6 Claims

A metal detector using an ordinary radio receiver and a signal generator having its fundamental and second harmonic

frequencies located equidistantly on either side of the frequency of the local oscillator of the radio. The fundamental and second harmonic of the generator are beat against the frequency of the local oscillator, producing two difference signals that are amplified and rebroadcast together to produce and



audio signal. Frequency change in the signal of the generator due to inductance of metal is multiplied threefold in audio output, which triples sensitivity as compared with other detectors. The search coil comprises a printed circuit board having concentric coil circles on one side and radial shielding lines on the other.

3,626,280

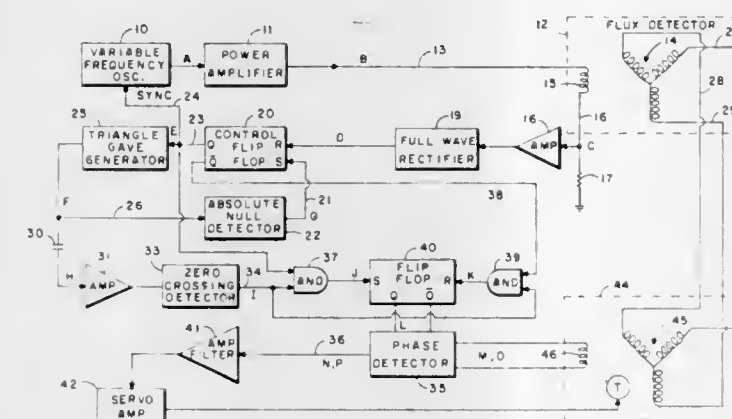
### FREQUENCY CONTROLLED FLUX DETECTOR EXCITATION

Clarence A. Van Englehoven, Marion, and David L. Richter, Cedar Rapids, both of Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Apr. 3, 1970, Ser. No. 25,478  
Int. Cl. G01r 33/02

U.S. Cl. 324-43 R

8 Claims



A flux detector saturation control circuit senses core saturation time for monitoring rate of change of current through the core drive winding. A frequency control loop for the core driving source is responsive to saturation detection to maintain a time symmetry between a driving source synchronizing waveform and core saturation time occurrences such that saturation is caused to occur midway in successive half-cycles of the driving source waveform.

3,626,281

### METHOD FOR THE SELECTIVE DETECTION OF THE DEFECTIVE CONDUCTOR OR CONDUCTORS IN A THREE-PHASE SYSTEM

Michel Henry Pierre Souillard, Fontenay-aux-Roses, France, assignor to Compagnie Des Compteurs, Paris, France

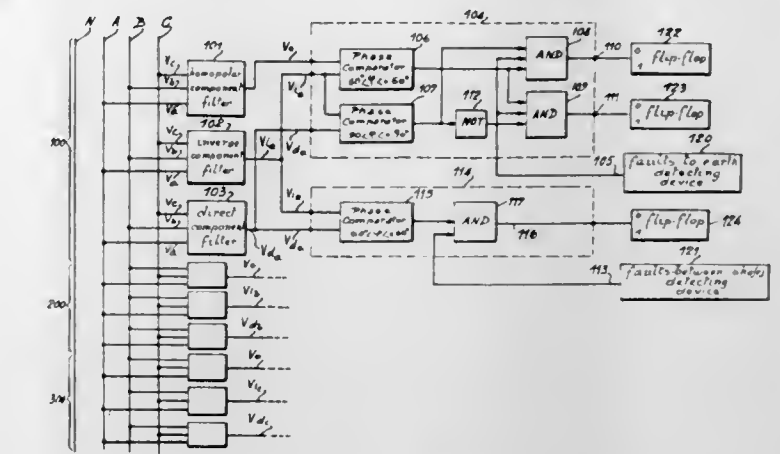
Filed July 3, 1969, Ser. No. 839,011  
Claims priority, application France, July 5, 1968, 158001  
Int. Cl. G01r 31/02

U.S. Cl. 324-51

5 Claims

A method for selecting a conductor or conductors of a three-phase power transport line and device for operating the same which when an earth fault has been determined detects for which phase the negative sequence or inverse component

makes with the zero sequence or homopolar component an angle less than 60° then for which of the detected phase the negative sequence or inverse and the positive sequence or



direct components make an angle exceeding 90°, and which when a defect not earthed has been determined detects for which of the phases the angle between the inverse and direct components make an angle less than 60°.

3,626,282

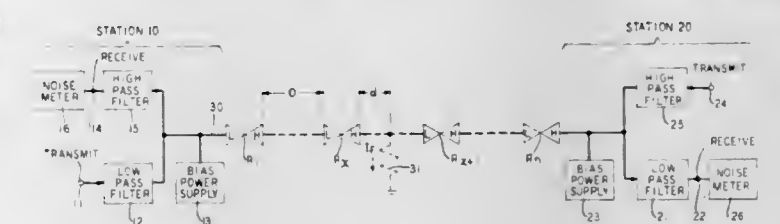
### METHOD FOR LOCATING SHUNT FAULTS IN A CABLE UTILIZING THE FAULT AS A NOISE SOURCE

Sherman Theodore Brewer, Little Silver, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Mar. 2, 1970, Ser. No. 15,520  
Int. Cl. G01r 31/08

U.S. Cl. 324-52

6 Claims



Shunt faults are located in a communications cable by turning to account the noise properties of the fault. Bias power supplied to a cable is adjusted to maximize the noise generated at the fault. Noise measurements are made at each of the cable terminals at predetermined frequencies. The noise measurements are utilized in conjunction with the preestablished transmission levels in the cable to obtain a measure of the distance to the fault from a cable terminal.

3,626,283

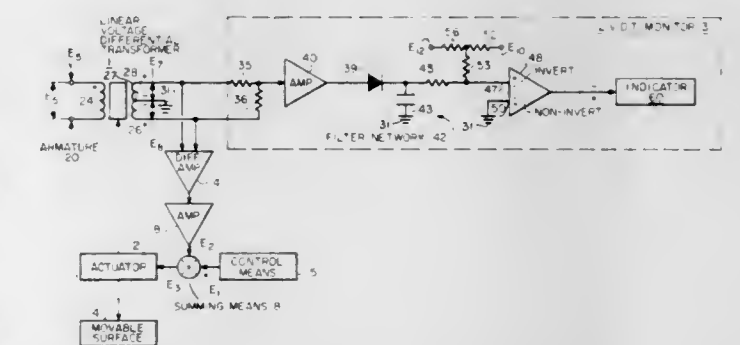
### APPARATUS FOR MONITORING AND INDICATING AN OPERATIONAL FAILURE OF A LINEAR VOLTAGE DIFFERENTIAL TRANSFORMER

Robert L. James, Bloomfield, and Frank Antonazzi, New Milford, both of N.J., assignors to The Bendix Corporation

Filed Dec. 11, 1969, Ser. No. 884,111  
Int. Cl. G01r 31/02, 31/06

U.S. Cl. 324-55

2 Claims



A device for monitoring and indicating an operational failure of a linear voltage differential transformer and includ-



ing summing means which sums the secondary voltages from the transformer. The sum signal is converted to a direct current voltage which is applied to an operational amplifier where it is balanced with a reference direct current voltage of equal amplitude and opposite polarity. An alternating current signal is also applied to the amplifier causing the amplifier to provide an alternating current output. Failure of the transformer or any part of the monitor causes the direct current voltages to become unbalanced resulting in the amplifier providing a direct current output. An indicator connected to the amplifier provides an indication of failure in response to a direct current output and not in response to an alternating current output from the amplifier.

3,626,284

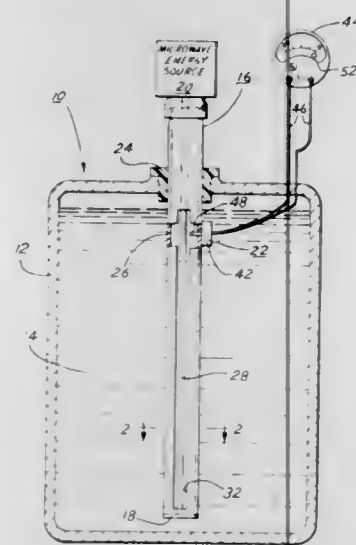
### APPARATUS FOR MEASURING CHANGES IN MICROWAVE FREQUENCIES CORRESPONDING TO THE DENSITY OF A FLUID

Aloysius Bak, Davenport, Iowa, assignor to The Bendix Corporation

Filed Aug. 7, 1969, Ser. No. 848,240  
Int. Cl. G01r 27/04

U.S. Cl. 324—58.5 B

3 Claims



An apparatus for measuring the density of a dielectric fluid retained in a vessel. A waveguide is inserted into the liquid through a sealed opening in the vessel. The waveguide has a center conductor concentrically positioned in the waveguide. The center conductor carries a microwave frequency emitted from a source to a disc on the bottom of the waveguide where a fixed node of the microwave frequency occurs. A detector member immersed in the fluid is fixed to the waveguide a predetermined distance from the bottom of the waveguide to receive a node of the standing wave created by the microwave frequency. With a change in the fluid density, the node adjacent the detector member will correspondingly shift with the detector member receiving a different electromagnetic field intensity created by a microwave energy source transmitted through the waveguide. The detector member will communicate all measurements of the electromagnetic field intensity to an indicator where density changes can be directly read from a scale.

3,626,285

### TESTING APPARATUS FOR VOLTAGE-VARIABLE CAPACITORS EMPLOYING PHASE-LOCKED OSCILLATORS

Jerome L. Hartke, Sudbury, Mass., assignor to KEV Electronics Corporation, Wilmington, Mass.

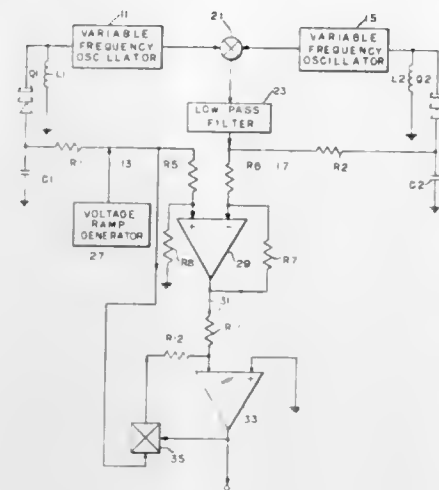
Filed Aug. 4, 1969, Ser. No. 847,266  
Int. Cl. G01r 27/02

U.S. Cl. 324—60 R

10 Claims

In the apparatus disclosed herein, a test oscillator employing a voltage-variable capacitor as a frequency-determining element and a reference oscillator are phase locked to the same frequency. The phase lock circuit employs a phase detector and a low-pass filter to provide a DC error signal having an amplitude which is a function of the phase difference

between the output signals of the two oscillators. This DC voltage is applied to the voltage-variable capacitor thereby controlling the frequency of the test oscillator to obtain



3,626,286

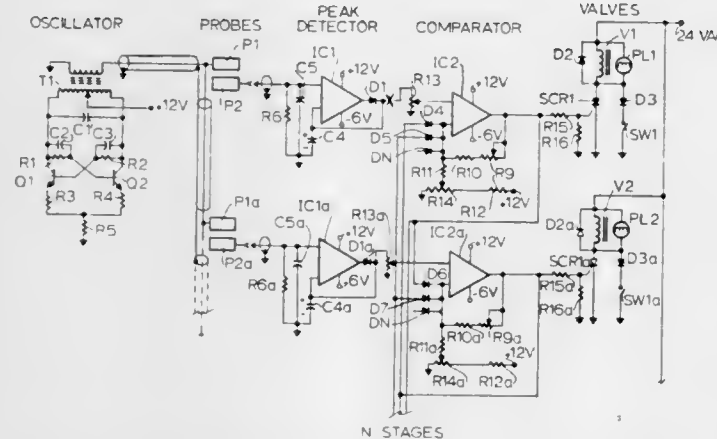
### CAPACITIVE MOISTURE CONTROL SYSTEM HAVING A PEAK DETECTOR

George P. Rauchwerger, c/o Aqua-Knight, 147 Cromart Court, Sunnyvale, Calif.

Filed Nov. 20, 1968, Ser. No. 777,219  
Int. Cl. G01r 27/26

U.S. Cl. 324—61 R

11 Claims



A meter for measuring moisture in soil electronically uses two probes spaced apart with soil between the probes. The probes may be insulated plates of metal or flat insulated cable made of a plurality of conductors. The circuit has an ultrasonic oscillator which transmits a signal to the probes, which function as a variable capacitor depending upon moisture content of the soil. An integrated-circuit peak detector provides a positive DC voltage proportional to input peak voltage, and its output is measured by a microammeter which thus measures moisture. The output of the detector may be used to control an irrigation valve. Several probes and valves may be used in a system. The soil may be contained in a plastic bag and the electrodes applied to opposite sides of the bag.

3,626,287

### SYSTEM FOR RESPONDING TO CHANGES IN CAPACITANCE OF A SENSING CAPACITOR

Anthony J. Di Niro, Bergen County, N.J., assignor to C.G.I. Corporation, Hackensack, N.J.

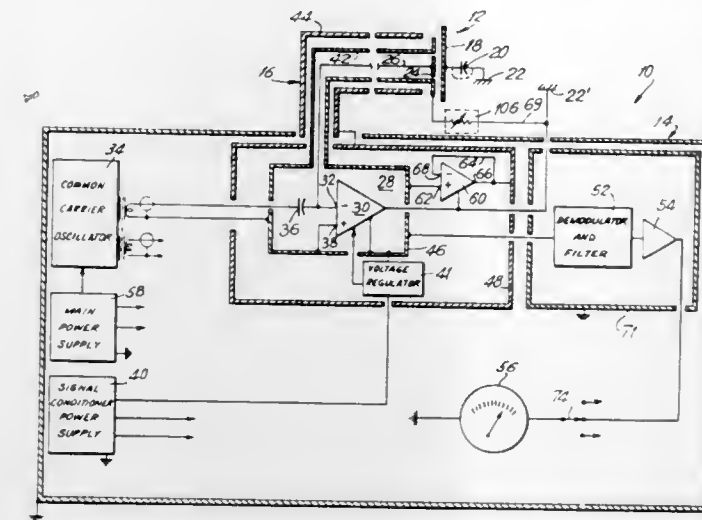
Filed Feb. 10, 1969, Ser. No. 797,788  
Int. Cl. G01r 27/26

U.S. Cl. 324—61 R

7 Claims

Capacitive transducer system utilizing capacitive probe connected in feedback loop of operational amplifier provided

with shielding system to convert capacitive changes at the probe to linear voltage changes for display by a voltmeter



with the system being isolated and shielded from the effects of stray capacity.

3,626,288

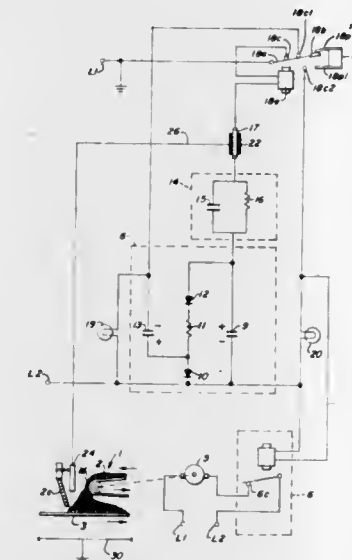
### APPARATUS FOR DETECTING CONDUCTIVE MATERIAL UTILIZING A VAPOR LAMP

Victor R. Bart, 2527 Riverside Drive, East Gary, Ind.  
Continuation-in-part of application Ser. No. 721,972, Apr. 17, 1968, now abandoned. This application Oct. 27, 1969, Ser. No. 869,804

Int. Cl. G01n 27/00

U.S. Cl. 324—71 R

8 Claims



A proximity or a probe contact control for a conveyor carrying electrically conductive material has a shielded fluorescent lamp, a sensing probe connected to the shield, a direct current plate potential charging means for the lamp, a discharge circuit connected in series with the lamp, a relay means responsive to the discharge circuit wherein the static bias on the lamp shield is changed by the change in level of conductive material initiating current flow in the lamp to actuate responsive relay means.

3,626,289

### FRONT PANEL TRIGGER LAMPS

Neal W. Vinson, and Eugene P. De Rosa, both of Oakland, Calif., assignors to Beckman Instruments Inc.

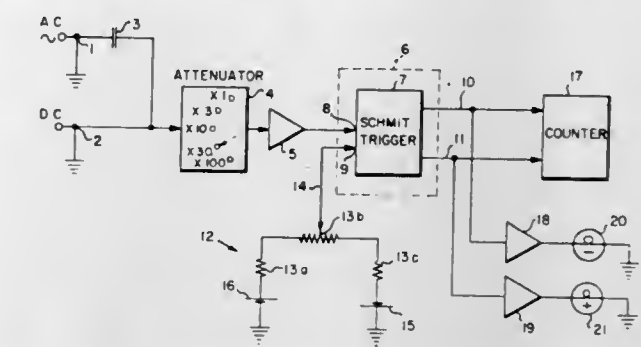
Filed Sept. 14, 1967, Ser. No. 667,755  
Int. Cl. G01r 31/00, 19/14

U.S. Cl. 324—96

12 Claims

A pair of incandescent lamps coupled to the output of a trigger circuit included in the input channel of an electronic

measuring instrument. The trigger circuit is actuated by an input signal to provide a pair of complementary output signals wherein each output signal is characterized by a duty cycle which is a function of the relative amplitudes of the



input signal and a threshold voltage which is applied to the trigger circuit. Each lamp is adapted to monitor one of the complementary output signals and emit visible light having a radiant intensity which is a function of the duty cycle of the output signal.

3,626,290

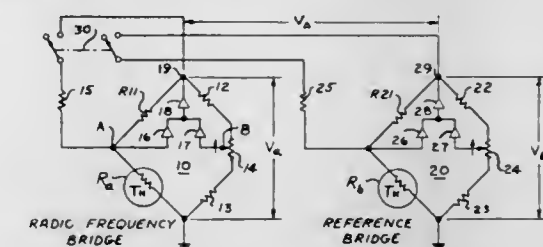
### HIGH-FREQUENCY POWER MEASURING CIRCUIT EMPLOYING TWO SELF-BALANCING BRIDGES

Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.

Filed Nov. 30, 1967, Ser. No. 686,914  
Int. Cl. G01r 5/26, 21/00

U.S. Cl. 324—106

7 Claims



A high-precision circuit for measuring radiofrequency power by the direct current substitution method, wherein two self-balancing bridges are used; the first bridge containing a thermistor subjected to the radiofrequency power, and the second bridge containing a reference thermistor for establishing a temperature-compensated reference level.

3,626,291

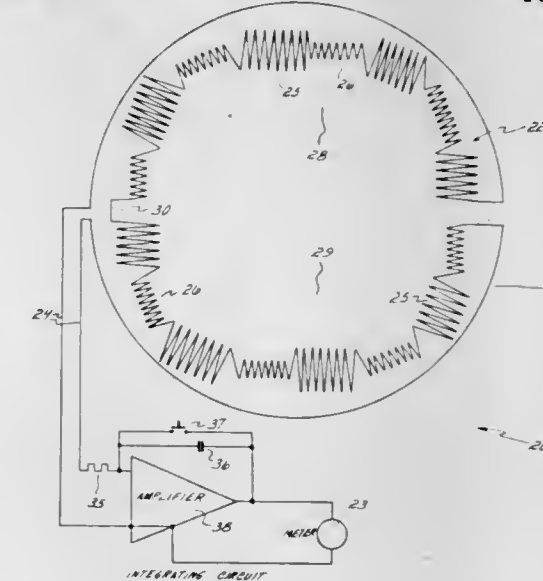
### CURRENT-MEASURING APPARATUS

Donald W. Yauch, and Paul A. Lille, both of Columbus, Ohio, assignors to Halmar Electronics, Incorporated, Columbus, Ohio

Filed May 12, 1969, Ser. No. 823,909  
Int. Cl. G01r 1/22, 33/00

U.S. Cl. 324—127

10 Claims



Apparatus including a set of adjacent coils which form a closed path adapted to be closed about a current-carrying



conductor. The voltage output from said coil, which is induced by the closing movement or by changes in the conductor current, is integrated. The integrated value of said voltage being proportional to the current flowing through said conductor.

3,626,292

## VOLTAGE RATIO DETERMINATION DEVICE

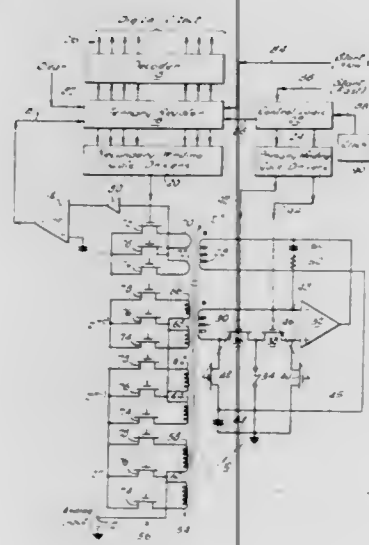
Roswell W. Gilbert, New York, N.Y., assignor to Technical Management Services, Inc., Westfield, N.J.

Filed Jan. 27, 1970, Ser. No. 6,075

Int. Cl. G01r 7/00; G06g 7/16

U.S. Cl. 324-140 D

13 Claims



In the ratio determination device, means are provided for repeatedly reversing the connections of the input terminals to the primary winding of a transformer, and means are provided for causing the magnetic flux in the core of the transformer to excursions symmetrically below saturation level, thus enabling operation with DC input signals.

3,626,293

## CIRCUIT FOR INDICATING VARIATIONS IN MARK-TO-SPACE RATIO

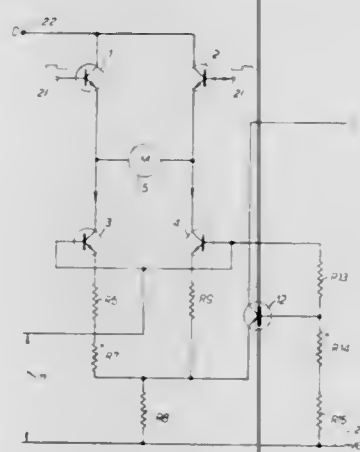
Stuart Alexander Andrews, Elstree, and Morgan Wynne Lewis, Bushey Heath, both of England, assignors to Rolls-Royce Limited, Derby, England

Continuation of application Ser. No. 681,875, Nov. 11, 1967, now abandoned. This application May 27, 1970, Ser. No. 41,721. Claims priority application, Great Britain, 50,218/66

Int. Cl. G01r 7/00, 25/00

U.S. Cl. 324-140 D

3 Claims



A phase-comparing circuit has two paths switched on and off alternately by the signals to be compared and a meter measures the average difference between the currents in the paths. Both currents are partly determined by a common transistor and by a respective transistor in the two paths, and temperature changes affect the three transistors equally to give temperature compensation to the meter reading.

3,626,294  
CARRIER-PLUS-NOISE TO NOISE-OPERATED AM SQUELCH CIRCUIT

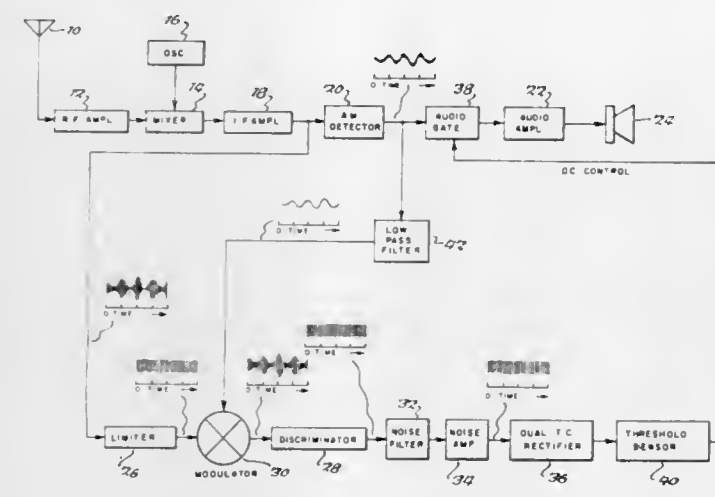
Charles H. Dancy, Getzville, N.Y., assignor to Sylvania Electric Products Inc.

Filed July 13, 1970, Ser. No. 54,537

Int. Cl. H04b 1/10

U.S. Cl. 325-478

12 Claims



In an AM radio receiver including a mixer, IF amplifier, detector and audio output section, a squelch circuit which operates on the basis of a synchronously averaged carrier-plus-noise to noise ratio sensing of the received signal. The squelch circuit comprises a signal amplitude limiter and a discriminator for processing the IF output signal to derive noise power inversely related to received carrier power. An amplitude modulator is provided at the input, output or bias source of the discriminator for synchronously modulating the derived noise power in response to the demodulated signal output of the detector. This modulated noise power is then processed through a noise filter, a dual time constant rectifier and a threshold sensor for providing a gate control signal for muting the audio output in response to excessive noise.

3,626,295

## TIME DIVISION MULTIPLEX COMMUNICATION SYSTEM

Akio Saburi, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

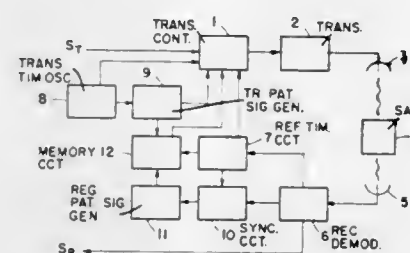
Filed Dec. 9, 1969, Ser. No. 883,659

Claims priority, application Japan, Dec., 1968, 43/90799

Int. Cl. H04b 7/20

U.S. Cl. 325-4

7 Claims



A time division multiple access communication system including earth stations and a satellite station wherein each earth station includes a paired transmitter and receiver for acquisition and burst synchronization; the transmitter sending first pattern signals, each identifying the start of one signaling frame including a plurality of frequency slots divided on a time basis to identify each earth station, to the satellite for reception and retransmission to the earth stations; the receiver deriving a reference time point from each received first pattern signal, for generating second pattern signals; detecting a time difference between time periods of the first and second pattern signals including a polarity indication of such difference; algebraically adding signals representing such time difference and polarity, a preassigned time interval during which the signal burst is to be transmitted.

mitted, and the one signal frame and time position therein at which the signal burst is to be transmitted.

3,626,296

## RADIO PAGING RECEIVERS

Albertus C. van der Veen, Gillingham, England, assignor to Multitone Electric Company Limited, London, England

Filed Sept. 23, 1969, Ser. No. 860,378

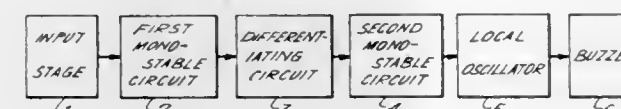
Claims priority, application Great Britain, Sept. 30, 1968,

46,357/68

Int. Cl. H04b 1/16; H04m 11/02

U.S. Cl. 325-55

2 Claims



A radio receiver for a staff location system emits an audible alerting signal in response to, but subsequent to a calling signal, thereby avoiding interaction between the input and output circuits. The duration of the alerting signal is determined by the period of a monostable circuit.

3,626,297

## TRANSFER TRIP SYSTEM USING QUADRATURE CARRIER MODULATION WITH COHERENT DETECTION

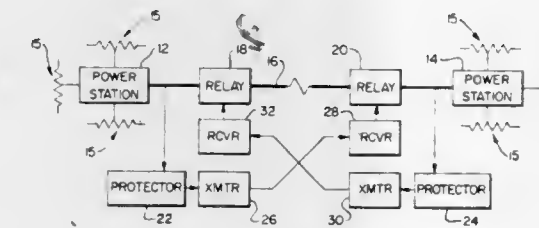
Stanley A. Green, Marlboro, and David A. Trutt, Newark, both of N.J., assignors to Quindar Electronics, Inc., Springfield, N.J.

Filed Dec. 11, 1969, Ser. No. 884,075

Int. Cl. H04b 3/00

U.S. Cl. 325-60

10 Claims



A quadrature carrier transfer trip system comprising a transmitter for generating at least two independent information signals over the same channel, the information signals being in quadrature with one another, a receiver for providing an output signal defining the information signals generated by the transmitter, and means for communicatively connecting the transmitter and receiver. The receiver is provided with a phase-locked loop for recovering the correct carrier signal from the received data and holding this correct carrier while a trip signal is being generated by the transmitter.

3,626,298

## TRANSITION TRACKING BIT SYNCHRONIZATION SYSTEM

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Tage O. Anderson, Arcadia; William J. Hurd, La Canada, and William C. Lindsey, Highland, all of Calif.

Filed July 8, 1969, Ser. No. 839,934

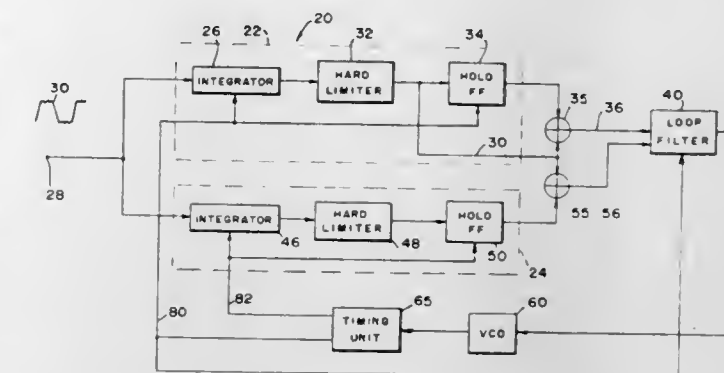
Int. Cl. H04b 7/18, 7/20; H04i 7/02

U.S. Cl. 325-321

20 Claims

A bit synchronization system, incorporating a digital data transition tracking phase-locked loop. The system, to which an input signal in the form of a noise-distorted constant amplitude bipolar stream of data bits, is assumed to be supplied, includes two integration channels. In one channel integrations are performed over assumed bit times, each bit time being equal to a bit period, while in the other channel integrations are performed over integration windows, each win-

dow being less than a bit period. The outputs of the two channels are combined to provide a pair of binary signals which are supplied to a digital filter, comprising a variable



length counter and a variable gain register. The contents of two registers are combined to provide an error signal indicative of the direction of the phase difference between periods of bits in said stream and the assumed bit times.

3,626,299

## FM RECEIVING NETWORK

Leonard E. Hedlund, Omaha, Nebr., assignor to McMartin Industries, Inc., Omaha, Nebr.

Continuation-in-part of application Ser. No. 702,424, Feb. 1, 1968, now abandoned, Continuation-in-part of application

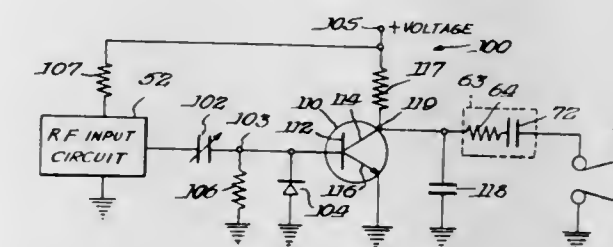
Ser. No. 408,216, Nov. 2, 1964, now abandoned. This

application Sept. 25, 1969, Ser. No. 861,125

Int. Cl. H04b 1/16

U.S. Cl. 325-349

17 Claims



A receiving network for converting an FM radiofrequency input signal to a corresponding AM output signal including a selective radiofrequency input circuit coupled to a demodulator circuit having no inductive elements. The demodulator circuit comprises a diode rectifier and transistor coupled to a resistor-capacitor circuit.

3,626,300

## IMAGE-REJECTING FREQUENCY SELECTIVE APPARATUS

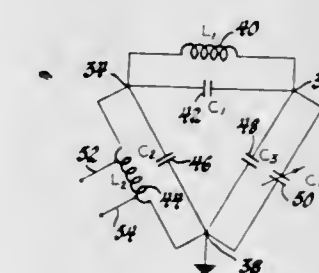
Richard A. Kennedy, Kokomo, Ind., assignor to Detroit Motors Corporation, Detroit, Mich.

Filed Aug. 4, 1969, Ser. No. 847,291

Int. Cl. H03h 7/10

U.S. Cl. 325-388

4 Claims



A frequency-selective network includes a circuit parallel resonant at a desired frequency for effectively transmitting signals at the desired frequency and a circuit series resonant at the desired frequency.



at an undesired frequency for effectively attenuating signals at the undesired frequency. A variable tuning capacitor is connected in both the parallel resonant circuit and the series resonant circuit for selectively determining the desired frequency and the undesired frequency. The resonant circuit components are chosen such that the undesired frequency always differs from the desired frequency by a substantially constant frequency. Further, the resonant circuit components are chosen such that the frequency selective network tracks as a conventional tank circuit at the desired frequency.

3,626,301

## BAND-PASS PHASE-LOCK RECEIVER

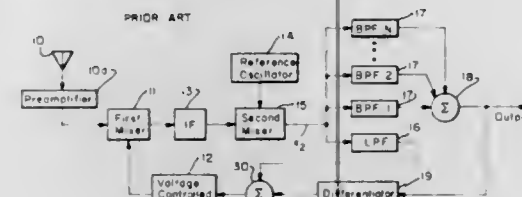
Jean A. Develet, Jr., Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 21, 1970, Ser. No. 39,331

Int. Cl. H04b 1/26

U.S. Cl. 325-420

11 Claims



A band-pass phase-lock loop receiver which can receive phase or frequency modulated signals in the presence of noise at lower signal power levels than conventional low-pass phase-lock loops. The circuit includes a plurality of band-pass filters, one for each discrete portion of the spectrum, in addition to the single low-pass filter found in conventional phase-lock loops.

3,626,302

## LOCAL OSCILLATOR RADIATION PREVENTING FREQUENCY CONVERTER CIRCUIT

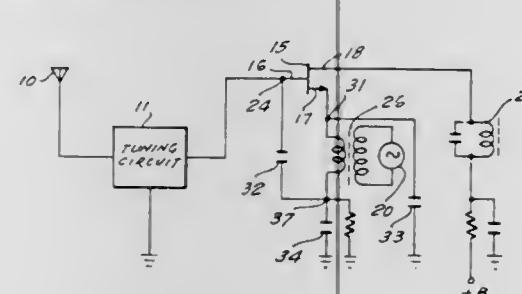
Hideo Nakamura, and Taiwa Okanobu, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 23, 1969, Ser. No. 860,220

Int. Cl. H04b 1/12

U.S. Cl. 325-436

4 Claims



A radio receiver having an improved signal to noise ratio and diminished cross modulation and interference wherein the local oscillator cooperates with a mixer circuit to change a radiofrequency signal selected by a tuning circuit into an intermediate frequency signal. The radio receiver utilizes a field effect transistor in the mixer circuit and only passive elements in the tuning circuit, and supplies the selected radiofrequency signal to the field effect transistor at the gate electrode, without preamplification of the radiofrequency signal. The output of the local oscillator is supplied to another terminal of the field effect transistor, namely the source electrode, in such a manner that the intermediate frequency signal appears at the drain electrode of the field effect transistor with improved signal to noise ratio and diminished cross modulation and interference. A balanced impedance bridge is associated with the field effect transistor and the local oscillator in order to prevent leakage to the antenna of the local oscillator signal and thereby avoid radiation of this signal by the antenna.

3,626,303

## NOISE INVERSION CIRCUIT

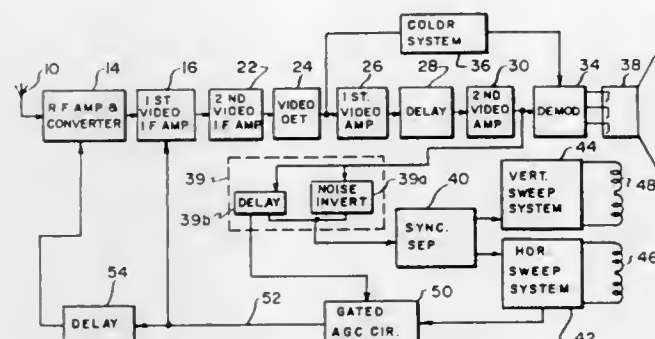
Milton E. Wilcox, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 3, 1970, Ser. No. 69,353

Int. Cl. H04b 1/12

U.S. Cl. 325-474

14 Claims



A noise inverter for use in a television receiver includes an input circuit for applying the composite video signal to a delay circuit and to a noise inverter gate, in the form of a PNP transistor, having a conduction threshold established by a storage capacitor. When the gate transistor is rendered conductive in response to noise pulses of sufficient magnitude, a clamping circuit driven by the gate operation to clamp the delayed composite signal to a predetermined magnitude. The discharge time of the capacitor establishes the maximum time interval the noise inverter is operative for prolonged signals exceeding the noise threshold.

3,626,304

## LINEAR DC TO AC CONVERTER

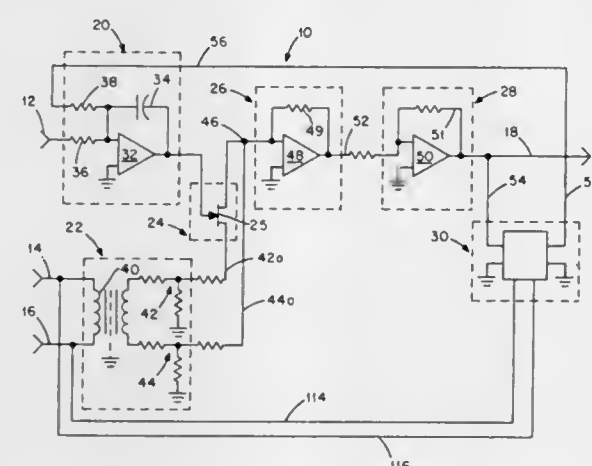
Gary A. Wallen, Belmont, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Jan. 26, 1970, Ser. No. 5,470

Int. Cl. H03k 5/08

U.S. Cl. 328-27

15 Claims



A DC to AC converter network in which a control signal produced by summing input DC with a network DC feedback signal, the control signal then being integrated and used to control the gate of a field effect transistor to operate the same as a variable resistance. A phase-splitter circuit provides out-of-phase AC components from an AC reference signal, and one of the components so produced is coupled to the other through the field effect transistor, to produce a resultant AC output whose phase and amplitude differ from the reference AC signal as a function of the integrated DC control signal. The resultant AC signal is fed to an amplifier and summed at the input thereof with a feedback signal from the amplifier output, and the latter is further amplified and fed to a phase-sensitive demodulator, to which the AC reference signal is also coupled. The demodulator output comprises the network feedback signal which is summed with the input DC, such that the amplified resultant AC signal is tied to the network input and will linearly follow the DC input signal.

3,626,305

## HIGH ENERGY ION ACCELERATOR

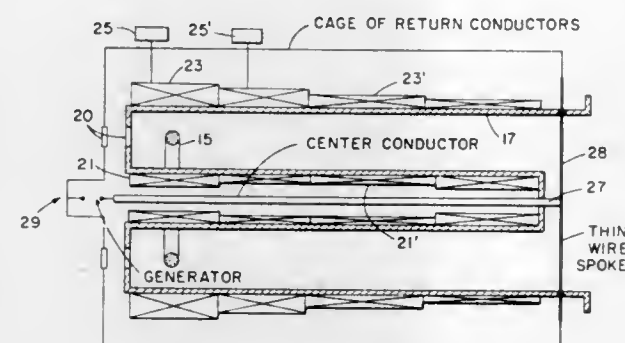
Harold P. Furth, and Marshall N. Rosenbluth, both of Princeton, N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 27, 1969, Ser. No. 794,314

Int. Cl. H01j 1/50; H05h 1/00

U.S. Cl. 328-233

2 Claims



Static field accelerator for transferring energy from an electron ring to ions confined therein whereby the ions are efficiently accelerated to high energies in a short distance.

3,626,306

## AUTOMATIC BAUD SYNCHRONIZER

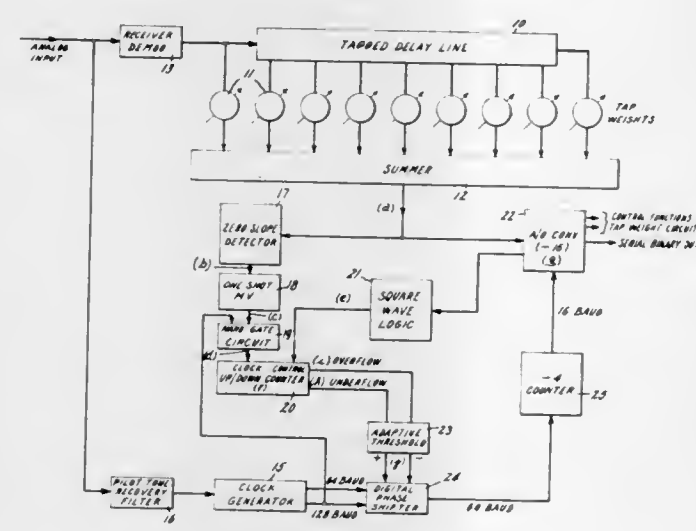
Charles McD. Puckette, Scotia, N.Y., assignor to General Electric Company

Filed Oct. 23, 1969, Ser. No. 868,701

Int. Cl. H03k 1/302

U.S. Cl. 328-72

15 Claims



A method and circuit for synchronizing the receiver-sampling pulse train with a received analog data waveform in the receiver analog-to-digital converter in a synchronous data communication system utilizes the average time of occurrence of the zero slope points of the received waveform to obtain the synchronous condition. A zero-slope detector detects the points of zero slope and each detected zero slope passes a clock pulse of repetition rate higher than the sampling pulse train rate to an up-down counter. The receiver time base in square waveform controls the count direction of the counter, and successively repeated overflows (or underflows) of the counter add (or inhibit) single pulses to a digital phase shifter which shifts by a small fractional period the receiver time base waveform and the sampling pulse train in the proper direction for synchronization with the received analog data waveform.

3,626,307

## COUNTING SYSTEM FOR MEASURING A DIFFERENCE BETWEEN FREQUENCIES OF TWO SIGNALS

Morito Koyama, Tokyo, Japan, assignor to Iwasaki Tsushinki Kaisha (a/k/a Iwatsu Electric Co., Ltd.), Tokyo-to, Japan

Filed Feb. 2, 1970, Ser. No. 7,905

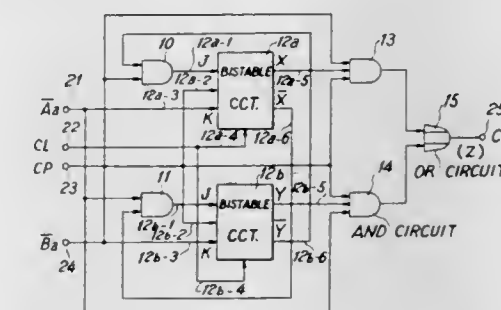
Claims priority, application Japan, Feb. 14, 1969, 44/10916

44/10917

U.S. Cl. 328-133

Int. Cl. H03d 13/00

3 Claims



A counting system for measuring a difference between respective frequencies of the first input signal and the second input signal, where the first and second input signals are converted to a first pulse train whose pulses are each timed with each of the cycles of the first input signal and to a second pulse train whose pulses are each timed with each of the cycles of the second input signal; the first pulse train and the second pulse train are applied to a sequential logical circuit having three possible states to generate an output pulse in response to every received pulse of at least one of the first and second pulse trains so as to obtain output pulses the number of which corresponds to the difference between the numbers of received pulses of the first and second pulse trains; and the number of output pulses of the sequential logical circuit is counted by a counter to obtain the difference desired.

3,626,308

## WIDE-BAND DOUBLER AND SINE WAVE QUADRATURE GENERATOR

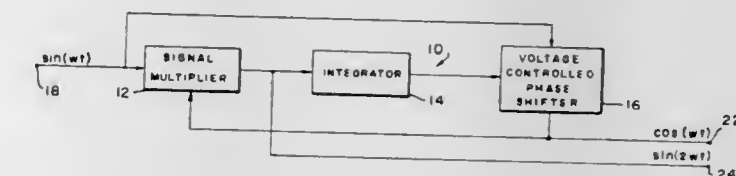
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Robert B. Crow, Sierra Madre, Calif.

Filed Dec. 23, 1969, Ser. No. 887,685

Int. Cl. H03b 1/04

U.S. Cl. 328-166

9 Claims



A wide-band signal quadrature and second harmonic generator comprising a voltage-controlled phase shifter which provides an output representing a phase-shifted sine input signal. The input signal and the phase shifter's output are multiplied by a multiplier whose output, after integration, is used to control the illumination levels of photoresistors in the phase shifter so that the output of the phase shifter is the cosine of the sine input signal. The multiplier's output when phase lock is achieved is the second harmonic of the sine input signal. The photoresistors in the phase shifter have large dynamic ranges of resistance changes to enable the generator to operate over a wide band of input signal frequencies.



3,626,309

## SIGNAL TRANSMISSION SYSTEM EMPLOYING ELECTROACOUSTIC FILTER

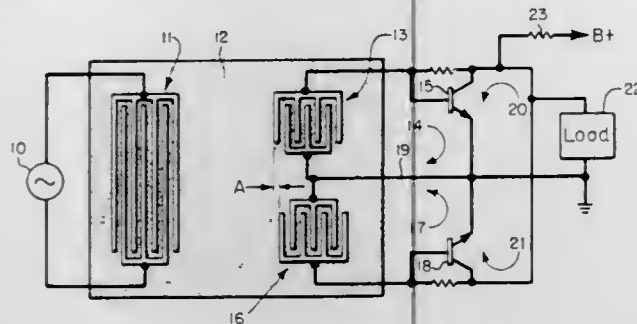
Terence John Knowles, Oak Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 12, 1970, Ser. No. 2,015

Int. Cl. H03d 3/16

U.S. Cl. 329-117

4 Claims



An acoustic-surface-wave system is used in coupling a signal source to a load. This system comprises an acoustic wave propagating medium with a single transducer at one end and at least a pair of transducers at the other. One end constitutes the input which connects to a signal source and the other connects to a load. A matrix including a pair of variable gain amplifiers couples the pair of transducers to its assigned terminal apparatus and controls the relative amplitudes of the signals transmitted by this transducer pair in determining the amplitude-frequency response of the system. Further control of the response characteristic is available by using unequal spacing along the medium of the members of the transducer pair relative to the aforesaid single transducer. The acoustic-surface-wave system is also used in a unique frequency-modulation detector and also in neutralizing feedback in transistor amplifiers.

3,626,310

## FREQUENCY DISCRIMINATOR

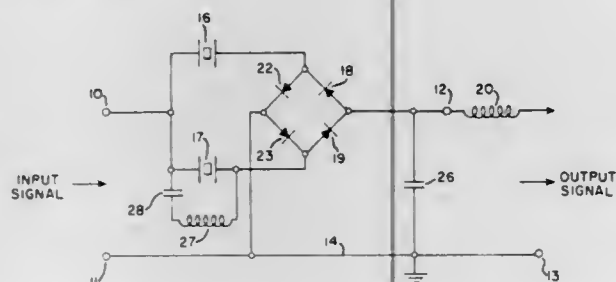
Junior I. Rhodes, Lynchburg, Va., assignor to General Electric Company

Filed Mar. 6, 1970, Ser. No. 17,249

Int. Cl. H03d 3/16

U.S. Cl. 329-117

12 Claims



Frequency discrimination is provided by two piezoelectric crystals tuned above and below a center frequency, and by rectifiers connected to the crystals.

3,626,311

## PHASE LOCK LOOP DEMODULATOR PROVIDING NOISE SUPPRESSION

Albert V. Kraybill, Riverside, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 30, 1970, Ser. No. 59,530

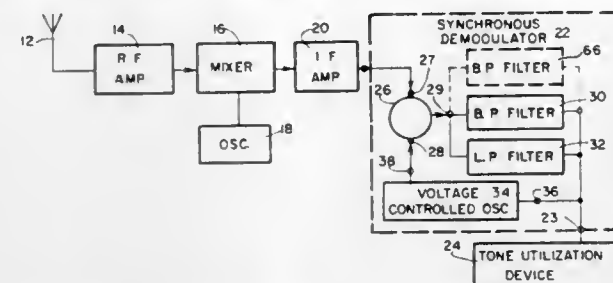
Int. Cl. H03d 3/18, 3/24

U.S. Cl. 329-122

7 Claims

A synchronous tone demodulator is comprised of a phase detector, a band-pass filter at the frequency of the desired tone and a low pass filter connected with a voltage-controlled oscillator in a feedback loop from the output of the phase detector to one of two inputs thereof. A carrier wave which is frequency or phase modulated by the tone is applied to the other input of the phase detector. Because the bandwidth of the feedback loop is limited by the filters, noise signals of frequencies outside of the band-pass of the filters are attenuated, thereby allowing the loop to lock even though the signal-to-noise ratio of the modulated wave is low. The

desired tone signal derived by the phase detector appears at the output of the band-pass filter.



3,626,312

## LASER PREAMPLIFIER

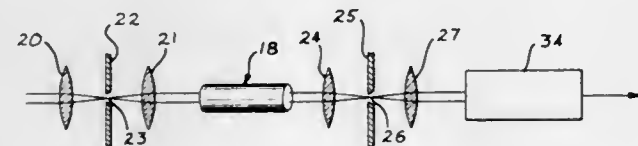
Elias Snitzer, Wellesley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 4, 1968, Ser. No. 765,099

Int. Cl. H01s 3/02

U.S. Cl. 330-4.3

10 Claims



A light energy detector which includes a laser preamplifier coupled to means for converting the amplified light into electrical energy is provided. The detector is capable of detecting 1.06 micron wavelength light and is capable of detecting a minimum signal of approximately 1,000 photons or less at a duration of 50 nanoseconds or less.

3,626,313

## CLASS AB AMPLIFIER FOR MONOLITHIC INTEGRATED CIRCUIT

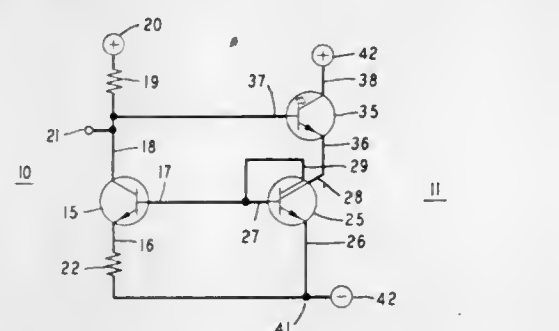
Paul Zuk, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 10, 1970, Ser. No. 18,076

Int. Cl. H03f 3/14

U.S. Cl. 330-40

5 Claims



A transistor amplifier circuit for class AB operation having a low current in the quiescent state but high in the amplifying state as determined by the difference in emitter areas of two of the three transistors and the magnitude of a control resistor. The current amplification thus is independent of the beta of the transistors and all transistors are of the same conductivity type.

The input branch contains a control transistor having a large area emitter connected through a control resistor to a common terminal. Also connected to the common terminal is the proportionately smaller area emitter of a current gain transistor whose collector in turn is connected to the emitter of a voltage amplitude control transistor likewise in the output branch. The bases of the control and current gain transistors are directly interconnected and bypass connection short circuits the base-collector PN junction of the current gain transistor.

3,626,314

## RESONANT TRANSFER EMPLOYING NEGATIVE RESISTANCE AMPLIFIERS

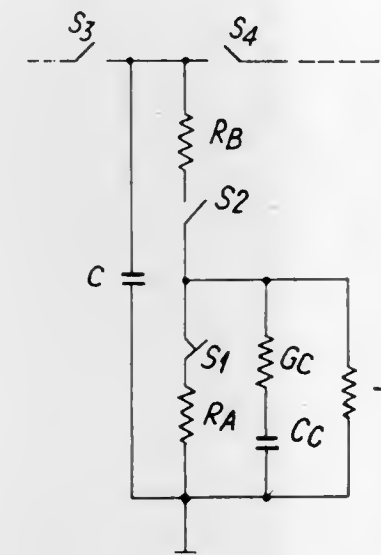
Joseph Antonius Broux, Antwerp, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of application Ser. No. 625,519, Mar. 23, 1967, now abandoned. This application Feb. 26, 1970, Ser. No. 14,768. Claims priority, application Netherlands 6604008

Int. Cl. H03f 15/00

U.S. Cl. 330-61 A

5 Claims



A sample of energy representing information is transferred, by use of the resonant transfer principle, to a storage capacitor. This sample of energy is amplified by being connected during a predetermined time to a negative resistance amplifier. The amplified energy is then retransferred by use of the resonant transfer principle to a load, i.e. to another capacitance.

3,626,315

## VOLTAGE-CONTROLLED OSCILLATOR SELECTIVELY INJECTION LOCKED TO STABLE FREQUENCY HARMONICS

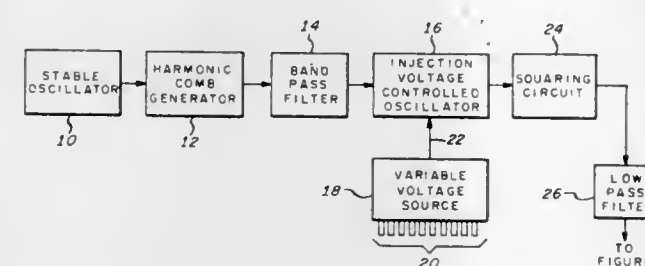
Ronald C. Stirling, Clearwater, Fla., and John L. Barnum, San Jose, Calif., assignors to Sperry Rand Corporation

Filed Apr. 7, 1970, Ser. No. 26,273

Int. Cl. H03b 3/06, 3/08, 21/02

U.S. Cl. 331-19

8 Claims



A signal source and harmonic signal selector for application in frequency-coherent signal generators or synthesizers and in precision radio communication systems features a novel frequency conversion process to obtain pluralities of selectable stable frequency signals from one source. A stable oscillator is employed to excite the desired plurality of signals in a harmonic comb generator. An injection oscillator, controlled by a selected unidirectional voltage level, is used as a

filter to select a desired one of the array of harmonically related signals. Means are provided for purifying the spectrum of the selected output signal.

3,626,316

## SIGNALLING DEVICE

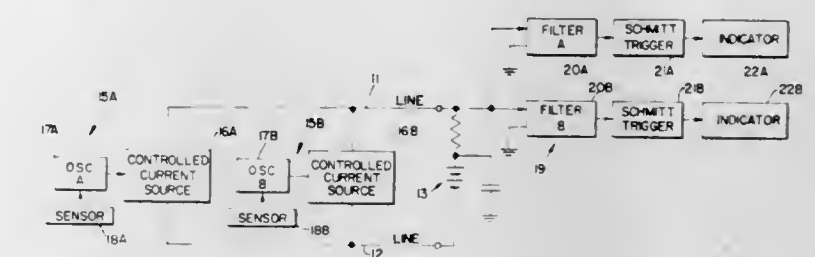
Raymond S. Connell, Jr., Adelphi, Md., assignor to H. B. Engineering, Silver Springs, Md.

Filed Dec. 31, 1969, Ser. No. 889,538

Int. Cl. H03b

U.S. Cl. 331-56

16 Claims



A controlled current signalling device for use with transmission lines, said device including a current source adapted to be coupled across the transmission lines and having a high output impedance in comparison to the impedance of transmission lines and modulation means adapted to modulate the current source in accordance with a sensed input signal, said current source adapted to maintain its high output impedance during modulation thereof.

3,626,317

## DIGITALIZED SCANLASER

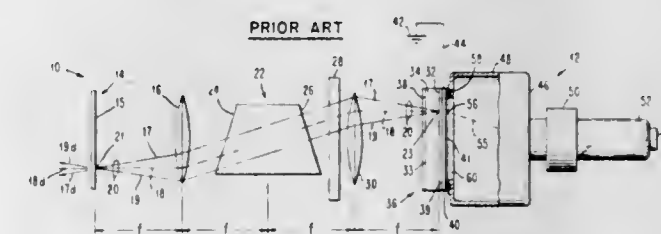
Mark L. Dakss, Yonkers; Richard L. Garwin, Scarsdale, and Robert V. Pole, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,789

Int. Cl. H01s 3/00; G02f 1/22

U.S. Cl. 331-94.5

27 Claims



Generally, the disclosure describes a scanlaser with a fly's eye lens array for discretized or digitalized beam steering via mode selection. In a scanlaser, a localized change in birefringence changes the Q of the associated laser cavity so that only certain modes can be sustained in the cavity. A scanlaser in accordance with this disclosure incorporates a fly's eye lens array which selects only one of the latter modes for lasing in the cavity.

3,626,318

## TANDEM OSCILLATOR DISC AMPLIFIER WITH TRIVALENT NEODYMIUM INPUT DISC AND TRIVALENT NEODYMIUM PLUS YTTERBIUM OUTPUT DISCS

Charles Gilbert Young, Storrs, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 10, 1970, Ser. No. 18,265

Int. Cl. H01s 3/14

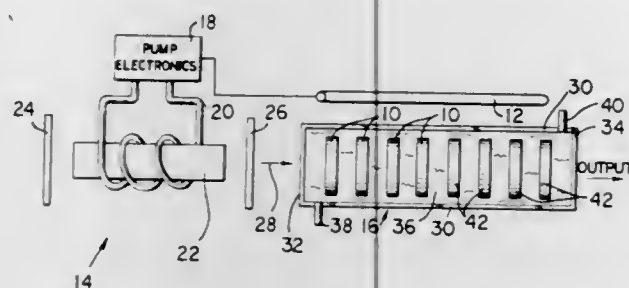
U.S. Cl. 331-94.5

6 Claims

A laser system is disclosed as including a conventional laser generator in tandem and in optical alignment with a laser amplifier, the laser amplifier having a series of laser disks disposed in parallel array in a laser cavity with a coo-



lant therein. The laser disks are arranged as amplifier input disks and amplifier output disks with the input disks using



trivalent neodymium as the active ingredient and the output disks using a combination of trivalent neodymium and trivalent ytterbium as the active laser material.

3,626,319

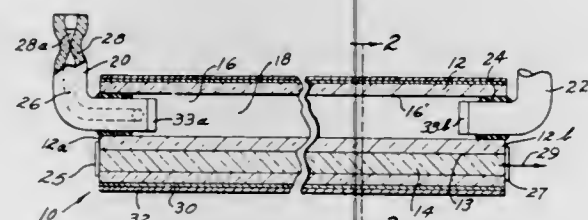
## LASER STRUCTURES AND THE LIKE

Charles Gilbert Young, Storrs, Conn., assignor to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.  
Continuation of application Ser. No. 539,041, Mar. 31, 1966, now abandoned. This application Apr. 14, 1970, Ser. No. 28,199

Int. Cl. H01s 3/04

U.S. Cl. 331-94.5

8 Claims



A solid unitary laser structure of high optical and thermal efficiency comprising elongated rod of laser glass and elongated flash tube bore completely enclosed within cladding glass of predetermined characteristics.

3,626,320

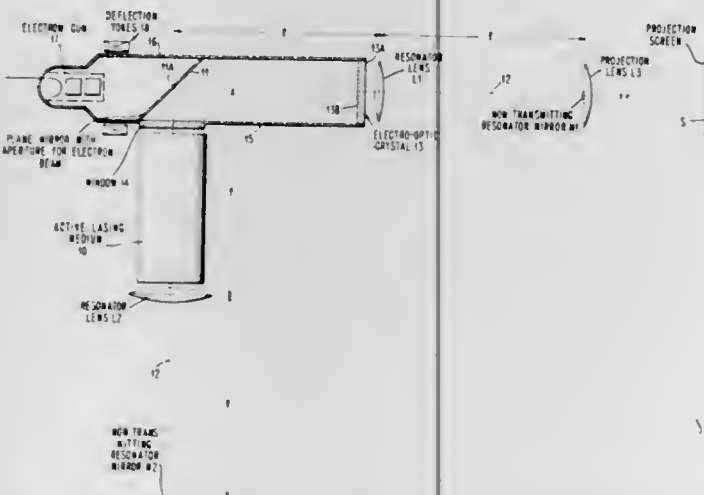
## IMAGE DISPLAY APPARATUS

Richard L. Garwin, Scarsdale, and Robert V. Pole, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
Continuation of application Ser. No. 668,558, Sept. 18, 1967, now abandoned. This application Oct. 5, 1970, Ser. No. 78,194

Int. Cl. H01s 3/05; G02f 1/28

U.S. Cl. 331-94.5

3 Claims



An electro-optic crystal sealed in a cathode-ray tube disposed between the end mirrors of a flat-field focusing laser

cavity operates, when scanned by the modulated electron beam to vary the index of refraction of the crystal, to cause it to function as a controllable phase-modulating transducer in an optical system. The phase modulation distributes light into zero and side order beams. The cavity is so designed that it causes the side order light to escape from it, forming an intensity modulated image on a viewing screen in the manner of projection television, while the zero order light is reflected within the cavity to sustain the lasing action.

3,626,321

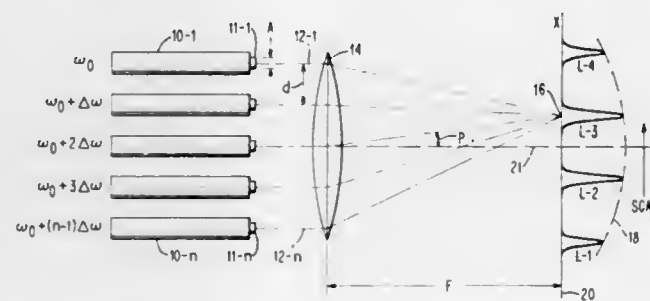
## OPTICAL SCANNER AND METHOD FOR OPTICAL SCANNING

Archibald W. Smith, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Nov. 13, 1968, Ser. No. 775,363

Int. Cl. H01s 3/10

U.S. Cl. 331-94.5

14 Claims



There is disclosed an optical scanner for optically scanning a target trace in the focal plane of an optical lens system. By establishing a plurality of coherent light beams with ordered geometrical intervals and frequency differentials from each other, the appropriate phase relationships are established for the beams to provide a moving interference pattern on the target trace. In particular, the source of the coherent beams alternatively may be a single beam laser whose consequent beam is caused by multiple reflections, diffractions, and transmissions to become an effective plurality of coherent beams or may be a multimode laser cavity whose beams are phase locked by the diffraction property of an acoustic wave medium. In particular, the diffraction of an incoming light beam by an acoustic wave obtains the requisite phase locking for the several interfering beams on the target trace.

3,626,322

## METHOD AND APPARATUS FOR ELIMINATING DOMINANCE OR LASER OSCILLATIONS AT ONE WAVELENGTH OVER THOSE AT ANOTHER

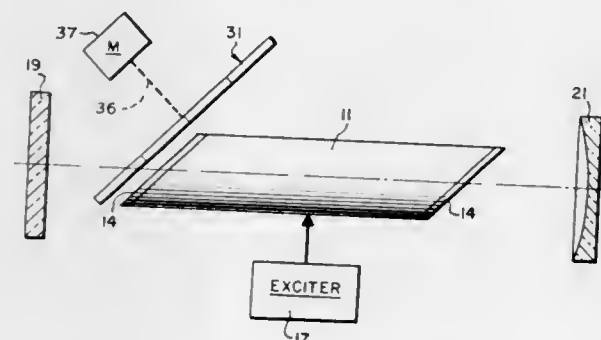
William M. Strouse, West Redding, Conn., and Irwin Tobias, New York, N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Filed July 9, 1969, Ser. No. 840,302

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

2 Claims



Method and apparatus for eliminating in a laser the dominance of laser oscillations at one wavelength of the laser medium over laser oscillations at another wavelength of said laser medium. The cavity of the laser is defined by two mirrors, at least one of which is spherically concave. Helium-neon gas has been mentioned as an example of one laser medium which may be used, and such acts more like a

diverging lens upon laser oscillations at 6,401 Å. than it does upon laser oscillations at 6,328 Å. Because of this effect, if the effective optical spacing between the mirrors of a helium-neon laser is increased from a value at which diffraction losses are low and oscillations at 6,328 Å. dominate, a point will be reached at which the diffraction losses for laser oscillations at 6,328 Å. become great enough while the diffraction losses for laser oscillations at 6,401 Å. remain small enough for laser oscillations at 6,401 Å. only to occur. Accordingly, a method and apparatus for obtaining laser oscillations alternately at two closely related wavelengths of a laser medium or alternately at such wavelengths separated by oscillations at both wavelengths are disclosed and achieved by the proper spacing of the opposite mirrors and suitable optical path altering means therebetween.

3,626,323

## THERMAL STABILIZING ARRANGEMENT FOR A LASER DEVICE

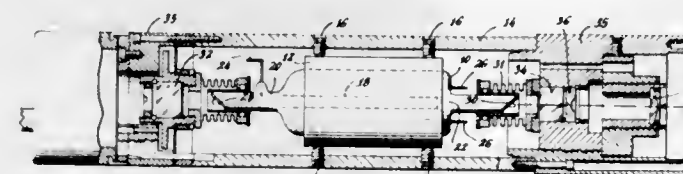
Beat Inelchen, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 19, 1968, Ser. No. 785,279

Int. Cl. H01s 3/02

U.S. Cl. 331-94.5

8 Claims



A laser device is described which includes a heat-generating body enclosing an optical transmission path and having a lasing material positioned in the path. A support housing is provided for the body and means are positioned about the body for cooling the body while substantially inhibiting the transfer of heat from the body to the housing. In this manner the body is maintained at a desirable operating temperature while the temperature of the housing is maintained substantially close to the ambient temperature of its surroundings.

3,626,324

## VOLUME REFLECTOR FOR LASER CAVITIES

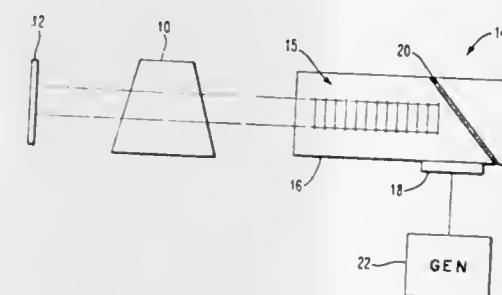
Eric G. Lean, Mahopac, and Robert A. Myers, New York, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,636

Int. Cl. H01s 3/05

U.S. Cl. 331-94.5

5 Claims



A volume reflector which may be employed as one or both of the end mirrors of a laser cavity. A laser cavity is provided including an active medium which is excited to produce stimulated emissions of light. A reflective means is located at each end of the cavity to reflect the light back into the cavity. One or both of the reflective means is an acoustic cell which is connected to a source of input signal, preferably at a microwave frequency. When particular relationships are satisfied, the light impinging on the acoustic cell is reflected back 180° by the standing acoustic wave fronts throughout the volume of the acoustic cell.

3,626,325

## PULSED GAS LASER WITH RADIATION COOLING

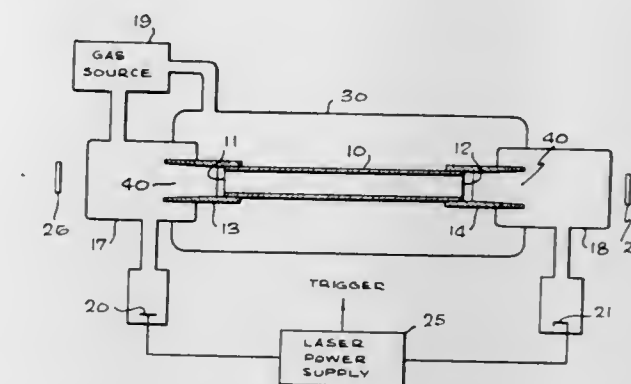
Michael R. Smith, Thousand Oaks, Calif., assignor to BRITT Electronic Products Corporation, Santa Monica, Calif.

Filed Nov. 10, 1969, Ser. No. 875,316

Int. Cl. H01s 3/02

U.S. Cl. 331-94.5

15 Claims



A pulsed gas laser having a ceramic tube in which lasing action takes place. The tube is surrounded by a glass envelope which forms a low-pressure environment around the tube so that the tube is cooled by thermal radiation. The tube is operable in a normal mode with a pulsing frequency in the range of 100 p.p.s. The tube is switchable to a burst mode in which the power input is increased tenfold to provide high average power output. Due to the radiation cooling even though the power input is increased tenfold and more, the tube's temperature only doubles remaining within safe limits for ceramic, and the gas density only changes by about 30 percent so that reasonable power output is obtained with any power input within the tenfold input range.

3,626,326

## TIME-VARIABLE REFLECTIVITY LASER ACTUATING CIRCUIT

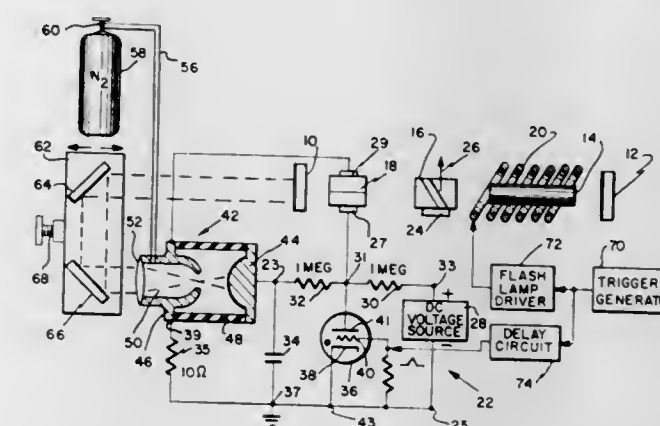
Ralph F. Wuerker, Palos Verdes Estates, and Robert A. Briones, Granada Hills, both of Calif., assignors to TRW, Inc., Redondo Beach, Calif.

Filed Dec. 8, 1969, Ser. No. 883,214

Int. Cl. H01s 3/09

U.S. Cl. 331-94.5

16 Claims



In a time-variable reflectivity laser of the type having a cavity, total reflection mirrors at the ends of the cavity, a ruby rod in the cavity for emitting radiation, a xenon lamp for pumping the ruby rod, a Glan polarizer in the cavity, a cell having electrodes in the cavity for changing the polarity of light, and apparatus for energizing the energy source and for energizing and deenergizing the cell in a predetermined sequence to discharge light from the cavity. The energizing apparatus consists of a trigger generator and a voltage source connected to the trigger generator and the energy source for pumping the ruby rod in response to the output from the trigger generator to establish a condition of excited atoms in the rod. Provided also is a DC voltage source, and a series circuit arrangement including a pair of resistors, a capacitor, and a discharge resistor, connecting the DC voltage source to the cell electrodes for charging the electrodes to a DC volt-



age to change the polarization of light within the cavity and to establish reduced reflectivity within the cavity. A delay circuit connected to the trigger generator is provided for generating a delayed-output signal. A thyatron tube circuit, which is responsive to the delayed output of the delayed circuit is utilized to short a portion of the circuit and to discharge the cell electrodes through the discharge resistor to thus deenergize the cell and to establish light amplification within the cavity. A spark gap is utilized to short another portion of the circuit when exposed to energy leaking from the cavity at its peak amplified value to discharge the capacitor through the discharge resistor and to establish a DC voltage across the electrodes of the cell to change the polarization of light within the cavity and to discharge the light energy at its peak amplified value from the cavity. A roof assembly consisting of mirrors positioned for movement with respect to one of the total reflection mirrors of the cavity for varying the length of the path of light leaked from the cavity and its transit time to the spark gap.

3,626,327

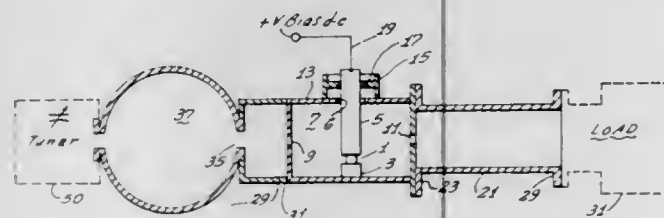
### TUNABLE HIGH-POWER LOW-NOISE STABILIZED DIODE OSCILLATOR

Thomas Hugo Luchsinger, Belmont, and Walter Ransom Day, Jr., Menlo Park, both of Calif., assignors to Litton Precision Products, Inc., San Carlos, Calif.

Filed June 22, 1970, Ser. No. 48,296  
Int. Cl. H03b 7/14

U.S. Cl. 331-107 R

9 Claims



The invention disclosed is a tunable high-power low-noise stabilized frequency semiconductor diode oscillator unit which comprises a semiconductor diode, suitably a Gunn or Avalanche diode, located within a low-Q-resonant cavity for generating the carrier frequency,  $f_0$ , and another cavity, tuned to  $f_0$  and having a very high-Q relative to the first cavity, is tightly coupled to the low-Q-cavity. A microwave output passage in the low-Q-cavity is provided for connection of the oscillator output directly to a load; wherein the oscillator provides output powers in excess of 100 milliwatts at frequencies of 9.4 gigahertz (GHz) with low-noise levels and a stabilization factor of approximately 200. A third cavity is coupled to the high-Q-cavity. The third cavity includes a voltage "tunable" diode, a varactor which varies in capacitance as a function of applied voltage. This provides a tuner which permits changing the frequency of resonance of the high Q cavity without substantially affecting its Q-value.

3,626,328

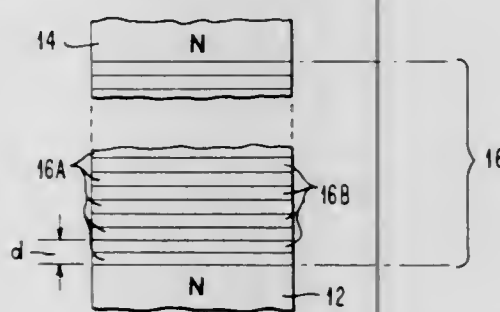
### SEMICONDUCTOR BULK OSCILLATOR

Leo Esaki, Chappaqua; Webster E. Howard, Jr., Yorktown Heights, and Raphael Tsu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1969, Ser. No. 811,870  
Int. Cl. H03b 7/06

U.S. Cl. 331-107 G

14 Claims



The semiconductor bulk oscillator includes a body of semiconductor material which includes a superlattice portion

across which an electric field is applied. The device responds to this field to produce bulk high-frequency oscillations. The superlattice portion has a one-dimensional periodic spatial variation in its band edge energy produced either by doping or alloying. The periodic variation in band edge energy provides in wave vector space a plurality of minizones which are much smaller than the Brillouin zone. A cavity-type structure is formed transverse to the superlattice portion of the device to extract outputs of electromagnetic energy at high frequencies obtained when an electric field above threshold is applied across the superlattice.

3,626,329

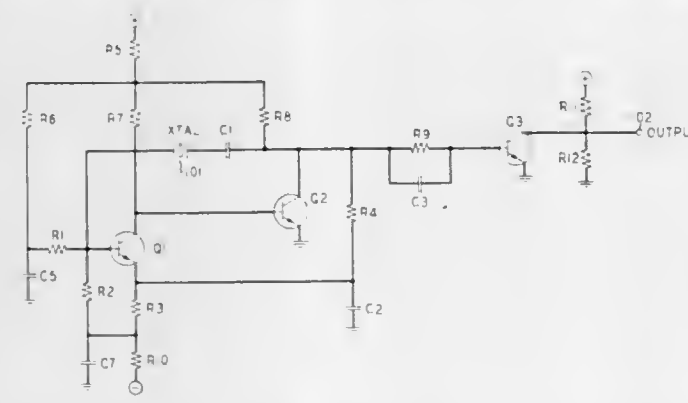
### CRYSTAL-CONTROLLED MULTIVIBRATOR OSCILLATOR

Glenn Edward Larson, Old Bridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 27, 1970, Ser. No. 40,937  
Int. Cl. H03b 5/36; H03k 3/282

U.S. Cl. 331-113 R

10 Claims



The frequency of a square wave transistor multivibrator oscillator is determined by a high-gain AC coupled quartz crystal feedback loop. Oscillator startup is provided by a DC coupled RC network feedback path which provides only sufficient gain to barely sustain oscillations. When power is turned on, the first-stage transistor is slowly biased through its linear region. The RC network thus provides a sinusoidal wave until energy at the resonant frequency of the crystal is produced, whereupon the crystal feedback path, which dominates, "takes over" and the multivibrator frequency becomes solely dependent upon the crystal.

3,626,330

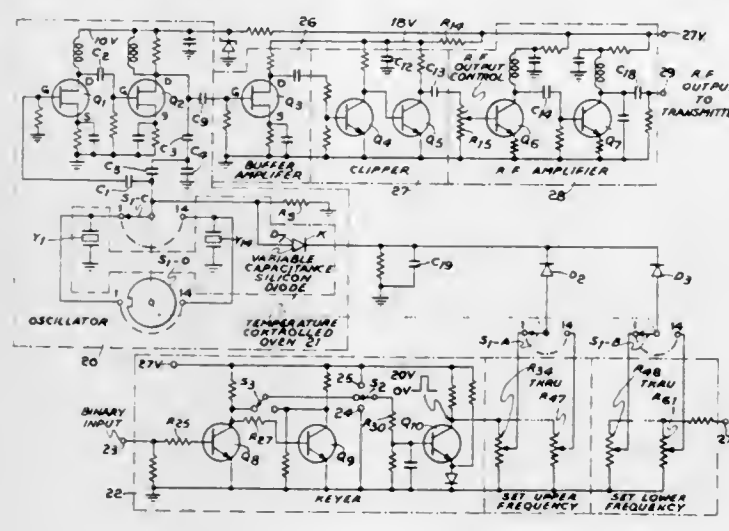
### CAPACITIVE DIODE CONTROLLED OSCILLATOR FREQUENCY SHIFT KEYING CIRCUIT

Robert A. Zalons, South Plainfield, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 15, 1970, Ser. No. 3,147  
Int. Cl. H03b 5/36

U.S. Cl. 331-116 R

1 Claim



A crystal oscillator is shifted between two different discrete frequencies by means of two different voltages being

applied to a variable capacitance diode coupled in shunt relation with the crystal. The circuit providing one of the two different voltages having a given value is permanently connected to the diode to provide the lower frequency shift. The other of the two different voltages having a value greater than the given value is provided by a transistor stage under control of a binary signal. The binary signal controls the conduction and nonconduction of the transistor stage to selectively connect and disconnect the other of the two different voltages to the diode. This other higher voltage, and, therefore, the higher frequency shift, is provided only when the transistor stage is nonconductive, which occurs when the condition of the binary signal is low, and overcomes the voltage providing the lower frequency shift.

3,626,331

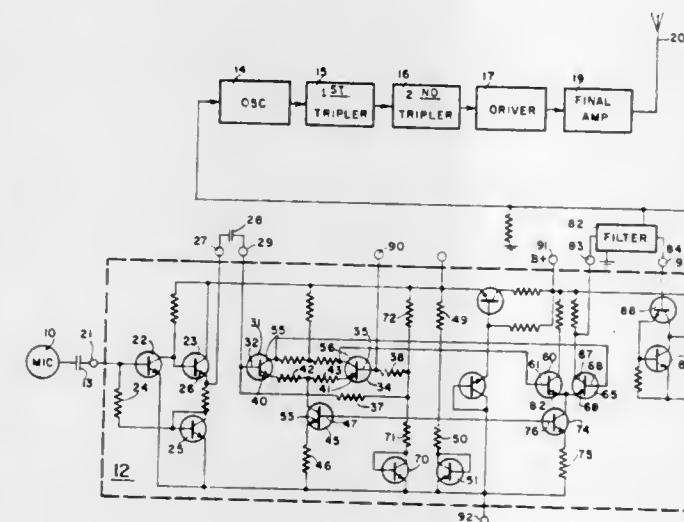
### AUDIO SIGNAL PROCESSOR

Donald B. Burns, La Grange, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 8, 1970, Ser. No. 48,803  
Int. Cl. H03c 3/08; H04b 1/04

U.S. Cl. 332-18

13 Claims



A modulating processing system for a phase or frequency modulated transmitter includes a differentiator and limiter for controlling the deviation of the modulated signal. The limiter includes a pair of emitter-coupled transistors alternately biased by an input signal between cutoff and conduction. A constant current source is coupled in series with the emitters of the limiter to maintain conduction at less than saturation and temperature compensation circuits are included to stabilize the operation of the system with temperature changes. The circuit is readily adapted to be formed as an integrated circuit.

3,626,332

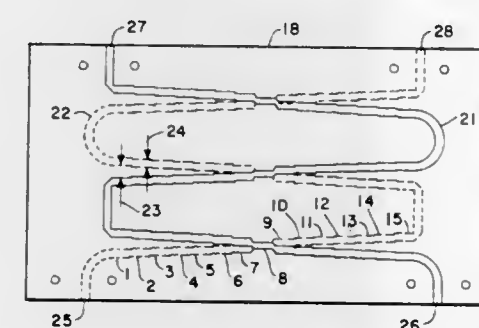
### QUADRATURE HYBRID COUPLER NETWORK COMPRISING THREE IDENTICAL TANDEM CASCADED SECTION COUPLERS

Ronald P. Barbat, Glendale, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 23, 1970, Ser. No. 31,180  
Int. Cl. H01p 5/14

U.S. Cl. 333-10

1 Claim



A quadrature hybrid coupler comprising three dielectric layers sandwiched between two backup plates. Positioned on

both sides of the center dielectric layer are copper strips forming three identical tandem, fifteen cascaded section couplers. Each of the tandem couplers provide a perfect match to the next section.

3,626,333

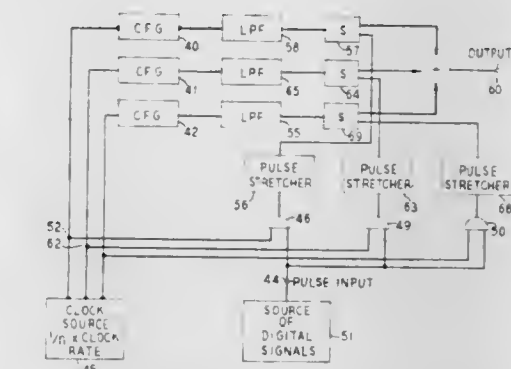
### AUTOMATIC EQUALIZER EMPLOYING BULK SEMICONDUCTOR DEVICES

Tingye Li, Middletown, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 29, 1969, Ser. No. 861,761  
Int. Cl. H03h 5/00

U.S. Cl. 333-28

3 Claims



An automatic equalizer employing  $n$  controlled waveform generators each of which uses a bulk semiconductor device having a series of contacts bonded to the surface with resistors, connected between the contacts. Each such generator has a domain nucleated in the semiconductor device at  $1/n$ th the clock rate and the filtered output of one of the generators is connected to an output terminal when the digital input signal received over the transmission system in a pulse. The result is that pulses are distorted over  $n$  slots so as to minimize intersymbol interference when the pulses are transmitted over a distorting transmission channel. In a preferred embodiment of the invention the resistors connected between the contacts are photoconductors so that an adjusting signal driving a light source may rapidly change the values of the resistors and thereby adjust the equalizer.

3,626,334

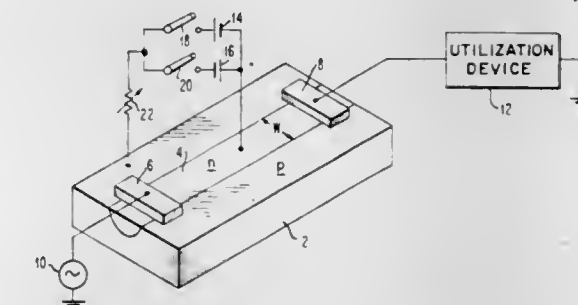
### ELECTRICALLY VARIABLE ACOUSTIC DELAY LINE

Robert W. Keyes, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,200  
Int. Cl. H03h 7/36, 9/00, 9/30

U.S. Cl. 333-30 R

9 Claims



This invention relates to acoustic wave delay lines and, more particularly, to surface acoustic wave delay lines in nonpiezoelectric semiconductors in which the delay can be varied by application of an electrical signal.

3,626,335

### PHASE-SHIFTING MEANS

William E. Hord, and James A. Benet, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 10, 1969, Ser. No. 875,248  
Int. Cl. H01p 1/18

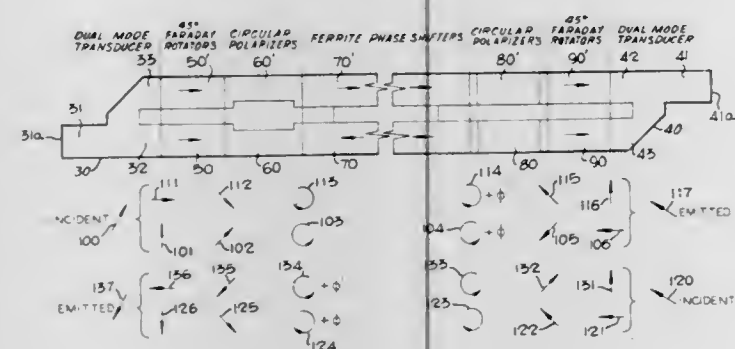
U.S. Cl. 333-31 A

8 Claims

A reciprocal latching phase-shifting device which accepts arbitrarily polarized electromagnetic wave energy. A first



dual mode transducer converts the incident wave energy into its two orthogonal components and passes each component into a separate waveguide section containing phase-shifter means. The two waveguides are joined at their remote ends by a second dual mode transducer for combining the phase-shifted orthogonal components. The first and second dual mode transducers are identical, and the position of the second transducer is inverted from that of the first. The vertical and horizontal components of the incident wave energy are therefore converted respectively to the horizontal and vertical components of the transmitted wave energy. Each



phase shifter means includes a linear polarizer, a  $45^\circ$  rotator, a quarter-wave plate, a ferrite phase shifter, a second quarter-wave plate, a second  $45^\circ$  rotator, and a second linear polarizer orthogonal to the first linear polarizer. The first and second waveguides are formed by plating directly onto the wave energy carrying material of the phase-shifting means. Ferrite shunts between the ferrite phase shifters in the first and second waveguides, at the ends of the ferrite phase shifters, form a closed magnetic circuit between the ferrite phase shifters, thereby allowing operation in a remanent state without the use of a magnetic yoke.

3,626,336

#### HEAT DISSIPATING STRUCTURE FOR CAVITY RESONATOR TUNING ACTUATOR

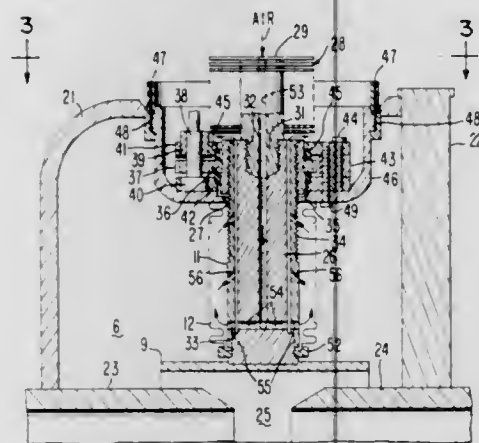
Martin E. Levin, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 13, 1970, Ser. No. 27,624

Int. Cl. H01p 7/06, 1/30

U.S. Cl. 333-83 R

9 Claims



A tunable cavity resonator structure is disclosed having a tuning member movable within the cavity for tuning same. A tuner actuator structure is affixed to the tuning member and extends out of the cavity through an apertured wall thereof for effecting movement of the tuner. A thermally conductive stem, separate from the tuner actuator member, is affixed to the movable tuning member and extends out of the cavity through the apertured wall for conducting heat from the tuning member to the surrounds. The tuner actuator member is made of a material having a low coefficient of thermal expansion to eliminate temperature dependent tuning effects.

#### 3,626,337 ELECTROMAGNETIC RELAY WITH PERMANENT MAGNET LATCHING

Harry Stanley Woodhead, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

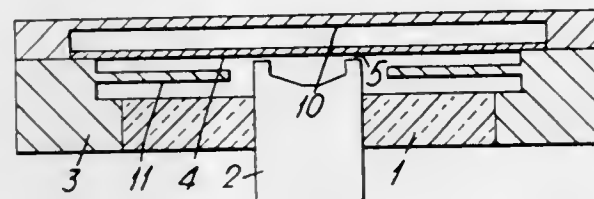
Filed July 29, 1970, Ser. No. 59,047

Claims priority, application Great Britain, Sept. 18, 1969, 46,043/69

Int. Cl. H01h 1/00, 9/00

U.S. Cl. 335-196

13 Claims



A diaphragm relay uses a paramagnetic diaphragm as part of the electromagnetic circuit and may also use the diaphragm as part of the electrical contact closing circuit. A third function is provided for the diaphragm herein. The diaphragm is also interposed within a permanent magnet circuit which acts to latch the diaphragm in an operated condition.

3,626,338

#### CIRCUIT BREAKER CASE STRUCTURE

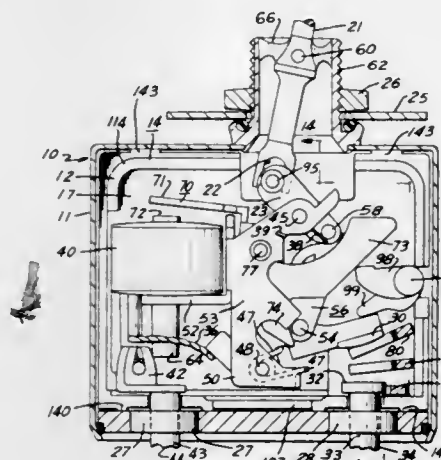
Ronald Nicol, and Ralph B. Davis, Trenton, both of N.J., assignors to Helmeann Electric Company, Trenton, N.J.

Filed Mar. 4, 1970, Ser. No. 16,518

Int. Cl. H01h 13/10

U.S. Cl. 335-202

16 Claims



An electromagnetic circuit breaker for opening a set of contacts upon the occurrence of predetermined conditions, having an outer tubular casing closed at one end, but for a hole through which an operating handle extends, and a terminal-carrying baseplate closing the other end of the tubular casing. The operating mechanism of the circuit breaker is housed within an inner case formed by two interfitting case sections, the inner case having an opening through which the operating handle extends and a pair of openings through which extend the terminals carried by the baseplate. Also, a multipole circuit breaker may be formed by stacking, side-by-side, the inner cases, each having its own mechanism and each defining a pole of the multipole circuit breaker. The mechanisms of the multipole circuit breaker are interconnected so as to trip all poles thereof upon the tripping of any one pole, the multipole circuit breaker having a suitable larger outer casing and terminal carrying baseplate.

#### 3,626,339 ELECTROMAGNETIC RELAY

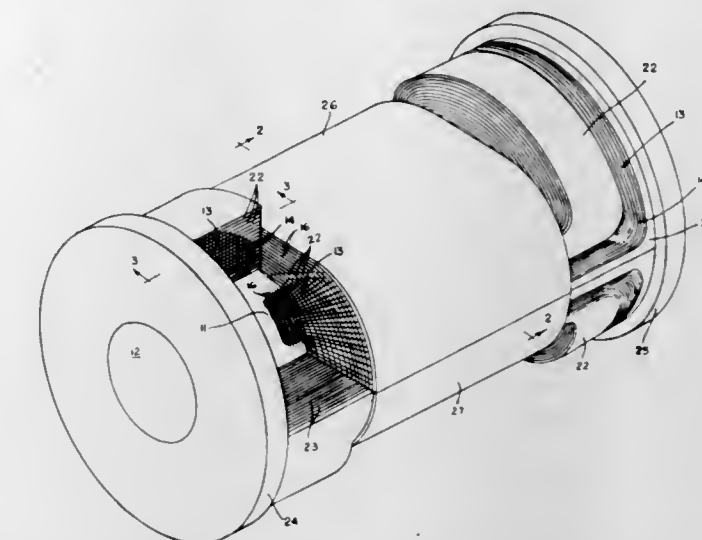
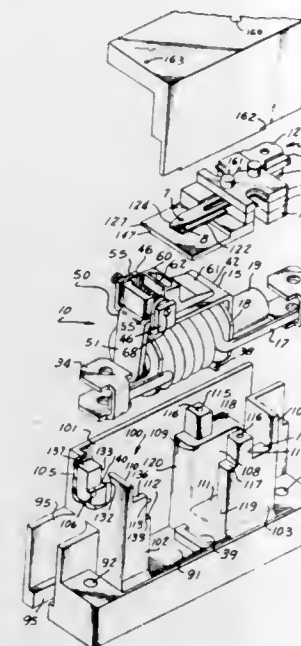
Albert D. Lisnay, Trenton, N.J., assignor to Helmeann Electric Company, Trenton, N.J.

Filed Apr. 20, 1970, Ser. No. 30,076

Int. Cl. H01h 9/02

U.S. Cl. 335-202

31 Claims



against displacement away from the support by a wound reinforcing layer of material having substantial tensile strength.

3,626,342

#### RELIEF VALVE STRUCTURE FOR OIL BATH SOLENOID

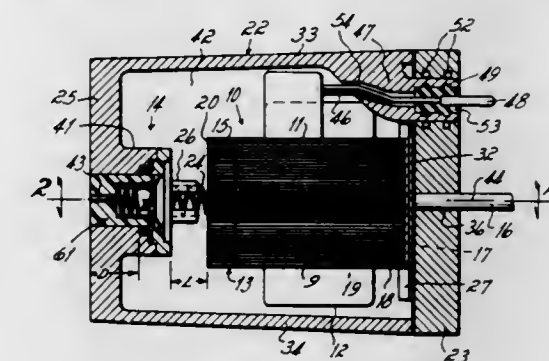
Robert H. Green, Grove City, Ohio, assignor to Abex Corporation, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,522

Int. Cl. H01f 7/08

U.S. Cl. 335-257

15 Claims



#### 3,626,340 REED SWITCH ASSEMBLY EMPLOYING A MAGNETIC SCREEN

Frederick Percival Mason, Burgess Hill, and Vishwanath Bansal, Hove, both of England, assignors to Creed & Company Limited, Hollingbury, Brighton, England

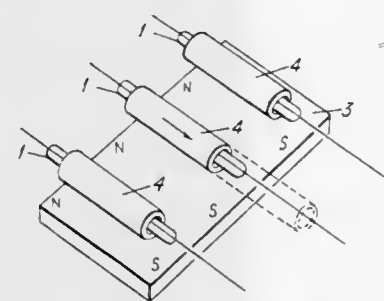
Filed Apr. 13, 1970, Ser. No. 27,739

Claims priority, application Great Britain, Apr. 16, 1969, 19,337/69

Int. Cl. H01h 51/28

U.S. Cl. 335-205

1 Claim



A reed switch (for example, for a keyboard controlling a transmitter) is controlled by a reciprocable high-permeability collar which can be slid axially onto the reed to screen the latter from a stationary magnet. This achieves low crosstalk and permits high-packing density.

3,626,341

#### ELECTROMAGNET STRUCTURE

James Dao, Alameda, Calif., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,420

Int. Cl. H01f 7/22

U.S. Cl. 335-216

7 Claims

An electromagnet structure is described for producing high-strength magnetic fields. Individual layers of electrical

coil layers are stacked on a support and comprise a coil structure. Each of the coil layers is individually reinforced

An oil bath solenoid which has a relief valve mounted in the housing. The valve is so positioned in the housing and so structured that it functions (a) as a relief valve to relieve excessive oil pressure within the solenoid housing, (b) as a bumper for the solenoid's plunger when the plunger is moved to the deenergized position, and (c) as a reset device for manually positioning the plunger in the energized position if a power failure is experienced.

3,626,343

#### LAMINATED MAGNET CORE

Gunther Bohlke, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

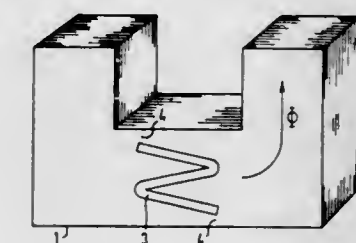
Filed Sept. 2, 1970, Ser. No. 69,001

Claims priority, application Germany, Jan. 28, 1970, P 20 03 643.5

Int. Cl. H01f 3/00

U.S. Cl. 335-281

4 Claims



A laminated magnet core for contactors and the like has a working airgap. The magnet core is made up of a stack of



metal sheets that define a path of flow of magnetic flux through the core. The metal sheets have respective elongated slitlike openings extending across a portion of the width of the sheets. The openings at least partly overlapped and jointly define a gap for reducing core remanence. The elongated slitlike openings have respective longitudinal axes that intersect the path of flow of the magnetic flux in the core at an acute angle.

3,626,344

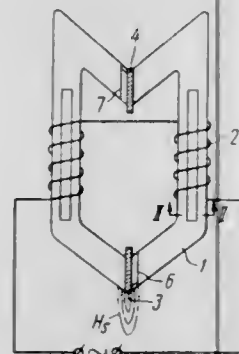
# EDDY CURRENTS TRANSDUCER FOR ELECTRICAL DEVICES TO CONTROL COATING THICKNESS AND SURFACE PROFILE OF METAL ARTICLES

Viktor Egorovich Shaternikov, ulitsa Chapaevskaya, 46/70, kv. 4, and Vladlen Alexandrovich Denisov, ulitsa Krasnoarmeiskaya, 106, kv. 4, both of Kuibyshev, U.S.S.R.  
Filed July 28, 1969, Ser. No. 845,265

Int. Cl. H01f 15/04, 27/28

U.S. Cl. 336—73

1 Claim



An eddy current transducer for devices to control and measure the thickness of coatings and the surface profiles of metal articles of complex configuration wherein a ferrite core of an inductance coil features at least one gap where provision is made for a plug made of a high-conductivity nonmagnetic material.

3,626,345

# RADIOFREQUENCY TRANSFORMER

Kyuzaemon Funaki, Saitama-ken, Japan, assignor to Toko Kabushiki Kaisha, Tokyo-to, Japan

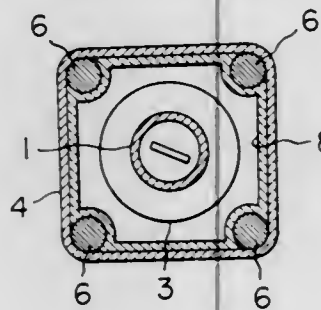
Filed Sept. 25, 1970, Ser. No. 75,557

Claims priority, application Japan, Oct. 13, 1969, 44/97356

Int. Cl. H01f 15/04

U.S. Cl. 336—84

7 Claims



A radiofrequency transformer having a metal outer case of a given cross section for enclosing coils therein and has a magnetic shield comprising four rods of a magnetic material each interposed and held between a respective corner of the outer case and a corresponding corner of a rigid inner case.

3,626,346

# THERMOELECTRIC OVERHEAT INDICATOR

Lynn S. Brock, Williamsville, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 92,024

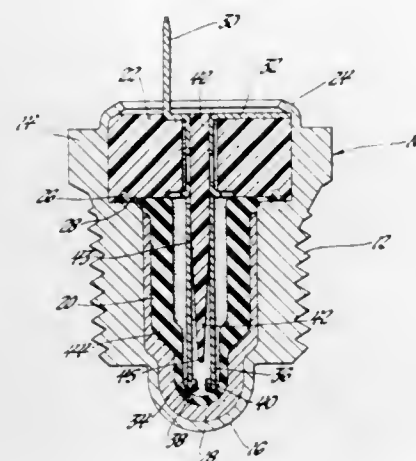
Int. Cl. G01k 5/52; H01h 37/04, 37/46

U.S. Cl. 337—393

3 Claims

An indicating device constructed as a switch that is adapted to fit into the block of an internal combustion engine

and, in operation therein, will provide a signal relative to engine overheat. More particularly, this switch operates by expansion and contraction of a microcrystalline wax in accordance with temperature changes. The wax acts upon a generally tubular elastomeric diaphragm having a thin wall



lower portion and a substantially thicker walled upper portion to collapse or pinch the diaphragm at the thin wall lower portion to close a set of contacts. When the wax contracts or returns to its original state, the diaphragm follows and also returns to its initial position and configuration.

3,626,347

# FUNCTION GENERATOR COMPRISING A CAM-OPERATED LEAF SPRING WITH STRAIN GAUGES

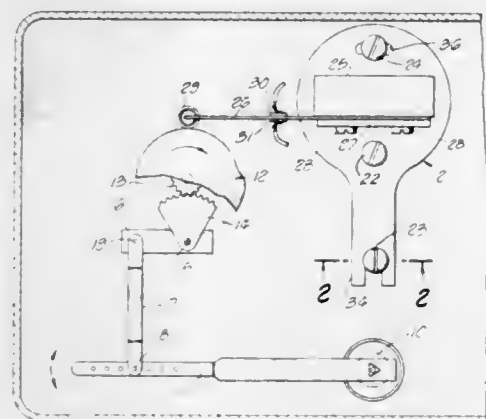
Victor Lawford, Pasadena; Richard P. Granada, Covina, and Art M. D. Moen, Covina, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 11, 1969, Ser. No. 832,206

Int. Cl. G01f 1/22

U.S. Cl. 338—4

5 Claims



The invention includes a cantilever leaf spring having strain gauges thereon. The leaf spring is bent by a cam. By using a cam of a particular configuration, the output of the strain gauges may be modified to represent any desired function of the cam angle. The leaf spring is mounted on a base which may be rotated to vary the spring deflection for a zero adjustment.

3,626,348

# CURRENT-REGULATING APPARATUS

Ralph W. Alten, Detroit, Mich., assignor to Essex International Inc., Fort Wayne, Ind.

Filed Apr. 2, 1969, Ser. No. 812,642

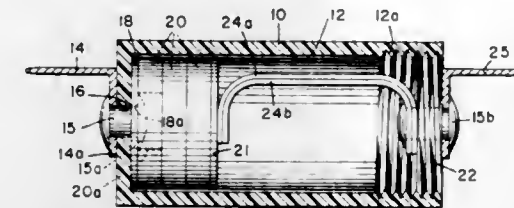
Int. Cl. H01c 7/10

U.S. Cl. 338—20

17 Claims

Apparatus for regulating the current in a circuit comprises a thermally sensitive bimetallic conductor exerting a force on

a plurality of stacked resistance elements, both the bimetallic conductor and the stacked elements forming conductive parts of the circuit. The force exerted by the bimetallic conductor varies in accordance with changes in its temperature.



The effective resistance of the stacked resistance elements varies inversely to the force exerted on them. The bimetallic conductor may be one which is responsive to a threshold temperature.

3,626,349

# SWITCHING ARRANGEMENT

Rudolf Hubrich, Ravensburg, Germany, assignor to Raimund Finsterholz (RAFI), Ravensburg am Wurttemberg, Germany

Filed June 6, 1969, Ser. No. 831,157

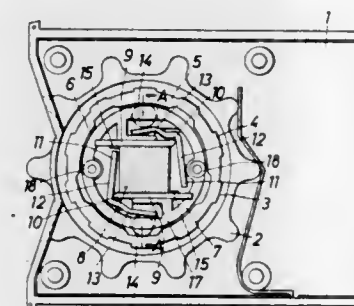
Claims priority, application Germany, Mar. 25, 1969, P 19

15 009.5

Int. Cl. H01c 7/16

U.S. Cl. 338—32

18 Claims



A switching arrangement for use in programming systems or the like wherein the hollow hub of a rotary selector accommodates a stack of coaxial ring-shaped cams whose lobes can pivot two-armed armatures mounted on the pole shoes of a fixed permanent magnet. The pole shoes carry semiconductors whose electrical resistance varies as a function of the intensity of the magnet field, and such intensity is changed in response to pivoting of armatures on rotation of the selector to predetermined angular positions. The semiconductors are connected in logical circuits.

3,626,350

# VARIABLE RESISTOR DEVICE FOR ELECTRONIC MUSICAL INSTRUMENTS CAPABLE OF PLAYING MONOPHONIC, CHORD AND PORTAMENTO PERFORMANCES WITH RESILIENT CONTACT STRIPS

Sholchi Suzuki, and Takatosi Okumura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Nakazawa-cho, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Feb. 17, 1970, Ser. No. 11,983

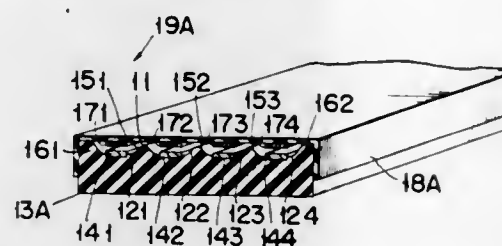
Claims priority, application Japan, Feb. 20, 1969, 45/12442

45/14387, 45/12438, 45/14388

Int. Cl. H01c 9/02

U.S. Cl. 338—69

7 Claims



A variable resistor utilized as a keyboard of an electronic musical instrument is comprised of an elongated rectangular

base member, a plurality of strip-shaped resistor bodies formed on one surface of the base member, a resilient pressure contact member covering resistor bodies and a plurality of mutually spaced apart strips of metal mounted on the inner surface of the pressure contact member to confront the resistor bodies with a small gap therebetween. By continuously varying the point of contact between the resistor body and the metal strip it is possible to produce monophonic chord and portamento signals and to vary the coloring and volume of the musical tone signals, or each or combinations of them.

3,626,351

# SQUARE-TYPE TRIMMING POTENTIOMETER

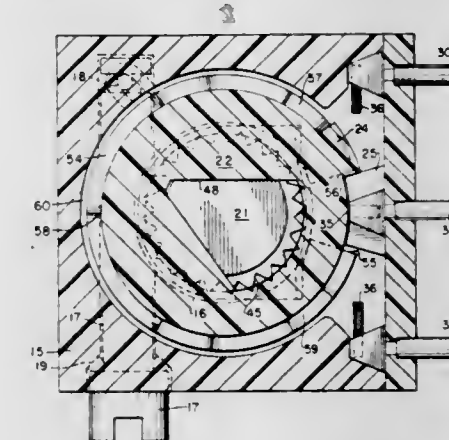
Edward Schoettly, Madison, N.J., assignor to Vishay International, Inc., Malvern, Pa.

Continuation-in-part of application Ser. No. 7,447, Feb. 2, 1971, now abandoned. This application Sept. 18, 1970, Ser. No. 73,579

Int. Cl. H01c 9/02

U.S. Cl. 338—162

7 Claims



A trimming potentiometer including a housing having top and bottom sections. The bottom section houses a gear which has on one of its flat surfaces a laterally disposed cam for engagement with a matching cam on one surface of a contact drum which also fits within the housing. The drum has on its reverse surface an electrical contact pressed against an arcuate-shaped resistance element housed within the top section and having each of its ends connected to a conductive terminal. The gear is driven by a worm rotatably mounted in the bottom section. Rotation of the worm drives the gear, which rotates the drum, causing the electrical contact to sweep across the arcuate-shaped resistance element. The drum has a stop that engages abutment edges on the housing to limit rotation of the drum so that the electrical contact will not go beyond the arcuate limit of the resistance element, usually 270° or so. If rotation of the screw is continued after the stop engages the abutment edges at either end of the range of rotation, the gear and screw are forced out of engagement with each other by camming action between the cam on the gear and the matching cam on the drum to prevent destruction of either the gear section or the thread surface of the worm. Within the bottom section is positioned a gear spring which will flex when the gear is forced out of position against it, but will keep the gear otherwise engaged with the screw. The drum is generally circular in shape and large enough to have one of its sides ordinarily pressed against a shoulder at the bottom section. Since the drum will rotate with the gear, unless otherwise provided, the drum will encounter large frictional forces when turning against the shoulder of the section. To reduce friction a wave spring is provided between the drum and the section shoulder.

3,626,352

# ATTENUATOR SWITCHES HAVING DEPOSITED LAYER-TYPE CIRCUITRY

Kenneth W. McColg, Anaheim, Calif., assignor to Beckman Instruments, Inc.

Filed Apr. 6, 1970, Ser. No. 25,845

Int. Cl. H01c 9/04

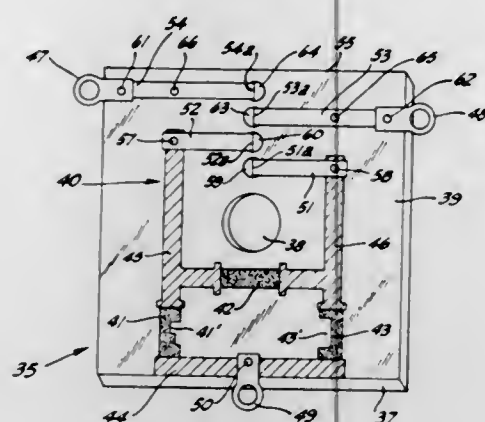
U.S. Cl. 338—190

18 Claims

Attenuator switches having deposited layer-type resistors, conductors, and switch pads. In one embodiment, a step at



tenuator comprises a plurality of  $\pi$  attenuator sections formed of resistive and conductive films disposed on stationary ceramic wafers. Relatively rotatable ceramic wafers carry conductive film switch pads which cooperate with switch contacts extending from the stationary wafers to



bypass or insert selected  $\pi$  sections into an electrical circuit. A bridged-T embodiment includes an electrically insulative wafer having interconnected film-type resistors and switch pads on both faces thereof. A set of rotatable wiper contacts cooperates with the pads to control the effective attenuation of the bridged-T circuit.

3,626,353

**FUSED SUBSTRATE RESISTOR**

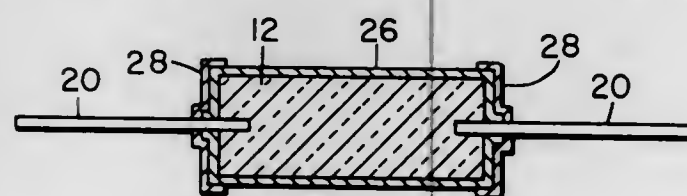
Guenther H. Loose, Webster, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Original application Dec. 27, 1968, Ser. No. 787,312. Divided and this application June 8, 1970, Ser. No. 44,236

Int. Cl. H01c 1/14

U.S. Cl. 338-263

5 Claims



A capless electroconductive coating resistor. The resistor dielectric substrate is formed of particulate material by pressing or molding within which substrate wire leads are embedded. The green body so formed is fired to coalesce or sinter the particles and volatilize any organic constituents. Thereafter, an electroconductive coating is applied over the surface of the substrate in electrical contact with the leads.

3,626,354

**POLARITY-REVERSING ADAPTER MEANS**

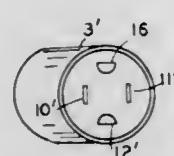
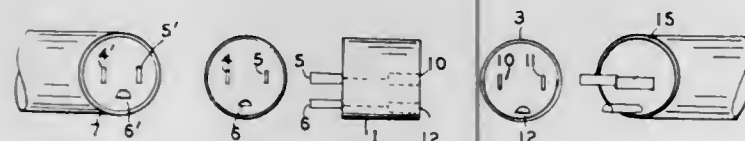
Philip M. Banner, 28 Oxford Road, Massapequa, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,477

Int. Cl. H01r 3/06

U.S. Cl. 339-14 R

1 Claim



A polarity-reversing adapter for single-phase three-wire systems designed for supplying electric power to small boats,

yachts, seaplanes, and other equipment. The adapter comprises a standard plug at one end and a socket at the other end, which is connected to the plug so as to reverse polarity at the socket.

3,626,355

**ELECTRICAL CONNECTOR HAVING ADJUSTABLE-SIZE SOCKET OPENINGS AND REMOVABLE PLUGS**

Jean C. Nudelmont, 130 Rue J. P. Timbaud, Courbevoie, France

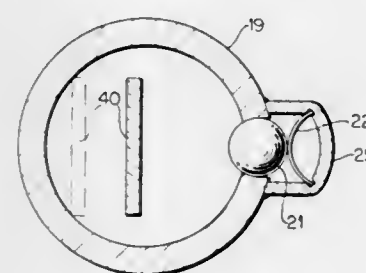
Filed Apr. 14, 1969, Ser. No. 815,558

Claims priority, application France, Apr. 12, 1968, 148072

Int. Cl. H01r 1/22

U.S. Cl. 339-14 R

5 Claims



An electrical connector for accommodating plugs and sockets having different standard configurations. Some of the grounding plug pins are removable and may be inserted in any one of several socket holes as required. The socket holes are provided with spring-loaded balls to accommodate various diameter plug pins of either circular or rectangular cross section.

3,626,356

**UNDERWATER CONNECTOR**

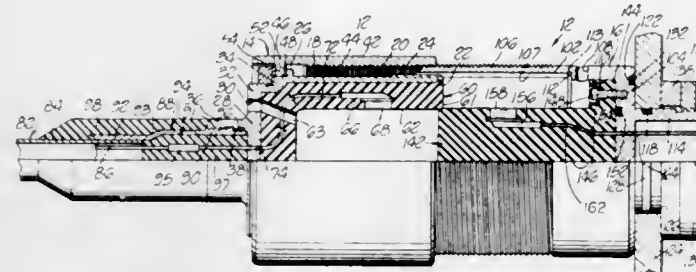
Carey V. Trammell, Phoenix, Ariz., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 30, 1968, Ser. No. 787,920

Int. Cl. H01r 13/52

U.S. Cl. 339-60 M

1 Claim



The disclosure relates to an underwater electrical connector comprising a plug connector and receptacle connector which are mechanically mated positively locking the connectors together. Inserts in each of the connectors contain contacting surfaces. The inserts are slidably engaged to provide a squeeze wiping action, forcing water out of the connectors through ports during the mating. The contacting surfaces are mounted flush with the surface of the inserts.

3,626,357

**ELECTRICAL CONNECTING WASHER**

Colin David Kindell, 22 Forest Walk, Bushey, Hertfordshire, and Terence Robert Raynor, 15 Russell Road, Chingford, London, E. 4, both of England

Filed Sept. 2, 1970, Ser. No. 69,086

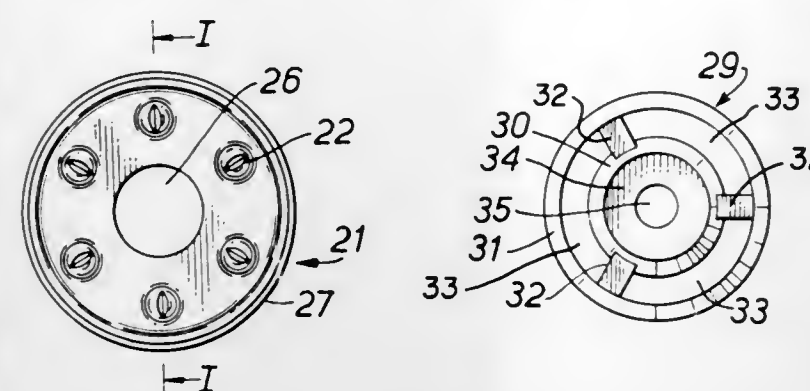
Int. Cl. H01r 3/04

U.S. Cl. 339-95 A

4 Claims

A connecting washer is provided with projections which scrape through a surface of a metal part to make an electrical

connection. Parts of a second resilient insulating washer are trapped between the connecting washer and the metal part



and around the projections to protect the connection area of the projections and the metal part from corrosive action.

3,626,358

**FAST-CONTACT CLIP**

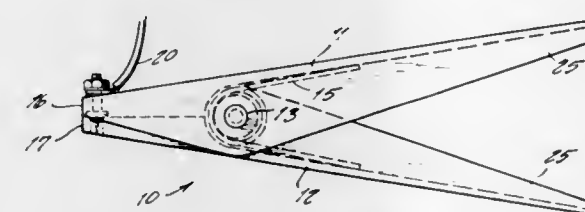
William Klassen, 11260 Zion St. N.W., Coon Rapids, Minn.

Filed June 8, 1970, Ser. No. 44,073

Int. Cl. H01r 1/20

U.S. Cl. 339-97 T

1 Claim



A clamping device for clipping against an electric wire so to connect two wires together, the device comprising a pair of levers which are connected pivotally free together along an intermediate portion of the levers, one end of the levers forming a squeeze handle and the opposite ends of the levers forming a pair of jaws, one of which has a seat across which a wire may be rested and the other jaw carrying a pointed stud for piercing the insulation around the seated electric wire and electrically engaging the enclosed electrical conductor.

3,626,359

**LAMP SOCKET**

Don L. De Lano, Mount Clements, Mich., assignor to Vare Corporation, New York, N.Y.

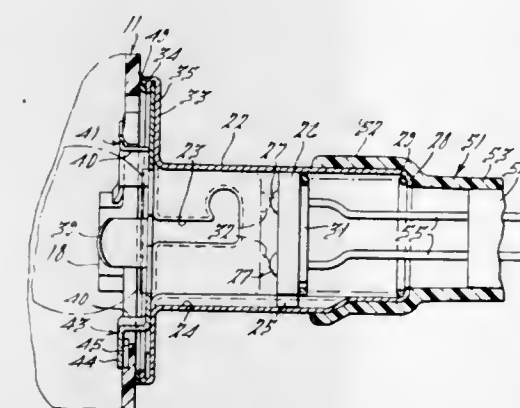
Continuation of application Ser. No. 748,858, July 30, 1968.

This application June 17, 1970, Ser. No. 48,913

Int. Cl. H01r 9/16

U.S. Cl. 339-127

3 Claims



The socket is releasably supported at the rear face of a lamp housing with a socket sleeve containing bayonet recesses for orienting the filament of the lamp therein with the socket oriented on the housing and sealed thereto.

3,626,360

**ELECTRICAL CONNECTORS**

James Edward George Cole, Ansty, England, assignor to Rendar Instruments Limited

Filed Dec. 5, 1969, Ser. No. 882,458

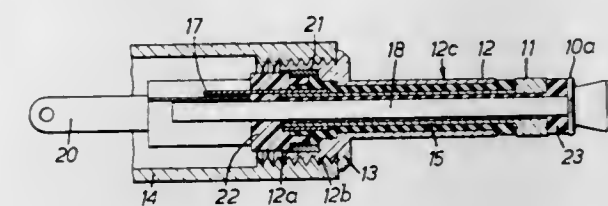
Claims priority, application Great Britain, Dec. 9, 1968,

58,271/68

Int. Cl. H01r 17/18

U.S. Cl. 339-183

6 Claims



A jack plug having at least three contacts of the tip, ring and sleeve type in which the separate conductors from the contacts are brought into a bush in the head of the plug which is formed to divide by lobes the space in the head into radially extending regions, a separate conductor being located in each region. This prevents the separate conductors making undesired electrical contact with each other.

3,626,361

**CONNECTORS FOR INSERTABLE PRINTED CIRCUITS**

Francois Robert Bonhomme, Saint-Cloud, France, assignor to Connectronics Corporation, New York, N.Y.

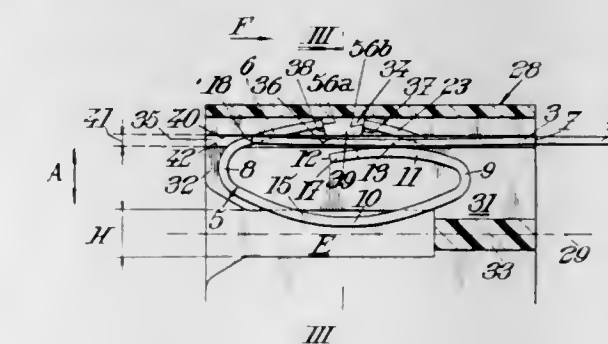
Filed Feb. 4, 1970, Ser. No. 8,595

Claims priority, application France, Feb. 4, 1969, 6,902,462

Int. Cl. H01r 9/08

U.S. Cl. 339-217 S

9 Claims



The connector comprises an insulating support housing an electrical contact member formed by a metallic strip having an intermediate portion whose opposite edges slide in grooves in the support. The intermediate portion has a longitudinal tongue which clamps the contact member in one direction and is contiguous on one side with a wiring tab and on the other with a curved portion for contacting the printed circuit. The housing has a boss for locking the contact member between tongues in the strip. The contact member can be introduced into the housing from either side.

3,626,362

**TERMINAL AND CORE ARRANGEMENT**

David Kellerman, 1485 S. Cardiff, Los Angeles, Calif.

Filed Nov. 17, 1969, Ser. No. 877,077

Int. Cl. H01r 9/16

U.S. Cl. 339-218 C

10 Claims

An improved terminal connection arrangement for an electrical component is provided in which a core means extends throughout the length of the electrical component and has terminal members at each end surface. The terminal members have an attachment portion. These may be male or female threads. Each of the male-threaded portions has a lead-receiving aperture therethrough. A wirelike lead means is inserted in each of the lead-receiving apertures and a deformable washer such as a lead or soft copper washer is placed over the threaded end portion of the terminal member and a rigid washer is placed adjacent the deformable washer.











developed in a matrix register which is a logic array of component storage locations or registers for holding an organization of data relating to nutrients and ingredients. The specification of nutrients and ingredients for a desired feed is registered as two columns in the matrix register, from which the system operates to complete the entire matrix with information from an ingredient storage means which contains nutrient information on various specific ingredients.

3,626,378

## ADDRESSING ARRANGEMENT

Adelin Eugene Gaston Salte, Versailles, France; Alois Rene Termote, Edegem, Belgium, and Stanislas Kobus, Palaiseau, France, assignors to International Standard Electric Corporation, New York, N.Y.

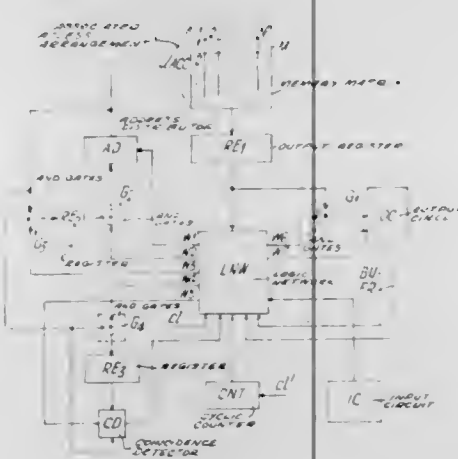
Filed Sept. 10, 1968, Ser. No. 758,733

Claims priority, application Belgium, Sept. 22, 1967, 704177

Int. Cl. G06f 9/20

U.S. Cl. 340-172.5

5 Claims



An addressing arrangement for accessing a memory storage location, and for accessing successive other locations if the first location returns a predetermined signal. A random number generator is used to provide the changes in the accessing location code. A specific application for which the arrangement is intended is to provide PBX hunting for an available line with a PBX group.

3,626,379

## UNIVERSAL DATA ACQUISITION AND CONTROL SYSTEM

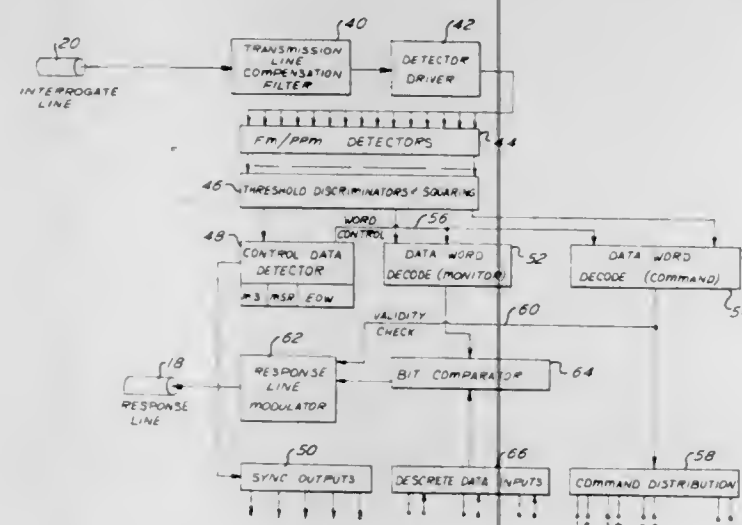
William R. Wrigley, 181 Claridge St., Satellite Beach, Fla. Continuation of application Ser. No. 733,736, May 20, 1968.

This application Jan. 18, 1971, Ser. No. 107,325

Int. Cl. G08b 11/00; G08c 15/00

U.S. Cl. 340-172.5

5 Claims



A universal data acquisition and control system using only two lines between a plurality of remote data units. The system uses a central computer connected to a central data

unit. The central data unit is tied by two transmission lines (a response line and interrogate line) to a plurality of remote data units. The transmission of information on the interrogate line uses a combination of modulation schemes to maintain costs at a minimum while maximizing the amount in time that information can be transferred from the central data unit to the remote data unit.

3,626,380

## SYSTEM FOR TIME RECORDATION

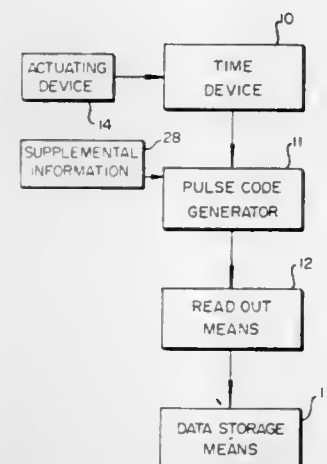
Gene E. Griffin, Silver Springs, Md., assignor to Systems Interface, Inc., Washington, D.C.

Filed Apr. 3, 1969, Ser. No. 813,121

Int. Cl. G01d 9/32; G06k 1/02, 1/12

U.S. Cl. 340-172.5

10 Claims



This disclosure provides a system for the recordation of time on a data storage means including a continuous record medium. The continuous record medium contemplates the use of punched paper tape, magnetic tape, or any other type of continuous record medium for effecting the entry of time and other information to provide a cost analysis for any type of business operation. The system of this invention includes a timekeeping mechanism interfaced with a pulse code generator and a collection information bank which includes the continuous record medium. The pulse code generator translates the time as produced by the timekeeping mechanism to a pulse train upon the energizing of actuating means included in the system. Additional apparatus is provided to prevent entries of two identical bits of information to be sensitively marked on a record card.

3,626,381

## PATTERN RECOGNITION USING AN ASSOCIATIVE STORE

Alexandre Dubinsky, London, and Peter J. Tiltman, Winchester, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

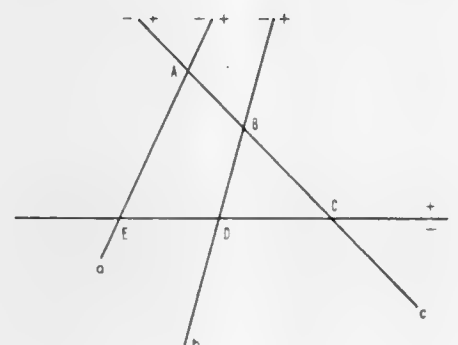
Filed Oct. 20, 1969, Ser. No. 867,694

Claims priority, application Great Britain, Oct. 23, 1968, 50202/68

Int. Cl. G06k 9/10

U.S. Cl. 340-172.5

13 Claims



Graphical patterns, such as characters, are represented by sets of binary symmetric numbers (1, -1). An associative

store holds a first table of numbers (1, 0, -1) organized into words representing the coefficients of hyperplanes for dividing a pattern space into volumes such that points in the same volume belong to the same pattern class. Each hyperplane representation is contained in a pair of words holding respectively the true and complemented forms of the hyperplane coefficients. A first associative table look-up determines which word of each pair more closely matches a particular pattern number set, by using the number set as a search argument. The resulting binary number string, indicative of a particular volume in the pattern space, is then used as a search argument for a second table in the store. The second table is organized into words representing each individual volume and the name of the pattern associated with that volume. An exact match on the second table look-up thus produces an output indicative of the name of the pattern to be recognized.

3,626,382

## DATA PROCESSING TERMINAL UNIT

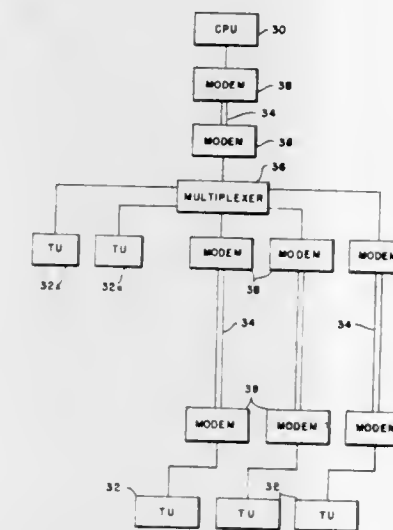
John H. Pedersen, Brussels; Fernand D. Gillet, Brussels; Slavko C. Radas, Liege; Jacques R. Debras, Liege, and Philippe Gransart, Brussels, all of Belgium, assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 19, 1969, Ser. No. 878,072

Int. Cl. G06f 5/04; H04b 1/38

U.S. Cl. 340-172.5

8 Claims



A full duplex online data processing terminal unit for providing remote data processing for a centralized large scale computer. The data processing terminal unit operates in a real time environment whereby mechanical operation by the terminal unit such as printing, forms advancing and keyboard data input, to name but a few, are not interrupted by information processing to and from the communication channels. A single timing system is used to generate the high speed timing of data processing and the relatively extremely slow speed data transmission on the communication channels.

3,626,383

## PROCESS FOR AUTOMATIC SYSTEM MAINTENANCE

William A. Oswald; Frank Y. Shaw, both of Rochester, and Lloyd H. Yost, Honeoye Falls, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 26, 1969, Ser. No. 880,168

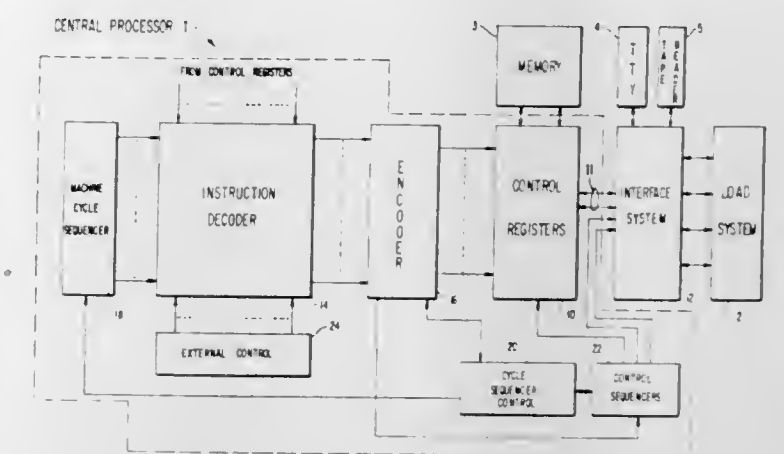
Int. Cl. G06f 11/04

U.S. Cl. 340-172.5

12 Claims

Process for automatically testing the links and components

of a multistage telephone switching network for determining the continuing proper operation thereof and for indicating



the presence, location and type of malfunctions which are detected.

3,626,384

## METHOD FOR REPRESENTING MEASURED DATA VALUES BY COEFFICIENT VALUES

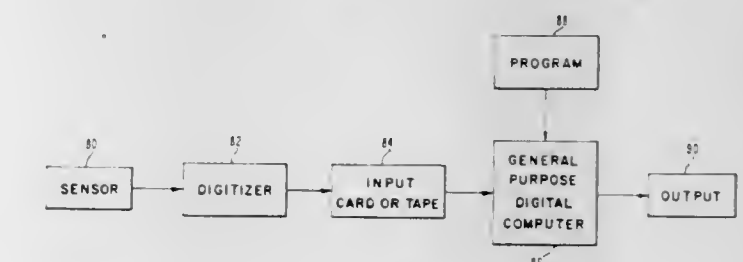
Jonathan B. Davis, Mahopac, N.Y.; Nathan P. Edwards, Darien, Conn., and Harold H. Herd, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,703

Int. Cl. G01d 21/00; G06f 7/00

U.S. Cl. 340-172.5

7 Claims



A method is provided for reducing measured data to representative coefficient values. The data relates to physical energy collected and measured by a physical sensor, and therefore, the measured data includes noise. In the method which may be carried out by programming a general purpose digital computer, the measured data values are first processed to remove the linear trend. The resultant values are then processed to provide the maximum number of coefficient values which represent the measured data values. A certain number of the set of coefficient values represent the portion of the measurements which is substantially noise, and may be eliminated. The method therefore includes a process for determining a number of coefficients of the total set which represent the measured data with minimum error where minimum error is defined as minimum stochastic uncertainty.

3,626,385

## TIME-SHARED NUMERICAL CONTROL SYSTEM

Geert H. Bouman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,201

Int. Cl. G05b 15/00; G06f 9/18

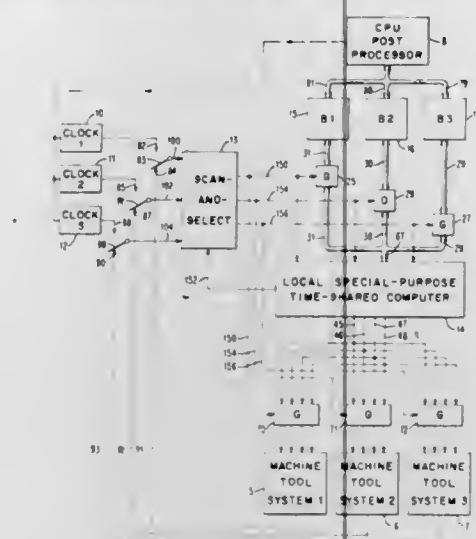
U.S. Cl. 340-172.5

8 Claims

A data processing machine capable of providing numerical control of a plurality of numerically controlled multislide



machine tools or other motion machinery on a time-sharing basis operable in response to request signals associated with the machine tools from sources located either internally or externally of their control systems, on an interleaved basis. The machine completes one sequence instruction or a single



sequence of a multisequence instruction at a time for each machine tool controller, stops and seeks a request from the next tool controller in priority and then proceeds to service such next tool controller. Output data from the machine are directly connected to the inputs of the controllers from the logic of the machine without intervening buffering.

### 3,626,386 INFORMATION STORAGE SYSTEMS

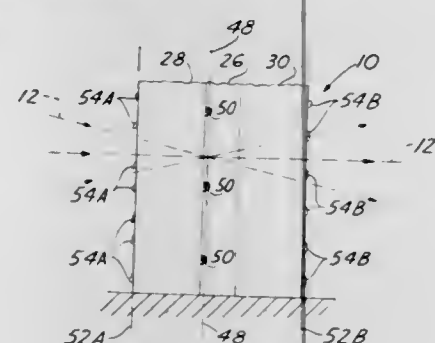
Julius Feinleib, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Mar. 5, 1970, Ser. No. 16,697

Int. Cl. G11c 13/04

U.S. Cl. 340-173 LT

9 Claims



The information storage system disclosed herein employs an amorphous semiconductor thin film sandwiched between two transparent substrates. A beam of laser energy is focused on the thin film by a lens having a sufficiently short focal length compared to the thickness of the substrates so that dust particles on the outer surfaces of the substrates are in a plane which is essentially out of focus of the lens. Accordingly, these particles do not affect the storage and retrieval of data bits stored in the amorphous film as discrete spots of crystalline or more ordered structure.

### 3,626,387 FET STORAGE-THRESHOLD VOLTAGE CHANGED BY IRRADIATION

Louis M. Terman, South Salem, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1968, Ser. No. 789,429

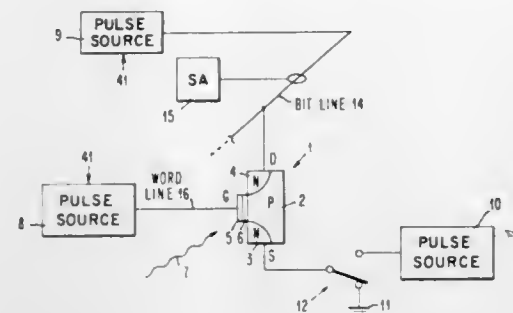
Int. Cl. G11c 11/40; H03k 17/60

U.S. Cl. 340-173 LS

18 Claims

An electron beam irradiated memory cell which stores information representative of both "ones" and "zeros" by the

application of appropriate voltages during irradiation is disclosed. Depending on the potentials applied to the source, drain and gate electrodes of an insulated gate FET, the threshold of the device is either raised or lowered. In the raised condition, a signal cannot pass through the device, showing that a "zero" has been affirmatively stored in the IG FET. In the lowered condition, a signal can pass through the



device indicating that "one" has been affirmatively stored in the IG FET. The adjustment of the threshold is completely reversible. The method also includes the step of reading or detecting the condition of the IG FET by applying potentials to it in the absence of irradiation. Specific storage devices and apparatus for storing information in an array and a read-only memory are also disclosed.

### 3,626,388 STORAGE DEVICE HAVING AN ALKALI-HALIDE STORAGE SURFACE

Yoshihiro Uno, Kadoma, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

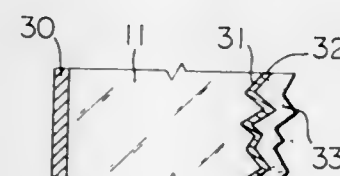
Claims priority, application Japan, Apr. 24, 1968, 43/2840

Apr. 25, 1968, 43/27849, 43/27851, Dec. 4, 1968, 43/89772

Int. Cl. G11c 13/04; H01j 29/12

U.S. Cl. 340-173 LM

6 Claims



A storage device having a storage surface formed with an evaporated alkali-halide film which is divided into a plurality of minute sections that are disposed either on a single plane or on different planes. The storage surface provides increased cohesion with the backplate and freedom from buildup of electrical charge. The storage surface finds application to a storage device of either the light-transmitting or light-reflection type.

### 3,626,389 CROSS-POINT MATRIX MEMORY USING STORED CHARGE

Sigurd G. Waaben, Princeton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 8, 1969, Ser. No. 864,705

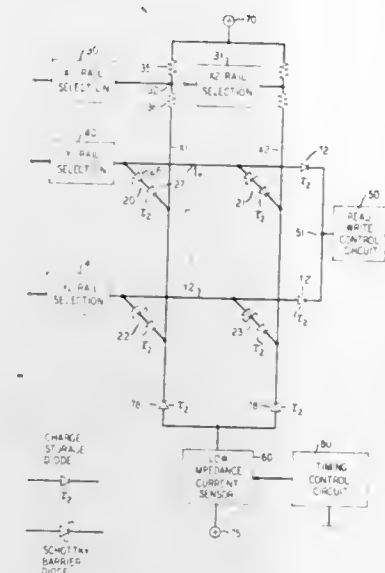
Int. Cl. G11c 11/36

U.S. Cl. 340-173 R

10 Claims

A cross-point matrix memory including, in each cross-point circuit, a memory cell having a charge storage diode and a metal semiconductor diode in a series aiding circuit arrangement. An information bit is written into any selected memory cell by forward biasing both diodes of the selected cell thereby generating minority carrier charge in the charge storage diode. Thereafter the charge is stored in the cell by applying reverse bias to the two diodes for transferring the

charge to the junction capacitance of the metal semiconductor diode. The information bit stored in the selected cell is



read out by applying a forward bias voltage ramp function to the cell.

### 3,626,390 MINIMEMORY CELL WITH EPITAXIAL LAYER RESISTORS AND DIODE ISOLATION

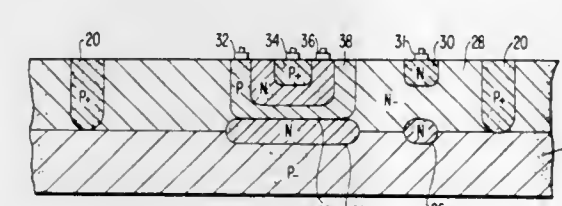
Joseph J. Chang, Shelburne, Vt.; Irving Tze Ho, Poughkeepsie, N.Y.; Norbert G. Vogl, Jr., Essex, Vt., and Bevan P. F. Wu, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,416

Int. Cl. G11c 11/40

U.S. Cl. 340-173 FF

6 Claims



A nondestructive read-integrated circuit memory cell consisting of a pair of cross coupled transistors. The junctions between the collectors of the transistors and the intrinsic epitaxial layer is utilized to provide isolation between the transistors. The transistors are formed by a triple-diffusion process wherein the collector region contacts a buried layer of opposite semiconductivity relative to the semiconductivity of the substrate structure. An epitaxial growth being of the same semiconductivity as the buried layer region is utilized as both a resistive material between the input and the buried layer and to form a diode gradient between the epitaxial region and the collector region of the transistors. The buried region forms a diode junction with the collector regions of the transistor to allow a bilevel operation of the memory cell.

### 3,626,391 JOSEPHSON TUNNELING MEMORY ARRAY INCLUDING DRIVE DECODERS THEREFOR

Wilhelm Anacker, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

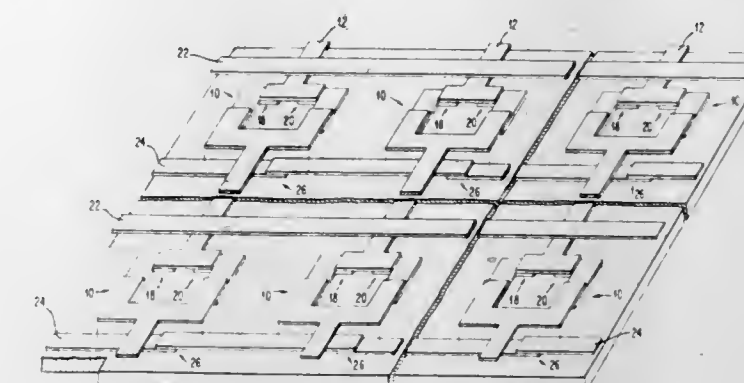
Filed July 15, 1968, Ser. No. 744,949

Int. Cl. G11c 11/44; H03k 3/38

U.S. Cl. 340-173.1

14 Claims

A memory array comprising memory cells having tunneling gates exhibiting Josephson current. Each memory cell is composed of two Josephson devices, each of which is located in a separate leg of the cell. Drive decoders using Josephson



sociated with the memory cells. The direction of current flow in a memory cell determines its binary state.

### 3,626,392 COMPOSITE THIN FILM MEMORY

Irving W. Wolf, and Andre A. Jaeklin, both of Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.

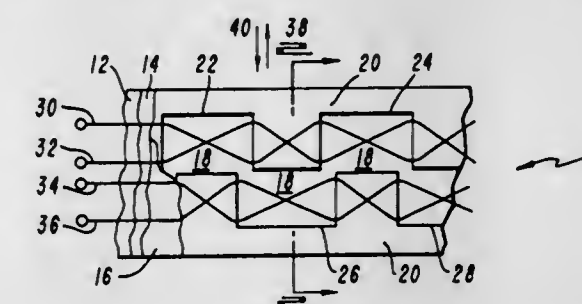
Original application Nov. 16, 1965, Ser. No. 508,108, now Patent No. 3,626,392. Divided and this application Jan. 26,

1970, Ser. No. 3,969

Int. Cl. G11c 11/14

U.S. Cl. 340-174 QA

5 Claims



A thin film storage memory, wherein a high-coercive force film is deposited as a separate layer on a continuous low-coercive force film, in a selected pattern as determined by a masking coating of electrically nonconductive material. This provides a memory with storage provided in the low-coercive force film windows, bounded by the high-coercive force film.

### 3,626,393 TEMPERATURE COMPENSATION CIRCUIT FOR MAGNETIC CORE MEMORIES

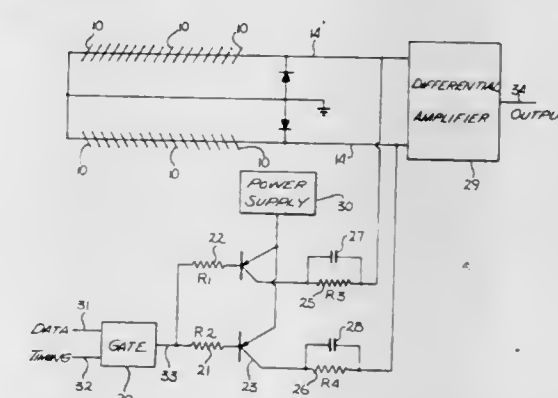
Henry M. Call, Orange, Calif., assignor to Documentor Sciences Corporation, Santa Ana, Calif.

Filed Feb. 13, 1970, Ser. No. 11,235

Int. Cl. G11c 5/02, 7/04, 11/06

U.S. Cl. 340-174 SC

5 Claims



An electrical circuit to compensate for the change in electrical characteristics of magnetic cores with changes in am-



bient temperature. In a magnetic core memory system comprising a common inhibit and sense winding, the resistance of the inhibit-winding circuit used to compensate for increases in temperature and its effect upon the characteristics of the magnetic cores.

3,626,394

**MAGNETO-OPTICAL SYSTEM**

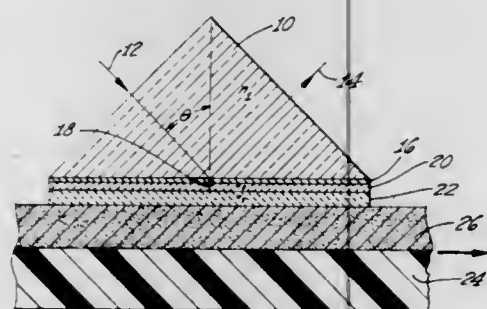
Alfred M. Nelson, Redondo Beach, and Henry W. Griffiths, Torrance, both of Calif., assignors to The Magnavox Company

Continuation-in-part of application Ser. No. 582,721, Sept. 28, 1966, now abandoned. This application Apr. 9, 1970, Ser. No. 27,130

Int. Cl. G11b 7/02

U.S. Cl. 340—174.1M0

22 Claims



A magneto-optical transducer simultaneously utilizing both the Faraday and Kerr effects. The transducer includes a thin magnetic film having substantially a critical thickness and disposed relative to a magnetic medium to receive the magnetic states previously recorded on the magnetic medium. The film is disposed to receive light and to rotate the light in accordance with the magnetic states induced in the film and to reflect a first portion of the rotated light and pass a second portion of the rotated light. An optical prism is disposed adjacent the thin magnetic film and is provided with a particular index of refraction to direct the light to the thin film.

A first layer of dielectric material is disposed adjacent the thin film and is provided with dielectric characteristics to transmit the portion of the light passing through the thin film and to produce substantially an in-phase relationship between the reflected and transmitted portions of the light. A second layer of dielectric material is disposed adjacent the first layer of dielectric material and is provided with dielectric characteristics to produce substantially a total internal reflection of the transmitted light.

3,626,395

**DUAL CLOCKING RECORDING AND REPRODUCING SYSTEM FOR MAGNETIC DATA**

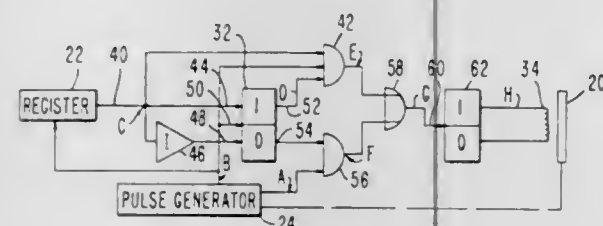
Virgilio J. Quogue, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 6, 1970, Ser. No. 35,040

Int. Cl. G11b 5/02; G06k 7/00

U.S. Cl. 340—174.1 G

8 Claims



A method and apparatus for magnetically processing digital binary information in an electronic computer on a magnetically coated disc. A dual clocking system is provided for synchronizing the information from each circular track into the main clocking system of the computer. The method looks ahead to the next succeeding binary bit to determine the frequency of flux reversals on the disc.

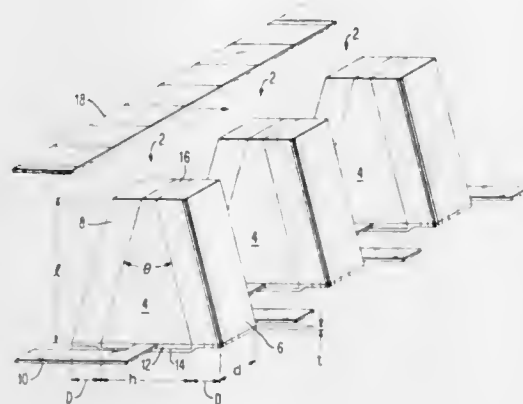
**3,626,396**  
**THIN-FILM MAGNETIC RECORDING HEAD**  
Dean E. Eastman, Putnam Valley, N.Y., and George J. Fan, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1968, Ser. No. 764,802

Int. Cl. G11b 5/16, 5/20

U.S. Cl. 340—174.1 F

12 Claims



A magnetic recording head is composed of a substantially U-shaped member made of very thin, highly permeable, ferrite pole pieces. The front gap of the head is of the order of 0.1 mil in width and the magnetic path of the head is closed at the back sides of the pole pieces with a magnetic permalloy film having square loop or nonlinear switching characteristics. The use of the square loop film together with high-permeability pole pieces permits a small magnetic field from a tape or disc to switch a large amount of flux in the permalloy film. Such flux reversal can be sensed with a single turn film of metal.

3,626,397

**DISPLACEMENT MEASURING INSTRUMENT**

Saburo Uemura, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

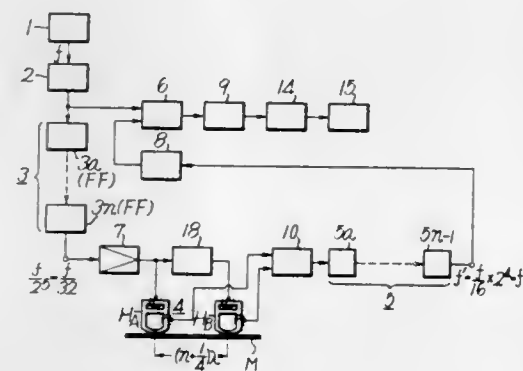
Filed Sept. 30, 1969, Ser. No. 862,413

Claims priority, application Japan, Oct. 2, 1968, 43/71660

Int. Cl. G11b 5/04; G01r 33/00

U.S. Cl. 340—174.1 B

7 Claims



A displacement measuring instrument having means for producing a carrier signal, a transducer supplied with the carrier signal from the above means to phase modulate the carrier signal in accordance with a displacement, means for multiplying the phase-modulated signal, means for demodulating the multiplied, phase-modulated signal and means for counting the displacement with the demodulated signal.

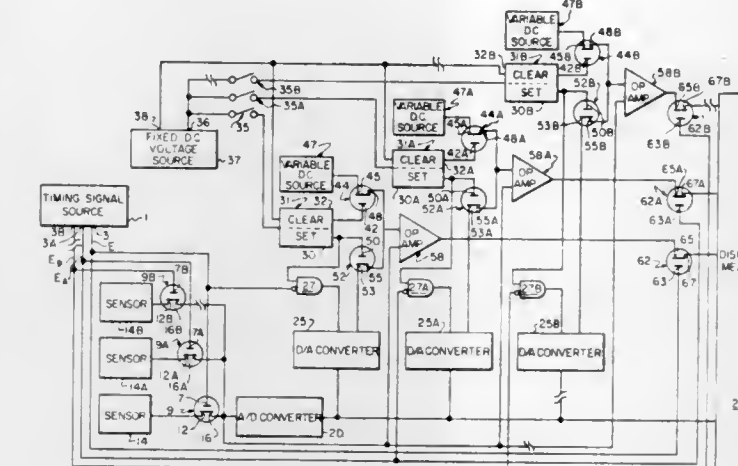
**3,626,398**  
**MULTIPLE DISPLAY SYSTEM**  
Abner Owens, Jr., Paramus; Arthur Simon, Fair Lawn, and Kenneth J. Kendall, Fairfield, all of N.J., assignors to The Bendix Corporation

Filed Aug. 21, 1968, Ser. No. 754,423

Int. Cl. G08c 15/12

U.S. Cl. 340—183

4 Claims



A multichannel electronic device providing data for displaying a plurality of actual flight conditions of an aircraft and for displaying the deviation of the actual flight conditions from the preset reference flight conditions or selected actual flight conditions, and multiplexing means for periodically displaying the data at a frequency to observe all conditions simultaneously.

3,626,399

**INDICATOR AND CONTROLLER CIRCUIT FOR LIQUID LEVEL CONTROL**

Lloyd T. Akeley, Fullerton, Calif., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

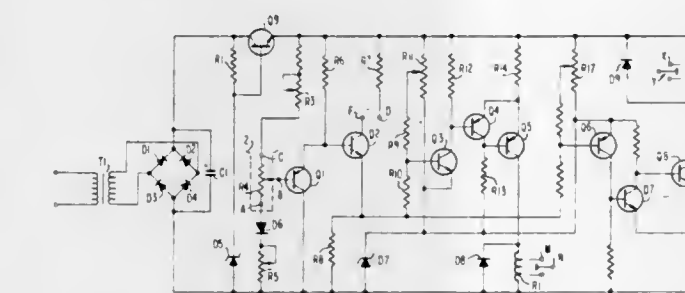
Continuation-in-part of application Ser. No. 715,863, Mar. 25, 1968, now abandoned. This application Oct. 16, 1969,

Ser. No. 867,053

Int. Cl. G08b 21/00

U.S. Cl. 340—244

9 Claims



An indicator controller circuit for liquid containers having a liquid level responsive signaling device in which a two-stage amplifier having a unity voltage gain characteristic develops a current output from a transmitter voltage input. Connected to the output of the amplifier are two complementary Schmitt trigger circuits, one operating a high-alarm relay, the other operating a low-alarm relay for respective different levels of liquid sensed within the container.

3,626,400

**SELF-CHECKING FLUID LEVEL INDICATORS**  
Trevor Bates, Houghton Regis near Dunstable, England, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 8, 1968, Ser. No. 765,905

Claims priority, application Great Britain, Oct. 18, 1967,

47,424/67

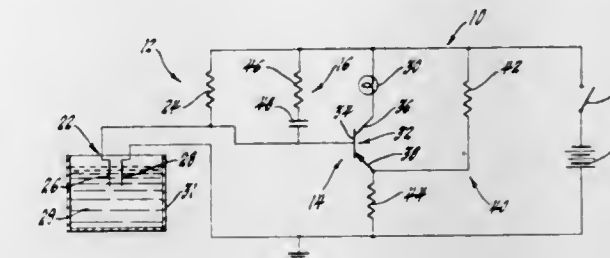
Int. Cl. G08b 21/00

U.S. Cl. 340—244 C

8 Claims

A fluid level detector comprising a probe circuit for the detection of fluid at a fluid level of interest, an indicator circuit for indicating the detection of fluid at the fluid level of

interest, and a timer circuit operative upon initial energization of the detector so as to energize the indicator circuit for



a predetermined time to provide a check of the detector operativeness.

3,626,401

**FAIL TO FLASH INDICATOR CIRCUIT**

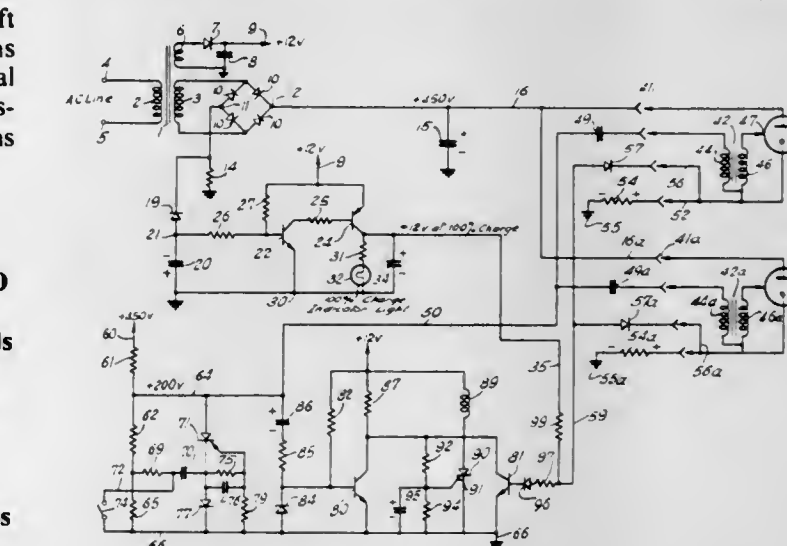
Robert A. Flieder, Englewood Cliffs, N.J., and Sumner S. Averett, Bayside, N.Y., assignors to Berkey Photo, Inc., New York, N.Y.

Filed Mar. 19, 1969, Ser. No. 808,583

Int. Cl. G08b 21/00

U.S. Cl. 340—253

11 Claims



A fail to flash alarm circuit including a main capacitor flash supply means and flash initiating means to discharge the capacitor into a discharge lamp. Control means includes alarm means so arranged as to be responsive to the actuation of the flash initiating means in the absence of current flow to the discharge lamp, this condition being determined by a current sensing resistor which is connected in the circuit to the discharge lamp to actuate switching means to block actuation of the alarm means. Bias means for the switching means may include a supervised charging circuit arranged so that bias means is not available to prevent a fail to flash alarm in the event the main capacitor is not fully charged. The bias means is connected through a voltage dropping resistor for normally dropping the control voltage to the second switching means. The drop in voltage is nullified current passed to the discharge lamp as sensed through the current sensing means and used to back bias the diodes to prevent the voltage drop and block actuation of the alarm. The circuit provides an alarm in the event the discharge lamp fails to be powered by current or in the event the main capacitor is not fully charged.

3,626,402

**WARNING SYSTEM FOR COMBINE**

Raymond G. Price, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Jan. 2, 1970, Ser. No. 26

Int. Cl. G08b 19/00

U.S. Cl. 340—267 R

15 Claims

A fail-safe monitoring device for a self-propelled combine harvester has a plurality of signal lights mounted in the



operator's platform in the field of view of the operator and a plurality of pairs of electrical contacts each of which is connected in series with one of the signal lights across the battery of the harvester. The pairs of contacts are controlled by displaceable members of the harvester such as a straw walker door, a concave, and a parking brake and are held closed to light the signal lights when the harvester is functioning normally. All of the signal lights connected with the pairs of contacts are of the same color and intensity. The normally closed contacts and normally lit lights are fail-safe since any wiring

the current flow through the diodes is such that no alarm indication is provided if a series-connected contact spanned by a diode is actuated, while for night use, a switching unit is provided to reverse the direction of current flow through the loop to cause the relay to be rendered operative if any series-connected contact is actuated.

3,626,404

## THREE-DIMENSIONAL DISPLAY SYSTEM

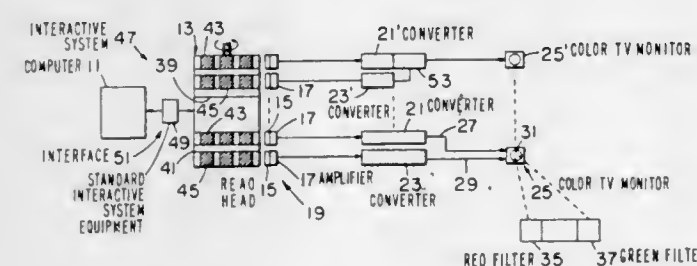
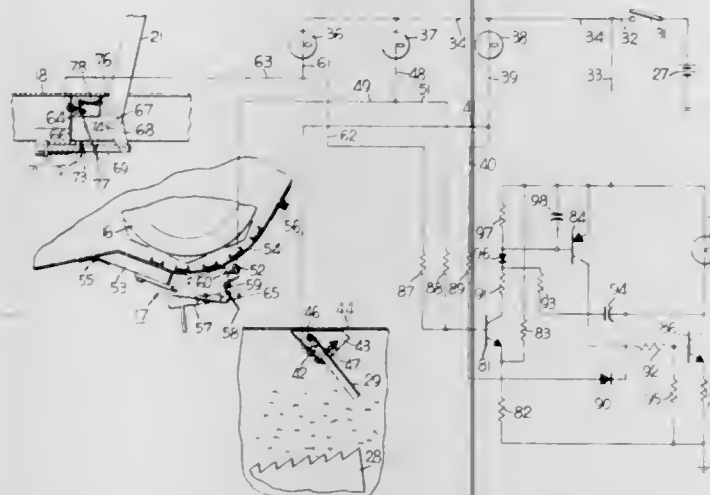
David Ophir, East Patchogue, N.Y.; Barry J. Shepherd, San Jose, and Robert J. Spinrad, Santa Monica, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 10, 1969, Ser. No. 797,765

Int. Cl. G06f 3/14

U.S. Cl. 340—324 A

1 Claim



Interactive method and apparatus for producing three-dimensional television wherein means having a computer and stored program device feeds a standard television monitor with two separate signals to produce a stereographic display in different colors that can be viewed through separate colored filters for three-dimensional television viewing by a large number of people.

3,626,405

## A D CONVERTER

Takao Yamamoto, Fujisawa, Japan, assignor to Shinko Tsushin Kogyo Kabushikikaisha represented by Yasukazu Watanabe, Kanagawa-ken, Japan

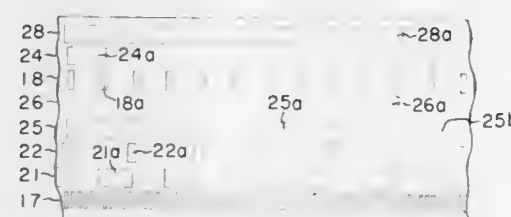
Filed Jan. 30, 1970, Ser. No. 6,989

Claims priority, application Japan, Feb. 1, 1969, 44/7460

Int. Cl. G08c 9/00, 9/06

U.S. Cl. 340—347 P

17 Claims



An analog digital converter comprising a first system for conversion of decimal numbers in all FIGS., in which an alternate ON-OFF signal is emitted from a photoelectric element whenever a divisional zone of minimum units having alternate transparent and opaque portions of uniform width shifts the minimum unit; a second system for indication of decimal numbers in each FIG., in which one among 10 photoelectric elements, but adjacent two at every converting borders, are exposed to passing light whenever divisional zones in which respective transparent portions each having a width equivalent to that of the minimum unit,  $10^n$ ,  $n$  means each FIG. where one place down from each pertinent FIG. and the same hereinafter, plus marginal width sufficient to cover at least one slit each on both sides of the transparent portions and are arranged centering in each phase corresponding to every  $10^n$ -th unit of the minimum units shift equivalent to the width of each  $10^n$  of the minimum unit; a third system for advance of FIGS., in which alternate com-

error or burned out lamp cannot be mistaken as a normal operating condition. If a malfunction occurs in the harvester, one of the displaceable members is moved and opens the associated pair of contacts and extinguishes the corresponding signal light. Oscillator means are provided for flashing a signal light of another color on and off in response to the opening of any one of the pairs of contacts, and such oscillator means are preferably astable multivibrator means having a NOR gate input stage with a plurality of resistance input branches each of which is connected to one of said pairs of contacts.

3,626,403

## PROTECTIVE SYSTEMS AND APPARATUS THEREFOR

Goodwin A. G. Ive, Farm Cottage, High Road, Old Chipstead, In the County of Surrey, England

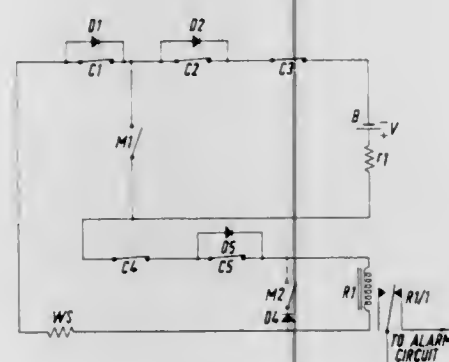
Filed Apr. 24, 1969, Ser. No. 818,860

Claims priority, application Great Britain, Apr. 29, 1968, 20,320/68

Int. Cl. G08b 13/08

U.S. Cl. 340—276

16 Claims



A protective system capable of being monitored for day and night use comprising a single electrical loop including a plurality of series-connected contacts arranged to be actuated by an intruder and a relay connected in the loop and arranged to be rendered operative to actuate associated contacts connected in an alarm circuit to indicate the presence of the intruder, selected ones of the contacts having diodes connected across the contacts such that the system can operate in accordance with two different modes. For day use,

pound ON-OFF signals are emitted from each pairs of photoelectric elements connected with ON side and OFF side respectively at the output of each photoelectric element for the highest number in each FIG. where one place down whenever each pairs of divisional zones consisting of alternately compound transparent and opaque portions each having a width equivalent to that of the minimum unit,  $10^n$ , plus marginal width sufficient to cover at least one slit on both sides of the compound transparent portions shift equivalent to the width of each  $10^n$ , of the minimum unit; and circuit which, by the switching of the ON-OFF signals given from the divisional zones in the first and the third systems, distribute electric current alternately to the photoelectric elements divided into two groups of odd and even numbers in each figure.

3,626,406

## CODE SIGNAL INPUT APPARATUS

Tadamitsu Iritani, Tokyo, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Aug. 26, 1970, Ser. No. 67,031

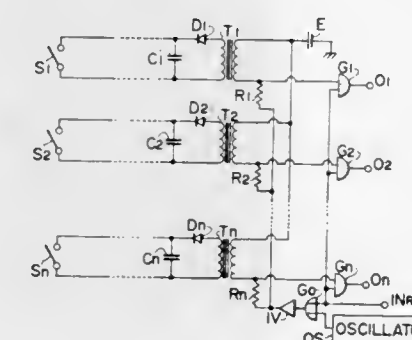
Claims priority, application Japan, Sept. 26, 1969, 44/76783

Dec. 11, 1969, 44/99581

Int. Cl. H03k 17/56

U.S. Cl. 340—347 DD

3 Claims



In apparatus to write a code signal generated by code signal-generating means such as a switch located at a measuring point into a computer, an insulation transformer is connected between the code signal-generating means and an output circuit. A series diode and a parallel capacitor are connected to a circuit interconnecting the primary winding of the insulation transformer and the code signal-generating means. A pulse is normally applied to the secondary winding of the insulation transformer to charge the capacitor through the diode. The capacitor is discharged when the switch is closed to decrease the secondary impedance of the transformer to produce an output signal corresponding to the code signal.

3,626,407

## CIRCUITS FOR CONVERSION BETWEEN ANALOG AND DIGITAL REPRESENTATIONS OF DATA

Karsten E. Drangeld, Hedingen, and Andres Moser, Thalwil, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 27, 1970, Ser. No. 58,438

Claims priority, application Switzerland, Aug. 5, 1969, 11,852/69

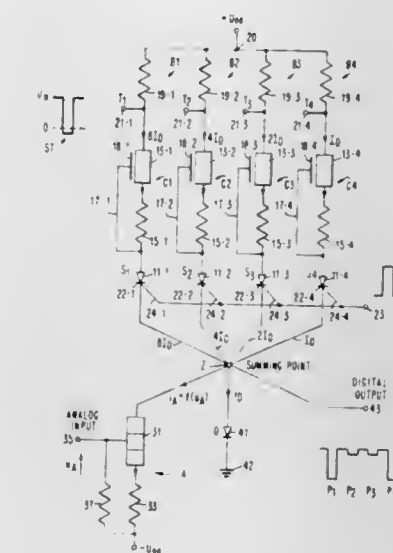
Int. Cl. H03z 13/175

U.S. Cl. 340—347 AD

9 Claims

An analog-to-digital converter is disclosed of the successive approximation type. The analog signal is converted to a current which is subtracted from the sum of weighted reference currents. Initially, all reference currents are switched on, but those not required for compensating the analog current are switched off in successive comparison

steps. Illustratively, a thyristor-type switch is provided for each reference current source, and a common diode is provided as a path for the difference current. Through the novel combination of elements provided by this disclosure, these



components are sufficient for the logic, comparison and switching functions required in the analog-to-digital conversion. A comparable digital-to-analog converter is also disclosed herein.

3,626,408

## LINEAR CHARGE REDISTRIBUTION PCM CODER AND DECODER

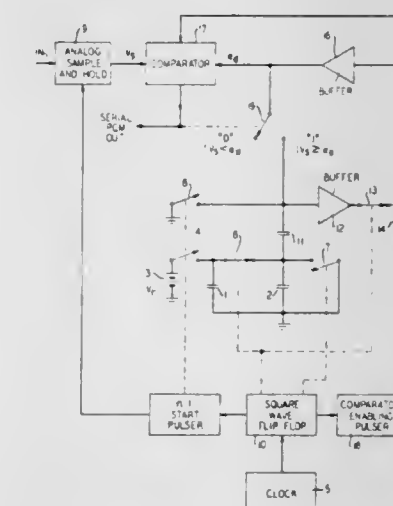
Robert L. Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 31, 1969, Ser. No. 889,399

Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

6 Claims



Circulating pulse code modulation (PCM) encoder and decoder which utilize capacitive charge redistribution techniques. A means for automatic scaling to adapt reference voltages to the signal to be converted is also provided.

3,626,409

## KEYBOARD DATA ENTRY DEVICE

Raymond Monroe Hill, and Leland Duane Lewis, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,205

Int. Cl. G08c 1/00

U.S. Cl. 340—365

8 Claims

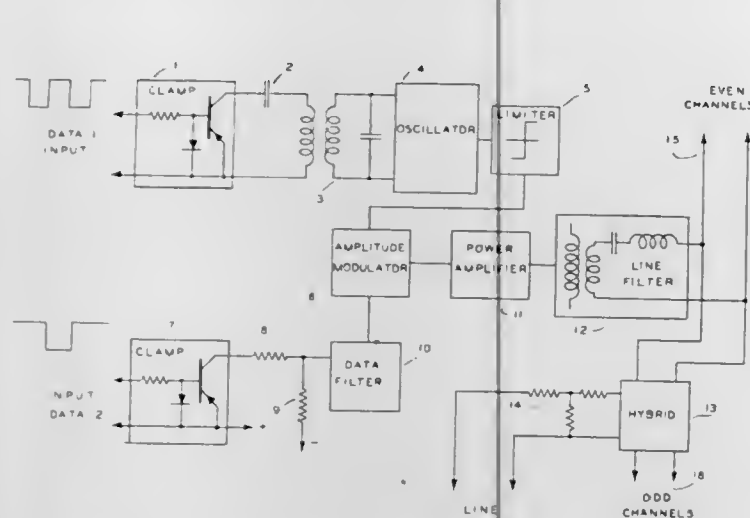
Each of the keys in a multiple key keyboard has associated with it a source of radiofrequency (RF) electromagnetic







modulation of the frequency shifted carrier of one channel to transmit the data of the second channel. Both channels which propagate to said receiver via a direct transmission path while distinguishing from those propagated via an in-



direct path. Said doppler shift is proportional to the angle of elevation from said receiver to said array.

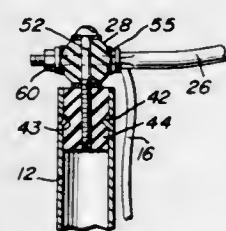
3,626,420

## MAST-MOUNTED LOOP ANTENNA

Louis Kocsi, 25 Palisade Ave., Garfield, N.J., and Julius Kocsi, Jr., 102 Highland Ave., Clifton, N.J.  
Filed Aug. 8, 1969, Ser. No. 848,494  
Int. Cl. H01a 1/12; H01q 1/12

U.S. Cl. 343-742

11 Claims



An antenna assembly including separate antennas for receiving UHF and VHF signals disposed along spaced points on an antenna mast. The UHF antenna forms a closed configuration aligned in a plane at the top of the mast while the VHF antenna is characterized by two triangular members fastened to the mast in side-by-side relation aligned in a plane at an angle to the mast. Specially formed cylindrical insulative blocks, connected to the mast, furnish anchoring mounting support for the antennas.

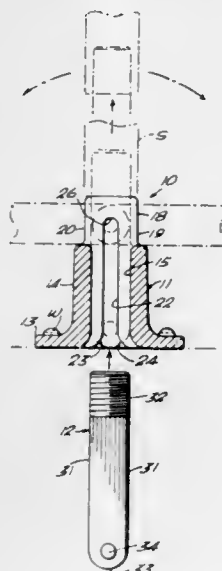
3,626,421

## MARINE ANTENNA-MOUNTING BASE

Manuel Santana, Miramar, and Frank Candela, Miami, both of Fla., assignors to Pearce-Simpson, Inc.  
Filed Mar. 3, 1970, Ser. No. 16,047  
Int. Cl. H01q 9/30

U.S. Cl. 343-900

8 Claims



A two-part antenna support base for vertical "whip" antennas comprising a base member adapted to be secured to a

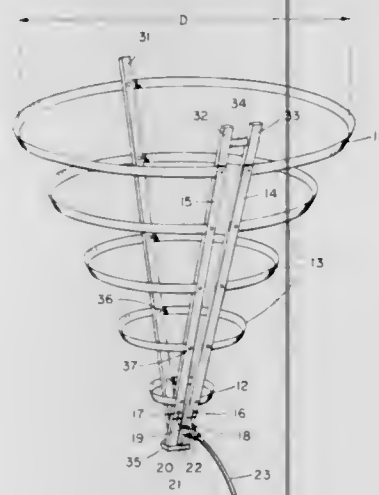
3,626,418

## BROADBAND, OMNIDIRECTIONAL, HORIZONTALLY POLARIZED, LOOP ANTENNA

Walter Clayton Berryman, Jr., Westminster, Md., assignor to The Bendix Corporation  
Filed Mar. 26, 1970, Ser. No. 22,946  
Int. Cl. H01q 1/12

U.S. Cl. 343-742

3 Claims



A broadband, horizontally polarized, omnidirectional antenna comprising a plurality of parallel-fed loop radiating elements is disclosed. This antenna has particular utility for reception of VHF entertainment broadcasts (Television channels 2-13 and the FM broadcast band).

3,626,419

## DOPPLER NAVIGATION SYSTEM

Charles William Earp, London, England, assignor to International Standard Electric Corporation, New York, N.Y.  
Filed Sept. 22, 1969, Ser. No. 859,915  
Claims priority, application Great Britain, Sept. 23, 1968, 45,088/68

Int. Cl. G01s 1/38

U.S. Cl. 343-106 D

6 Claims

A first frequency signal is successively radiated from each antenna of a vertical array thereby simulating a constant velocity moving source; and second and third frequency signals are continuously transmitted from another antenna. A receiver responsive to all of the radiated signals derives therefrom the doppler shift of the first frequency signals

horizontal support surface and a support post slidably receivable through the bottom of an upwardly extending sleeve portion integrally formed with the base member. The support post is movable between a lower position within the sleeve whereat it is constrained thereby in vertical disposition, and an upper limit position whereat it is swingable downwardly to each side through side openings at the upper end of the sleeve portion to permit downward swinging of the support post together with an antenna attached thereto at the upper end.

ing of machine-readable longish lines on the light-responsive medium which is thereafter severed in label-like sections. A plurality of apertured wheels are also disposed in proximity to the light-responsive medium and for cooperation with a light source to facilitate the recording of visual figures on the medium.

## ERRATA

For Classes 9-310 and 408-115 sec:  
Patent Nos. 3,626,428 thru 3,626,513

3,626,424  
LAMP

Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.  
Filed Mar. 18, 1970, Ser. No. 20,727  
Int. Cl. F21v 29/00

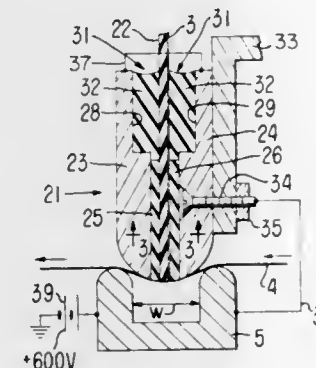
U.S. Cl. 240-47

2 Claims

3,626,422  
ELECTROGRAPHIC-WRITING HEAD HAVING A PREPONDERANCE OF CONDUCTIVE PORTIONS ENGAGING THE RECORDING MEDIUM  
William A. Lloyd, San Jose, Calif., assignor to Varian Associates, Palo Alto, Calif.  
Filed July 28, 1969, Ser. No. 845,358  
Int. Cl. G03g 15/00

U.S. Cl. 346-74 ES

6 Claims



An electrographic-writing apparatus is disclosed having a writing head containing plural-writing electrodes and having portions bearing against the charge retentive surface of the recording medium. A backup electrode structure is spaced from the recording head to define a writing gap through which the recording medium is passed. A preponderance of the bearing surface of the recording head is formed by an electrode structure operated at a potential independent of the writing electrodes and at the potential of the backup electrode, to prevent depositing unwanted charges on the recording medium.

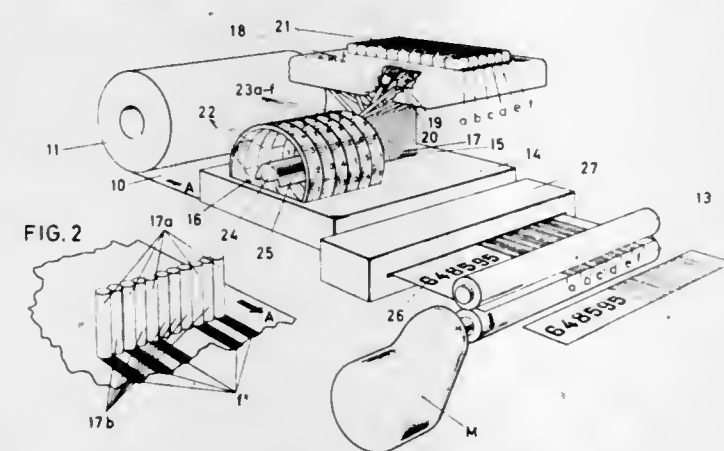
3,626,423

## DEVICE FOR RECORDING INFORMATION ON A DATA RECORD

Tore Ameen, Solna, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden  
Filed June 4, 1969, Ser. No. 830,317  
Int. Cl. G06k 15/12

U.S. Cl. 346-107 R

4 Claims



A plurality of light-conducting rods are disposed with one end of each rod arranged in a parallel line in close proximity a continuous sheet of light-responsive recording medium. The other ends of the rods are disposed for coaction with light sources adapted to be energized, in coded combinations, upon actuation of the keys of a keyboard. The appearance of light at the end of the rods results in the record-

An incandescent lamp device is disclosed as including a cylindrical cage-like shell and a cylindrical socket housing at the top thereof, said cage-like shell encircling an inverted incandescent lamp bulb depending from a socket in the socket housing. A cylindrical diffuser base attached to a diffuser is removably attached to the lower end of the cylindrical cage-like shell such that the diffuser surrounds the incandescent lamp bulb to a point slightly removed from the base of the bulb, thereby providing a convenient means for ready removal of the bulb and cooling air emission. A further cooling construction is also described for providing longer bulb life and protecting the plastic parts of the device from excessive heat.

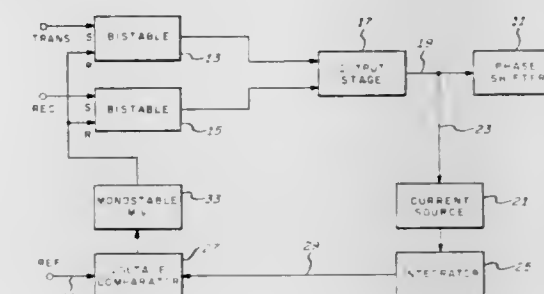
3,626,425

## ELECTRONIC DRIVE CIRCUIT

Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation  
Filed Mar. 19, 1970, Ser. No. 20,964  
Int. Cl. H03k 17/00

U.S. Cl. 307-262

5 Claims



An electronic drive circuit for a microwave ferrite phase shifter includes a single output stage to drive the phase shifter to a specified level of magnetization of either polarity. Bistable circuits permit the output stage to magnetize the



phase shifter in one polarity or the other in response to first or second command signals respectively. A signal indicative of the absolute value of the instantaneous voltage being applied to the phase shifter is integrated and compared to a reference voltage. When the integrated signal reaches a prescribed level, a monostable multivibrator is actuated and the magnetization current to the phase shifter is terminated.

3,626,426

## PHASED LOCKED LOOPS

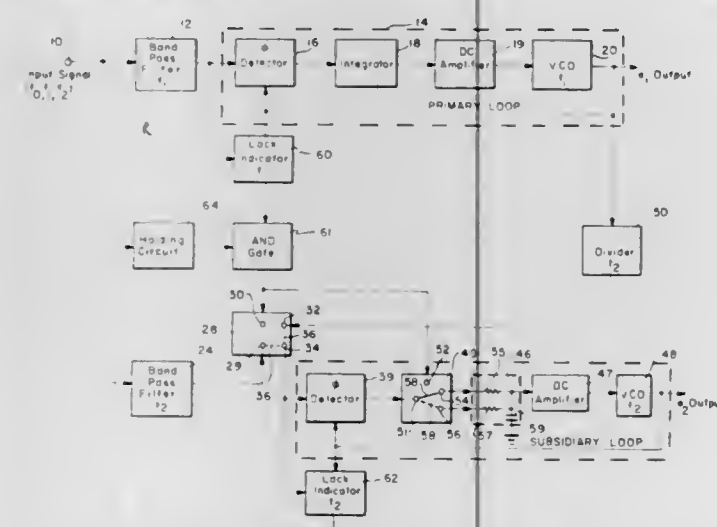
Richard Steinberg, Encino, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jan. 29, 1970, Ser. No. 6,698

Int. Cl. H03h 7/20

U.S. Cl. 340—170

7 Claims



Apparatus for rapid automatic signal acquisition having multiple phase-locked loops with coherently related output signal frequencies. The first phase-locked loop is responsive to a first input signal for generating a first output signal having substantially the same frequency as the first input signal. The second phase-locked loop is responsive to a second input signal for generating a second output signal having substantially the same frequency as the second input signal. A signal generator provides a phase-lock signal to phase-lock the second loop. Another signal generator generates a signal which indicates phase-lock of both the first and second loops. An integrator having short and long time constant circuit portions is provided in the second loop such that upon being suitably switched it provides either a fast or slow signal response to the second loop. A switch mechanism normally applies the phase-lock signal to the second loop, and switches the integrator so as to provide the second loop with the short time constant circuit portion and accordingly a fast signal response until the second loop becomes phase locked. The switch mechanism then applies the second input signal to the second loop, and so switches the integrator in the second loop as to provide it with the long time constant circuit portion and slow signal response when the phase-lock indicating signal indicates that both loops are phase locked.

3,626,427

## LARGE-SCALE DATA PROCESSING SYSTEM

Olin L. MacSorley, Lake Katrine, N.Y.; Leo J. Hasbrouck, Poughkeepsie, N.Y.; Wesley C. Stetler, Poughkeepsie, N.Y.; C. Richard Holleran, Saratoga, Calif.; Alan R. Geller, Poughkeepsie, N.Y.; Clark Kurtz, Highland, N.Y.; Robert A. Nelson, Poughkeepsie, N.Y.; Gordon L. Smith, Poughkeepsie, N.Y.; Dana R. Spencer, Poughkeepsie, N.Y.; Joe F. Timm, Poughkeepsie, N.Y.; William P. Wissick, Sunnyside, Calif.; Richard G. Allen, Hyde Park, N.Y.; Thomas F. DuBois, Newburgh, N.Y.; George E. Hack, Poughkeepsie, N.Y.; Eugene J. Annunziata, Poughkeepsie, N.Y.; William C. Hoskinson, Poughkeepsie, N.Y.; Lewis E. King, Highland, N.Y., and Thore-Jan Johansen, Oslo, Norway, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 445,326, Apr. 5, 1965, now abandoned. This application Jan. 13, 1967, Ser. No. 609,238

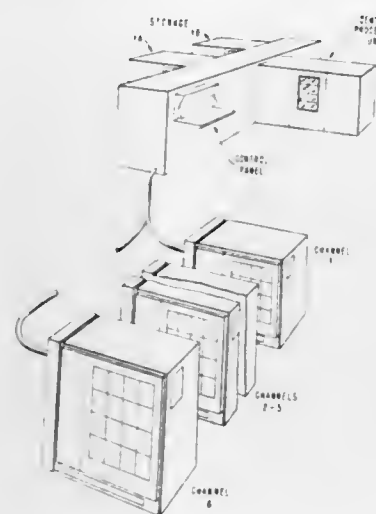
Int. Cl. G06f 9/00, 15/00, 3/00

U.S. Cl. 340—172.5

62 Claims

The specification discloses an illustrative embodiment for

the invention comprising a large-scale data processing system of the type which is composed of a plurality of quasi-independent units. The environmental data processing system includes a central processing unit or portion, which is herein referred to as a CPU, a plurality of storage units, a plurality of input/output control devices referred to herein as channels, as well as control and maintenance facilities which are found in a power distribution unit, herein referred to as a



PDU. The CPU of the environmental system includes a control or instruction unit hereinafter referred to as an I-unit, and an arithmetic and logic or execution unit, hereinafter referred to as an E-unit. The I-unit includes controls for instruction fetching, branching, interruption handling, communication with the input/output channels, and other related functions. The E-unit of the environmental system can perform algebraic and logical operations, moving, shifting, and other functions.

3,626,428

## SURF BOARDS

Christopher Collaro, 25-27 Effra Road, London, S. W. 2, England

Filed Dec. 3, 1969, Ser. No. 881,721

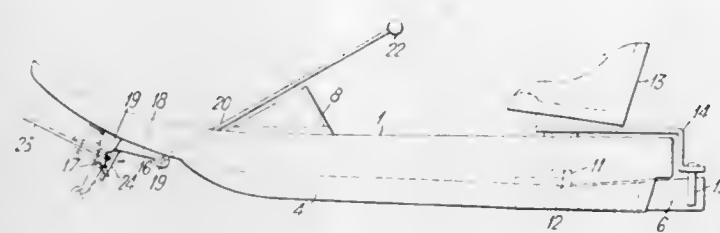
Claims priority, application Great Britain, Feb. 4, 1969,

5,982/69

Int. Cl. A63c 15/00

U.S. Cl. 9—310 E

13 Claims



A surf board having a hull with sufficient buoyancy to support a rider is provided with a seat which is pivotally mounted so that it can turn about an upright axis and a rudder which is connected to the seat so that the rider can steer the surf board by twisting the seat. A catch for the attachment of a towrope to the hull is provided on the underside of the bow of the hull and the catch has a release mechanism controlled by a member which extends towards the seat to enable it to be held by the rider. The release mechanism is so arranged that when the control member is held and pulled by the rider, the catch holds the towrope, but on release of the control member, the release mechanism causes the catch to release the rope.

3,626,429

## DETACHABLE DRAPERY CARRIER

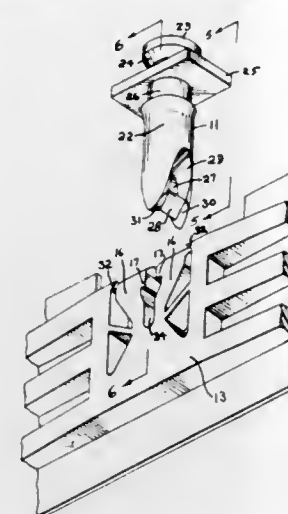
Ellis I. Toder, 9225 Grace Lane, Philadelphia, Pa.

Filed Oct. 29, 1969, Ser. No. 872,085

Int. Cl. A47h 13/00

U.S. Cl. 16—87.2

4 Claims



A two part detachable drapery carrier and heading stiffener including a male member and a female member. The female member is made integrally with a drapery-heading stiffener and is formed to provide a cavity between movable latch elements having catches which snap over and lock the lower end of the male member when the latter is properly located within the cavity. The upper end of the male member is formed to be easily slidable in a track system, while the lower end of the male member is formed to cam open the latch elements of the female member. In addition the lower end of the male member has a double inclined surface over which the catches of the latch elements fit to couple the male member with the female member. The trunk of the male member is formed to enable the device to be rocked or moved in the plane of the drapery-heading stiffener without unlatching the male member from the female member, while at the same time it is formed to permit unlatching of the male member from the female member in response to relative movement therebetween in a plane which is substantially perpendicular to the plane of the drapery-heading stiffener.

3,626,430

METHOD AND APPARATUS FOR LACING A HANK  
Takashi Ohta; Yoshinobu Adachi; Shygeru Tanaka, and  
Toshitaki Norimatsu, all of Nobeoka-shi, Japan, assignors to  
Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

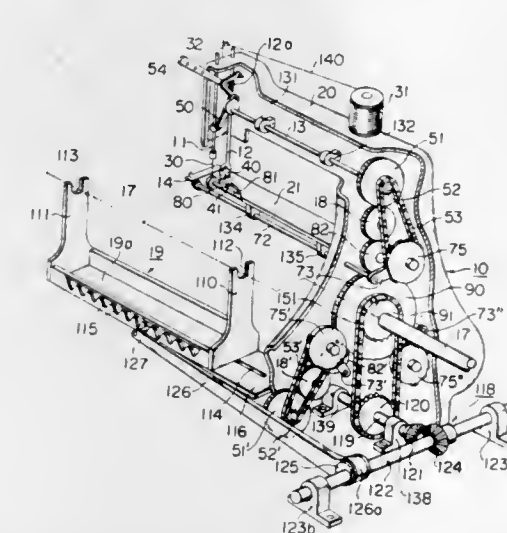
Filed Jan. 5, 1970, Ser. No. 723

Claims priority, application Japan, Jan. 3, 1967, 44/2

Int. Cl. B65h 55/00, 69/04

U.S. Cl. 28—21

5 Claims



A process for lacing a hank using a reciprocating needle threaded with an upper thread and a rotary looper feeding a lower thread therefrom, said process being characterized in that said both threads form in combination a plurality of half

hitches at each end of the lacing for the formation of a knot and a series of regular lock stitches between said end knots.

3,626,431

## AUTOMATIC MACHINE FOR PROCESSING CONNECTING WIRES

Michel Thierri, and Pierre Toussaint, both of Amlens, Somme, France, assignors to U.S. Philips Corporation, New York, N.Y.

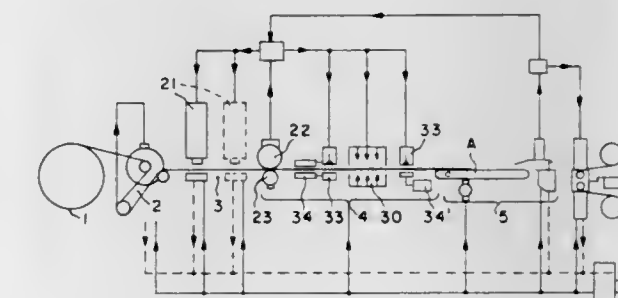
Filed Dec. 16, 1969, Ser. No. 885,606

Claims priority, application France, Dec. 20, 1968, 179506

Int. Cl. H01r 43/04

U.S. Cl. 29—203 D

1 Claim



Automatic machine for processing electric connecting wires. The machine comprises the combination of a winding off unit, a marking unit, a length-measuring member, a stripping member, a transmission and feeding unit and a terminal-sleeve insertion unit. Pneumatic means control the cycle of the various units at a high rate and safety members provide a reliable operation.

3,626,432

## TILT TOP TOOLING PLATE FOR COIL ASSEMBLY MACHINES

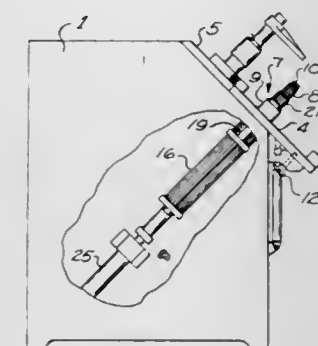
Henry B. Fohl, Wellston, and Frank Korski, Brentwood, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 29, 1969, Ser. No. 888,525

Int. Cl. H02k 15/06

U.S. Cl. 29—205

12 Claims



A coil assembly apparatus for axially inserting prewound coils and wedges in the slots of the stator core for an electric motor has the tooling normally associated with transfer winding and bore wedge insertion attached to a platform that is in turn hinge mounted to the machine frame. The platform is moveable from closed, operating position to open position by a hydraulic cylinder or the like. A hydraulically activated ram transmits power to the tooling through a separable connector. In the open, raised position of the platform, the tooling attached to the underside of the hinged platform is disconnected from the ram, accessible to operator or maintenance personnel, and readily manipulatable.



3,626,433

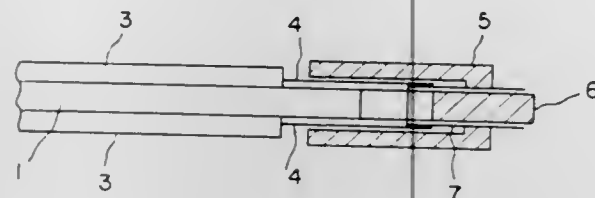
**METHOD FOR INTERCONNECTING PLATED WIRES USED IN MAGNETIC MEMORY FRAMES**

Arthur P. Schultz, Woodstock, N.Y., assignor to Ferroxcube Corporation, Saugerties, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,946  
Int. Cl. H01f 7/06

U.S. Cl. 29-604

4 Claims



A method of interconnecting the free ends of plated wire conductors used in magnetic memory frames. A soft, flexible, interconnecting ribbon conductor is shaped to a configuration which will permit its freedom of movement, and is attached to the free ends of each of two plated wire conductors positioned on opposite sides of the frame. The resultant connection will be "free floating" and stress free.

3,626,434  
**LINE DOG**

Bruce L. Miller, Bowling Green, Ky., assignor to Lera M. Jones, Bowling Green, Ky.

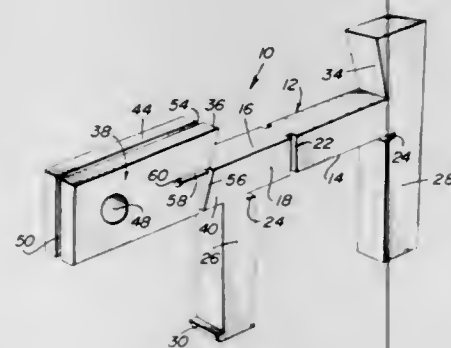
Filed Feb. 13, 1970, Ser. No. 11,088  
Int. Cl. B44d 3/00

U.S. Cl. 33-86

8 Claims

U.S. Cl. 51-124

3 Claims



A line-anchoring device adapted to establish an anchoring point on a masonry surface for a line to guide laying of brick and/or blocks. A pair of legs extend from the elongated body of the anchoring device spaced from an externally grooved head presenting an angled edge in confronting relation to a tail projecting from the body in a direction opposite to one of the legs.

3,626,435  
**DRESSING ROLL**

Frank P. Tuczak, Livonia, Mich., assignor to Sidley Diamond Tool Co., Detroit, Mich.

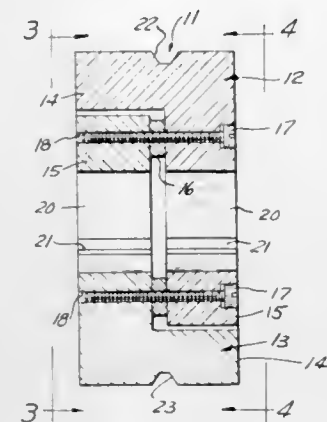
Filed Sept. 11, 1970, Ser. No. 71,521  
Int. Cl. B24d 17/00

U.S. Cl. 51-206.5

4 Claims

A dressing roll formed of a ring-shaped rim diametrically cut into two axially and radially aligned semicircular halves,

with a continuous abrasive-coated dressing groove formed in the peripheral edge of said rim. Each rim half is provided with a ring-shaped end plate integral with its inner surface at one end thereof, with the plates being less than one-half the axial thickness of the rim. The plates are arranged face to



face, encircled by and arranged within the rim, and are fastened together by adjustable mechanical fasteners for axially shifting and then fixing the two rim halves relative to each other for thereby axially offsetting the two halves of the groove formed in the rim halves.

3,626,436

**MACHINE FOR SHARPENING TWIST DRILLS**

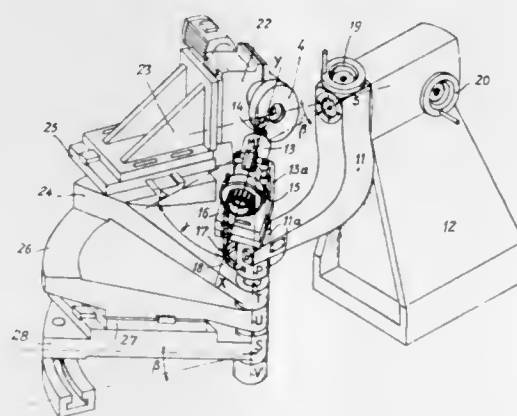
Francois Lhomme, and Bernard Leguy, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt, France

Original application June 15, 1967, Ser. No. 646,254, now Patent No. 3,535,831, dated Oct. 27, 1970. Divided and this application Sept. 3, 1969, Ser. No. 854,904

Claims priority, application France, July 19, 1966, 69898  
Int. Cl. B24b 3/30

U.S. Cl. 51-124

3 Claims



A machine for sharpening each one of the symmetrical portions of a drill point as a conical central surface portion edged with a part-spherical surface portion tangent to the central portion including a rotatable drill holder mounted on a bent arm with the arm pivotally mounted about an oblique axis to the plane of a grinding wheel.

3,626,437

**HONING TOOL UNIVERSAL DRIVE, HONE HOLDER AND SIZE SELECTOR**

Charles F. Staples, 4456 Samoset, Royal Oak, Mich.

Filed Nov. 10, 1969, Ser. No. 875,065

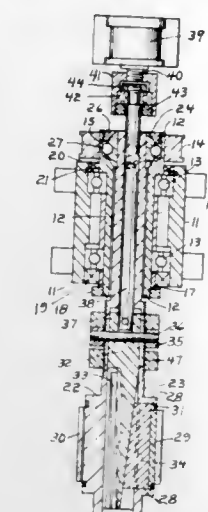
Int. Cl. B24d 17/00

U.S. Cl. 51-338

1 Claim

A honing tool having a body provided with radial slots for the reception of a plurality of hone holders that are a sliding fit in the slots, metal-bonded abrasive hones mounted onto the outer faces of the holders, the inner faces of the holders are provided with channels for the reception of expansion plates, an expansion wedge slidably fitting an aperture in the

body, a stop collar cross-pinned to the wedge, adjustable stop nuts for locating the stop collar longitudinally of the body



and a universal joint on the extreme end of a shaft for driving the body.

3,626,438

**ADJUSTABLE STAIRS**

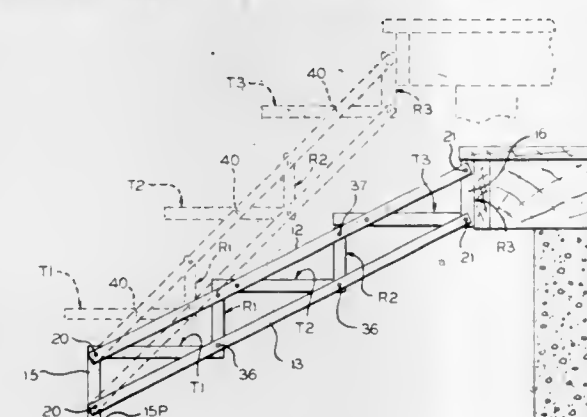
George L. Cornell, Harrison, Ark., assignor to Ozark Metal Products, Inc., Harrison, Ark.

Filed Dec. 15, 1969, Ser. No. 885,115

Int. Cl. E04f 11/06

U.S. Cl. 52-183

2 Claims



Adjustable stairs are presented by side supports each including a pair of longitudinal stringers and a pair of end links transverse thereto, the four being pivotally joined as a parallelogram. The stair tread and riser span the supports and are pivotally connected thereto, preferably at the angle where the tread and riser meet. The stairs can therefore be manipulated as a flexible assembly to meet the pitch angle required, whereafter the side of the tread is fastened to the stringers to produce a fixed relationship.

3,626,439

**ROOF PLANKING**

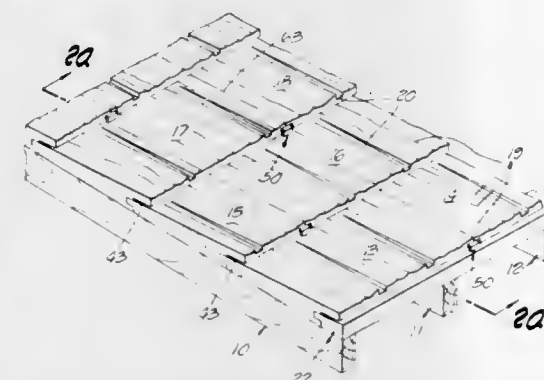
Joseph P. Kneisel, 3920 El Lado Drive, La Crescenta, Calif.

Filed Dec. 15, 1969, Ser. No. 885,148

Int. Cl. E04d 1/36

U.S. Cl. 52-533

10 Claims



There is disclosed herein a new roof construction wherein

the roofing material is in the form of planks and may be secured directly to rafters, eliminating the need for sheathing and a moisture barrier or membrane such as felt sheeting. The planking has a particular lock joint arrangement which, along with joint drain clips, provides a watertight construction. The exposed surfaces of the planks may be textured to simulate shakes, shingles, tiles or any other texture or pattern desired, and the planks may be of laminated construction, such as of plywood. Not only is the construction watertight, but it is particularly structurally sound and with no exposed fasteners, such as nails and the like. The planks may be readily mass produced and then shipped to the site for installation. A fireproof coating and coloring may be applied to the planks during manufacture thereof.

3,626,440

**YARN-PIECING APPARATUS AND METHOD WITH YARN COLLATION BY VACUUM**

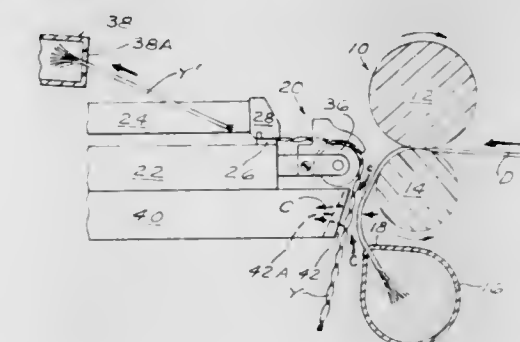
Albert D. Harmon, Clemson, S.C., assignor to Maremont Corporation, Chicago, Ill.

Filed Mar. 17, 1970, Ser. No. 20,365

Int. Cl. D01h 15/00

U.S. Cl. 57-34-R

8 Claims



A yarn-collating vacuum means and method are disclosed for use in association with a yarn-piecing apparatus having a freely rotatable roller as the yarn-proffering element thereof, to assure the consistent and strong joining of diverse yarn-ends despite offset of their threadlines prior to the piecing operation. The vacuum means has a mouth opening positioned below and close to the roller so as to be in line with the yarn-end entrained on the roller and depending therefrom. In operation, as the roller bearing the entrained end approaches another yarn-end to be pieced therewith, the vacuum means, in a yarn-collating action, draws in air currents and with them draws the other end into engagement with the entrained end. The entrained end at this time is clamped and twisted to hold it in a spaced away relation to the vacuum means mouth and to impart to it an overtwist. It is then released to untwist and in so doing intertwines with the other end collated therewith. The roller then is rotated to unentrain the first end. The mouth of the vacuum means, in preferred embodiments, is bevelled and/or has grooves in line with the threadline of the entrained end to permit close, yet spaced away relation thereto for better yarn collation.

3,626,441

**POLYESTER SEWING THREAD**

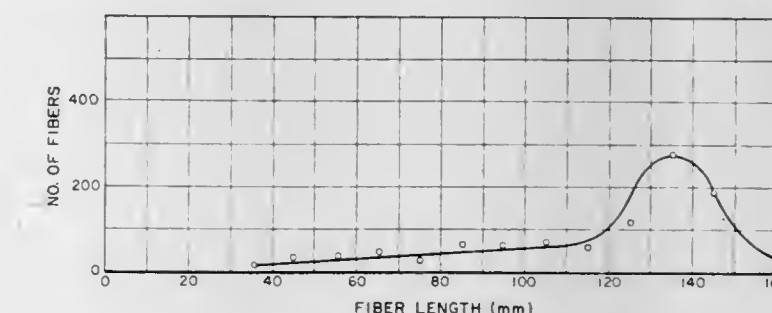
Walter Wayne Freed, Signal Mountain, Tenn., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.

Filed Oct. 10, 1969, Ser. No. 865,403

Int. Cl. D01h 1/12; D01g 1/08

U.S. Cl. 57-140 R

8 Claims



This specification discloses a sewing thread spun from sta-



ble lengths of polyester fiber produced by repeated breaking under tension.

3,626,442

**BICOMPONENT POLYESTER TEXTILE FILAMENT**  
Edward A. Haseley, Grifton, and Elmer E. Most, Jr., Kinston, both of N.C., assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 26, 1969, Ser. No. 853,192

Int. Cl. D02g 1/18, 3/04, 3/24

U.S. Cl. 57—140 BY

4 Claims

A crimpable composite textile filament having two longitudinally extending components, one of said components consisting essentially of poly(1,4-cyclohexylene dimethylene terephthalate) and the other component consisting essentially of poly(ethylene terephthalate).

3,626,443

**PIVOTING ARRANGEMENT FOR MOVING PARTS OF TIMEPIECES**

Jean-Claude Schneider, La Chaux-De-Fonds, Switzerland, assignor to Fabrique d'Horlogerie Chs. Tissot et fils S. A., Le Locle, Canton of Neuchatel, Switzerland

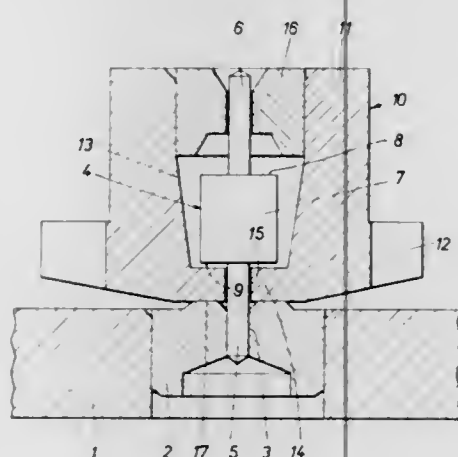
Filed Sept. 15, 1970, Ser. No. 72,532

Claims priority, application Switzerland, Sept. 26, 1969, 14571/69

Int. Cl. G04b 13/02, 31/00

U.S. Cl. 58—140 R

6 Claims



A bearing for rotating or oscillating parts of timepieces. A supporting shaft is fixed in the plate and the moving part rotates about it. Axial play of the moving part is limited in one direction by coaction between an inwardly extending flange of the moving part and a wide portion of the shaft and in the other direction by coaction between said flange and the plate or something fixed to it.

3,626,444

**IMPROVEMENTS IN LIQUID FUEL VAPORIZING COMBUSTION SYSTEMS**

Jacques Emile Jules Caruel, Dammarie-les-Lys; Armand Jean-Baptiste Lacroix, Itteville, and Herve Alain Quillevere, Issy-les-Moulineaux, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed Oct. 30, 1969, Ser. No. 872,605

Claims priority, application France, Nov. 4, 1968, 172477

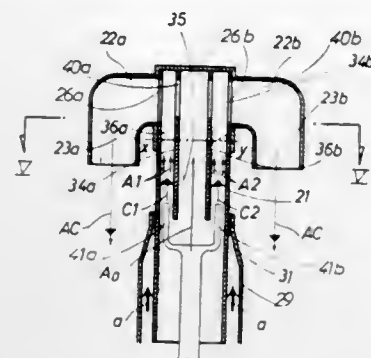
Int. Cl. F02c 3/22

U.S. Cl. 60—39.71

5 Claims

A T-shaped liquid fuel prevaporizing device for a combustion chamber, said device comprising a tubular shank projecting into the combustion chamber and two arms projecting from the downstream section of said shank to open into the combustion chamber, wherein overheating of the device is

minimized by compartmenting the downstream section of the tubular shank by longitudinal partitions to form separate but



intercommunicating passages which are selectively fed with combustion air alone and with fuel/air mixture.

3,626,445

**HYDRAULIC POWER TOOL**

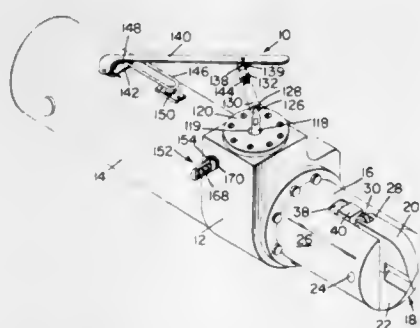
Alonzo L. Penix, New Braintree Road, W. Brookfield, Mass.

Filed Mar. 13, 1970, Ser. No. 19,295

Int. Cl. F15b 15/18; B26b 17/00

U.S. Cl. 60—52 US

3 Claims



A motorized hand tool including a relatively small electric motor arranged to drive a new and improved pump which operates a piston to reciprocate a thrust block to close for instance a pair of jaws, cutters, or the like, in combination with a new and improved hand controlled valve for the pump, including a single handle having means for turning the motor on and off and to control the pump moving the valve between off and on positions.

3,626,446

**DEVICE FOR BUILDING UP HIGH-PRESSURE IMPULSE JETS OF LIQUID**

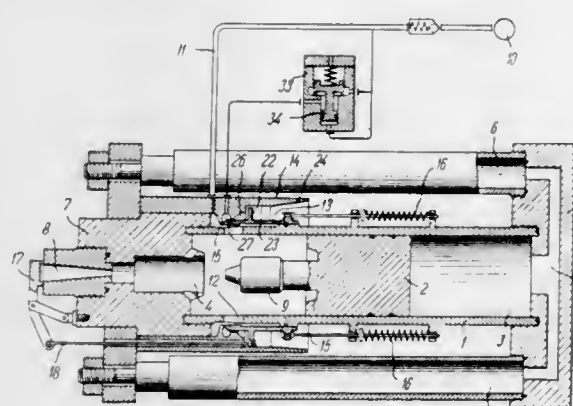
Faina Fedorovna Voltsekhovskaya, ulitsa Akademicheskaya, Kottedzk 2, Novosibirsk, U.S.S.R.

Filed Nov. 4, 1969, Ser. No. 873,860

Int. Cl. F15b 7/00

U.S. Cl. 60—54.5 HA

4 Claims



The present invention provides a device for building up high-pressure impulse jets of liquid upon an impact delivered by a piston accelerated by compressed gas upon liquid disposed in a chamber provided with an aperture for the liquid outflow by jets; to bring the piston back to its initial position after an impact, the space of the cylinder before the piston being communicated with a liquid-supplying pressure

main, and, to drain the liquid during the piston acceleration, the sidewalls of the cylinder are provided with drain apertures overlapped by a movable member of a locking mechanism.

3,626,447

**PORTABLE AIR INFLATED DRYDOCK**

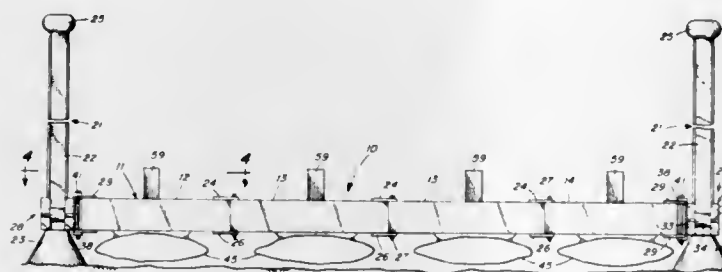
Harry O. Hindlin, 5715 E. Hastings Arch, Virginia Beach, Va.

Filed Oct. 22, 1969, Ser. No. 868,330

Int. Cl. B63c 1/06

U.S. Cl. 61—46.5

4 Claims



A portable drydock for larger boats and small ships comprising a chock equipped platform and inflatable pontoons attached to the underside thereof. The platform is retained in all horizontal directions and guided in its upward and downward movements by an upright guide rail at each corner thereof which has a pedestal of concrete resting on the bottom of the body of water in which the drydock is located and which rail extends above the water being surmounted by a marker. The boat or ship is maneuvered between the markers at each side of the platform and the pontoons are inflated to float the platform and raise the vessel from the water on the chocks.

3,626,448

**SEPARATION OF LOW-BOILING GAS MIXTURES**

Duffer B. Crawford, Westfield, N.J., and Johannes C. Norenburg, New York, N.Y., assignors to Pullman Incorporated, Chicago, Ill.

Original application Aug. 1, 1967, Ser. No. 657,662, now

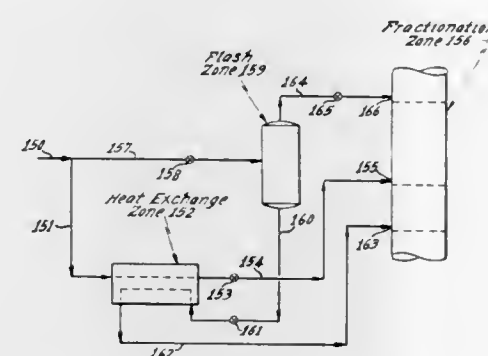
Patent No. 3,543,528, which is a continuation-in-part of application Ser. No. 438,900, Mar. 11, 1965, now abandoned.

Divided and this application Feb. 27, 1970, Ser. No. 14,939

Int. Cl. F25j 1/00, 3/02

U.S. Cl. 62—24

4 Claims



A process for prefractionation of a feed mixture comprised of at least two components prior to introduction to the main fractionation zone, wherein substantially liquid feed maintained at pressures higher than that prevailing in the fractionation zone is cooled by indirect heat exchange, part or all of said cooled feed is flashed at a pressure at least above that of the fractionation zone, to produce flashed material having a liquid phase and vapor phase. The refrigeration potential of the flashed material is utilized for cooling of the feed by indirect heat exchange with a liquid or mixed phase portion of

said flashed material thereby increasing the vapor-to-liquid ratio of the latter prior to its introduction to the fractionation zone at a suitable point. Remaining feed is introduced to the fractionation zone at one or more other suitable points.

Preferred feeds disclosed are nitrogen-containing mixtures, such as mixtures comprising nitrogen and methane, nitrogen and argon, nitrogen, methane and argon. A specific example is included as to the application of the invention to the separation of the individual components of an ammonia synthesis purge gas and to the recovery of argon in either liquid or gaseous form.

3,626,449

**APPARATUS FOR CONTINUOUSLY RELAXING TEXTILE MATERIAL IN A TREATING LIQUID**

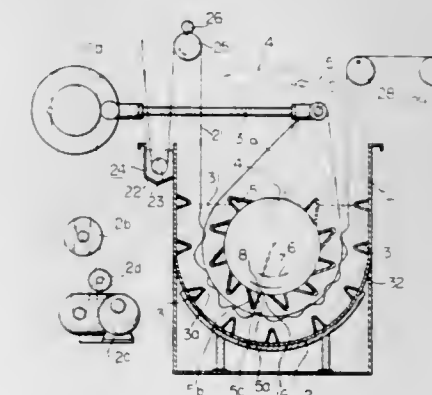
Masahiro Arashi, Komatsu-shi, Japan, assignor to Komatsu Seiren Co., Ltd., Ishikawa-ken, Japan

Filed Jan. 23, 1970, Ser. No. 5,336

Int. Cl. B05c 3/136

U.S. Cl. 68—158

10 Claims



The relaxing apparatus of the present invention comprises a treating bath having a plurality of hurdle projections mounted on the inside surface of the treating bath and a cylindrical rotor facing the inside surface of the treating bath, the rotor is reciprocally rotatable at a predetermined angle, preferably 20° to 45° and has a plurality of paddle projections mounted on the peripheral surface of the rotor.

The paddle projections are effective for paddling a treating liquid in the treating bath so as to exert a crumpling action to the material charged in the treating bath. The hurdle projections are effective for enforcing the crumpling action presenting an obstacle to movements of the material and treating liquid. The material can be continuously and sufficiently relaxed the treating liquid by the crumpling action.

3,626,450

**PORTABLE SWAGING TOOL**

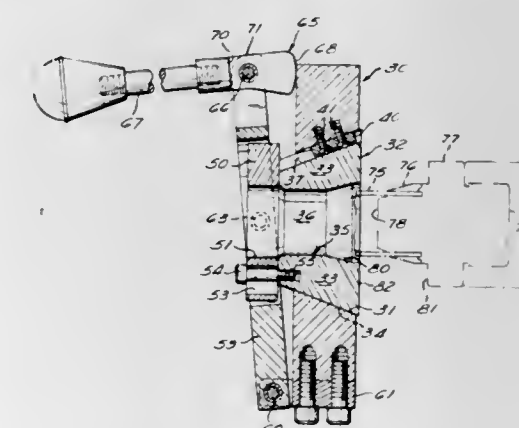
Frederick S. Browne, Euclid, and Hiralal V. Patel, Cleveland, both of Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

Filed Aug. 12, 1969, Ser. No. 849,425

Int. Cl. B21d 41/00

U.S. Cl. 72—402

6 Claims



In an apparatus for swagging a sleeve onto a tubular member inserted therein, the swagging die is split into three



identical segments, each of which is provided with an internal swagging die portion and an externally coned outer surface. The externally coned surface of each die segment is keyed to an internally coned socket member, so that displacement of the die segments with respect to the socket member opens and closes a swagging die cavity defined by the three die portions to permit loading and removing the sleeve and tubular member. The die segments are displaced by an actuator which includes a pusher plate and a cam acting between the pusher plate and the socket member. The pusher plate is connected to the die segments by a connector that permits relative radial movement between each die segment and the pusher plate.

3,626,451

# APPARATUS AND METHOD FOR THE DYNAMIC TESTING OF ORDNANCE

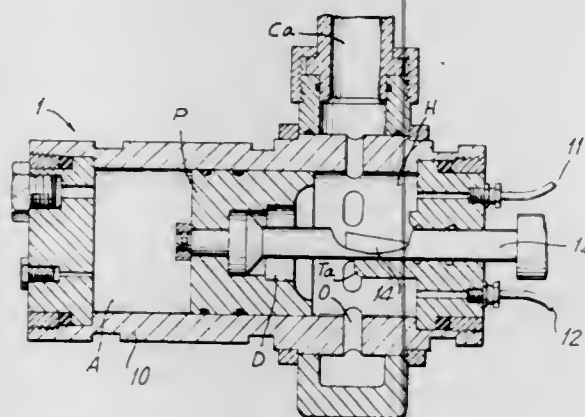
Michel Philippe Lucien Bourgeot, Bourges, France, assignor to Etat Français, Paris, France

Filed Mar. 19, 1970, Ser. No. 20,899

Claims priority, application France, Mar. 19, 1969, 6907896 Int. Cl. G01m 7/00

U.S. Cl. 73-167

5 Claims



A thrust unit is placed in contact with the nozzle of an artillery piece and a power unit applies dynamic force to the thrust unit and thus to the artillery piece to simulate firing of the artillery piece, the power unit has a piston which compresses nitrogen in a closed chamber, and a control unit holds the piston in place with the nitrogen compressed. The control unit is adapted to release the piston and allow the same to displace under the pressure of the nitrogen, the piston being coupled to the thrust unit.

3,626,452

# MULTIPOSITION BIDIRECTIONAL ROTARY MEANS FOR A SWITCH OR THE LIKE

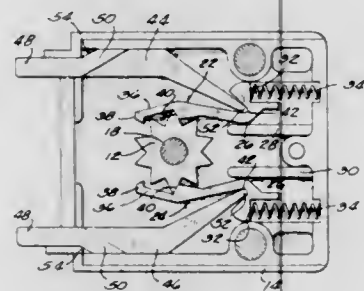
Ronald C. Winter, Johnson Creek, and Enno Knief, Watertown, both of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jan. 14, 1970, Ser. No. 2,898

Int. Cl. F16h 21/02; G05g 1/00

U.S. Cl. 74-143

5 Claims



Multiposition bidirectional rotary means for a switch or the like includes a rotary ratchet operated by two actuating

levers. Two advance levers slidably and pivotally mounted to engage this ratchet from opposite radial directions. Each advance lever has means for engaging the ratchet to rotate the ratchet one step to an adjacent position and means to engage the ratchet and releasably hold it in a position. One lever rotates it in one direction the other lever rotates it the opposite direction. Springs urge each advance lever toward the ratchet and tangentially thereof toward projected at rest positions. The push levers have projections to engage the advance levers for effecting lineal sliding movement and permitting pivoting of such advance levers relative to the ratchet and the push levers.

3,626,453

# RILJACK POWER TRANSDUCER

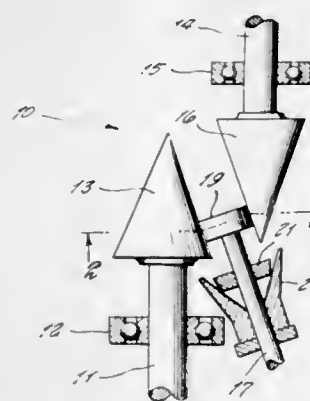
Trevor J. Riley, 11431 94 "A" Ave., North Surrey, British Columbia, Canada

Filed Mar. 2, 1970, Ser. No. 15,587

Int. Cl. F16h 15/16

U.S. Cl. 74-193

1 Claim



A motion transmission device for producing variable speed and power and which comprises a cone on a driven shaft and a cone on a driving shaft, the cones having a cylindrical driving wheel therebetween that is slideable between the cones and engaging the cylindrical sides thereof, the position of the intermediate driving wheel determining the relative speed of the cones.

3,626,454

# PUSHBUTTON DEVICE

Hideo Yokoyama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

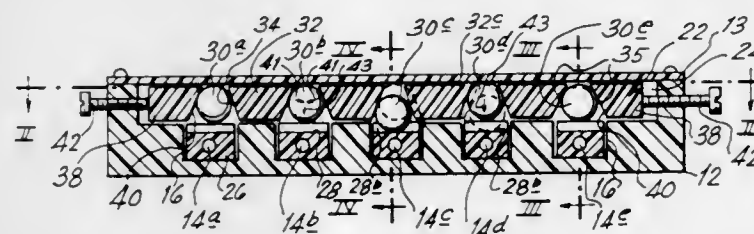
Filed Mar. 20, 1970, Ser. No. 21,403

Claims priority, application Japan, Mar. 27, 1969, Mar. 27, 1969, Apr. 18, 1969, Apr. 19, 1969; 44/23291, 44/27269, 44/35678, 44/35874

Int. Cl. G05g 13/00

U.S. Cl. 74-483 PB

12 Claims



In a pushbutton control device having a plurality of actuator members movable between first and second positions within a support housing for operating associated switches or the like, each actuator is biased towards its first position and is provided with an associated detent member for retaining its respective actuator in its second position, and the individual detent members are interconnected by a force transmitting mechanism which is adapted to release the detent member of an actuator in its second position to permit return of that actuator to its first position in response to movement of any other actuators to its second position.

3,626,455

# IGNITION TIMING RESPONSIVE TO TRANSMISSION SETTING

Yoshio Toda; Mitsutaka Konno, both of Yokohama; Masao Nakajima, Kawasaki, and Toshitake Kikuchi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

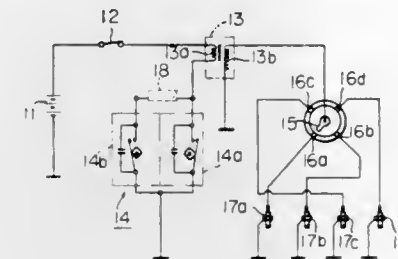
Filed Dec. 5, 1969, Ser. No. 882,532

Claims priority, application Japan, Dec. 10, 1968, Dec. 10, 1968, Feb. 5, 1969; 43/90054, 43/90055, 44/8257

Int. Cl. B60k 21/00; F02p 5/00; B60k 33/00

U.S. Cl. 74-860

1 Claim



An ignition system of which the ignition distributor has two interruptors, one for providing an ignition timing suited to provide a maximum engine power output at full engine load and a minimum fuel consumption at light engine loads and the other providing an ignition timing retarded from the timing dictated by the former interruptor, the latter interruptor being connected with the ignition coil through a control switch operating in accordance with the transmission setting, vehicle speed, engine speed vacuum in the throttle chamber of the carburetor or in the intake manifold of the engine, angular position of the throttle valve in the carburetor or combination of two or more of these factors.

3,626,456

# RADIUS TURNING ATTACHMENT FOR LATHES

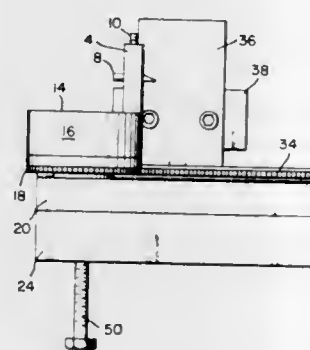
George William Freeborn, 21421 Moneta Ave., Carson, Calif.

Filed Aug. 4, 1969, Ser. No. 847,267

Int. Cl. B23b 5/40

U.S. Cl. 82-12

6 Claims



The disclosed device is a radius turning attachment intended for use with conventional lathes. A tool post is mounted atop a disc-shaped tool base having a peripherally situated ring gear adapted to be engaged by a movable gear rail support member which serves to rotate the tool post, and a cutting tool mounted thereon, about a predetermined vertical axis extending through the center points of the planar surfaces of the disc-shaped tool base.

3,626,457

# SENTINEL CONTROL FOR CUTOFF APPARATUS

Lorenz K. E. Duerr, Coram, N.Y., and Charles D. Nitchie, Ruxton, Md., assignors to Koppers Company, Inc.

Filed Mar. 5, 1970, Ser. No. 16,690

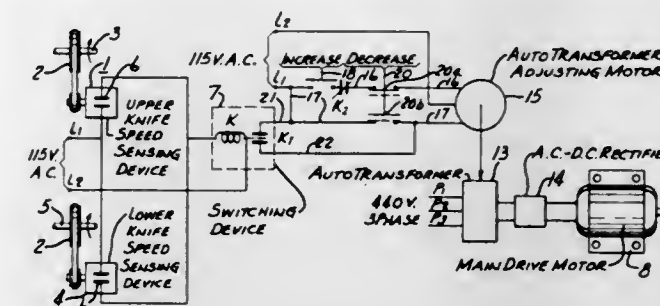
Int. Cl. B23s 25/12

U.S. Cl. 83-74

9 Claims

A sentinel control in cutoff apparatus having rotatable cutting means for cutting sheets of uniform length from a moving web of material fed to the apparatus to prevent the rotational velocity (revolutions or cuts per second) of the cutting means for exceeding a predetermined maximum or

threshold limit rotational velocity and thereby prevent possible damage and destruction to the cutoff apparatus caused by



the heavy inertia forces imposed upon the apparatus when operated at velocities in excess of maximum desired limit.

3,626,458

# DRUMS

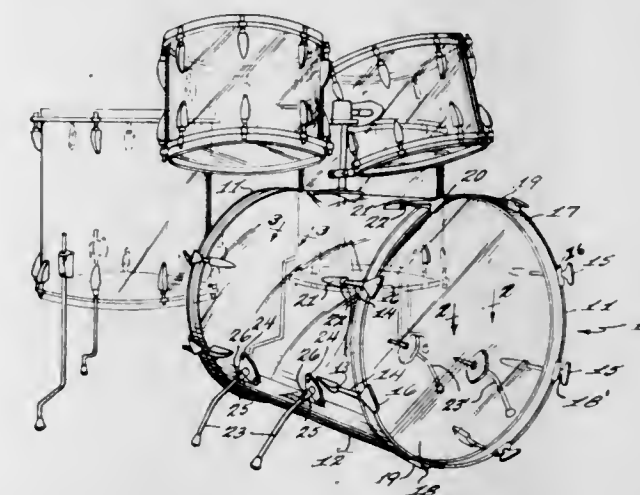
William Zickos, 9302 West 89th St., Overland Park, Kans.

Filed Nov. 2, 1970, Ser. No. 86,099

Int. Cl. G10d 13/02

U.S. Cl. 84-411

2 Claims



A drum having transparent shell and heads whereby the performer thereon can be completely viewed during his performance.

3,626,459

# GRAPHIC ARTS PRINTER

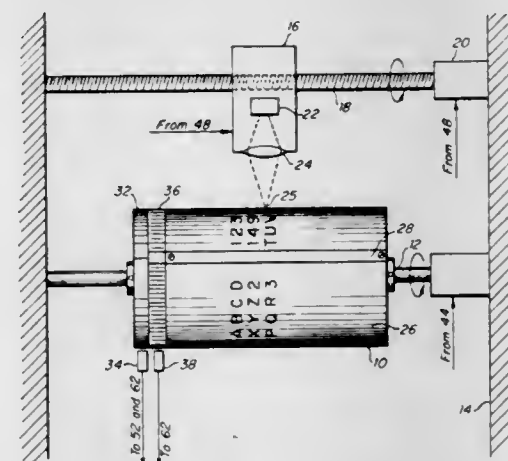
Dan J. Haflinger, Rancho Santa Fe, and Omer F. Hamann, La Jolla, both of Calif., assignors to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed Feb. 19, 1970, Ser. No. 127,300

Int. Cl. H04n 5/84; H04l 15/34

U.S. Cl. 95-4.5 R

3 Claims



A printer in which a continuously rotating drum carries an energy sensitive recording medium on which characters are



formed by a modulated energy source such as light. Characters are formed by a plurality of line segments generated during successive revolutions of the drum. Electronic circuitry including a character generator, controls the modulation of the energy source.

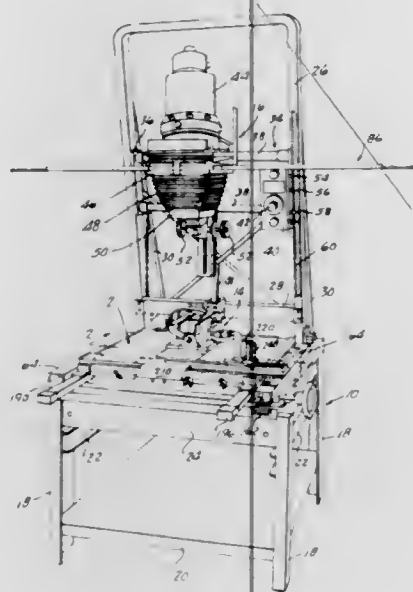
3,626,460

# PHOTOGRAPHIC LETTER STYLE AND JOB LAYOUT MACHINE

Ralph H. Miller, 13619 Sunset, Detroit, Mich.  
Filed Mar. 11, 1969, Ser. No. 806,137  
Int. Cl. B41b 13/10

U.S. Cl. 95-4.5

14 Claims



A photocomposing machine for varying the size, arrangement and style of character layouts comprising a base, a hollow table movable on said base in forward and rearward directions, a photosensitive sheet-holding plate slidably mounted within said table to move from side-to-side, the upper surface of said table having a centrally disposed light-passing opening, a shutter disposed above and closing said opening, a photographic enlarger mounted above said table including a holder for a film strip having transparent characters, means for vertically adjusting said enlarger and aligning the same with said table opening and shutter, and means for opening and reclosing said shutter.

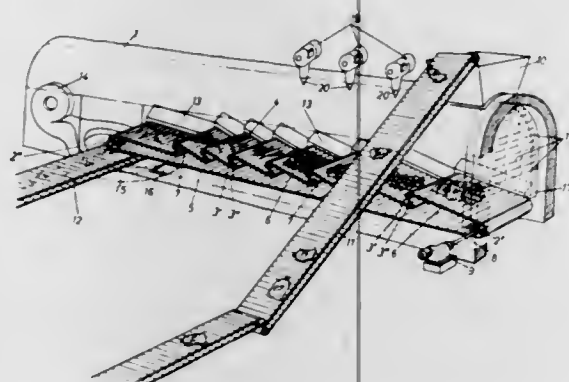
3,626,461

# INCINERATOR

Kristian Pedersen Munk, Kalundborg, Denmark, assignor to Keller Ofenbau G.m.b.H., Carl-Keller-Strasse, Germany  
Filed Mar. 13, 1970, Ser. No. 19,446  
Int. Cl. F23g 5/12

U.S. Cl. 110-8 C

4 Claims



The present invention relates to a furnace for combustion of refuse, especially household and industrial refuse, and of the type comprising a horizontal chute with a transporting gate arranged longitudinally in said chute.

The object of the invention is to provide a furnace of the above stated art which can be erected and installed easily

and for low-costs, and which also can be arranged in unused brick kilns, especially such of the Hoffmann-type. Another object of the invention is to provide a furnace in which complete combustion of the refuse is secured maintaining a relatively low-temperature under and in the grate itself, but maintaining a maximum temperature in a range of about 800° C. in order to remove odor from undesired odors in the flue gas.

These and following objects are apparent from and are achieved with the following disclosure.

3,626,462

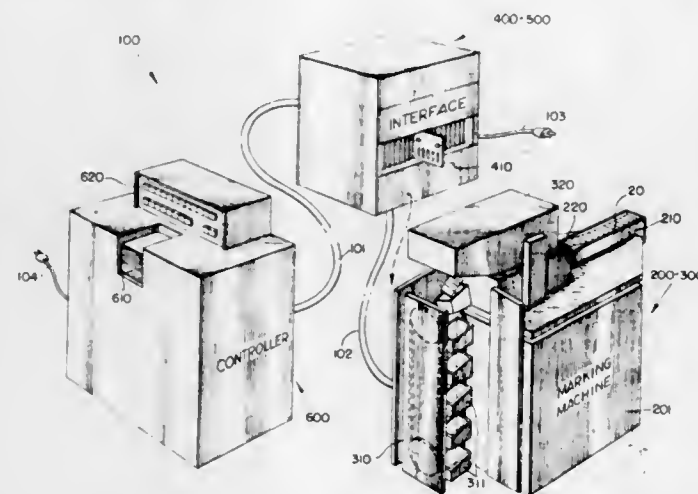
# MULTICOLOR MARKING SYSTEM

Richard F. Stucchi, Hudson, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.  
Original application Dec. 9, 1968, Ser. No. 787,294, which is a continuation of application Ser. No. 681,831, Nov. 9, 1967, now abandoned. Divided and this application Sept. 11, 1969, Ser. No. 857,066

Int. Cl. B41f 1/48, 1/14; B67d 3/00

U.S. Cl. 101-210

5 Claims



A device for applying a color mark to a ticket or the like; the device including a number of different color applications adapted to be positioned at a marking station. Transfer means for positioning a ticket at a marking station and a control mechanism for positioning one of said applicators and the marking station and relatively moving said ticket and said applicator to apply a color mark to the ticket.

3,626,463

# TRAVELING IMPRESSION ROLLER MEANS FOR TIME PRINT WHEELS

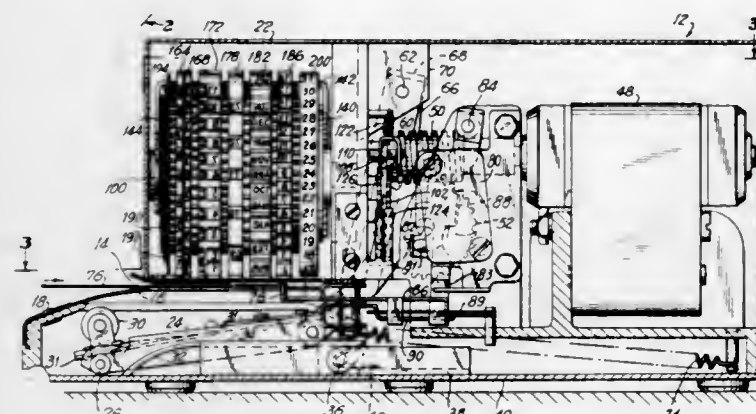
Gerhard A. Foerster, Woodbridge; Walter Wolog, New Haven; Louis Cetran, Newington, and William P. Ryan, Bethany, all of Conn., assignors to Mite Corporation, New Haven, Conn.

Filed Nov. 20, 1968, Ser. No. 777,218

Int. Cl. B41f 3/02; G01d 15/20

U.S. Cl. 101-269

11 Claims



The present time stamp eliminates the usual hammer and solenoid with their impact noise. Instead, a carriage is mounted for reciprocating travel along the print wheels, and an impression roller carried by the carriage serves to press

successive parts of a document against the print wheels. The desired print is thus obtained by means of a quiet rolling action rather than by a noisy hammer impact. There is smooth acceleration and deceleration of the carriage, thereby further avoiding noise and vibration. There are print wheels for date, month, year and the time in hours and minutes. Most of the print wheels are moved by pawl and ratchet mechanism. A timing motor drives a cam and cam follower to operate the pawl, and the cam configuration causes smooth acceleration and deceleration of the pawl movement, which again contributes to quiet operation. The time print wheels are provided with separate readout discs. These are made of sheet material and are progressive in diameter to expose readout numerals on the outer faces of the discs near their periphery. The time print wheels have concentric hollow shafts each extending axially to its readout disc. Additional print wheels print the date, the month, and the year.

3,626,464

# RAILROAD CAR CONSTRUCTION

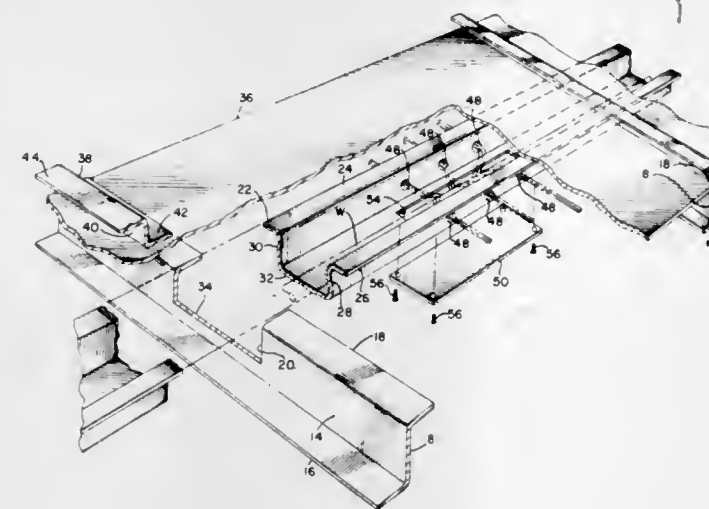
William Van Der Sluys, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 22, 1969, Ser. No. 818,269

Int. Cl. B61d 1/00, 1/12

U.S. Cl. 105-418

7 Claims



A railroad car floor construction including a plurality of longitudinally spaced Z-shaped crossbearers, each crossbearer having an upper cutout portion for receiving and supporting a wire duct therein, a longitudinally extending hat-shaped wire duct having upper horizontal laterally extending flanges, a subfloor structure mounted atop the upper flange portion of the Z-shaped crossbearers, the flanges of said wire duct being attached to the underside of said subfloor with the wire duct extending in the wire duct cutout of each of the crossbearers, Z-shaped crossmembers mounted on top of the subfloor structure and over a respective crossbearer top flange, the top flange of each crossmember being spaced longitudinally of another and adapted to receive thereover the top floor sheeting, the wire duct being perforated to receive the wiring therein longitudinally of the car.

3,626,465

# ELASTOMERIC RAILWAY AXLE SPRING

Archle John Hirst, Leicester, England, assignor to The Dunlop Company Limited, London, England

Filed Sept. 17, 1969, Ser. No. 858,701

Claims priority, application Great Britain, Sept. 19, 1968, 44,465/68

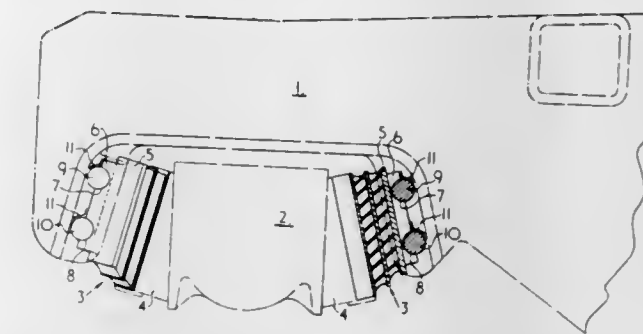
Int. Cl. B60b 35/16; B61f 5/30, 5/34

U.S. Cl. 105-224.1

7 Claims

A vehicle axle suspension spring formed from at least one block of resilient material arranged between metal end plates, one end plate being arranged to be associated with one end of the axle and the other end plate having two

spaced semicircular recesses formed therein for engagement with a pair of correspondingly spaced pins associated with a



support structure of the vehicle body, so locating the spring relative to the support structure.

3,626,466

# MOLDING DEVICE FOR PREPARING CHIP-TYPE PRODUCTS

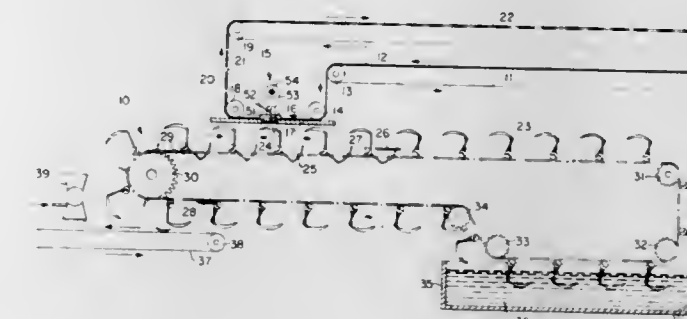
Alexander L. Ljepa, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Original application Oct. 31, 1967, Ser. No. 683,083, now abandoned, which is a continuation-in-part of application Ser. No. 569,278, Mar. 1, 1966, now abandoned. Divided and this application July 14, 1969, Ser. No. 862,556

Int. Cl. A21c 11/00

U.S. Cl. 107-15

5 Claims



Method and apparatus for continuously preparing fried products from a sheet of edible dough including an infeed conveyor to carry the sheet of dough; a cutter for cutting pieces the desired size from the sheet; a shaper-molder utilizing movable, apertured mold halves to shape the cut pieces to the desired surface conformation and hold them during subsequent processing; and a reservoir containing a frying medium through which the shaped, restrained pieces are passed until they are fried to a crisp state. The fried objects assume a final shape defined by the shaper-molder.

3,626,467

# MARINE DRIVE

Philip J. Mazziotti, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Sept. 3, 1969, Ser. No. 854,841

Int. Cl. B63h 5/12

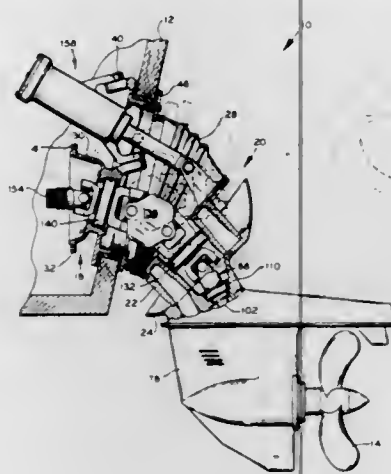
U.S. Cl. 115-41

10 Claims

A marine outdrive unit is disclosed in which the outdrive unit is supported substantially on a four-bar linkage. One bar of the four-bar linkage is formed by spaced locations adjacent the transom of the boat on which the outdrive unit is mounted. The second and opposite bar is formed by fixed portions of the housing for the outdrive unit. Pivotal pickup and trim for the unit is provided by the other two bars of the four-bar linkage, one of these being formed in a series of universal joints joining the gear drive, drivingly connected to the marine engine, to the shafting driving the propeller for the marine outdrive unit. The last bar of the four-bar linkage is provided by a hydraulic means which is pivotally attached to the outdrive unit at its piston end and mounted adjacent to the transom. Thus, retraction of the hydraulic piston means



causes tiltup of the outdrive unit for either the trim or kickup function. The hydraulic piston means is also pivotally mounted on the transom on an angularly extending axis rela-



tive to the vertical so that steering of the outdrive unit may be obtained by movement of the hydraulic piston means, pivotally, relative to this axis.

3,626,468

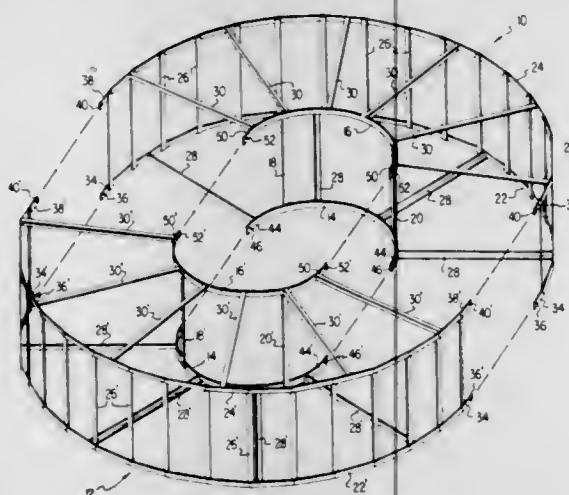
**CREEP FOR AN ANIMAL FEEDER**

James E. Hanson, Carter, S. Dak.

Filed July 25, 1969, Ser. No. 844,992

Int. Cl. A01k 5/00

U.S. Cl. 119-60



A creep comprises an open framework including a pair of separate, rigid, substantially semicircular sections which are secured to one another to provide an assembled circular framework having a central circular opening for receiving a conventional animal feeder. The creep includes spaced vertical members at the outer periphery thereof to limit access to the interior of the creep, and weather protection means is supported at the upper inner portion of the creep.

3,626,469

**VALVE GEAR**

Gerald J. Ashley, 23465 Lee Baker Drive, Southfield, Mich.

Filed Nov. 12, 1968, Ser. No. 775,063

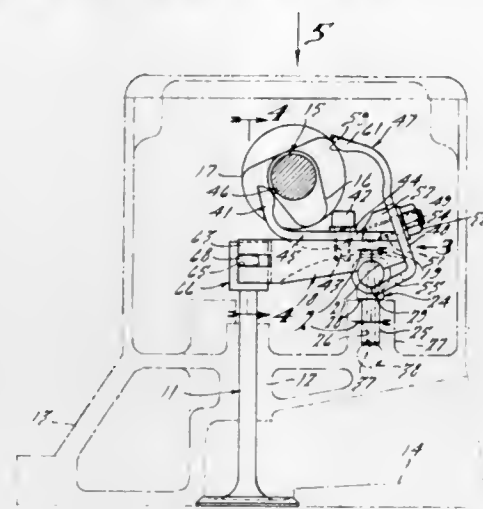
Int. Cl. F01L 1/30, 1/18, 1/04

U.S. Cl. 123-90.25

11 Claims

A positively operated valve gear for an internal combustion engine embodying pivotally supported rocker arms that carry detachable spring fingers which fingers engage cams on a camshaft for pivoting the rocker arms upon rotation of the camshaft. The rocker arm is pivotally connected to the engine poppet valves for positively transmitting movement to these valves and may be formed as a casting, forging or stamping. The pivotal connection between the rocker arms and poppet valves is accomplished through an improved

keeper arrangement. The rocker arm acts as a third-class lever so that the valves can be disposed on opposite sides of



the axis of the rotation of the camshaft giving greater latitude to the positioning of the valves relative to the cylinder bore.

3,626,470

**DIAGNOSTIC DEVICE FOR OBTAINING CYTOLOGIC SAMPLES**

Harold J. Antonides, Kankakee, and M. Budd Mittleman, Chicago, both of Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.

Filed Aug. 28, 1969, Ser. No. 853,677

Int. Cl. A61b 10/00

3 Claims

U.S. Cl. 128-2 R

10 Claims



A diagnostic device for obtaining cytologic samples such as in collecting cervical and endocervical cell specimens for Papanicolaou smear testing and the like, is described. The device comprises an elongated handle carrying a flexibly coupled platform member upon which a spongelike pledget is uniquely formed, the latter being impregnated with a critical amount of a proteolytic enzyme. The characteristic properties of the proteolytic enzyme facilitate cellular defoliation and sampling, and improved diagnostic examination of the cells so collected by inducing lysis of the obscuring mucus which occurs at or near the cervical site.

3,626,471

**ILLUMINATED SUCTION BRAIN RETRACTOR**

Robert E. Florin, 14909 Lodsa Drive, Whittier, Calif.

Filed Oct. 13, 1969, Ser. No. 865,675

Int. Cl. A61b 17/02

U.S. Cl. 128-20

4 Claims

A surgical tool comprising a brain retractor is shaped so that it may pass through an opening in the skull. The tool has an arched blade with a concave lower surface, flat in cross section, and a pair of tubes mounted on the marginal edges of the arched blade are flush with the lower surface thereof. Both tubes may be connected to a source of suction pressure

for removal of fluids from the operating area, or only one whereby the one of three input signals which is median in may be so connected, with the other supplying a flushing, value is passed to the output.



fluid. A curved fiber optic element is mounted upon the arched blade between the tubes to illuminate the operating area.

3,626,472

**MEANS FOR FEEDING CROP MATERIAL TO AN AXIAL FLOW THRESHING AND SEPARATING COMBINE**

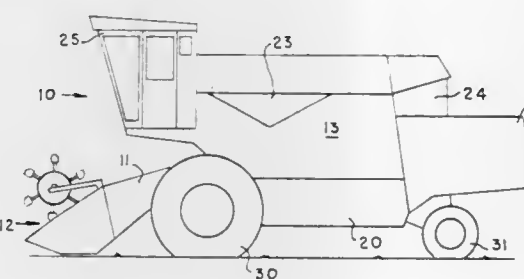
Edward William Rowland-Hill, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Continuation-in-part of application Ser. No. 790,145, Jan. 9, 1969. This application Nov. 24, 1969, Ser. No. 879,214

Int. Cl. A01F 7/06

U.S. Cl. 130-27 T

13 Claims



A combine has two axial flow type threshing and separating means each comprising a generally horizontal and cylindrical casing with longitudinally extending concaves and grates and a rotor on an axial shaft within the cylindrical casing having rasp bars and blades cooperating with the concaves and grates, respectively, to thresh and separate grain from crop material. On the forward end of the shaft are auger flights for feeding crops to the rasp bar bearing rotor and the concaves. A ramp means extends downwardly and forwardly from midportions of the auger flights to the bottom wall of the crop elevator. The crop is delivered by a crop elevator to the ramp means for directing the crop upwardly into midportions of the auger flights. The auger flights and stripper bars on the sides of the casings cooperate to deliver the crop material to the rasp bar bearing rotors at the ends of the respective threshing actions.

3,626,473

**FLUIDIC MEDIAN SELECTOR**

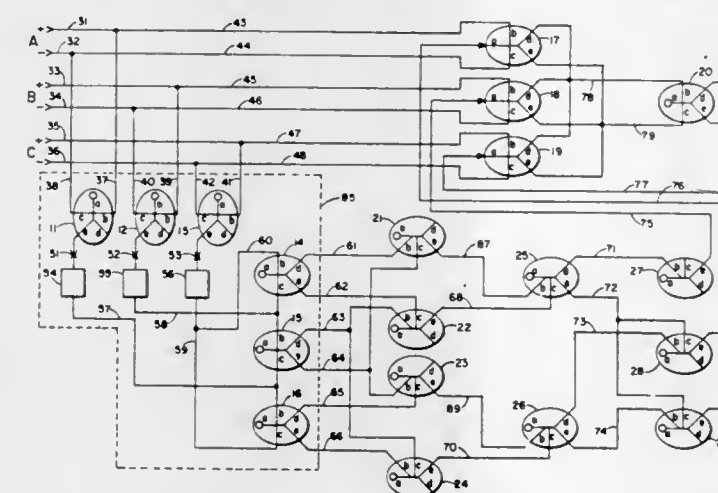
Walter M. Posingles, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 23, 1969, Ser. No. 827,247

Int. Cl. F15c 1/12

U.S. Cl. 137-81.5

4 Claims



A fluidic median signal selector circuit including means for comparing signals, logic means, and signal-switching means,

**3,626,474  
PRESSURE INDICATOR AND BYPASS PRESSURE RELIEF VALVE**

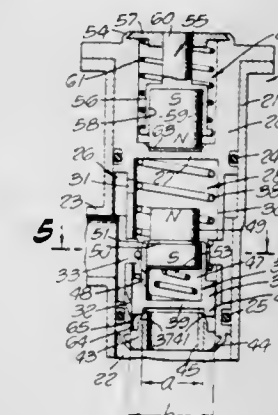
Kurt F. Hammer, Camarillo, Calif., assignor to Purolator, Inc., Rahway, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,374

Int. Cl. F16k 37/00; B01d 35/14

U.S. Cl. 137-554

6 Claims



An indicator and bypass pressure relief device for use in a system having a high-pressure side and a low-pressure side, which indicates or signals an increase of pressure in the high-pressure side of the system beyond a predetermined differential limit; and bypasses fluid from the high-pressure side to the low-pressure side of the system to relieve such high pressure whenever it exceeds a predetermined differential pressure limit.

3,626,475

**HIGH TEMPERATURE PIPE-PLUGGING APPARATUS**

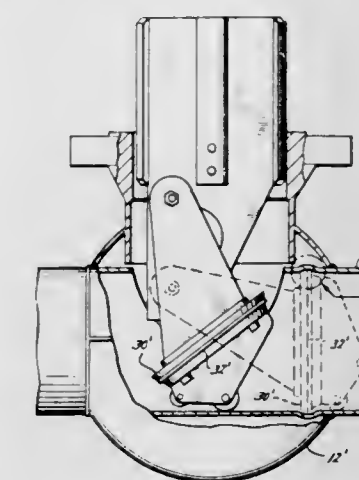
David J. Hicks, Tulsa, Okla., assignor to T. D. Williamson Inc., Tulsa, Okla.

Filed Jan. 5, 1970, Ser. No. 673

Int. Cl. F16I 55/10

U.S. Cl. 138-94

14 Claims



The high temperature pipe plugger disclosed uses a backup plate for the sealing element on the plugging member that provides substantially complete support for the sealing element against the differential pressure imposed on the element by the hot fluid in the pipe. The backup plate may either deform the pipe to match its outside diameter or the pipe may deform the plate to match its inside diameter depending on the material from which the plate is made and the shape of the pipe. A method of isolating a leak in a superheated steam line is also disclosed. The method locates the pipe plugs far enough away from the bypass openings for the steam adjacent the plug, being removed from the flowing stream, to lose its superheat quickly and thereby reduce the temperature at which the sealing element of the plugging member must operate while the line is being repaired.

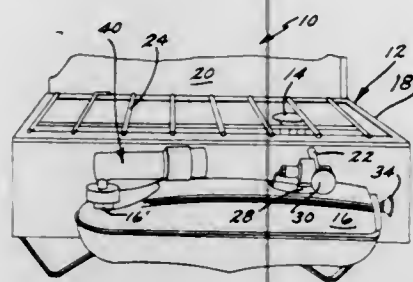


3,626,476

**FUEL TANK PRESSURIZER**

John G. Trumble, 160th Ave., Big Rapids, Mich.  
 Filed Aug. 6, 1969, Ser. No. 847,910  
 Int. Cl. F24c 5/00; B67b 7/24  
 U.S. Cl. 141—329

1 Claim



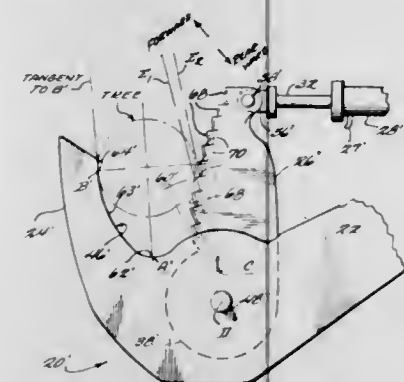
Fuel tank cap assembly for the liquid fuel tank of portable camping burner units, e.g., stoves and lanterns, but especially camping stoves, including an elongated main body to receive and allow controllably actuated puncture of a pressurized gas cylinder therein, one end of this body having a support and gas passage portion mounted in and transverse to the main body and having a surrounding collar connectable to the fuel tank spout to cause the pressurized capsule-containing body to lie closely alongside the fuel tank.

3,626,477

**TIMBER SHEAR**

Oscar T. Fulghum, Jr., Wadley, Ga., assignor to Fulghum Enterprises, Inc., Wadley, Ga.  
 Filed Oct. 30, 1969, Ser. No. 872,633  
 Int. Cl. A01g 23/02  
 U.S. Cl. 144—34 E

7 Claims



A timber shear is provided having a main body means adapted for connection to a vehicle and including a stationary jaw and a moving cutting blade, pivotally connected to said main body means, and wherein the jaw has a tree-engagable surface means and the blade has a substantially rectilinear or straight cutting edge portion disposed at the open end of the tree receiving mouth defined by the jaw and the blade, and with the tree-engagable surface on the jaw and the straight cutting edge portion of the blade being so arranged that when a tree is disposed in the mouth and the blade is pivoted toward the jaw, there is a tendency for the tree and shear to be drawn together.

3,626,478

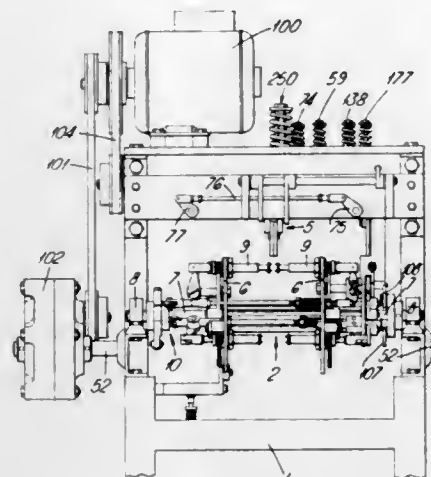
**CASHEW NUT DECORTICATING MACHINE**

Frederick Lawton, Dar Es Salaam, Tanzania, assignor to Tanzania Cashew Machines Limited, Dar es Salaam, Tanzania  
 Filed July 23, 1969, Ser. No. 844,128  
 Claims priority, application Great Britain, Sept. 11, 1968, 43,149/68  
 Int. Cl. A23n 5/04

6 Claims

A cashew nut decortivating machine comprises a rotatable turret having three nut holding devices equiangularly spaced

about the axis of rotation, means for rotating the turret in stepwise manner so that, after each step of rotation, each nut-holding device is opposite one of three stations, means at the first station for supplying a single nut to the nut-holding device opposite it, means at the second station for cutting



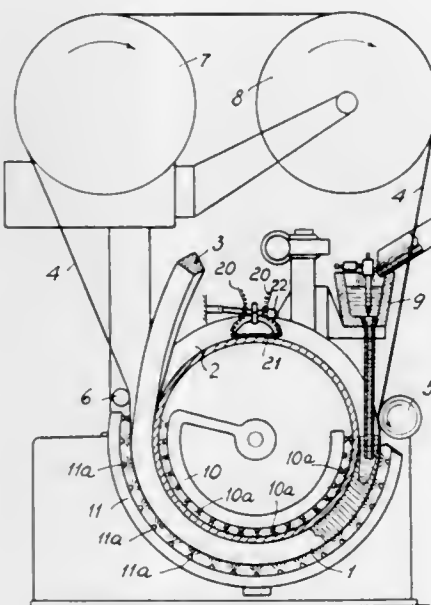
right round and through the shell of the nut held in the nut-holding device opposite it, and means at the third station for removing the grooved nut from the nut-holding device opposite it, separating the two cut halves of the shell and ejecting the kernel.

3,626,479

**CONTINUOUS CASTING MACHINE WITH CHANNEL COOLANT CONTROL MEANS**

Ilario Properzi, C/O Continuus S.p.A. Via Cosimo del Fante 10, Milan, Italy  
 Filed Nov. 24, 1969, Ser. No. 879,330  
 Claims priority, application Italy, Nov. 25, 1968, 24147A/68  
 Int. Cl. B22d 11/06  
 U.S. Cl. 164—154

5 Claims



An apparatus for the adjustment of cooling for a continuous ingot casting machine of the type comprising a rotating casting wheel provided with a peripheral channel or mould which is covered along a certain arc by a metal tape, said apparatus comprising means responsive to the temperature of said mould arranged at the noncovered portion of said channel, and adjustment means arranged to be actuated by the temperature responsive means in order to adjust cooling means for cooling said mould.

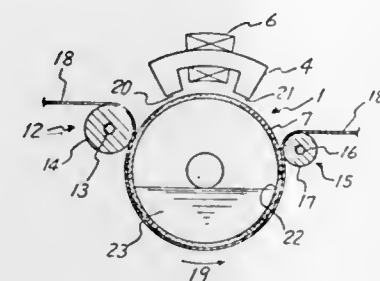
3,626,480

**DEVICE FOR HEATING AND COOLING PLASTIC SHEETS**

Masuya Takei, Hideyuki Kawasaki, and Taira Yasuda, all of Takatsuki, Japan, assignors to Kuraray Co., Ltd., Osaka, Japan  
 Filed July 31, 1970, Ser. No. 59,914  
 Claims priority, application Japan, Aug. 11, 1969, 44/64577  
 Int. Cl. F26b 13/00

U.S. Cl. 165—61

10 Claims



Apparatus for continuously heating and cooling continuous lengths of sheet material comprises a hollow cylinder of ferromagnetic material rotatably mounted on a horizontal axis, with an electromagnetic induction heating device placed in a fixed position to continuously inductively heat a peripheral area of the cylinder as it moves past that position, the cylinder being partially filled with a cooling liquid to continuously and successively cool the heated peripheral area and rollers to guide the sheet material successively in contact with the heated and cooled periphery of the cylinder.

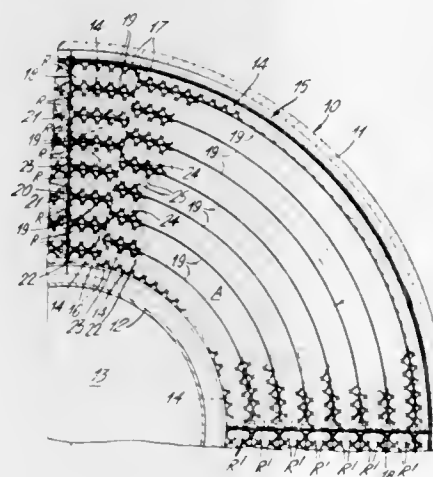
3,626,481

**HEAT EXCHANGERS**

Derek Taylor, and Reginald Philip Hardingham, both of Knutsford, England, assignors to United Kingdom Atomic Energy Authority, London, England  
 Filed Jan. 19, 1970, Ser. No. 3,961  
 Claims priority, application Great Britain, Jan. 28, 1969, 4,770/69  
 Int. Cl. F23d 7/00

U.S. Cl. 165—162

7 Claims



A grid for locating the tubes of a heat exchanger in which the tubes are arranged parallel to one another in rows. The tubes are located by support members of zigzag strip material carried on structural components extending between the rows of tubes. In a particular arrangement the tubes are in concentric rows and the structural components carrying the zigzag support members are in the form of annular strips extending between alternate rows of the tubes the rows of tubes on either side of the annular strips being supported by zigzag support members attached to each side of the annular strips.

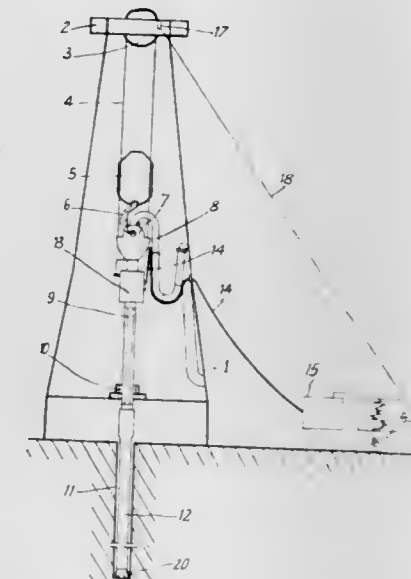
3,626,482

**METHOD AND APPARATUS FOR MEASURING LITHOLOGICAL CHARACTERISTICS OF ROCKS**

Claude Jean Quichaud, Billere; Michel H. Raynaud, and Jean Lutz, both of Pau, all of France, assignors to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine, Coubevole, France  
 Filed Oct. 23, 1969, Ser. No. 868,873  
 Claims priority, application France, Oct. 30, 1968, Dec. 11, 1968, Feb. 27, 1969; 6905142, 177543, 171873  
 Int. Cl. E21b 47/00, 49/00

U.S. Cl. 175—25

27 Claims



A method by which physical and mechanical characteristics of rocks are measured during drilling, comprises picking up a signal representing the vibrations of a train of rods forming part of drilling gear, selecting the components of the said signal which, after peak-clipping, are in a frequency band which is centered on, and preferably is related to, a characteristic frequency of the tool, establishing from the components thus selected, a value which is representative of the amplitude of the vibrations, and correlating this value with the drilling depth.

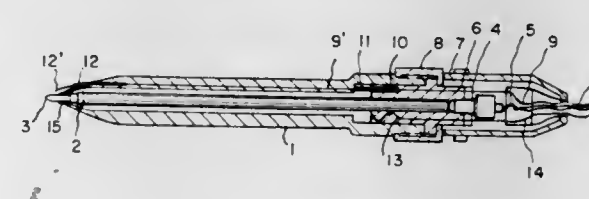
3,626,483

**SPARK PEN**

Albert Whetstone, Southport, Conn.; Samuel Fine, New City, N.Y.; William Banks, Fairfield, and Stanley Phillips, Trumbull, both of Conn., assignors to Science Accessories Corporation, Southport, Conn.  
 Filed July 16, 1969, Ser. No. 842,148  
 Int. Cl. G01v 1/02

U.S. Cl. 181—0.5

10 Claims



A writing stylus for use as a graphical-input terminal for digital computers. The stylus will produce a fast rise time shock energy sound wave generated by a spark detectable by coordinately placed microphones, at the instant the spark is produced can be determined and recorded in digital form.

3,626,484

**BRAKE RIGGING FOR RAILWAY FREIGHT CARS**

Paul G. Kinnecom, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.  
 Filed Sept. 22, 1969, Ser. No. 859,984  
 Int. Cl. B61h 13/26

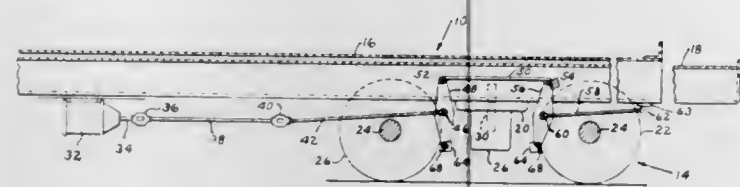
U.S. Cl. 188—52

3 Claims

Brake rigging for a railway freight car having a center sill structure with an open bottom and receiving a portion of the



brake rigging. The truck live lever and the truck dead lever extend in a vertical direction and have upper end portions received within the center sill structure. A truck lever rod wholly within the center sill structure connects the upper



ends of the truck levers and extends over the truck bolster and the body center plate. An actuating pull rod is connected to an intermediate portion of the truck live lever for actuating the truck brakes.

3,626,485

**SELF-ENERGIZING DISC BRAKES**

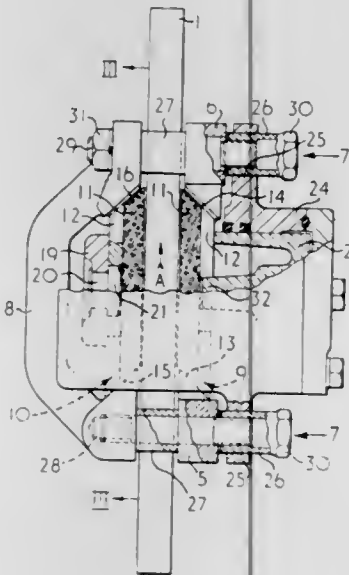
Aubrey James Masters Holloway, Coventry, England, assignor to Dunlop Limited, Birmingham, England  
Filed Oct. 15, 1969, Ser. No. 866,514

Claims priority, application Great Britain, Oct. 25, 1968, 50,652/68

Int. Cl. F16d 55/46

U.S. Cl. 188—72.2

10 Claims



Single-sided disc brake comprising a brake disc, a pair of opposed friction pads, a rigid brake support structure, a rigid caliper extending across the brake disc and a brake-actuating mechanism mounted on one limb of the caliper. Complementary abutment surfaces inclined towards the disc, are formed on the support structure on both sides on the disc and on each friction element to render the brake self-energizing, once it has been applied. The friction elements are both mounted for limited movement with the disc relative to the caliper, whereby the caliper is subjected to little or no torque reaction when the brake is applied, of which the following is a specification.

3,626,486

**FLUID-DISTRIBUTION APPARATUS**

Cecil W. Bugbee, and John G. Hicks, Jr., both of Tampa, Fla., assignors to Tennessee Corporation, New York, N.Y.

Original application Dec. 26, 1968, Ser. No. 787,101, now Patent No. 3,540,596, dated Nov. 17, 1970. Divided and this application Dec. 29, 1969, Ser. No. 1,943

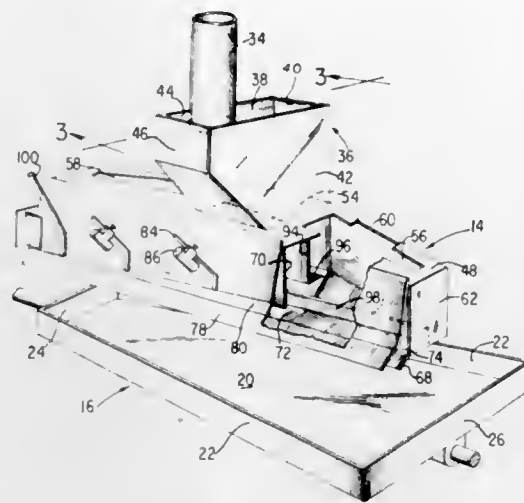
Int. Cl. B01d 33/38

U.S. Cl. 210—405

2 Claims

An improved slurry distribution box for use with moving bed filters, preferably a tilting pan vacuum filter is disclosed herein. The distribution box is a horizontally mounted box with a flat side transverse to the path of the filter pans, the flat side having a coextensive opening therein and a gate pivotally mounted from the top opposite the opening and act-

ing together with the opening to define a discharge port. Adjustably mounted counterweights are cantilevered from the front of the gate to provide a biasing force to hold the gate against the opening. Preferably the gate is angularly bent at



its bottom to provide a slight taper to the discharge port formed by the gate and the opening so as to distribute slurry evenly over the annular filter surface area of the moving filter.

3,626,487

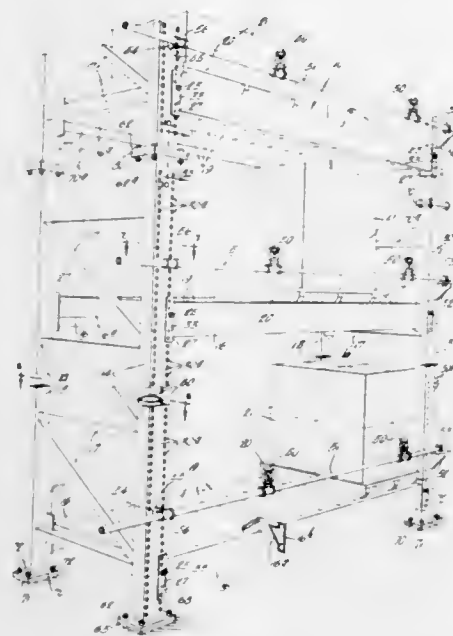
**FIRE AND VERMIN RESISTANT STORAGE STRUCTURE HAVING FAIL-SAFE FEATURES**

Edward A. Seiz, 136 E. Third St., Lansdale, Pa.  
Continuation-in-part of application Ser. No. 728,182, May 10, 1968, now Patent No. 3,545,626. This application Mar. 3, 1970, Ser. No. 15,998

Int. Cl. A47f 5/10

U.S. Cl. 211—176

8 Claims



A free-standing storage structure comprising uprights and a series of load-carrying beams releasably secured to the uprights by means of improved locking assemblies on the ends of the beams projecting through knockout openings spaced apart along the length of each upright. Fire protection for the structure is provided by means of a wet upright having a conduit which contains a fire-retardant substance and which forms a structural component of the upright, the conduit being connected to pipes extending across the back of the structure for discharging the fire-retardant substance in response to a fire. Coupling means is provided to interconnect the conduits of aligned uprights when the structures are stacked vertically. Unused openings are closed by knockouts and the ends of the uprights and beams are closed to prevent vermin from inhabiting the storage structure.

3,626,488

**GUIDE ARRANGEMENT**

Anton Heumann, Nuernberg, Germany, assignor to Klein Schanzlin & Becker Aktiengesellschaft, Frankenthal Pfalz, Germany

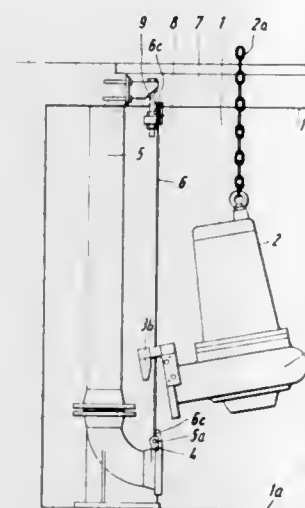
Filed Feb. 5, 1970, Ser. No. 8,769

Claims priority, application Germany, Mar. 14, 1969, P 19 12 963.6

Int. Cl. B66b 7/06

U.S. Cl. 214—1 R

12 Claims



An article, particularly a pump unit, which is to be lowered from a higher to a lower level is clampingly connected by an annular clamp member which comprises two parallel, slightly spaced arms adapted during descent of the article to automatically slidably engage a pair of parallel guide wire sections extending vertically between the higher and lower levels. The guide-wire sections, in effect, are formed by one integral wire which in the region of the higher level, is deflected through 180° by means of a C-shaped deflecting member. The free ends of the guide-wire sections are connected in the region of the lower level.

3,626,489

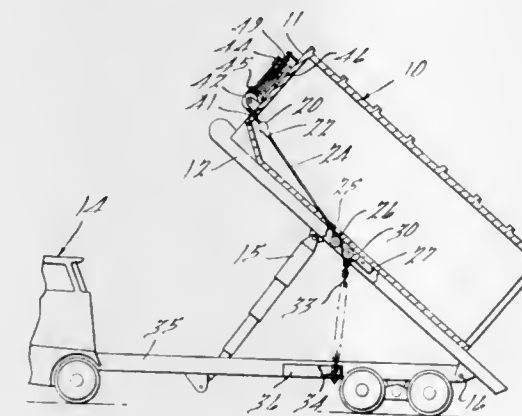
**TILT DUMP VEHICLE WITH LOAD EJECTING MEANS**  
Robert J. Ploch, Jackson, Mich., assignor to Kysor Industrial Corporation

Filed Nov. 3, 1969, Ser. No. 873,156

Int. Cl. B60p 1/04

U.S. Cl. 214—510

7 Claims



A closed body for a tilt-bed vehicle has an openable rear end and when raised pulls a cargo ejecting bar rearwardly inside the body to assist the discharge of the contents. A chain and cable mechanism actuates the ejecting bar by the lifting of the body.

3,626,490

**LIQUID METERING APPARATUS**

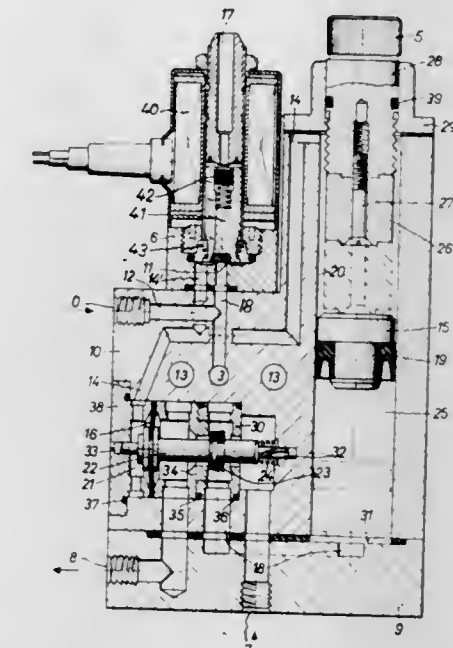
Heinz Rausch, Basel, Switzerland, assignor to Elektro-Apparatebau F. Knobel & Co., Ennenda, Glarus, Switzerland  
Filed Jan. 26, 1970, Ser. No. 5,584

Claims priority, application France, Jan. 24, 1969, 6901409

Int. Cl. G01f 1/106

U.S. Cl. 222—334

5 Claims



A liquid metering apparatus, particularly for distribution of beverages, comprises a metering or dosing container in which a metering piston is reciprocating, and a reversing valve controlling the filling and draining of the metering container. Actuation of the reversing valve and movement of the metering piston for draining the metering container is effected by means of an auxiliary medium controlled by an auxiliary magnetic control valve.

3,626,491

**SOLENOID-OPERATED DISPENSER FOR PRESSURE-SENSITIVE TAPE**

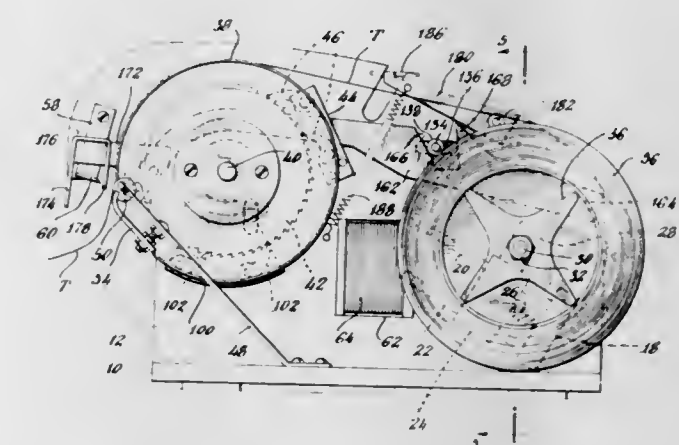
John H. Grosser, 148 Scofield Ave., Bridgeport, Conn.

Filed Aug. 27, 1969, Ser. No. 853,400

Int. Cl. B26f 3/02

U.S. Cl. 225—8

11 Claims



A roll of pressure-sensitive adhesive tape is mounted to be freely rotatable and its end is passed over a toothed tape feeding wheel which may be advanced in predetermined increments to draw tape off the roll. The end of the tape is manually lifted against a cutting edge which severs the tape and at the same time lifts a trigger mechanism. The trigger mechanism works through a time delay to close the switch. The switch in turn energizes a solenoid which has a plunger normally spring biased to its deenergized position. The plunger advances to its energized position, releasing the switch and simultaneously engaging the tape feeding wheel



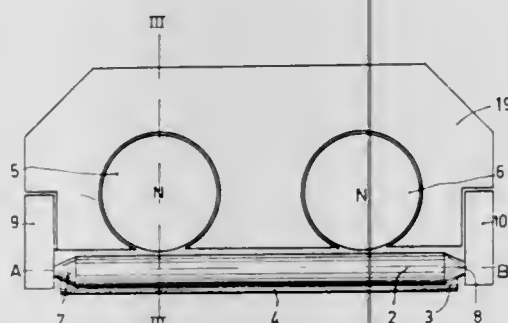
through a pawl and ratchet arrangement. When the springs return the plunger to its deenergized position, they simultaneously advance the tape feeding wheel.

whereby two lifting steps are accomplished in each cycle of the lifting device.

**3,626,492**  
**MEANS FOR FRACTURING A PLATE OF MATERIAL**  
Kenneth Hobbs, Southampton, England, assignor to U.S. Phillips Corporation  
Filed Nov. 25, 1969, Ser. No. 879,845  
Claims priority, application Great Britain, Nov. 29, 1968, 56,792/68  
Int. Cl. B26f 3/00

U.S. Cl. 225-103

8 Claims

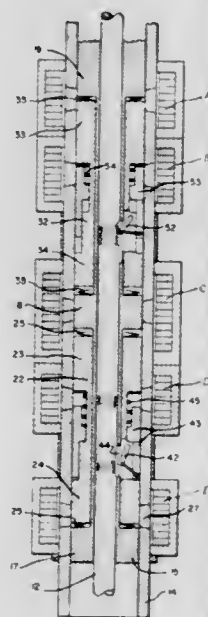


A roller arrangement suitable for fracturing into dice semiconductor wafers is described comprising an unpivoted working roller of 2 mm. diameter and two backing rollers of 5 mm. diameter. The working and backing rollers are of magnetic material and the working roller is held against the backing rollers using a magnet. Such a roller arrangement is satisfactory when the surface area of the dice is only 350 microns by 350 microns.

**3,626,493**  
**GRIPPER-TYPE LINEAR MOTION DEVICE**  
Peter F. Behmke, Tolland, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.  
Filed June 18, 1969, Ser. No. 834,465  
Int. Cl. B65h 17/36

U.S. Cl. 226-54

7 Claims

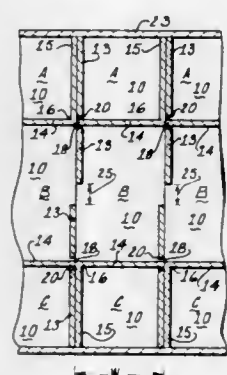


A linear motion device of the type in which magnetic coils surround a shaft lifting and lowering slugs which contain gripper elements which in turn may be selectively engaged and disengaged from the shaft. An upper coil operates to lift an upper slug while an upper central coil operates to effect engagement between the shaft and the upper slug. A lower coil operates to pull down a lower slug while a lower central coil operates to effect engagement between the lower slug and the shaft. The single central coil operates to simultaneously pull down the upper slug and lift the lower slug

**3,626,494**  
**PARTITION UNIT AND METHOD OF MAKING SAME**  
Lloyd L. Levin, Reading, Pa., assignor to Interstate Container Corporation, New York, N.Y.  
Filed Nov. 20, 1969, Ser. No. 878,513  
Int. Cl. B65d 5/48, 85/00

U.S. Cl. 229-15

23 Claims

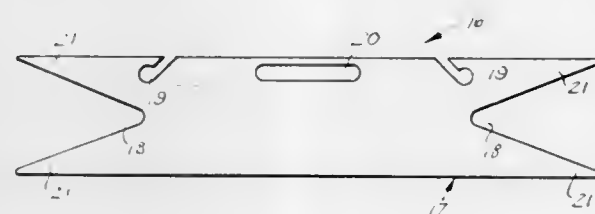


A one piece die-cut blank for folding into a multicell partition unit for insertion into a carton. In the basic embodiment the blank comprises a central section and two side sections with cutout flaps adapted to be folded to a position spanning the central section. The basic blank may be modified to include two wing portions attached to the side sections each having flap portions, said wing portions adapted to be folded to a position in planar contiguity with said side sections and said flap portions adapted to be folded outwardly away from said side sections. A plurality of either of such blanks may be integrally attached to form a single blank for folding into a partition unit of any desired number of cells.

**3,626,495**  
**TANGLE FREE WIRE HOLDER**  
John A. Bastian, Jr., 3920 Haring Road, Metairie, La.  
Filed Mar. 5, 1970, Ser. No. 16,691  
Int. Cl. B65h 75/06

U.S. Cl. 242-85.1

1 Claim



A device for storing extension wires used with electrical appliances. This device is boardlike in configuration and eliminates tangles in the wire which normally causes damage to the wire. The device consists of a boardlike affair having V-slotted openings at each end to accommodate the wire, one edge of the device having a pair of spaced-apart and keyhole shape configured openings for the insertion of the wire at the end of the male and female plugs of the wire, the opposite edge having an elongated opening which serves as a handle for the board.

**3,626,496**  
**THREAD GUIDE**  
Albert D. Harmon, Clemson, S.C., assignor to Maremont Corporation, Chicago, Ill.  
Filed Oct. 12, 1970, Ser. No. 79,736  
Int. Cl. B65h 57/08

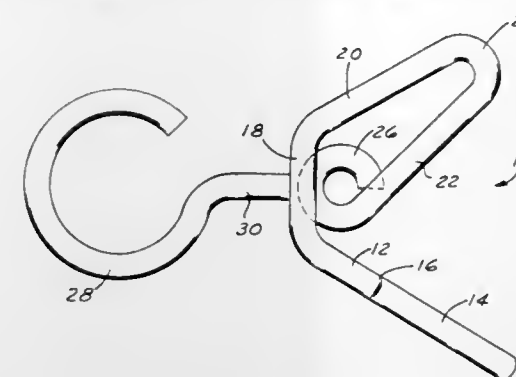
U.S. Cl. 242-157 R

6 Claims

An upswingable, self-threading yarn guide is disclosed, having two legs extending from a single shank to form a bifurcate yarn-gathering structure, one leg intermediate its

juncture with the shank being bent downwardly and outwardly as a yarn-gathering guide, and the other leg intermediate its juncture with the shank being bent downwardly and inwardly thereof and terminating in a helical turn away from said first leg so as to receive yarn gathered by said first

leg, slidably and rotatably move the hemispherical plug portion into and out of engagement with the valve sleeve dur-

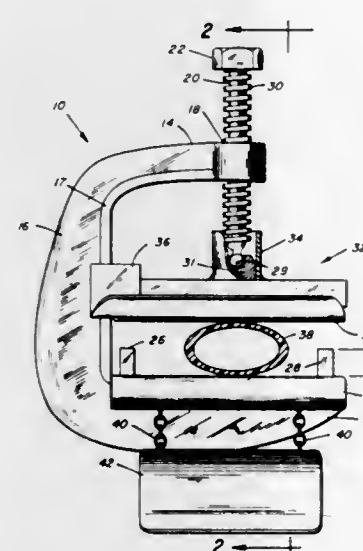


leg in a yarn-retaining and self-threading function. Also disclosed is a conventional circular holder attached to the shank opposite the legs for attachment to an upswingable yarn guide-holding fixture attached to a textile spinning or twisting machine.

**3,626,497**  
**PLASTIC PIPE CLAMP**  
Lucian T. Lambert, 6004 East 18th St., Tulsa, Okla., and Edward K. Knouse, Jr., 5729 East 26th Pl., Tulsa, Okla.  
Filed Aug. 6, 1969, Ser. No. 847,957  
Int. Cl. F16k 7/06

U.S. Cl. 251-8

2 Claims



A clamp for shutting off flow through heavy wall plastic pipe utilizes a stationary jaw and a vertically movable jaw carried on a frame. Downward movement of the movable jaw towards the stationary jaw pinches the walls of the pipe placed therebetween without rupture of the pipe. Adapters provide application of the clamp to pipes having diverse outer diameters.

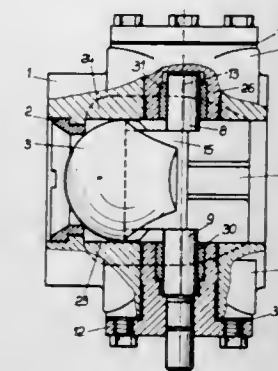
**3,626,498**  
**VALVE**  
Herbert Rihm, Ostheim, Germany, assignor to Honeywell G.m.b.H., Frankfurt-am-Main, Germany  
Filed Nov. 6, 1969, Ser. No. 874,590  
Claims priority, application Germany, Nov. 14, 1968, P 18 08 764.4

U.S. Cl. 251-261

Int. Cl. F16k 31/44

9 Claims

A valve having a sleeve-shaped body, a plug that has a hemispherical shaped portion that is movable in an axial direction within the inner wall of the sleeve with respect to an annular valve seat formed in the body, and an eccentric connected to a rotatable shaft and in engagement with a substantially C-shaped wall portion of the plug to simultane-

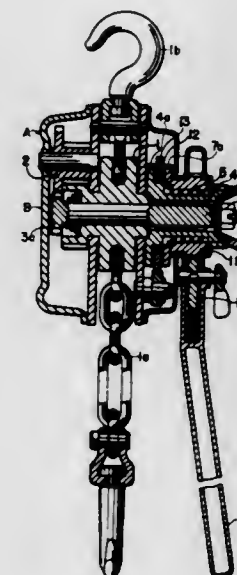


ing associated clockwise and counterclockwise movements of the shaft.

**3,626,499**  
**SMALL-SIZED HOIST DEVICE**  
Hideo Iwama, Tokyo, and Takeshi Saito, Kawasaki-shi, both of Japan, assignors to Kabushiki Kaisha Kito Seisakusho, Kawasaki-shi, Kanagawa-ken, Japan  
Filed Feb. 19, 1969, Ser. No. 800,662  
Claims priority, application Japan, Feb. 21, 1968, 43/12829  
Int. Cl. B66d 1/04

U.S. Cl. 254-167

10 Claims



In a small-sized hoist device, an inner annular member disposed in spaced relationship to an outer annular member is employed in transmitting the input force to the drive shaft. The inner annular member is mounted and rotates with the shaft while the input force is delivered to the outer annular member which conveys the force through interlocking means to the inner member. The interlocking means comprises a cage member holding a plurality of balls which fit into continuous threads formed in the oppositely arranged facing surfaces of the inner and outer annular members.

**3,626,500**  
**AERATION SYSTEM AND METHOD OF FABRICATION**  
Carl Dummman, 3959 Spenard Road, Anchorage, Alaska  
Filed July 17, 1970, Ser. No. 55,708  
Int. Cl. B01f 3/04

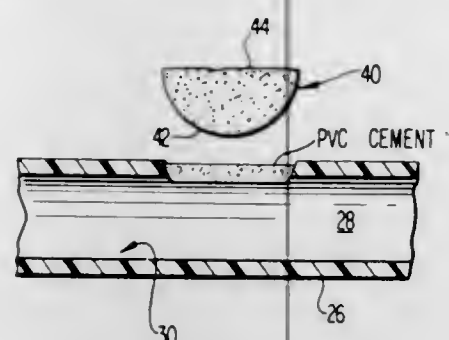
U.S. Cl. 261-121 R

8 Claims

An aeration system wherein a plastic pipe is provided with porous ceramic inserts to release a controlled volume of gas from the pipe. The pipe also has a series of porous ceramic dewatering discs for drainage of liquid from the pipe; and A method of installing porous ceramic elements in a pipe wherein slots are formed in the pipe and dimensioned to



tightly grip the elements. The slots are coated with a liquid cement to provide lubrication for insertion of the discs, and



additional mastic is thereafter injected under pressure to form an adhesive bond between the elements and the pipe.

3,626,501

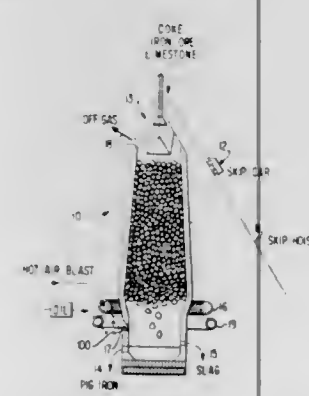
# APPARATUS FOR INJECTING FLUID FUEL INTO A BLAST FURNACE

Roger B. Baird, Palos Park; Frank J. Bruns, Homewood, and Barney Vallino, Jr., Chicago Heights, all of Ill., assignors to Atlantic Richfield Company  
Original application Mar. 18, 1968, Ser. No. 714,112, now Patent No. 3,523,683, which is a continuation of application Ser. No. 415,373, Dec. 2, 1964, now abandoned. Divided and this application Dec. 11, 1969, Ser. No. 889,791

Int. Cl. C21b 7/16

U.S. Cl. 266-41

12 Claims



System for the injection of fluid hydrocarbon fuels into a blast furnace through an injection lance mounted in a tuyere for injecting the fluid fuel into the hot airblast of the tuyere.

3,626,502

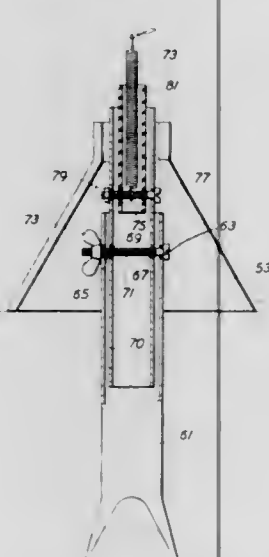
# TETHERED BALL FOR BASEBALL BATting PRACTICE

Ben A. Well, Houston, Tex., assignor to Indian Head, Inc.  
Filed July 24, 1968, Ser. No. 747,390

Int. Cl. A63b 69/40

U.S. Cl. 273-26 E

1 Claim



A batting practice apparatus including a ball secured to a cord light enough and long enough to have little effect on the pitching and batting of the ball, the cord being secured to an

upright stake arrangement for absorbing the shock of the ball and keeping the ball in a confined area. The stake arrangement principally includes a vertically mounted spring surrounded by a flexible collar and an inverted funnel-shaped enclosure to prevent the cord from becoming fouled on the stake.

3,626,503

# GAME APPARATUS

Wilfred H. Rattey, Jr., 1 Laurel Lane, Cumberland, R.I.  
Filed Oct. 8, 1970, Ser. No. 79,026

Int. Cl. A63f 3/00

U.S. Cl. 273-135 R

3 Claims



A game apparatus having a plurality of identical playing boards, each having a plurality of rectangles marked thereon and being arranged in a line with the longer dimension of the rectangles being substantially perpendicular to the line. On one side of the board an arrow points to the left with the letter L next to it and on the other side an arrow points to the right with the letter R next to it. Each board has its own set of markers with each marker of the set having a different numeral on it. The markers have a substantially rectangularly shaped base generally conforming to the dimensions of the rectangles marked on said playing boards, with the height of said markers being greater than the longer dimension of said base. The number of markers in each set equals the number of rectangles marked on said playing boards. The rectangles marked on the game boards are spaced laterally by a distance less than the height of said markers. A deck of cards is used comprising a first plurality of cards having no numerals on them known as free cards and a second plurality of cards comprising several pairs of cards with at least one pair of cards having the same numeral on them as that on each of said markers with one card of each pair having the letter L on it and the other card of the set having the letter R on it.

3,626,504

# RECORD PLAYER

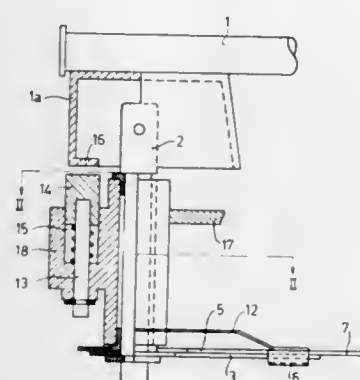
Martinus Johannes Holl, La Lande Patry, France, assignor to U.S. Philips Corporation, New York, N.Y.  
Filed Jan. 29, 1970, Ser. No. 6,785

Claims priority, application France, Jan. 29, 1970, 6901746

Int. Cl. G11b 17/00

U.S. Cl. 274-1 L

6 Claims



A record player suitable for playing records having the standard diameters of 30, 25 and 17 cm. and records having diameters smaller than 13 cm., in particular a diameter of 10 cm. The record player of the invention has an automatic switch-off mechanism of the type comprising a displaceable trip lever which, when a record is being played, is moved by the moving tone arm into the path of a projection which is eccentrically provided on the turntable. The trip lever is periodically moved back by this projection, but when the pickup needle moves into the runout groove of a record it is displaced a larger distance by a control element so that the

projection grips the lever to impart an additional displacement to it, which causes automatic switch-off. The record player includes an abutment pin which, in order to enable records having diameters smaller than 13 cm. to be played, can be so operated by the person using the record player that, when the tone arm is set on the record, the control element is temporarily blocked so that contact with the trip lever is postponed in order to prevent premature switching off.

3,626,505

# WIRE LINE STRIPPER

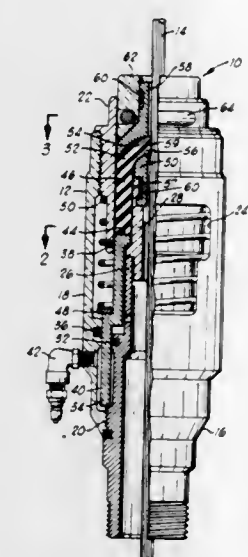
Bobby L. Douglas, Ennis, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 28, 1969, Ser. No. 853,888

Int. Cl. F16j 9/00, 15/54

U.S. Cl. 277-2

3 Claims



A wire line stripper for use in conjunction with the movement of wire line supported tools into and out of well bores. The stripper includes a housing encircling the wire line, a sealing element located in the housing and having a surface thereon in engagement with the wire line. The sealing element is constructed so that the pressure responsive means continues to maintain the seal member in sealing engagement with the wire line even though considerable wear occurs on the seal surface that is in engagement with the wire line.

3,626,506

# REMOVABLE SECURING DEVICE

Rudolf Splieth, Kennenburgerstrasse 42, 73 Esslingen-Kennenburg, Germany

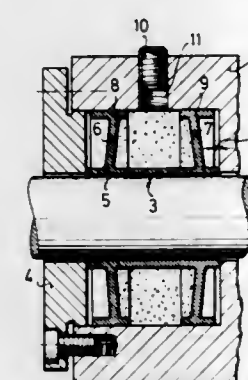
Filed Dec. 11, 1968, Ser. No. 782,924

Claims priority, application Germany, Dec. 15, 1967, P 16 25 452.7

Int. Cl. F16d 1/06

U.S. Cl. 287-52

6 Claims



A clamping bushing for removably securing two elements on each other, for example, a pulley on a shaft, so as to be exactly coaxial. The device consists of a tubular part which is slipped, for example, loosely over the shaft and has a pair of substantially radial flanges which extend at an angle of more or less than a right angle to the tubular part and have small coaxial tubular extensions on their outer ends which are fitted tightly, for example, into a cylindrical bore in a pulley. When a pressure is applied upon a pressure fluid in the

chamber formed between the flanges, the tubular part and the wall of the bore, the flanges are bent to a more erect position and thereby increase in effective length so as to connect the two elements tightly to each other.

# 3,626,507 PATIO DOOR LOCK

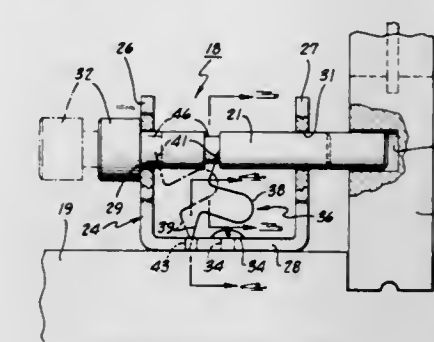
Donald B. Hawkins, 2233 A Washington Ave., San Leandro, Calif.

Filed Oct. 24, 1969, Ser. No. 869,036

Int. Cl. E05c 1/00, 13/02

U.S. Cl. 292-175

3 Claims



A device for locking sliding patio doors and other sliding sashes characterized by an extremely simple construction featuring an overcenter spring-induced toggle action imparted to a lock bolt to selectively urge same into locked position or hold same in open or unlocked position. The spring functions as a keeper for retaining the bolt in locked position and as a stop for determining the unlocked position of the bolt.

3,626,508

# CONCRETE PIPE LIFTING CONNECTOR

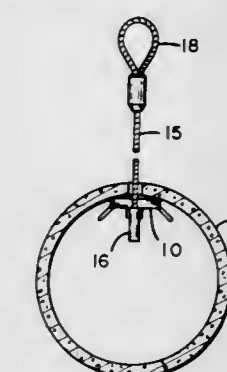
Clarence C. Sharrow, 121-11th Ave. South, South St. Paul, Minn.

Filed Sept. 11, 1970, Ser. No. 71,296

Int. Cl. F16g 11/00

U.S. Cl. 294-89

4 Claims



A quick attach and release connector for lifting heavy objects such as sewer pipes in which a slotted plate slides over a steel cable and is retained in place by a sleeve on the cable which is prevented from leaving the slot in the plate by a retaining rim on the plate.

3,626,509

# DISPOSABLE MOP ASSEMBLY AND METHOD OF FORMING DISPOSABLE MOPHEAD THEREFOR

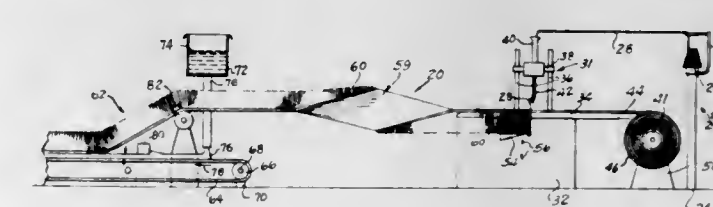
James M. Rones, P.O. Box 13377, Atlanta, Ga.

Filed Oct. 8, 1969, Ser. No. 870,491

Int. Cl. A46d 1/08

U.S. Cl. 300-21

2 Claims



A web of canvas backing material is continuously unreeling for tufting with yarn whose ends are sheared to form the mop



strands with the canvas backing receiving a thick vinyl layer which is cured thereto prior to transversely severing of the finished web laminate to form individual disposable mophead. A thin metal plate removably coupled to the mophead carries a simplified universal joint which connects the same to the mop handle.

3,626,510

**HYDRAULIC BEARING SYSTEM**

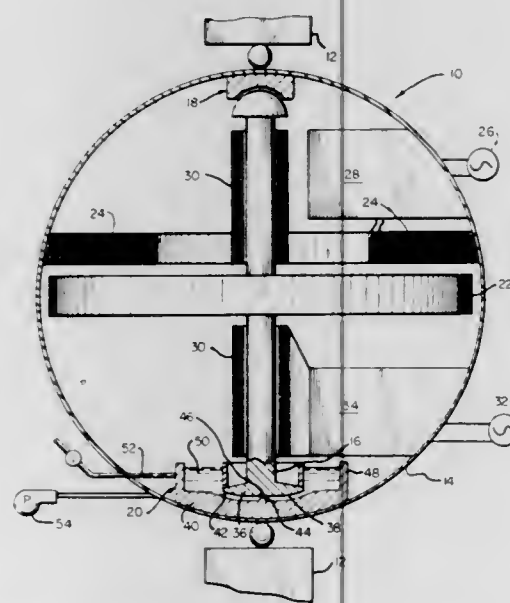
James J. Kauzlarich, University of Virginia School of Engineering and Applied Science Department of Mechanical Engineering, Charlottesville, Va., and Richard D. Rheutan, Jr., 206 Mellwood Ln., Richmond, Va.

Filed Sept. 4, 1970, Ser. No. 69,727

Int. Cl. F16c 17/00

U.S. Cl. 308-1

7 Claims



A hydraulic thrust bearing having bearing members with horizontally aligned, spaced bearing surfaces and a liquid completely filling the space between the surfaces. One member is oscillated normal to the bearing surfaces to generate a positive load supporting force in the bearing.

3,626,511

**DIGITAL LIGHT DEFLECTOR USING ELECTRO-OPTIC GRATING**

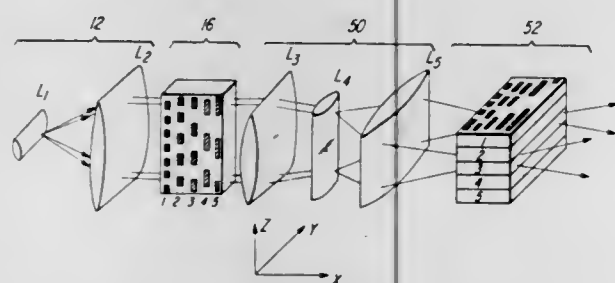
Jacob Meyer Hammer, Trenton, N.J., assignor to RCA Corporation

Filed July 20, 1970, Ser. No. 56,496

Int. Cl. G021 1/26

U.S. Cl. 350-160

10 Claims



A digital light deflector or modulator is disclosed in which a polarized sheet of light derived from a laser is directed through a slab of an electro-optic crystal such as lithium niobate,  $\text{LiNbO}_3$ . The crystal slab is thin and has a major surface provided with discrete, regularly spaced electrodes arranged in a column extending transverse to the direction of light passing through the crystal. The opposite major surface of the crystal is provided with a matching, registered column of electrodes. When an electric potential is applied across the two columns of electrodes, an electric field grating is established in the crystal which causes a diffraction of the sheet of light in a direction lying in the plane of the sheet of light. The output sheet of light from the crystal may be translated to a beam of light by lenses.

**3,626,512  
PROCESS AND APPARATUS FOR DETERMINING A REFERENCE DIRECTION**

Jean Michel Catharin, Savigny-sur-Orge, France, assignor to Compagnie Generale D'Electricite, Paris, France

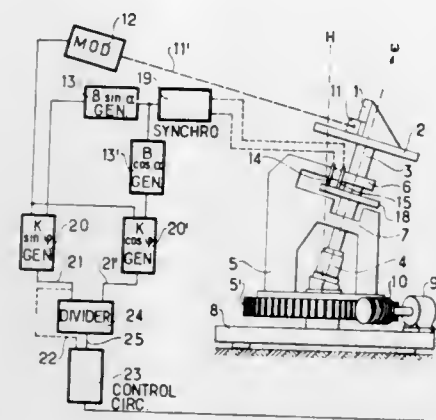
Filed May 7, 1969, Ser. No. 822,587

Claims priority, application France, May 7, 1968, 150778

Int. Cl. G01b 11/26

U.S. Cl. 356-141

7 Claims



A process and an apparatus are disclosed for determining an unknown reference direction by means of a rotating unit which transmits a signal  $f(\alpha - \Phi)$ ,  $\alpha$  being the angular position of the unit in relation to a known reference direction,  $\Phi$  being the angle between the said unknown reference direction and the known reference direction. A signal  $f(\alpha)$  identical to the signal  $f(\alpha - \Phi)$  is generated to the nearest constant multiplying factor. The operation

$$\frac{1}{T} \int_0^{2\pi} f(\alpha - \rho) f(\alpha) d(\alpha)$$

is performed by electronic means,  $T$  being the rotation period of the said unit, the value of the resulting signal being  $g$ , which is the characteristic of the angle defining the position of the unknown reference direction in relation to the known reference direction.

3,626,513

**TOOL GUIDE**

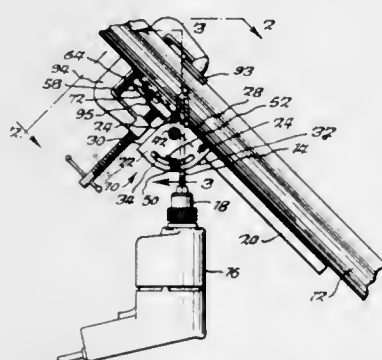
Sylweriusz Pytlak, 50 Robin Court, West Seneca, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,058

Int. Cl. B23b 47/28

U.S. Cl. 408-115

7 Claims



A guide body having a passage therethrough for accommodating a tool bit is pivotally mounted between a pair of spaced, upstanding plates secured to a base member. A stop member adjustably threaded into the passage controls the depth of penetration of the tool bit. Lateral projections extend from opposite sides of the guide body through arcuate slots in the plates for receiving fasteners to secure the guide body in a selected angular position relative to the base member. In another form, a pair of rods pivotally mounted adjacent the base member extend through lugs projecting laterally outwardly from opposite sides of the guide body and set screws in the lugs engage the rods for securing the guide body in a selected angular orientation.

**DESIGNS**

DECEMBER 7, 1971

222,689

**WEEDING TOOL**

Kaneo Futami, 319 N. Vancouver Ave., Los Angeles, Calif. 90022

Filed July 7, 1969, Ser. No. 18,084

Term of patent 7 years

Int. Cl. D8-01

U.S. Cl. D8-4



222,690

**BUILDING**

Scott W. Rumph, P.O. Drawer 1060, Sumter, S.C. 29150

Filed Aug. 19, 1970, Ser. No. 24,570

Term of patent 14 years

Int. Cl. D25-04

U.S. Cl. D13-1



222,691

**WOOD MOULDING**

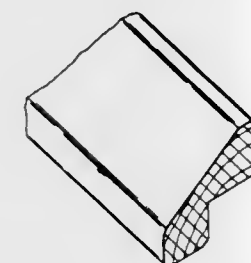
Skull Walter Lindal, 9004 S. 19th St., Tacoma, Wash. 98466

Filed Mar. 16, 1970, Ser. No. 21,908

Term of patent 14 years

Int. Cl. D25-01

U.S. Cl. D13-6



222,692

**TRACTOR**

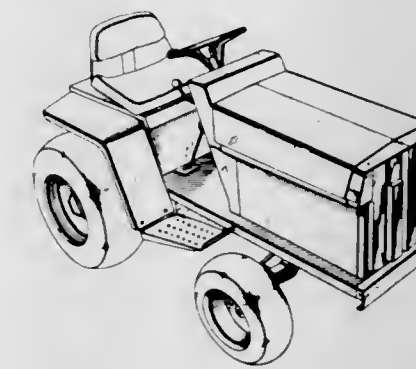
John C. Pritchett, Schenectady, Bruce R. Laumeister, Rexford, and Raymond M. Fisher, Jr., Schenectady, N.Y., assignors to General Electric Company

Filed Feb. 2, 1970, Ser. No. 21,188

Term of patent 14 years

Int. Cl. D12-09

U.S. Cl. D14-3



222,693

**CHAIR**

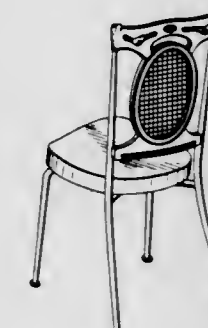
Wayland B. Parker, Merritt Hill, Va., assignor to Daystrom Virtue, Inc., Houston, Tex.

Continuation of abandoned applications Ser. No. 16,637 and Ser. No. 16,645, both Apr. 9, 1969. This application Oct. 7, 1969, Ser. No. 19,784

Term of patent 14 years

Int. Cl. D6-01

U.S. Cl. D15-1



222,694

**INDUSTRIAL FORK LIFT TRUCK**

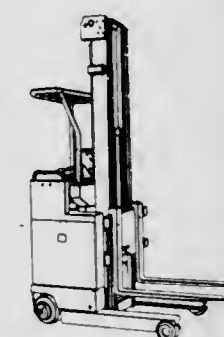
Cecil Goodacre, Basingstoke, England, assignor to Lansing Bagnall Limited, Hampshire, England

Filed Nov. 3, 1970, Ser. No. 25,798

Term of patent 14 years

Int. Cl. D12-09

U.S. Cl. D14-3





222,695

**FIRE HYDRANT**John J. Smith, Decatur, Ill., assignor to  
Mueller Co., Decatur, Ill.

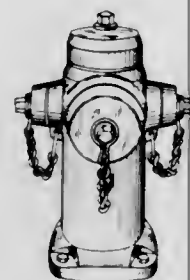
Filed May 11, 1970, Ser. No. 22,904

Term of patent 14 years

The portion of the term of the patent subsequent to  
Aug. 18, 1984, has been disclaimed

Int. Cl. D23—01

U.S. Cl. D23—12



222,696

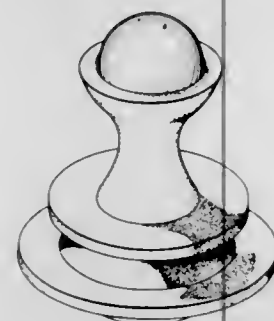
**DRINKING FOUNTAIN**Cornelius Sampson, 1080 Grizzly Peak Blvd.,  
Berkeley, Calif. 94708

Filed June 22, 1970, Ser. No. 23,605

Term of patent 14 years

Int. Cl. D23—01

U.S. Cl. D23—13



222,697

**PORTABLE ELECTRONIC CALCULATOR**Takashi Morita, Sagami-hara-shi, Japan, assignor to  
Takachiho Koeiki Kabushiki Kaisha, Osaka-shi, Japan

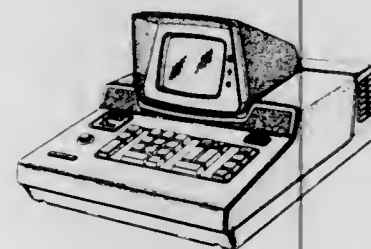
Filed Dec. 4, 1969, Ser. No. 20,350

Claims priority, application Japan June 9, 1969

Term of patent 14 years

Int. Cl. D14—02; D18—01

U.S. Cl. D26—5



222,698

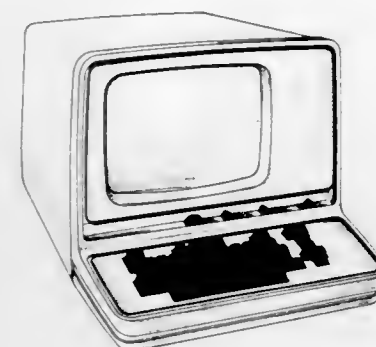
**HOUSING FOR KEYBOARD DISPLAY TERMINAL**Douglas G. Ohlmann, West Newton, Mass., assignor to  
Infoton, Incorporated, Burlington, Mass.

Filed Mar. 10, 1970, Ser. No. 21,839

Term of patent 14 years

Int. Cl. D14—02

U.S. Cl. D26—5



222,699

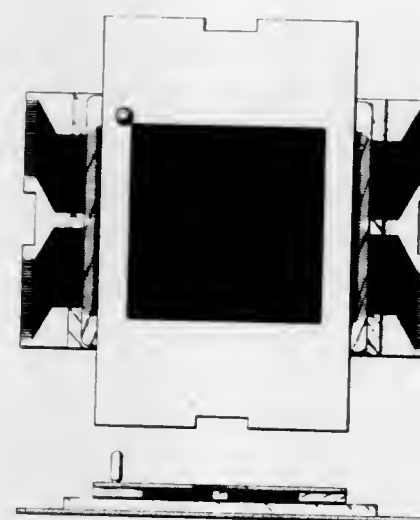
**LIGHT EMITTING GAS DISCHARGE MATRIX  
DISPLAY PANEL**Gerald E. Wojcik, 4619 282nd St.,  
Toledo, Ohio 43611

Filed Aug. 7, 1970, Ser. No. 24,380

Term of patent 14 years

Int. Cl. D14—01

U.S. Cl. D26—5



222,700

**COPYING MACHINE FOR MAGNETIC  
VIDEO TAPE**Yoji Ishida, Ashiya, Ryohei Nishimoto, Osaka, and  
Kenichi Murakami, Suite, Japan, assignors to Matsu-  
shita Electric Industrial Co., Ltd., Osaka, Japan

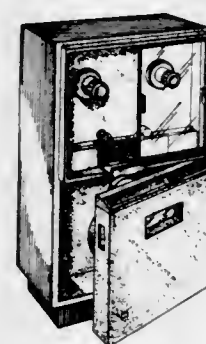
Filed May 6, 1970, Ser. No. 22,863

Claims priority, application Japan Nov. 8, 1969

Term of patent 14 years

Int. Cl. D14—01, 02

U.S. Cl. D26—14



222,701

**FOOD SUPPORT FOR A COOKING VESSEL**

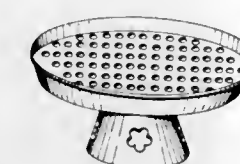
Joyce Chen, 47 Alpine St., Cambridge, Mass. 02138

Filed Mar. 9, 1970, Ser. No. 21,796

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D44—1



222,702

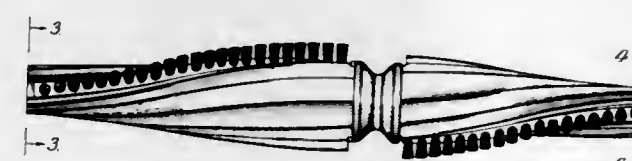
**VACUUM CLEANER BRUSH ROLL**Harold W. Schaefer, Bloomington, and William H. Penn,  
Normal, Ill., assignors to National Union Electric Cor-  
poration, Stamford, Conn.

Filed July 23, 1970, Ser. No. 24,086

Term of patent 14 years

Int. Cl. D4—01

U.S. Cl. D49—17



222,703

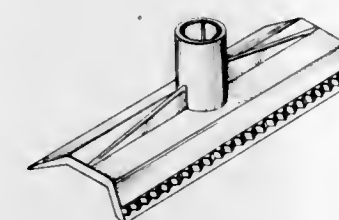
**COMBINATION SQUEEGEE AND SCRAPER HEAD  
OR SIMILAR ARTICLE**William P. Richardson, Greenwich, Conn., assignor to  
Empire Brushes, Inc., Port Chester, N.Y.

Filed Jan. 17, 1969, Ser. No. 15,393

Term of patent 14 years

Int. Cl. D7—99

U.S. Cl. D49—23



222,704

**ICE CUBE VENDING MACHINE**

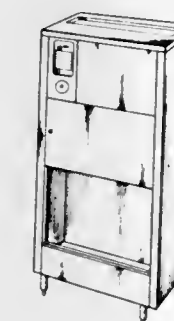
Marion H. Winsett, 3920 Mandell, Houston, Tex. 77006

Filed Jan. 23, 1970, Ser. No. 21,060

Term of patent 14 years

Int. Cl. D20—01

U.S. Cl. D52—3



222,705

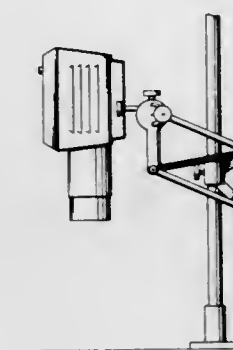
**OPAQUE IMAGE PROJECTOR OR THE LIKE**Gerald G. Mayer, Los Angeles, Calif., assignor to  
Kopykake Enterprises

Filed Apr. 2, 1970, Ser. No. 22,212

Term of patent 14 years

Int. Cl. D16—02

U.S. Cl. D61—1



222,706

**COMBINED MICROFILM CAMERA AND  
PROCESSING MACHINE**Hiroshi Saito, Shuzo Horikoshi, and Iwao Nakajima,  
Osaka, and Susumu Yamamoto, Moriguchi, Japan, as-  
signors to Matsushita Electric Industrial Co., Ltd.,  
Osaka, Japan

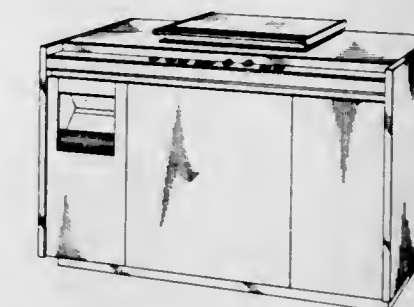
Filed June 25, 1970, Ser. No. 23,656

Claims priority, application Japan Dec. 29, 1969

Term of patent 14 years

Int. Cl. D16—02

U.S. Cl. D61—1



222,707

**TYPEWRITER**Matsakatsu Yotsukura, Narashino-shi, Japan, assignor to  
Citizen Watch Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 24,635

Claims priority, application Japan May 30, 1970

Term of patent 14 years

Int. Cl. D18—01

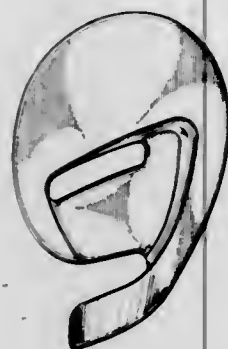
U.S. Cl. D64—11





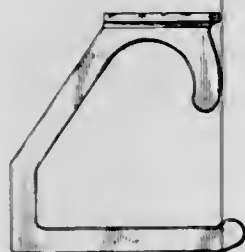
**222,708**  
**HAND PADDLE FOR AQUATIC USE**  
 Albert Balla, Hollywood, Fla.  
 ((3494 N. Ocean Blvd., Fort Lauderdale, Fla. 33308)  
 Filed June 10, 1970, Ser. No. 23,421  
 Term of patent 14 years  
 Int. Cl. D21—03

U.S. Cl. D71—1



**222,709**  
**SKI PANTS HANGER**  
 David L. Conger, 1508 Tennessee St.,  
 Vallejo, Calif. 94590  
 Filed Nov. 24, 1969, Ser. No. 20,266  
 Term of patent 14 years  
 Int. Cl. D6—07

U.S. Cl. D80—8



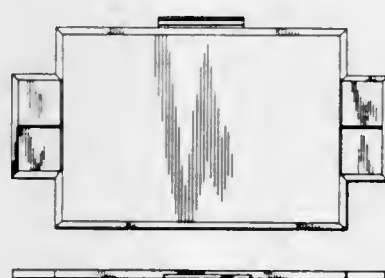
**222,710**  
**BICYCLE MIRROR**  
 Emil Kirwin, Holywood, Fla., and Jack Kramer, Bronx,  
 N.Y., assignors to D. P. Harris Hardware & Manu-  
 facturing Co., Inc., New York, N.Y.  
 Filed Nov. 23, 1970, Ser. No. 26,114  
 Term of patent 14 years  
 Int. Cl. D12—16

U.S. Cl. D90—1



**222,711**  
**BULLETIN BOARD**  
 Melburn O. Simmons, 675 Duane St.,  
 Glen Ellyn, Ill. 60137  
 Filed Dec. 2, 1969, Ser. No. 20,331  
 Term of patent 14 years  
 Int. Cl. D20—03

U.S. Cl. D96—12



## LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF DECEMBER, 1971

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Anderson, James E., to Jackson Vibrators, Inc. Ballast tamping work-head. 3,625,156, Cl. 104-12.

Anderson, James H. Binary power cycle for nuclear power plants. 3,625,817, Cl. 176-38.

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- Fonden, Per Borje; and Walander, Karl Ove Torgny. Arresting device for aircraft. 3,625,460, Cl. 244-110.
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Nagamatsu, Hiroaki; Handa, Katsuhiko; and Shimasaki, Tetsuo, to Toyo Kogyo Co., Ltd. Friction coupling controlled by vehicle speed and manifold vacuum. 3,625,322, Cl. 192-0.032.

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Noguchi, Teruhisa; Asada, Mitsuo; Sakimoto, Reiji; Aoki, Yoshiyasu; and Sawaki, Mikio, to Nippon Soda Kabushiki Kaisha. O-acetylbenzohydroxamates. 3,625,990, Cl. 260-471.

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Siefermann, Willi, deceased (by Siefermann, Luise, nee Gaugler/Siefermann, Dorothea/Siefermann, Hans; heirs). Mobile swivel ladder. 3,625,307, Cl. 182-66.

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## LIST OF DESIGN PATENTEEES

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# CLASSIFICATION OF PATENTS

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3,626,377	3,625,385	3,625,902	3,626,426	3,625,735	3,624,856
3,626,438	3,625,391	3,625,905	3,626,439	3,625,739	3,624,877
3,624,865	3,625,406	3,625,910	3,626,456	3,625,755	3,624,879
3,624,870	3,625,407	3,625,933	3,626,459	3,626,017	3,624,881
3,624,873	3,625,420	3,625,970	3,626,471	3,626,067	3,624,888
3,624,886	3,625,445	3,625,971	3,626,474	3,625,084	3,624,974
3,624,893	3,625,446	3,625,993	3,626,507	3,625,766	3,625,019
3,624,894	3,625,455	3,625,995	3,626,508	3,626,298	3,625,086
3,624,897	3,625,458	3,625,996	3,626,510	3,626,308	3,625,134
3,624,900	3,625,474	3,626,012	3,626,531	3,626,372	3,625,146
3,624,901	3,625,479	3,626,032	3,626,548	3,624,925	3,625,185
3,624,905	3,625,481	3,626,035	3,626,549	3,625,031	3,625,192
3,624,908	3,625,484	3,626,084	3,626,564	3,625,060	3,625,209
3,624,930	3,625,486	3,626,091	3,626,576	3,625,171	3,625,223
3,624,937	3,625,515	3,626,101	3,626,588	3,625,177	3,625,237
3,624,938	3,625,519	3,626,113	3,626,594	3,625,179	3,625,241
3,624,939	3,625,545	3,626,114	3,626,608	3,625,201	3,625,251
3,624,947	3,625,549	3,626,142	3,626,617	3,625,208	3,625,292
3,624,951	3,625,552	3,626,160	3,626,643	3,625,212	3,625,293
3,624,952	3,625,557	3,626,167	3,626,648	3,625,225	3,625,294
3,624,959	3,625,560	3,626,186	3,626,662	3,625,306	3,625,339
3,624,960	3,625,579	3,626,190	3,626,670	3,625,356	3,625,343
3,624,982	3,625,583	3,626,202	3,626,684	3,625,393	3,625,351
3,624,986	3,625,598	3,626,206	3,626,699	3,625,435	3,625,352
3,625,016	3,625,600	3,626,209	3,626,707	3,625,448	3,625,376
3,625,017	3,625,604	3,626,210	3,626,719	3,625,455	3,625,386
3,625,037	3,625,618	3,626,230	3,626,728	3,625,489	3,625,397
3,625,056	3,625,621	3,626,259	3,625,729	3,625,500	3,625,402
3,625,064	3,625,636	3,626,264	3,625,732	3,625,506	3,625,434
3,625,065	3,625,654	3,626,269	3,625,735	3,625,513	3,625,470
3,625,083	3,625,673	3,626,270	3,625,739	3,625,544	3,625,471
3,625,095	3,625,707	3,626,279	3,625,763	3,625,555	3,625,472
3,625,116	3,625,712	3,626,286	3,625,765	3,625,577	3,625,488
3,625,122	3,625,728	3,626,289			
3,625,132	3,625,759	3,626,301			
3,625,137	3,625,763	3,626,325			
3,625,162	3,625,765	3,626,326			

17	: 3,625,494	20	: 3,624,978	26	: 3,625,413	32	: 3,625,510	36	: 3,624,932	36	: 3,626,353
	3,625,496		3,625,214		3,625,429	33	: 3,625,279		3,624,958		3,626,354
	3,625,503		3,625,542		3,625,430		3,626,208		3,624,983		3,626,365
	3,625,505		3,625,668		3,625,443		3,626,240		3,625,021		3,626,368
	3,625,509		3,625,704		3,625,464		3,626,261		3,625,036		3,626,373
	3,625,528		3,626,458		3,625,525	34	: 3,624,871		3,625,080		3,626,374
	3,625,537	21	: 3,626,005		3,625,543		3,624,915		3,625,089		3,626,383
	3,625,556		3,626,077		3,625,544		3,624,926		3,625,104		3,626,384
	3,625,575		3,626,135		3,625,565		3,624,971		3,625,105		3,626,385
	3,625,595		3,626,434		3,625,580		3,624,980		3,625,142		3,626,387
	3,625,623	22	: 3,624,866		3,625,597		3,624,993		3,625,152		3,626,391
	3,625,630		3,625,022		3,625,624		3,625,052		3,625,168		3,626,396
	3,625,637		3,625,643		3,625,647		3,625,120		3,625,193		3,626,404
	3,625,700		3,625,738		3,625,731		3,625,138		3,625,200		3,626,411
	3,625,742		3,625,778		3,625,751		3,625,145		3,625,218		3,626,424
	3,625,760		3,625,880		3,625,789		3,625,164		3,625,219		3,626,427
	3,625,775		3,626,280		3,625,801		3,625,176		3,625,220		3,626,433
	3,625,786		3,626,363		3,625,830		3,625,205		3,625,221		3,626,457
	3,625,796		3,626,495		3,625,838		3,625,243		3,625,228		3,626,513
	3,625,797	24	: 3,624,953		3,625,900		3,625,297		3,625,229	37	: 3,624,963
	3,625,810		3,625,033		3,625,967		3,625,359		3,625,252		3,625,029
	3,625,854		3,625,066		3,625,983		3,625,416		3,625,263		3,625,149
	3,625,856		3,625,199		3,626,002		3,625,456		3,625,270		3,625,224
	3,625,876		3,625,296		3,626,004		3,625,593		3,625,277		3,625,233
	3,625,891		3,625,378		3,626,010		3,625,610		3,625,334		3,625,260
	3,625,912		3,625,459		3,626,023		3,625,616		3,625,384		3,625,345
	3,625,941		3,625,529		3,626,033		3,625,663		3,625,388		3,625,370
	3,625,985		3,625,563		3,626,061		3,625,687		3,625,398		3,625,377
	3,625,988		3,625,721		3,626,062		3,625,705		3,625,410		3,625,411
	3,625,989		3,625,727		3,626,063		3,625,709		3,625,412		3,625,737
	3,626,001		3,625,887		3,626,097		3,625,725		3,625,419		3,625,754
	3,626,020		3,625,907		3,626,121		3,625,752		3,625,457		3,626,016
	3,626,021		3,626,189		3,626,128		3,625,753		3,625,485		3,626,157
	3,626,029		3,626,276		3,626,223		3,625,757		3,625,516		3,626,250
	3,626,051		3,626,316		3,626,256		3,625,769		3,625,517		3,626,409
	3,626,089		3,626,335		3,626,304		3,625,783		3,625,530		3,626,442
	3,626,118		3,626,380		3,626,348		3,625,831		3,625,576	39	: 3,624,863
	3,626,130		3,626,413		3,626,359		3,625,844		3,625,581		3,624,869
	3,626,134		3,626,415		3,626,366		3,625,852		3,625,585		3,624,916
	3,626,137		3,626,418		3,626,375		3,625,881		3,625,587		3,624,919
	3,626,149	25	: 3,624,892		3,626,386		3,625,896		3,625,590		3,624,962
	3,626,166		3,624,902		3,626,395		3,625,916		3,625,591		3,624,964
	3,626,184		3,624,934		3,626,435		3,625,924		3,625,594		3,624,965
	3,626,187		3,624,969		3,626,437		3,625,925		3,625,602		3,624,975
	3,626,221		3,624,984		3,626,460		3,625,934		3,625,606		3,625,002
	3,626,255		3,625,015		3,626,469		3,625,944		3,625,626		3,625,010
	3,626,309		3,625,053		3,626,476		3,625,945		3,625,628		3,625,038
	3,626,311		3,625,058		3,626,489		3,625,957		3,625,653		3,625,063
	3,626,331		3,625,059	27	: 3,624,853		3,625,959		3,625,674		3,625,075
	3,626,464		3,625,067		3,624,882		3,625,976		3,625,683		3,625,078
	3,626,470		3,625,126		3,624,890		3,625,981		3,625,689		3,625,087
	3,626,501		3,625,129		3,624,921		3,625,982		3,625,694		3,625,087
18	: 3,624,840		3,625,130		3,624,957		3,625,984		3,625,695		3,625,117
	3,624,989		3,625,147		3,624,979		3,625,999		3,625,699		3,625,196
	3,625,005		3,625,427		3,625,011		3,626,014		3,625,711		3,625,246
	3,625,046		3,625,440		3,625,023		3,626,018		3,625,715		3,625,271
	3,625,079		3,625,441		3,625,069		3,626,038		3,625,730		3,625,295
	3,625,112		3,625,466		3,625,070		3,626,053		3,625,734		3,625,328
	3,625,113		3,625,512		3,625,123		3,626,054		3,625,745		3,625,330
	3,625,155		3,625,589		3,625,135		3,626,060		3,625,773		3,625,348
	3,625,159		3,625,601		3,625,269		3,626,069		3,625,776		3,625,357
	3,625,161		3,625,612		3,625,305		3,626,155		3,625,779		3,625,392
	3,625,240		3,625,620		3,625,325		3,626,163		3,625,788		3,625,417
	3,625,261		3,625,660		3,625,394		3,626,171		3,625,793		3,625,493
	3,625,267		3,625,662		3,625,475		3,626,188		3,625,808		3,625,513
	3,625,310		3,625,669		3,625,507		3,626,199		3,625,818		3,625,546
	3,625,319		3,625,685		3,625,532		3,626,213		3,625,851		3,625,577
	3,625,371		3,625,717		3,625,609		3,626,241		3,625,862		3,625,592
	3,625,404		3,625,740		3,625,617		3,626,242		3,625,866		3,625,603
	3,625,414		3,625,799		3,625,901		3,626,244		3,625,869		3,625,629
	3,625,495		3,626,052		3,626,081		3,626,245		3,625,895		3,625,667
	3,625,501		3,626,079		3,626,092		3,626,274		3,625,908		3,625,670
	3,625,627		3,626,085		3,626,098		3,626,282		3,625,917		3,625,671
	3,625,634		3,626,123		3,626,219		3,626,283		3,625,921		3,625,675
	3,625,655		3,626,129		3,626,358		3,626,287		3,625,956		3,625,679
	3,625,762		3,626,131		3,626,370		3,626,297		3,625,972		3,625,682
	3,625,828		3,626,154		3,626,473		3,626,305		3,625,977		3,625,703
	3,625,833		3,626,247		3,626,508		3,626,329		3,625,978		3,625,706
	3,625,855		3,626,285	28	: 3,626,253		3,626,330		3,626,006		3,625,710
	3,625,951		3,626,312	29	: 3,624,849		3,626,333		3,626,031		3,625,718
	3,626,025		3,626,364		3,624,942		3,626,338		3,626,034		3,625,719
	3,626,117		3,626,445		3,624,967		3,626,339		3,626,056		3,625,723
	3,626,138		3,626,462		3,625,347		3,626,351		3,626,064		3,625,733
	3,626,139	26	: 3,624,842		3,625,405		3,626,389		3,626,103		3,625,780
	3,626,196		3,624,861		3,625,433		3,626,398		3,626,107		3,625,790
	3,626,224		3,624,895		3,625,526		3,626,401		3,626,108		3,625,795
	3,626,225		3,624,918		3,625,538		3,626,416		3,626,109		3,625,803
	3,626,226		3,624,912		3,625,548		3,626,420		3,626,141		3,625,873
	3,626,227		3,624,970		3,625,555		3,626,448		3,626,152		3,625,874
	3,626,228		3,625,003		3,625,650		3,626,511		3,626,158		3,625,911
	3,626,239		3,625,004		3,625,716	35	: 3,625,767		3,626,192		3,625,913
	3,626,251		3,625,007		3,625,827		3,626,124		3,626,192		3,626,015
	3,626,288		3,625,032		3,625,888		3,626,231		3,626,231		3,626,028
	3,626,300		3,625,040		3,625,980	36	: 3,624,841		3,626,237		3,626,057
	3,626,367		3,625,085		3,626,041		3,624,845		3,626,257		3,626,071
	3,626,467		3,625,090		3,626,050		3,624,854		3,626,290		3,626,145
19	: 3,624,848		3,625,094		3,626,058		3,624,855		3,626,292		3,626,151
	3,624,931		3,625,156		3,626,159		3,624,858		3,626,294		3,626,155
	3,625,166		3,625,172		3,626,201		3,624,862		3,626,306		3,626,165
	3,625,380		3,625,259		3,626,277		3,624,875		3,626,317		3,626,170
	3,625,714		3,625,262		3,626,432		3,624,884		3,626,320		3,626,172
	3,626,203		3,625,302		3,626,484		3,624,904		3,626,321		3,626,229
	3,626,207		3,625,303	31	: 3,625,181		3,624,906		3,626,324		3,626,233
	3,626,248		3,625,309		3,625,489		3,624,910		3,626,328		3,626,249
	3,626,284		3,625,314		3,625,547		3,624,922		3,626,334		3,626,252
20	: 3,624,927		3,625,364		3,626,299		3,624,923		3,626,346		3,626,266



39 : 3,626,291	42 : 3,625,182	42 : 3,626,177	47 : 3,625,877	51 : 3,624,885	55 : 3,625,006
3,626,342	3,625,244	3,626,271	3,626,173	3,624,940	3,625,068
3,626,450	3,625,289	3,626,313	3,626,441	3,625,018	3,625,071
3,626,466	3,625,308	3,626,429	3,624,911	3,625,106	3,625,139
40 : 3,625,054	3,625,315	3,626,472	3,625,175	3,625,368	3,625,143
3,625,119	3,625,324	3,626,487	3,625,249	3,625,379	3,625,184
3,625,258	3,625,389	3,626,494	3,625,281	3,625,524	3,625,189
3,625,285	3,625,401	3,626,499	3,625,282	3,625,802	3,625,195
3,625,287	3,625,415	3,626,418	3,625,286	3,626,066	3,625,215
3,625,672	3,625,421	3,626,235	3,625,288	3,626,162	3,625,238
3,625,857	3,625,422	44 : 3,625,001	3,625,338	3,626,169	3,625,244
3,625,889	3,625,440	3,625,013	3,625,350	3,626,214	3,625,245
3,625,932	3,625,478	3,625,442	3,625,361	3,626,262	3,625,257
3,626,475	3,625,480	3,625,499	3,625,374	3,626,310	3,625,265
3,626,497	3,625,640	3,625,809	3,625,382	3,626,447	3,625,355
41 : 3,624,852	3,625,641	3,625,948	3,625,504	3,626,510	3,625,399
3,624,903	3,625,659	3,626,503	3,625,559	53 : 3,625,210	3,625,483
3,624,985	3,625,676	45 : 3,624,899	3,625,607	3,625,586	3,625,492
3,625,140	3,625,708	3,624,992	3,625,631	3,625,611	3,625,523
3,625,198	3,625,774	3,625,266	3,625,632	3,625,635	3,625,551
3,625,449	3,625,792	3,625,351	3,625,791	3,625,841	3,625,652
3,625,463	3,625,817	3,625,642	3,625,882	3,626,094	3,625,732
3,625,656	3,625,821	3,626,440	3,626,086	3,626,168	3,625,787
3,625,813	3,625,824	3,626,496	3,626,106	54 : 3,625,298	3,625,812
42 : 3,624,867	3,625,861	46 : 3,624,956	3,626,122	3,625,390	3,625,814
3,624,909	3,625,870	3,625,088	3,626,183	3,625,500	3,625,850
3,624,949	3,625,879	3,625,800	3,626,267	3,625,533	3,625,858
3,624,961	3,625,896	3,626,468	3,626,502	3,625,729	3,625,885
3,624,976	3,625,926	47 : 3,625,428	3,626,505	3,625,836	3,625,890
3,624,987	3,625,950	49 : 3,624,843	3,625,514	55 : 3,624,880	3,626,068
3,625,020	3,625,966	3,625,541	3,625,216	3,624,924	3,626,143
3,625,025	3,626,019	3,625,558	3,625,781	3,624,945	3,626,402
3,625,096	3,626,037	3,625,661	3,625,823	3,624,948	3,626,452
3,625,114	3,626,070	3,625,680	3,626,390	58 : 3,624,950	3,625,761
3,625,136	3,626,083	3,625,768	3,624,850		

## Design Patents

6 : 222,689	6 : 222,709	12 : 222,710	17 : 222,711	36 : 222,692	48 : 222,704
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222,705	12 : 222,708	222,702	222,701	44 : 222,690	53 : 222,691

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## PATENT OFFICE NOTICES

### Availability of Annual Report on Government Patent Policy

The Combined December 1969 and 1970 Annual Report on Government Patent Policy of the Federal Council for Science and Technology recently has been published.

The report assesses the effectiveness of the 1963 Presidential Statement of Government Patent Policy based on the information available from the seven years' operation, and describes the progress made to date by the Committee on Government Patent Policy.

The report contains:

The revised Memorandum and Statement of Government Patent Policy issued by President Nixon on August 23, 1971 and an explanation of the revisions.

A report on a Government-wide comprehensive patent licensing program. This report contains the proposed licensing regulations to be promulgated by the General Services Administration. It also contains legal memoranda of the Department of Justice which discuss the concept of issuing limited exclusive licenses on Government-owned inventions.

A statistical analysis of the Government's patent operations for fiscal years 1963 through 1970. This report

includes the total number of invention disclosures reported to the Government agencies, the type of patent clauses used in R & D contracts, the extent of patent protection sought by the Government, and the available information on the licensing of Government-owned patents.

A list, by agency, of all statutes, memoranda and regulations pertaining to the allocation of rights to inventions. This list also contains the identity of the office within each agency which has the primary responsibility for Government patent policy matters.

Information on the merger of the Patent Advisory Panel and the Committee on Government Patent Policy of the Federal Council for Science and Technology.

The report may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, for \$1.25. A check or money order made payable to the Superintendent of Documents must accompany your order.

O. A. NEUMANN,

*Executive Secretary,  
Committee on Government Patent Policy  
Federal Council for Science and  
Technology.*

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DECEMBER 14, 1971

U. S. PATENT OFFICE

399

### Certificates of Correction for the Week of Dec. 14, 1971

D. 218,206	3,567,715	3,582,150	3,586,833
3,328,213	3,568,183	3,582,263	3,586,887
3,437,309	3,570,680	3,582,318	3,586,946
3,495,057	3,572,595	3,582,476	3,587,330
3,501,325	3,573,323	3,582,495	3,587,749
3,502,834	3,573,324	3,582,535	3,588,121
3,527,746	3,573,667	3,582,728	3,588,429
3,528,377	3,574,232	3,582,836	3,588,462
3,535,647	3,574,343	3,583,648	3,588,984
3,541,056	3,574,443	3,584,460	3,589,082
3,541,775	3,575,645	3,584,506	3,589,398
3,542,502	3,576,561	3,584,789	3,589,794
3,547,877	3,576,811	3,585,214	3,590,626
3,556,762	3,577,782	3,585,456	3,591,257
3,558,053	3,577,904	3,585,510	3,591,686
3,559,049	3,579,292	3,585,634	3,592,392
3,561,571	3,580,908	3,586,091	3,593,111
3,563,493	3,581,134	3,586,094	3,593,824
3,563,924	3,581,217	3,586,415	3,594,585
3,563,947	3,581,638	3,586,570	3,598,685
3,563,975	3,581,744		

### Dedication

3,220,100.—*Frank L. Christensen*, Saratoga, Calif. APPARATUS FOR UNPLUGGING LEAD BONDING CAPILLARY TOOLS. Patent dated Nov. 30, 1965. Dedication filed Aug. 11, 1971, by the assignee, *Tempress, Inc.*

Hereby dedicates to the Public the entire term of said patent.

### Disclaimers

3,081,966.—*Harold T. Avery*, Oakland, Calif. ROTATING WING AIRCRAFT. Patent dated Mar. 19, 1963. Disclaimer filed Sept. 30, 1971, by the assignee, *Honeywell Inc.*

Hereby enters this disclaimer to claims 50, 51, 52 and 53 of said patent.

3,365,717.—*Hobbe D. Hülscher*, Johannesburg, Transvaal, Republic of South Africa. METHOD OF AND APPARATUS FOR PROVIDING A MEASURE OF THE DISTANCE BETWEEN TWO SPACED POINTS. Patent dated Jan. 23, 1968. Disclaimer filed August 30, 1971, by the assignee, *South African Inventions Development Corporation*.

Hereby enters this disclaimer to claims 1-5, 7-10, 12, 14 and 16 of said patent.

3,445,077.—*Joseph I. Cole*, Staten Island, and *Harold S. Moss*, Brooklyn, N.Y. STRAND DISTRIBUTING AND RECEIVING APPARATUS AND METHOD. Patent dated May 20, 1969. Disclaimer filed Oct. 7, 1971, by the assignee, *Nassau Smelting and Refining Company, Incorporated*.

Hereby enters this disclaimer to claims 1, 2, 3, 11, 12 and 16 of said patent.

3,544,583.—*Emmett H. Burke, Jr.*, Glenwood, Ill., and *Donald D. Carlos*, Crown Point, Ind. CYCLOALIPHATIC MONO (NITRILE SULFITES). Patent dated Dec. 1, 1970. Disclaimer filed Aug. 28, 1970, by the assignee, *Atlantic Richfield Company*.

Hereby disclaims the terminal portion of the patent subsequent to Sept. 28, 1988.

3,563,757.—*David A. Dixon*, San Anselmo, Calif. APPARATUS FOR MINIMIZING PERISHABLE PRODUCTS. Patent dated Feb. 16, 1971. Disclaimer filed Oct. 13, 1971, by the assignee, *Oxytrol Corporation*.

Hereby disclaims all that portion of the term of the patent subsequent to Aug. 30, 1983.

3,584,858.—*Merrill G. Beck*, Erie, Pa. COMPRESSION SPRING. Patent dated June 15, 1971. Disclaimer filed Oct. 18, 1971, by the assignee, *Lord Corporation*.

Hereby disclaims the terminal portion of the patent subsequent to July 22, 1986.



## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
F. H. BRONAUGH, Deputy Assistant Commissioner

### CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 30, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director..... Heterocyclics; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-13-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-09-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-13-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-05-70
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-30-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-21-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-26-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-16-71
PHYSICS, GROUP 280—R. L. EVANS, Director..... Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	9-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director..... Industrial Arts; Household, Personal and Fine Arts.	10-22-70
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	9-02-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGO, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletory; Printing; Typewriters; Stationery; Information Dissemination.	8-17-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director..... Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	12-01-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	10-06-70

**Expiration of patents:** The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,695,998 to 2,698,433, inclusive  
Plant Patents..... Numbers 1,328 to 1,338, inclusive

## DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 14, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T893,001

### ULTRASONIC CLEANING PROCESS AND APPARATUS

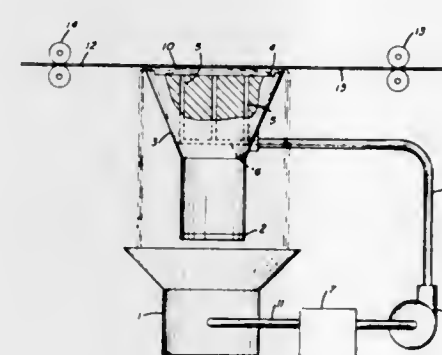
John D. Fisler, Kodak Park Works, 1669 Lake Ave.,  
Rochester, N.Y. 14650

Filed Mar. 12, 1970, Ser. No. 18,884

Int. Cl. B08b 3/10; G03g 13/00, 15/00

U.S. Cl. 134—1

1 Sheet Drawing, 10 Pages Specification



Ultrasonic energy is used to create turbulence in a bead of liquid through which is a xerographic element is moved for removing toner particles from the image-bearing surface thereof, thereby preparing the element for further use. The toner particles can be distributed over the surface in the form of an image or as residual toner particles that were not picked up in the course of transferring the image to a receiver sheet. The liquid is continuously circulated and a device is included for filtering out the toner particles that have been removed.

T893,002

### METHOD FOR THE SELECTIVE CONTROL OF ANNUAL GRASS

Harvey D. Bidlack, 4272 E. Isabella County Line Road,  
Shepherd, Mich. 48883, and William T. Irvine, 842  
Scheurmann Road, Bay City, Mich. 48706

Filed May 7, 1970, Ser. No. 35,557

Int. Cl. A01n 9/22

U.S. Cl. 71—92

No Drawing, 10 Pages Specification

A new composition and method for the suppression of the growth of annual grass of the genus Digitaria, and particularly for the preemergent control of crabgrass by exposing crabgrass seeds to a composition comprising a growth suppressing amount of a 4-substituted cinnoline, in particular, 4-cinnolinecarbonitrile.

T893,003

### FLUORESCENT MULTICOLOR ADDITIVE SYSTEM

Robert Joseph Tuite, % Eastman Kodak Company,  
Kodak Park Division, Rochester, N.Y. 14650

Filed Sept. 8, 1970, Ser. No. 70,546

Int. Cl. C09k 1/02; G03c 1/92

U.S. Cl. 96—82

No Drawing, 12 Pages Specification

A novel additive color system which is colorless under visible light but which is transformed in the additive manner into the visible primary colors upon exposure to ultraviolet radiation so as to produce the complete range of colors of the visible spectrum. With respect to photographic products the system contains a blue emitting optical brightener, a colorless terbium complex or chelate which emits in the green region of the visible spectrum and a colorless europium complex or chelate which emits in the red region of the visible spectrum. The luminescent materials all absorb in the UV region of the spectrum (330–380 nm.), but can be superposed in separate layers without undue loss in luminescence intensity resulting from absorption of the existing UV radiation by the overlying layers. The color system can be typically employed in photo-mechanical image reproductions; as inks; as xerographic toners; in photopolymerizable coatings; in conventional color photographic reflection and transparent prints in order to provide highlight masks for the unwanted absorptions of the cyan, magenta and yellow dyes and to provide extended tonal range; and in contact screens. The system can also be applied to non-mechanical uses, such as in paints, pigments, inks, pencils, crayons, etc. for sketching; in yarn, glass, etc. for unusual and useful effects.

The photographic silver halide emulsions and elements containing the optical brighteners and rare earth complexes can be chemically sensitized, e.g., with noble metal sensitizers alone or in combination with sulfur or selenium sensitizers. They can contain spectral sensitizers, incorporated color-forming couplers, incorporated developing agents, antifoggants, hardeners plasticizers, coating aids, and other suitable photographic addenda, such as described in U.S. Pat. 3,297,446 (columns 4–9).

T893,004

### BLOCK COPOLYMERS OF BUTADIENE AND STYRENE

William Glenn Mayes, Akron, Ohio, assignor to The  
Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 658,550, Aug. 4,  
1967. This application Oct. 12, 1970, Ser. No. 80,249

Int. Cl. C08f 15/04

U.S. Cl. 260—880 B

2 Sheets Drawing, 14 Pages Specification

New copolymers of butadiene and either styrene or a styrene-type monomer are formed in which all of the



styrene or styrene-type units are relatively uniformly distributed in butadiene at one or both ends of the molecule, and the balance of the molecule is composed of butadiene. Tire treads made from the copolymers exhibit better wear resistance than other butadiene-styrene copolymers.

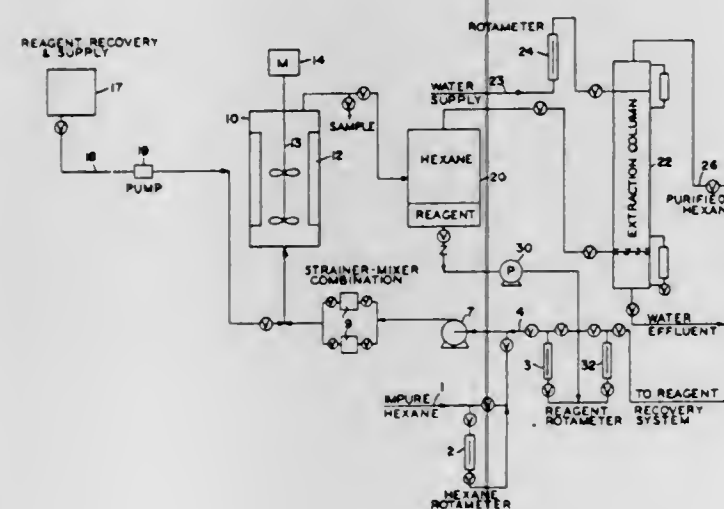
T893,005

# PROCESS FOR REMOVING CARBON DISULFIDE FROM AN ORGANIC SOLVENT BY EMULSIFICATION EMPLOYING AN ALCOHOLIC ALKALI HYDROXIDE

Hossein Moosavian, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio  
Continuation of application Ser. No. 654,199, July 18, 1967. This application Oct. 26, 1970, Ser. No. 84,257

Int. Cl. C07c 9/00  
U.S. Cl. 260-676

2 Sheets Drawing. 15 Pages Specification



Hydrocarbon solvent recovered from a composite of (a) elastomer derived from a latex in which a dithiocarbamate has been used as a short-stopping agent, and (b) elastomer derived from a solution of the elastomer in said solvent, such as a rubber masterbatch which contains (1) carbon black, (2) oil, (3) elastomer derived from a latex in which a dithiocarbamate has been used as a short-stopping agent, and (4) elastomer derived from a solution of the elastomer in said solvent, is treated for removal of carbon disulfide generated from the dithiocarbamate. This is accomplished in a continuous process by first converting the carbon disulfide to water-soluble xanthate with a solution of a sodium or potassium hydroxide and methanol, and subsequently separating the xanthate from the solvent. The unreacted methanol-hydroxide reagent which is immiscible with the solvent separates from the solvent and on continued use becomes saturated with xanthate. Any further xanthate formed is carried with the solvent and is separated from it by washing with water, preferably by countercurrent extraction. The reagent is reused in the treatment of further solvent by recirculation, and its concentration is maintained by withdrawing some of the used reagent and adding some fresh reagent.

The reagent used is prepared by dissolving 10 or preferably 15 to 25 percent, and usually about 17 percent, of substantially anhydrous sodium or potassium hydroxide in 80 to 95 percent methanol. During the treatment of the solvent, water is formed, and after the operation has been functioning for several hours the reagent used contains about 15 to 30 percent of water. The solvent is usually hexane or other aliphatic hydrocarbon of 4 to 7 or 8 carbon atoms, but an organic solvent such as benzene or toluene may be employed.

## T893,006 BLADE FOR CUTOFF DEVICES IN TOBACCO PROCESSING MACHINES AND METHOD OF MAKING THE SAME

Fritz Weninger, Mechanicsville, Va., assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Dec. 3, 1970, Ser. No. 94,789

Int. Cl. B26d 1/12

U.S. Cl. 83-663

2 Sheets Drawing. 17 Pages Specification



The blade of a cutoff device or severing device for wrapped tobacco or filter rods, particularly for severing of filter rods, is a one-piece body consisting of chromium steel or another steel alloy and having a relatively hard layer and one or two softer outer layers. The hard layer has a sharply defined wedge-shaped cutting edge which extends beyond the softer layer or layers. The imparting of different hardnesses to the layers of the blade can be carried out in a vacuum furnace by changing the texture of the material of a steel blank. The softer outer layer or layers reduce the likelihood of breakage or cracking and enhance the elasticity of the blade. A sickle-shaped blade is preferred for use in cutoff devices which serve to sever wrapped tobacco or filter rods while the rods move axially, and a disk-shaped blade is preferred for severing of wrapped tobacco or filter rods which move sideways. The blade can be used for extended periods of time without any sharpening or with grinding at infrequent intervals.

T893,007

## PROCESS FOR PACKAGING FIBROUS BALES

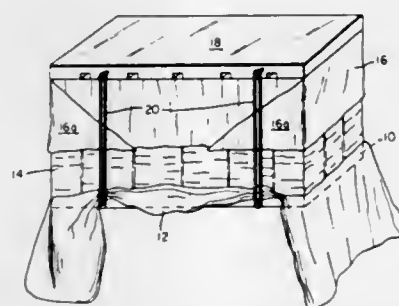
Robert Milton McCormick, 7907 Springpond Road, Columbia, S.C. 29204

Filed Jan. 5, 1971, Ser. No. 104,058

Int. Cl. B65b 27/12

U.S. Cl. 53-27

2 Sheets Drawing. 4 Pages Specification



A process for packaging fibrous bales with flexible sheets of synthetic polymer without the need for pre-fabricating the sheets into bale configurations as, for example, in the form of sewn bags so they retain their shape around the bale during banding. The process utilizes elastic cords temporarily extended between the platens of the baler to hold the sheets in place as they are folded around the bale. After the bale is permanently banded, the elastic cords are released. The flexible sheets of synthetic polymer are preferably sheets of spunbonded synthetic fiber.

## T893,008 DEVICE FOR CONTROLLING THE OPERATION OF A WINDING UNIT IN AUTOMATIC WINDING MACHINES

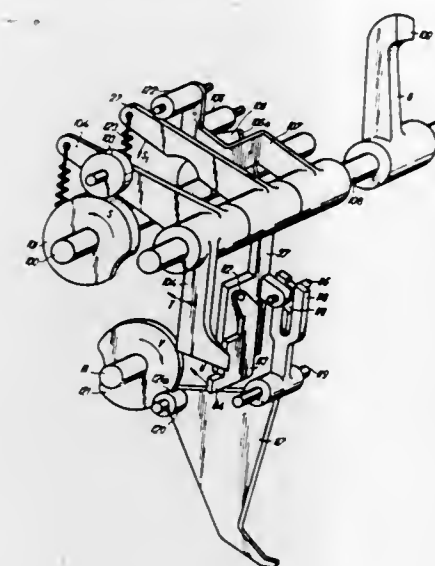
Vladimir Prasil, Brno, Czechoslovakia, assignor to Elitex, Zavody textilního strojírenství generalni reditelství, Liberec, Czechoslovakia

Filed Jan. 8, 1971, Ser. No. 104,927

Int. Cl. B65h 54/22, 63/02

U.S. Cl. 242-35.6 R

2 Sheets Drawing. 4 Pages Specification



Device for controlling the operation of a winding unit in automatic winding machines, said winding unit having a clutch and a brake. The device controls the operation of both the clutch and the brake of the winding unit during winding, as well as during the automatic removal of yarn breakage, during knotting of the yarn end from a new supply cop, and upon eliminating pattern winding on the wound bobbin. The device has a series of cams and levers; a first lever forms on one hand a component of mechanism for disengaging the winding unit from the drive, and on the other hand a component of mechanism for controlling the clutch and the brake of the winding unit upon automatic removal of yarn breakage or upon knotting the yarn end of a new supply cop, said first lever constituting at the same time the main control element for engaging and disengaging a single-revolution clutch through which the bobbin driving distributor of the winding unit is driven.

T893,009

## SELF-SUSPENDING AMMONIUM POLYPHOSPHATE SUSPENSION FERTILIZER

Fred D. Nix, Rte. 3, Phil Campbell, Ala. 35581  
Continuation-in-part of application Ser. No. 836,386, June 25, 1969. This application Jan. 28, 1971, Ser. No. 110,537

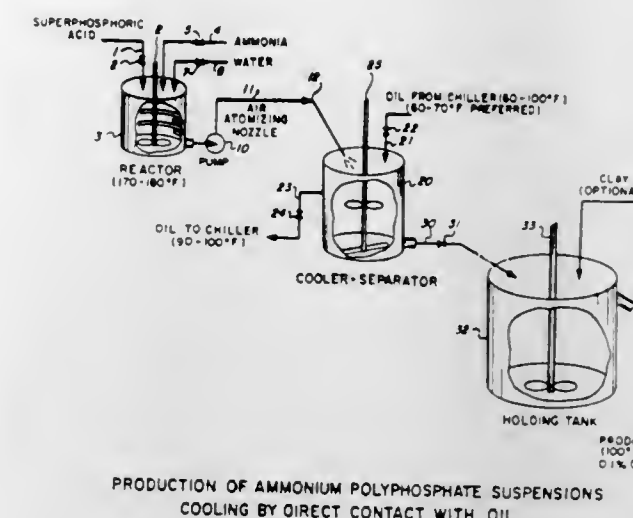
Int. Cl. C01b 25/28; C05b 7/00

U.S. Cl. 71-34

4 Sheets Drawing. 34 Pages Specification

A process for improving the storage characteristics of ammonium polyphosphate clayless base suspension while increasing the grade up to 14-47-0 involves causing fine crystals of ammonium polyphosphate to be formed in the fresh suspension by close control of the  $P_2O_5$  (80-81 percent) content of the superphosphoric acid fed thereto and quick cooling the product via water cooled heat exchange or direct contacting in a chilled fluid immiscible therewith. With this latter cooling method, spraying of the fertilizer into a specially designed cooling vessel results in an efficient cooling technique. Good storage properties result with fresh 14-47-0 products having about 80 percent of the  $P_2O_5$  in polyphosphate form. The 14-47-0 can be converted easily to 11-37-0 clear solutions by ad-

dition of water. As 14-47-0 contains 27 percent more plant nutrient than 11-37-0, considerable savings result



in shipping and storage costs by use of 14-47-0 to produce 11-37-0 at the destination point.

T893,010

## PRODUCTION OF LAMINATES

David Fairclough Oxley, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 4, 1971, Ser. No. 112,819

Int. Cl. B29d 27/00; B29f 1/00

U.S. Cl. 264-45

No Drawing. 10 Pages Specification

A process for the production of laminates by sequentially injecting two or more synthetic resins into a mould in which a compound to improve the adhesion between the synthetic resins is also injected into the mould. The resins are maintained within the mould for sufficient time for them to set and for a bond to form between them with the aid of the adhesion improving compound. The process is particularly useful for articles having a cellular core and an unfoamed surface. The adhesion improving compound, which may itself be a synthetic resin, may be injected into the mould between the injection of the synthetic resins so that an adhesive layer is formed between them. Also, the adhesion improving compound may comprise two components which react with each other in which case each component is incorporated into adjacent layers of the synthetic resins so that the components react along the line defining the join between the synthetic resins to form a bond.

T893,011

## AUTOMATIC TRACK CHANGING APPARATUS

George J. Hanggi and Theodore T. Martin, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Feb. 11, 1971, Ser. No. 114,429

Int. Cl. G01n 21/30

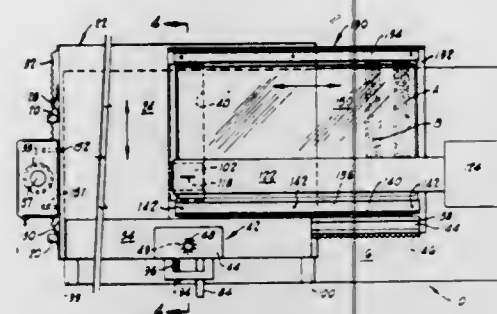
U.S. Cl. 250-219 TH

3 Sheets Drawing. 28 Pages Specification

Apparatus for automatically moving a body in alternate transverse and longitudinal movements through a predetermined path, the successive transverse movements being in opposite directions to each other, and the successive longitudinal movements being in substantially the same direction. The apparatus includes a holder for supporting the body; a carriage slidably supporting the holder; a transverse driving system for automatically driving the carriage in alternating bidirectional strokes in a transverse direction; a longitudinal driving system for automatically driving the holder in a single, selectively distanced longitudinal direction during a selected final increment of each transverse movement of the carriage; stroke termination and reversing means connected to said



transverse driving means and cooperating with the carriage to end each transverse stroke of the carriage, and to reverse the drive imparted thereto by the transverse driving system; and manual reset mechanism for manually positioning the carriage and holder at any location



desired within the carriage and holder positioning capability range of the transverse and longitudinal driving systems. The apparatus has a particular utility in an optical densitometer for analyzing chromatographic sample slides or plates.

**T893,012**  
**LIQUID-FILLED FUSE CUTOUT WITH EXPLOSION RESISTANT METAL COVER**  
Edward A. Vrabel, Pittsfield, Mass., assignor to General Electric Company  
Filed Feb. 16, 1971, Ser. No. 115,255  
Int. Cl. H01h 85/40  
U.S. Cl. 337-217

1 Sheet Drawing. 7 Pages Specification

A liquid-filled, fused circuit interrupter is provided having a fluid-holding container that is covered and sealed with a metal cover which is characterized by having a Brinell Hardness that is less than the Brinell Hardness of prior art oil-filled cutouts having equivalent high current interrupting ratings.

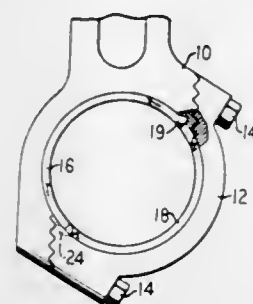
**T893,013**  
**PROCESS FOR PRODUCING SPINNABLE, BASIC DYEABLE (POLYETHYLENE TEREPHTHALATE) COPOLYESTERS**  
Charles J. Kibler and Bobby J. Sublett, both of P.O. Box 511, Kingsport, Tenn. 37462  
Filed Mar. 10, 1971, Ser. No. 123,088  
Int. Cl. C08g 17/013  
U.S. Cl. 260-75 S

No Drawing. 12 Pages Specification

Preparation of basic-dyeable poly(ethylene terephthalate) and analogous copolyesters having improved spinning characteristics by the employment in the preparation of the poly(ethylene terephthalate), or analogous copolyesters containing sulfonated comonomers, of a titanium catalyst in combination with an acid phosphate additive which functions to eliminate or substantially reduce spinneret problems when the copolyester containing the catalyst and additive is melt spun. Examples include comonomers such as sulfonated isophthalic acid,  $\text{MgHTi}(\text{OC}_4\text{H}_9)_8$  and ethyl acid phosphate whereby spinning at least 1,000 pounds of the molten basic-dyeable copolyester can be carried out for 40 to 100 or more hours without spinneret difficulties.

ning characteristics by the employment in the preparation of the poly(ethylene terephthalate), or analogous copolyesters containing sulfonated comonomers, of a titanium catalyst in combination with an acid phosphate additive which functions to eliminate or substantially reduce spinneret problems when the copolyester containing the catalyst and additive is melt spun. Examples include comonomers such as sulfonated isophthalic acid,  $\text{MgHTi}(\text{OC}_4\text{H}_9)_8$  and ethyl acid phosphate whereby spinning at least 1,000 pounds of the molten basic-dyeable copolyester can be carried out for 40 to 100 or more hours without spinneret difficulties.

**T893,014**  
**BEARING INSERT RETAINING MEANS**  
Almond J. Gatzemeyer, 10423 N. Forrest Trail, Peoria, Ill. 61614, and George B. Grim, 710 Crestview Drive, Washington, Ill. 61571  
Filed Mar. 16, 1971, Ser. No. 124,713  
Int. Cl. F16c 9/00  
U.S. Cl. 308-237  
1 Sheet Drawing. 5 Pages Specification



Bearing inserts for connecting rods and the like have a substantially semi-circular configuration and are adapted to be inserted in paired relationship within a connecting rod and cap bore with a radially loose or floating fit to allow radial self-adjustment of the bearing inserts for oil film clearance and resultant journal bearing effects.

The bearing inserts are restrained against axial movement out of the rod bore and against rotational movement, preventing loading of the bearing joints and backs, and allowing bearing designs oriented to load patterns, by means of restraining tabs extending radially outwardly into appropriate notches in the rod and cap bores.

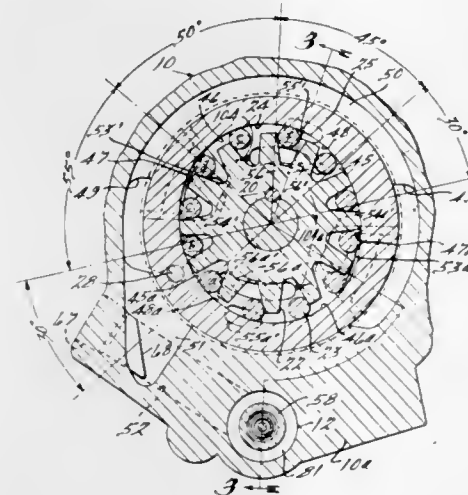
The tabs are provided by segments of the ends of the bearing inserts which are bent outwardly from the surface of the bearing. The notches in the connecting rod and cap loosely receive the tabs and prevent them and the bearing inserts from moving axially or rotating.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**27,241**  
**PORTING FOR BALANCED HYDRAULIC ROLLER PUMP**  
Carl A. Pace, Jr., and Christopher Nuss, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.  
Original No. 3,374,749, dated Mar. 26, 1968, Ser. No. 606,934, Jan. 3, 1967. Application for reissue Feb. 24, 1970, Ser. No. 13,563

U.S. Cl. 418-225 Int. Cl. F04c 1/00

22 Claims



Rollers carried within the circumferential notches in a pump rotor ride along an out-of-round cam surface to pump fluid from radially outer and inner inlet ports associated with inlet cam arcs of increasing radius) to radially outer and inner outlet ports associated with outlet cam arcs of decreasing radius. The outer inlet ports are restricted and open axially into radially outer portions of the notches subsequently to the axial opening of the inner inlet ports into the notches at locations radially inwardly of the rollers, the latter opening being subsequent to appreciable movement of the rollers along the inlet cam arcs, thereby to effect a gradual fluid pressure rise in the rotor notches and a radial pressure gradient enhancing roller stability within the inlet cam arcs. The inner outlet ports discharge high pressure fluid axially from the notches and are arranged to exert unbalanced fluid pressure force axially in one direction on the ends of the rollers as they move along approximately the trailing thirds of the outlet cam arcs, thereby to end load these rollers and enhance their stability.

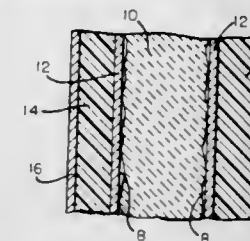
**27,242**  
**FUEL ELEMENT**  
Louis J. Aerts, Hubert F. J. G. Bairiot, Mol, and Philippe L. Van Ashbroeck, Brussels, Belgium, assignors to Societe Belge pour Industrie Nucleaire, S.A., and Centre d'Etude de l'Energie Nucleaire, both of Brussels, Belgium  
Original No. 3,488,827, dated Jan. 13, 1970, Ser. No. 620,489, Mar. 3, 1967. Application for reissue Aug. 10, 1970, Ser. No. 62,447.  
Claims priority, application Belgium, Mar. 4, 1966, 24,811  
Int. Cl. B23p 17/00, 9/00  
U.S. Cl. 29-400

8 Claims  
This invention pertains to an improved method for manufacturing fuel elements for nuclear reactors by surrounding the fuel elements with an envelope of synthetic

## REISSUES

DECEMBER 14, 1971

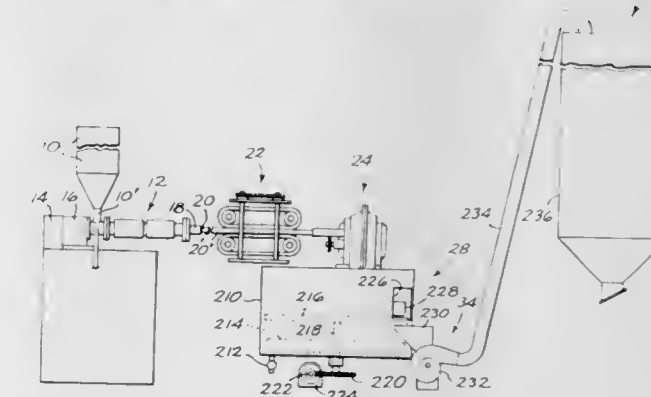
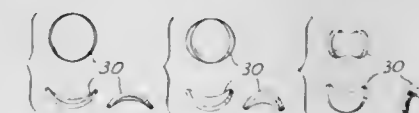
plastic material and thereafter applying deformation forces to the synthetic plastic envelope in order to de-



crease or completely remove any gaps existing between the nuclear fuel material and its surrounding casing.

**27,243**  
**METHOD OF MANUFACTURING CELLULAR PACKING MATERIALS**  
James R. Sare, Richard L. Ropiequet, and Duncan C. Bergeron, by Alta Industries, Inc., Portland, Oreg., assignee  
Original No. 3,400,037, dated Sept. 3, 1968, Ser. No. 411,033, Nov. 13, 1964. Application for reissue Jan. 12, 1970, Ser. No. 7,958.  
Int. Cl. B29d 27/00  
U.S. Cl. 161-42

12 Claims



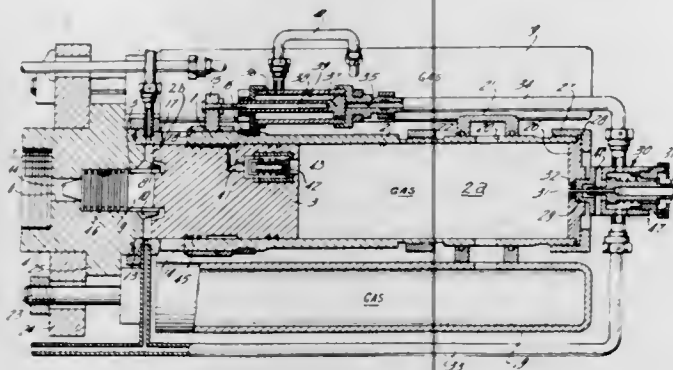
This invention relates to articles made of extrudable, expandable synthetic plastic material, and to the method and apparatus for producing such articles.

**27,244**  
**DEVICE FOR BUILDING UP HIGH PULSE LIQUID PRESSURES**  
Bogdan Vjacheslavovich Voitsekhovskiy, Elmar Andreevich Antonov, Valentin Pavlovich Nickolaev, Grigory Yankelevich Shoikhet, Vladimir Mikhailovich Dudin, Alexandr Vasiljevich Shevchenko, and Nikolai Fedorovich Olenkov, Novosibirsk, U.S.S.R., assignors to Institute Gidrodinamiki Sibirskogo Otdelenia Akademii Nauk U.S.S.R., Novosibirsk, U.S.S.R.  
Original No. 3,412,554, dated Nov. 26, 1968, Ser. No. 453,424, May 5, 1965. Application for reissue Nov. 26, 1969, Ser. No. 888,174.  
Int. Cl. F15b 7/00  
U.S. Cl. 60-54.5 HA

36 Claims  
A device for building up liquid pressure pulses comprises a cylinder housing a piston, and at one side of the



piston, the cylinder's face is filled with compressed gas and serves as a low pressure chamber designed to accumulate energy from a forced stroke of the piston in the direction of the chamber. The space at the other side of the piston is filled with liquid and serves as a high pressure



chamber. High pressure in the chamber is built up as a result of impact of the piston on the liquid in this chamber upon reciprocation of the piston in the cylinder, the piston obtaining kinetic energy in the course of acceleration during expansion of the compressed gas.

### 27,245 POLARITY REVERSIBLE CURRENT REGULATOR APPARATUS

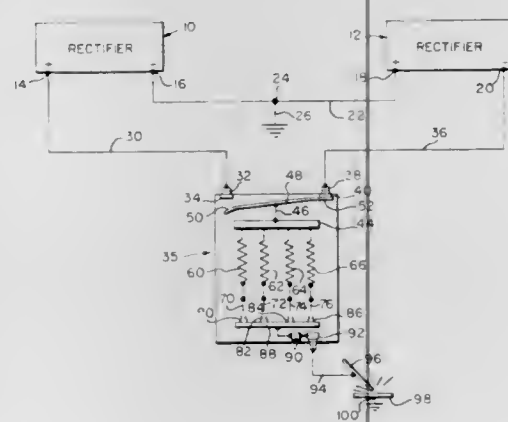
David H. Buerkel, Bala Cynwyd, Pa., assignor to The Connecticut Development Credit Corporation, Meriden, Conn.

Original No. 3,452,211, dated June 24, 1969, Ser. No. 625,497, Mar. 23, 1967. Application for reissue July 30, 1970, Ser. No. 59,765

Int. Cl. H02j 1/10

U.S. Cl. 307—24

22 Claims



A source of DC electric power comprises a pair of rectifier means each having a positive and negative out-

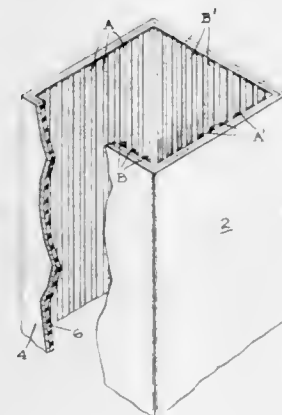
put terminal, the positive output terminal of one of the rectifier means and the negative output terminal of the other of the rectifier means are connected to a common terminal which in turn is adapted to be connected to ground. One or more control means is provided, each control means including selectively adjustable resistance means for varying the current output thereof. Means in the form of a switch or the like is provided for selectively electrically connecting either the positive terminal of one rectifier means or the negative terminal of the other rectifier means to the input of the control means to thereby control the polarity of the output of the control means which is connected with suitable welding apparatus or the like. The apparatus is especially adapted for use in a multi-operator system wherein a plurality of control means are connected as described above in parallel with one another.

27,246  
ELECTRONIC LIQUID MEASURING SYSTEM  
Sherwood Thaler, Lexington, Mass., and Alfred D. Groner, White Plains, N.Y., assignors to Simmonds Precision Products, Inc., Tarrytown, N.Y.  
Original No. 3,377,861, dated Apr. 16, 1968, Ser. No. 453,716, May 6, 1965. Application for reissue Oct. 23, 1969, Ser. No. 869,976

Int. Cl. G01f 23/26

U.S. Cl. 73—304

5 Claims



A fuel gauging system of the capacitance electrode type which enables the gauging of liquid in a container regardless of the position of the container with respect to a gravitational field. Each pair of opposing walls of the container is provided with a plurality of elongated capacitor plates, each of the plurality of plates being one of a pair, the other of the pair being located in the opposite wall of the opposing wall pairs. Each pair of plates is connected together and into a measuring circuit so that a reading of mass of fuel may be obtained and so that fringing effects are reduced.

## PATENTS

GRANTED DECEMBER 14, 1971

### GENERAL AND MECHANICAL

#### 3,626,514 EYESHIELD FITTED WITH EYELASHES OR THE LIKE

Pierino Sacco, Michelangelo Bovi Corso Vittorio Emanuele 74, Turin, Italy

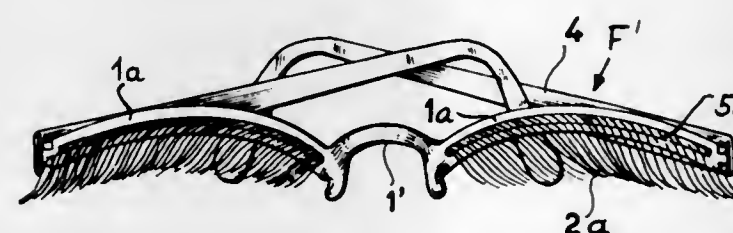
Filed Sept. 25, 1969, Ser. No. 861,075

Claims priority, application Italy, Oct. 3, 1968, 53,349/68

Int. Cl. A61f 9/00

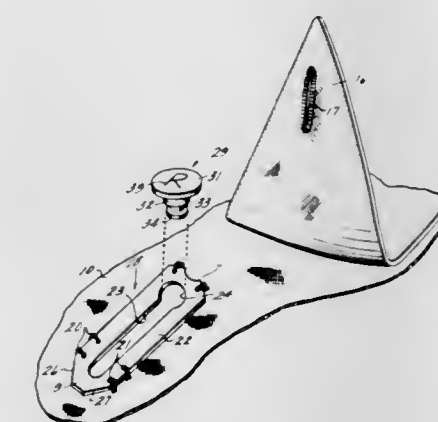
U.S. Cl. 2—12

7 Claims



An eyeshield having a frame including a pair of bow-shaped members which are connected to each other and provided with means for holding the frame in front of the eyes of the user and in which artificial eyelashes connected to the bow-shaped members of the frame projecting forwardly from the latter.

having an elongated slot therein and a button-member slideably received in the slot slideable along the slideway. When a button portion of the button-member is inserted



in a buttonhole of the collar point, tension in the collar point can be adjusted by moving the button-member along the slot.

3,626,515  
HOCKEY GLOVE  
William Murray, Brantford, Ontario, Canada, assignor to A. G. Spalding & Bros. of Canada Limited, Brantford, Ontario, Canada

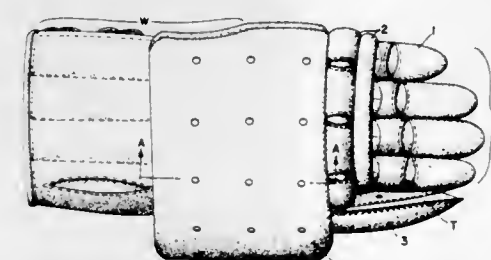
Filed Dec. 4, 1969, Ser. No. 882,119

Claims priority, application Canada, Aug. 26, 1967, 60,468

Int. Cl. A41d 13/10

U.S. Cl. 2—16

2 Claims



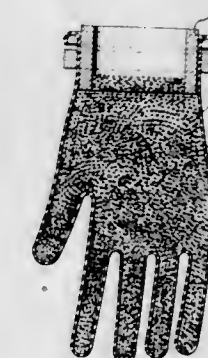
A protector for the back of a hockey glove comprising a layer of relatively rigid and unbreakable material sandwiched between layers of shock absorbing material and formed over the back and around the side of the glove and perforations through the sandwich and glove to admit air to the glove interior.

3,626,517  
RUBBER ARTICLES  
Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures, Inc., Coventry, Conn.  
Filed Nov. 16, 1964, Ser. No. 411,334

Int. Cl. A41d 19/00

U.S. Cl. 2—168

3 Claims



A surgeon's rubber glove having a continuous polytetrafluoroethylene coating over the entire inner, the entire outer or both surfaces.

#### 3,626,516 COLLAR POINT HOLD DOWN AND TENSIONING DEVICE

George W. Ruane, 165 W. McMillan St., Cincinnati, Ohio 45219

Filed Nov. 12, 1969, Ser. No. 875,978

Int. Cl. A41b 3/00

U.S. Cl. 2—132

2 Claims

A collar point hold down and tensioning device which includes a slideway attached to the body of a shirt and

3,626,518  
ARTIFICIAL CARDIAC VALVE  
Saul Leibinsohn, 11 Hagardom St., Rishon Lezion, Israel  
Filed July 30, 1969, Ser. No. 845,981

Int. Cl. A61f 1/22

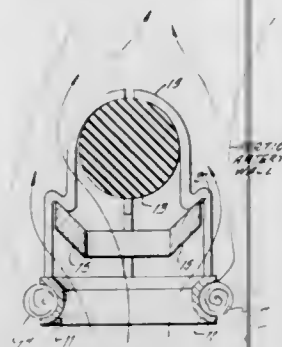
U.S. Cl. 3—1

10 Claims

Characteristics of the ball valve and disc valve are employed to provide a cardiac valve of improved hydrodynamic design to assure more streamline blood flow and decreased turbulence. At the same time, the valve effects a reduction in volume as compared to ball valves heretofore used, but without lessening the amount of blood flow-



ing therethrough. An intermediate movable seating ring of water rises in said tank. Particularly, a control tank is located between the ball and stationary valve seat so positioned within said tank, so as to encompass the float



as to provide two flow paths when the valve is in the open position.

### 3,626,519 STILTS

Jesse W. Baker, 122 Glen Parkway,  
Hollywood, Fla. 33021  
Filed Oct. 20, 1969, Ser. No. 867,624  
Int. Cl. A61f 3/00

U.S. Cl. 3-4

3 Claims



A stilt for a pair of stilts including a tubular post which is square or rectangular in section, a stirrup for the post in the form of an angle extrusion fastened to the post with bolts, a foot for the post in the form of a T-shaped extrusion secured to the bottom end of the post with bolts, and a legging secured to the upper end portion of the post with bolts. The bolts for the stirrup and the legging are movable to permit adjustment of the height of the stirrup and the legging. The stirrup also includes a cleat and a heel plate with straps over the same which encircle the foot of the user.

### ERRATUM

For Class 4-213 see:  
Patent No. 3,626,554

### 3,626,520 CONTROL TANK FOR A WATER CLOSET

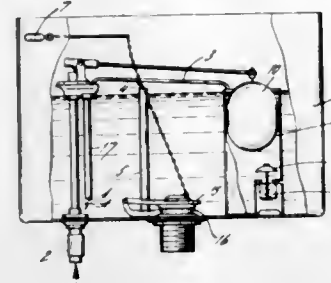
Frank D. Biniores, 7817 Arch St.,  
Little Rock, Ark. 72206  
Continuation-in-part of application Ser. No. 885,554,  
Dec. 16, 1969. This application Mar. 26, 1970,  
Ser. No. 22,925

Int. Cl. E03d 1/36

U.S. Cl. 4-41

10 Claims

Water closet supply tanks of the type embodying a float regulating the water supply, according as the level



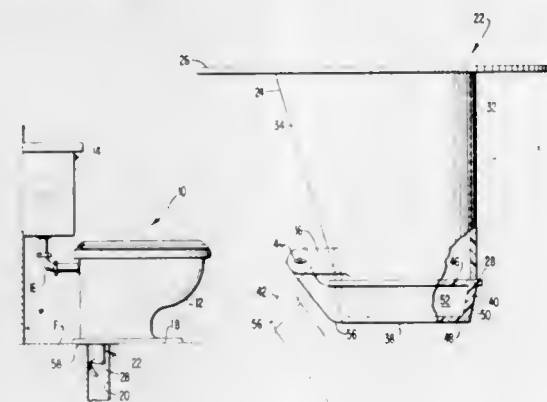
and ensure cutting off of the water supply, if the discharge valve remains open in the water tank.

### 3,626,521 WATER CLOSET VALVE

Ernest Delco, 2720 E. Michigan Blvd.,  
Michigan City, Ind. 46360  
Filed Nov. 22, 1968, Ser. No. 778,090  
Int. Cl. E03d 11/10

U.S. Cl. 4-85

4 Claims



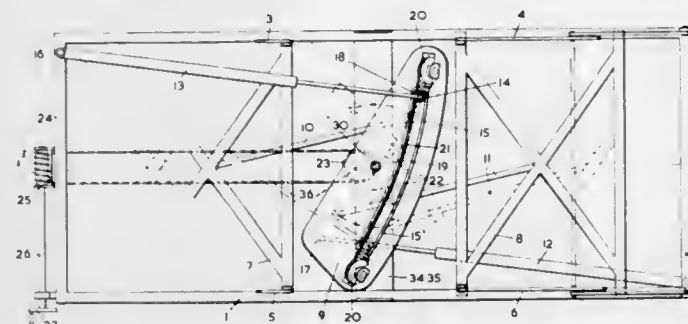
Disclosed is an inverted eccentric frusto-conically shaped sleeve mounting a flange about its upper end and extending within the discharge pipe of a water closet. A float member is pivotally mounted at the lower end of the sleeve for movement between a normally depending, valve open position and a fluid supported position seating against the lower end of the sleeve sealing the passage through the sleeve to preclude back-flow of fluid from the discharge pipe into the water closet. A bumper is provided on the float member and is engageable with the discharge pipe wall to limit downward pivotable movement such that the fluid in the discharge pipe always tends to float and pivot the valve member toward the closed position.

### 3,626,522 HOSPITAL BED

Johannes N. J. van der Meij, Hobbemalaan 7,  
Hilversum, Netherlands  
Filed Sept. 22, 1969, Ser. No. 859,916  
Int. Cl. A61g 7/00

U.S. Cl. 5-63

5 Claims

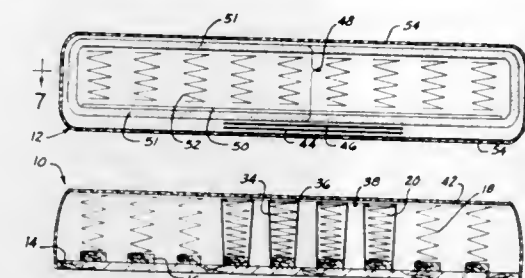


A pair of adjustable spring elements, having traveling means, are connected between a chassis and mattress support wherein said traveling means move in an arcuate path to raise or lower said mattress support.

### 3,626,523 BED FOUNDATION AND MATTRESS ASSEMBLY

Harry J. Robins, 5311 Blythwood, Houston, Tex. 77021  
Filed Sept. 25, 1970, Ser. No. 75,562  
Int. Cl. A47c 23/00, 25/00, 27/00  
U.S. Cl. 5-345

6 Claims



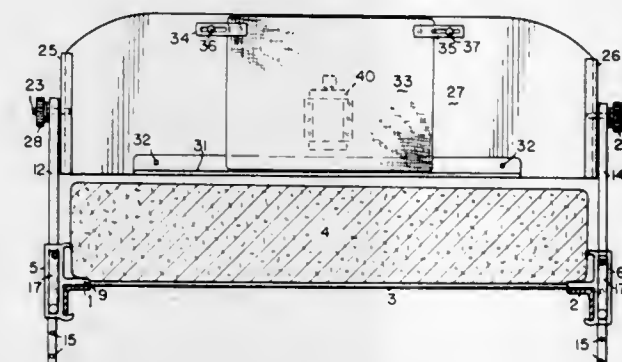
An improved bed foundation and mattress assembly which provides varying degrees of firmness for support and comfort of a human anatomy. The center section of the assembly is stiffened to provide additional firmness.

### 3,626,524 BED CROSS-BOARD

James W. Minton, 5125 Whitsett Ave.,  
North Hollywood, Calif. 91607  
Filed Sept. 21, 1970, Ser. No. 73,831  
Int. Cl. A47c 21/00

U.S. Cl. 5-327

6 Claims



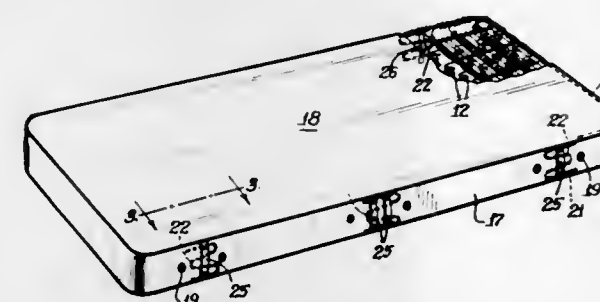
A cross-board for supporting and for providing certain treatments to the feet of invalids while in bed. The board may also be adjusted to a horizontal position to act as a table. A pair of compound angle brackets are selectively usable with bed rails of different sizes. The structure is proportioned to create an inward stress when fastened in position, thereby to simply secure the brackets upon the rails.

### 3,626,525 MATTRESS CONSTRUCTION

George S. Fasanella, Chicago Heights, Ill., assignor to  
The Columbia Bedding Company, Chicago, Ill.  
Filed Feb. 5, 1970, Ser. No. 8,932  
Int. Cl. A47c 23/00, 25/00

U.S. Cl. 5-345 B

8 Claims



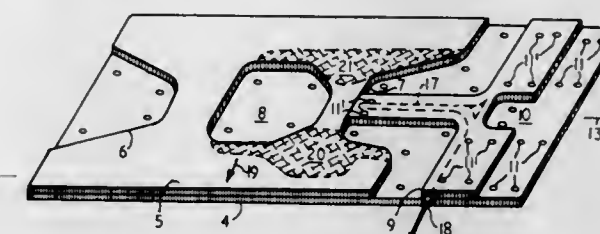
An innerspring mattress has a W-shaped handle support affixed to the innerspring unit at each of the handle locations. The central portion of the W is horizontal and is engaged by an inner fabric band attached to the exterior handle.

There is provided a simple, reliable and compact member having a plug-in portion that plugs into an under-water guide post, and, releasably fixed to an upper part thereof, there is a coil of relatively light line enclosed within a can. One end of the line is connected directly to a buoy and the other end is also connected to the

### 3,626,526 MATTRESSES

Edmond Pierre Robert Viel, Cite Industrielle, Ducos,  
Noumea, New Caledonia  
Filed June 17, 1969, Ser. No. 833,996  
Claims priority, application Australia, Feb. 17, 1969,  
50,560/69  
Int. Cl. A47c 23/00; A61g 7/04; A47g 9/00  
U.S. Cl. 5-345

6 Claims



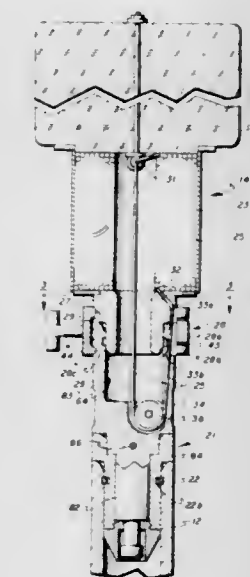
A mattress having a base consisting of a layer of soft resilient expanded foam material over which is arranged a further layer of a similar material, from which layer portions have been removed or are absent to produce a mattress in which parts of the surface are at an elevation above the level of the remainder, the elevated parts being arranged so that the mattress supports the body of the user when either in the dorsal or lateral positions in an anatomically advantageous manner. Absent portions of the overlying layer may be filled with material of greater softness and resilience than the remainder of the layer. Portions removed from the absent portions of the overlying layer may be attached to the elevated parts to increase the difference in elevation between the different parts of the mattress.

### 3,626,527 METHOD AND APPARATUS FOR INSTALLING GUIDELINES AT UNDERWATER WELLHEADS

Walter Brown, Long Beach, Calif., assignor to  
North American Rockwell Corporation  
Filed June 5, 1970, Ser. No. 29,206  
Int. Cl. B63b 21/52

U.S. Cl. 9-8

8 Claims





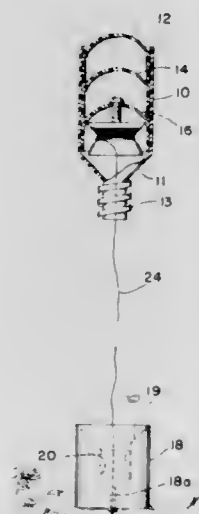
same buoy after the end passes through a pulley mounted onto the plug-in portion. The compact member is adapted to be plugged into the guide post by a submarine that afterwards releases the buoy and coil of line from the plug-in portion. On the surface, a working guideline is fixed to one end of the light line and the guideline is pulled and secured to the plug-in portion by pulling on the other end of the light line. Means are incorporated in the plug-in portion to allow it to be released from the guide post by pulling on a guideline with a force greater than the threshold force built into the system.

**3,626,528**  
**ANCHORED MARKER FLOAT FOR DIVERS**

David L. Jackson, 4504 Cape May Ave.,  
San Diego, Calif. 92107  
Filed May 11, 1970, Ser. No. 36,016  
Int. Cl. B63b 21/52

U.S. Cl. 9-9

3 Claims



A plastic float carries a spinning reel and is detachably connected to a leaded weight. When a diver wishes to mark a spot he loosens and drops a weight and lets the float rise. Line on a reel in the float plays out permitting the float to rise to the surface.

**3,626,529**  
**WATER SKIING DEVICE**  
James H. Schreck, 2908 12th St. NW.,  
Massillon, Ohio 44646  
Filed Jan. 2, 1970, Ser. No. 120  
Int. Cl. A63c 15/00

U.S. Cl. 9-310 A

9 Claims



A water skiing device having retaining members for holding two or four water skis in a rigid parallel position. The device is readily attachable and detachable from the skis without the use of any tools or equip-

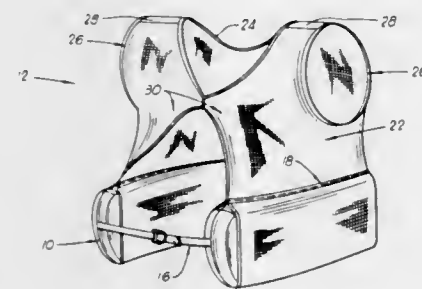
ment and is attached in such a manner so as not to mar, permanently mark or damage the skis being used. The device is adjustable to permit skis of various sizes to be utilized and is suitable for use on skis of different material. The device is free of sharp or dangerous projections and has few moving parts to become rusted or broken. The component parts are simple and inexpensive to produce yet provide for a device which is sturdy and durable.

**3,626,530**  
**VEST**

Laura C. Ecklor, 251 N. Old Manor 67208, and Suzanne E. Smith, 7007 Beachy 67206, both of Wichita, Kans.  
Filed Nov. 24, 1969, Ser. No. 879,324  
Int. Cl. B63c 9/10

U.S. Cl. 9-342

2 Claims



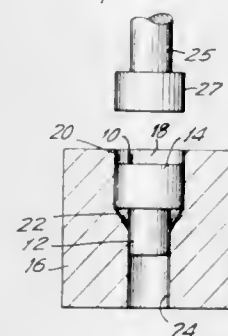
This invention is a vest structure to be worn by a person with a body supporting buoyant water belt. The vest structure has a belt loop portion to retain the water belt and portions to pass over the back, sides and shoulders of the wearer with openings therethrough for the arms and neck thus supporting the belt generally at the person's waist.

**3,626,531**  
**METHOD FOR FORMING ULTRA HIGH-STRENGTH BUCKABLE RIVETS**  
Marshall R. Mazer, Philadelphia, and Raymond Ollis, Jr., Orelana, Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed May 29, 1969, Ser. No. 828,956  
Int. Cl. B21k 1/58; B23g 9/00

U.S. Cl. 10-27

7 Claims



A method of forming an ultra high-strength buckable bolt, such as a rivet, wherein an initially uniformly soft rivet blank is selectively cold worked to selectively work harden a portion of the rivet blank while maintaining another portion of the blank in the initially soft condition. After heat treating, the blank is machined to the final rivet shape with the softer portion being retained as the rivet tail so that it can be readily upset, as by bucking or squeezing, without cracking when the rivet is installed.

**3,626,532**  
**SHOEMAKING METHODS**  
Frank R. Smith, Leicester, England, assignor to USM Corporation, Boston, Mass.  
Filed Aug. 31, 1970, Ser. No. 68,250  
Claims priority, application Great Britain, Sept. 5, 1969, 44,053/69  
Int. Cl. A43d 21/00

U.S. Cl. 12-142 F

4 Claims U.S. Cl. 14-22



A method of making shoes in which the margin of a lasted shoe upper is applied to molten thermoplastic adhesive on the bottom of a last and, after the adhesive sets to form a lasted shoe unit, an outsole member is applied.

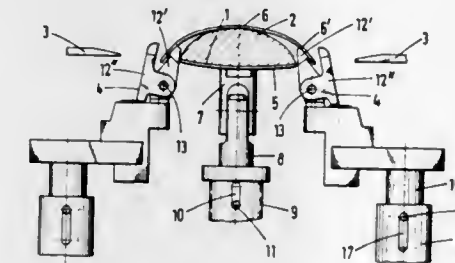
**3,626,533**  
**METHOD OF LASTING THE UPPER OF FOOTWEAR**

Henry von den Benken, West Roxbury, Mass., and Herbert Klantke, Lemberg, Germany, assignors to Firma Eugen G. Henkel Maschinenfabrik, Neu-Isenburg, Germany, and Compo Industries, Inc., Waltham, Mass., fractional part interest to each

Filed Jan. 7, 1970, Ser. No. 1,132  
Claims priority, application Germany, Jan. 9, 1969, P 19 00 843.6  
Int. Cl. A43d 21/00

U.S. Cl. 12-145

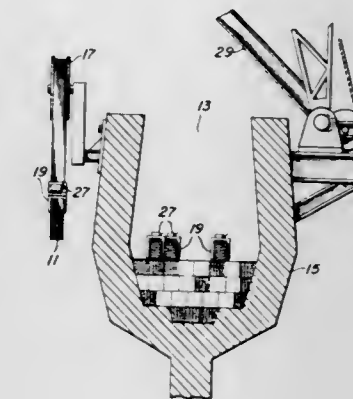
4 Claims



A method of lasting the upper of a boot or shoe using a lasting machine having a last carried by a movable support, wipers and grippers movable with respect to the last. The bottom surface of the last is initially arranged below the plane of movement of the wipers and the grippers above this plane. The last support and grippers are moved in opposite directions simultaneously to bring the bottom surface of the last into said plane, and the wipers are moved to engage the leather.

**3,626,534**  
**METHOD OF ERECTING PARALLEL WIRE STRANDS IN BRIDGE SADDLES**  
Joseph R. Bell, Warwick, R.I., and John E. Windsor, Bristol, Md., assignors to Bethlehem Steel Corporation  
Filed Apr. 16, 1969, Ser. No. 864,231  
(Filed under Rule 47(a) and 35 U.S.C. 116)  
Int. Cl. E01d 11/00

3 Claims

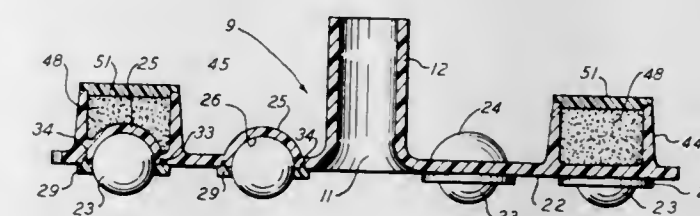


Parallel wire strands are positioned in a bridge saddle by compacting the strands into a rectangular cross section and applying U-shaped forms to the strand at spaced locations along the portion of the strand which is to be supported in the saddle. The shaped strands are then placed side by side in the saddle in layers and as each layer is completed the U-shaped forms are removed.

**3,626,535**  
**SPHERE-SUPPORTED POOL SUCTION HEAD**  
William D. Bond, Arcadia, Calif., assignor to World Industries, Inc., Azusa, Calif.  
Filed Dec. 8, 1969, Ser. No. 883,092  
Int. Cl. E04h 3/20

U.S. Cl. 15-1.7

10 Claims



A rectangular flexible base plate has a handle bracket and a suction hose coupling. A plurality of rotatable spheres in base plate sockets support the base plate above the pool floor. The spheres are of a heavy material to weight the suction head. Alternatively, hollow boxes atop the base plate contain heavy material to weight the suction head. The sockets and boxes have walls which rigidify the base plate.

**3,626,536**  
**AUTOMATIC VEHICLE WASHING APPARATUS**  
Angelo Napoli, 1609 Wills Place, Vineland, N.J. 08360  
Filed Dec. 19, 1968, Ser. No. 785,155  
Int. Cl. B60s 3/06

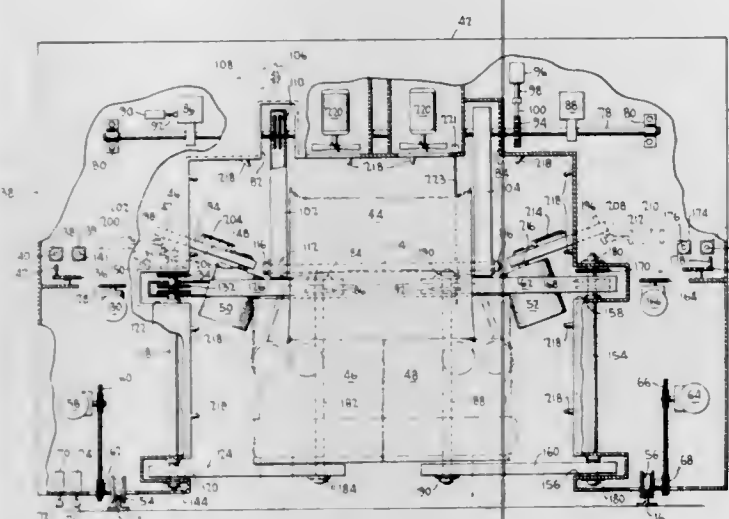
U.S. Cl. 15-21 E

2 Claims

Apparatus for automatically washing vehicles including a frame movable along a pair of tracks to pass by a vehicle to be washed, a pair of side brushes supported by the frame, a top brush supported by the frame, a pair of window brushes supported by the frame, a plurality of nozzles on the frame for spraying liquid on the vehicle



and brushes and system control circuitry for moving the frame past the vehicle four times including a first cycle in which the vehicle is washed by the top brush and side brushes, a second cycle in which the vehicle is washed



by the side brushes and the windows of the vehicle are washed by the window brushes, a third cycle in which the vehicle is rinsed and waxed, and a fourth cycle in which the vehicle is dried by blowers.

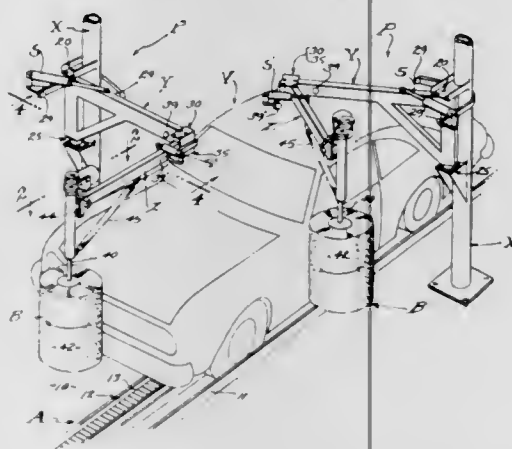
### 3,626,537 GRAVITY OPERATED CAR WASH WITH RELEASABLE BRUSH MEANS

Earl E. Wilson, 1328 Newport Ave.,  
Long Beach, Calif. 90804

Filed Jan. 31, 1969, Ser. No. 795,615  
Int. Cl. B60s 3/06

U.S. Cl. 15—21 D

20 Claims



This invention relates to automobile washing wherein brushing units traverse the substantially vertically disposed planar surfaces of the vehicle body and particularly the front, both sides and the back surfaces, and wherein the units carrying the brushing apparatus are characterized by articulated inner and outer arms supported from a stationary standard and carrying powered brush means that engages the surfaces being washed so as to articulate the apparatus into movement over said surfaces. In accordance with this invention releasable brush means is biased toward engagement with the said surfaces by gravitational forces. To these ends, the said inner and outer arms and said releasable brush means are each pivotally mounted, one upon the next, and the mounting axes thereof so disposed as to create swinging action of the brush means into releasable yielding pressured engagement against the automobile body surfaces.

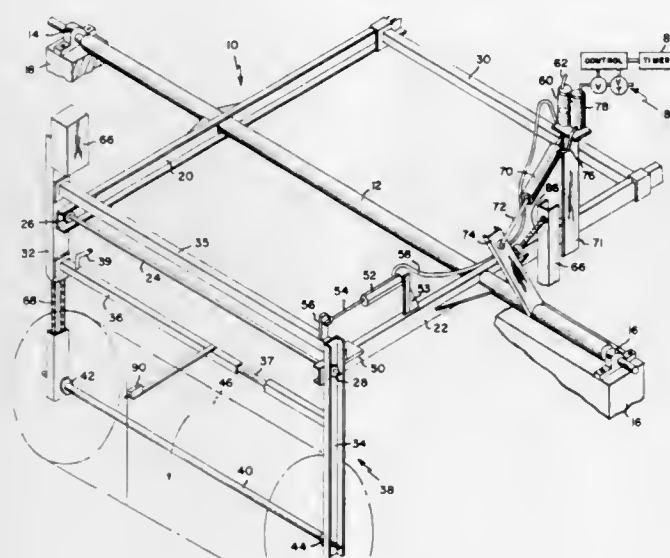
### 3,626,538 CAR WASH APPARATUS

Kurt P. Scheuermann, 211 Eastbourne Terrace,  
Moorestown, N.J. 08057

Filed Sept. 8, 1970, Ser. No. 70,150  
Int. Cl. B60s 3/06

U.S. Cl. 15—21 D

10 Claims



Car wash apparatus in which an overhead brush which washes the roof and rear end portion of the car is supported to permit the brush to move in the direction of the car as the brush moves into contact with the rear portion of the car moving past the apparatus.

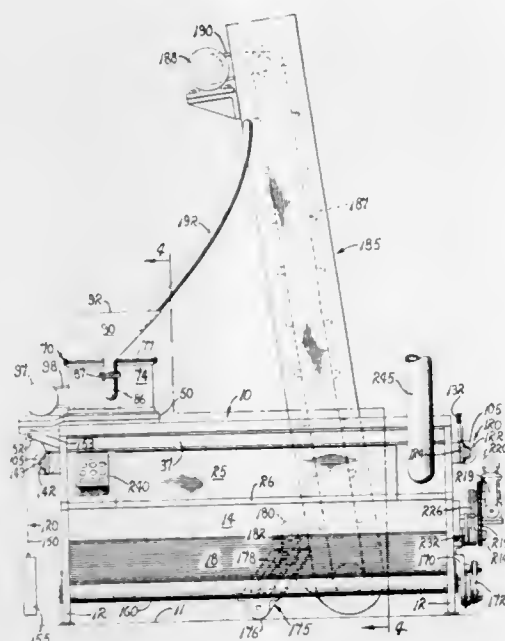
### 3,626,539 SHOT PEENING MACHINE

Rutter W. Arney, 5505 E. Liberty Ave.,  
Fresno, Calif. 93727

Filed June 1, 1970, Ser. No. 42,193  
Int. Cl. B24c 3/10

U.S. Cl. 15—95

9 Claims



A shot peening machine providing a housing circumscribing a peening chamber having means for supporting a workpiece within the chamber and shot discharge means movably mounted on the housing for reciprocal movement along a substantially rectilinear path to discharge shot into the chamber against the workpiece.

### 3,626,540 SHAFT WIPER

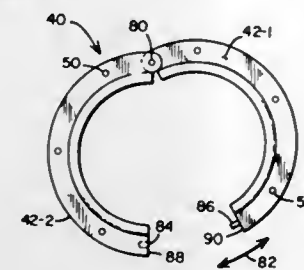
Robert M. Rood, 3225 Victoria Road,  
St. Paul, Minn. 55119

Original application Aug. 21, 1968, Ser. No. 754,248, now  
Patent No. 3,570,037, dated Mar. 16, 1971. Divided  
and this application June 8, 1970, Ser. No. 44,208

Int. Cl. F16c 33/20

U.S. Cl. 15—210

10 Claims



This invention relates to a wiper for use with a moveable shaft, or quill, adapted for axial movement within a supporting structure. The shaft wiper slideably surrounds and engages the movable shaft in a manner to wipe all contaminants and foreign particles therefrom for preventing the contaminants or particles from becoming lodged between the movable shaft and the mounting, thereby preventing the movable shaft from becoming lodged in the housing and unable to be moved. A circular structure having means for holding at least a portion of the wiper in contact with the movable shaft is shown. Various other embodiments of the shaft wiper are also shown.

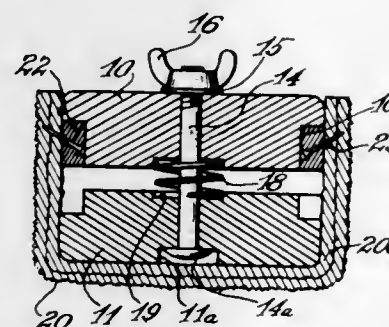
### 3,626,541 FLOOR CLEANING AND WAXING IMPLEMENTS

William A. Boettcher, 4507 N. Clark St.,  
Chicago, Ill. 60640

Filed Oct. 29, 1969, Ser. No. 872,064  
Int. Cl. A47l 13/46

U.S. Cl. 15—233

4 Claims



An implement carried at the lower end of a stick for cleaning or waxing floors. The implement is a headpiece having upper and lower cross-bars held together by bolts directed upwardly from the lower bar through the upper one to receive wing nuts; and the upper bar is urged by compression springs between the bars to separate from the lower one. A pad designed to carry a cleaning or waxing solution receives the bar assembly and rises along its sides. The upper bar carries outwardly projecting and upwardly slanted barbs; and advancing the wing nuts lowers the upper bar for impaling the sides of the pad on the barbs. The consequent retraction of the wing nuts causes the upper bar to draw the pad into taut engagement with the lower one.

### 3,626,542 GUTTER CLEANING TOOL

William S. Despain, 1725 Darrel Drive, Titusville, Fla. 32780, and James E. Blevins, 1948 Barkley Ave., Eau Gallie, Fla. 32935

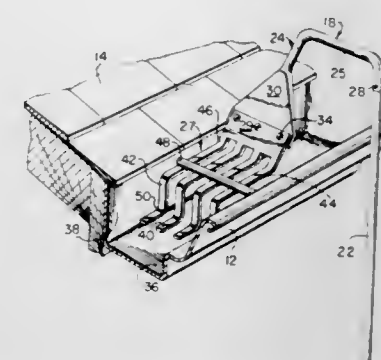
Filed Feb. 25, 1970, Ser. No. 14,030  
Int. Cl. E04d 13/06

U.S. Cl. 15—236

8 Claims

An implement is disclosed for cleaning leaves and other debris from elevated house gutters, including a tool

portion comprising a plurality of substantially parallel horizontal tines and an elongated, substantially vertical handle portion secured thereto to permit manipulation of the tool portion by a person standing on the ground.



In its preferred form, the tool portion includes a step-like vertically offset portion which enables the tines to fit underneath a typical overhead hanger bracket for the gutter.

### 3,626,543 WIPING ARRANGEMENT FOR VEHICLE HEADLIGHTS

Willi Schaper, Buhl, Germany, assignor to Robert Bosch  
G.m.b.H., Stuttgart, Germany

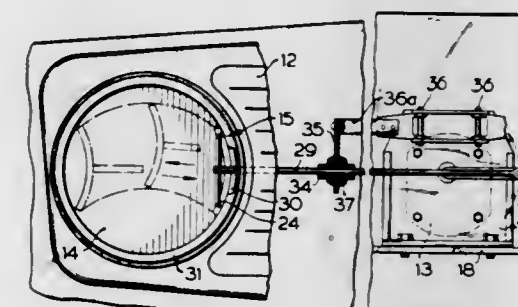
Filed Dec. 15, 1969, Ser. No. 889,848

Claims priority, application Germany, Dec. 17, 1968,  
P 18 15 098.6

Int. Cl. B60s 1/32, 1/36

U.S. Cl. 15—250.21

12 Claims



A wiping arrangement for vehicle headlights includes at least one vehicle headlight whose protective lens has an exposed surface subject to contamination which is to be removed, such surface having two transversely spaced edges. A wiper member is located on this surface in contact therewith. Means is provided for reciprocating the wiper member in wiping contact with the surface in a first path from one towards the other of the edges, and thereupon in a second path different from the first path from the other towards the one of the edges.

### 3,626,544 CLIP FOR WINDSHIELD WIPER BLADE REFILL

Manuel Lopez, Trumbull, and Thomas J. Chiaramonte,  
Shelton, Conn., assignors to The Roberk Company,  
Shelton, Conn.

Filed Sept. 16, 1970, Ser. No. 72,567

Int. Cl. B60s 1/02

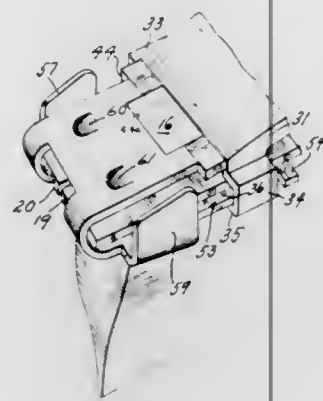
U.S. Cl. 15—250.42

4 Claims

A clip structure for use with a windshield wiper blade refill comprising a main body member and a pair of resilient legs interconnected thereto by a corresponding pair of bent resilient parts, whereby said legs may be disposed parallel and beneath said main body member; said main body member defining a free laterally extending edge, said legs being resiliently compressible to-



ward each other, and having laterally outwardly extending terminal lugs thereon, said lugs and said edge defining an interstice on either side of said clip, the width



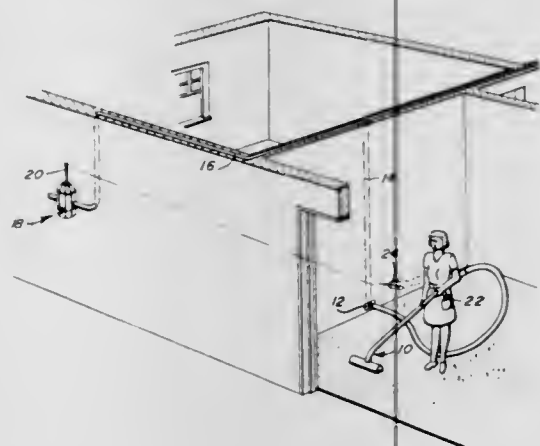
of which is resiliently adjustable within small limits upon engagement with a corresponding claw on a pressure distributing means forming part of a wiper blade.

### 3,626,545 CENTRAL VACUUM CLEANER WITH REMOTE CONTROL

Perry W. Sparrow, Pine Bluff, Ark.  
(3822 W. 27th, Little Rock, Ark. 72204)  
Filed Oct. 9, 1969, Ser. No. 865,063  
Int. Cl. A47L 5/38

U.S. Cl. 15-314

3 Claims



A vacuum cleaner hose to be selectively connected to separately located outlets connected in parallel by conduits to a dust collection container. A blower is mounted in the container for creating a vacuum which is distributed along the conduit and the hose so that cleaner action can be effected at the outer hose end. The blower in the collection container is motor driven and a radio controlled switch causes the motor to be turned on and off from a remote location, where the operator is located. The operator carries a small radio transmitter for transmitting a command signal to a receiver located in the compartment and the receiver causes actuation of the radio controlled switch.

### 3,626,546 ATTACHMENT FOR A VACUUM CLEANER TO COMB THE HAIR OF PETS

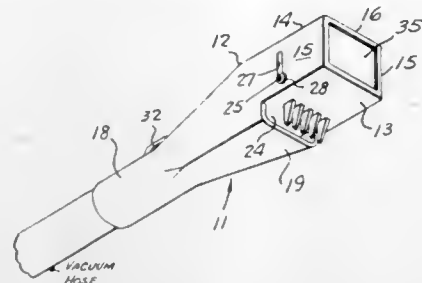
Arthur L. Dove, 464 Watchung Ave.,  
Watchung, N.J. 07060  
Filed Feb. 13, 1970, Ser. No. 11,139  
Int. Cl. A01K 13/00

U.S. Cl. 15-402

9 Claims

A combined comb and vacuum handpiece for combing the hair of animals. The comb portion has a set of teeth

located adjacent the intake orifice of the vacuum handpiece portion and has a cam mechanism for raising the

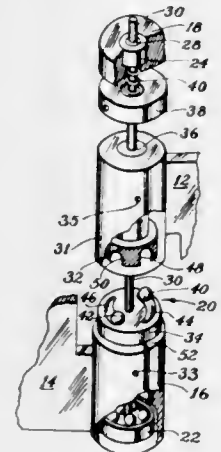


comb teeth to loosen hair therefrom and to allow the loosened hair to be drawn into the vacuum intake orifice.

3,626,547  
DOOR HINGE  
Herbert S. Werner, Hollywood, Fla., assignor to  
Auto Comp Devices, Inc., Huntington, N.Y.  
Filed Oct. 2, 1969, Ser. No. 863,084  
Int. Cl. E05f 1/00

U.S. Cl. 16-154

5 Claims

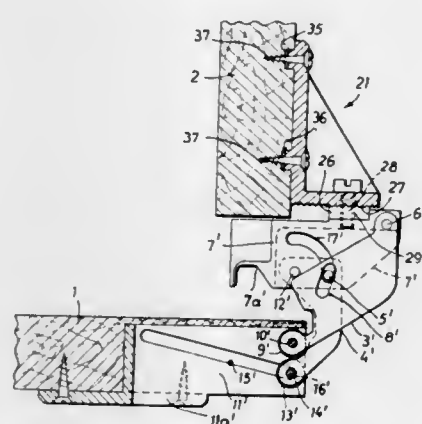


An automatic self-closing door hinge which is actuated by the weight of the door it is mounted on. The hinge utilizes an inclined plane riding on rotatable members.

3,626,548  
INVISIBLE HINGE DEVICE FOR DOORS  
OR THE LIKE  
Hellmuth Grunert, Hoffnangstal, Germany, assignor to  
Prameta Präzisionsmetall- und Kunststoffzeugnisse  
G. Baumann & Co., Cologne-Ostheim, Germany  
Filed June 18, 1969, Ser. No. 834,290  
Claims priority, application Germany, June 22, 1968,  
P 17 59 939.2  
Int. Cl. E05d 3/06, 7/04

U.S. Cl. 16-166

4 Claims



This disclosure provides an invisible hinge device for mounting at least one door leaf at an end face of a frame wall member. A first hinge member is mounted on the

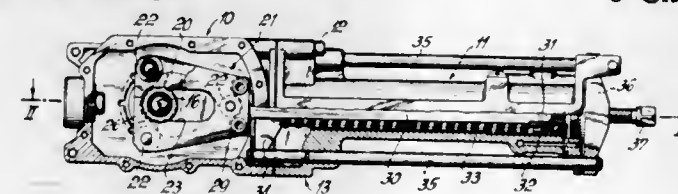
door leaf and a second hinge member is mounted on the frame wall member. A lever member and a link member are attached at each end thereof to a respective hinge member. The lever member and link member are pivotally connected about a common pin member to effect a tongs-like movement with respect to each other when the door leaf is deflected from a closed position. The link and lever members include angled end portions attached to the hinge member mounted on the door leaf. The hinge device of this disclosure is universally adaptable to articles having various thicknesses of frame wall members and door leaves.

3,626,549  
DEVICE FOR CLOSING DOORS AND THE LIKE  
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to  
Firma Dorken & Mankel KG, Ennepetal-Voerde, Germany

Filed Aug. 15, 1969, Ser. No. 850,378  
Claims priority, application Germany, Aug. 17, 1968,  
P 17 84 547.5  
Int. Cl. E05f 3/10, 3/00

U.S. Cl. 16-53

8 Claims

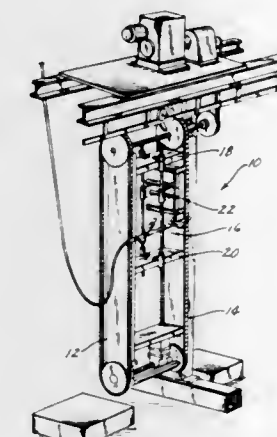


A door closer has an elongated housing in which there is arranged a slide movable longitudinally between a rest position and a working position. The slide has at least one aperture extending transversely of but elongated in the direction of movement, and the aperture is bounded at opposite sides by edge faces which extend in this direction. Biasing means permanently urges the slide to its rest position. A fixedly positioned turnably mounted shaft has an inner portion extending through the aperture in the slide and an outer portion which projects from the housing for connection to a door so that the shaft will turn as the door moves between open and closed positions. Connecting means connects the shaft with the slide so that the latter is moved from its rest position when the shaft turns. A roller ring is mounted on the inner portion of the shaft and received in the aperture in rolling engagement with the edge faces so as to guide and support the shaft in the aperture with minimum friction.

3,626,550  
ELECTRICAL SHOCKING DEVICE FOR A HIDE  
PULLER APPARATUS  
John G. Troy, 8401 W. Dodge Road, Suite 111,  
Omaha, Nebr. 68102  
Filed July 30, 1970, Ser. No. 65,292  
Int. Cl. A22b 5/16

U.S. Cl. 17-21

4 Claims



An electrical shocking device for use with a hide puller apparatus comprising a support means mounted on the

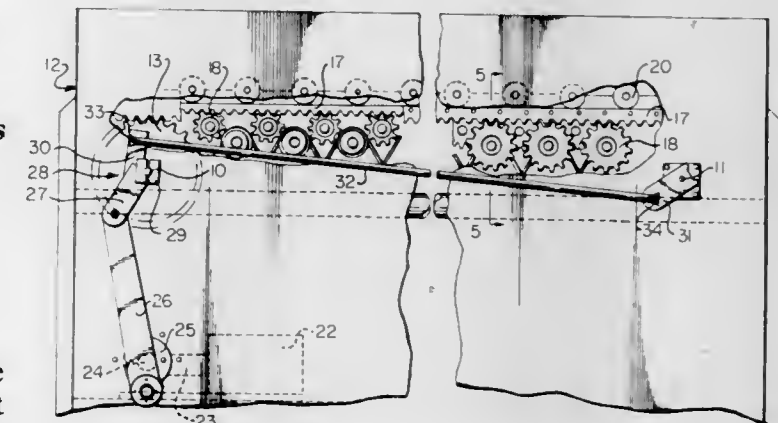
frame of the hide puller apparatus and having a power cylinder means mounted thereon with a movable cylinder rod extending therefrom. An electrode means is mounted on the outer end of the extendible rod and may be selectively moved into contact with the spine of the carcass suspended adjacent the hide puller apparatus to stiffen or firm the carcass for the hide pulling operation.

### 3,626,551 SHRIMP PEELING MACHINE DRIVE MECHANISM

James M. Lapeyre, New Orleans, La., assignor to The  
Laitram Corporation, New Orleans, La.  
Filed Oct. 24, 1969, Ser. No. 869,285  
Int. Cl. A22c 29/00

U.S. Cl. 17-73

2 Claims

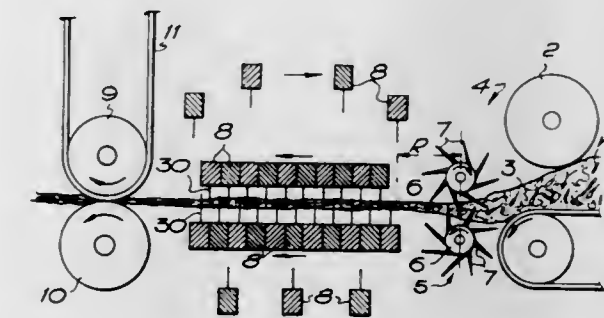


This disclosure is directed to driving the peeling rollers of a shrimp peeling machine and the pressure finger frames mounted thereover by a pitman arm actuated bell crank which rocks on cam shaft of a pair of cam shafts which raises and lowers the pressure finger frame and simultaneously drives the peeling rollers and the bell crank through a link drives a rocker arm which in turn oscillates the second cam shaft for raising and lowering the pressure finger frames.

3,626,552  
PROCESS AND MEANS FOR TREATING  
TEXTILE FIBRES  
Donald Walker, 58 Bramley Lane, Lightcliffe, near Halifax, England, and Michael John Walker, 36 Florence Ave., Wilsden, near Bradford, England  
Continuation-in-part of application Ser. No. 660,785,  
Aug. 15, 1967. This application Nov. 17, 1969,  
Ser. No. 877,198  
Claims priority, application Great Britain, Aug. 22, 1966,  
33,172/66  
Int. Cl. D10g 19/06

U.S. Cl. 19-129

3 Claims



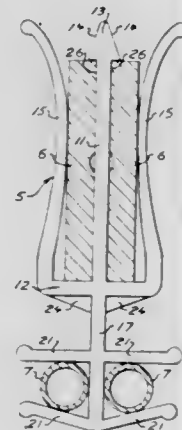
Apparatus for treating a random mass of wool or other textile fibres to convert them into a lap or sliver having the fibres in substantially parallel formation, wherein the random mass of fibres is supplied between a pair of pinned feed rollers whose pins co-operate to effect a restraining but non-positive grip on the material whilst it is drawn from the pins of the rollers by faller gills moving at a



speed at least three times as fast as that at which the fibres are forwarded by said rollers to straighten the fibres in the space between the rollers and the nearest faller gills, which space is not greater than the mean fibre length of the material being treated, the fibres then being drawn off the faller gills by delivery rollers.

### 3,626,553 SKI CLIP

Robert J. Darney, 125 W. Keith Road, and Douglas W. Goodbrand, 1341 W. 22nd St., both of North Vancouver, British Columbia, Canada  
Filed Aug. 6, 1970, Ser. No. 61,588  
Int. Cl. A44b 21/00; A63c 11/02  
U.S. Cl. 24—81 SK



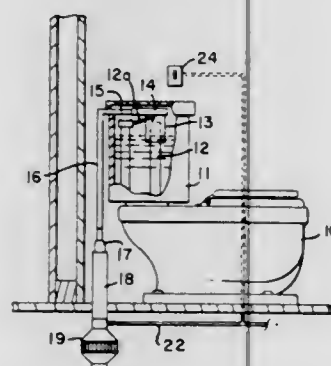
A ski clip for holding a pair of skis and ski poles in a neat, compact bundle, the clip having spring arms between which the skis are clamped and a shaft extending between the skis having an abutment member at a free end for holding the skis within the arms and against a base of the ski clip. Spring clips extending from the base receive and hold ski poles in spaced, parallel relationship to the skis.

### 3,626,554 VENTILATOR FOR BATHROOMS

William L. Martz, 15875 Woodacre Road, Los Gatos, Calif. 95030  
Filed Dec. 8, 1969, Ser. No. 882,815  
Int. Cl. E03d 9/04

U.S. Cl. 4—213

3 Claims

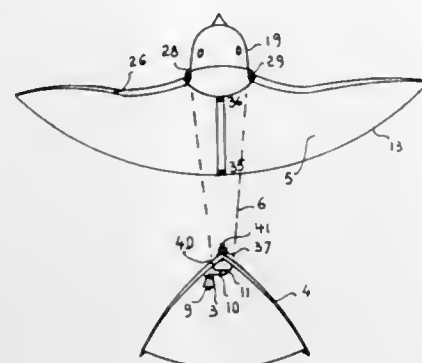


A ventilator for bathrooms and the like which may be easily installed in existing bathrooms and which is provided with a hood that is placed over the overflow pipe in the water tank. This hood is connected to a channel member that telescopes over another channel member to facilitate installation of the device. A blower is connected to the channel members and one embodiment of the device provides a filter of activated charcoal connected to the channel just ahead of the blower. Another embodiment of this device employs a check valve provided in the ventilating pipe of a toilet bowl which is equipped with a flush type valve. The check valve functions to prevent water from entering the ventilating duct during flushing of the toilet.

### 3,626,555 FLYING TOY

Prosper Albertini and Gerard de Ruymbecke, both of 30 Boulevard Chancel, Marseille, France  
Filed Dec. 1, 1969, Ser. No. 881,194  
Int. Cl. A63h 27/00  
U.S. Cl. 46—74 R

1 Claim

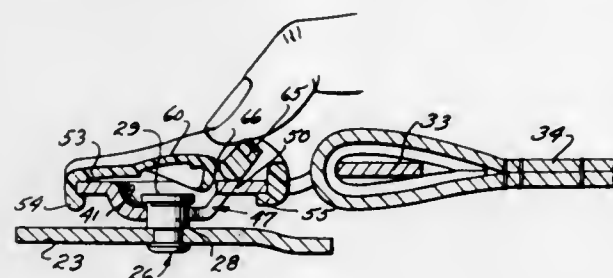


A flying bird toy has an elongated body on which a pair of two-arm wing levers are pivoted for reciprocating up-and-down movement, each wing lever having a flexible wing secured to its longer arm and to the body, the body containing a crank rotatably mounted therein and coupled to the shorter arm of each two-arm lever, the crank being rotated by an elastic motor within the body.

### 3,626,556 BUCKLE MECHANISM

Joseph W. Struck, East Detroit, Mich., assignor to Irvin Industries Inc., Lexington, Ky.  
Filed Nov. 10, 1970, Ser. No. 88,303  
Int. Cl. A44b 11/25, 17/00  
U.S. Cl. 24—203

10 Claims



A coupling for a safety seat belt system including at least first and second buckle members, one buckle member, one buckle member including connector means and the other buckle member including a pocket portion for receiving said connector means and latch means for releasable retention of the connector means of one buckle member in the pocket portion of the other.

### 3,626,557 YARN TEXTURIZING METHOD AND APPARATUS

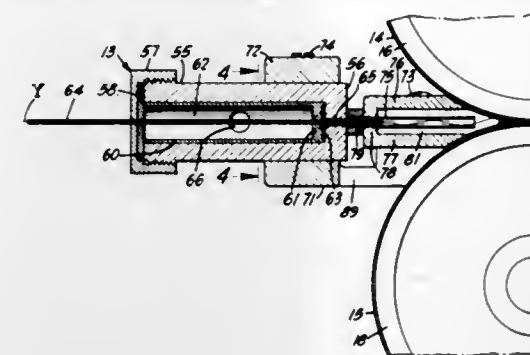
Ashvin J. Chudgar and Walter R. Dunn, Reading, and Vincent A. Iannucci, West Lawn, Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.  
Filed May 18, 1970, Ser. No. 37,995  
Int. Cl. D02g 1/20

U.S. Cl. 28—1.3

13 Claims

Method and apparatus for texturizing multi-filament thermoplastic yarn. The yarn is fed into a yarn delivery tube having a terminal end projecting into a larger tube. The larger tube terminates at a texturizing zone defined by the bight between a pair of opposed mesh belts as they pass around their respective support rollers and by adjustable plates controlling the width of the zone. Air under pressure and with a swirling motion imparted thereto is fed into the larger tube, the air flowing therethrough to

the texturizing zone and drawing the yarn therewith and causing the yarn to twist as it leaves the yarn delivery tube. As the yarn reaches the texturizing zone the swirling current of air causes the yarn to form spirals which are confined in overlapping compacted relationship as

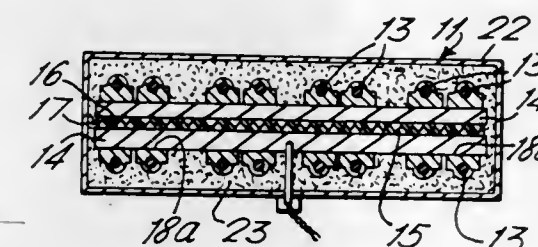


they enter the bight between the belts. During the passage of the yarn between the belts it is subjected to heating and thereafter to cooling. After the yarn leaves the belts it is tensioned to bulk the yarn and the tension is thereafter relaxed and the yarn wound into a package.

### 3,626,558 TEXTILE HEATER APPARATUS

Walter Parker, Wilmslow, England, assignor to Ernest Scragg & Sons Limited  
Filed Dec. 31, 1969, Ser. No. 889,588  
Claims priority, application Great Britain, Jan. 11, 1969, 1,761/69  
Int. Cl. D02j 13/00; F26b 23/06; H05b 3/06  
U.S. Cl. 28—62

10 Claims



A yarn heater for heating a plurality of yarns in a multistation yarn processing machine has a single heating unit sandwiched in heat-conducting relationship between two thermally conductive plates, each of which is provided at its side facing away from the heating unit with heater tubes through which the yarn is to pass. These heater tubes may extend in parallelism or at an angle of inclination to an edge of the respectively associated plate.

### 3,626,559 PROCESS OF SHAPING METAL SURFACES AND CLEANING THE SAME

Christian Rossmann, Langenfeld, and Irmgard Dunnewald, Neuss, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany  
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,597  
Claims priority, application Germany, Mar. 20, 1969, P 19 14 193.6  
Int. Cl. B23p 17/00; C23g 1/00

U.S. Cl. 29—1

4 Claims

In the process of shaping metal surfaces and cleaning the same which comprises shaping a hard metal surface in the presence of a cutting, grinding or forming oil based on mineral oil, subjecting said shaped metal surface having a residue of said cutting, grinding or forming oil thereon to the action of an aqueous cleaning solution and recovering said shaped metal surface free of said residue of said cutting, grinding or forming oil, the improvement which comprises (A) admixing said cutting, grinding or forming oil based on mineral oil, prior to said shaping

step, with from 3% to 50% by weight of an oil-soluble, nonionic emulsifier selected from the group consisting of: (a) Addition products of 2 to 5 mols of ethylene oxide to 1 mol of a fatty compound having a replaceable hydrogen atom and 12 to 18 carbon atoms selected from the group consisting of fatty acids, fatty amines and fatty alcohols,

(b) Addition products of 5 to 6 mols of ethylene oxide to 1 mol of dodecylphenol,

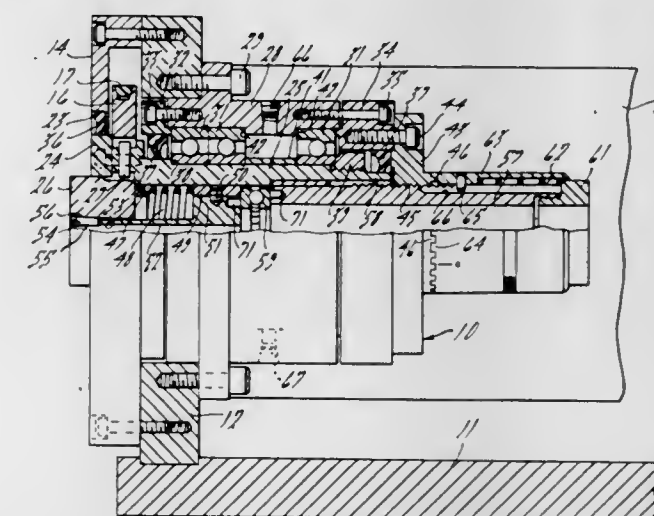
(c) Partial esters of sorbitol with fatty acids having 12 to 18 carbon atoms in a ratio of 1.5 to 3 mols of fatty acid to 1 mol of sorbitol, and

(d) Mixtures thereof; and (B) utilizing as said aqueous cleaning solution, an aqueous composition containing from 0.05% to 0.5% of an anionic wetting agent and from 0.05% to 0.5% of said oil-soluble, nonionic emulsifier.

### 3,626,560 SIZING AND FINISHING DEVICE FOR EXTERNAL SURFACES

Stuart E. Kalen, Sterling Heights, Mich., assignor to Cogsdill Tool Products, Inc.  
Filed June 4, 1970, Ser. No. 43,390  
Int. Cl. B21c 37/30; B24b 39/00  
U.S. Cl. 29—90

10 Claims



The self-contained device produces relative rotation between a workpiece, truncated conical rollers and a head having a truncated conical surface. The rollers are adjustable to fall on a desired diameter for sizing and/or finishing the external surface of a cylindrical workpiece by a burnishing operation. By tilting the rollers relative to the axis of the tool, a feed occurs which advances the workpiece through the burnishing rollers. Manual or power operated members adjust the roller carrier and head relative to each other lengthwise of the tool for positioning the rollers for the sizing and/or finishing operation and for releasing the workpiece after the burnishing operation and when desirable for receiving a new workpiece after which the rollers are returned to the set working diameter.

### 3,626,561 AUTOMATIC SHEET STACKER

John W. Luce, Maumee, Ohio, and Richard A. Morrette, Temperance, Mich., assignors to Owens-Illinois, Inc.  
Filed Dec. 15, 1969, Ser. No. 885,144  
Int. Cl. B24b 39/00

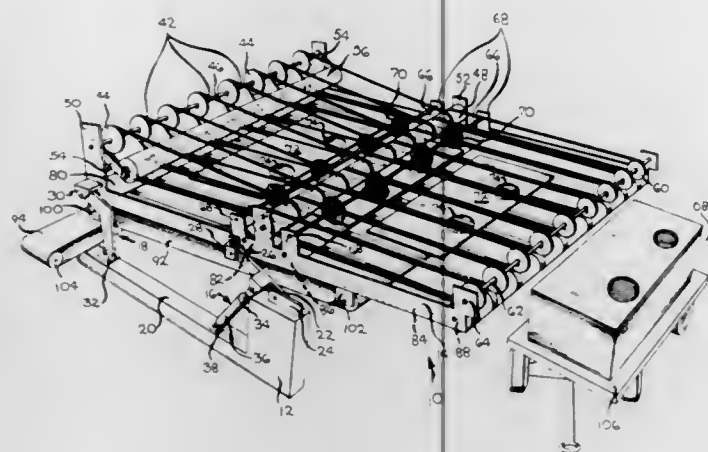
U.S. Cl. 29—90.5

6 Claims

An improved automatic sheet stacker for conveying individual sheets in precise alignment, removing scrap materials from the sheets as they are being conveyed, and depositing the sheets in a uniform stack at a collection point. This stacker features four sets of revolving conveyor belts, two upper sets and two lower sets, between which the



individual sheets are securely held and conveyed in precise alignment. Also provided by this improved stacker are a plurality of revolving brushes, which are positioned to re-



move scrap material from the sheets being conveyed, and a conveyor system to collect and transport away the scrap particles removed by the revolving brushes.

3,626,562

# METHOD OF AND APPARATUS FOR PROVIDING BOLSTER-DOUBLE BUTTONS AND THE LIKE IN BOLSTERS, MATTRESSES AND CUSHIONS

Karl Brink, Schloss Holte, Germany, assignor to Astor-Werke Otto Berning & Co., Schwelm, Westphalia, and F. Balke & Co., Holte, Westphalia, Germany

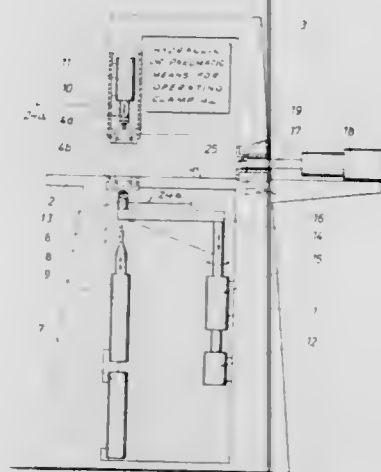
Filed Feb. 10, 1969, Ser. No. 797,762

Claims priority, application Germany, Feb. 10, 1968, P 16 32 570.5

Int. Cl. B68g 7/00

U.S. Cl. 29—91.1

12 Claims



A method of and an apparatus for applying two-part double bolster buttons of synthetic material connected together by a stay-part, and two-part hollow rivets or the like equipped with bolster buttons and serving as a stay-part in bolsters, mattresses, cushions and the like, which comprises the steps of strongly compressing and rigidly clamping a bolster about the position of a double bolster button, and punching the bolster at the point of the bolster button to be inserted. A small tube slides over the shaft of a mandrel behind cutting edges of the mandrel and the latter is withdrawn through the small tube and the mandrel and is removed from the bolster. A stay-part of one portion of the double bolster button or of a hollow rivet is inserted into the small tube on the side remote from the mandrel. The small tube is then withdrawn and the other portion of the double bolster button or the rivet equipped with a bolster button slides and is secured onto the first portion of the bolster button already in the bolster, and the clamping of the bolster is released.

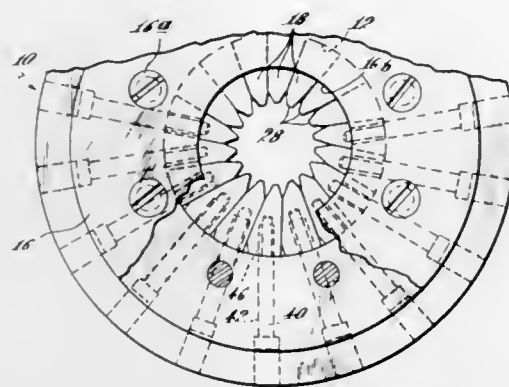
3,626,563  
POT BROACH  
Reino G. Lehto, Maynard, and Robert L. Schneider, Hudson, Mass., assignors to The Lapointe Machine Tool Company, Hudson, Mass.

Filed Jan. 2, 1970, Ser. No. 223

Int. Cl. B26d 1/04

U.S. Cl. 29—95.1

9 Claims



A tool comprising a plurality of broach bars having teeth along one edge and a holder supporting the bars with the toothed edges at equal radial distances from a common axis so that the toothed edges collectively form an internal broach.

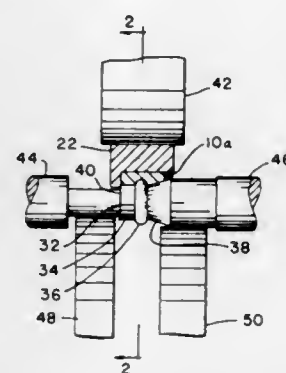
3,626,564  
MANUFACTURE OF BEARING RACES  
David W. Daniel, Birmingham, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Feb. 26, 1970, Ser. No. 14,483

Int. Cl. B21h 1/12

U.S. Cl. 29—148.4 R

11 Claims



Internal ball bearing races are produced by rolling an annular body within a sizing ring to produce the required contour and dimensions.

3,626,565  
CAGE AND ROLLER METHOD  
Hans W. Koch, Levittown, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

Original application Nov. 24, 1969, Ser. No. 879,352.

Divided and this application Nov. 10, 1970, Ser. No. 88,373

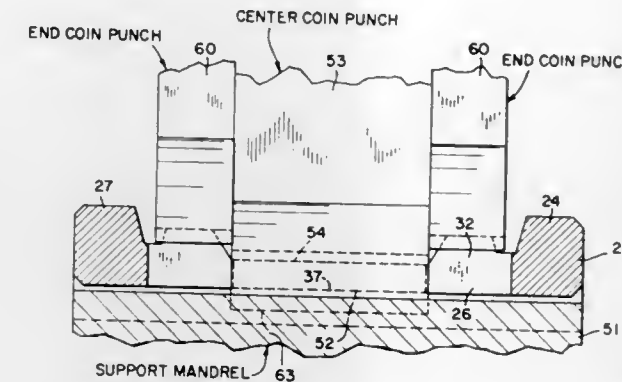
Int. Cl. B21d 53/12

U.S. Cl. 29—148.4 C

4 Claims

In cage and roller combinations suitable for operation between inner and outer members to form a bearing, a cage guided on its outside diameter is produced by forming a blank having thickened rim portions at the ends, relieved relatively thin portions inwardly of the rim portions, thickened guiding portions and outward retaining portions inwardly of the relieved portions and a relatively thin mid-length portion, then punching windows with parallel sides from the mid-length portion, the guiding and outward retaining portion and the relieved portion but not entering the rim portions, the windows being

relatively wide at the ends and relatively narrow at the middle, and then coining the crossbars desirably simultaneously to form lips at the guiding and outward retaining portions near the outside while retaining parallel sides at the guiding portions near the pitch diameter, and to displace metal from the mid-length portions so as to form inwardly converging side walls which will clear



the rollers and prevent escape of the rollers inwardly. The invention may provide cage and roller combinations in which a single roller in a window is guided adjoining the pitch circle near the end, the guiding portion outwardly converges to retain the roller against outward motion, and the window at the end terminates short of the rims.

3,626,566  
METHOD OF FORMING A BALL AND SOCKET JOINT

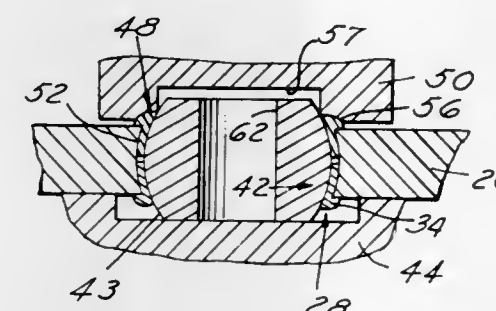
Norman R. Kilgour, Dearborn Heights, Mich., assignor to The Standard Forge Company, Detroit, Mich.

Continuation-in-part of abandoned application Ser. No. 758,516, Sept. 9, 1968. This application Mar. 30, 1970, Ser. No. 23,931

Int. Cl. B23p 11/00

U.S. Cl. 29—149.5 B

10 Claims



A method of forming a ball and socket joint including forming an aperture in a supporting member having a gradually increasing diameter from each end toward its center, disposing a first bearing member in one end of the aperture having an inner bearing surface conforming to the ball surface, supporting the ball within the aperture spaced a predetermined nominal clearance distance from the first bearing surface, forcing a second bearing member from the opposite end of the aperture between the ball and the aperture wall to provide a second bearing surface conforming to the ball surface, and releasing the ball to permit it to center itself within the bearing surfaces in rotatable relation therewith.

Additional methods of making such a ball and socket joint are disclosed, but the above recited basic method is preferred. The aperture formed in the support may be either spherical or of two frusto-conical sections, and in the preferred form is provided with a central circumferential flange or lip extending radially inwardly of the aperture.

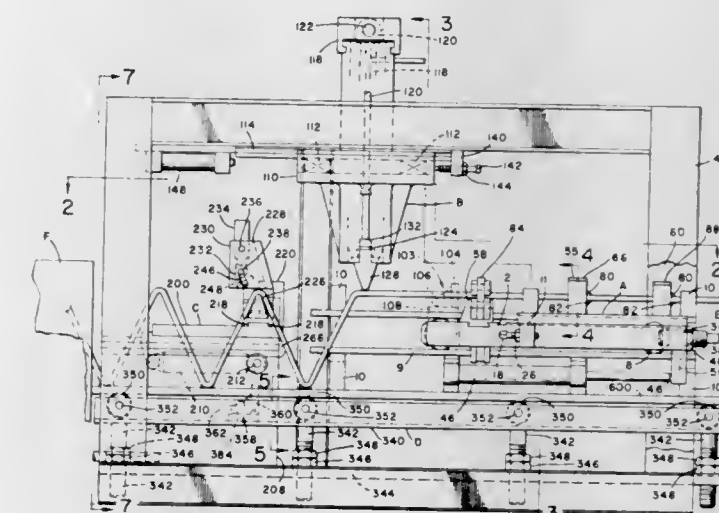
3,626,567  
METHOD AND APPARATUS FOR MANUFACTURING STRUCTURAL SEMIJOIST  
Anatol Michelson, Swarthmore, and Robert W. Cruger, Springfield, Pa., assignors to Gulf + Western Industrial Products Company, Grand Rapids, Mich.

Filed Apr. 28, 1970, Ser. No. 32,645

Int. Cl. B23p 17/00, 19/00

U.S. Cl. 29—155

20 Claims



An apparatus and method for producing partial structural girders or semijoists from two elongated strand members by forming one strand member into a V-shaped configuration with an apex, which apex contacts the second strand member, and is joined thereto. The first strand member is fixedly supported at two preselected end points by two support means while a power forming means, operative through a predetermined distance, operates against the strand to form and stretch it into the V-shaped configuration. Movement of the power forming means forces one support means towards the other during the forming operation. At the bottom of the forming stroke, the apex of the V-shaped configuration contacts the second strand member and is joined thereto by joining means. This process is repeated until a semijoist is completed having a succession of V-shaped configurations.

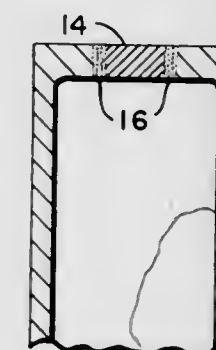
3,626,568  
METHOD FOR BONDING PINS INTO HOLES IN A HOLLOW TURBINE BLADE  
Stanley M. Silverstein, Stratford, and Victor Strautman, Trumbull, Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Apr. 23, 1969, Ser. No. 818,557

Int. Cl. B21k 3/04; B23p 15/02, 15/04

U.S. Cl. 29—156.8 H

2 Claims



This disclosure relates to turbine blades and the method for bonding pins or inserts into the holes which are formed in the turbine blades during casting.



3,626,569

**FREE-WHEELING DEVICE**

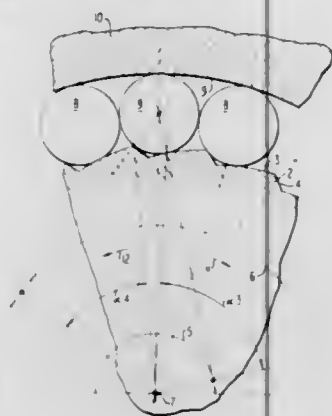
Paul Kluwe, Fellbach, near Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertürkheim, Germany

Continuation-in-part of application Ser. No. 515,767, Sept. 14, 1965, which is a division of application Ser. No. 3,189, Jan. 18, 1960, now Patent No. 3,249,186. This application Mar. 17, 1970, Ser. No. 20,298

Int. Cl. B21d 53/26

U.S. Cl. 29—159

9 Claims



A method of manufacturing a one-way roller element wedging clutch having an outer element with a cylindrical bore, an inner element with a toothed camming surface opposing the cylindrical bore, and a plurality of roller elements therebetween wherein the toothed surface is formed in one continuous step by a single surface hob by simultaneously rotating the hub and a gear blank, embedding the hob teeth in the gear blank and grinding the gear blank by the abrasive surface of the hob teeth.

3,626,570

**TWO-PHASE COBALT IRON ALLOYS PREPARED BY POWDER METALLURGY**

Bud W. Kushnir, Edmonton, Alberta, Robert William Fraser, Fort Saskatchewan, Alberta, and David John Ivor Evans, North Edmonton, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Sept. 19, 1969, Ser. No. 859,252

Claims priority, application Canada, Nov. 15, 1968, 35,250

Int. Cl. B22f 1/00

U.S. Cl. 29—182

2 Claims

A ductile cobalt alloy containing about 1.5 to about 15% by weight iron and balance cobalt and being fabricated by powder metallurgy methods from cobalt and iron powders. The alloy has a two-phase microstructure in which the iron content of one phase is higher than the iron content of the other phase and has a predominantly face-centered cubic crystal allotropic structure and suppressed transformation from said face-centered cubic crystal structure to a hexagonal crystal structure at room temperature.

3,626,571

**APPARATUS FOR ASSEMBLING SEALED CONTACT SWITCHES**

Glenn Adrian Marlin, James Clifford McConnell, and Wilhelm Emil Albert Schmidt, Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original application Mar. 3, 1967, Ser. No. 621,730, now Patent No. 3,539,323, dated Nov. 10, 1970. Divided and this application Oct. 24, 1969, Ser. No. 871,186

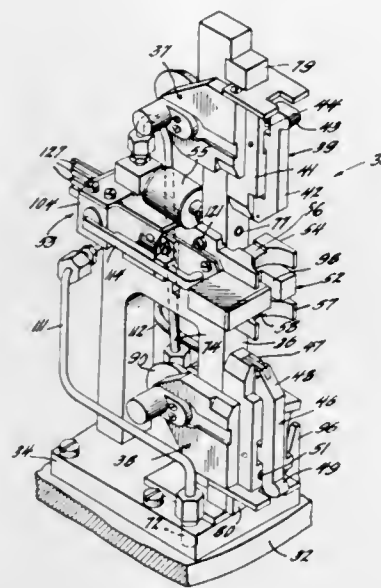
Int. Cl. H05k 13/00

U.S. Cl. 29—203

4 Claims

Apparatus for assembling sealed contact switches has a number of fixtures, each of which are incrementally moved through each one of a series of assembly stations. Each fixture has axially aligned vertical moving upper

and lower carriages for supporting an upper and a lower contact, respectively. Positioned between the upper and lower carriages are laterally movable holding facilities for supporting a glass sleeve into which are moved the upper and lower contacts in an overlapping relationship. Facilities are provided on the fixture to magnetize the upper contact by way of the upper carriage to attract and support the lower contact which is subsequently released by the lower carriage. The lower contact is thereafter sealed by



radiant energy within the lower end of the glass sleeve while forming gas is introduced into the upper end of the glass sleeve. Subsequently, the holding facilities are actuated to move the glass sleeve and sealed lower contact laterally with respect to the upper contact to set a predetermined gap between the overlapping portions of the upper and lower contacts. Thereafter the upper contact is sealed within the upper end of the glass sleeve in an enclosed pressurized chamber.

3,626,572

**TOOL FOR SAFELY REMOVING ANODE LEAD FROM CATHODE RAY TUBE**

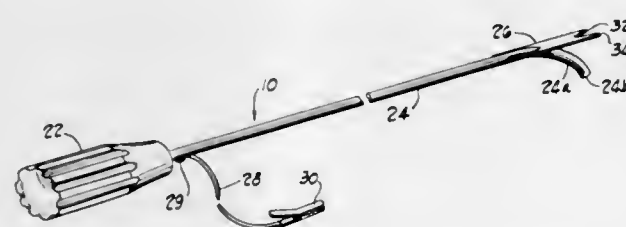
Chor Keung Chang, 19308 Homeway Ave., Cleveland, Ohio 44135

Filed Sept. 19, 1969, Ser. No. 859,322

Int. Cl. H01r 3/04

U.S. Cl. 29—203 H

3 Claims



A tool for safely removing an anode lead from a cathode ray tube such as a picture tube of a television set. A rod portion of the tool has an insulating handle at one end, a thin, flat, part with a V-shaped notch adjacent the other end, and an attached wire with a spring clamp at the end for grounding the tool during use. The rod portion terminates in an abutment portion at said other end. The flat notched portion is adapted to slide beneath a cup-like insulating cover piece on the end of an anode lead secured to the wall of a TV picture tube. Two contact prongs extend from the center of the cover piece into an aperture in the tube wall. When the tool is inserted beneath the cover piece, converging walls of the notched portion straddle the prongs and movement of the tool cams the prongs together to facilitate removal from the

3,626,573

**ELECTRODE HANDLING DEVICE**

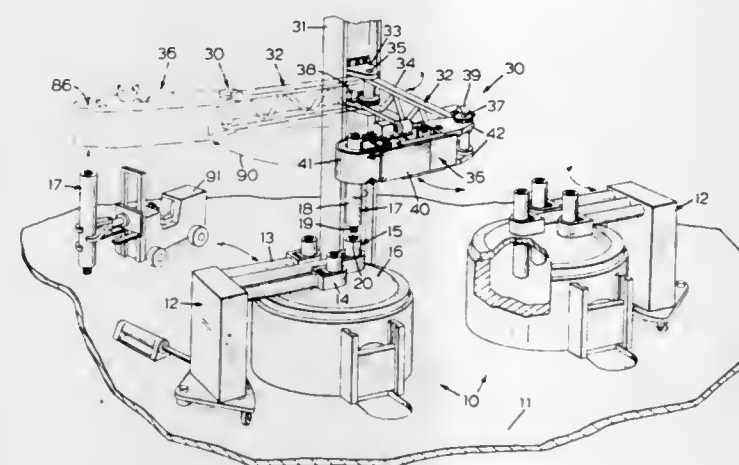
Andrew Gwilym Blake, Oshawa, Ontario, Canada, assignor to Lake Ontario Steel Company Limited, Whitby, Ontario, Canada

Filed Jan. 15, 1970, Ser. No. 3,014

Int. Cl. B23p 19/04; H05k 13/00

U.S. Cl. 29—203

8 Claims



An electrode handling device for an electric arc furnace, in which threaded electrode sections are attached to electrodes mounted in the furnace to provide a continuous electrode feed. The device grips the electrode section, locates the section in line with the mounted electrode, and rotates the section to thread it onto the electrode.

3,626,574

**AUTOMATIC ASSEMBLY MECHANISM FOR BALL COCK GUIDE AND FLOAT SUBASSEMBLY**

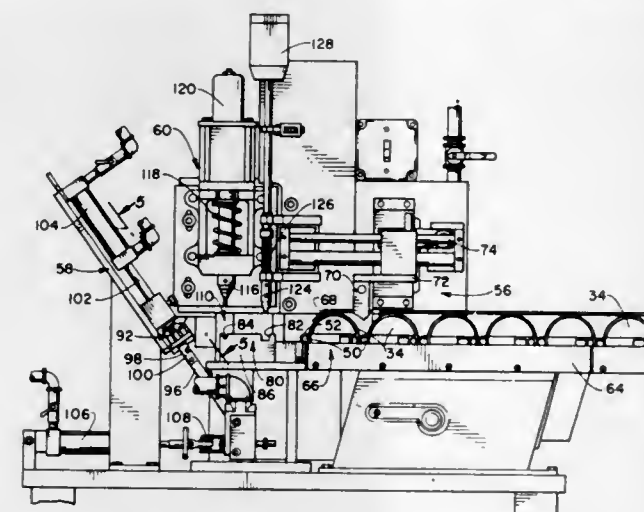
Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631, and Fredric E. Schmuck, 535 Century Drive, Anaheim, Calif. 92805

Filed Feb. 19, 1970, Ser. No. 12,782

Int. Cl. B23g 7/10; B23p 19/00

U.S. Cl. 29—211 D

20 Claims



A series of ball cock floats are fed consecutively by a vibrating supply bowl into a feed track and consecutively therealong to an assembly transfer station, with a series of connecting clips being similarly fed consecutively to a separated assembly transfer station, both the floats and connecting clips arriving at their respective transfer stations particularly positioned for following transfer operations. During a transfer operation preceding each assembly operation, a linearly movable float transfer arm engages

each float at the transfer station and pushes that particular float to an assembly station float holder, while at the connecting clip transfer station a feed plunger moves a clip into a pivotal transfer arm mounted clip holder, the transfer arm subsequently pivotally moving the clip holder to its assembly station. In the respective assembly stations, the clip, U-shaped in configuration, has telescoped a float boss aligning clip leg portion and float boss openings. An operator then inserts a float end of a rigid guide through a guide opening of the float and a float end of a valve actuating link through the connecting clip and float boss aligned openings, a valve end of the guide being previously connected to a valve end of the actuating link through a valve control arm. Upon the float ends of the guide and valve actuating link simultaneously engaging limit switches, a staking punch stakes the float end of the valve actuating link beyond the connecting clip and float boss to permanently assemble the ball cock subassembly for removal from the assembly mechanism.

3,626,575

**PRINTED CIRCUIT BOARD EXTRACTOR TOOL**

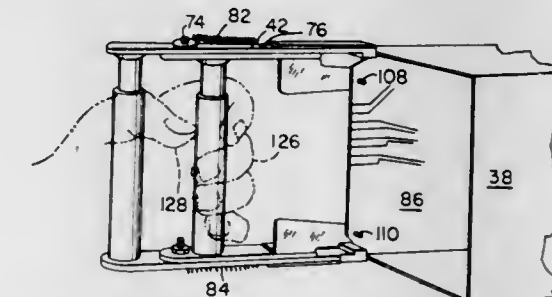
Bertram H. Greenspan, 112 Delia Lane, Philadelphia, Pa. 19115

Filed Aug. 4, 1969, Ser. No. 847,193

Int. Cl. B25b 27/00

U.S. Cl. 29—203 H

2 Claims



An extractor tool for removing slide captivated printed circuit boards from a connector housing including a frame of generally U-shaped configuration having a pair of spaced side flanges joined at one end thereof in a connecting web of variable width and having a slide of generally U-shaped configuration in sliding engagement within the said frame, the said slide terminating forwardly in a pair of circuit board affixing pins and the said frame terminating forwardly in a pair of spaced housing contacting stops whereby the spacing between the said pins may be varied by adjusting the width of the connecting web and whereby the distance between the pins and the stops may be varied by pulling the slide with respect to the connecting web. The extractor tool urges a printed circuit board forwardly with respect to its associated connector housing by positioning the pins within openings in the printed circuit board and the stops against stationary housing construction and then pulling the slide with respect to the web to apply extraction forces at the openings.

3,626,576

**METHOD FOR REPAIRING PRESSURE LINES SUCH AS GAS MAINS AND THE LIKE**

Charles William Ray, 525 Stadium Drive, Fort Wayne, Ind. 46805

Filed Mar. 17, 1969, Ser. No. 807,846

Int. Cl. B22d 19/10; B23p 7/00

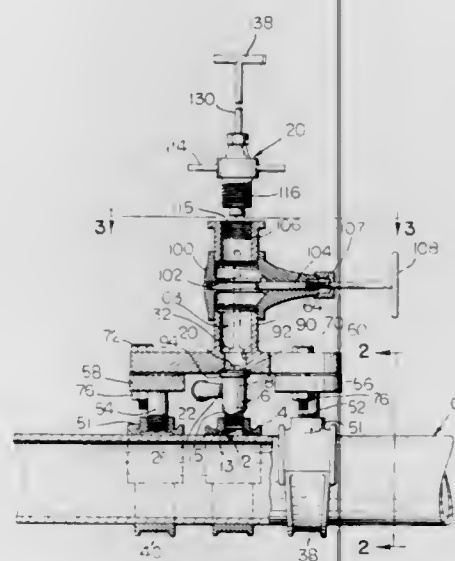
U.S. Cl. 29—401

8 Claims

In repairing gas mains, a fixture is clamped to the main at the location of the repair, and a conduit is then joined to the main through a sealed fit. The conduit has a valve which separates the conduit into two compartments, and the end of the conduit is adapted to receive a tool mounting, the valve being opened and a tool passed through the conduit to perform repair operations on the



main. The tool mounting is connected to the conduit through a sealed connection, and the tool can be operated through the tool mounting means by an operator so that the repair operation occurs through a sealed conduit. The entire operation occurs with normal operation of the main under its usual operating condition of internal super-atmospheric pressure.



This superatmospheric pressure can be varied and the present invention contemplates pressures for gas mains in the range of 60 p.s.i.-120 p.s.i., other pressures for other materials such as petroleum, water etc., varying as desired.

3,626,577

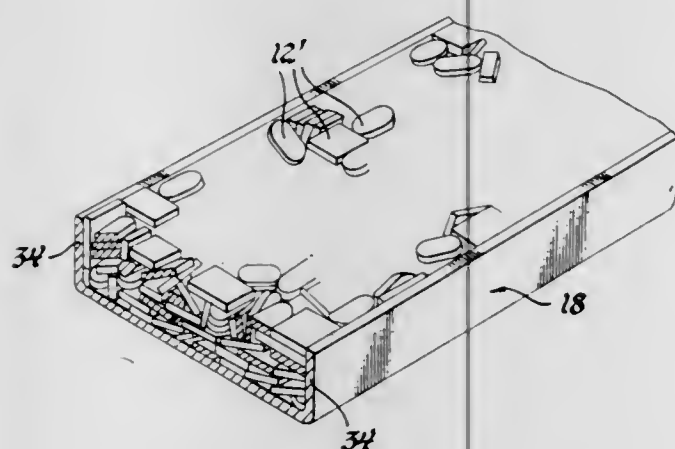
#### METHOD OF RECLAIMING SCRAP FERROUS METAL SHEET WITHOUT MELTING

Clayton J. Tribble, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Continuation of application Ser. No. 852,711, Aug. 25, 1969, which is a continuation-in-part of application Ser. No. 737,775, June 17, 1968. This application Feb. 24, 1970, Ser. No. 13,368

Int. Cl. B23q 17/00

U.S. Cl. 29-403

14 Claims



A method is disclosed for converting ferrous metal scrap, originating from sheet or strip metal, into reusable flat-rolled ferrous metal products. For example, many pieces of carbon steel offal, randomly sized and shaped but generally less than three inches in greatest dimension, are deposited on a long carrier sheet of substantially the same composition to a suitable height. The carrier sheet and offal are heated in a reducing atmosphere to about

2000° F. and then rolled into a strip or sheet of reusable flat-rolled steel stock.

3,626,578

#### CONVERSION OF METAL SCRAP TO USEFUL PRODUCTS

Clarence A. Price, Ann Arbor, Mich., and Alvin M. Sabroff and Thomas G. Byrer, Columbus, Ohio, assignors to Hoover Ball and Bearing Company, Saline, Mich.

No Drawing. Filed July 2, 1968, Ser. No. 741,902

Int. Cl. B23q 17/00

U.S. Cl. 29-403

29 Claims

Metal scrap is compacted under ambient conditions and then is consolidated into a solid product by hot working with a high reduction ratio.

3,626,579

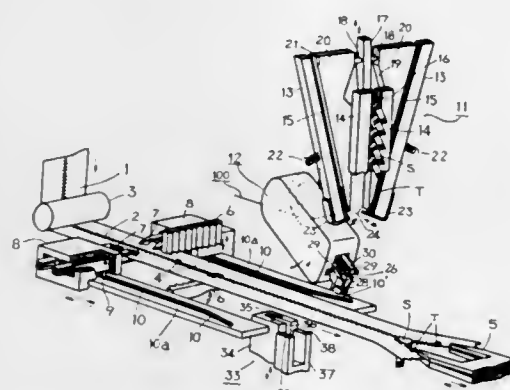
#### METHOD FOR AUTOMATICALLY ASSEMBLING SLIDE FASTENERS

Masayuki Maeda, 5395 Nyuzen, Nyuzen-machi, Shimonikawa-gun, Toyama-ken, Japan  
Original application June 6, 1967, Ser. No. 643,875, now Patent No. 3,530,563, dated Sept. 29, 1970. Divided and this application May 5, 1970, Ser. No. 34,797  
Claims priority, application Japan, June 27, 1966, 41/41,672, 41/41,673, 41/60,678; July 11, 1966, 41/45,285

Int. Cl. B23p 11/00

U.S. Cl. 29-408

3 Claims



A method of assembling slide fasteners with slider and top stops in an automatic cycle of operation. This operation comprises cutting a slide fastener stringer carrying interlocking elements to individual unit lengths, delivering a slider and top stops to a parts holder, positioning said parts holder with reference to the path of stringer travel, attaching said sliders and top stops to said stringer, and drawing the assembled slide fasteners out of the machine while maintaining the stringer in a successive movement.

3,626,580

#### METHOD OF MANUFACTURING DISC BRAKE CALIPER HOUSINGS

Horacio Shakespear, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.  
Original application Oct. 1, 1968, Ser. No. 764,261, now Patent No. 3,556,265, dated Jan. 19, 1971. Divided and this application Sept. 19, 1969, Ser. No. 859,383

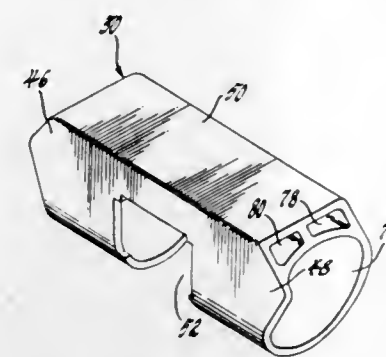
Int. Cl. B23p 17/00

U.S. Cl. 29-412

1 Claim

A disc brake caliper housing is made from an extruded pipe by cutting the pipe into segments and transversely notching each segment to provide space for re-

ceiving the disc to be braked and for mounting the brake pads. The pipe cross section pattern provides suitable



openings for mounting wheel cylinder assemblies, for cooling, and for weight reduction.

3,626,581

#### WIRE WOUND CONICAL LINER FOR SHAPED CHARGE WARHEAD

Clarence E. Weinland, Vista, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 5, 1970, Ser. No. 59,793

Int. Cl. B23p 17/00

U.S. Cl. 29-424

4 Claims

Conical metallic liners for shaped charges which comprises providing a suitably formed mandrel precoated with a release agent, winding wire of uniform diameter on said mandrel and bonding each turn in place.

3,626,582

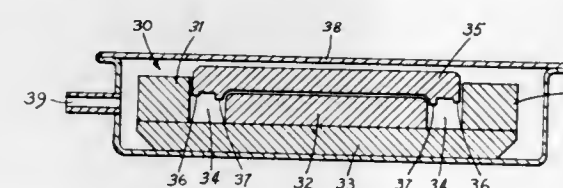
#### FABRICATION OF DIFFUSION BONDED BELLOWS

Joseph Melill, Rolling Hill Estates, Calif., assignor to North American Rockwell Corporation  
Filed Mar. 5, 1970, Ser. No. 16,805

Int. Cl. B23p 19/04

U.S. Cl. 29-454

12 Claims



Metal bellows are fabricated by diffusion bonding thin gauge sheet metal annular ring leaves. The multiple annular sheet metal ring leaves are stacked coaxially and simultaneously alternatively joined in pairs by diffusion bonding on the inside and the outside ring diameter land areas. The stacked coaxial assemblage of thin sheet metal annular ring leaves are bonded into accordion-fold, multiple pleated bellows. The fabrication process embodies the use of pressurizing fixture tooling comprising an external steel cylindrical retainer ring and an internal steel cylindrical retainer plug, together with a force transmitting annular ram and multiple thin steel pressure support rings used to transmit the bonding forces of a high pressure ram. The diffusion bonding process requires elevated temperatures of 1600-1700° F. at 500 p.s.i. pressure for 5 hours for typical thin sheet metal titanium annular ring leaves. By properly shaping the inner edge and the external edge of the annular ram transmitting the bonding forces, the clean, alternative outside and inside annular land areas of adjacent pairs of the sheet metal ring leaves are bonded into homogeneous edges of an accordion-fold pleated bellows. The fixture tooling, including the steel force transmitting rings are later removed. Aluminum, stainless steel, titanium, nickel, tantalum, molybdenum, zirconium and columbium thin metal sheet stock may likewise be formed into bellows by this improvement in the fabricating process.

3,626,583

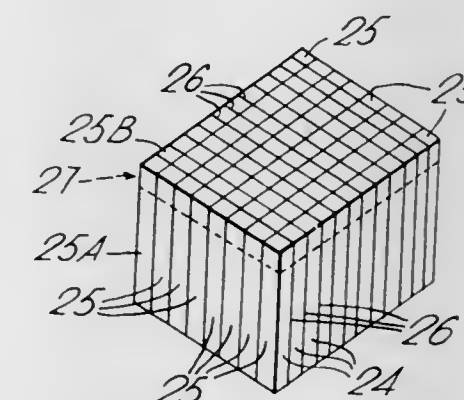
#### THERMOELECTRIC DEVICE

Colin Edward Abbott, Windsor, Guy Anthony Barnes, Earley, Reading, and John Francis Anthony McEntee, Greenford, Middlesex, England, assignors to Mining & Chemical Products Limited, London, England  
Continuation of application Ser. No. 357,225, Apr. 3, 1964. This application June 18, 1969, Ser. No. 868,659  
Claims priority, application Great Britain, Apr. 5, 1963, 13,612/63

Int. Cl. B01j 17/00; H01l 15/00

U.S. Cl. 29-573

14 Claims



A method of making a thermoelectric device comprising the steps of providing pieces of p type material and n type material, respectively, cutting these pieces into first flat slices, securing the p and n slices together in alternating relation thereby forming a first composite unit which begins and ends with p and n slices, respectively, cutting said first units normal to said first surfaces into second and third slices, respectively, securing the second and third slices together with the p and n slices in alternating relation thereby forming a third composite unit, cutting said third unit normal to said first, second and third surfaces into slab-like matrices having a plurality of p and n type elements, insulating said elements from each other and conductively connecting said elements together in a predetermined manner.

3,626,584

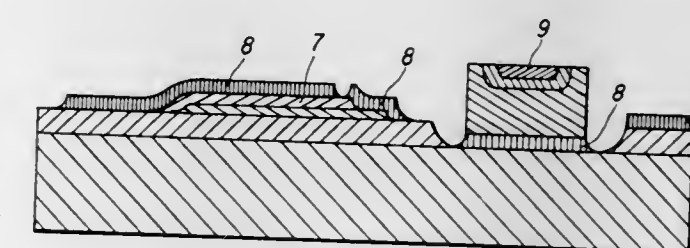
#### METHOD OF MAKING MINIATURE HYBRID INTEGRATED CIRCUITS

Britton T. Vincent, Jr., Dallas, and Charles E. Earhart, Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 576,571, Sept. 1, 1966. This application July 25, 1969, Ser. No. 847,803  
Int. Cl. B01j 17/00; H01l 1/16

U.S. Cl. 29-577

5 Claims



In the disclosed method a miniature hybrid integrated circuit is fabricated by selectively removing portions of the glaze from a ceramic substrate to expose portions of the substrate surface. Circuit components are disposed in thermal contact with the exposed portions and may be interconnected with passive circuit elements supported on the glaze.



3,626,585

**METHOD OF FABRICATING A SUPER-CONDUCTIVE STRUCTURE**

Alfred Paul Hammer, Paris, Alexis Charles Entz, Vaucresson, and Claude Levaire, Chauny, France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France

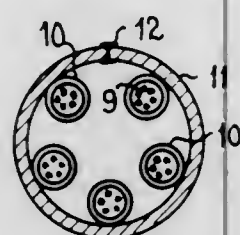
Filed Sept. 29, 1969, Ser. No. 861,910

Claims priority, application France, Oct. 18, 1968, 170,415

Int. Cl. H01v 11/00

U.S. Cl. 29—599

5 Claims



An elongated metallic tube has secured therein, with substantial line contact, a sheathed filamentary superconductor, having an outside diameter much less than the inside diameter of the tube; preferably the sheath metal and the metal of the tube are the same (for example copper, aluminum, or alloys thereof). According to the method, a long band is provided along the length of which the superconductor is first bonded, for example by welding, or fusing of the sheath metal to the band; thereafter, the band is folded and formed into the tube, the lateral edges of the band being seamed together to form a fluid tight seal for example by welding, cold flowing or the like.

3,626,586

**METHOD OF MANUFACTURING MULTIPLE EXTENDED TAB PRINTED CIRCUIT BOARDS**

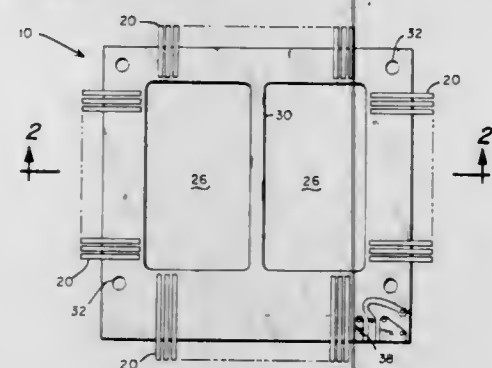
Jaken Y. Huie, Minneapolis, and George R. Macnamara, Burnsville, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,187

Int. Cl. H01f 7/06

U.S. Cl. 29—604

8 Claims



A method of simultaneously manufacturing a plurality of memory frames, each for the support of and electrical interconnection to a plurality of magnetizable memory cores. The method includes: fabricating two epoxy-glass-base double-copper-clad boards having desired copper patterns thereon; organically etching the epoxy-glass in selected areas unprotected by the copper patterns; forming registration holes and epoxy-glass frames about which the extended tabs are to be formed; solder plating all underside copper surfaces exposed by the etched epoxy-glass; removing the copper pattern from the mating surfaces of the boards; laminating together the boards on their epoxy-glass mating surfaces using the registration holes for tooling alignment; fabricating desired printed circuit and extended tab patterns on the outside (top and bottom) copper layers; separating the memory frames from each other and from the border strip; removing the solder plate from the underside of the extended tabs; and, tin coating the extended tabs and the printed circuit patterns.

3,626,587

**METHODS OF CONSTRUCTING ELECTRICAL TRANSFORMERS**

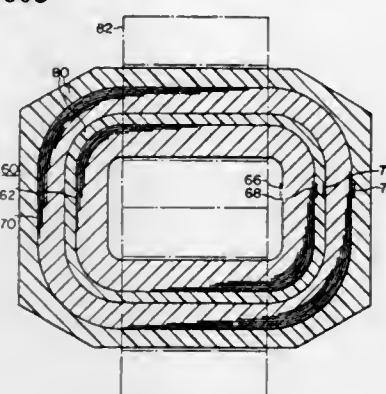
Frank R. Zickar, Sharon, and Paul Voytik, Sharpsville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Application Sept. 21, 1967, Ser. No. 669,549, now Patent No. 3,555,670, dated Jan. 19, 1971, which is a division of application Ser. No. 506,350, Nov. 4, 1965. Divided and this application Apr. 6, 1970, Ser. No. 25,721.

Int. Cl. H01f 7/06

U.S. Cl. 29—605

7 Claims



Methods of constructing encapsulated electrical windings or coils for transformers, with at least certain of the windings being formed of electrically conductive strip or foil. The strip or foil is coated with an adhesive prior to winding the coils, and the adhesive is set prior to encapsulation of the coils, to stabilize their dimensions. At least two coils are disposed in spaced, concentric relation within a mold, and castable electrical insulating means is then introduced into the mold and cured to a solid.

3,626,588

**SILICON RESISTOR**

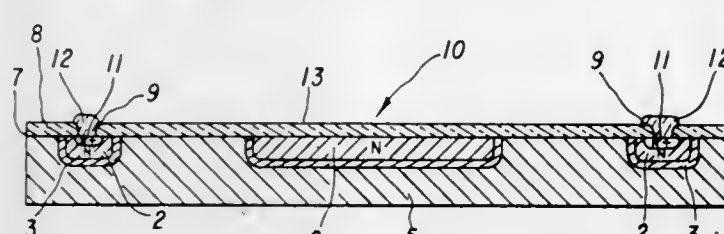
Kenneth M. Durham, Jr., 629 W. 15th, and William W. Plumlee, 641 Spring Lane, both of Plano, Tex. 75074

Continuation of application Ser. No. 601,371, Dec. 13, 1966. This application Feb. 24, 1970, Ser. No. 14,722

Int. Cl. H01c 7/04

U.S. Cl. 29—612

7 Claims



This disclosure relates to silicon resistors, and more particularly to a high resistance silicon resistor having a high positive temperature coefficient of the type wherein the resistive element is embedded in, but isolated from, a substrate, and to the method of making the same.

3,626,589

**DEVICE FOR THE REMOVAL OF CONTAINERS OF THERMOPLASTIC SYNTHETIC MATERIAL**

Gerhard Hansen, Hofener Strasse 47, D 7013 Offingen, Kreis Waiblingen, Germany

Filed Nov. 25, 1969, Ser. No. 879,722

Claims priority application Germany, Dec. 6, 1968, P 18 13 048.8

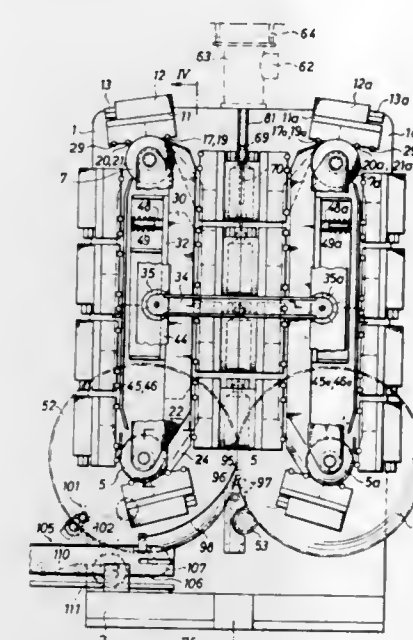
Int. Cl. B29d 23/03

U.S. Cl. 425—307

12 Claims

The invention concerns a device for the removal, out of a production mold of thermoplastic containers produced by a blow molding process, and for the removal of the waste material from the containers. The device has a discharge device having a unit acting on one side on the container located in the production mould and a guide

member which brings the container in a position tilted against its production onto a conveyor track. A side displacement device having a stop member for the container is provided in front of a separating device. The unit acting on one side on the container located in the production mould has at least one projection on the wall part of the half mould adjacent the conveyor track and a drivable displacement roller arranged substantially at the point of



separation of the half mould. A stripper serves to remove any container still in the mould. The lateral displacement device has U-shaped stop members for the alignment of the container, before it is displaced into the separating device wherein spiral shaped projections of a pair of separating rollers grip onto the waste parts and remove them from the container. The bottles are then pushed away to the side by the lateral displacement device.

3,626,590

**METHODS AND APPARATUS FOR ACCOMPLISHING ELECTRICAL WIRING**

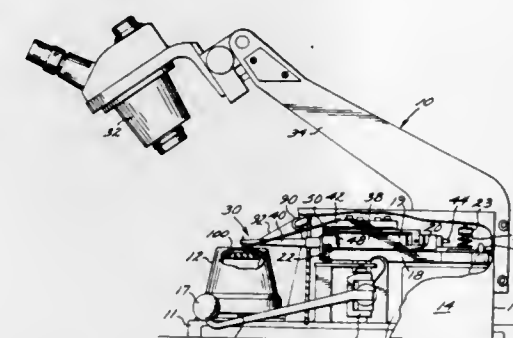
Charles Fredrick Miller, 2519 Strong Place, Anaheim, Calif. 92806

Filed May 28, 1968, Ser. No. 732,629

Int. Cl. B23k 21/00; H01b 13/00

U.S. Cl. 29—624

5 Claims



This invention relates to methods and apparatus for accomplishing electrical wiring. In the method the electrical conductor is formed to selected length with an integral enlargement at each end comprising conductor material. One of these enlargements is placed over one circuit point and the other enlargement is placed over a second circuit point which is to be electrically connected to the first. Bonding force is applied to each enlargement until the conductor is bonded to the selected circuit point. Practice of the invention is facilitated by the employment of a bonding apparatus in which the tool by which bonding force is applied to the enlarged conductor end is movable over a work station and in which provision is made for guiding the conductor wire so that one of its ends,

together with the enlargement at that end, is positioned in the line of action of the bonding tool and is movable with it over the work station. Bonding energy is applied to bond that enlargement to a first circuit point so that the end of the wire is fixed to the work. Then the tools are moved over the surface of the work to the second bonding point where the conductor wire is severed by the application of heat in a way that utilizes surface tension of the molten end of the conductor wire to form a ball of conduction material at the severed end of the conductor, the other end of which is already connected to the work. A novel apparatus for accomplishing this step is disclosed and in the form specifically described includes a device for directing a flame at the wire so that it is severed adjacent the bonding tool whereby the ball formed at the end of the conductor lies in the path of action of the bonding tool and so the ball formed at the end of the remaining stock of conductor wire is formed out of line of action of the bonding tool. The method of the invention, when practiced with such an apparatus, includes the step of positioning the stock of wire with the ball formed at its end such that the ball lies in the line of action of the bonding tool. Thus, the ball is in proper position as the ball and bonding tool are moved together over the work piece. The apparatus of the invention is capable of practicing all of the steps of the method and if certain steps are accomplished manually or by other means, the apparatus of the invention is capable of conducting the remaining steps of the method. The specific apparatus selected for illustration in the drawing and detail description in the specification is arranged to accomplish bonding by a thermo-compressive method.

3,626,591

**SAFETY RAZOR WITH MEANS FOR RETRACTING GUARD PLATE**

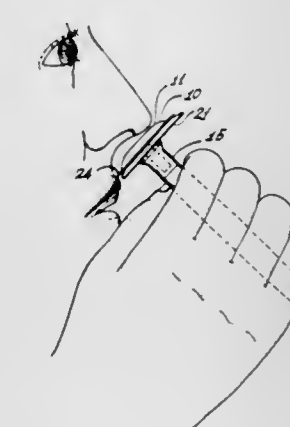
Edward Robey, 1500 Crenshaw Blvd., Los Angeles, Calif. 90019

Filed May 18, 1970, Ser. No. 38,294

Int. Cl. B26b 21/00

U.S. Cl. 30—54

1 Claim



A safety razor adapted to clamp its blade in the conventional manner, with the blade edge guarded by a guard plate, and designed so that the guard plate can be shifted laterally to a retracted position to expose the blade for more precise cutting, without protection by the guard plate.

3,626,592

**BLADE HOLDER AND BLADE**

George A. La Cas and William S. Smith, Staunton, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,331

Int. Cl. B26b 5/00

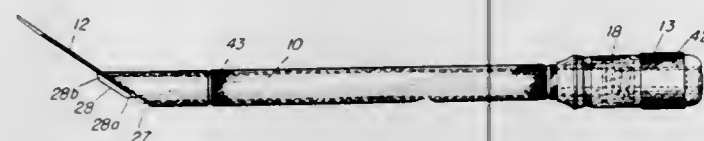
U.S. Cl. 30—339

8 Claims

A tubular blade holder particularly adapted for mounting a surgical blade at an angle to the axis of the holder



embodying an elongated sleeve, a shaft extending axially therethrough having a head for clamping the blade against one end of the sleeve, a knob at the opposite end having a screw threaded engagement with the shaft permanently

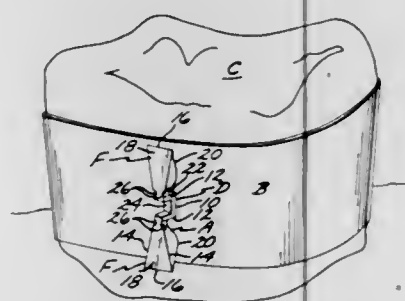


but rotatively secured to the sleeve, the knob being engageable against a compression spring adapted to be compressed into a solid non-elastic condition for positive locking of the blade.

**3,626,593**  
**ORTHODONTIC BRACKET**  
William V. Ridgeway, 3245 E. 1st St.,  
Long Beach, Calif. 90803  
Filed June 23, 1970, Ser. No. 49,107  
Int. Cl. A61c 7/00

U.S. Cl. 32-14 A

9 Claims

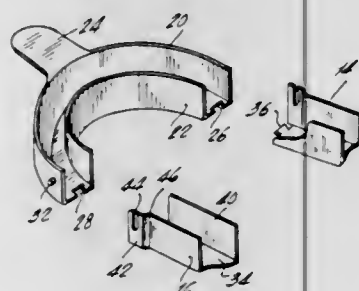


A wire engageable orthodontic bracket that is particularly adapted for mounting on a tooth encircling band. The bracket includes a recessed wire engaging central portion, which central portion has two wings extending therefrom in opposite directions. The wings are of such configuration that they tend to guide a tensioned elastomeric ring that they engage into a seated position with the central portion, with the band when so seated serving to anchor the wire in the recessed position.

**3,626,594**  
**SEPARABLE DENTURE TRAY**  
Ira D. Zinner, 165 N. Village Ave., Rockville Centre,  
N.Y. 11570, and Herbert Sherman, 200 E. 15th St.,  
New York, N.Y. 10003  
Filed Mar. 30, 1970, Ser. No. 23,888  
Int. Cl. A61c 9/00

U.S. Cl. 32-17

4 Claims



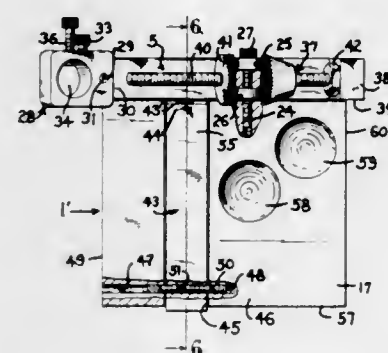
A dental impression tray comprising a central portion of generally arcuate shape and having detachable leg portions. There is provided a dovetail interlock between

the co-planar bottoms of the central portions and the legs. A vertical sliding connection by way of cooperating pins and slots is provided, the entire dental impression tray being generally channel shaped and being provided with a handle on the central portion thereof.

**3,626,595**  
**HOLDER FOR A SCRIBING TOOL AND SURFACE MARKING SYSTEM**  
Claude K. Hulen, 1524 Charlotte,  
Kansas City, Mo. 64108  
Filed Jan. 2, 1970, Ser. No. 139  
Int. Cl. B43l 13/00

U.S. Cl. 33-32 B

6 Claims



A surface marking system including a slide member movable along an elongate straight edge between stop members mounted thereon to define limits of travel of the slide member and means for movably mounting a scribing tool on the slide member for selectively moving the scribing tool into and out of engagement with a surface to be marked wherein a scribing tool holder has a slide member shaped to engage and slide along the straight edge member and a lever is pivotally mounted on the slide member with a member for holding the scribing tool mounted on one end of the lever whereby the scribing tool mounted in the holding member may be selectively moved into and out of engagement with the surface to be marked. The slide member has a second lever pivotally mounted thereon and extending transverse to the first named lever and having one end connected thereto. A spring engages the second lever and the slide member for urging the scribing tool out of engagement with the surface to be marked. The slide member has a plurality of recesses in the exterior surface thereof positioned to receive thumb and fingers of a hand of a person using the scribing tool holder whereby one finger is free to selectively depress the second lever to move the scribing tool into engagement with the surface to be marked.

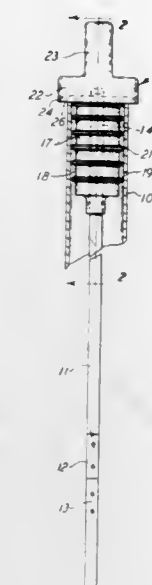
**3,626,596**  
**OIL FILLER TUBE PLUG AND DIP STICK COMBINATION**  
Raymond F. Manke, Racine, Wis., assignor to  
J. I. Case Company, Racine, Wis.  
Filed Jan. 15, 1970, Ser. No. 3,131  
Int. Cl. G01f 23/04

U.S. Cl. 33-126.7 R

4 Claims

A filler tube plug with a dip stick imbedded in the plug and extending therefrom. The plug has a series of rings shown spaced therealong on a shank portion of the plug, and the dip stick extends through the shank portion to be securely imbedded therein and to also reinforce the shank portion of the plug. A handle is also an integral part of the plug, and a shoulder is formed on the plug to limit insertion of the assembly into an

oil filler tube. The rings on the plug are flexible and are micrometer is adjusted for a double thickness, so that shown to have reduced outer ends for flexing on the when the slide of the micrometer is placed to the correct

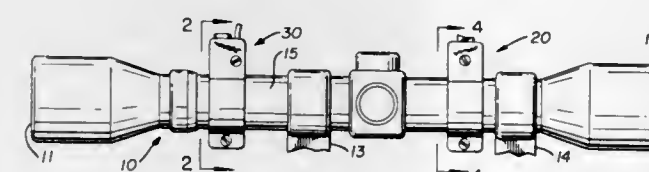


wall of the filler tube when the plug is inserted and removed relative to the filler tube.

**3,626,597**  
**AUXILIARY GUN SIGHT**  
Chester R. Darrah, 3898 Sanford Road,  
Rootstown, Ohio 44272  
Filed June 23, 1969, Ser. No. 835,435  
Int. Cl. F41g 1/38

U.S. Cl. 33-50

5 Claims



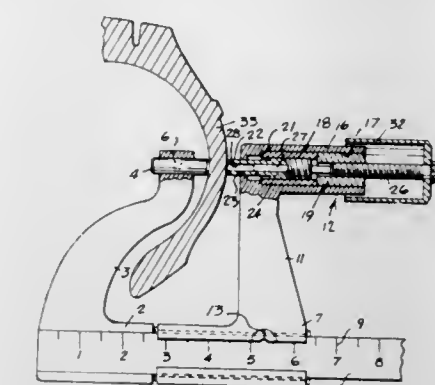
An auxiliary gun sight for use in conjunction with conventional telescopic sights. The sight includes front and rear open sighting assemblies which can be mounted on the tube of the conventional telescopic sight to enable the user to alternatively utilize the scope or the open sights. The front sight is adjustable transversely while the rear sight is adjustable vertically to permit proper registry of the weapon.

**3,626,598**  
**MICROMETER FOR DETERMINING SIZE OF CURING RIM**  
Elmer W. Robertson, P.O. Box 265,  
Duncansville, Pa. 16635  
Filed Mar. 23, 1970, Ser. No. 21,700  
Int. Cl. G01b 5/00

U.S. Cl. 33-165

10 Claims

A properly fitted inside curing rim is vital in retreading tires, therefore it has to be accurately and quickly determined. To determine the size of the curing rim it is necessary to deduct the opposite thicknesses of the tire casing from the inside width of the matrix in which the retreading is to be performed. The micrometer herein, in the preferred form, has a double action adjustment whereby when the thickness of the tire casing is measured, the

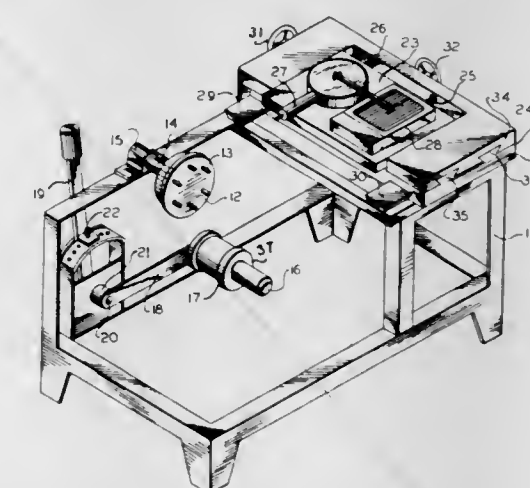


matrix distance, a direct reading of the rim width can be taken on the scale.

**3,626,599**  
**AUTOMATIC TIRE TREAD GAUGE**  
Bobby G. Purswell, Guntersville, Ala., assignor to  
Ashland Oil, Inc., Houston, Tex.  
Filed Mar. 5, 1969, Ser. No. 804,515  
Int. Cl. G01b 3/28, 5/18

U.S. Cl. 33-169 B

2 Claims



The disclosure relates to an automatic tire tread gauge for continuously measuring the tread depth of a tire. The apparatus has built-in resilient means to compensate for out-of-round variations in the tire to be tested, and transmits a continuous record of tire tread depth to a recording apparatus.

**3,626,600**  
**ADJUSTABLE INDEX DEVICE AND METHOD OF INDEXING ON A PLATEN SHEET STOCK**  
Donald D. Gaither, 14915 Barnwall St.,  
La Mirada, Calif. 90638  
Filed May 8, 1968, Ser. No. 734,836  
Int. Cl. G01b 3/38

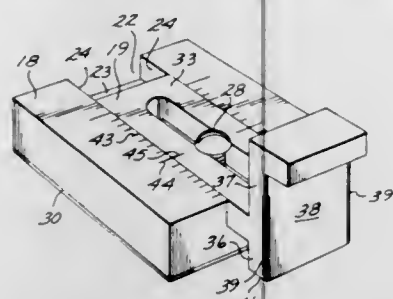
U.S. Cl. 33-180

4 Claims

An adjustable index device which includes a base member having a stop member movably connected to the base member for limited movement, said stop member having a horizontal flange received in a shallow groove across the top of the base member so as to be limited to lineal movement, and also having an abutment portion with a depending section depending to a position even with the bottom of the base and an upstanding portion provided with a lip so as to be adapted to engage and index the edge of sheet stock; said device having means for selectively locking said stop member against movement relative to said base member. Said disclosure also discloses



a method of indexing sheet stock on a press platen using a plurality of index devices of the type just described, wherein the index device, with the stop member locked at approximately the mid-point of its movement relative to the base member, is secured to the platen; and



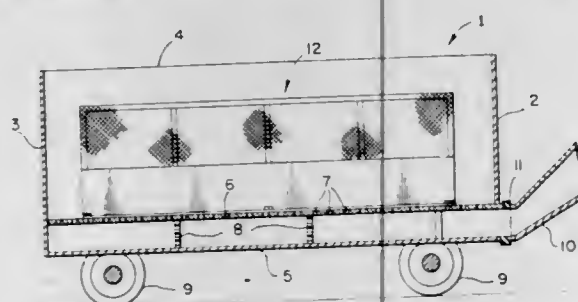
then a test cut is made on sheet stock, and then the amount that the stop member must be moved in order to obtain proper positioning of the edge of the sheet stock is determined; and then the stop member is unlocked, adjusted to the desired proper position, and then relocked against movement relative to the base member.

### 3,626,601 PEANUT DRYERS AND ATTACHMENTS FOR PEANUT DRYERS

Burton A. Moore, Rte. 1, Emporia, Va. 23847  
Filed May 8, 1970, Ser. No. 35,819  
Int. Cl. E26b 19/00

U.S. Cl. 34—90

6 Claims



In peanut dryers of the type comprising a bin-like container having an air-pervious floor through which air may be forced upwardly to dry peanuts located in the container, the drying action is facilitated and expedited by one or more air distributors mounted on the previous floor inside the container. Each distributor is an open-bottomed structure extending from the floor upwardly, and is air-pervious at least in its upper sections, so as to receive air through its open bottom and discharge this air at multiple points within the mass of peanuts. Each distributor is of metal construction, with substantial areas of the upper portions being fabricated of open metal mesh, and preferably is detachably mounted on the air-pervious floor. The distributors are readily mountable on existing dryers, or can be supplied as integral parts of new dryers. Each distributor preferably is a box-like structure of horizontally elongate form, with its height being substantially greater than its width. Each distributor preferably is of a length approximately 2 feet less than the corresponding internal dimension of the bin-like container.

### 3,626,602 COLLAPSIBLE CLOTHES DRYER

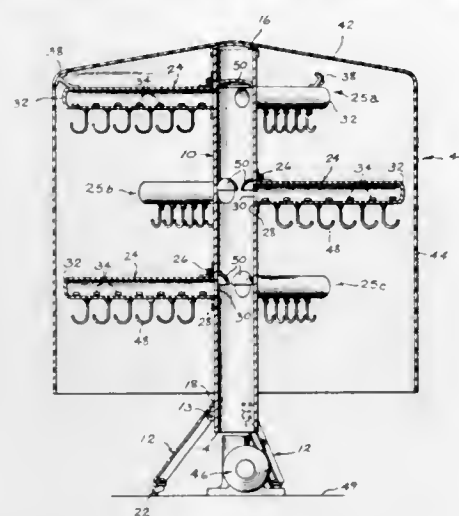
John Glowacki, 425 N. Euclid Ave.,  
Benton Harbor, Mich. 49022  
Filed July 13, 1970, Ser. No. 54,204  
Int. Cl. F26b 13/00

U.S. Cl. 34—151

11 Claims

A collapsible clothes dryer having a vertically oriented central duct in which a plurality of clothes supporting ducts project laterally outwardly therefrom. The clothes supporting ducts are pivotally connected to the central duct so as to be shiftable from their laterally projecting

position to a position generally paralleling the central duct. Each clothes supporting duct has one end in communication with an opening in the central duct when positioned in its laterally projecting position and includes a plurality of openings which extend longitudinally along the clothes supporting duct. Means are provided



for introducing heated air into the central duct. The heated air enters the clothes supporting ducts and passes out the openings therein to cause drying of the clothing carried by the clothes supporting ducts. A flexible hood is positioned over the clothes supporting ducts and serves to retain the heat from the air which passes out the openings in such ducts.

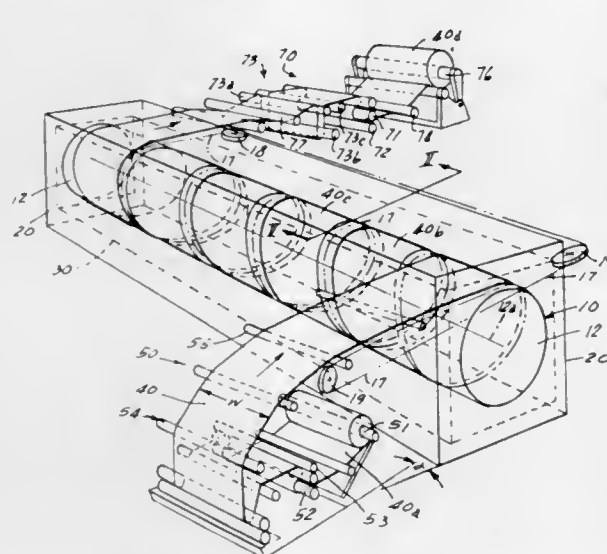
### 3,626,603 MEANS FOR THE CONTACT-FREE GUIDANCE AND PROCESSING OF WEB-SHAPED ARTICLES

Eberhard Breyer, Herrenberg, Germany, assignor to  
Schilde Aktiengesellschaft

Filed Jan. 23, 1970, Ser. No. 5,323  
Claims priority, application Germany, Jan. 28, 1969,  
P 19 04 101.1  
Int. Cl. F26b 13/00

U.S. Cl. 34—156

18 Claims



Convenient, accurate and high speed conditions of web material over a course of travel where it is free from contact with any solid means is made possible by an apparatus comprising an elongated stationary cylinder having aerostatic means arranged on its surface which aerostatic means provides an outward force of a processing medium such as air against a first surface of a helical wrap of web material to keep it spaced from the outer surface. With a feeding means at the forward feed end of the cylinder inclined at an angle  $\alpha$  to the axis of the cylinder providing a helical constant web feed, an extracting means including a tension control means cooperates with the outward aerostatic force to keep the web in a state of equilibrium spaced from the

outer surface. The aerostatic bearing means comprises an internal blower or ventilator means which forces the processing medium out under pressure through rectangularly shaped pockets axially aligned in peripherally spaced rows. The rows have suction inlets therebetween through which the processing medium returns and the pockets may or may not have suction inlets therebetween. A convective means operates on the outer surface of the web to condition it. Suitable flow control means allow easy variation of the aerostatic pressure about and along the cylinder. Housing means and further conditioning means may be provided about the cylinder. A chain feed means assures quick and simple initial placement of the web.

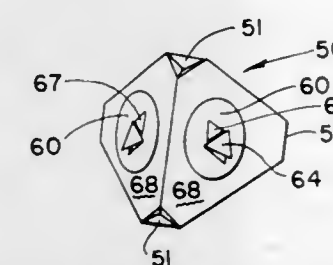
### 3,626,604 THREE-DIMENSIONAL CHEMICAL MODELS

James B. Pierce, 147 Old Westford Road,  
Chelmsford, Mass. 01824

Filed June 23, 1969, Ser. No. 835,459  
Int. Cl. G09b 23/26

U.S. Cl. 35—18 A

10 Claims



Models of atoms, molecules and radicals which may be made, transported and stored in flat, planar, sheet form, and which may be foldably erected rapidly and conveniently into three-dimensional, spatially-representative chemical models. Fastening tabs are adhered, or affixed, so that each model is a rigid, non-collapsible, shell-like structure. Attachment tongues bent slightly out of the plane of the sheet material to form tongue receiving pockets thereunder permit models to be detachably and slidably affixed to each other. A particular feature of the invention is that by which stearic hindrance and other space-dependent phenomena can be represented by use of a novel rotatable fastening element.

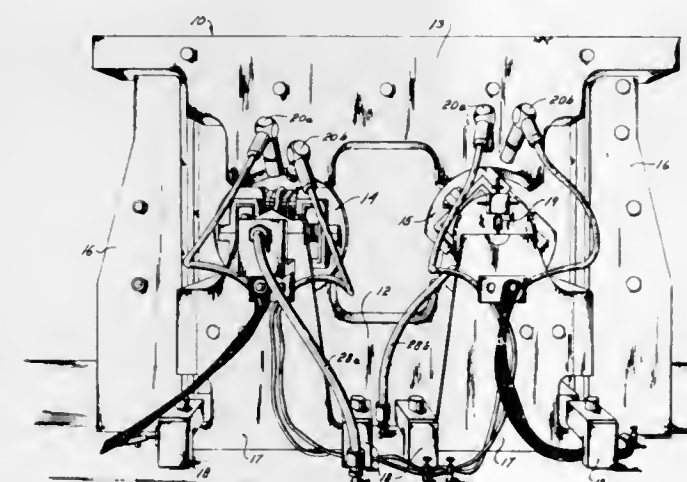
### 3,626,605 METHOD AND APPARATUS FOR GENERATING A SECONDARY GRAVITATIONAL FORCE FIELD

Henry Wm. Wallace, Ardmore, Pa.  
(803 Cherry Lane, Laurel, Miss. 39440)

Filed Nov. 4, 1968, Ser. No. 773,051  
Int. Cl. G09b 23/06

U.S. Cl. 35—19

10 Claims



Apparatus and method for generating a time variant non-electromagnetic force field due to the dynamic inter-

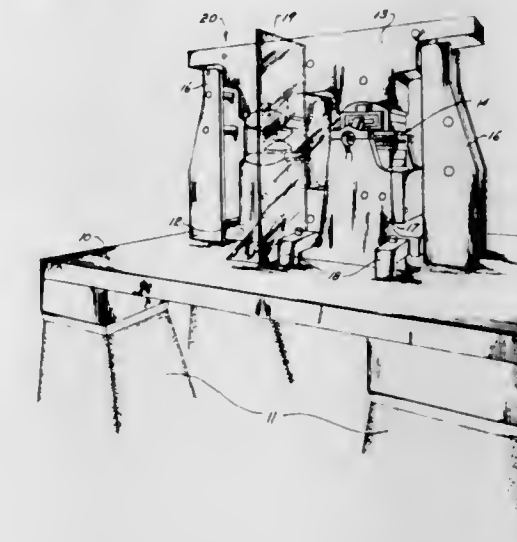
action of relatively moving bodies and for transforming such force fields into energy for doing useful work.

### 3,626,606 METHOD AND APPARATUS FOR GENERATING A DYNAMIC FORCE FIELD

Henry W. Wallace, Ardmore, Pa.  
(803 Cherry Lane, Laurel, Miss. 39440)  
Filed Nov. 4, 1968, Ser. No. 773,116  
Int. Cl. G09b 23/06

U.S. Cl. 35—19

10 Claims



Apparatus and method for generating a non-electromagnetic force field due to the dynamic interaction of relatively moving bodies through gravitational coupling, and for transforming such force fields into energy for doing useful work.

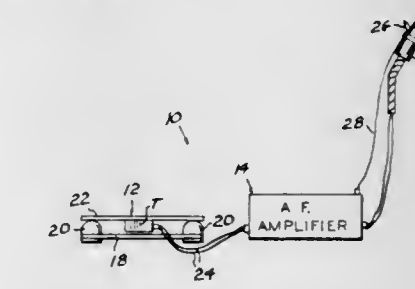
The method of generating such non-electromagnetic forces includes the steps of juxtaposing in field series relationship a stationary member, comprising spin nuclei material further characterized by a half integral spin value, and a member capable of assuming relative motion with respect to said stationary member and also characterized by spin nuclei material of one-half integral spin value; and initiating the relative motion of said one member with respect to the other whereby the interaction of the angular momentum property of spin nuclei with inertial space effects the polarization of the spin nuclei thereof, resulting in turn in a net component of angular momentum which exhibits itself in the form of a dipole moment capable of dynamically interacting with the spin nuclei material of the stationary member, thereby further polarizing the spin nuclei material in said stationary member and resulting in a usable non-electromagnetic force.

### 3,626,607 SPEECH TRAINING AID

William O. Schwake, 1133 W. 1st, Sulphur, Okla. 73086  
Filed Feb. 24, 1970, Ser. No. 13,398  
Int. Cl. G09b 21/00

U.S. Cl. 35—35 A

3 Claims



A speech training aid for simultaneously imparting tactile and visual indication of speech and speech patterns including electronic amplification of an instructor's vocal



utterances which is transmitted to provide tactile perception to a recipient by a transducer mechanically applying amplified vibrations to a panel in contact with the hands or feet of the recipient. The tactile sound vibration sensation is supplemented visually by a lamp energized in response to the electrical energy and frequency of an instructor's voice.

3,626,608

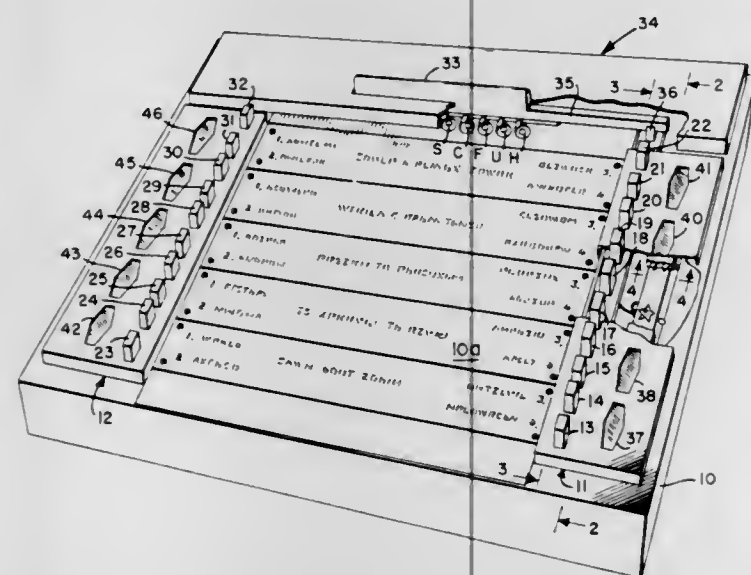
# **ELECTRONIC EDUCATIONAL AND AMUSEMENT DEVICE**

Frank Ingeneri, Santa Clara, Calif., assignor to Self Development Inc., San Jose, Calif.  
Continuation-in-part of application Ser. No. 629,604, Apr. 10, 1967. This application Dec. 5, 1969, Ser. No. 882,420

Int. Cl. G09b 7/06

U.S. Cl. 35—48 R

14 Claims



An electrical device which is adapted for use either as a teaching aid or an amusement device for testing a person's knowledge in various subjects. This device is provided with a question card which is also adapted to control the programming of the electrical memories provided to the device. The question card has a plurality of questions printed thereon which are adapted to be aligned with the play switches of this device when the card is placed on the panel positioned to control the programming switches. The programming switches are actuated by a programming bar. This bar closes the programming switches which are aligned with perforations provided to the question card. This device is provided with a single battery and a power circuit which is adapted to charge the various capacitors of the memory, either positively or negatively, depending upon the programming of the device. This device is also provided with a circuit whereby either questions with multiple choice two or multiple choice four answers may be employed therewith. It is also provided with a circuit for counting the number of correct answers provided to a given set of questions.

3,626,609

# **COSTUME LEG EXTENDERS WITH NATURAL FOOT COVERS**

Evan R. Cramer, 1420 Arlington Place, El Cajon, Calif. 92021  
Filed July 2, 1970, Ser. No. 51,781

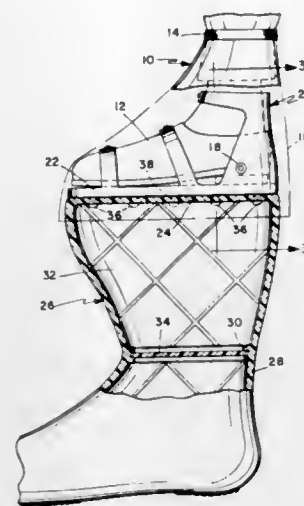
Int. Cl. A43b 3/10

U.S. Cl. 36—7.5

9 Claims

A costume item for the lower leg and foot in three interconnected principal parts, namely, a bell bottom pant leg simulating cover for the natural foot of the user,

a sandal connected to the cover, and a leg or pedal extender having unique means for safety attachment to the sandal. The pedal extender is conceived as ordinarily



grotesque and of course contributes the principal costuming, comic or toy characteristic, while the foot cover is primarily to give the illusion of leg length extension.

3,626,610

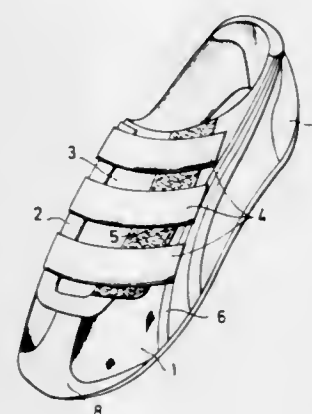
# **SPORT SHOE**

Rudolf Dassler, Herzogenaurach, Germany, assignor to Puma-Sportschuhfabriken Rudolf Dassler KG, Herzogenaurach, Germany  
Filed Mar. 13, 1969, Ser. No. 807,020  
Claims priority, application Germany, Mar. 27, 1968, P 31,165

Int. Cl. A43b 23/00

U.S. Cl. 36—50

4 Claims



An athletic shoe made of fabric and having a longitudinal division on its upper on which is provided adjacent one edge of the division at least one strap extending across the division and having a multitude of small barbs on its underside and adjacent the other edge of the division a rough facing with which the barbs of the strap can engage to form a separable fastener.

3,626,611

# **CLEAT PLATE FOR GOLF SHOES**

Louis E. Bernier, Rockland, and James P. Giblin, Milton, Mass., assignors to E. T. Wright & Co., Inc., Rockland, Mass.

Filed Aug. 24, 1970, Ser. No. 66,503

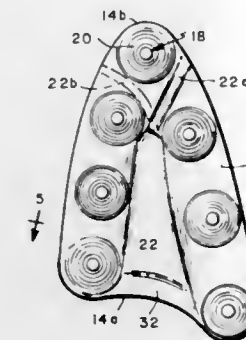
Int. Cl. A43c 15/00

U.S. Cl. 36—67 R

13 Claims

Cleat plates adapted to be incorporated in the bottom of a shoe by molding of an elastomer about the cleat plates to attach them to the shoe, the cleat plates corresponding in configuration to the portions of the shoe

bottom in which they are to be incorporated and having extending from one broad side a plurality of cleats, said cleats being arranged symmetrically with respect to the longitudinal center line of the plate; characterized in that the cleat plates have at the broad side from which the cleats extend, in the area intermediate the cleats and ex-



tending along the longitudinal center line, shallow recesses which reduce the thickness of the plates, said recesses commencing at one end and extending toward the other end beyond the midlength of the plates. Additional recesses may extend from the opposite end of the cleat plates toward the one end.

3,626,612

# **TILTABLE TRACTOR BUCKET**

Heinrich Fritz Liebrecht, Great Ryburgh, England, assignor to Leeford (London) Limited, Great Ryburgh, Norfolk, England

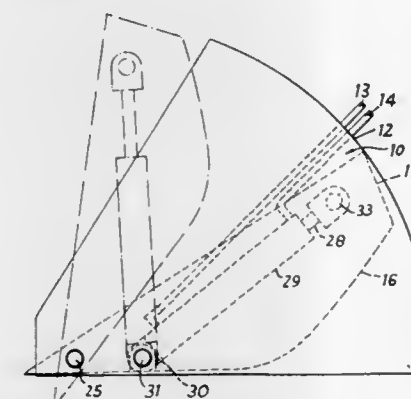
Filed Feb. 20, 1969, Ser. No. 800,924

Claims priority, application Great Britain, Feb. 10, 1968, 8,195/68

Int. Cl. E02f 3/81

U.S. Cl. 37—118

2 Claims



The invention provides a tractor bucket comprising a main housing support structure to which a tiltable bucket is pivoted by means of jacks that are housed in pairs of walls which form the end walls of the bucket, the jacks lying at all times within the side view area of the bucket.

3,626,613

# **CONTINUOUS LOADER FOR BULK MATERIAL**

Agricol Jullien, Salin de Giraud, France, assignor to Compagnie Saliniere de la Camargue Salicam, Paris, France

Original application July 25, 1966, Ser. No. 567,717.

Divided and this application Nov. 12, 1969, Ser. No. 871,280

Claims priority, application France, July 23, 1965, 25,822

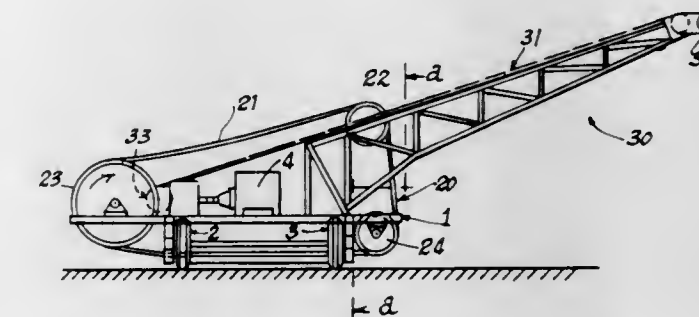
Int. Cl. E02f 3/14, 3/24

U.S. Cl. 37—190

3 Claims

A continuous loader for bulk material comprising a frame member, a plurality of buckets with a cutting edge on each of the buckets for cutting into the material and means for the displacement of the buckets upwardly and

rearwardly and for inverting the buckets to dump the material, a first conveyor behind the shovel in the form of an endless belt having a horizontally disposed lower portion adjacent the upwardly inclined end portion of the shovel, an ascending concave portion and a horizontally disposed upper portion spaced vertically from the lower portion with means for driving the first conveyor at a linear speed to impart centrifugal force to the material thereon sufficient to overcome gravity whereby the material deposited



on the top surface of the lower portion remains on the surface during conveyance through the concave portion to the underside of the upper portion, a second conveyor having a portion located beneath the upper portion of the first conveyor to receive the material falling gravitationally from the bottom side of the upper portion of the first conveyor whereby the material collected by the shovel travels to the first conveyor and from the first conveyor onto the second conveyor for discharge of the material by the second conveyor.

3,626,614

# **BLADE ARRANGEMENT FOR A SNOWPLOW AND THE LIKE**

Anton Kahlbacher, 8 Aschbachweg, 6370 Kitzbuhel, Tirol, Austria

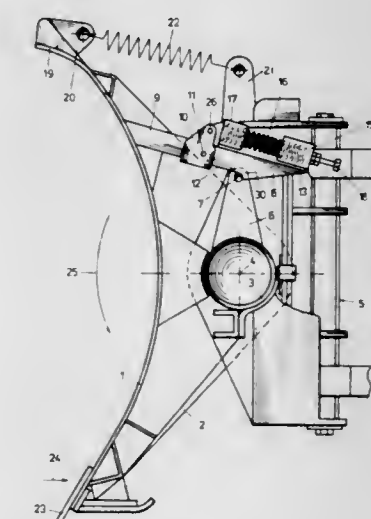
Filed Dec. 18, 1969, Ser. No. 886,422

Claims priority, application Austria, Jan. 2, 1969, A 3/69

Int. Cl. A01b 61/00

U.S. Cl. 37—42 VL

8 Claims



The blade of a snow plow is pivoted on the associated vehicle for movement about a horizontal axis, and normally prevented from pivoting by a spring loaded detent on the blade engaging a latch pin on the fixed blade support. When the lower edge of the blade hits an immovable obstacle, the detent is released, and the blade can yield. When the plow thereafter is backed up, a spring returns the blade to its normal position and automatically engages the detent with the latch pin.



**3,626,615**  
**ELECTRIC IRON WITH STEAM EMISSION UNDER PRESSURE, TRANSFORMABLE INTO A ROOM HUMIDIFIER**

Mario Zuccarello, Via Boncompagni 67, Milan, Italy

Filed Feb. 11, 1970, Ser. No. 10,413

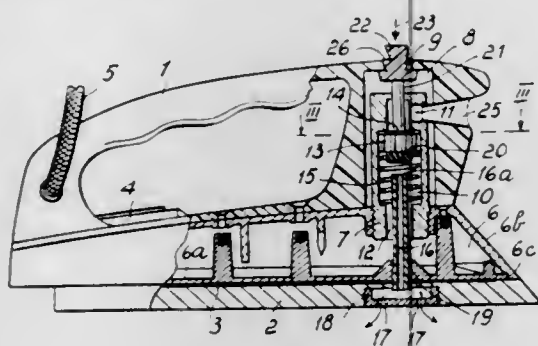
Claims priority, application Italy, Feb. 25, 1969,

13,270/69

Int. Cl. D06f 75/06

U.S. Cl. 38—77.8

5 Claims



An electric iron with steam emission for moistening the objects to be ironed, the steam being produced by heating water in a suitable reservoir situated above the plate by means of an electrical resistance and in which use is made of a switching valve which makes the water pass through the ironing plate in the form of steam and may be changed over to obtain dry ironing.

**3,626,616**  
**LETTER AND NUMBER KITS AND THE PROCESS OF PREPARING SAME**

Joseph P. Seme, Walton Hills, Ohio, assignor to

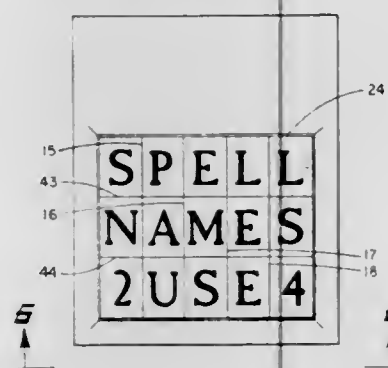
Sem-Torq, Inc.

Filed Oct. 2, 1969, Ser. No. 870,495

Int. Cl. B65d 15/16

U.S. Cl. 40—63

10 Claims



A letter and number kit for use in preparing signs or names and addresses including street numbers. The kit consists of a packet of thin metal plates, each having upper and lower longitudinally and transversely extending score lines to provide segments having a blank on one or both faces or a letter, number, or punctuation mark on one or both faces of each segment. The number of letters in the kit may be varied. Primary letters of the alphabet which are used more frequently than other letters are present in the kit in a greater number than secondary letters which in turn are present in the kit in a greater number than tertiary letters. For instance, in comparatively large kits from approximately eight to eleven of each of the primary letters, from six to seven of each of the secondary letters and from approximately two to five of each of the tertiary letters may be present.

Means including special blades are provided to respectively cut upper and lower transversely and longitudinally

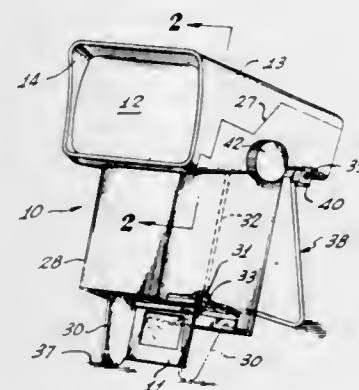
extending indentations or score lines to divide the plate into rectangularly-shaped segments. In both operations, blades having opposed tapered cutting edges may be provided in both the upper and lower dies of the press for separately cutting both the longitudinally and the transverse score lines on indentations and while the press is set to provide oppositely disposed upper and lower score lines in the thin metal blades, stops are provided in the lower bed of the press to prevent the blades from severing the thin metal plates, thus limiting the depth of the opposed score lines or indentations of the blades.

Circular blades having tapered peripheries may also be arranged in opposed relation on a driving and a driven shaft or on driving shafts to provide upper and lower score lines or indentations in each of the metal plates.

**3,626,617**  
**SLIDE VIEWER**  
 Gerald J. Frey, 1834 Devon Road,  
 Pasadena, Calif. 91103  
 Filed Mar. 27, 1970, Ser. No. 23,229  
 Int. Cl. G09f 11/14

U.S. Cl. 40—98

13 Claims



A slide viewing device of basically conventional construction having a recess in its underside receiving the open upper end of a box-like slide magazine and properly positioned in the viewer for projection of a slide in the magazine toward a viewing lens of the viewer, which is coupled to a movable slide carrier of the magazine for manual feeding of the slides. The magazine and a foldable wire stand on the viewer cooperate to support the latter on a table.

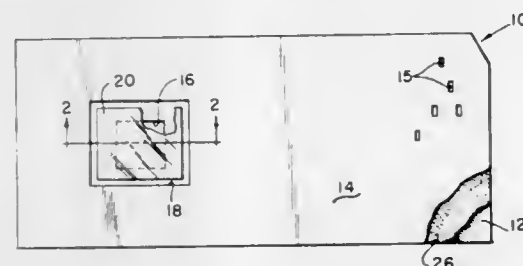
**3,626,618**  
**INFORMATION BEARING CARD**  
 Frederick F. Tone, Holly, and Horace G. Warren, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,892

Int. Cl. G09f 1/10

U.S. Cl. 40—158 B

8 Claims



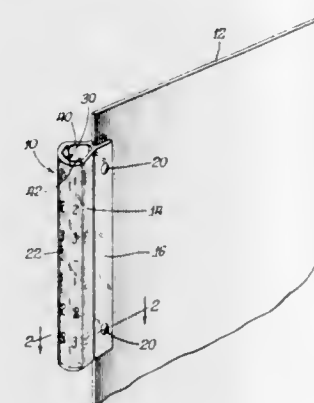
An information bearing card is provided for receiving an information bearing media such as a chip of photo-sensitive film and capable of being coded so as to be easily retrieved from a plurality of similar cards. More

specifically, the information bearing card is made up of at least first and second laminar layers, which are secured together with a suitable adhesive. The first and second laminar layers respectively have a larger and a smaller aperture therein. The information bearing medium or chip has dimensions intermediate between the smaller and larger apertures and is disposed within the larger aperture of the first laminar layer. Further, the first laminar layer may have a series of slits or apertures disposed about the information bearing medium to relieve stresses that may be placed on the mounted information bearing medium.

**3,626,619**  
**GUIDE TAB**  
 Harold W. Boedeker, 534 Ashland Ave.,  
 River Forest, Ill. 60305  
 Filed Jan. 31, 1968, Ser. No. 701,980  
 Int. Cl. B42f 21/04

U.S. Cl. 40—360

3 Claims

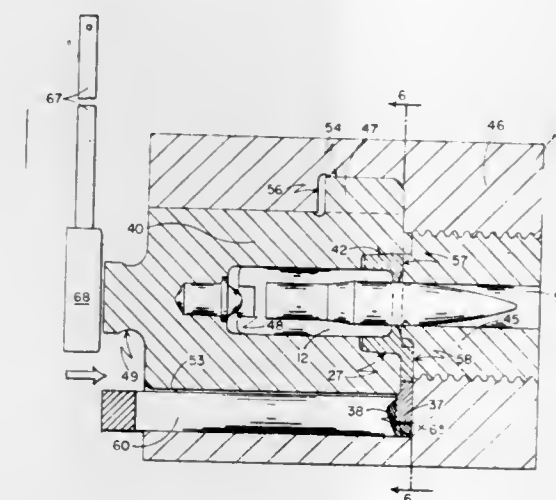


Guide tabs for use on guide cards wherein indicia carrying means inserted in the transparent guide tabs are viewable from either side of the guide card or from directly in front of the guide cards, that is, from positions anywhere within a 180° arc around the edge of the guide card.

**3,626,620**  
**GUN HAVING A FLOATING FIRING CHAMBER**  
 John Gonsalves Rocha, Westfield, Mass., assignor to  
 Maremont Corporation, Chicago, Ill.  
 Filed Jan. 15, 1969, Ser. No. 791,308  
 Int. Cl. F41c 11/02, 13/00

U.S. Cl. 42—15

7 Claims



A caseless small arms cartridge including a generally cylindrical solid propellant body having a bullet projecting from the front end thereof with an organic plastic seal ring and link element mounted on the bullet with the bullet projecting forwardly therebeyond. The seal

ring has an outer surface of a diameter greater than that of the solid propellant body for providing a seal with a surrounding firing chamber and has an arm portion extending radially outward beyond the ring with a bore for receiving either the bullet of a second like cartridge for assembling a plurality of cartridges to provide a belt thereof or for engaging the loading plunger of the gun breech.

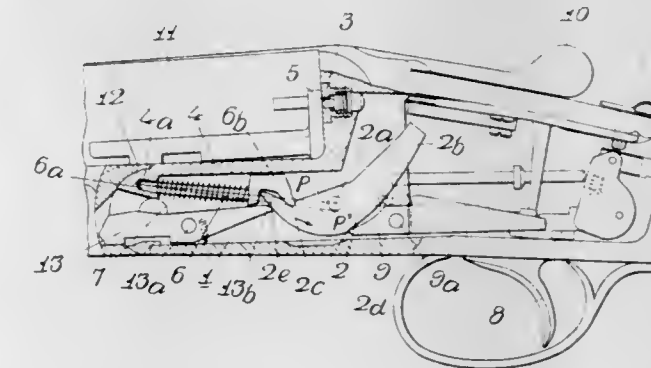
The gun for firing such caseless cartridges comprises a receiver element, a barrel mounted therein, a floating firing chamber element mounted in the receiver element for limited movement between a loading position away from and a firing position toward the barrel, and firing means for moving the floating firing chamber element to its firing position. The floating firing chamber has an enclosed bottom with abutment means thereon for contacting the primer of the cartridge and an open forward end adjacent the barrel for receiving the cartridge body within the chamber with the bullet within the barrel when the floating firing chamber is in its loaded position. The firing means moves the firing chamber to its firing position to drive the abutment means into contact with the primer to fire the cartridge.

**3,626,621**  
**PERCUSSION FIRING MECHANISM FOR A BREECH-LOADED GUN**  
 Chiyoki Ido, Kochi, Japan, assignor to Kabushiki Kaisha Miroku Seisakusho, Kochi, Kochi Prefecture, Japan  
 Filed Feb. 25, 1969, Ser. No. 802,123  
 Claims priority, application Japan, Mar. 5, 1968,  
 43/13,848

Int. Cl. F41c 19/00

U.S. Cl. 42—41

2 Claims



A percussion mechanism in a breech loading gun where a percussion hammer is engaged with a sear which holds the hammer at full cock, where the direction of force of a preloaded spring bearing on the percussion hammer through a stirrup is closely located at the center of rotation of the percussion hammer and with the rotation of the percussion hammer in operating a trigger, the said direction of force moves away from the said center of rotation.

**3,626,622**  
**SAFETY DEVICE FOR REVOLVERS**  
 Aldo Uberti, Piazza Garibaldi 3, Gardone  
 Val Trompia, Italy  
 Filed Sept. 10, 1969, Ser. No. 856,548  
 Claims priority, application Italy, July 16, 1969,  
 2,789/69

Int. Cl. F41c 17/00, 17/08

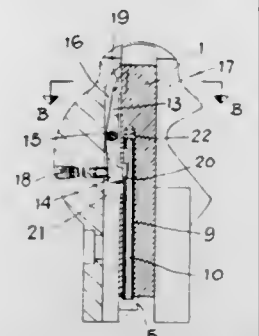
U.S. Cl. 42—66

3 Claims

A safety device for revolvers for the prevention of accidental discharge. The device is mounted directly on the hammer and is controlled by the trigger. It consists of: a balance lever pivotably connected to the yoke and having a lower finger and an upper appendix and angularly movable in a plane parallel to the back face of the yoke; a pusher axially movable and cooperating with



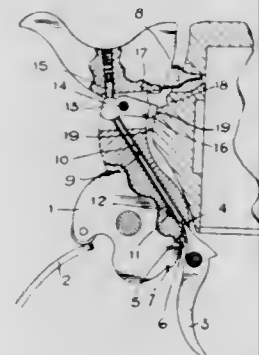
the trigger's blocking tooth; and an inclined upper surface near the upper extremity of the pusher for positioning



the balance lever between the hammer and the back face of the yoke.

### 3,626,623 HAMMER MOUNTED SAFETY DEVICE FOR REVOLVERS

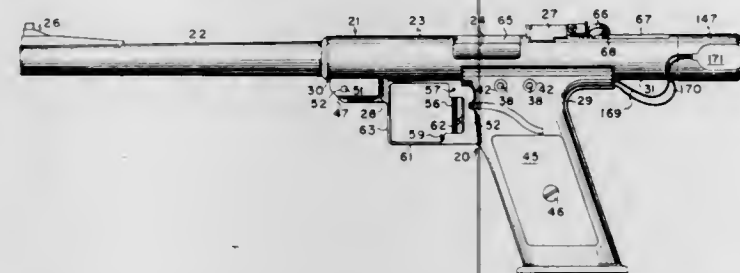
Aldo Uberti, Piazza Garibaldi 3, Gardone  
Val Trompia, Italy  
Filed Aug. 8, 1969, Ser. No. 848,583  
Claims priority, application Italy, June 25, 1969,  
2,779/69  
Int. Cl. F41c 17/00, 17/08  
U.S. Cl. 42—66



A safety device for revolvers for the prevention of accidental discharge. The device is mounted directly on the hammer and is controlled by the trigger. It consists of a pusher, axially movable within a seat in the hammer and acting on a lever which has a terminal finger which is capable of interposing itself between the hammer and the back face of the yoke of the revolver, so as to prevent the full displacement of the hammer and, consequently, of the firing pin.

### 3,626,624 ELECTRO-MECHANICAL FREE PISTOL

Franklin C. Green, 6304 Locker Lane,  
San Antonio, Tex. 78238  
Filed Mar. 10, 1969, Ser. No. 805,470  
Int. Cl. F41c 11/00, 19/00, 19/12  
U.S. Cl. 42—84

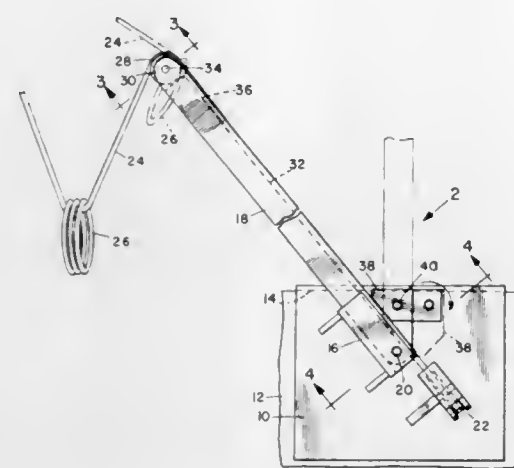


An electro-mechanical free pistol wherein the barreled action, including the firing mechanism, does not greatly exceed the outside diameter of the barrel except for the bolt handle and sights, said barreled action serves as a platform upon which the grip and trigger switch are adjustably positioned and electrically connected.

### 3,626,625 MEANS AND METHOD FOR STRIPPING PURSE RINGS ON A PURSING LINE BEING HAULED IN

Morris L. Whaley, 4140 The Hill Road,  
Bonita, Calif. 92002  
Filed Sept. 5, 1969, Ser. No. 855,578  
Int. Cl. A01k 73/12  
U.S. Cl. 43—4.5

10 Claims

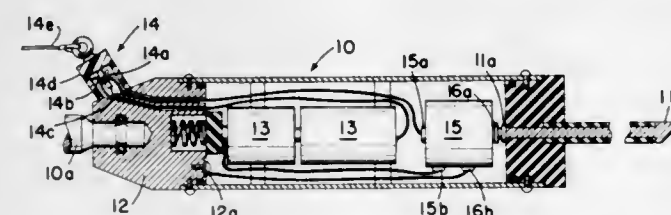


Rings on a pursing cable of a purse seine fishing net are stripped or collected on a prong, that portion of the cable with the rings thereon being made to carry the rings over the tip end of the prong and to traverse the prong. Since the cable moves relative to the prong a sheave is provided in the tip end of the prong to minimize abrasion of the cable and a cable-receiving channel in the prong is gently curved or rectilinear to facilitate the threading of heavy cable into the channel.

### 3,626,626 SHARK DART ELECTRONIC CIRCUIT

Clarence G. Blanc, Escondido, Calif., assignor to the  
United States of America as represented by the Secre-  
tary of the Navy  
Filed July 24, 1970, Ser. No. 58,025  
Int. Cl. H05c 1/00; A01k 81/04; F41b 5/02  
U.S. Cl. 43—6

5 Claims



An electronic circuit, including a source of DC potential connected to an astable multivibrator enabling a serially-connected switch interposed in the feedback loops of a switching inverter, couples an immobilizing electromotive force to the interior of a marine predator's body via a pathway between a blade-like electrode imbedded in the predator's body, ambient seawater, and a return electrode. An "on-off" duty cycle conserves the potential source to ensure a longer period of electronarcosis.

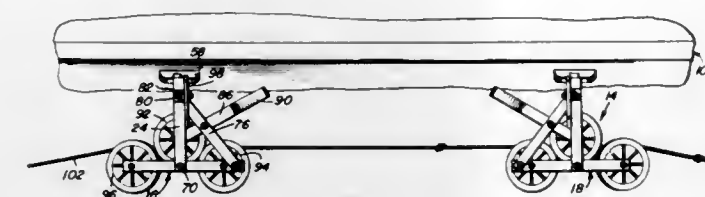
### 3,626,627 TROTLINE RUNNER

Twin W. Osborne, Del City, Okla., assignor of fractional  
part interest to Raymond E. Theimer, Oklahoma City,  
Okla.  
Filed Apr. 1, 1970, Ser. No. 24,597  
Int. Cl. A01k 79/00, 91/00  
U.S. Cl. 43—27.4

10 Claims

A pair of guide units for securement to longitudinally spaced portions of a boat side. Each of the guide units includes a pair of radially spaced horizontally disposed

and journaled grooved wheels and a third grooved wheel disposed on the side of a line tangent to corresponding sides of the first mentioned wheels remote from said wheels and swingable toward and partially through that

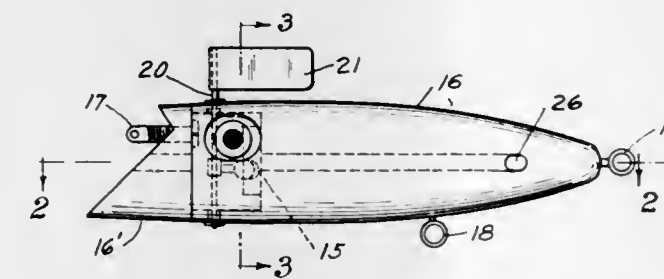


line to a position with the outer periphery of the third grooved wheel at least partially embraced between and slightly spaced from the aforementioned corresponding sides of the first mentioned wheels.

### 3,626,628 FISHING LURE OF PLUG TYPE

Emory L. Weimer, P.O. Box 57, Orondo, Wash. 98843  
Filed Jan. 16, 1970, Ser. No. 3,373  
Int. Cl. A01k 85/00  
U.S. Cl. 43—42.03

11 Claims



This plug has, near its forward end, at least one external rudder type vane swingingly supported by a pivot post whose axis is in the plane of the vane and is perpendicular to and intersects the longitudinal axis of the plug. The vane can swing to both sides of a medial plane common to the axis of the pivot post and the axis of the plug and detent means lightly but releasably holds the vane in either of its maximum inclined positions. The plug has two water passageways which receive water near the head and discharge it sidewise in opposite directions near the rear end of the plug. The vane operates valve means which controls the flow of water in the passageways so that the plug guiding action of the vane and of the discharging water augment each other in causing the plug to follow an irregular zig-zag course.

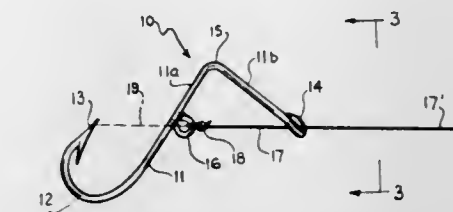
### 3,626,629 WEED-PROOF FISHHOOK

William H. Lowery, 112 Grove Place,  
Utica, N.Y. 13501  
Filed July 20, 1970, Ser. No. 56,514  
Int. Cl. A01k 83/00  
U.S. Cl. 43—43.2

1 Claim

A fishhook having a long shank bent at substantially a right angle to provide a shank portion extending from the other shank portion in a direction opposite to that in which the point extends. There is an eye at the end of the shank and a second eye between the right angle bend of the shank and the curve of the hook so that, when the leader is brought through the end eye and tied to the second eye, the shank is pulled ahead of the point preventing

weeds from entering and engaging the hook curve. When a fish is hooked the pull of the line through both eyes

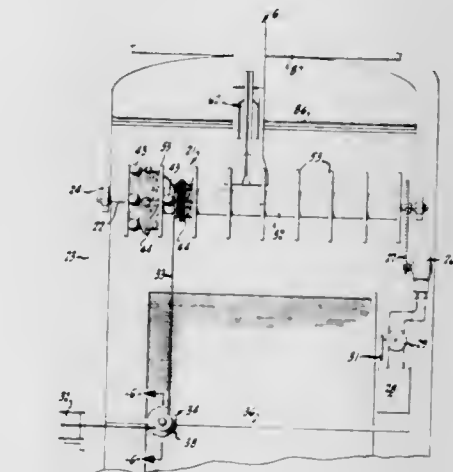


is in substantially the direction in which the point is facing because the hook is weighted by the fish.

### 3,626,630 FISH LINE REELING AND BAITING APPARATUS

Kenneth F. Tison, Crescent City, Calif., assignor to  
Marine Construction & Design Co., Seattle, Wash.  
Filed Aug. 22, 1969, Ser. No. 852,165  
Int. Cl. A01k 79/00, 83/02, 97/00  
U.S. Cl. 43—6.5

13 Claims



A semi-automatic line handling and baiting system for commercial fishing including a plurality of rotatable reels adapted to receive and dispense fish line with each reel including spokes on which spaced fish hooks on the line are engaged. The baiting portion includes a slotted bait container through which the line and hooks are drawn for hooking bait as line is fed into the water and a slotted trough above the container for accommodating the passage of floats and weights attached to the line.

### ERRATUM

For Class 46—74 see:  
Patent No. 3,626,555

### 3,626,631 BUBBLE GENERATOR

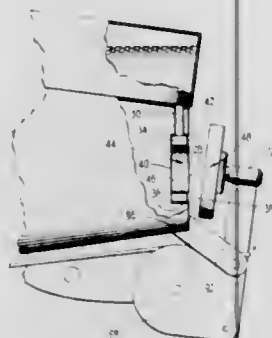
Victor S. Lerman, 149 Essex St., Malden, Mass. 02148  
Filed May 1, 1970, Ser. No. 33,729  
Int. Cl. A63h 33/28

26 Claims

This disclosure includes a soap bubble generator adapted to generate a continuous, controllable stream of soap bubbles in response to a stream of air in which the device is placed, as when mounted on a bicycle. The device includes a specially constructed bubble ring which is supported centrally within the outlet end of a tube which also is open at its forward end to ingest and direct air flow



rearwardly toward and through the ring along a substantially laminar path. The bubble ring is of hollow, annular construction, the hollow of the ring being in constant communication with a source of soapy liquid adapted to form soap bubbles. The ring also includes a number of outlet orifices formed at its rearward surface to permit the soapy liquid to flow about the ring and form a film over the opening in the ring. The air flowing through the tube

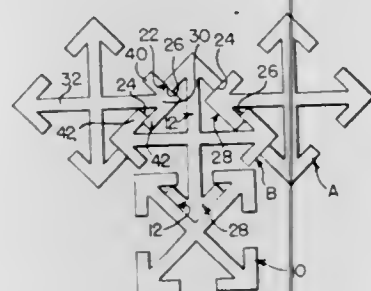


and the ring generates a continuous stream of bubbles which are emitted from the ring, the soapy liquid flowing continually to the ring as the bubbles are generated. Control of the bubble formation is provided by a sealing pad which is moveable by the operator from a closed position abutting the rearward face of the ring to a remote position thus permitting the flow of air and soapy fluid to be controlled.

**3,626,632**  
**TOY BUILDING BLOCK**  
Richard E. Bullock, Jr., 116 E. Shaw St.,  
Charlotte, Mich. 48813  
Filed May 4, 1970, Ser. No. 34,043  
Int. Cl. A63h 33/08

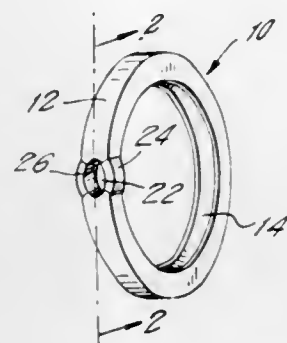
U.S. Cl. 46-25

12 Claims



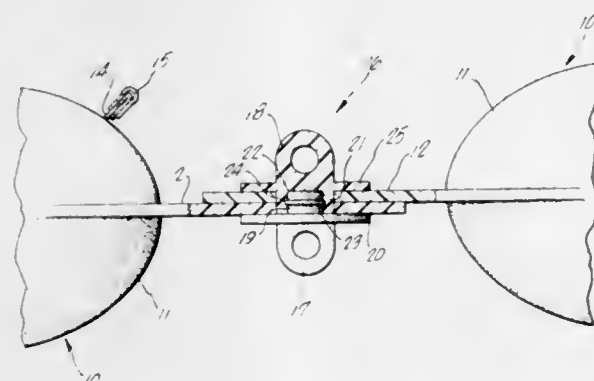
A toy building block is formed as an extruded or molded unit, of substantially square cross-sectional configuration, the four sides of the block being provided with longitudinally extending medial grooves having an arrowhead-shaped transverse section, whereby the corners of the block are formed into arrows arranged in a cruciform design, the heads of the arrows being undercut with flanges arranged substantially at right angles to each other and extending from the body of the arrowhead. The arrowheads of one block will fit within the grooves of a second block. The arrowheads not only can fully seat in a complementary groove of a substantially identical block, but an arrowhead of one block can partially seat in an undercut portion of the groove of a second block, an arrowhead of the second block engaging the arrowhead of the first block by the same flanges. When the two blocks are thus engaged, they are disposed in parallel alignment. When the arrowhead of one block is fully engaged in a groove of a second block, the cruciform core of the first block is at 45° to the cruciform core of the second block.

**3,626,633**  
**MAGNETIC TOY**  
Louis Meyer, 5 Allie Magellan, Choisy-le-Roi, France  
Filed July 1, 1970, Ser. No. 51,527  
Claims priority, application France, July 28, 1970,  
6925688  
Int. Cl. A63h 33/26  
U.S. Cl. 46-236 5 Claims



The invention relates to a magnetic toy provided with an annular or circular support having inner and outer guide paths for a metal ball to pass therealong. The outer guide path is magnetized, and the inner and outer paths are connected by a passageway or opening so the ball can pass therebetween and move along the paths when the toy is manipulated by hand.

**3,626,634**  
**CONSTRUCTION SET**  
Lawrence T. Jones, Pacific Palisades, Gerald W. Schmidt, Woodland Hills, and Jay Smith III, Pacific Palisades, Calif., assignors to California R & D Center, Pacific Palisades, Calif.  
Filed July 22, 1969, Ser. No. 843,505  
Int. Cl. A63h 33/04  
U.S. Cl. 46-23 7 Claims



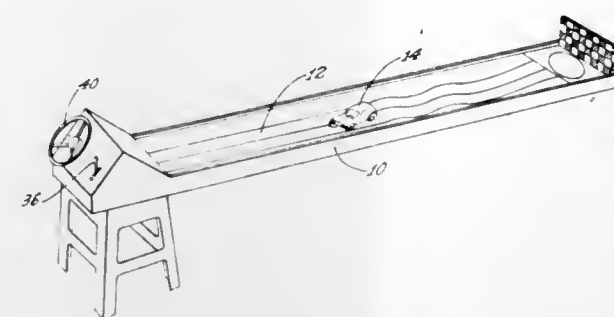
A toy modular construction set is disclosed having a plurality of inflatable elongated elements of a plastic material that are interconnectable at their ends by fasteners to enable the elements to be assembled into structures of various configurations.

**3,626,635**  
**MAGNETICALLY CONTROLLED APPARATUS**  
John D. Birdsall, 17446 Posetano Road,  
Pacific Palisades, Calif. 90272  
Filed Dec. 31, 1970, Ser. No. 103,254  
Int. Cl. A63h 18/10

**U.S. Cl. 46-240 12 Claims**  
An improved magnetically controlled apparatus is provided which permits the player to control movements of a toy vehicle about the surface of a game board. The toy vehicle is propelled across the surface of the game board from one end of the apparatus to the other by means of a carriage mounted under the game board and magnetically coupled through the board to the vehicle. The carriage is moved under the force of gravity, or by

an appropriate drive mechanism from one end of the housing to the other. As the vehicle is propelled by the carriage, it can be independently steered transversely to

nating electric field to induce currents which cancel each other except when an automobile is above the upper coil. A proximity detector 26 including an antenna wire 124

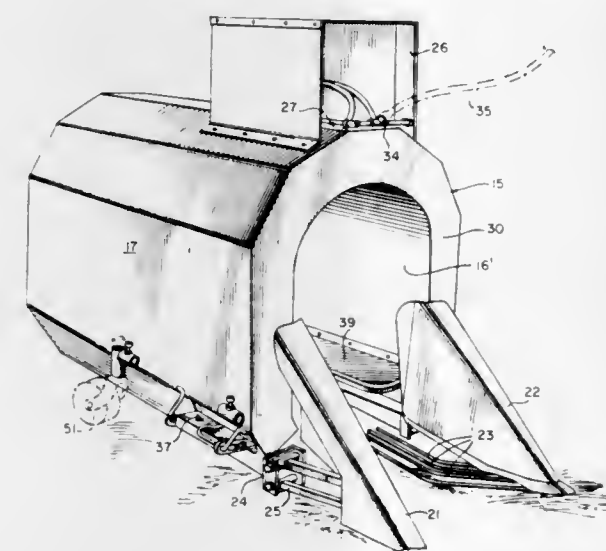


the path of the carriage under the control of a steering wheel which is rotatably mounted on the housing, and which causes a magnetic element on the carriage to move from one side of the carriage to the other.

**3,626,636**  
**THERMAL PLANT CONDITIONING APPARATUS AND METHOD**  
Joe R. Wheeler, Leachville, Ark. 72438  
Filed July 15, 1969, Ser. No. 841,780  
Int. Cl. A01m 15/00

U.S. Cl. 47-5

18 Claims



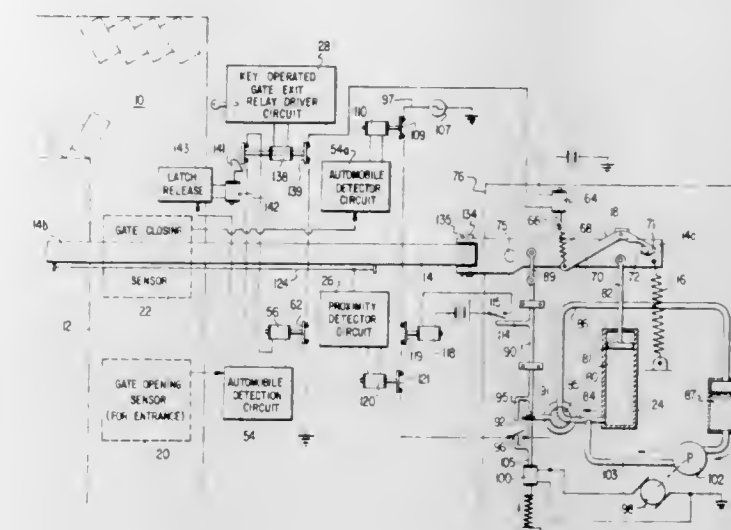
A mobile oven traverses rows of cotton plants or the like and forms a heating tunnel through which the plants pass. A lower set of laterally opposed burners subject the lower portions of the plants to flame primarily for shocking the plants. Alternatively, an upper set of burners within the hollow wall structure of the oven produce heat without direct flame action for less drastic forms of heat treatment.

**3,626,637**  
**AUTOMATICALLY OPERATED TRAFFIC CONTROL BARRIER**  
Charles E. Rudicel, Orlando, Fla., assignor of fractional part interest to Robert C. Knarreborg, Orlando, Fla.  
Filed Apr. 3, 1967, Ser. No. 627,690  
Int. Cl. E05f 15/20

U.S. Cl. 49-25

4 Claims

A gate control system including a first magnetic detector 20 in front of the gate releases a latch 18 holding the gate 14 closed when an automobile approaches, and a second magnetic detector 22 prevents operation of a hydraulic pump motor 98 for closing the gate as long as an automobile is within two feet. Each magnetic detector consists of a vertical magnetic rod 44 buried beneath the roadway with top and bottom coils 46 and 48 subjected to an alter-

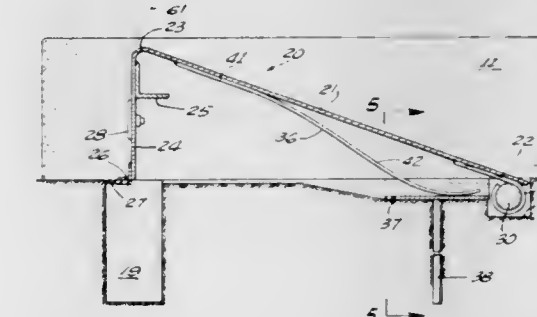


on the gate prevents gate closure if an object under the gate changes the capacitance of the air gap between gate and roadway.

**3,626,638**  
**WRONG-WAY TRAFFIC SAFETY BARRIER**  
Edward J. W. Lafferty, 1749 1/2 Westmoreland Ave.,  
Los Angeles, Calif. 90006  
Filed Aug. 5, 1970, Ser. No. 61,057  
Int. Cl. E01f 13/00

U.S. Cl. 49-49

10 Claims



A safety barrier is provided to prevent wrong-way traffic from entering a one-way street. The barrier is formed by one or more metal pans which extend transversely across the roadway. Each pan is hinged to the roadway on its longitudinal side which is first encountered by vehicles moving in the normal direction of traffic flow. Spring means are provided underneath the pan for normally holding the pan in an angled, elevated position. The other, normally elevated longitudinal edge of the pan is provided with a downwardly turned flange which is clearly visible to traffic approaching from the wrong direction, and gives the appearance of a curb.

**3,626,639**  
**SPRING LOADED ALIGNMENT CLIP FOR CLOSURE FRAME MEMBERS**  
Vincent E. Di Lucia, Springfield, Pa., assignor to Bell Specialty Company, Inc., Philadelphia, Pa.  
Filed June 16, 1970, Ser. No. 46,760  
Int. Cl. E06b 1/04

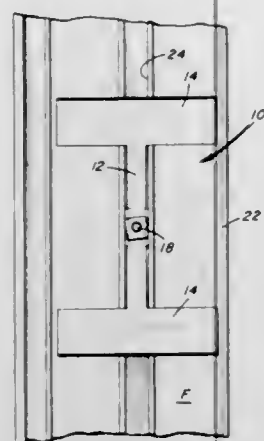
U.S. Cl. 49-505

1 Claim

A spring loaded alignment clip particularly adapted for window frame members to assure plumb line straightness of the frame members during installation and to provide



adjustable sash tension, the said clip comprising a substantially flat leaf spring having an intermediate portion of



reduced width and laterally extended end portions and screw threaded means to adjust the clip to desired tension.

#### ERRATA

For Classes 51—8 and 51—125 see:  
Patent Nos. 3,626,841 and 3,626,842

3,626,640

#### APPARATUS FOR PROVIDING A FINISHED SURFACE ON WORKPIECES

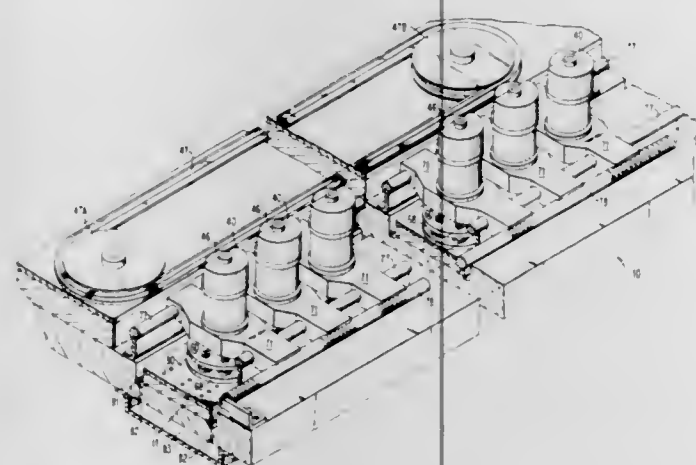
Fred E. Goetz, Wappingers Falls, Perry R. Druzba, Jr., Poughkeepsie, James R. Hause, La Grangeville, and Gerard Seeley, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original application Mar. 22, 1968, Ser. No. 715,350, now Pat. No. 3,550,325, dated Dec. 29, 1970. Divided and this application Mar. 23, 1970, Ser. No. 24,932

Int. Cl. B24b 37/04, 7/00

U.S. Cl. 51—5

9 Claims



This disclosure includes apparatus for preparing the surface of a workpiece. The disclosure teaches the provision of a novel workpiece carrier for engaging the workpiece, and oscillating the workpiece holder relative to a finishing surface while simultaneously providing relative linear movement between the workpiece holder and the finishing surface. The apparatus includes a carrier having a driver for moving the carrier along a linear path of travel. A rotatable mount which is carried by the carrier includes a depending workpiece receiver which is rotatably connected to the mount, the receiver being mounted eccentrically with respect to the carrier. Structure is provided for imparting rotation to the mount and separate elements such as springs are connected between the receiver and the carrier so as to inhibit rotation of the receiver while permitting oscillation thereof. In this manner, an article being

held by the receiver may be engaged and oscillated against the finishing surface in substantially coplanar relationship therewith. In addition, as herein disclosed, the finishing table upon which the carriers ride may be provided with a plurality of finishing surfaces, each adapted for different finishing operations with intermediate cleaning surfaces to clean the workpiece of any residue adhering thereto from a previous finishing surface.

3,626,641

#### CONTINUOUS CLEANING APPARATUS

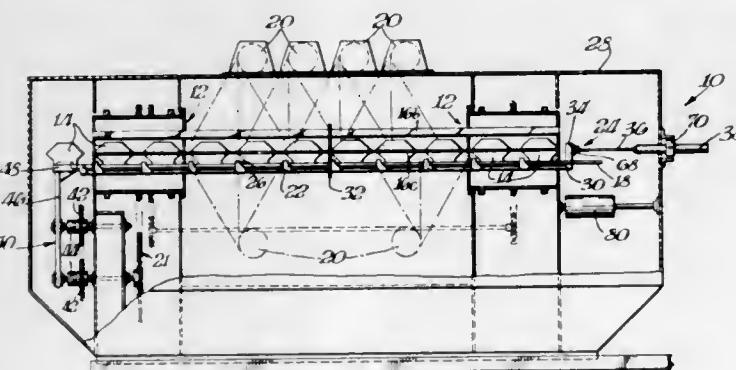
George W. Powell, Willard J. Harper, and James H. Carpenter, Jr., Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Aug. 13, 1969, Ser. No. 849,839

Int. Cl. B24c 3/08

U.S. Cl. 51—15

25 Claims



A continuous cleaning apparatus comprises a rotating barrel open at both ends and made in a skeletal form with longitudinal peripheral parts support slats for permitting treating media to pass through the slats and contact the parts. Spacing means move the parts in the barrel and maintain them spaced from each other. The spacing means are driven in a forward stroke and a return stroke by reciprocating means during each revolution of the barrel.

3,626,642

#### PARALLEL LAPPING DEVICE

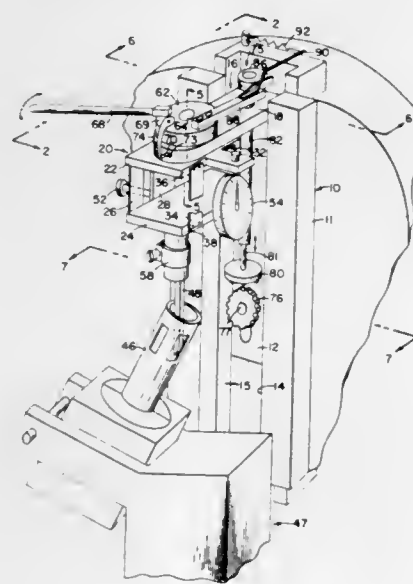
William J. Abernathy, 209 Cole Drive SE. 35802; William J. Reed, 3613 Lakewood Drive NW. 35810; John R. Sealy, 805 W. Arbor Drive NW. 35811; and Lowell G. Snoddy, 419 Warner NW. 35805, all of Huntsville, Ala.

Filed July 31, 1969, Ser. No. 846,338

Int. Cl. B24b 7/00

U.S. Cl. 51—57

10 Claims



A lapping machine wherein a lapping tool is supported by a parallel structure which maintains a desired linear and parallel lapping force on the entire surface being lapped and during the entire lapping operation.

3,626,643

#### TOOL GRINDING ATTACHMENT

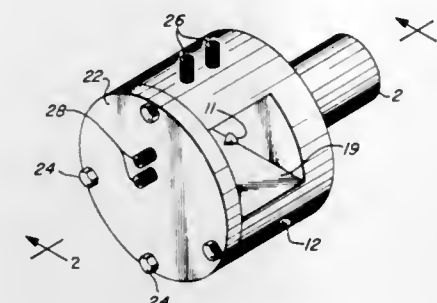
Albert F. Kirchgessner, 2306 Betty Elyse Lane, Phoenix, Ariz. 85022

Filed Dec. 15, 1969, Ser. No. 885,212

Int. Cl. B24b 19/00

U.S. Cl. 51—218

2 Claims



A grinding attachment for cutting tools used in a standard metal-turning machine. The device includes a shank adapted to fit a collet in a standard tool and cutter machine. A shoulder is integrally formed with the shank and the shoulder has means for positioning a rectangular shaped tool within the aperture in the shoulder and holding the tool in place to a very close tolerance. Because of the unique attitude of the tool in respect to the position of the grinder, the shape of the tool follows the arc of the circle from nose to heel. This makes it possible to renew the cutting edge of the tool by shaving the face along the rake angle, thus extending the life of a tool by as much as 500 percent.

3,626,644

#### METHOD OF MAKING SOLID DIAMOND DRILLS

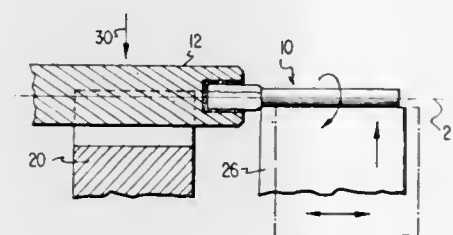
John A. Cupler II, 10 Cupler Drive-La Vale, Cumberland, Md. 21401

Filed July 17, 1969, Ser. No. 842,488

Int. Cl. B24b 1/00

U.S. Cl. 51—288

14 Claims



A method of machining solid drills wherein such drills are machined without regard to natural cleavage lines. The drills are machined to a desired three-dimensional configuration by providing a yieldable engagement of the diamond with an endless machining member in accordance with the surfaces which are to be machined.

3,626,645

#### METHOD OF SHARPENING TWIST DRILLS

Claude Rochet, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France

Filed Oct. 10, 1969, Ser. No. 865,299

Claims priority, application France, Oct. 18, 1968,

170,457

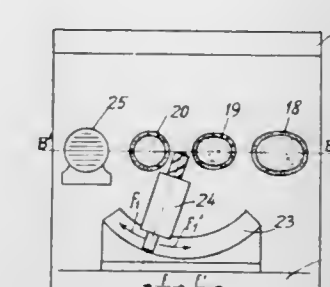
Int. Cl. B24b 1/00

U.S. Cl. 51—288

4 Claims

Method of sharpening twist-drills having a point comprising at least two symmetric lips each formed with

a cutting edge, characterized in that the twist-drill point is ground to impart a pyramidal configuration thereto



with the vertex of the pyramid centered automatically to the twist-drill axis.

3,626,646

#### FINISHING FLAP ASSEMBLY

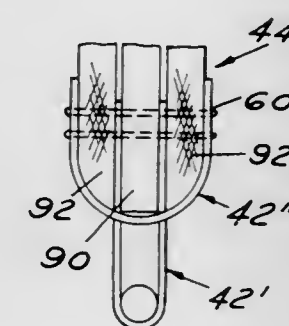
James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.

Filed Sept. 15, 1969, Ser. No. 857,885

Int. Cl. B24b 9/02

U.S. Cl. 51—337

2 Claims



The novel replaceable finishing flap assemblies are arranged in side by side relation in the form of an annulus about the periphery of a cylindrical hub. The hub is provided with circumferentially extending grooves into which the inner ends of the finishing flap assemblies are inserted to form a finishing wheel or tool. Such assemblies are pivotally connected to the hub and are adapted to pivot through a small predetermined angular movement to help maintain the wheel or tool in proper balance. The finishing flap assembly is provided with an elongated hinge type retainer having a plurality of longitudinally spaced notches in one edge thereof which are separated by hinge type sockets, the latter being adapted to extend into the grooves of the hub and form pivot mountings for a pin carried by the hub. The assembly further includes a pack of flexible material extending outwardly from the retainer and having an end portion secured to the retainer by means of staples or other type of fastening elements.

3,626,647

#### CURVED ROOF SUPPORT STRUCTURE

Harry L. Guzelimian, 154 Nardo Ave., Solana Beach, Calif. 92075

Filed July 20, 1970, Ser. No. 56,441

Int. Cl. E04b 1/32

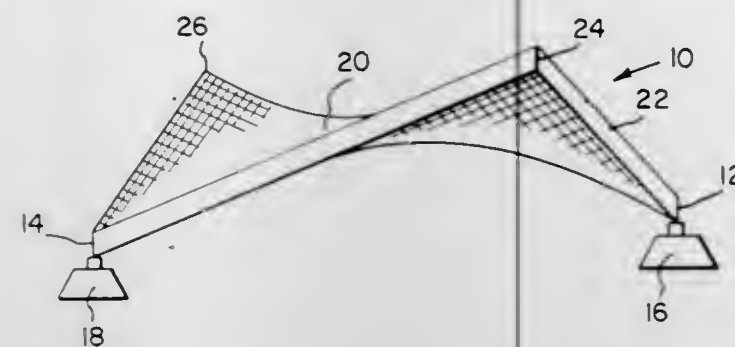
U.S. Cl. 52—80

9 Claims

A roof support structure is formed with a plurality of individual members in two groups of parallel members. Members in the first group are generally perpendicular



with members in the second group and the two groups are notched to provide interfitted intersections in a unitary



assembly. Anchors hold opposite portions downward and inward to form a curved roof support structure.

3,626,648

**BRIDGE DECK FORM HANGER**

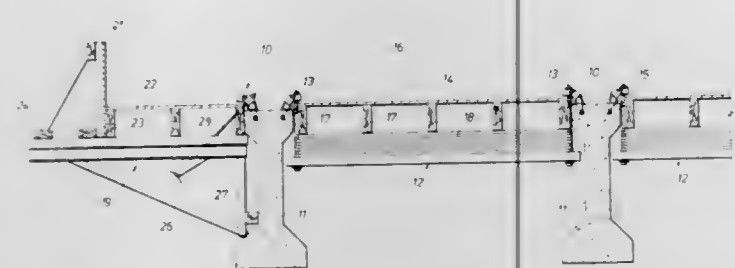
Joe W. Beckham, Lufkin, Tex., assignor to Texas Foundries, Inc., Lufkin, Tex.

Filed Aug. 21, 1969, Ser. No. 851,985

Int. Cl. E04b 1/00

U.S. Cl. 52—127

2 Claims



A bridge deck form hanger for suspending deck forms from concrete bridge girders so that a concrete deck can be poured. The hanger has a lower end portion adapted to be embedded in the top surface of a girder and an upper end portion which extends over the edge of the girder to interconnect with the bridge deck form to secure the form in its proper position with respect to the girders.

3,626,649

**PREFABRICATED HOUSE**

Yoshiro Ohkawa, 2-2-6-404 Asahigaoka, Kiyosemachi, Kitlamagun, Tokyo, Japan

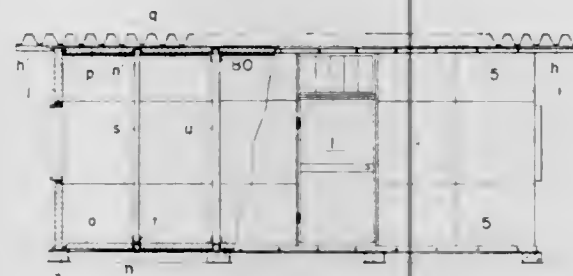
Filed July 17, 1970, Ser. No. 55,646

Claims priority, application Japan, Apr. 9, 1970, 45/33,656

Int. Cl. E06b 1/04

U.S. Cl. 52—204

12 Claims



This invention provides a prefabricated house, which is earthquake-proof, strong against wind, durable, com-

portable, and inexpensive. The house can be built easily in a short time by any person by assembling specific ready made parts, such as panels with steel sheet or aluminum for an outer covering and isocyanate foam material with leather cloth of selected color bonded thereto for an inner covering and channel and angle steel members used in combination as a groundsill and a top rail. After assembly, the rooms of the house are kept airtight, cold-proof, and cooler, and furthermore, by reason of the panel construction, the whole building is protected from any partial distortion or collapse by tension and compression.

3,626,650

**WALL STRUCTURE AND METHOD**

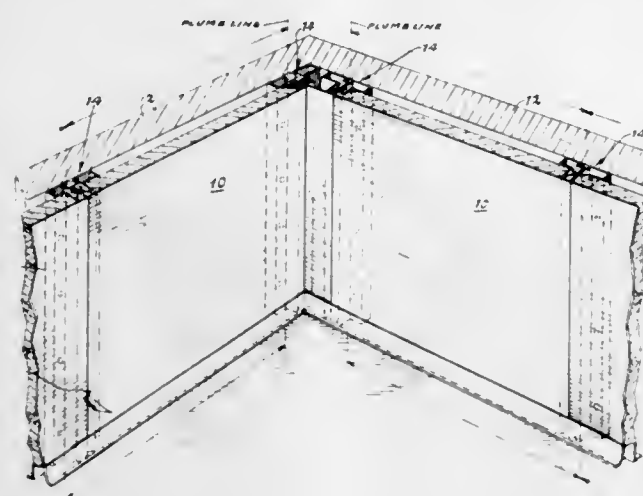
Robert P. Lickliter and Earl Abbott, Hamburg, and John F. Reeves, Tonawanda, N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.

Continuation-in-part of application Ser. No. 703,955, Feb. 8, 1968. This application Sept. 3, 1968, Ser. No. 756,853

Int. Cl. E04b 1/38; E04c 3/32

U.S. Cl. 52—288

8 Claims



A method of paneling a wall by plumbing a first panel connector true vertical to receive one vertical edge of a panel, securing the first connector to a base wall, snap-fitting a second panel connector to the other vertical edge of the panel, snap-fitting the one vertical panel edge to the first panel connector and thereby positioning the second panel connector against the base wall, and securing the second panel connector to the wall. The panel connectors are of an elongated, reinforced construction which can extend substantially the full height of the panel members and are provided with openings for receiving fastening means therethrough into the wall. Connector-splicers are provided for spaced-apart panel connectors and have fastener-receiving means. Corner trim connectors cover the exposed inner and outer corners of the base wall.

3,626,651

**PANEL FOR SURFACING BUILDINGS**

John K. Kough, Rte. 2, Box 62, Morgan Hill, Calif. 95037; Otis M. Martin, 321 Grey Ghost Ave., San Jose, Calif. 95111; and Silas N. Miller, 5300 Kittridge Road, Saratoga, Calif. 95070

Filed Aug. 7, 1969, Ser. No. 856,236

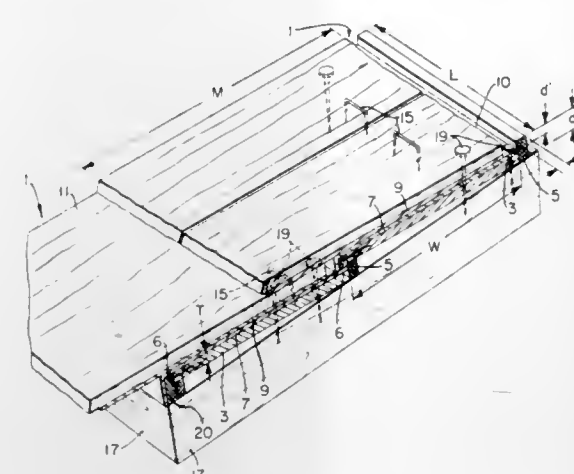
Int. Cl. E04d 1/20, 1/26, 1/28

U.S. Cl. 52—536

1 Claim

A prefabricated enclosure panel, a plurality of which may be used to surface roofs or sides of buildings. The panels are designed with a sheathing member attached to longitudinal guide strips for interlocking with a vertical positioned panel. The sheathing member and guide

strips may further carry angled abutting ends for interlocking with a horizontally positioned panel. A water-



proofing membrane plus shingles, shakes or other surfacing material may be secured to the sheathing member.

3,626,652

**BUILDING AND WALL STRUCTURE AND THE LIKE AND CONNECTING MEANS THEREFOR**

William John Hanley, Nassau, New Providence, Bahamas

Filed Jan. 5, 1970, Ser. No. 598

Int. Cl. E04b 1/48

U.S. Cl. 52—584

12 Claims



A panel structure comprising a plurality of individual panel members having slot means therein with cleat means adapted to be disposed in the slot means with the cleat means having an unlocked position and a locked position so that the panel members may be quickly joined together in a rigid fashion for assembling a wall, container, or the like, and in which the cleat members may be disposed in an unlocked position so that the panel members may be quickly disassembled.

3,626,653

**BISERRATED FRAMING MEMBER**

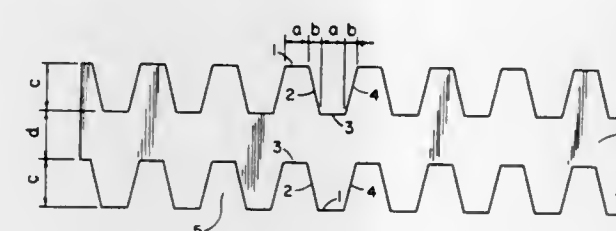
Arsbam Amirikian, 6526 Western Ave., Chevy Chase, Md. 20015

Filed Nov. 18, 1969, Ser. No. 877,610

Int. Cl. E04c 3/30

U.S. Cl. 52—734

1 Claim



The method of increasing the depth of a rolled I- or channel beam, by first cutting the web on a single sinuous

or serrated line then welding together the two resulting segments at their projecting edges, is a well-known and practiced art in fabrication. In this invention that principle is extended to a more profitable application in the form of serrating a strip of plate along both of its two longitudinal boundaries. When a strip is double cut from a large plate, by serrated cutting, the width of a straight-cut strip is increased by an amount equal to the depth of the serration, which gain is obtained without an increase in weight. Another feature of the strip is that the serrations consist of directly opposite and mutually parallel pairs of edge segments in the two sides, thus providing a constant cross-sectional area for the strip throughout its length. A doubly-serrated strip of this type, when used either in flat or bent form, serves as the basic element for building a number of new framing members of great structural efficiency and economic merit.

3,626,654

**METHOD OF OVERWRAPPING A PACKAGE**

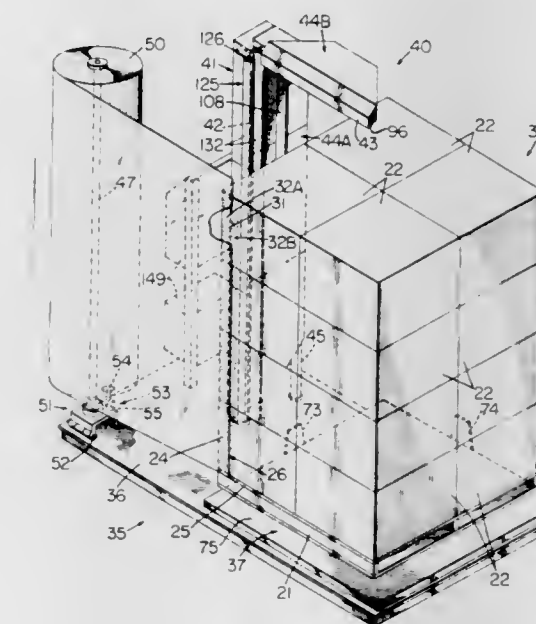
William B. Hoffer, Henrico County, and Thomas E. Kirby, Jr., Chesterfield County, Va., assignors to Reynolds Metals Company, Richmond, Va.

Original application Apr. 17, 1968, Ser. No. 722,010, now Pat. No. 3,514,920, dated June 2, 1970. Divided and this application Mar. 16, 1970, Ser. No. 19,795

Int. Cl. B65b 11/30, 35/30

U.S. Cl. 53—26

21 Claims



This disclosure relates to an overwrapped package comprised of a pallet and one or more containers supported on such pallet and the pallet and containers have a film of plastic heat shrunk therearound to provide a unitary package which is easy to handle and transport. This disclosure also relates to an improved apparatus for and method of providing such a package.

3,626,655

**METHOD FOR THE CONTINUOUS MANUFACTURE OF EVACUATED PACKAGES AND APPARATUS FOR CARRYING OUT THE AFOREMENTIONED METHOD**

Paul Eitel, Reiden, Switzerland, assignor to Tourpac AG, Zug, Switzerland

Filed June 2, 1970, Ser. No. 42,779

Claims priority, application Switzerland, June 19, 1969, 9,363/69

Int. Cl. B65b 31/02

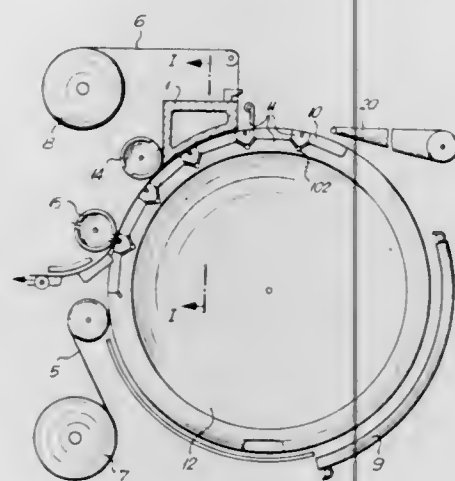
U.S. Cl. 53—22 A

20 Claims

A method and apparatus for the continuous evacuation and sealing of successively filled packages formed of two foil webs sealed at their periphery with one another and



between which there is contained the package fill. According to the invention, the lower web is filled at spaced locations along its length with the material to be packaged and is guided beneath the upper web. The upper web moves past a vacuum beam and by virtue of the vacuum prevailing thereat is raised into a depression or cavity of such vacuum beam. As a result an opening is formed between the lower and the upper webs through which the vacuum acts upon the surroundings of the material to be



packaged. Furthermore, due to the existence of the vacuum the upper and lower webs are pressed against the vacuum beam and one another in such a fashion that they are sealed with respect to the ambient air or surrounding region and only communicate with the vacuum of the vacuum beam by virtue of the aforementioned opening, whereby the hollow space between the webs surrounding the material to be packaged is evacuated. Then the evacuated package is sealed at its periphery.

3,626,656

## APPARATUS FOR COVERING MATTRESSES

Ernst Langenscheidt, 4 Franzenshohe,  
43 Essen-Werden, Germany

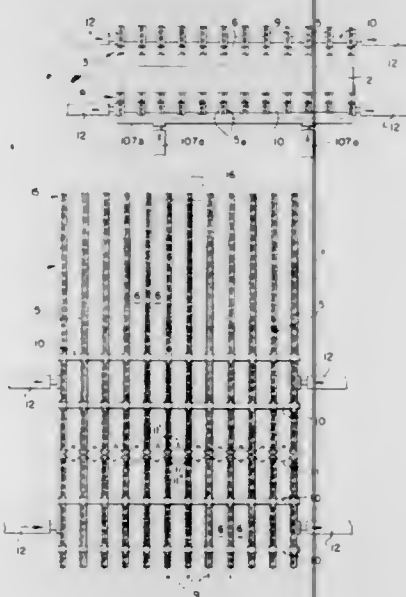
Filed Oct. 16, 1969, Ser. No. 866,827

Claims priority, application Germany, Mar. 27, 1969,  
P 19 15 805.5

Int. Cl. B65b 57/08, 1/24, 63/02

U.S. Cl. 53—59 R

11 Claims



An apparatus for covering mattresses wherein one of two spaced-apart, mutually parallel generally horizontal transport grates is vertically shiftable relative to the other so that the entire mattress structure can be compressed between the grates. The grates are composed of planar arrays

of transversely spaced, mutually parallel grate bars and means is provided to vary the bar spacing of each grate to accommodate mattress structures of various widths and laterally compress the filter body. The grates co-operate with endless conveyor means for shifting the mattress between the grates in a spaced-apart condition thereof whereby the grates can then be totally closed (brought toward one another) to compact the mattress.

3,626,657

## TYING MECHANISM FOR BAILS AND THE LIKE

Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes

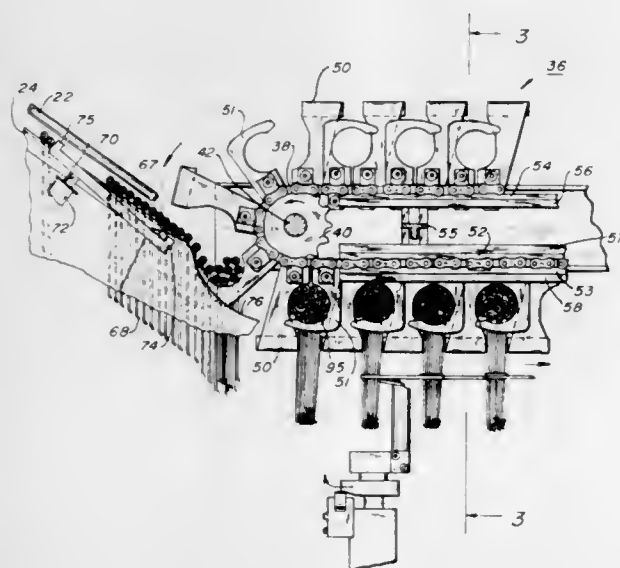
Township, Bergen County, N.J. 07417

Filed July 23, 1970, Ser. No. 57,675

Int. Cl. B65b 13/10, 27/10, 57/20

U.S. Cl. 53—62

28 Claims



An automatic collating and tying mechanism adapted for receiving wire bails and the like is disposed to receive a determined accumulation of bails and the like and with the delivery thereof, an actuation is made of the tying and transporting mechanism of this invention. The accumulation of these bails is provided by a downwardly sloped gravity fed chute and after a determined number of bails has been delivered to the chute a gate release is actuated to permit this accumulated number of bails to be discharged to a grouping means provided by the conveyor mechanism. These bails are clamped in a determined circumferential configuration and after clamping are fed by means of an intermittently actuated mechanism to a later station whereat a tying apparatus is actuated to cause strips of adhesive tape to be applied for a plurality of turns around the bundled grouping of wires. After the tape is applied the bundles are intermittently advanced to the end of the conveying mechanism where a pair of cutters is actuated each adapted to cut a strip of tape. At the delivery end of the conveying mechanism the grouping means is caused to be opened to deliver the tied bails to a container or the like. In an alternate embodiment twisted wire is used to tie the groupings of bails.

3,626,658

## BOTTLE-CAPPING MACHINE

Leon H. Jones, Versailles, France, assignor to Société a

responsabilité limitée dite: Congex, Versailles, France

Filed Aug. 27, 1969, Ser. No. 853,436

Claims priority, application France, Nov. 8, 1968,

173,072

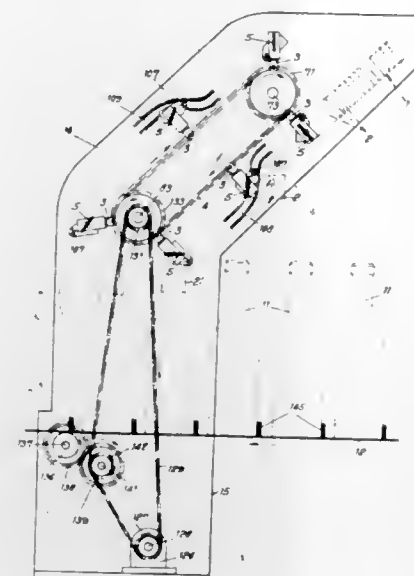
Int. Cl. B65b 7/28

U.S. Cl. 53—67

10 Claims

A bottle-capping machine having a horizontal conveyor for supporting and moving upright bottles. An endless chain has upper and lower reaches above and

inclined with respect to said conveyor. A cap magazine is located near the upper end of the lower reach. Jaws



are mounted at intervals along the chain and are caused to engage one cap and place it upon a bottle as the bottles are moved continuously by the conveyor.

3,626,659

## APPARATUS FOR APPLYING LIDS TO PANS

Johnnie J. Breitbach, Rockford, Ill.

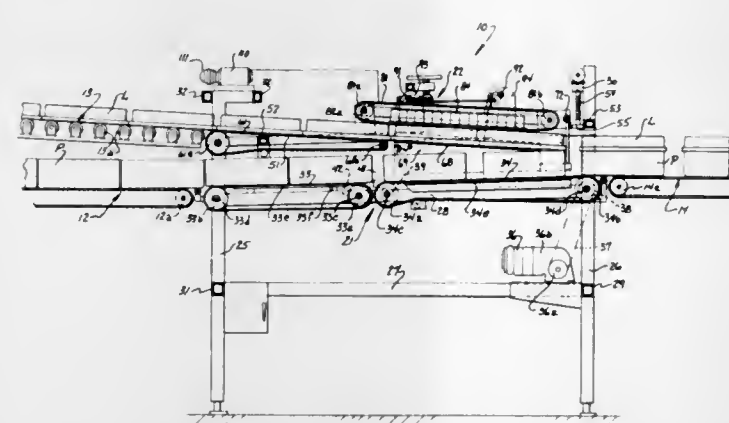
(11 Hawthorne Drive, Normal, Ill. 61761)

Filed June 12, 1970, Ser. No. 45,752

Int. Cl. B65b 57/02, 7/28

U.S. Cl. 53—71

18 Claims



An apparatus for applying magnetizable lids to pans as the latter are advanced by a pan conveyor past a lid applying station. The lids are advanced to the lid applying station by a lid conveyor assembly having a first endless type conveyor that underlies the lids, and a second magnetic endless conveyor that overlies the lids. The lid conveyors are selectively driven in a direction to advance lids to the lid applying station and are then braked to stop and hold the lids in position until a pan is advanced to the lid applying station. The pan conveyor includes an inlet section and an outlet section for advancing the pans past the lid applying station. The pan conveyor is driven at a speed higher than the inlet section to effect separation of the pans as they move past the lid applying station.

3,626,660

## CARTON ERECTING AND PACKAGING MACHINE

Oskar Dorfmann, North Bergen, N.J., assignor to Grand-

City Container Corporation, North Bergen, N.J.

Filed Apr. 7, 1970, Ser. No. 26,227

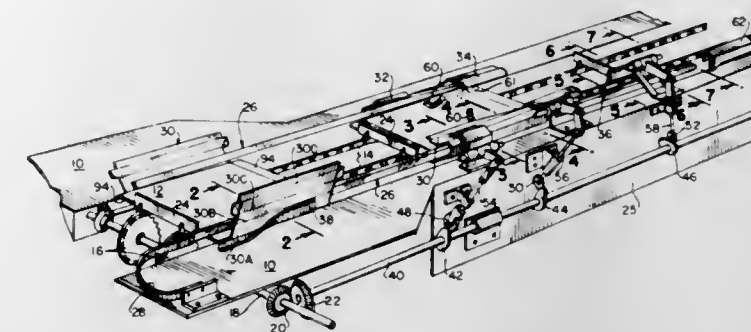
Int. Cl. B65b 11/18, 25/14, 61/00

U.S. Cl. 53—183

24 Claims

An automatic carton erecting and packaging machine is described. Tubular bumpers are automatically formed

on a carton blank by folding the blank's side flaps over a forming bar by a series of roll-over cams. The newly formed bumpers are then spread apart for the insertion of the article to be packaged into the partially erected carton. When operating with a double (two part) blank carton, the filled carton and its cover are simultaneously conveyed into engagement for the final gluing and closing



operation. When operating with a single blank carton, a curved plough closes the carton cover as it is conveyed to the final gluing and closing operation.

In an alternate embodiment, a contoured flight which conveys the carton blank through the bumper forming operation also engages the article to be packaged and inserts it into proper position in the carton blank.

3,626,661

## PACKAGING MACHINE

Donald G. Reichert, Tarpon Springs, Earl A. Petrikin,

St. Petersburg, and John A. Pasteris and Arthur W.

Bluder, Clearwater, Fla., assignors to ABC Packaging

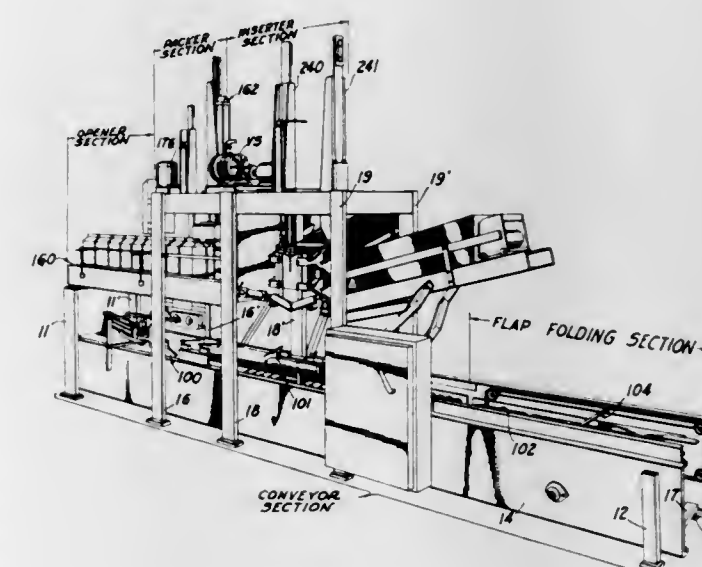
Machine Corporation, Largo, Fla.

Filed Oct. 23, 1968, Ser. No. 769,876

Int. Cl. B65b 25/54, 43/30

U.S. Cl. 53—157

8 Claims



A method and apparatus for receiving cartons in a flat, collapsed or folded condition; setting these cartons up in an open condition; folding some of the flaps of the carton; loading containers into the carton; inserting partitions between the containers in the carton; and, subsequently folding the unfolded bottom flaps of the carton for sealing.

The apparatus includes a carton magazine which receives the flat, collapsed cartons in an ordered arrangement. A stripping means moves cartons from the ordered arrangement one at a time substantially parallel to the side panels thereof and into engagement with opposed,



relatively movable suction means. The suction means are moved away from each other to set up the carton in an open condition. A pusher means of a conveyor means then engages and moves the opened carton longitudinally of the machine to a loading position while closing two of the bottom flaps thereof.

An infeed conveyor receives containers in an ordered arrangement and disposes them over the opened carton when it is in the loading position. A loading suction means engages the containers to be loaded into the carton and moves them down into the carton as opening means engage the top flaps of the carton and hold them open while the carton is being loaded. A primary conveyor of the conveyor means then moves the loaded carton longitudinally of the apparatus and into partition inserting position.

A partition inserting means then places partitions in the carton between the containers therein to protect the containers during shipment. The primary conveyor and a secondary conveyor of the conveyor means then move the loaded carton to a flap folding means. A bar conveyor of the conveyor means moves the carton through the flap folding means to fold the unfolded bottom flaps of the carton for final sealing of the carton.

3,626,662

**BAG OPENING APPARATUS**

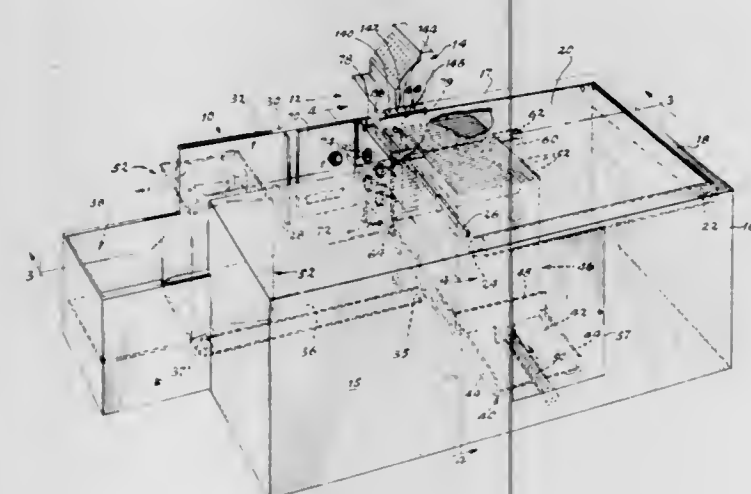
Oscar W. Graveley, Sanborn, N.Y., assignor to  
Niagara Frontier Services, Inc., Buffalo, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,784

Int. Cl. B65b 43/30

U.S. Cl. 53—188

11 Claims



A stationary plate for engaging one face of a folded bag and a pivotal plate for engaging the other face of the bag are provided with suction means for securing the respective bag faces thereto. A lip portion adjacent the lower end of the stationary plate engages over the forward edges of the bottom folded portion of the bag as the bag is fed into position against the plate. The pivotal plate is swung away from the stationary plate to spread the opposite faces of the bag apart and the bottom folded portion of the bag is cammed beneath the lip to completely open the bag.

3,626,663

**BLANKET FOR HORSES AND THE LIKE**

Jacob R. Moon, St. Mary's Road, Box 642,  
Hillsborough, N.C. 27278

Filed July 24, 1970, Ser. No. 57,925

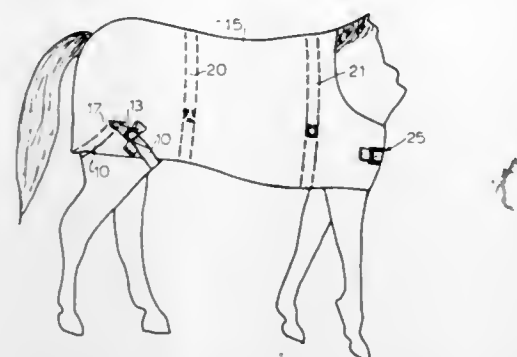
Int. Cl. B68c 5/00

U.S. Cl. 54—79

5 Claims

A conventional horse blanket is modified by the elimination of the conventional non-stretchable body cinches

and the substitution of a single stretchable strap slidably mounted in grommets placed in the lower rear portions



of the blanket. The strap is formed of a seamless, stretchable tube adapted to embrace the hind legs of the horse.

3,626,664

**METHOD OF SEPARATING PARTICLES FROM A FLUID**

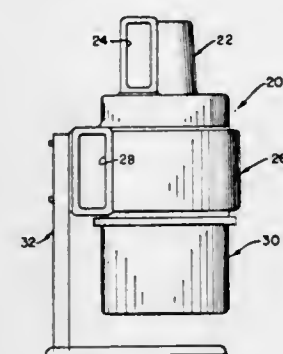
Bo Nilsson Hoffstrom, deceased, late of Santa Monica, Calif., by Maruja Hoffstrom, administratrix, Santa Monica, Calif., assignor to McDonnell Douglass Corporation, Santa Monica, Calif.

Continuation of application Ser. No. 459,704, May 28, 1965. This application Apr. 1, 1969, Ser. No. 837,001

Int. Cl. B01d 37/00, 45/00

U.S. Cl. 55—1

2 Claims



Method and apparatus for separating two fluids or separating oversize particles from a fluid in which they are entrained. The fluid to be treated is passed through narrow passages formed between members which are rotated in the same direction at sufficiently high speed to create oppositely moving boundary layers at the sides of each passage, the boundary layer at one side of said passage entraining oversize particles or the fluid to prevent the travel of the fluid or oversize particles through the passages.

3,626,665

**PROCESS FOR SEPARATING URANIUM ISOTOPES**

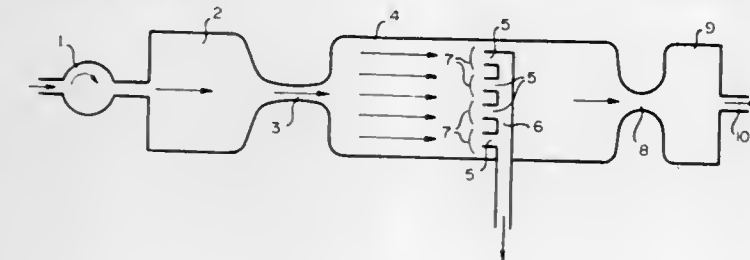
John B. Fenn, Branford, Conn., and James R. White, Princeton, N.J., assignors to Mobil Oil Corporation

Filed Aug. 29, 1969, Ser. No. 854,245

Int. Cl. B01d 57/00

U.S. Cl. 55—17

6 Claims



Uranium isotopes can be separated utilizing shock separation techniques by introducing gaseous uranium hexafluoride, alone or in admixture with inert gaseous diluents,

at supersonic velocity into a duct such that parallel flow streamlines are present; placing within the supersonic parallel flow stream a plurality of hollow probes having critical dimensions relative to the mean free path of said flow stream in front of said probes so as to cause a detached stationary shock to form ahead of each of said probes leading edges and regulating the flow through the probes in relation to the flow through the duct such that the maximum amount of separative work is accomplished. This maximization of separative work does not occur either at the highest enrichment of the heavier isotope in the sampling probes or at the highest feasible withdrawal rate of gas through said probes but only at a narrow range of critical parameters.

3,626,666

**METHOD AND APPARATUS FOR FRACTIONAL SEPARATION OF MIXTURES**

B. M. Drinkard, Beaumont, Tex., assignor to

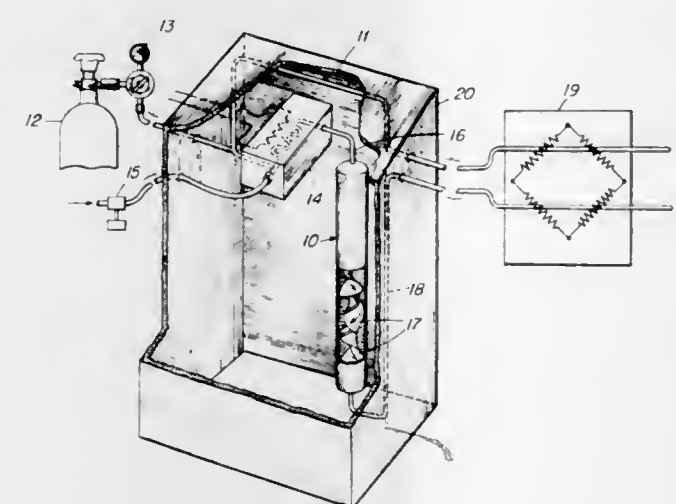
Mobil Oil Corporation

Filed May 18, 1970, Ser. No. 38,091

Int. Cl. B01d 15/08

U.S. Cl. 55—67

9 Claims



This development provides a method and apparatus for improved fractional separation of mixtures, particularly hydrocarbons, by contacting the mixture in fluid form with a body of separatory material, such as a bed of solid adsorbent particles or solid particles impregnated with a liquid sorbent. The system is useful, for example in separation of organic compounds which have closely similar boiling points. The body of adsorbent is disposed along a compact path wherein are disposed diverting and dividing elements of such form and arrangement that a substantially constant cross section of the adsorbent bed is maintained along the path of contact.

3,626,667

**SCRUBBING METHOD AND APPARATUS**

Ernest Mare, Johannesburg, Transvaal, Republic of South Africa, assignor to J. Ronald Hershberger, Palo Alto, Calif.

Filed Jan. 6, 1970, Ser. No. 869

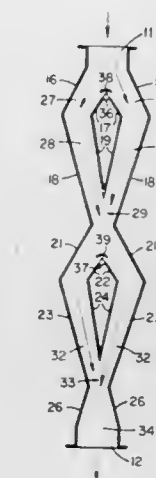
Int. Cl. B01d 47/06

U.S. Cl. 55—95

3 Claims

Gas scrubbing method and apparatus usable where it is desired to obtain intermixing of liquid droplets and a gas. For example, it may be used for gas scrubbing, blending, quenching, absorption, heat exchange, chemical reactions and the like. A gas stream to be treated is split into at least two separate streams which are first diverging and then caused to converge. The two streams are then brought together in a turbulent mixing zone. The scrubbing liquor is introduced into the two streams before

they are intermingled whereby the liquor is thoroughly intermixed with the gas in the turbulent mixing zone. The flow paths leading to the zone of mixing are of decreasing cross sectional flow area to provide increasing flow



velocities. Generally it is desirable to employ two or more such scrubbing stages. The equipment employs casing means which forms ducts for the flow paths and which has a means for introducing the scrubbing liquor.

3,626,668

**ELECTRONIC AIR FILTER MEANS**

George H. Cardiff, P.O. Box 1138,

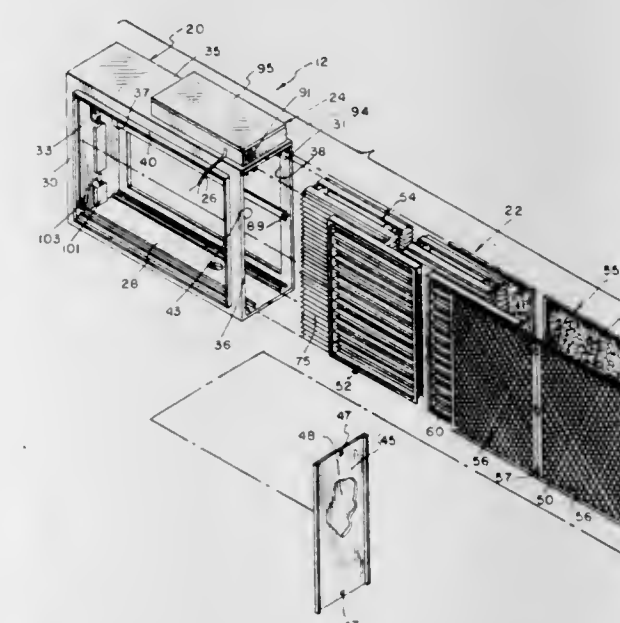
Wichita, Kans. 67201

Filed May 19, 1969, Ser. No. 825,732

Int. Cl. B03c 3/01

U.S. Cl. 55—126

3 Claims



An electronic air filter means including duct mounted air filter structures and wall mounted air filter structures, each adapted to receive air flow through a pre-filter assembly; a plurality of ionizer assemblies; particle collector means; after-filter agglomerator assembly; and utilizing control means to provide power for the proper charging of foreign particles within the air for removing the same on passage therethrough. More particularly, disclosed is an air filtering means having modular electrostatic precipitator means operable to separate foreign particles from a given air flow therethrough, the precipitator means having ionizer units and particle collector units readily removable for service and maintenance with a minimum amount of time and effort required.



3,626,669

**ELECTROSTATIC AIR FILTERING MEANS**

George H. Cardiff, 725 E. 37th St. N.,

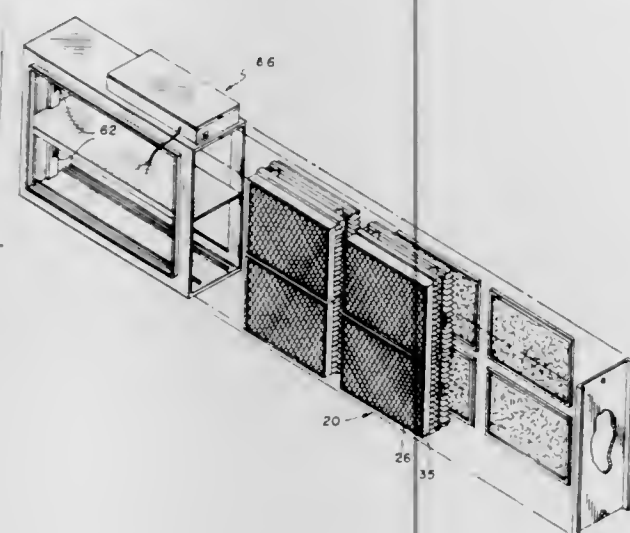
Wichita, Kans. 67219

Continuation-in-part of application Ser. No. 825,732,  
May 19, 1969. This application Nov. 3, 1969, Ser.  
No. 873,527

Int. Cl. B03c 3/01

U.S. Cl. 55—126

3 Claims



An electrostatic air filtering unit is adapted to be used in an air filter. The modular structural cell has an outer pre-filter panel, an inner particle collector area and an ionizer area therebetween. Alternately chargeable and groundable plate members in the particle collector area form passageways for air to be filtered, and collect charged particles in the air during operation. Chargeable filaments are in the ionizer area, and during operation charge the particles to be removed from the air as they pass through the ionizer area. The pre-filter panel is easily removably mounted in an enclosure around the ionizer area, and held in mounted position by resilient means with the enclosure and mounting permitting the panel to be removed for maintaining the modular cell.

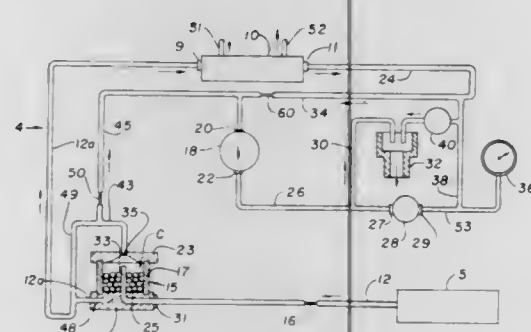
3,626,670

**FLUID CIRCULATION APPARATUS INCLUDING DEAERATION AND NEGATIVE PRESSURE CONTROL**Edwin A. Pecker, Los Angeles, Calif., assignor to  
Vernitron Corporation, Great Neck, N.Y.Continuation-in-part of application Ser. No. 809,792,  
Mar. 24, 1969. This application June 30, 1970, Ser.  
No. 52,220

Int. Cl. B01d 19/00

U.S. Cl. 55—159

10 Claims



A fluid circulation system includes a suction pump and valve controlled recirculating loop for adjustably maintaining fluid pressure within a specified range at the pump, with a deaerator disposed in a fluid supply line to continuously remove air from the fluid and to pass it via a bleed line to the pump. A fluid flow restrictor in the recirculating loop maintains a pressure differential between

the pump and the fluid supply source. Two stages of de-aeration may be provided as well as a restrictor in the bleed line to limit passage of fluid through the bleed line.

3,626,671

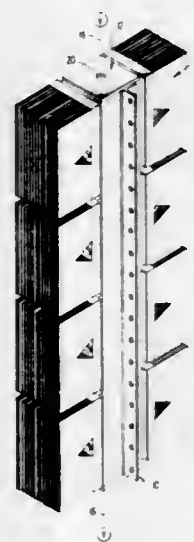
**ADSORBER ELEMENT AND TEMPERATURE CONTROLLED ADSORBER PURIFICATION SYSTEM**Robert W. Ebeling, Jr., Maxatawny, Pa., assignor to Air  
Products and Chemicals, Inc., Allentown, Pa.

Filed May 2, 1969, Ser. No. 821,182

Int. Cl. B01d 53/00

U.S. Cl. 55—179

8 Claims



A gas purification system of the adsorption type is disclosed wherein the adsorption bed comprises a plurality of adsorbent elements disposed in spaced relationship to one another with channeling provided to conduct gas between the elements. Thermoelectric elements, in heat transmitting contact with each of the adsorbent elements, remove heat therefrom to cool the bed during the adsorption cycle and introduce heat thereto during regeneration.

3,626,672

**GAS SCRUBBER APPARATUS**

Harrison Griffin Burbidge, Lachine, Quebec, Canada,

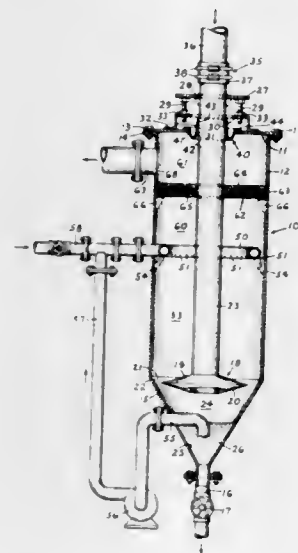
assignor to Amercoat Corp., Brea, Calif.

Continuation of application Ser. No. 528,302, Feb. 17,  
1966. This application Apr. 14, 1969, Ser. No. 817,269

Int. Cl. B01d 19/00

U.S. Cl. 55—185

3 Claims



A gas scrubbing device which includes means for spraying liquid downward within the device, means for introducing gas so that it flows upward in the device and is scrubbed by the liquid, and a disk valve adapted to form

with an internal tapered wall portion of the device an orifice through which the gas flows upward, the disk valve being movable relative to the tapered wall portion by means outside the device to vary the effective size of the orifice, which in turn regulates gas flow within the device for maximum dispersion and hence maximum scrubbing efficiency.

3,626,673

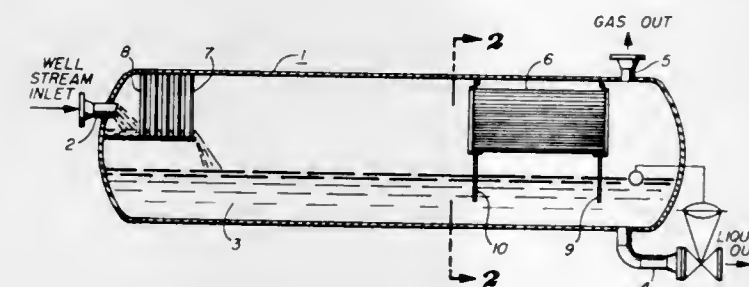
**MEANS FOR SEPARATING FLUIDS**King E. Stockton and Robert W. Coggins, Tulsa, Okla.,  
assignors to Combustion Engineering, Inc., New York,  
N.Y.

Filed Oct. 26, 1970, Ser. No. 83,836

Int. Cl. B01d 57/00

U.S. Cl. 55—199

5 Claims



Baffles for vessels through which fluids are passed for phase separation are grouped into modules. The modules are stacked in a vessel to provide passages in which the flow of multi-phasic fluids has its Reynolds number controlled to facilitate separation of the fluid phases.

3,626,674

**FLUID FILTERS**Donald Eric Blackmore, London, England, assignor to  
Westinghouse Brake and Signal Company, Limited

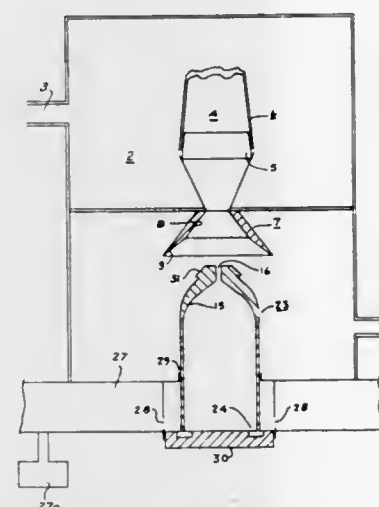
Filed Mar. 24, 1969, Ser. No. 809,826

Claims priority, application Great Britain, Apr. 11, 1968,  
17,438/68

Int. Cl. B01d 46/04

U.S. Cl. 55—294

4 Claims



A gas filter provided with a cleaning nozzle which reciprocates between a dividing means and a supply conduit has been inserted.

3,626,675

**WEED PUMP**Merle P. Chaplin, 609 Driver Ave.,  
Winter Park, Fla. 32789

Filed Nov. 10, 1969, Ser. No. 875,297

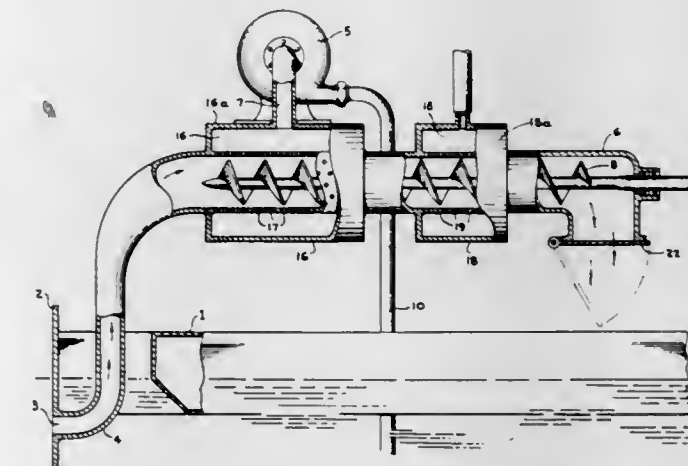
Int. Cl. A01d 45/08

U.S. Cl. 56—9

15 Claims

A new and improved device suitable for employment adjacent the front end of a barge or other vessel concerned with removing weeds or other marine growths

from lakes, rivers or other bodies of water. Screw conveyor means are used in concert with suction means, the latter enabling the weeds to be removed from an under-water location to the location at which the screw conveyor completes the removal operation. Other facets of this invention include cutoff means disposed at an under-water location ahead of the inlet to the screw conveyor, means for controlling the rotational speed of the screw



conveyor, and a novel piping arrangement whereby suction or pressure may be selectively applied to certain chambers disposed along the length of the tubular structure associated with the screw conveyor. These piping arrangements also make it possible for certain cleaning operations to be carried out on occasion, so as to back-wash the weeds from certain of the chambers, and for other purposes later described.

3,626,676

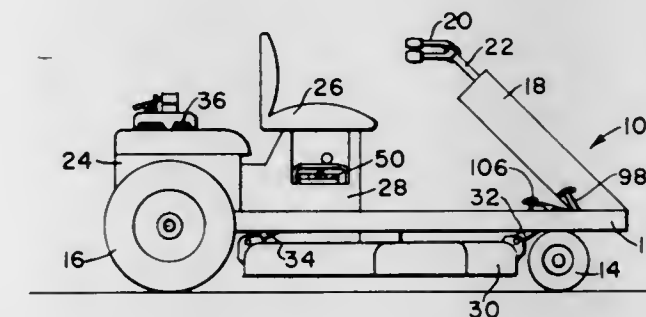
**SAFE START SYSTEM FOR RIDING MOWERS**Richard Erwin Miley and Rudolph Andrew Peterson, Jr.,  
Horicon, Wis., assignors to Deere & Company, Moline,  
Ill.

Filed Apr. 15, 1970, Ser. No. 28,607

Int. Cl. A01d 35/08

U.S. Cl. 56—10.5

4 Claims



A safe start electrical system prevents a recoil rope start engine on a riding mower from starting unless the mower is disengaged and the vehicle drive disengaged. The system is based on a switch that is closed when the engine is being started and is opened by the starter rope when the starter rope is recoiled. The switch is connected to the engine ignition system and is connected in series with two additional switches which are also connected to the chassis of the vehicle. One of the additional switches is responsive to the condition of the clutch for the vehicle drive and is closed when the vehicle drive is engaged. The second additional switch is responsive to the condition of the clutch for the mower and is closed whenever the mower



clutch is engaged. The safe start electrical system grounds the engine ignition system if an attempt is made to start the engine while either the vehicle clutch or mower clutch is engaged.

3,626,677

# MECHANICAL HARVESTER

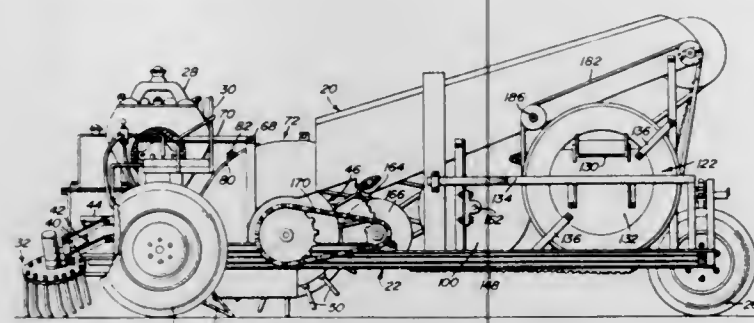
Wilmot L. Sides, Rte. 2, Box 42,  
Goldthwaite, Tex. 76844

Filed Oct. 14, 1969, Ser. No. 866,257

Int. Cl. A01d 51/00

U.S. Cl. 56—328

39 Claims



A ground traveling harvester for nuts and the like comprising a full width pickup unit including an elongated drum mounting pickup fingers, and an overlying adjustable hood which cooperates with the fingers in the raising and rearward discharging of the nuts. The raised nuts are deposited on an upwardly and rearwardly traveling chain belt. A second chain belt travels under the lower portion of the first chain belt and retains the nuts for traveling movement by the first chain belt while allowing trash and the like to drop therethrough for discharge on the ground. Continued travel of the first chain belt beyond the second chain belt results in a dropping of the gathered nuts through the first chain belt onto a panel which directs the nuts to a cross conveyor. A trash dislodging fan discharges through the second portion of the first chain belt. The conveyor feeds the nuts to one end of a rotating screen drum for a more complete separation of the trash from the nuts. Subsequent to a travel of the nuts through the screen drum, the nuts are elevated by a rotating elevator for deposit in an outlet spout or chute which effects a lateral discharge of the cleaned nuts from the machine.

3,626,678

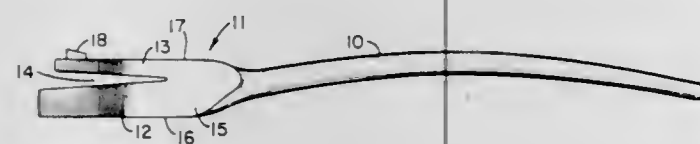
# TOOTH FOR HARVESTING EQUIPMENT

Henry A. Quam, Edmonton, Alberta, Canada, assignor to Imperial Oil Limited, Toronto, Ontario, Canada  
Continuation-in-part of application Ser. No. 778,163, Nov. 22, 1968. This application June 17, 1970, Ser. No. 47,042

Int. Cl. A01d 77/00

U.S. Cl. 56—400

8 Claims



A one-piece tooth for use in harvesting pickup equipment wherein the base of the tooth is integral with the tine portion of the tooth; the base is also laterally resilient and deformable so as to snap into position on the pickup without the need for bolts, screws or other mechanical fastening devices. The bat or other tooth support means on the pickup is adapted to receive the base of the tooth in a releasable locking relationship.

# CHENILLE YARN FABRICATING APPARATUS

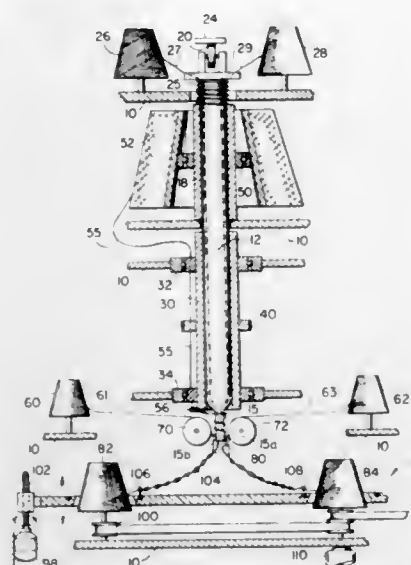
Imre Meir Schwartz, 566 Broadway,  
Paterson, N.J. 07514

Filed Oct. 30, 1969, Ser. No. 872,640

Int. Cl. D02g 3/42

U.S. Cl. 57—24

7 Claims



Apparatus for fabricating chenille yarn employs a reciprocating inner die having at least one yarn cord passing therethrough. An outer guide rotates about the inner guide and continuously wraps a fill thread therearound, the formed fill loops being periodically severed by a cam actuated knife element. Take-up apparatus is provided to twist two chenille yarn cords during a collection operation, with the twisted cords forming loops which entrap the severed, half-turn fill loops.

3,626,680

# STRAND HANDLING APPARATUS

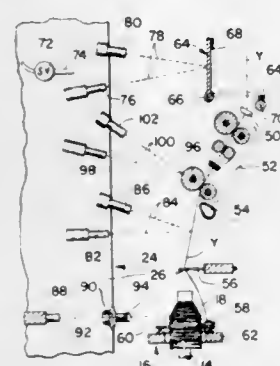
William R. Whitney, Cranston, R.I., assignor to Leeson Corporation, Warwick, R.I.

Filed Dec. 15, 1969, Ser. No. 884,960

Int. Cl. D01h 13/26

U.S. Cl. 57—34 R

11 Claims



Strand handling apparatus including a system for controlling a cycling tender which scans and services bobbin winding stations on a spinning or twisting machine, or the like. The control system provides a signal indicating when a station being scanned is operational and a service signal when the station requires servicing. Upon receipt of both of these signals the control system initiates a work cycle of the tender to service the station. The service signal is provided either when the bobbin at the scanned station is ready to be doffed or when there is an interruption in the advancing strand to the bobbin. If there are more than a predetermined number of such interruption signals during a cycle, this signal is rendered ineffective by the control system to cause servicing of the station. If a roll-wrap occurs on a drafting roll, an indicator which cooperates in providing the operational signal is moved to a non-operational position so that this signal is not provided and thereafter

the tender by-passes only the particular station until the station is again placed in operational condition, as by an attendant. When the indicator is moved to its non-operational position it causes the strand to be broken prior to entering drafting rolls of the station.

3,626,681

# RINGLESS SPINNING MACHINE

Toshiichi Naruse, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Daiwa Boseki Kabushiki Kaisha

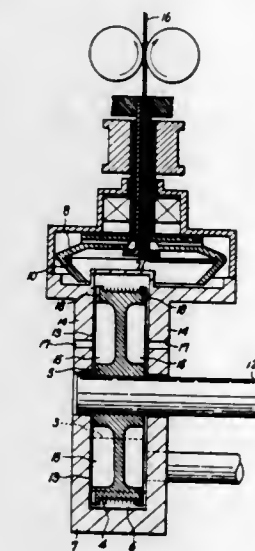
Filed July 31, 1969, Ser. No. 846,503

Claims priority, application Japan, Aug. 8, 1968, 43/68,084; Feb. 28, 1969, 44/18,575

Int. Cl. D01h 1/12, 11/00

U.S. Cl. 57—58.91

5 Claims



A cotton clogging-preventive device for continuous ringless spinning machines. The device has a rotary spinning chamber having a fiber collecting surface and operating under subatmospheric pressure. Rotary transfer bodies for transferring fibers are disposed between said rotary spinning chamber and the fiber feed part including a collector, and a casing surrounds said rotary transfer bodies and has an air inlet channel directed to the spinning chamber. Between said rotary transfer bodies and the casing wall there is provided in the casing wall an air inlet hole for admitting air from the outside.

3,626,682

# METHOD OF AND APPARATUS FOR PROCESSING YARN

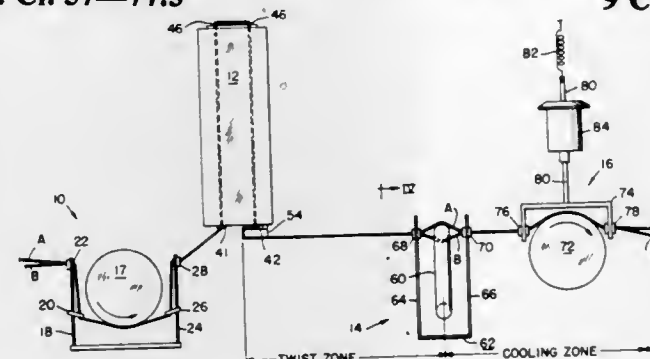
Richard C. Spurgeon, R.D. 2, Lansdale, Pa. 19446

Filed May 13, 1970, Ser. No. 36,975

Int. Cl. D02g 1/02, 3/00; D01h 7/92

U.S. Cl. 57—77.3

9 Claims



Yarn from a package thereof is threaded through apparatus comprising a tension leveling device, electric heater, false twist device, and tension reducing device and then fed directly to a circular knitting machine or other utility. Close to the heater and interposed between the same and the false twist device is means which effectively coats with the tension leveling device to restrict twisting of the yarn to the downstream side of the heater.

3,626,683

# MECHANISM FOR ROTATING TWIST SPINDLES

Eric Thomas Scriven, Wheathampstead, England, assignor to Scriven & Paget Limited, London, England

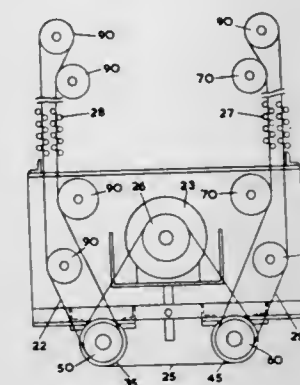
Filed Aug. 12, 1969, Ser. No. 849,454

Claims priority, application Great Britain, Aug. 16, 1968, 39,287/68

Int. Cl. D01h 13/00, 7/92

U.S. Cl. 57—104

5 Claims



The invention relates to a machine for twisting yarn and a belt drive mechanism in the machines for driving a plurality of false twist spindle units individually rotatable about their own axes to twist lengths of yarn characterised in that the spindle units are driven from the faces of one or other of parallel runs of at least two driving belts driven by a common driving member.

3,626,684

# WOOL-LIKE ACRYLIC FOR DOUBLE KNITS

Louis S. Hovis, Triangle Forest, Rte. 1, Cary, N.C. 27511, and James P. Craig, Jr., 4130 Rockingham St., Raleigh, N.C. 27609

No Drawing. Filed May 1, 1969, Ser. No. 821,141

Int. Cl. D02g 1/18, 3/04, 3/24

U.S. Cl. 57—140 BY

6 Claims

A wool-like acrylic fiber blend is provided which comprises a low denier fiber consisting of at least 50% of a bicomponent acrylonitrile polymer fiber and a high denier fiber consisting of an acrylonitrile polymer fiber.

3,626,685

# METHOD AND APPARATUS FOR FORWARDING TWISTED YARNS

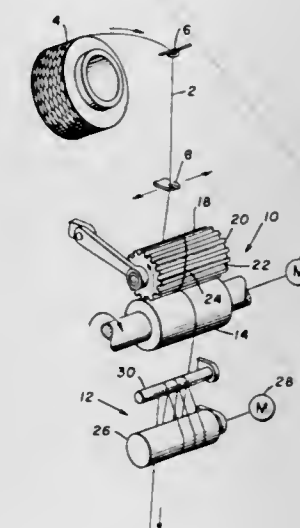
Roberto Constantakis, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 30, 1970, Ser. No. 7,183

Int. Cl. D01h 7/00, 7/02

U.S. Cl. 57—156

3 Claims



Apparatus and method for forwarding a non-circular, continuous strand, tow or yarn having a slight twist imparted thereto by guiding the yarn to a forwarding zone



and nipping the yarn intermittently between a tangentially engaging, striated roll assembly which permits the yarn to be forwarded with the twist intact.

3,626,686

**CRYSTAL CONTROLLED ELECTRIC CLOCK**

John E. Harris, Bayshore, Ottawa, Ontario, Canada, assignor to Sperry Rand Canada Limited, Toronto, Ontario, Canada

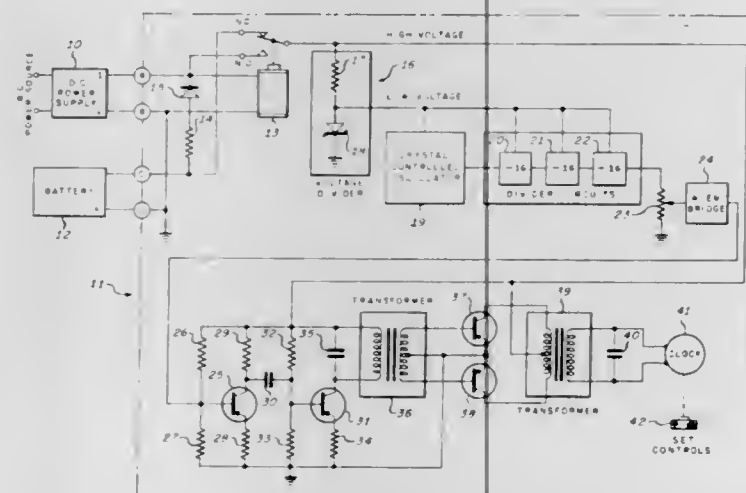
Filed June 18, 1970, Ser. No. 47,463

Claims priority, application Canada, May 14, 1970, 82,826

Int. Cl. G04c 3/00

U.S. Cl. 58—23

7 Claims



A crystal controlled voltage source in combination with an electric clock which provides a high accuracy time piece for use with mobile and remotely located electrical power sources. The device uses a D.C. voltage supply powered from an alternating voltage source which may be subject to frequency fluctuations. The D.C. output voltage energizes a crystal oscillator which generates a high frequency square wave. Integrated divider circuits divide-down the high frequency square wave to 60 hertz which is filtered and amplified thereby producing an alternating voltage source having a frequency stabilized sine waveshape output. The electric clock is operated from this voltage source to provide a highly accurate display of time.

3,626,687

**TIME SERVICE SYSTEM**

William Fondiller, Lawrence H. O'Neill, and Robert S. Feldstein, New York, N.Y. assignors to Time Control Corporation, New York, N.Y.

Filed Nov. 19, 1968, Ser. No. 777,126

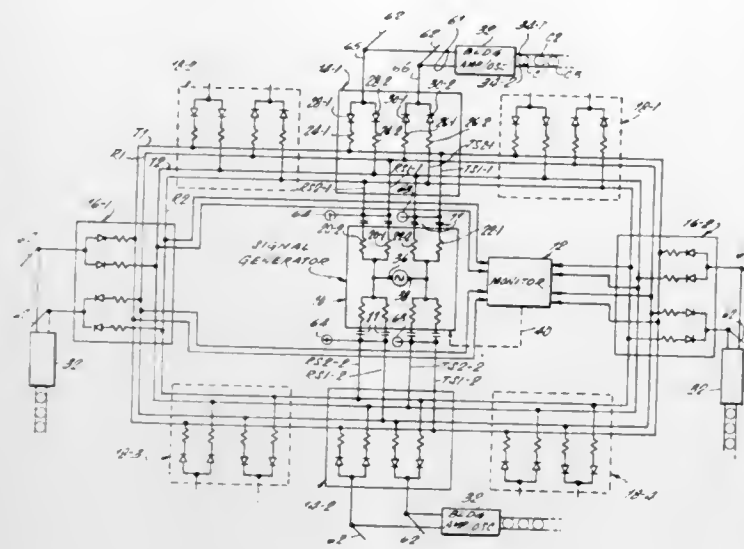
Int. Cl. G04c 13/02

U.S. Cl. 58—24 R

42 Claims

A time service system utilizing a single master signal generator and the telephone facility. Dedicated lines are used for transmitting continuous signals from the master generator to individual amplifiers in different buildings. Except for five seconds every twelve hours, a 50-Hz. signal is transmitted to each building amplifier. The amplifier processes the signal and transmits it to numerous clocks in the building which are driven synchronously. At the end of each 12-hour period, a 100-Hz. signal is transmitted by the master generator instead of a 50-Hz. signal for five seconds. With the change in frequency, the clocks automatically reset to a position indicating the exact time when 50-Hz. signal transmission resumes. Thereafter, the clocks are again driven in synchronism with the 50-Hz. signal. Changes to and from daylight

saving time are accomplished automatically at the master generator by advancing or delaying the switch-over from



50-Hz. to 100-Hz. transmission by one hour, twice each year.

3,626,688

**PULL OUT HAND SETTING MECHANISM FOR A TIMEPIECE**

Georges Bullat, Fontainemelon, Switzerland, assignor to Fabrique d'Horlogerie de Fontainemelon S.A., Fontainemelon, Switzerland

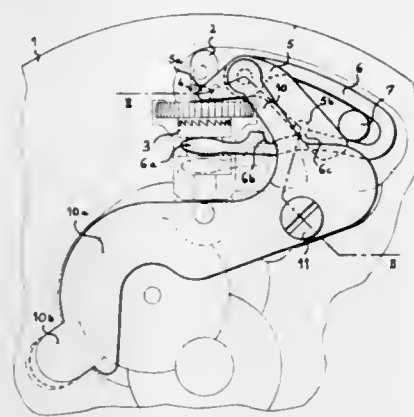
Filed Mar. 31, 1970, Ser. No. 24,180

Claims priority, application Switzerland, May 28, 1969, 8,073/69

Int. Cl. G04b 27/04

U.S. Cl. 58—68

7 Claims



A pull out hand setting mechanism for a timepiece comprises a setting stem, a sliding pinion and a setting lever operatable by the setting stem. The lever and a spring therefore consists of a single piece bent into the shape of a hairpin. The lever and the setting stem are preferably mounted on a common star held axially by a spring arm mounted on the timepiece movement by a single screw.

3,626,689

**TIMEPIECE WITH ISOLATED HOUR HAND CHANGING DEVICE**

Cyril Vuilleumier, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Switzerland

Filed Jan. 25, 1971, Ser. No. 109,508

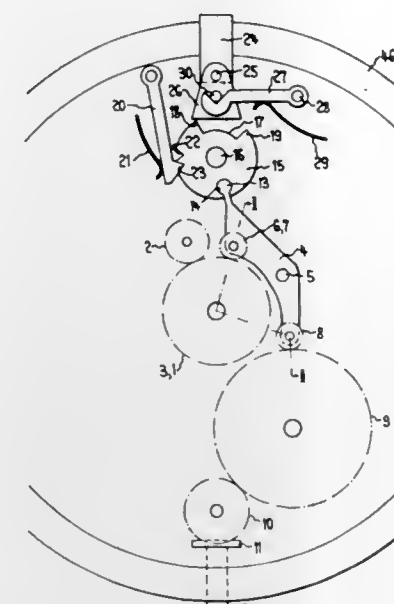
Int. Cl. G04b 27/00

U.S. Cl. 58—85.5

5 Claims

A timepiece comprising an additional gear controlling the hour hand, which gear is rotatably mounted coaxially with a second gear, actuated by the movement of the timepiece, and means actuable from the outside for rotating the additional gear by one or more steps without influencing the indication of the other hand or hands,

characterized in that it comprises in addition a yoke which may take, under the action of an outer control member, on the one hand, a first position wherein the said gears are interlocked in the direction of rotation upon normal



setting of the timepiece and during the running thereof, and, on the other hand, a second position wherein the said gears are disengaged from each other to permit actuating only the additional gear controlling the hour hand.

3,626,690

**ARTICLE OF MANUFACTURE**

Arthur Fischer, 219, Altheimer Str., 7241 Tumlingen, Germany

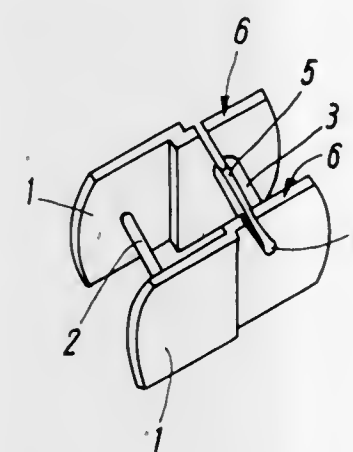
Filed June 8, 1970, Ser. No. 44,330

Claims priority, application Germany, July 18, 1969, P 19 36 754.5

Int. Cl. F16g 13/00

U.S. Cl. 59—84

5 Claims



A chain link element has two elongated side walls each having a first portion and a longitudinally adjacent second portion which is inwardly offset with reference to the first portion. A first and a second connecting rod connects the portions together. A slot is provided in the second connecting rod having a general plane inclined to that of the link element and extending lengthwise in the second connecting rod. The link element is connectable to make a chain with another similar link element by positioning its second portions between the first portions of the other link element and introducing the first connecting rod of the other link element through the slot.

3,626,691

**WATCH BALANCE**

Francois Bonsack, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Le Locle, Neuchatel, Switzerland

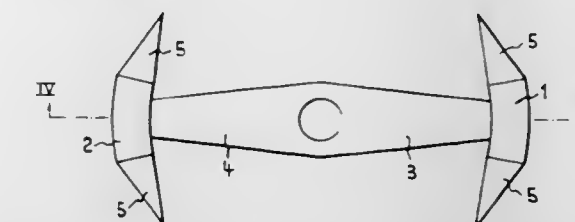
Filed Aug. 25, 1969, Ser. No. 852,559

Claims priority, application Switzerland, Sept. 6, 1968, 13,444/68

Int. Cl. G04b 17/00

U.S. Cl. 58—107

6 Claims



A watch balance comprising at least two inertia-blocks having a streamlined shape carried by arms and extending on the whole over less than the half of the circumference of the balance, the rest of the circumference being free of material, characterized in that the compactness of the inertia-blocks in the range of from .310 to .455 and the material comprising the inertia-blocks a density exceeding 9 g./cm.<sup>3</sup>.

3,626,692

**GAS TURBINE POWER PLANT**

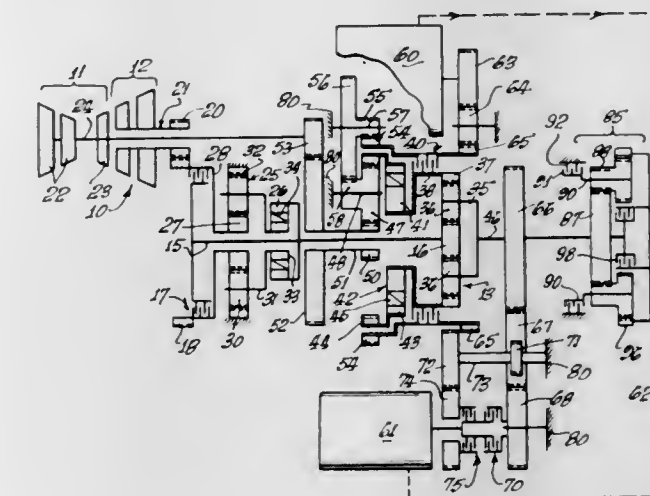
Emerson L. Kumm, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 15, 1970, Ser. No. 28,817

Int. Cl. F02c 7/02

U.S. Cl. 60—39.16

16 Claims



A power plant having a gas turbine engine with separate gas generator and power turbine sections, a transmission with input and output shafts connected by differential gearing, a hydraulic power transfer loop, and power transfer means between the engine and the transmission. The power transfer means has a first set of power transfer paths selectively connecting the power turbine with the input shaft, and a second set of power transfer paths selectively connecting the gas generator section with other parts of the transmission. Both power transfer paths of each set have gear reduction trains of different ratios. Clutch means serve to selectively render certain power transfer paths of each set effective at predetermined times during the operation of the power plant. A hydraulic power transfer loop, with combination pump and motor components in motion-transmitting relation with elements of the transmission and the output shaft, serves in certain phases of operation of the power plant to deliver power from the power turbine to the output shaft, and in other phases of operation from



the output shaft to the compressor. A two-speed gear section may be employed between one hydraulic component and the output shaft to increase the effectivity of power transfer at certain speeds. Control means serves during acceleration of the power plant to actuate parts of the clutch means at a certain percentage of the maximum speed of the output shaft to render certain power transfer paths effective, and other parts of the clutch means at a different percentage of the maximum output shaft speed during deceleration of the power plant to render the other power transfer paths effective.

3,626,693

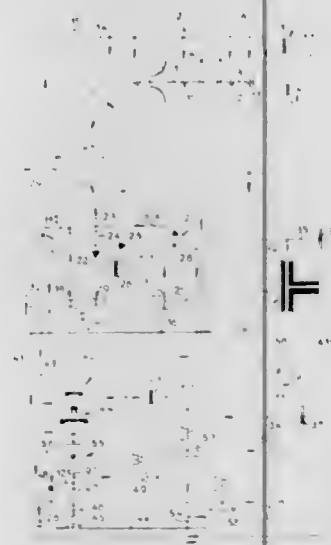
# DEVICE TO ENSURE LUBRICATION, REGULATION AND RELIABILITY OF OPERATION OF GAS TURBINES

Jack Guillot, Tour, 20 Rue Maurice Audin, Blanc-Mesnil, Seine-Saint-Denis, France  
Filed Nov. 20, 1969, Ser. No. 878,485  
Claims priority, application France, Nov. 28, 1968, 50,689

Int. Cl. F02c 9/04, 9/06, 9/10

U.S. Cl. 60—39.28

6 Claims



A gas turbine, in addition to being provided with a mechanically operated lubricating pump and an auxiliary electrically operated lubricating pump in parallel, is provided with an additional mechanical pump for supplying oil to a regulating circuit. The regulating circuit is comprised of two branches, one of which contains oil the pressure of which is controlled by a tachometric detector and the other of which contains oil, the pressure of which is modulated. Both branches combine to actuate a regulator which in turn controls a valve for controlling the flow of fuel to the combustion chambers.

3,626,694

# CENTRIFUGAL FLOW GAS TURBINE

Merrill R. Holste, 2228 Saint Stephen St., St. Paul, Minn. 55113

Filed May 18, 1970, Ser. No. 37,952

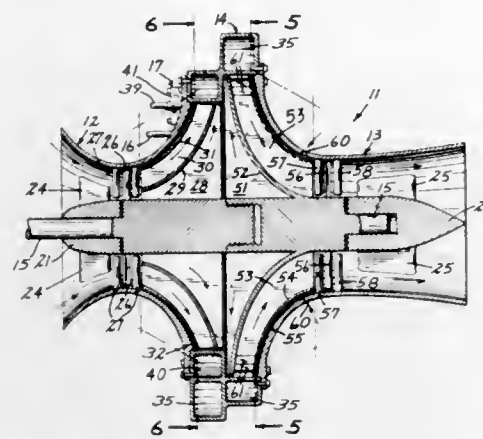
Int. Cl. F02c 3/08, 3/14, 7/28

U.S. Cl. 60—39.69

24 Claims

A gas turbine having a centrifugal compressor and an inward flow power turbine is disclosed which includes a combustion chamber that spirally encircles the turbine, defining a straight-through passage for the fuel-air mixture as it flows therethrough during ignition, combustion and exhaust. The chamber preserves continuous, laminar flow and thereby increases engine power and efficiency. Also disclosed is a flame holder for the combustion chamber which intermixes ignited gases with the cooler, un-ignited gas mixture to better maintain ignition in the

chamber. A centrifugal air seal is used to prevent blow-by or leakage of compression gases and combustion



gases between the engine housing and the compression turbine and between the power turbine and its housing.

3,626,695

# CONTROL DEVICE FOR A POWER SYSTEM FOR DRIVING A HYDRAULIC FLUID ACTUATED MOTOR

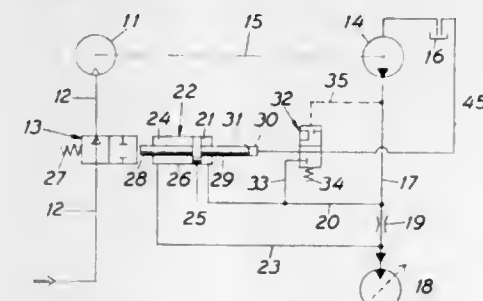
Nils Gunnar Jonsson, Jakobsberg, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden  
Filed Mar. 30, 1970, Ser. No. 23,750

Claims priority, application Sweden, Apr. 3, 1969, 4,859/69

Int. Cl. F16d 31/00

U.S. Cl. 60—53 R

9 Claims



A compressed air motor drives a hydraulic fluid pump which supplies a hydraulic fluid motor with drive fluid. A motor actuated valve senses the pressure and flow of the hydraulic fluid and controls the supply conduit of the air motor so as to limit indirectly on the one hand the pressure of the hydraulic fluid and on the other hand the flow of the hydraulic fluid.

3,626,696

# PNEUMATIC REMOTE READOUT SYSTEM FOR METERS

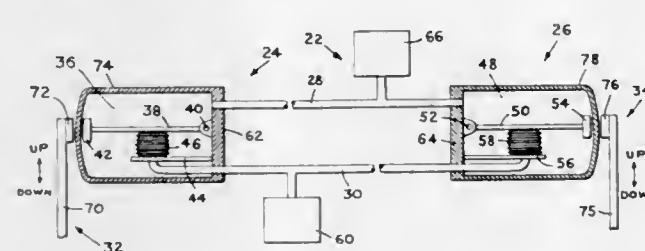
Ronald A. Munier, New Providence, and Norman L. Meyerson, Glen Rock, N.J., assignors to Gamon-Calmet Industries, Inc., Newark, N.J.

Filed Oct. 22, 1968, Ser. No. 769,692

Int. Cl. F15b 7/00; G06m 1/00

U.S. Cl. 60—54.5 R

7 Claims



A fluidic telemetering device for the transmission of signals between input signal transmission means and remotely disposed output signal transmission means, including a hermetically sealed chamber system comprising

transmitter chamber cooperatively associated with said input signal transmission means, and a receiver chamber cooperatively associated with said output signal transmission means, and balancing line means connecting said transmitter and receiver chambers, an independently hermetically sealed pressure responsive means system comprising first, variable volume pressure responsive means disposed in said transmitter chamber, second variable volume pressure responsive means disposed in said receiver chamber, and balancing line means connecting said first and second variable volume pressure responsive means, means coupling said input signal transmission means to said first variable volume pressure responsive means, and means coupling said second variable volume pressure responsive means to said output signal transmission means to transmit output signals to the latter.

3,626,697

# METHOD AND MEANS FOR CONTROLLING THE THRUST IN A SOLID PROPELLANT ROCKET MOTOR

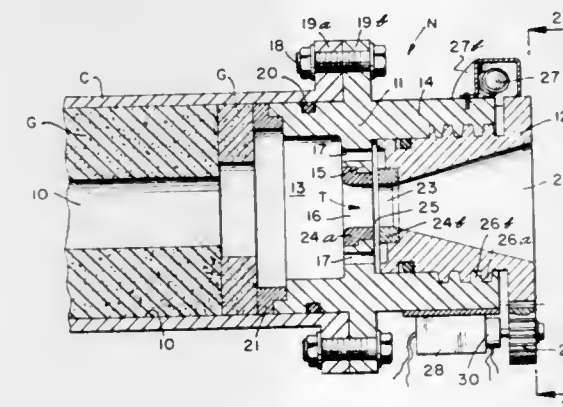
Robert H. Nunn, Davis, and Lane Curtis Chafin, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy

Filed Jan. 22, 1965, Ser. No. 428,021

Int. Cl. B63h 11/00

U.S. Cl. 60—204

3 Claims



1. In a system for controlling the effective chamber pressures within a combustion chamber of a variable-thrust rocket motor of the type including an exhaust nozzle through which a stream of exhaust gases is expelled, a combustion chamber for burning propellants therein for generating the exhaust gases, a by-pass conduit for directing exhaust gases transversely into the stream of exhaust gases to thus effectively restrict the stream and thereby establish and control chamber pressures within said combustion chamber, and a pair of co-axially aligned nozzle sections arranged within the nozzle, at least one of said sections being adapted for axial displacement with respect to the other section for dictating the flow of transversely directed exhaust gases, the improvement comprising:

- (a) means defining an internally threaded nozzle block surrounding said one section;
- (b) means defining an externally threaded surface for said one section being so disposed as to be mated in threaded engagement with the threads of said nozzle block, whereby said one section may be counter-rotated for axial displacement relative to the other co-axially aligned nozzle section;
- (c) resilient means connected between said block and said one section for continuously applying a rotating force to said one section for displacing said one section in a first direction for reducing the flow of exhaust gases as the gases are directed transversely into the exhaust stream; and

(d) selectively operable drive and brake means connected with said one section adapted to be activated for rotating said one section in opposition to said spring for thereby displacing said one section in an opposite second axial direction and for selectively retaining said one section against spring induced rotation.

3,626,698

# COMBUSTION CHAMBER CONSTRUCTION AND METHOD OF OPERATING A COMBUSTION CHAMBER

Werner Baum, Flein, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Germany

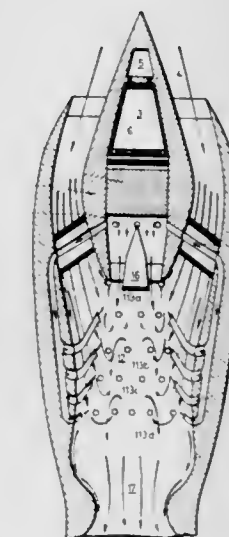
Filed Apr. 21, 1970, Ser. No. 30,550

Claims priority, Application Germany, May 24, 1969, P 19 26 728.8

Int. Cl. F02k 7/10

U.S. Cl. 60—270 R

19 Claims



A rocket type ram jet engine includes a centrally arranged stream-lined displacement member which defines an annular inlet for combustion air and which provides a reservoir for a fuel component and a pressure gas for atomizing the component in a catalyst chamber. The atomized fuel component is directed into a decomposition gas chamber where it is decomposed and a portion of the decomposed gas is directed through the walls of the combustion chamber for discharge through one or more fuel nozzles in a counterflow direction in a main combustion chamber. The decomposition gases are introduced into the main combustion chamber at a location downstream of the discharge from the decomposition gas chamber. The combustion chamber is operated with decomposition gases which are obtained from hydrazine or its derivatives by catalytic decomposition. The first quantity of the decomposition gas is introduced centrally into the main combustion chamber and a second partial gas quantity is injected by nozzles into the main combustion chamber downstream of the main introduction and counter to the flow thereof.

3,626,699

# GROUTING OF SOILS

William Arthur Lees, Chandlers Ford, England, assignor to Borden, Inc., New York, N.Y.

No Drawing. Filed Jan. 5, 1970, Ser. No. 831

Int. Cl. E02d 3/12, 3/14

U.S. Cl. 61—36 R

1 Claim

The present invention relates to a method for the stabilization of soil which comprises impregnating the soil with an aqueous silica acid hydrosol optionally containing a gelation accelerator.



### 3,626,700 SUPERSTRUCTURE IN SELF-ADVANCING ROOF SUPPORTS

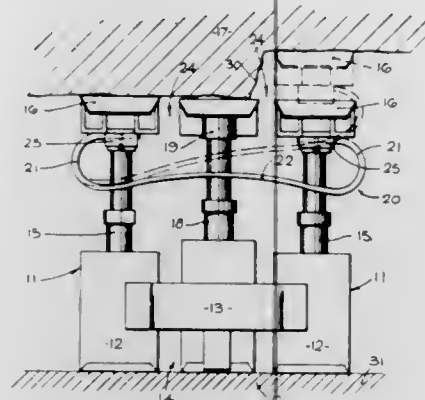
Karl Maria Groetschel, 44 Stolzeasse,  
463 Bochum, Germany

Filed Jan. 26, 1970, Ser. No. 5,498

Int. Cl. E21d 15/44

U.S. Cl. 61—45 D

12 Claims



The invention provides a self-advancing roof support primarily for mine workings in which a roof-engaging superstructure carried by a plurality of hydraulic props upstanding from a base includes laterally spaced, longitudinally extending, roof bars connected with each other by transversely extending spring strip elements incorporating one or more looped, undulating, or arcuate portions to provide an extended length of the strip element between connections to the roof bars substantially exceeding the distance between such connections.

### 3,626,701 EMERGENT INSTALLATION FOR DRILLING AND PRODUCTION AT GREAT DEPTH AT SEA

Maurice Laffont, La Celle-Saint-Cloud, France, assignor to Societe Nationale des Petroles d'Aquitaine, Paris, France

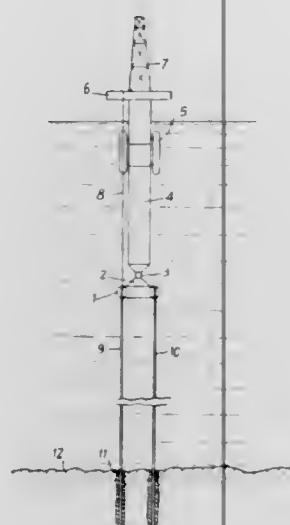
Filed Mar. 26, 1970, Ser. No. 22,842

Claims priority, application France, Apr. 4, 1969, 10,528

Int. Cl. E02b 17/00; E21b 43/01

U.S. Cl. 61—46.5

5 Claims



An emergent drilling and production installation for operating at great depths at sea, especially for the production of hydrocarbons from a field under the sea-bed, comprising the combination of an oscillating column having a positive buoyancy, supporting at its upper portion a drilling and production platform and articulated at its lower portion, with two degrees of freedom, on a base having a high positive buoyancy and fixed to the sea-bed at a pre-determined distance therefrom by anchorage members

under tension driven and cemented into the sea-bed. The oscillating column may be provided with internal storage compartments for receiving part of the products obtained.

### 3,626,702 FLOATING FOUNDATION AND PROCESS THEREFOR

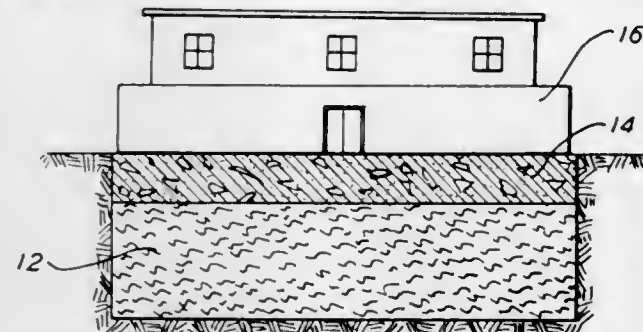
Edward J. Monahan, 381 Broad St., Apt. A913,  
Newark, N.J. 07104

Filed Feb. 12, 1970, Ser. No. 10,843

Int. Cl. E02d 3/12, 27/36, 27/46

U.S. Cl. 61—50

13 Claims



There is provided a novel form of floating subfoundation and a method of producing the same. The novel subfoundation comprises a layer of moderately rigid, synthetic, polymeric foam placed in the excavation for a structure. A customary rigid foundation, suitably of reinforced concrete is placed over the subfoundation and the structure erected upon the rigid foundation. The novel subfoundation makes possible greatly increased structural loads on soils which are unstable and not normally considered capable of supporting high loads.

### 3,626,703 UNDERWATER EXPLORATION AND RECOVERY VEHICLE

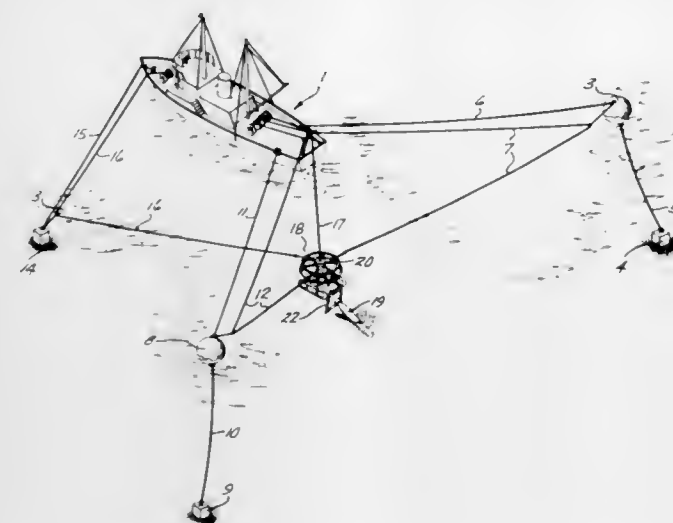
Ned F. Richburg, Tacoma, Wash., assignor to Twanoh Marine Charters, Inc., Bellevue, Wash.

Filed Nov. 18, 1969, Ser. No. 877,804

Int. Cl. B63c 11/00

U.S. Cl. 61—69

11 Claims



An underwater exploration and recovery vehicle capable of recovering submerged objects from the depths of an ocean or lake. The vehicle comprises frame means, a tool holder means rotatively attached to the frame means for rotation to engage a workpiece and instrumentation to aid and observe the recovery operation. The instrumentation is used to assist in positioning the vehicle under water adjacent the object to be recovered and includes sonar, closed circuit television, lighting apparatus and the like. The tool holder means is adapted to carry various tools including hooks, nooses, wrenches, nets, claws, drills, and the like.

### 3,626,704 THERMOELECTRIC UNIT

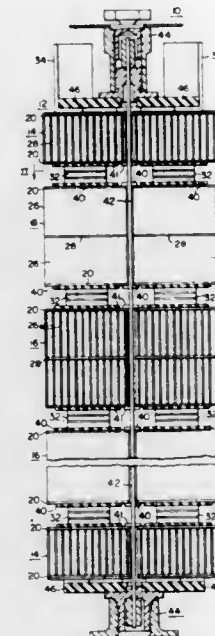
Harry D. Coe, Jr., Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 9, 1970, Ser. No. 1,613

Int. Cl. F25b 21/02

U.S. Cl. 62—3

7 Claims



The invention relates in general to thermoelectric units and more particularly to a thermoelectric unit which includes a plurality of coextensive symmetrically arranged elongated columns, wherein each column is formed from an alternate arrangement of heat exchange means and thermoelectric material. Means are provided for exerting a compressive force through the length of each column and for exerting lateral support between columns.

### 3,626,705 LOW TEMPERATURE SEPARATION OF GASEOUS MIXTURES EMPLOYING SOLIDIFICATION

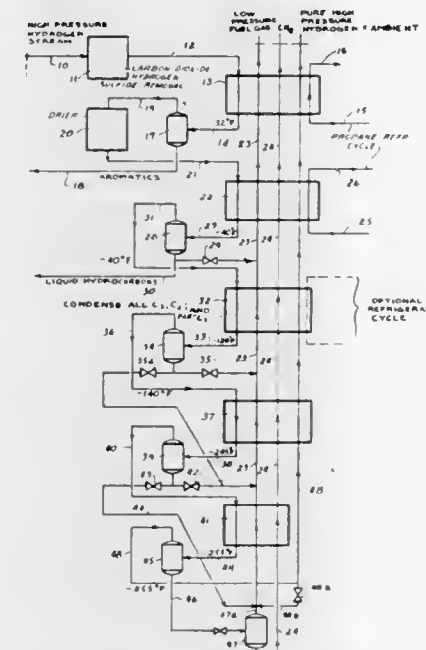
Helmut Knapp, Massenheim, Germany, and Irving Weiss, Brooklyn, N.Y., assignors to Messer Griesheim G.m.b.H., Frankfurt am Main, Germany

Continuation of applications Ser. No. 386,595, July 31, 1964, and Ser. No. 624,621, Mar. 20, 1967. This application Sept. 4, 1968, Ser. No. 785,831

Int. Cl. F25j 1/02, 3/06

U.S. Cl. 62—23

3 Claims



A process for recovering hydrogen from a refinery off-gas by progressive reduction in temperature of the gas

and successive removal of respective contaminants therefrom by condensation thereof. At least some of the condensed contaminants are expanded and employed as a refrigerating fluid in the process. Methane which precipitates out as solid in the final stage of heat exchange is removed in an alternating exchanger purge arrangement. In a hydrogen purification system, a portion of the purified hydrogen is mixed with the condensed hydrocarbons separated from the crude hydrogen and this mixture is used to cool the crude hydrogen to be purified.

### 3,626,706 CRYOSTAT

Albrecht Elsner, Hechtstheim, and Gustav Klipping, Berlin, Germany, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Göttingen, Germany

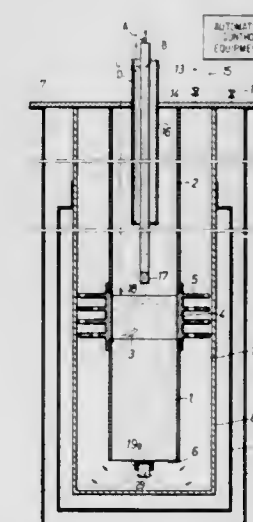
Filed Mar. 26, 1970, Ser. No. 22,846

Claims priority, application Germany, Apr. 12, 1969, P 19 18 624.4

Int. Cl. F25b 19/00

U.S. Cl. 62—62

15 Claims



Liquid helium flows downwardly through an element having a pore size of less than  $10^{-4}$  cm. A controlled vacuum is placed at the lower end of the element. The liquid helium is completely evaporated at this lower end. The gases emitted at the lower end have a temperature determined by the controlled vacuum. In this way, a cryogenic cooling of a determined temperature is made available.

### 3,626,707 METHOD AND APPARATUS FOR DEFROSTING REFRIGERATORS

Gottlob Bauknecht, Stuttgart, and Karl Laszlo, Welzheim, Germany, assignors to Gottlob Bauknecht Elektromotorenbau, Stuttgart, Germany

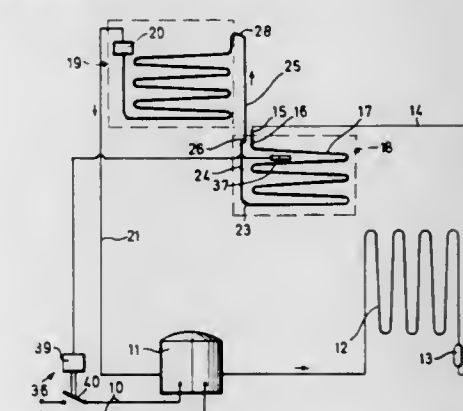
Filed Apr. 23, 1970, Ser. No. 31,166

Claims priority, application Germany, Apr. 23, 1969, P 19 20 513.1

Int. Cl. F25d 21/00

U.S. Cl. 62—81

11 Claims



In a two-temperature refrigerator wherein the defrosting of the cooler evaporator is effected by natural thawing



during the periodic inoperative periods of the refrigerating apparatus in order to expedite said defrosting, the liquid refrigerant present in the cooler evaporator upon stoppage of the compressor is forced into the freezer evaporator by pneumatic pressure generated by the evaporation of a small quantity of liquid refrigerant introduced into the cooler evaporator through a capillary tube at the beginning of the inoperative period.

3,626,708

# REDUCTION OF VAPOR PRESSURE IN ABSORPTION TYPE REFRIGERATION CYCLE

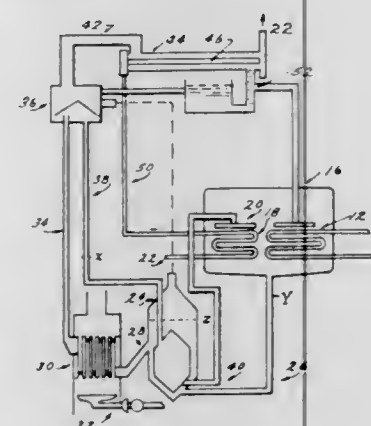
Chester C. Lyon, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Continuation-in-part of application Ser. No. 673,204, Oct. 5, 1967. This application Oct. 5, 1970, Ser. No. 78,305

Int. Cl. F25b 15/06

U.S. Cl. 62-112

2 Claims



An increase in the cooling capacity of an absorption-type refrigeration system employing water as refrigerant and a conventional aqueous salt solution as absorbent is obtained by incorporating a small amount of an additive which is ethylene glycol monobutyl ether and/or diethylene glycol monobutyl ether in the salt solution. The presence of the ether lowers the operating vapor pressure in the absorber section of this type of system and thereby effects a lower operating refrigerant temperature in the evaporator section.

3,626,709

# APPARATUS FOR PREPARATION OF FROZEN CONFECTIONS

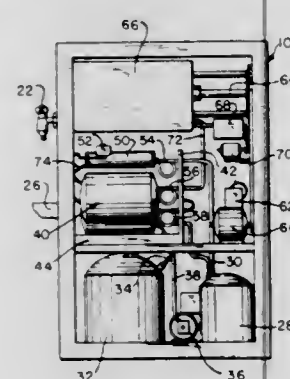
Rudolph A. Yuza, Paris, Ill., assignor to Astro Controls, Inc., Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,170

Int. Cl. F25c 7/18

U.S. Cl. 62-136

15 Claims



A blending and freezing apparatus including weight sensitive pivotally-mounted syrup supply, carbonator and blender receptacles, automatic liquid level and delivery control means therefor, means to disperse and mix carbonated water and syrup under pressure of a carbonating

gas to produce a carbonated liquid feed, a freezing zone including means to apply a shearing force upon and through the solidifying liquid feed to maintain same as a flowable mass, means to regulate the refrigeration conditions applied to the freezing zone in accordance with the torque required to drive the shearing force, means to maintain a reverse flow pre-cooling zone in the freezing zone and prevent channeling therethrough and means to discharge the product to atmosphere.

3,626,710

# CRYSTALLIZATION PREVENTION CONTROL FOR ABSORPTION REFRIGERATION MACHINES

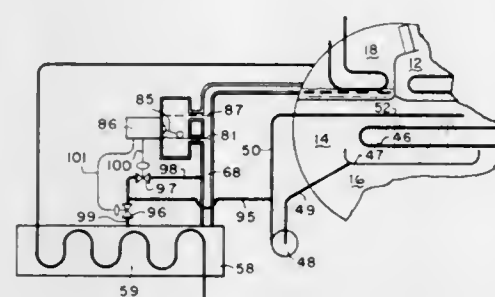
James M. Porter, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Sept. 9, 1969, Ser. No. 856,266

Int. Cl. F25b 15/06

U.S. Cl. 62-141

6 Claims



A control which senses impending crystallization is utilized in an absorption refrigeration machine to prevent solidification of absorption solution in the critical areas of the machine. A sensing element senses a rise in concentrated solution level between the generator and the heat exchanger, which rise in solution level is indicative of impending crystallization. This sensor can actuate one or more of a plurality of controls which will cause dilution of the concentrated solution in the heat exchanger or other crystallization prone areas. As the solution level in the conduit between the generator and the heat exchanger returns to an operating level, additional automatic controls are actuated to proceed with a dilution and shutdown cycle.

3,626,711

# CRYSTALLIZATION PREVENTION CONTROL

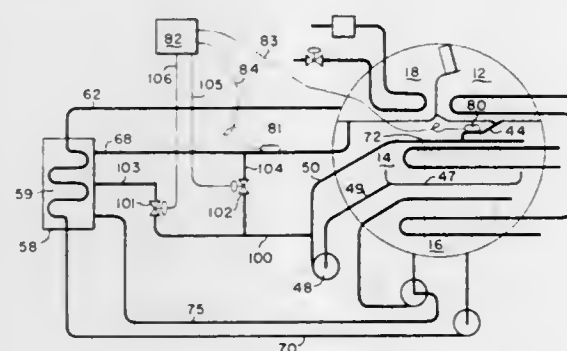
James M. Porter and Lee E. Johnson, La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Sept. 9, 1969, Ser. No. 856,275

Int. Cl. F25b 15/06

U.S. Cl. 62-141

3 Claims



An absorption refrigeration machine wherein the condenser temperature and the temperature of the concentrated solution leaving the generator are sensed to provide a signal or measure of impending crystallization in the

solution heat exchanger. When the aforementioned temperatures reach a predetermined maximum a control signal is transmitted to a normally closed valve. The valve opens and dumps refrigerant or other dilute solution into the heat exchanger and associated piping which contains partially crystallized absorbent solution.

3,626,712

# SAFETY LOCK FOR FOOD FREEZERS OR REFRIGERATORS

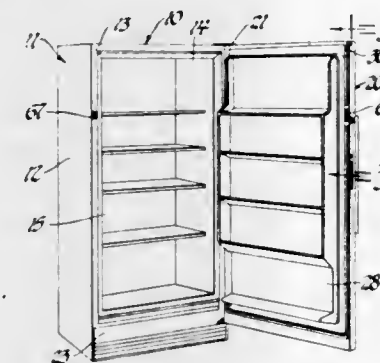
Leonard J. Mann, Kettering, and Thomas H. Fogt, Carrollton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 21, 1970, Ser. No. 73,880

Int. Cl. F25d 29/00

U.S. Cl. 62-161

3 Claims



A safety lock for locking the door structure of a food freezer or refrigerator to prevent unauthorized access to the food compartment which functions in combination with a magnetic type door seal such that the latch operates to lock the door. The door lock is provided with thermostatic means which permits the door to be locked and unlocked in the ordinary manner by means of a key operated locking bolt when the freezer is being used for the preservation of food and which thermostatic means renders the lock inoperative in a fail-safe manner to prevent locking the door in the event the freezer is disconnected from its current supply.

3,626,713

# VEHICLE CAB AIR CONDITIONING SYSTEM

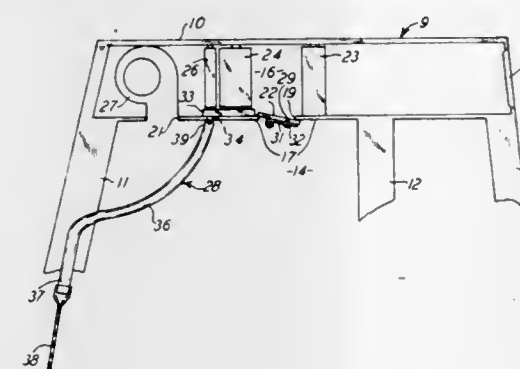
Phillip G. Venable, Orion, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 23, 1970, Ser. No. 31,271

Int. Cl. F25d 17/04

U.S. Cl. 62-187

6 Claims



A vehicle cab having an air conditioning compartment contiguous to the cab and having an evaporator with an air blower on one side and an air filter on the other side, and all being disposed in the compartment. A condensate drain tray is disposed in the compartment beneath

the evaporator, and a drain tube extends from the tray to a location outside the vehicle enclosure. The drain tube has an atmospheric air responsive control which automatically closes when there is air pressure differential between the air conditioning compartment and the outside. This prevents air from flowing into the drain tube and into the compartment, and it also thus permits the condensate to drain from the tube and not be detained by the air pressure differential. Also, a regulator door is provided on the compartment for recirculation of air from the cab enclosure and to the compartment, and the door provides a control for the air pressure differential between the cab enclosure and the compartment.

3,626,714

# DOUBLE KNIT FABRIC HAVING A TEXTURED APPEARANCE

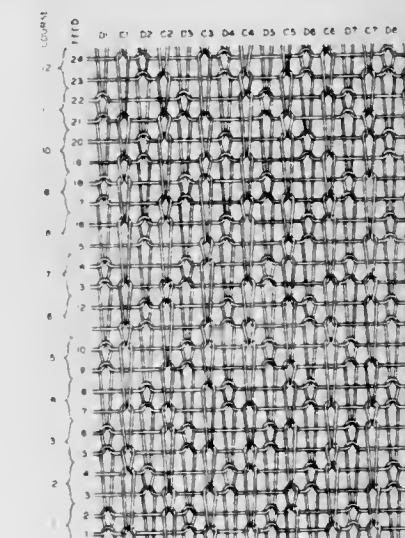
James H. Blore, Greenville, S.C., assignor to Phillips Fibers Corporation

Filed Nov. 13, 1969, Ser. No. 876,390

Int. Cl. D04b 9/08

U.S. Cl. 66-196

8 Claims



The double knit fabric has a first set of alternating wales forming the reverse side of the fabric. Each course has first and second yarns. In the front wales the yarns are knitted in a random fashion, with the first yarn in each course having a knit stitch when the second yarn has either a tuck stitch or a welt stitch and having either a tuck stitch or a welt stitch when the second yarn has a knit stitch. One set of the first yarns or the second yarns has more knit stitches than the other set in the front wales, and one set has a longer average knit stitch length than the other set in the front wales. In the reverse side wales, the first and second yarns have knit stitches in even numbered wales in even numbered courses and in the odd numbered wales in odd numbered courses, and either tuck or welt stitches in the remainder.

3,626,715

# REFRIGERATION COMPONENT

Edward W. Bottum, 9357 Spencer Road, Brighton, Mich. 48116

Filed Jan. 22, 1970, Ser. No. 5,006

Int. Cl. F25b 43/00

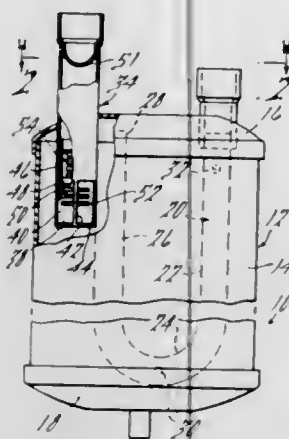
U.S. Cl. 62-217

3 Claims

A suction accumulator is provided for the compressor of a refrigeration system which includes a compressor, an evaporator and a condenser connected in operative relationship with refrigerant expansion means between the condenser and evaporator. The suction accumulator includes an evaporator pressure regulator valve on the inlet



which is a device sensitive to the temperature of incoming evaporator gases to open or close in accordance therewith



to maintain the pressure-temperature conditions of the evaporator at a desired level.

3,626,716

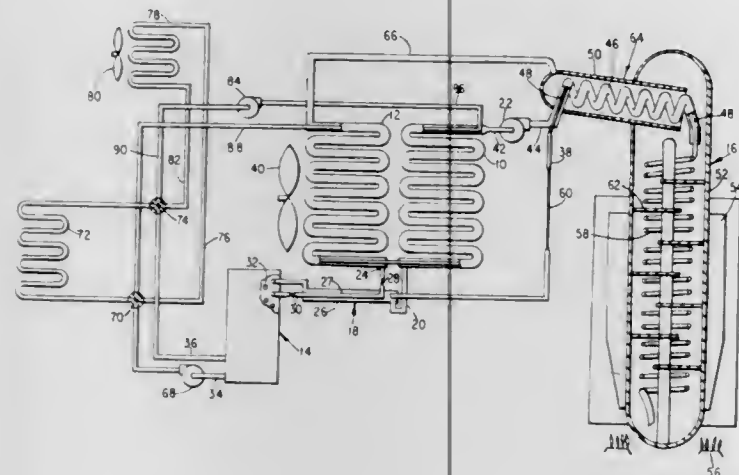
# **ABSORPTION REFRIGERATION MACHINE HEAT PUMP**

Louis H. Leonard, Jr., Dewitt, N.Y., assignor to  
Carrier Corporation, Syracuse, N.Y.  
Filed Oct. 15, 1969, Ser. No. 866,699

Int. Cl. F25b 13/00, 15/04

U.S. Cl. 62—324

3 Claims



An absorption refrigeration machine employing an absorber and a condenser adapted for passage of ambient air thereover for cooling the condenser and absorber when the machine is operating on the cooling mode and for passage of a liquid heat exchange medium through the absorber and condenser for cooling thereof when the machine is operating on the heating mode.

3,626,717

# **APPARATUS FOR CONVEYING A COLD FLUID TO AND FROM A ROTATABLE BODY**

Hugh Olaf, Lorch, Stafford, England, assignor to The  
English Electric Company Limited, London, England

Filed Aug. 27, 1970, Ser. No. 67,463

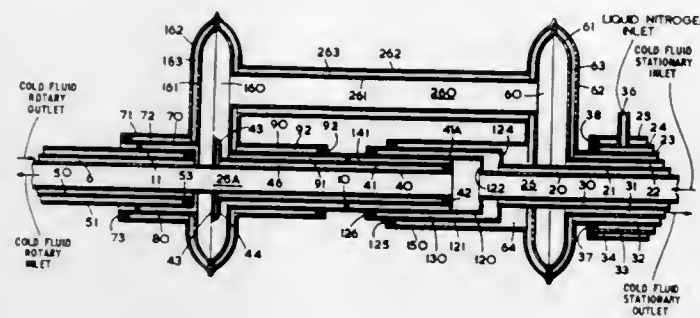
Int. Cl. F25b 31/00

U.S. Cl. 62—505

13 Claims

In apparatus for conveying a cold fluid to and from a rotatable body a stationary inlet tube conveys the cold fluid to a rotatable inlet tube carried on the axis of the body and a rotary seal is provided between these two tubes, cold fluid flows from the rotatable body by way of a rotatable outlet tube and means are provided for

conveying the cold fluid from the rotatable outlet tube to a stationary outlet tube which bypasses the rotary seal so that the cold fluid is not heated by the rotary seal. Some cold fluid is allowed to escape from the stationary



inlet tube and also from the rotatable outlet tube and this cold fluid is caused to flow up to and around the rotary seal so thermally isolating the seal from the flow paths of the cold fluid.

3,626,718

# **ARTICLE OF JEWELRY WITH DETACHABLY MOUNTED JEWELS AND KEEPER MEANS THEREFOR**

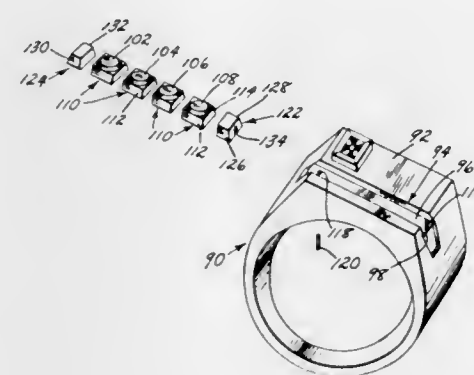
Jack Schneider, North Miami Beach, Fla., assignor to  
William Schneider Inc., New York, N.Y.

Filed Dec. 10, 1969, Ser. No. 883,702

Int. Cl. A44c 17/02

U.S. Cl. 63—29 R

2 Claims



A custom-made finger ring is adapted to mount a selected number of set jewels therein. The keeper may be a single member with a recess holding said jewels, or a pair of members to be secured in said groove at respective ends of a row of said jewels. The ring has a transverse groove formed in the head thereof having inclined side walls which make a dove-tail fit with the settings of a row of selected jewels slidably received in said groove. Keeper means mounted in said groove brackets the row of jewels and screw means lock the keeper means in said groove to retain the row of jewels securely therein.

3,626,719

# **MECHANICAL POWER TRANSMISSION COUPLING**

Robert M. Church, 126 Knox Drive,  
West Lafayette, Ind. 47906

Filed June 26, 1970, Ser. No. 50,114

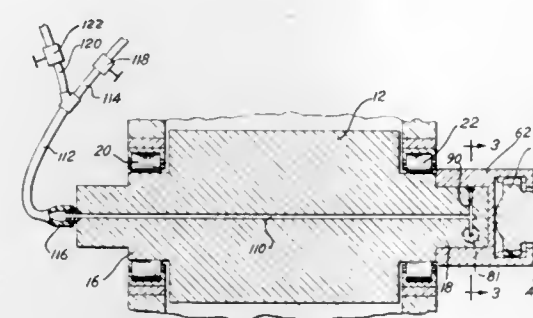
Int. Cl. F16d 3/00

U.S. Cl. 64—6

11 Claims

A mechanical power transmission coupling structure particularly suitable for use with a rolling mill having a roll with a neck or drive shaft connected to the roll, in which the coupling structure includes lands on the roll neck and a connector with a bore having corresponding

lands therein for mounting on the roll neck. Fluid operated pistons disposed in cylinders in the neck engage the lands on the adapter to form a firm connection between the coupling and the roll. The fluid, which is preferably hydraulic, is transmitted to the cylinders in the roll neck through



passages in the roll. When the pistons are actuated, the lands on the roll neck seat on the lands of the adapter, thereby eliminating or minimizing movement between the parts and preventing fretting, excessive wear, and backlash.

3,626,720

# **EMISSION CONTROL DEVICE**

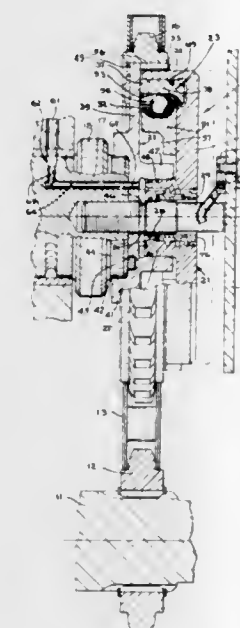
George B. K. Meacham, Birmingham, and James L. Oliver, Royal Oak, Mich., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Dec. 19, 1968, Ser. No. 785,324

Int. Cl. F16d 5/00

U.S. Cl. 64—25

10 Claims



A mechanism for varying the phase relationship of a camshaft with respect to crankshaft. A driven member is secured in fixed relationship to the camshaft and is connected through a helical ball spline to a piston member which is nonrotatably related to the crankshaft. The piston member and the driven member define a fluid chamber therebetween. A shiftable valve member permits flow of fluid to said chamber causing the piston to move axially relative to the driven member, whereby the helical ball spline causes the driven member to rotate relative to the piston, which in turn causes rotation of the camshaft relative to the crankshaft. The valve member may be controlled either manually or automatically in response to an engine operating condition.

3,626,721  
TORQUE LIMITER

Richard F. Koen, 127 Ridgefield Road,

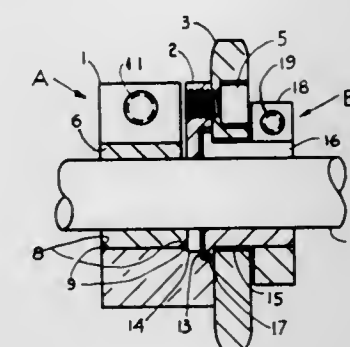
Lutherville, Md. 21093

Filed Aug. 29, 1969, Ser. No. 854,162

Int. Cl. F16d 7/02

U.S. Cl. 64—30

1 Claim



A torque limiter having a prestressed split collar for gripping a shaft and a power transmitting member attached thereto for receiving power from the shaft or transmitting power thereto, the prestressed collar having an internal liner or bushing surrounding the shaft, the liner having spongy or springy qualities and torque loads over a predetermined amount will cause rotary slippage between the liner and the shaft.

3,626,722

# **METHOD AND APPARATUS FOR PRODUCING A FINELY DIVIDED PROTECTED SPRAY OF LIQUID**

Joseph Corsentino, deceased, late of Belton, Tex., by  
Donald J. Corsentino, executor, Temple, Tex., assignor  
to The Susquehanna Corporation

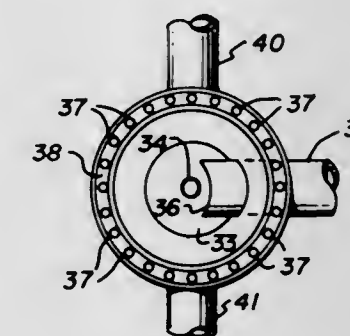
Original application Oct. 18, 1965, Ser. No. 496,987.

Divided and this application July 22, 1969, Ser.  
No. 845,123

Int. Cl. C03c 25/02

U.S. Cl. 65—3

5 Claims



The method involved and the combination of a device for spraying a liquid binder and the like into a stream of fibers produced from molten slag by a rotating head and steam ring, at least two devices being spaced around the rotating head, with their axes inclined toward the stream of fibers. Each device produces a central jet of gaseous fluid, such as steam, directed axially toward a liquid binder or the like supplied through a pipe generally transverse to the axis and having an arcuate inner end in adjacent but spaced position to the jet. An outer annulus of gaseous fluid, such as steam discharged from an annular series of holes, is directed generally coaxially with the central jet to surround the central jet and spray produced thereby and also increase the velocity of the spray as the spray stream expands. The annulus protects the spray from volatilization by heat in the environmental conditions of use.



3,626,723

**PRODUCTION OF CHEMICALLY STRENGTHENED CURVED GLASS BODIES**

Emile Plumet, Gilly, Belgium, assignor to Glaverbel S.A., Watermaal-Boitsfort, Belgium

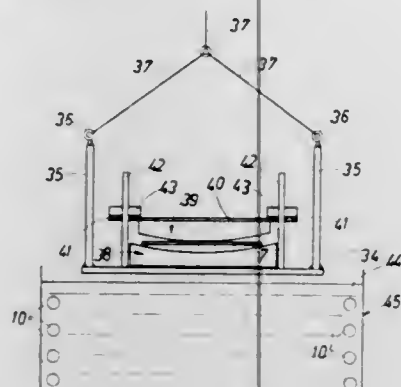
Filed Apr. 18, 1968, Ser. No. 722,359

Claims priority, application Luxembourg, Apr. 28, 1967, 53,550

Int. Cl. C03c 21/00

U.S. Cl. 65—30

18 Claims



A procedure for forming curved, tempered glass sheets by chemically tempering the sheets by means of a diffusion process and then bending the sheets to the desired curved form while the sheets are at a raised temperature which gives them a viscosity of no less than  $10^{10}$  poises, whereby the sheets can be bent after tempering without having to be subjected to extremely high temperatures.

3,626,724

**METHOD OF KNITTING A TUBE WITH A CLOSED END**

Harry Wignall, Leicester, and Gillies Wood, Evington, Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England

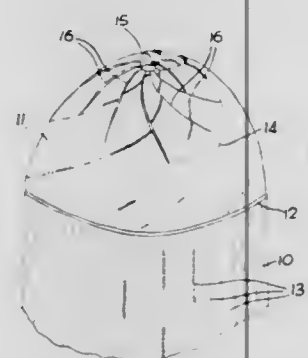
Filed Jan. 10, 1969, Ser. No. 790,384

Claims priority, application Great Britain, Jan. 11, 1968, 1,756/68; Feb. 23, 1968, 8,888/68

Int. Cl. D04b 9/56, 9/54

U.S. Cl. 66—14

5 Claims



A method of forming a closed or partially closed fabric tube on a knitting machine wherein an end pouch is formed by knitting double fabric in the manner of a turned welt from a yarn or yarns having a high degree of twist liveliness, the effect of the twist liveliness being to cause the wales in one ply of the welt to deviate slantwise in one direction and the wales in the other ply of the welt to deviate slantwise in the opposite direction, the fabric being thereby caused to become twisted so that at the fold of the welt-like portion it is constricted to a substantial or complete closure; and also a tubular knitted fabric having a substantially or completely closed pouch at one end produced by such method.

3,626,725

**RUNNER CHECKER APPARATUS FOR WARP KNITTING MACHINES**

Raymond Baines Fertig, Ronceverte, and Samuel Eugene Mitchell, Lewisburg, W. Va., assignors to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.

Filed Oct. 15, 1970, Ser. No. 80,944

Int. Cl. D04b 27/00

U.S. Cl. 66—86

24 Claims



A runner checker for measuring and indicating the length of yarn being fed from the warp beam section of a warp knitting machine, including a pulse generator mounted on each tension let-off controller assembly of a warp beam section to produce pulses related to unit lengths of warp yarn feed, a device connected to the pattern wheel drive shaft of the knitting machine for producing pulses related to pattern wheel rotation, and electronic circuitry responding to the pulses to indicate the yarn runner length in a rack of cloth.

3,626,726

**TUBULAR KNITTED FABRICS**

Peter Michael Findlay, Forest East, William Ewart Alan Shelton, Oadby, and John Michael Klee, Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England

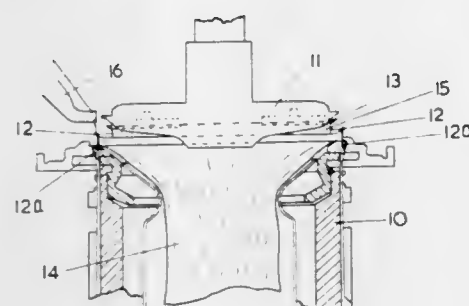
Filed Nov. 19, 1968, Ser. No. 776,943

Claims priority, application Great Britain, Nov. 22, 1967, 53,066/67

Int. Cl. D04b 9/56

U.S. Cl. 66—95

12 Claims



A closed fabric tube and method of forming it in which a first tubular portion of fabric is knitted on a knitting machine and, whilst its last formed loops are held, another and separate tubular portion of fabric is formed on the machine and closed by constriction, the two portions of fabric being afterwards joined by at least one connecting course of knitting. The separate second portion of fabric may be of welt-like construction and constricted at the fold of the welt.

3,626,727

**TUBULAR KNITTED FABRIC**

Gillies Wood, Evington, England, assignor to The Bentley Engineering Company Limited, Leicester, England

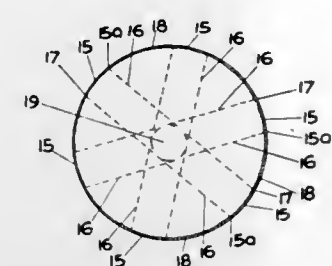
Filed Dec. 1, 1969, Ser. No. 881,227

Claims priority, application Great Britain, Dec. 6, 1968, 57,963/68

Int. Cl. D04b 9/56

U.S. Cl. 66—95

5 Claims



A closed fabric tube and more especially a foot part of a stocking or other article of hosiery footwear, and a method of forming it in which a double ply welt-like portion of closure fabric is constricted by means of U-shaped loops of yarn spaced around the fabric and each partly encircling the fold line of the welt-like portion and anchored at each end in a knitted course at the junction of the plies thereof. Each U-shaped loop may be formed of yarn used in knitting the welt-like portion and may be of a length such that full constriction to close the fabric is obtained when the closure fabric is extended to a required shape.

3,626,728

**BASKET WITH FILTER MEANS FOR AUTOMATIC WASHER**

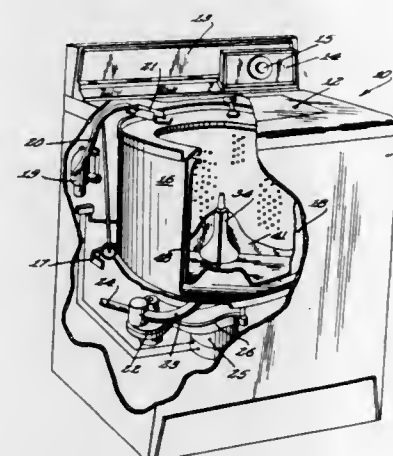
John H. Traube, and Robert A. Brenner, St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 6, 1970, Ser. No. 61,677

Int. Cl. D06f 39/10

U.S. Cl. 68—18 F

10 Claims



An upstanding basket for use in a vertical axis automatic washing apparatus characterized by having an agitator affixed to the interior of the basket, filtering means disposed on the upstanding side wall of the basket and pumping vanes mounted on the exterior of the bottom wall of the basket. In the preferred embodiment, a bottom portion of the basket, the agitator and the pumping vanes are in an integral molded plastic unit which is joined to other portions to complete the basket. The filtering means are small perforations in the side wall of the basket which are the size to filter foreign matter from the washing fluids. In operation, the pumping vanes cause fluid disposed in the space

between the basket and the outer tub of the automatic washing apparatus to flow outward and upward along the outer surface of the surrounding side wall to enter the interior of the basket through the small filtering perforations. During a spin cycle, fluid disposed in the interior of the basket is forced out through the small filtering perforations to wash away any foreign material that is accumulated thereon during the washing operation.

3,626,729

**CYLINDER PLUG RETAINER FOR PADLOCK**

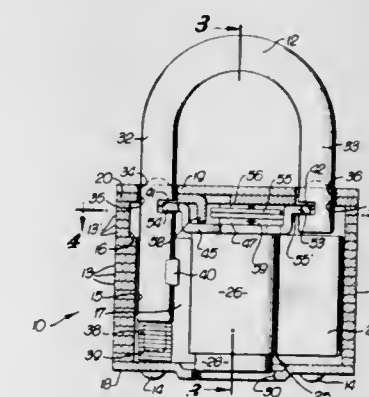
William J. Fane, Burnaby, British Columbia, Canada, and Vernard W. Sanders, Los Angeles, Calif., assignors to Norris Industries, Inc., Los Angeles, Calif.

Filed Aug. 17, 1970, Ser. No. 64,241

Int. Cl. E05b 9/04, 17/04 67/24

U.S. Cl. 70—38 A

9 Claims



A padlock body constructed of multiple laminations has a chamber occupied by a pin tumbler lock for locking and unlocking a shackle. Inwardly facing notches in respective long and short legs of the shackle are engaged by locking lugs of a locking plate which is rotated to locked position by an extension on a rotating cylinder plug in the lock. The extension protrudes through an opening in the locking plate and opposite outwardly facing undercut segments of the cylinder plug overlie the locking plate to hold the pin tumbler lock in the chamber. Stops respectively on the cylinder plug prevent rotation of the cylinder plug to a position of potential disengagement when they engage in one direction shoulders formed in the opening in the cylinder plug and in the opposite direction a shoulder forming part of one of the end laminations.

3,626,730

**DIE-CAST LOCKS FOR SUITCASES**

Mikio Murase, Yao, Japan, assignor to Osaka Trunk Material Co. Ltd., Osaka, Japan

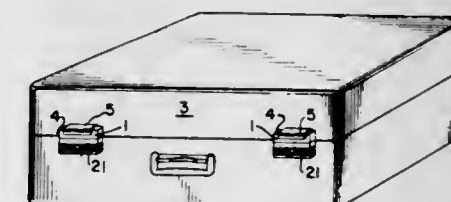
Filed Nov. 10, 1970, Ser. No. 88,451

Claims priority, application Japan, July 18, 1970, 45/62,994

Int. Cl. E05c 65/52, 19/10

U.S. Cl. 70—70

10 Claims



A latch lock for suitcases in which an upper member secured to the cover has a vertical plate tongue extending beyond the bottom edge of the cover with a vertically slidable latch plate having a laterally extending hook mounted

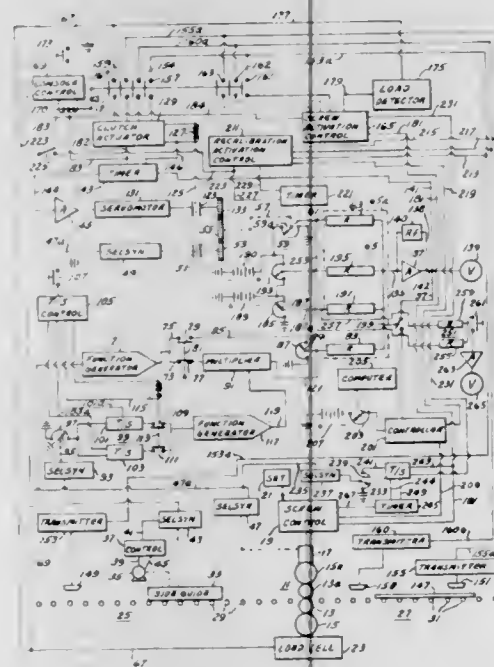


for vertical sliding movement with the hook lying within the dimensions of the vertically extending plate and spring-pressed to a raised inoperative position, and having a finger-engageable handle for projecting the latch hook, a lower member secured to the bottom portion of the suitcase has a horizontally slidable catch which cooperates with the latch hook of the upper member and is horizontally slidable by finger-engagement with the manually engageable slide to move the catch laterally for disengagement of the latch hook and catch hook to permit opening of the suitcase, the latch hook and catch hook having cam surfaces whereby closing the suitcase automatically causes the latch and catch to engage, due to spring urging of the parts. A key lock is provided for preventing the catch slide from being surreptitiously opened.

**3,626,731**  
**AUTOMATIC CALIBRATION OF ROLLING MILL THICKNESS GAGING SYSTEM**  
William Jeuck, Bethlehem, Pa., assignor to Bethlehem Steel Corporation  
Filed Mar. 18, 1970, Ser. No. 20,710  
Int. Cl. B21b 37/00

U.S. Cl. 72—8

12 Claims



A rolling mill control system, which uses a load cell signal to determine the stretch of the mill under load, is periodically recalibrated to correct for drift by moving the work rolls into contact to establish the true zero setting that serves as the basis in the system for determining the correct gage of strip subsequently rolled. A biasing signal is provided during recalibration to relate, in a straight line relationship, the stretch of the mill structure to the load detected by the load cell in order to enable the recalibration to be accomplished quickly and without hunting in the system at any indicated below face position of the rolls.

**3,626,732**  
**STRAIGHTENING MACHINE FOR METALLIC BARS OR THE LIKE**  
Erich Kraft and Heinz Hartkopf, Solingen, Germany, assignors to Th. Kieserling & Albrecht, Solingen, Germany

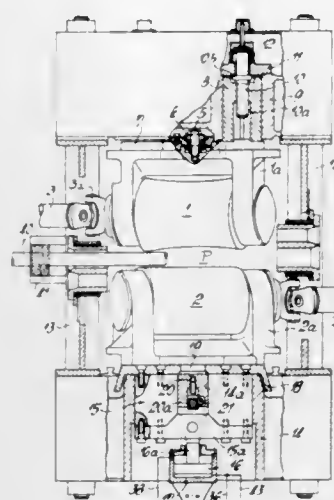
Filed Feb. 24, 1970, Ser. No. 13,614  
Claims priority, application Germany, Mar. 4, 1969, P 19 10 879.3  
Int. Cl. B21d 3/04

U.S. Cl. 72—99

8 Claims

A straightening machine for workpieces of circular or other than circular cross section wherein the lower roll of a pair of superimposed straightening rolls is movable to

and from a retracted position in which its carrier abuts against the housing and cannot yield when the rolls treat workpieces of circular cross section. The carrier is mounted on the piston of a double-acting hydraulic cylinder which can move the lower roll from retracted position to bias it against a workpiece of other than circular cross section. The cylinder can receive pressurized oil from a



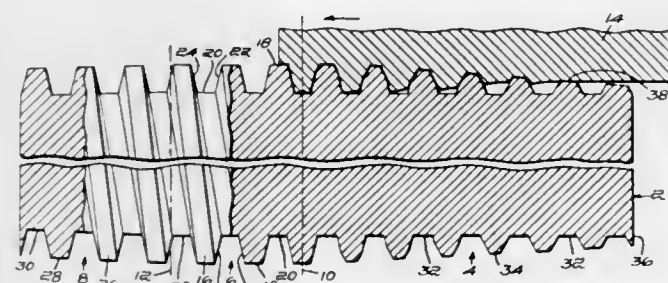
pump by way of a first solenoid-operated valve which can effect rapid movements of the lower roll to and from retracted position, and from an accumulator by way of a second solenoid operated valve which can admit highly pressurized oil to urge the lower roll toward the upper roll during treatment of workpieces of other than circular cross section.

**3,626,733**  
**TRUNCATED THROUGH FEED THREAD ROLLING DIE FOR ROLLING FLAT ROOTED THREADS**  
Elmer S. Zook, Princeton, and Paul W. Ronn, Gardner, Mass., assignors to Reed Rolled Thread Die Co., Holden, Mass.

Filed Mar. 26, 1969, Ser. No. 810,485  
Int. Cl. B21h 3/04; B23g 7/00

U.S. Cl. 72—104

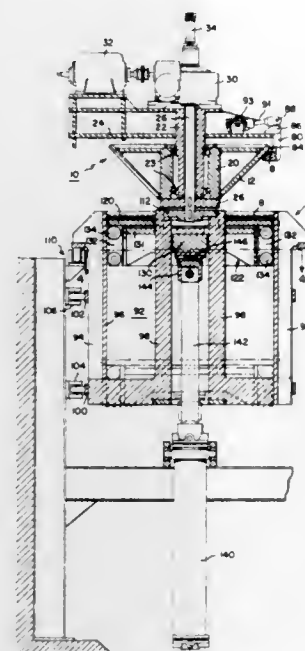
21 Claims



A through feed thread rolling die which acting in cooperation with one or more identical dies will produce so called Acme or similar threads on a work piece. The threads on the relieved starting section in which the root diameter is constant have a novel constantly changing cross section. The crests of the threads considered in longitudinal section are flat and lie in the surface of a truncated cone. The flanks of the threads that first contact the work are at a relatively wide angle so that good starting thread formation is produced in the work. As the thread on the die increases in diameter, the flanks assume a dual angularity with the wide angled flanks merging with steep inner flanks. When the tapered starting relief section reaches the full diameter intermediate dwell section, the wide angled flanks will have gradually disappeared to be replaced by the steep flanks of Acme configuration.

**3,626,734**  
**BAR COILER**  
Richard Kotler, Monroeville, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.  
Filed June 10, 1970, Ser. No. 44,917  
Int. Cl. B21d 7/04; B21f 3/04  
U.S. Cl. 72—139

13 Claims



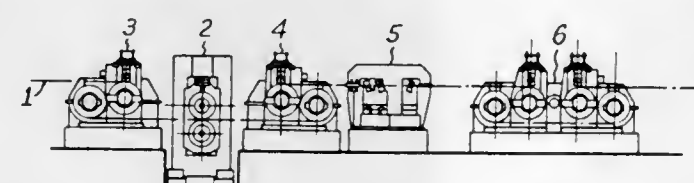
A machine for the coiling of bars including a rotating mandrel having a conical surface and means for holding the bar being coiled against said surface for a substantial arc so as to bend the bar to form the coil. As the bar is being fed through the coiler, the holding means is moved axially back and forth along the conical surface to progressively vary the radius of curvature of the bar as it is being formed.

**3,626,735**  
**WORKING OF METAL STRIP**  
Pierre M. Lebourg, Le Vesinet, and Pierre S. Rasser, Paris, France, assignors to Wean Industries, Inc., Youngstown, Ohio

Filed Oct. 29, 1969, Ser. No. 872,215  
Int. Cl. B21h 15/00, 39/08

U.S. Cl. 72—161

5 Claims



The invention concerns the working of metal strip and is original in the fact that it comprises a temper mill located between an entry drag bridle and a pulling bridle followed by a roller leveler and a second exit pulling bridle, and more particularly the driving of the rolls of the bridles and temper mill in synchronism by a common source.

**3,626,736**  
**SHEET- AND STRIP-FLATTENING MACHINE**  
Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Irma Ungerer, geb. Dollinger, Pforzheim, Germany

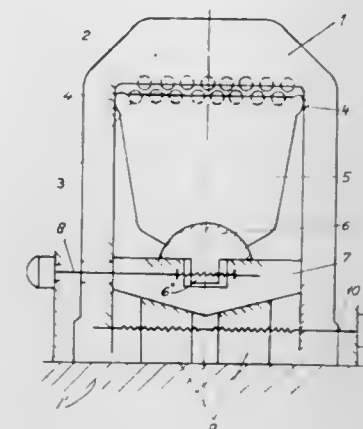
Filed Jan. 17, 1969, Ser. No. 791,979  
Claims priority, application Germany, Mar. 14, 1968, P 16 52 644.6  
Int. Cl. B21d 1/02

U.S. Cl. 72—165

2 Claims

A frame has vertical guideways spaced apart in a predetermined horizontal direction. Two guide members which are cylindrically curved are formed with surfaces

which are at least a part of a surface of revolution centered on a generally horizontal axis that is transverse to said predetermined direction. The guide members are mounted in said frame on opposite sides thereof for adjustment in a vertical direction and generally in the direction of said axis. A yoke is disposed between and in slidable engagement

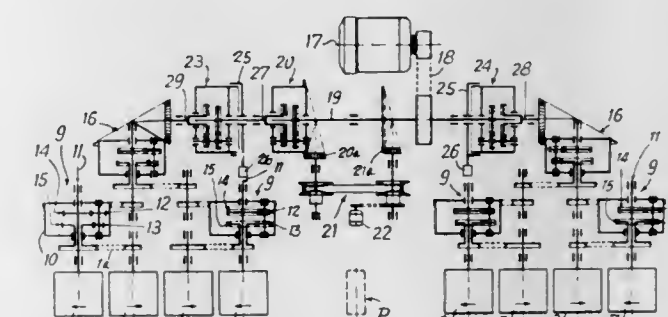


ment with said guideways and formed on opposite sides of said frame with surfaces conforming to and resting on said surfaces of said guide members to support said yoke. A set of lower rolls extending generally horizontally and transversely to said predetermined direction is carried by said yoke.

**3,626,737**  
**BRIDLES**  
Paul A. Defontenay, Bourg-la-Reine, France, assignor to Wean Industries, Inc., Youngstown, Ohio  
Filed Oct. 29, 1969, Ser. No. 872,214  
Claims priority, application France, Dec. 27, 1968, 181,159  
Int. Cl. B21h 39/08

U.S. Cl. 72—205

10 Claims



The invention concerns a device which places tension on a metal strip by pulling the latter by means of pulling rolls of a pulling bridle through drag rolls of a drag bridle, each of the pulling and drag rolls being coupled to a following roll by means of a differential, and all rolls being driven by a common motor.

**3,626,738**  
**PRE-STRESSED MILL ROLLS WITH REVERSE LOADING**  
Lucien Diolot, Neuilly, France, assignor to Societe Nouvelle Spidem, Paris, France  
Filed Apr. 11, 1969, Ser. No. 815,290  
Claims priority, application France, Apr. 11, 1968, 147,831  
Int. Cl. B21h 31/32

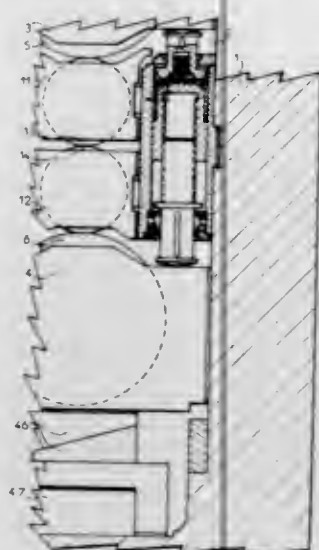
U.S. Cl. 72—237

9 Claims

A gap adjusting device for an inverted screw-down pressure pre-stress rolling mill enabling compensation for



possible variations in the said gap when rolling mill cylinders are replaced, including a jack having upper and lower rams adjustably secured to one another to selectively-



ly adjust the length of the jack, one of said rams being of selectively variable length in response to applied pressure fluid.

3,626,739

# APPARATUS FOR ROLL COUNTER-DEFLECTION IN ROLLING STANDS

Horst Willeke, Dusseldorf, and Karl-Heinz Simon, Langenfeld, Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

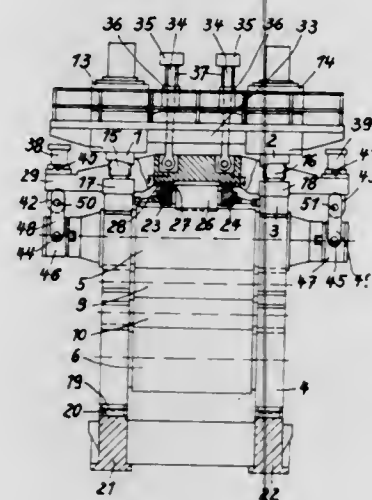
Filed July 8, 1969, Ser. No. 839,899

Claims priority, application Germany, July 10, 1968, P 17 52 752.5

Int. Cl. B21b 13/14, 29/00, 31/32

U.S. Cl. 72-241

3 Claims



A rolling stand, especially a two-high or a four-high rolling stand, has a downward rolling pressure onto a roll, which pressure is absorbed by the stock when present and by the roll bearings. The present invention is to avoid excess load on the bearings and their mountings for a given rolling pressure by counter-deflecting the roll. A cross beam of the roll stand is parallel and above the roll and back-up rolls are provided to space the cross beam from the roll; deflecting devices are provided to connect the corresponding ends of the roll and cross beam, so that operation of the deflecting devices urges together said corresponding ends.

## 3,626,740 APPARATUS FOR SHAPING METAL BARS

Ernst Hinterholz, Linz, Austria, assignor to Vereinigte Österreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

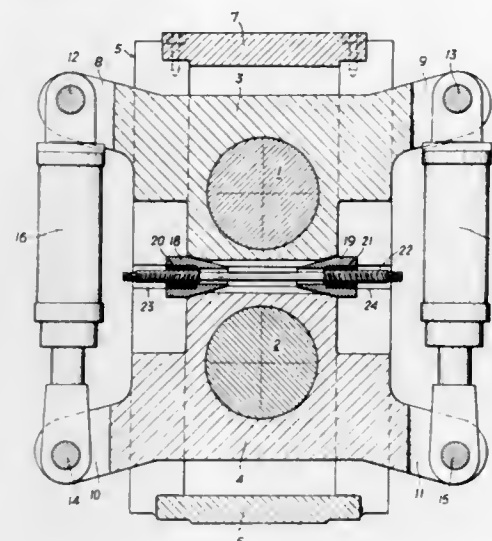
Filed July 24, 1969, Ser. No. 844,321

Claims priority, application Austria, Apr. 23, 1969, A 3,913/69

Int. Cl. B21b 31/30

U.S. Cl. 72-244

4 Claims



In an apparatus for shaping metal bars, particularly castings immediately supplied from a continuous casting plant, comprising a series of rolling stands in tandem arrangement containing pairs of rolls, in which the rolls are arranged by means of inserts, easy and accurate alignment of the roll gaps in the direction of rolling is achieved according to the invention by providing for each roll of a pair of rolls being adjustable away from and towards the roll pass axis in that the two inserts of a pair which are slidably arranged within common vertical or horizontal guide means, are interconnected and urged against interposed wedges by hydraulic means exerting a pressure exceeding the maximum roll pressure that may occur, said wedges being interconnected to be relatively movable by a threaded spindle so as to change the distance between said inserts and thereby the roll gap.

3,626,741

# EXTRUDED ARC CAST MOLYBDENUM

John Lowell Ham, Wellesley Hills, Mass., assignor to Norton Company, Worcester, Mass.

No Drawing. Filed Feb. 12, 1968, Ser. No. 704,508

Int. Cl. B21c 23/00; G01k 5/06

U.S. Cl. 72-253

6 Claims

Arc cast molybdenum billets are extruded at a starting temperature of about 1000° F. through a 10 to 1 reduction without excessive extrusion pressure to produce sound extruded bars with excellent surface quality and little die wear.

3,626,742

# COLORIMETRIC OXYGEN DETECTOR

John P. Hogan and Donald R. Witt, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 24, 1969, Ser. No. 844,615

Int. Cl. C07d 103/00, 105/00; G01n 31/22

U.S. Cl. 23-232 R

7 Claims

A process for detecting the presence of free oxygen and oxides of sulfur and nitrogen in a gaseous stream which comprises contacting the reaction product of the reduction of an organo-transition metal compound with a metal hydride or an alkyl, the reduction compound containing the transition metal in a lower valence state, with the oxygen-containing gas to produce a color change in the reaction product.

## 3,626,743 MAKING CORRUGATED ELASTIC SHIMS

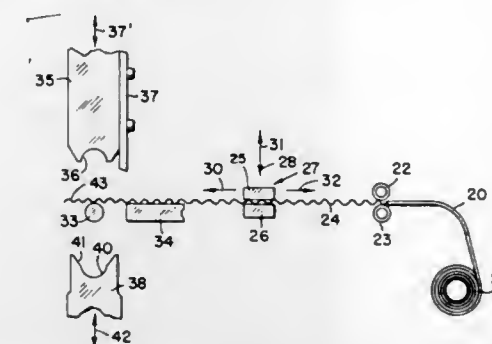
Hans W. Koch, Levittown, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

Filed Dec. 22, 1969, Ser. No. 887,463

Int. Cl. B21d 31/02, 43/10, 37/18

U.S. Cl. 72-330

7 Claims



In bending corrugated strip to make a corrugated elastic shim, a continuous strip is fed forward in a space between a circular mandrel and a first bending and cutting die cooperating with a mandrel, and the first die is moved forward to cut off a piece of strip in cooperation with an anvil and bend it into the shape of a U with the ends protruding away from the first bending die, without crushing the corrugations, and the second bending die cooperating with the mandrel on the side remote from the first bending die is moved forward to bend the piece of strip into a curved, circular or multisided shape without crushing the corrugations. In the preferred embodiments the bending dies and the mandrel grip the corrugated strip at the edges.

3,626,744

## SMOOTH HIGH TOLERANCE POROUS TUBE AND PROCESS FOR MAKING

Frederick J. Sorgenfrei, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,972

Int. Cl. B21k 21/00

U.S. Cl. 72-367

8 Claims

Several beneficial properties are achieved by centripetally mechanically working as by rotary swaging of porous metal tubing particularly prepared from sintered powdered metals. These include excellent dimensional tolerance, excellent surface finish, controlled densification depending on the amount of reduction, increased strength and yet the overall porosity of the tube is retained to a very considerable extent. The internal surface retains its initial rough structure.

3,626,745

## RIVET GUN ACCESSORY

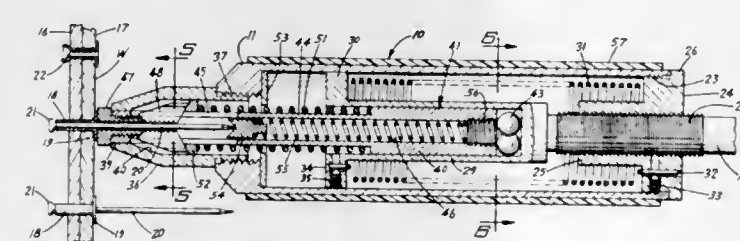
Russell F. Richardson and Gregory A. Richardson, St. Paul, Minn., assignors to The Richline Company, Incorporated, St. Paul, Minn.

Filed Dec. 1, 1969, Ser. No. 881,143

Int. Cl. B21d 9/05

U.S. Cl. 72-391

8 Claims



A rivet setting accessory for the setting of blind rivets for use in conjunction with a standard power unit, such as an electric drill. The operator's hand gripping the barrel of the rivet setting gun functions as a clutch holding the barrel stationary while the rotary motion supplied

by the power drill advances a plunger causing jaws to grip the mandrel of a rivet, set the rivet, detach the mandrel from the set rivet and eject the spent mandrel.

3,626,746

## WORK REDUCING AND SHAPING APPARATUS

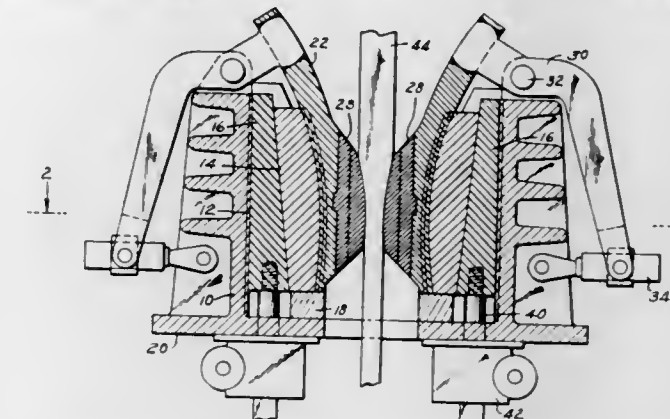
Joseph Pietryka, Paris, France, assignor to Fives Lille-Cail, Paris, France

Filed Feb. 25, 1969, Ser. No. 802,089

Int. Cl. B21j 13/02

U.S. Cl. 72-402

10 Claims



A perimetric frame adapted for passing slender work such as a continuous casting therethrough. Blocks in the frame provide guide surfaces which are convergent in the direction of movement of the work. Work engaging shoes are slidably along the convergent guide surfaces so as to cross-sectionally reduce the work as it passes through the frame in step-by-step manner by reciprocation of the shoes. Wedges are slidably interposed between the frame and the blocks to move the shoes transversely into and out of engagement with the work.

3,626,747

## ATTACHMENTS FOR FRAME STRAIGHTENING MACHINE

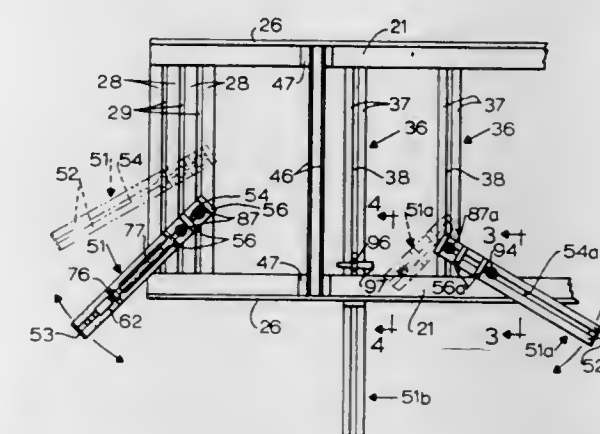
Robert J. Rouis, San Mateo, Calif. (% Align Rite, Inc., 2277 Shafter Ave., San Francisco, Calif. 94124)

Continuation-in-part of application Ser. No. 613,274, Feb. 1, 1967. This application July 18, 1969, Ser. No. 842,978

Int. Cl. B21j 9/18

U.S. Cl. 72-453

8 Claims



A vehicle frame straightening machine has a flat, rigid base formed of longitudinal side rails and transverse front and rear ends, the latter formed with parallel vertical slots. The side rails are formed with inward facing horizontal slots which receive the ends of transverse vertically slotted horizontal rails fitting between the side rails and longitudinally movable with respect thereto. The attachment is formed with a vertical longitudinal slot. It may be attached to either the front or rear end by resting same upon the end and inserting bolts through the slot in the attachment and through different slots in the end. By sliding the bolts laterally of the base the lateral position of the attachment is adjusted and by



swinging the attachment in an arc, permitting the bolts to slide in the slots and then tightening nuts on the ends thereof the attachment is fixed in diagonal position. Similarly, a bolt may be inserted through the attachment slot in the transverse rail slot and also a hook through the attachment slot to engage the side rail to locate the attachment at a diagonal. Means is provided to apply diagonal pulls to a vehicle frame on the base. Also an underslung attachment may be supported below the base.

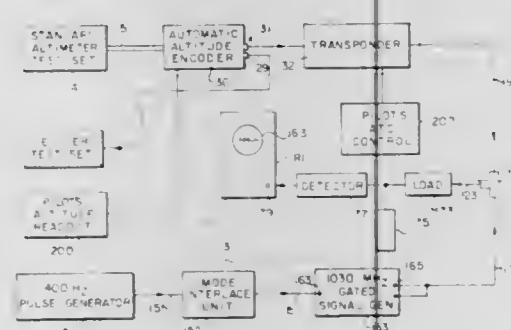
### 3,626,748 AUTOMATIC ALTITUDE REPORTING SYSTEM VERIFYING APPARATUS

Earl W. Springer, Box 220, Fairland, Ind. 46126  
Filed May 14, 1970, Ser. No. 37,168

Int. Cl. G01M 22/00

U.S. Cl. 73-4 R

23 Claims



An apparatus for verifying the output of an aircraft transponder combined with an automatic altitude encoding means, the apparatus comprising an altimeter test set including means for generating negative pressures, a calibrated altimeter for measuring said pressure in units of altitude, means for applying these pressures to the altitude encoding means, an altitude decoder test set including encoder means for generating a binary reference signal corresponding to the altitude equivalent of the pressure applied to the said altitude encoding means and means for simultaneously displaying, for comparison, said altitude encoding means, and means for interrogating such a transponder including means for generating a transponder interrogating signal and means for displaying the signal generated by the transponder in response to said interrogating signal, whereby the signal generated by the transponder can be compared to said binary reference signal.

### 3,626,749 FLUID DENSITY MEASURING APPARATUS

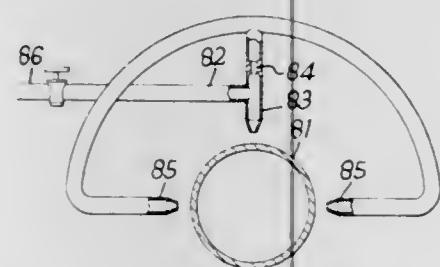
William Edward Abbotts, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Original application Jan. 25, 1967, Ser. No. 611,632, now Patent No. 3,516,283. Divided and this application Jan. 28, 1970, Ser. No. 888,102

Int. Cl. G01M 7/00, 9/10

U.S. Cl. 73-32

3 Claims



A fluid density measuring apparatus includes an elastically resilient hollow vibratory tube which can be contacted by a fluid, the density of which is to be measured. A pneumatic embodiment thereof includes pulsation

means for supplying a pressurized fluid against the external surface of the tube to excite the tube into natural vibration.

### 3,626,750 LEAK DETECTION IN UNDERGROUND WATER SYSTEM

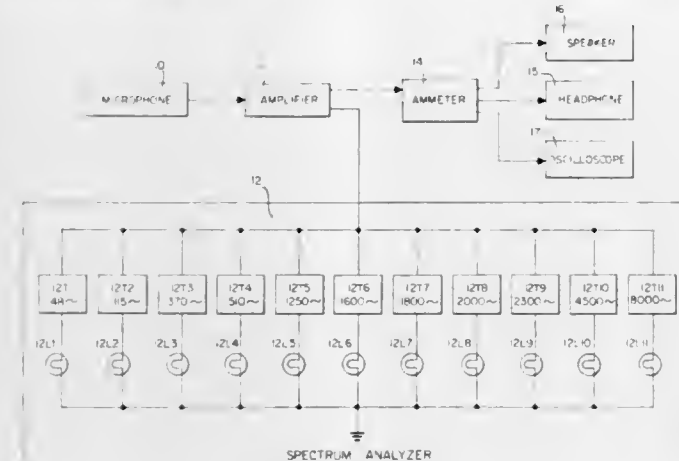
Clarence A. Talmon, North Miami Beach, Fla., assignor to United States Water Conservation Corporation, Miami, Fla.

Filed Jan. 9, 1970, Ser. No. 1,783

Int. Cl. G01M 3/16, 3/24

U.S. Cl. 73-40.5 A

3 Claims



A method for accurately locating leaks in underground water, gas, or like fluid, systems which includes the steps of detecting leak-frequency sound signals at a plurality of randomly selected locations on the underground system, converting the same to electrical signals, observing and selecting the predominant leak-frequency electrical signals and measuring the selected signals at a plurality of locations on the underground system, observing the two locations that yield electrical signals of greatest intensity at the selected leak frequency, averaging the low-magnitude limit values of said signals of greatest intensity and ignoring the high-magnitude peak values, and determining the proportional relationship between said average low-magnitude values as a function of a reference value to determine the distance from the midpoint between the two locations to the leak location.

### 3,626,751 DEVICE AND METHOD FOR MEASURING OIL IN WATER

Charles J. Overbeck, Palos Heights, and Jay C. Means, River Forest, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 11, 1969, Ser. No. 884,229

Int. Cl. G01N 33/18, 25/14

U.S. Cl. 73-61.1 R

6 Claims



A device and method for the convenient analytical determination of oil-in-waste water using a funnel-syringe device and a low boiling solvent.

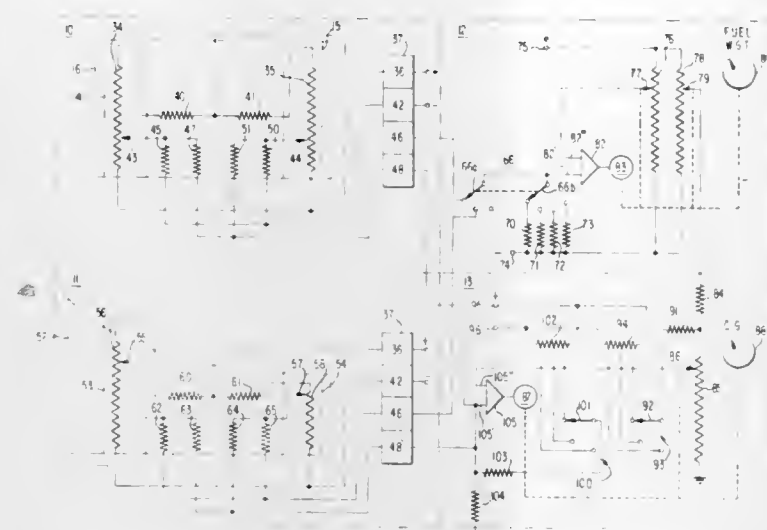
### 3,626,752 FUEL MANAGEMENT SYSTEM

Dave B. Levins, Swampscott, Mass., assignor to General Electric Company  
Continuation of application Ser. No. 528,584, Feb. 18, 1966. This application May 27, 1968, Ser. No. 739,973

Int. Cl. G01M 1/12

U.S. Cl. 73-65

7 Claims



A fuel management system for indicating aircraft center of gravity. Fuel probes in each fuel tank produce an electrical signal which varies in accordance with the fuel level at each probe. This signal is converted by scaling resistors to produce a liquid weight current signal and a liquid weight moment signal. Servo means and amplifiers are energized by these two current signals to obtain the total aircraft liquid weight and moment and to indicate the aircraft center of gravity.

### 3,626,753 ACOUSTO-HOLOGRAPHIC METHOD AND APPARATUS FOR INTERNALLY IMAGING AND INTERFEROMETRICALLY ANALYZING OBJECTS

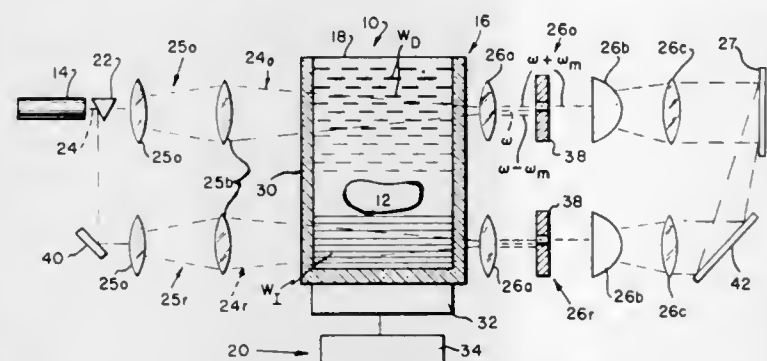
Robert Aprahamian, Culver City, and Pravin G. Bhuta, Torrance, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 5, 1970, Ser. No. 16,636

Int. Cl. G01B 5/30; G01N 29/00

U.S. Cl. 73-88 A

12 Claims



An acousto-holographic method of an apparatus for internally imaging and interferometrically analyzing objects, particularly objects which are optically opaque. The object to be examined is acoustically coupled to an acoustic source of fixed frequency and to an acoustic wave transmission medium in a manner such that acoustic wave energy from the source is transmitted through the object to the acoustic medium to produce within the medium distorted acoustic waves containing information defining an image of the object. This acoustic wave information is transformed to equivalent holographic information by a light-sound wave interaction involving passage of an object beam from a laser through the distorted acoustic waves to produce an object beam sideband of given order defining an image of the object, modu-

lating a reference beam from the laser to obtain a reference beam sideband of the same order as the object sideband, and mixing the object and reference sidebands to produce a hologram for reconstructing a three-dimensional interior image of the object. The object may be strained after the initial exposure and the holographic film then reexposed to provide a hologram for reconstructing an interior three-dimensional image of the object displaying the internal stress pattern of the object.

### 3,626,754 DISPLACEMENT TRANSDUCER HAVING AN OSCILLATING TRANSMITTER ELEMENT

Thomas Haagen and Clas-Goran Skoog, Nynahamn, Sweden, assignors to Rederiaktiebolaget Nordstjernan, Nynahamn, Sweden

Filed July 9, 1969, Ser. No. 840,151

Claims priority, application Sweden, July 12, 1968, 9,615/68

Int. Cl. G01M 5/12

U.S. Cl. 73-141 A

28 Claims



A transmitter element arranged to mechanically oscillate between fixed ends. The element takes the form of a rod, band or the like which is resistant to bending, and is curved in shape between its points of mounting. The transmitter element may be used for measuring forces, elongation, motion, etc. by monitoring changes in its oscillating frequency.

### 3,626,755 FLOW MEASURING APPARATUS

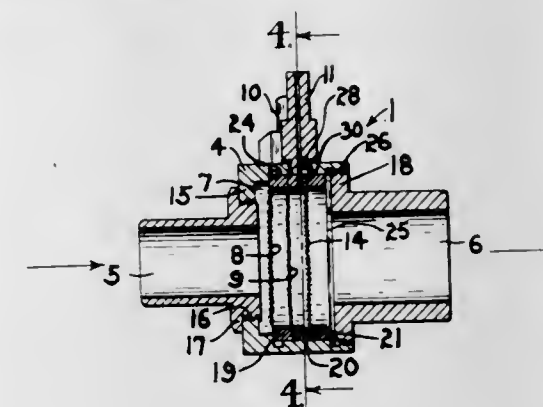
Hans Rudolph, Johnson County, Kans., assignor to Hans Rudolph, Inc., Kansas City, Mo.

Filed Apr. 9, 1970, Ser. No. 26,821

Int. Cl. G01F 1/00

U.S. Cl. 73-205 L

4 Claims



A flow measuring apparatus for measuring fluid flow comprises a housing having a bore therethrough and a fluid passage mounted on each end of the housing and communicating with the bore. An end screen is positioned within the housing and adjacent each of the fluid passages to effect laminar flow of fluid and an intermediate screen is positioned between the end screens to effect a measurable pressure differential adjacent opposite sides of the intermediate screen. A pair of spaced apart taps are mounted on the housing for connection to a differential pressure measuring instrument, and said taps being positioned on each side of the intermediate screen in communication with the space between the intermediate screen and the respective end screen.



3,626,756

**FLOWMETER**

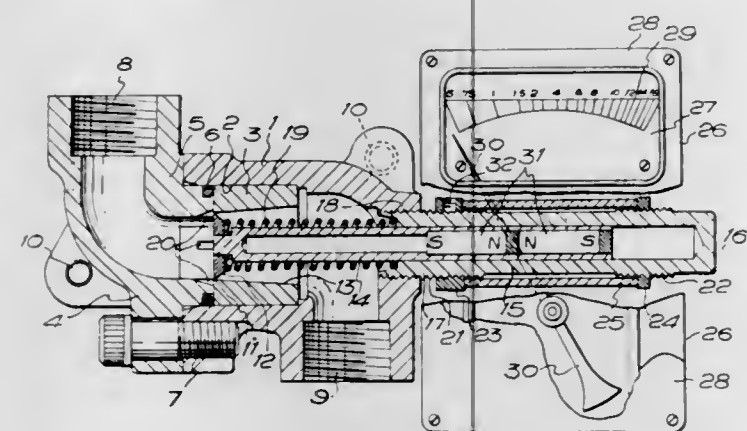
Cyril Marshall and Dennis A. Perry, Lenton, England,  
assignors to Conflow Limited  
Filed Jan. 26, 1970, Ser. No. 5,719

Claims priority, application Great Britain, Jan. 29, 1969,  
5,288/69

Int. Cl. G01f 1/00

U.S. Cl. 73—207

4 Claims



A flowmeter is provided with a spring urging the valve member towards a seating at the smaller inlet end of a flow passage, so as to be suitable for use in any disposition or for measuring flows under high pressures, and the valve member is carried by a plunger including opposed magnets by means of which a pointer is moved over a scale without any mechanical connection with the valve member, thereby enabling the pointer and scale to have a mounting rotatable about the axis of the plunger to bring the scale to a convenient position for reading regardless of the disposition of the flowmeter.

3,626,757

**EAR THERMOMETER**

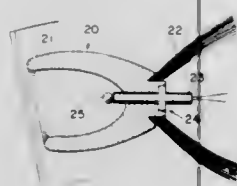
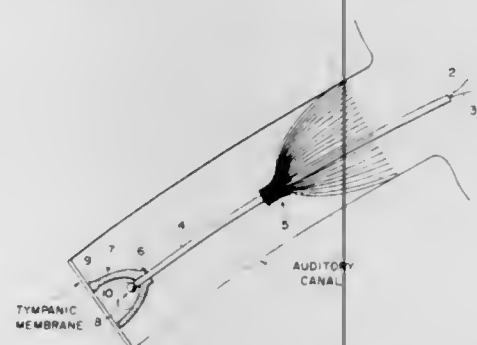
Theodor H. Benzinger, 6607 Broxburn Drive,  
Bethesda, Md. 20034

Filed Oct. 24, 1967, Ser. No. 677,794

Int. Cl. G01j 5/12; G01k 13/00

U.S. Cl. 73—355 R

2 Claims



This clinical ear thermometer, devised to measure the temperature of the tympanic membrane in man or animals, includes a hollow, cuplike member which has an inner reflecting surface. The opening of this cup has a soft edge, preferably made of deformable material, for gentle, transitory contact with the tympanic membrane. In the optical focal area of the cup, near its bottom, the sensing portion of a temperature measuring device is

located. The sensing tip is responsive to infrared in the region of animal or human body temperature. The cup is accommodated at the distal end of a flexible stem which is as long as or longer than the ear canal, and this stem accommodates means for bringing the temperature signal out of the ear canal for recording. The stem also serves for the safe introduction without undue pressure and for the safe removal of the cup from the ear canal.

3,626,758

**REMOTE RADIATION TEMPERATURE SENSOR**

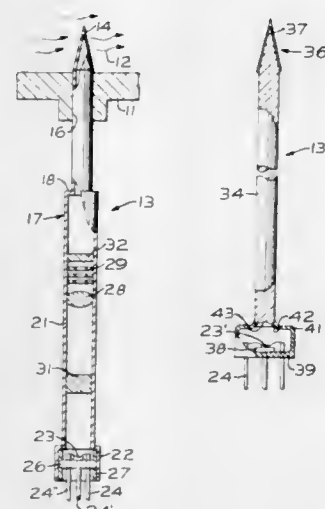
James E. Stewart, Lafayette, La., and Duane E. Evans  
and Gerald L. Larson, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 15, 1969, Ser. No. 885,069

Int. Cl. G01j 5/08

U.S. Cl. 73—355 R

2 Claims



A semiconductor element of the kind which produces an electrical signal which is a function of the intensity of incident infrared radiation is disposed at one end of a thin tubular body having a tip at the opposite end which may be disposed in a high temperature environment. The tip has a conical configuration to approximate blackbody characteristics and emits thermal radiation towards the detector through a system of collimators and lenses within the tube. In another embodiment, the body of the device may be a solid quartz or sapphire rod having a conical radiation opaque tip at one end and having a concave opposite end to define a focusing lens for directing infrared radiation onto the detector element.

3,626,759

**THERMOSTATIC ELEMENTS**

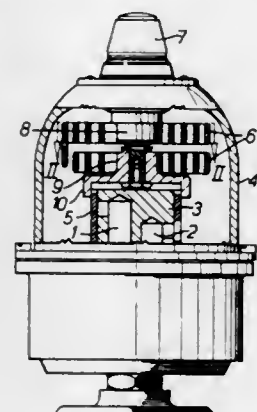
Dennis C. Arbon, 179 Leckhampton Road,  
Cheltenham, England

Filed Aug. 11, 1969, Ser. No. 848,784

Int. Cl. G01k 5/38

U.S. Cl. 73—368.6

1 Claim



A thermally sensitive element comprising a sealed, spiral, metal tube which is filled with a non-toxic liquid under pressure and which, in cross section, is formed

with an opposed pair of narrower, curved walls having concave internal surfaces, and with an opposed pair of wider walls having flat and parallel portions, the said walls are of the same uniform thickness, the internal radius of the narrower walls is not less than twice and not more than five times the wall thickness, the width of the parallel portions of the wider walls is not less than the mean thickness of the tube, and the mean width of the tube is not less than twice the said mean thickness. The element is produced by a method which comprises fabricating the tube in a straight, open-ended form, filling the tube with a solid supporting medium having a low melting point, shaping the straight tube to the spiral form, melting and expelling the supporting medium, sealing one end of and evacuating the tube, forcing the non-toxic liquid under pressure into the tube through the opposite end, and sealing the said opposite end.

3,626,760

**LEAK DETECTION CYCLIC PUMPING CONTROL**

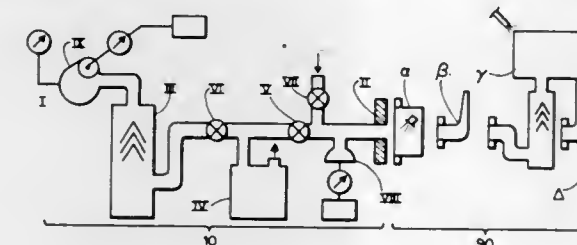
Walton E. Briggs, Lynnfield, and Paul R. Fruzzetti, North  
Easton, Mass., assignors to Varian Associates, Palo  
Alto, Calif.

Filed July 16, 1969, Ser. No. 842,169

Int. Cl. G01m 3/00

U.S. Cl. 73—40.7

19 Claims



Mass spectrometer leak detector (or vacuum apparatus) generally controlled in its pumping cycles by solenoid operated roughing and isolation valves and utilizing roughing line suction for effective operation of the roughing valve in opening and sealing. The roughing valve is also used for test port air release in conjunction with sealing of the roughing valve per se. Automatic, pressure-responsive, control of the system is provided to allow complete control of pump-down, test air release and stand-by phases of a single cycle using a single electrical switch.

3,626,761

**SAMPLE-INTRODUCTION APPARATUS****FOR A GAS-CHROMATOGRAPH**

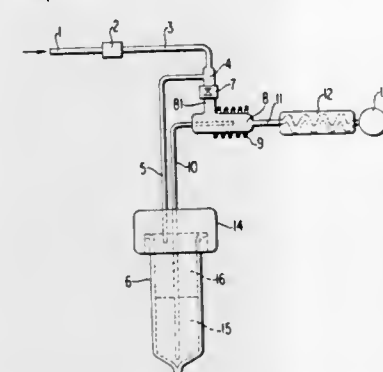
Tatsuro Haruki and Yoshiro Hayashi, Kyoto, Japan,  
assignors to Shinadzu Seisakusho Ltd.

Filed Sept. 24, 1970, Ser. No. 75,172

Int. Cl. B01d 15/08; G01n 1/00

U.S. Cl. 73—422 GC

6 Claims



A sample-introduction apparatus capable of introducing an accurate and fully controllable flow of a liquid-state sample into its vaporizer, by means of an intentional opening and closing operation of the valve, unaffected by pressure change of the carrier-gas or temperature change of the sample, in which a pressure-balancing

tube is provided to connect the inlet port of the valve to the gaseous space over the liquid-state sample in the sample container.

3,626,762

**METHOD AND APPARATUS FOR FILLING A CAPILLARY TUBE WITH LIQUID**

Saul R. Gilford, Oberlin, Ohio, assignor to Gilford  
Instrument Laboratories, Inc., Oberlin, Ohio

Filed Aug. 12, 1969, Ser. No. 849,371

Int. Cl. G01n 1/14

U.S. Cl. 73—425.6

10 Claims



An evacuated length of accurately sized bore capillary tubing with sealed ends is scored adjacent one end, supported in a break-off member on the opposite side of said score from said one end, immersed in a sample fluid, and the length of tubing pushed axially against a wedge surface of the break-off member so as to strain the score laterally thereby cleanly breaking off the one end below the surface of the sample fluid. Vacuum draws the fluid into the length of tubing which can then be cut into accurate short lengths each containing a known volume of the sample fluid.

3,626,763

**SPECIFIC GRAVITY MEASURING DEVICE**

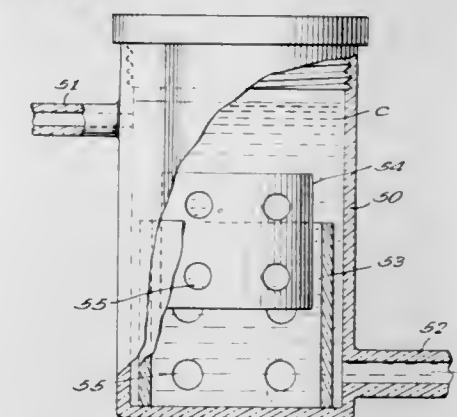
Fred K. White, Glen Ellyn, Ill., assignor to Mulwhiteson  
Development Company, Glen Ellyn, Ill.

Filed Feb. 18, 1970, Ser. No. 12,334

Int. Cl. G01n 9/10

U.S. Cl. 73—440

3 Claims



This invention relates to a device for determining principally the changes in specific gravity of a fluid on a continuous basis. The device includes a vertically extending chamber containing a plurality of floatable elements. Each element is adapted to float at a different specific gravity. As fluid passes through the chamber, first one and then another element will float or settle, depending upon the specific gravity of the fluid. Changes in specific gravity of the fluid will be indicated by the rise or fall of the elements in the fluid.

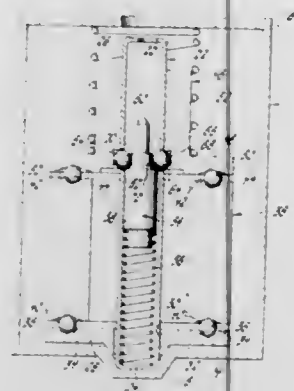


3,626,764

**MULTIDIRECTIONAL INERTIAL SENSOR**  
 Otakar P. Prachar, Santa Barbara, Calif., assignor to  
 General Motors Corporation, Detroit, Mich.  
 Filed July 27, 1970, Ser. No. 58,212  
 Int. Cl. G01p 15/02

U.S. Cl. 73—492

7 Claims



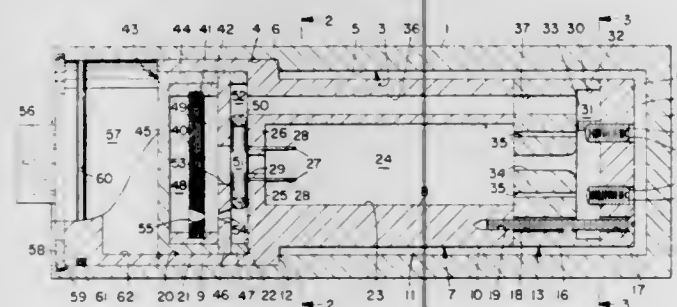
A cylindrical support has a hollow tubular axial guide mounted on an end wall thereof. An operator is slidably mounted within the guide and spring biased toward actuated position. Balls mounted within radial openings of the guide engage a radially tapered shoulder of the operator to hold the operator in normal position against movement. The balls are held in engagement with the operator shoulder by a retainer slidably mounted on the guide and spring biased axially opposite to the operator. An annular seismic mass surrounds the guide and fits between the retainer and an end wall of the support. Three equally circumferentially spaced conical depressions in each end of the mass mate with like depressions in the retainer and in the support. Each pair of mating depressions receives a ball. When the mass receives an acceleration pulse of predetermined amplitude and time, it shifts radially of the guide, and the camming action of the balls moving within the conical depressions shifts the retainer axially against its spring bias to release the balls from the operator shoulder and in turn release the operator.

3,626,765

**FLUID JET DEFLECTION TYPE INSTRUMENT**  
 Alvin G. Moore, Cumberland, and Wilfred C. Schuermann, Rawlings Heights, Rawlings, Md., assignors to Hercules Incorporated, Wilmington, Del.  
 Filed June 5, 1969, Ser. No. 830,824  
 Int. Cl. G01p 3/26

U.S. Cl. 73—505

10 Claims



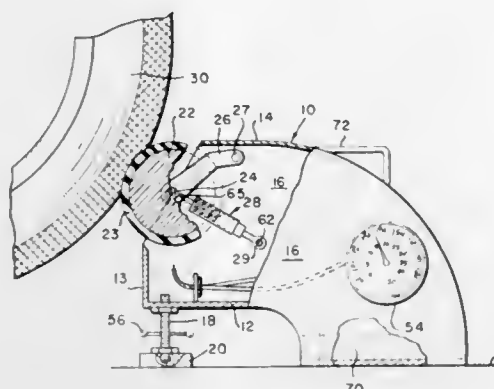
An instrument wherein the deflection of a fluid jet, induced for example by the angular movement of the instrument, produces a signal proportional to the deflection, and particularly such an instrument that is substantially self-contained to provide a closed fluid circuit that is relatively insensitive to transient temperature differentials, and in which the overall dimensions of the instrument have been minimized.

3,626,766

**PORTABLE SPEEDOMETER**  
 Donald E. Waldecker, Fairfax, Va., assignor to  
 RAM Enterprises, Incorporated, Falls Church, Va.  
 Filed July 20, 1970, Ser. No. 56,382  
 Int. Cl. F16h 37/04; G01c 25/00

U.S. Cl. 74—12

10 Claims



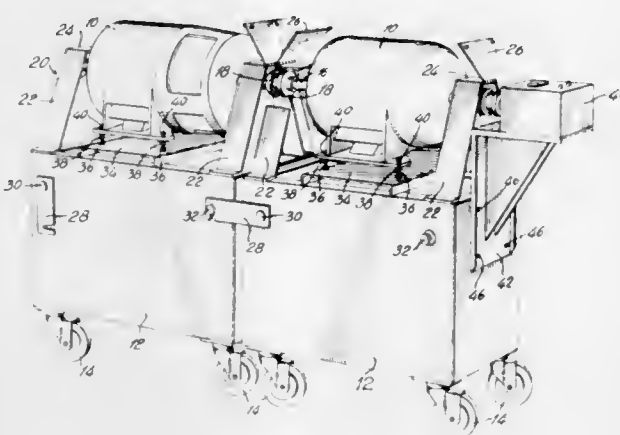
A portable device for testing speedometers on automobiles, trucks and other similar land vehicles, and for indicating wheel speed during wheel balancing and other automotive maintenance operations. The device includes means for providing direct speed readings for vehicles equipped with either conventional or "limited-slip" differentials.

3,626,767

**MECHANICAL SYSTEM FOR COUPLING TWO ROTATING MACHINES**  
 Theodore Wildi, Quebec City, Quebec, Canada, assignor to Lab-Volt (Quebec) Limited, Quebec City, Quebec, Canada  
 Filed July 16, 1970, Ser. No. 55,438  
 Int. Cl. F16m 3/00

U.S. Cl. 74—16

11 Claims



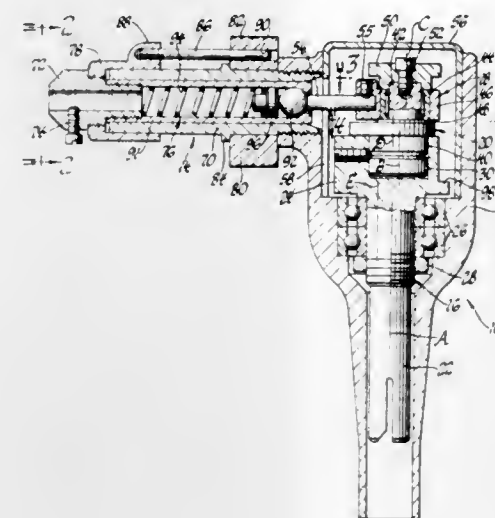
A system for mechanically coupling two or more rotating machines comprising at least two carriages each supporting one rotating machine having extensions at both ends of its regular shaft and hubs mounted on such shaft extensions. A soft coupling is adapted to mate with the hubs of two machines and each carriage is provided with notched links rotatably mounted on each side and at one end thereof, and with studs mounted one on each side and at the other end thereof. The links and studs are designed and located so that the notches in the links of one carriage engage the studs in the other carriage so as to couple the carriages end to end in such a way that the soft coupling between the two hubs of each machine permits to mechanically couple the two rotating machines.

3,626,768

**TOOL DRIVE ASSEMBLY**  
 Joseph J. Dancsik, Oak Park, Mich.  
 (Rosenheingasse 9, Graz, Austria)  
 Filed Sept. 2, 1969, Ser. No. 854,372  
 Int. Cl. F16h 21/22

U.S. Cl. 74—44

19 Claims



A tool drive assembly for converting rotary motion to reciprocating motion. A driven member is rotatably supported in a housing and includes a shank portion and an enlarged head portion with a center of mass offset from the axis of rotation. An intermediate member has a cylindrical portion integral therewith and disposed in a hollow in the head portion. A peg extends upwardly from the intermediate member and forms a part of a connection means which is connected to a reciprocating tool holder member. The intermediate member and the connection means have counterbalancing masses which, in combination with one another, counterbalance the offset mass of the head portion during all adjusted rotary positions of the intermediate member relative to the driven member, which in turn adjusts the length of the stroke of the tool holder member. A tool holder assembly includes a tubular member extending from the housing with a dust cover attached to the tool holder member and slidably and reciprocally disposed about the exterior of the tubular member. A drive means interconnects the tool holder member and the connection means for transmitting the reciprocating motion. A knurled member is disposed about the tubular member adjacent the housing and is connected to the dust cover by a shaft slidably disposed in the knurled member for rotatably adjusting the position of the tool holder member.

3,626,769

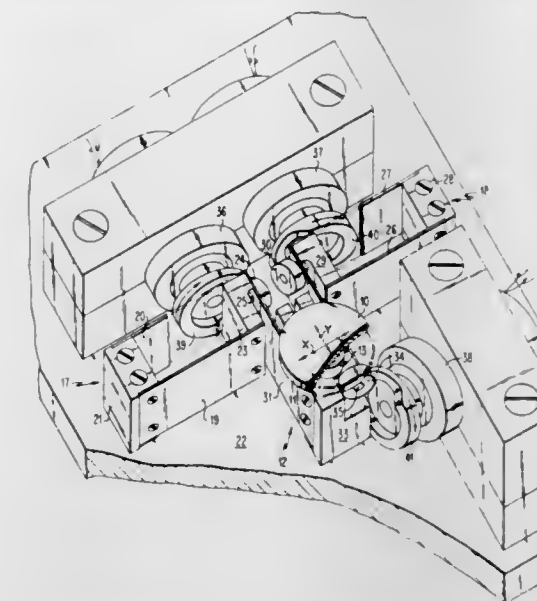
**APPARATUS FOR POSITIONING WORKPIECES IN SELECTED TRANSLATIONAL AND ROTATIONAL ORIENTATIONS**  
 Edward P. Hecker, Poughkeepsie, Joseph E. Kulak, Hopewell Junction, and Bela Musits, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
 Filed Apr. 6, 1970, Ser. No. 26,007  
 Int. Cl. F16h 25/16

U.S. Cl. 74—54

21 Claims

Apparatus for positioning workpieces including three leaf spring members, two of which are in alignment, one end of each being mounted in a fixed position and the other or free ends being spaced from and facing each other. A third member substantially perpendicular to the other two aligned members is mounted on the free ends of both of said other members. Accordingly, the first two members are deflectable about fixed pivots while the third member is deflectable about a floating pivot formed by the

free ends of the first two members. The apparatus also includes first and second means for applying linear forces respectively to said first and second members, which forces are substantially perpendicular to a first coordinate axis,



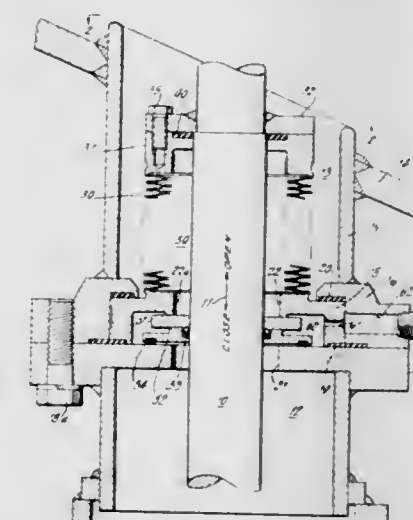
and means for applying to said third member a linear force which is substantially perpendicular to a second coordinate axis. The resulting displacement of the third spring member is applied to the workpiece being oriented.

3,626,770

**BACK-UP SEAL FOR BELLOWS**  
 Roy W. Lindberg, Sierra Madre, and James R. McCloud, Burbank, Calif., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.  
 Filed Jan. 30, 1970, Ser. No. 6,997  
 Int. Cl. F16j 15/52

U.S. Cl. 74—18.2

6 Claims



A bellows is attached to a movable shaft which extends through a barrier between a high-pressure and low-pressure region. The bellows forms a seal between the outer diameter of the shaft and the opening in the barrier through which the shaft passes. A sealing ring formed around the shaft then forms a second seal between the bellows interior and the shaft. A monitoring channel is connected to the volume bounded between the back-up seal and the bellows interior.

3,626,771

**V-BELT DRIVE**  
 Lloyd A. Luedtke, P.O. Box 123, Allenton, Wis. 53002  
 Filed Feb. 9, 1970, Ser. No. 9,508  
 Int. Cl. B65g 31/02; F16h 7/24

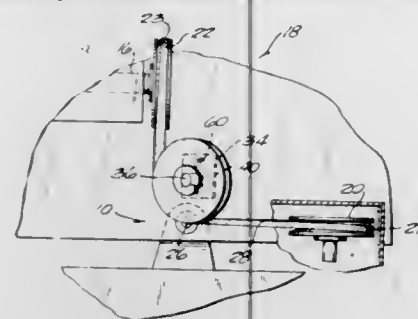
U.S. Cl. 74—219

8 Claims

Disclosed herein is a belt drive idler assembly including a pair of idler pulleys mounted in a vertically spaced



relation in a position eccentric to the axis of pivotal connection between a baler and a bale thrower and an endless belt reeved around the idler pulleys, a drive pulley mounted on a longitudinally extending drive shaft on the baler



and a driven pulley mounted on a drive shaft positioned in a perpendicular relation to the longitudinal axis of the bale thrower. The belt on the upper idler pulley is twisted so that the outer surface of the belt is reeved around the upper idler pulley.

3,626,772

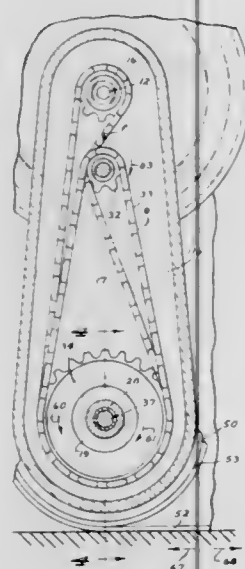
**VEHICLE TRANSMISSION APPARATUS**

Ralph T. Gutzmer, North St. Paul, Minn., assignor to Main Tool & Mfg. Co., Minneapolis, Minn.

Filed Feb. 2, 1970, Ser. No. 7,758  
Int. Cl. F16h 7/10; F16d 19/00

U.S. Cl. 74—220

18 Claims



Clutch and transmission mechanism for a vehicle, for example, a snowmobile having a forward drive sprocket rotatably mounted by an annular clutch member which is keyed to the ground engaging member drive shaft and driven through a first chain from the main drive shaft sprocket, a reverse drive sprocket rotatably mounted by the annular clutch member and driven by a second chain that in turn is driven by a sprocket that is rotated in a direction opposite the main shaft from a chain tightener sprocket for the first chain, and operated mechanism for moving a clutch shifter member between a neutral position, a forward drive position that the forward sprocket drives the annular clutch member and a reverse drive position that the reverse sprocket drives the annular clutch member.

3,626,773

**SELF-CLEANING PULLEY**

Fredrick L. Loeffler, 18016 Norwell Ave.,  
Cleveland, Ohio 44135

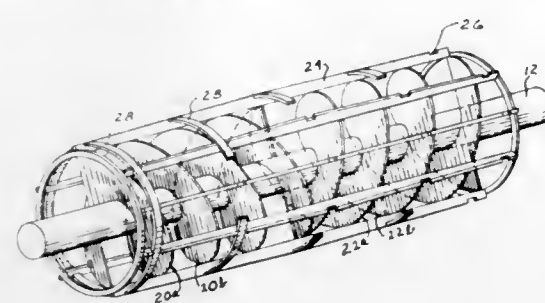
Filed May 6, 1970, Ser. No. 35,124  
Int. Cl. F16h 57/04

U.S. Cl. 74—230

7 Claims

A self-cleaning pulley having a shaft with screw means mounted thereon. A belt engaging surface is provided by

members disposed on the outer periphery of the screw means. The belt engaging surface has continuous circum-



3,626,774

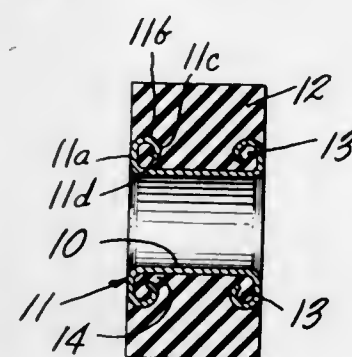
**DRIVE ROLLER ASSEMBLY**

Werner C. Schon, 1082 Sunny Slope Drive,  
Mountainside, N.J. 07092

Filed July 27, 1970, Ser. No. 58,220  
Int. Cl. F16h 55/36

U.S. Cl. 74—230.3

5 Claims



A resilient drive roller assembly and a method of making same in which the resilient roller is molded onto an annular carrier which has curled back ends forming toroidal locking cavities which lock the resilient roller thereon.

3,626,775

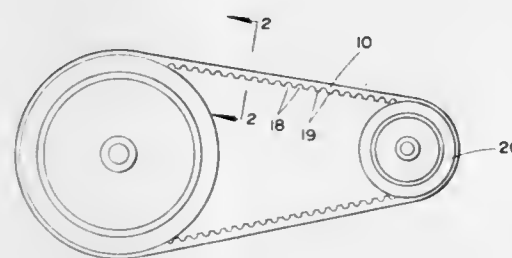
**METHOD OF DETERMINING NOTCH CONFIGURATION IN A BELT**

Kay V. Gentry, Littleton, Colo., assignor to  
The Gates Rubber Company, Denver, Colo.

Filed Oct. 7, 1970, Ser. No. 90,197  
Int. Cl. F16g 5/16, 5/00

U.S. Cl. 74—233

12 Claims



This invention relates to a mathematical determination of the parameters established for determining the configuration and spacing of notches in the compression section of power, motion or traction.

3,626,776

**CHAIN TENSIONING DEVICE**

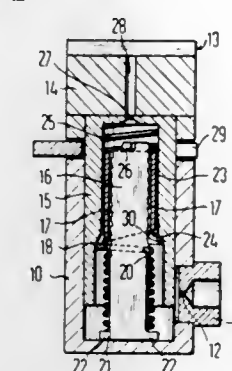
Siegfried Staudinger, Munich, Manfred Klimont, Geretsried, and Hermann Zollner, Munich, Germany, assignors to Joh. Winklhofer & Söhne, Munich, Germany

Filed Aug. 27, 1970, Ser. No. 67,521

Claims priority, application Germany, Sept. 15, 1969,  
P 19 46 651.4

Int. Cl. F16h 7/12, 7/10  
U.S. Cl. 74—242.11 S

17 Claims



A chain tensioning device in which a tensioning member is telescopically received in said casing is provided with a locking arrangement including an elongated abutment member formed with two rows of receptacles extending in the direction of movement of the tensioning member and a detent dimensioned for simultaneous engagement with receptacles of the two rows. A spring in the casing biases the detent toward the open end of the casing, and the spring force is transmitted to the tensioning member by an interposed pressure transmitting member having a face for engagement with the detent and obliquely inclined relative to the direction of movement of the tensioning member.

3,626,777

**GEAR TRANSMISSION WITH MULTIPLE POWER PATHS**

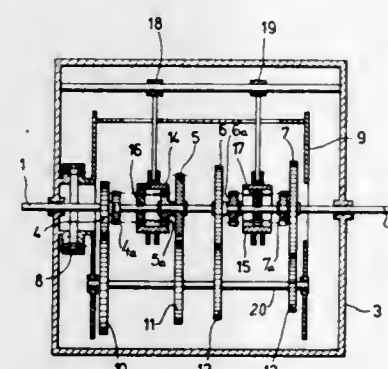
Konrad Langenbeck, Mulheim (Ruhr), Germany, assignor to Rheinstahl Huttenwerke AG, Essen, Germany

Filed Jan. 8, 1970, Ser. No. 1,409

Claims priority, application Germany, Jan. 9, 1969,  
P 19 00 923.5

Int. Cl. F16h 3/08  
U.S. Cl. 74—333

8 Claims



The input shaft of a gear transmission having several gear stages, is connected with the output shaft by a plurality of sets each of which has three gears so that power is transmitted in each stage of the transmission over three paths.

3,626,778

**CENTERING MECHANISM FOR POWER TRANSMITTING MEANS**

Alvin Clifford Holmes, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

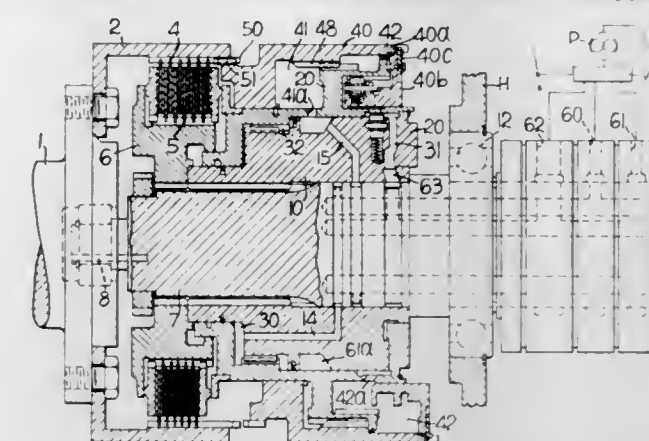
Filed July 23, 1970, Ser. No. 57,617

Int. Cl. F16h 55/18  
U.S. Cl. 74—409

8 Claims

Power transmitting means having a plurality of concentric driving parts which are connectible together by

means of teeth or splines and between which the various clearances, tolerances, and eccentricities all contribute to result in an unbalance of the means. Satisfactory balancing of such means is virtually impossible when such means operate in both a driving relationship with one another and also under low or zero torque when they seek another position dependent on their individual internal unbalance.



3,626,779

**GEAR AND METHOD FOR MAKING SUCH GEAR**

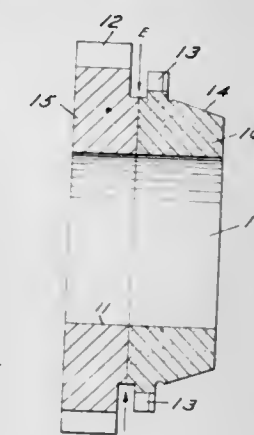
Michael R. Howard, "Trojans" Great Oak,  
Hutton Brentwood, Essex, England

Filed Mar. 26, 1970, Ser. No. 22,965

Claims priority, application Great Britain, Apr. 5, 1969,  
17,811

Int. Cl. F16h 55/00  
U.S. Cl. 74—431

4 Claims



A gear formed from wrought and powdered metal, particularly a transmission gear, having gear teeth designed to engage a driving or driven gear and clutch teeth designed to couple the gear for rotation with the shaft on which it is freely mounted. Gear manufacturing method includes forming a first gear part with gear teeth from wrought metal, forming a second part from powdered metal and joining the two parts together.

3,626,780

**TRANSMISSION CONTROL QUADRANT AND LOCK ASSEMBLY**

James E. Lowder and Gary D. Perry, Lubbock, Tex., assignors to Johnson Manufacturing Company, Lubbock, Tex.

Filed Jan. 30, 1970, Ser. No. 7,202

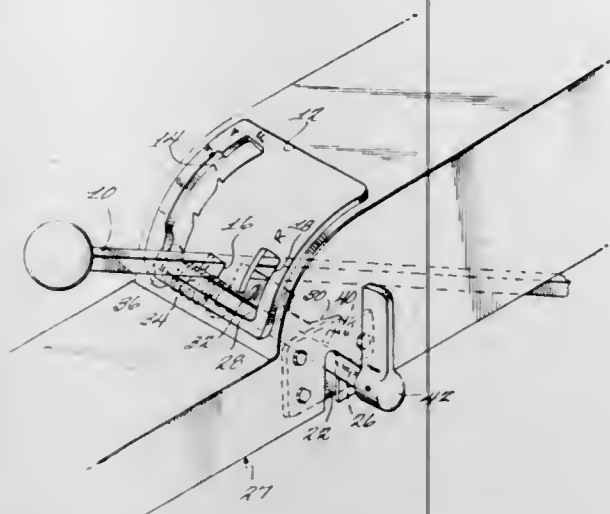
Int. Cl. G05g 9/02  
U.S. Cl. 74—473 R

6 Claims

A guide and locking device for a movable control lever includes a slotted guide plate through which the lever



extends. A manually operated shaft carries a flange which upon rotation of the shaft to a lock position blocks movement of the lever out of a preselected guide slot. The shaft



is resiliently held in either its lock or unlock position by a spring biasing arrangement which urges the shaft in an axial direction so as to insert a second flange carried thereby into either a lock or unlock slot in a fixed plate.

3,626,781

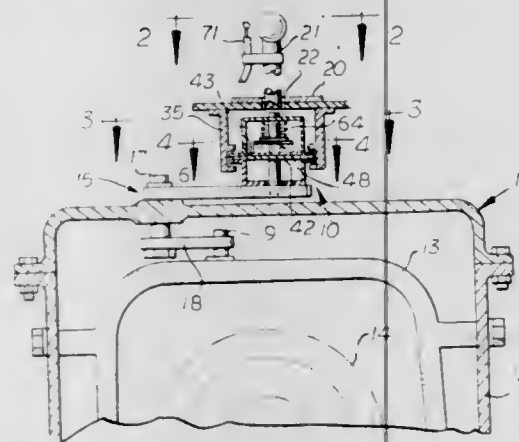
## GEAR SHIFTER MECHANISM

Robert L. Moser, Columbia City, Ind., assignor to International Harvester Company, Chicago, Ill.  
Filed Mar. 13, 1970, Ser. No. 19,376

Int. Cl. G05g 5/00

U.S. Cl. 74-477

14 Claims



A sequential gear shift selector mechanism for a multi-speed transmission. The mechanism is formed principally of stamped metal parts rather than the precisely machined metal components of existing structures. The shifter includes a plurality of spring loaded pins, each of which is selectively and individually engageable with a respective one of the linkages for establishing one of a plurality of driving gear ratios upon movement of the shifter thereafter, and a cable actuated pin release ramp for raising simultaneously all of the pins while moving the shifter to effect engagement of another pin with its respective linkage.

3,626,782

## SERVO APPARATUS FOR MANUAL OPERATION OF A TAPE RECORDER

Imre Siller, Nuremberg, Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt, Furth am Bayern, Germany

Filed Apr. 16, 1970, Ser. No. 29,017

Claims priority, application Germany, Apr. 26, 1969, P 19 21 343.5

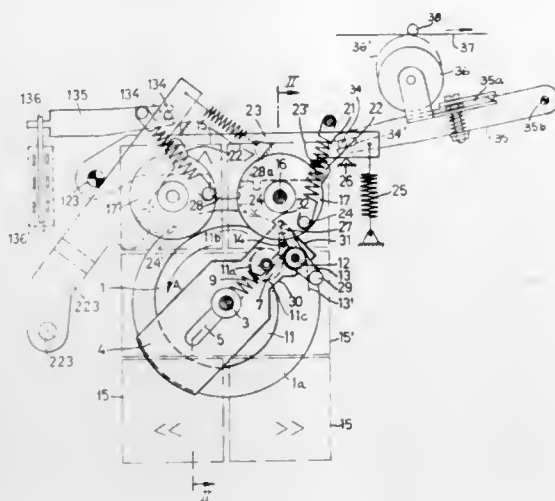
Int. Cl. G05g 13/02

U.S. Cl. 74-483 PB

11 Claims

A servo apparatus, which reduces the manual force required for the operation of the pushbuttons of a tape

recorder, has a driven cam, and an operating member with a cam follower for moving an actuating lever to an operative position for starting an operation of the tape recorder. When any pushbutton is depressed, a coupling



means is placed in a position guiding a control lever on the respective operating member to a position engaging the actuating lever so that the operating member is blocked against rotation and is moved by the rotary cam to the operative position.

3,626,783

## CIRCULAR SAW

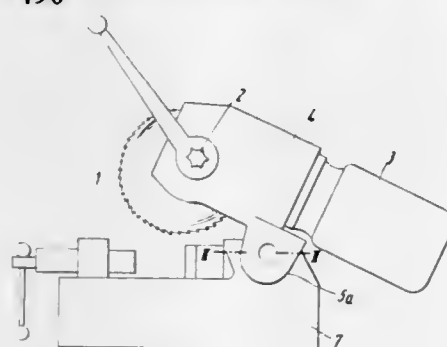
Leopold Jagers, 1 Rudolf-Diesel-Strasse, 535 Euskirchen, Rhineland, Germany

Filed Apr. 9, 1970, Ser. No. 31,432

Int. Cl. B23d 45/04

U.S. Cl. 83-490

5 Claims



A section of a support is provided with a hole and a rocking lever has a bifurcated end portion which straddles the section and whose arms are provided with aligned bores registering with the hole in the section. A pair of conical sleeves are provided in each of the bores tapering towards one another and a bolt extends through the sleeves and the hole. The screw is threaded into an exposed end of the bolt and engages the associated sleeve for urging the same inwardly towards the other sleeve. One or more springs are arranged and stressed between the screw and the associated sleeve.

3,626,784

## LINKAGE SYSTEM

Burford L. Johnson, Dallas, Tex., assignor to Forney Engineering Company, Dallas, Tex.

Filed Oct. 20, 1969, Ser. No. 867,637

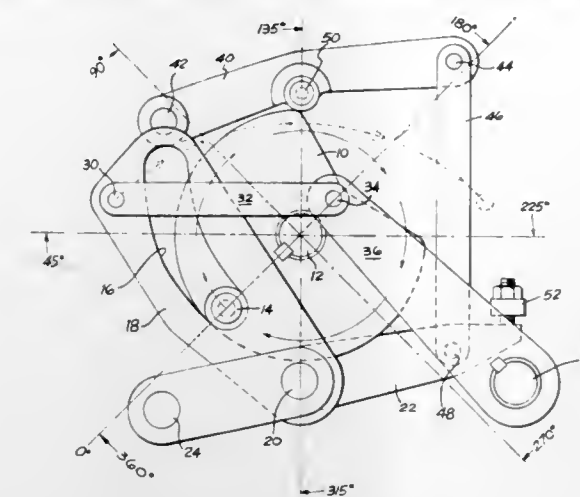
Int. Cl. G05g 1/00; F16h 21/18

U.S. Cl. 74-518

7 Claims

A linkage system for connecting an actuator to an output member, wherein a first linkage arm is connected to the output shaft of the actuator and oscillates in response to an input torque from the actuator output shaft, and a second linkage arm is connected between the first arm and the output member and applies an output torque to the output member in response to the oscillation of the first

arm. The effective lever arm of the first linkage arm is regulated so that the output torque to the output member



is at least equal to the input torque from the actuator output shaft.

3,626,785

## UNIVERSAL PEDAL EXTENSION

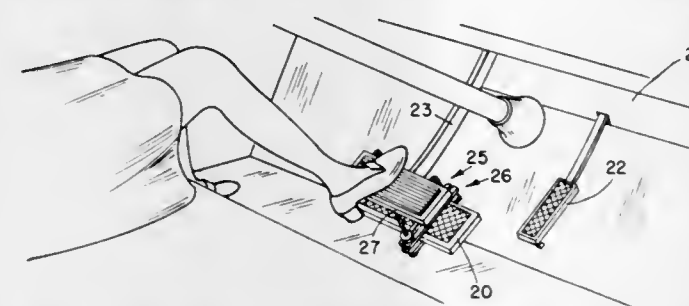
John W. Ross, 109 North St., Georgetown, Mass. 01830

Filed Aug. 21, 1970, Ser. No. 65,923

Int. Cl. G05g 1/16

U.S. Cl. 74-562

7 Claims



A pedal extension for increasing the height of a conventional foot pedal, such as the brake pedal of an automobile, has an extension plate supported by four inverted L-shaped, threaded legs, the ends of the legs being clamped on the brake pedal by two pairs of clamp bars. The legs pivot flatwise for shipment and are adjustable both laterally and longitudinally, when erected, to fit around foot pedals of any configuration and be permanently clamped thereon.

3,626,786

## PISTON-CRANK MECHANISMS

Haruo Kinoshita, Hamamatsu-shi, and Isao Shirayanagi, Shizuoka-ken, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Hamakita-shi, Japan

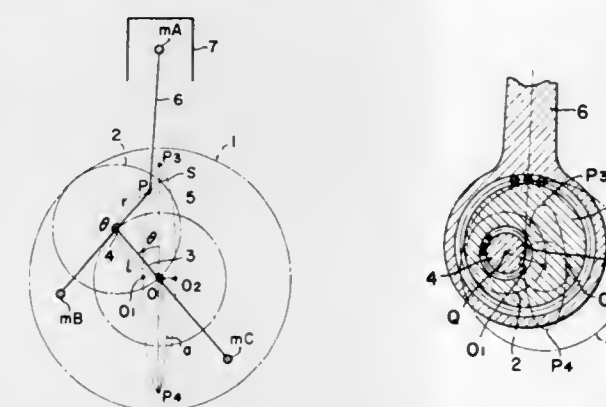
Filed Jan. 26, 1970, Ser. No. 5,875

Claims priority, application Japan, Jan. 30, 1969, 44/6,903; Aug. 1, 1969, 44/60,875; Oct. 7, 1969, 44/95,749; Oct. 18, 1969, 44/83,450

Int. Cl. G05g 1/00

U.S. Cl. 74-604

5 Claims



A piston-crank mechanism of the type comprising a piston disposed in a cylinder for reciprocal motion therein,

a crank shaft rotatably mounted within a crank case and a connecting rod connecting said piston with said crank shaft. An internal gear is fixed in the crank case and a small gear having a number of teeth one half of that of the internal gear is rotatably mounted on the crank pin of the crank shaft. The connecting rod has one end pivotally connected to the piston and the other end pivotally connected to the small gear.

3,626,787

## CONTINUOUSLY VARIABLE TRANSMISSION

Robert B. Singer, Palos Verdes, Calif., assignor to White Motor Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 711,339,

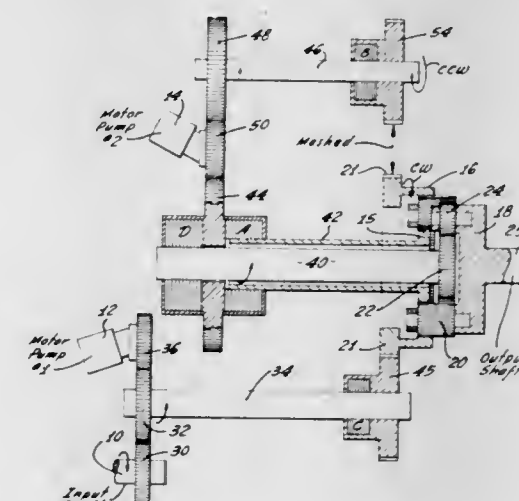
Mar. 7, 1968. This application Nov. 24, 1969, Ser.

No. 879,390

Int. Cl. F16h 47/04

U.S. Cl. 74-687

27 Claims



Planetary gearing including a ring gear, a planet gear carrier, two sun gears and two corresponding sets of planet gears is combined with a hydraulic transmission means that is reversible in output direction without reversal of input direction and is reversible in direction of power flow. An engine is permanently connected to the hydraulic transmission means and is releasably connected to the ring gear. The hydraulic transmission means is releasably connectable to the ring gear and to the two sun gears individually.

3,626,788

## AUTOMATIC POWER TRANSMISSION MECHANISM WITH COMPOUND PLANETARY GEARING

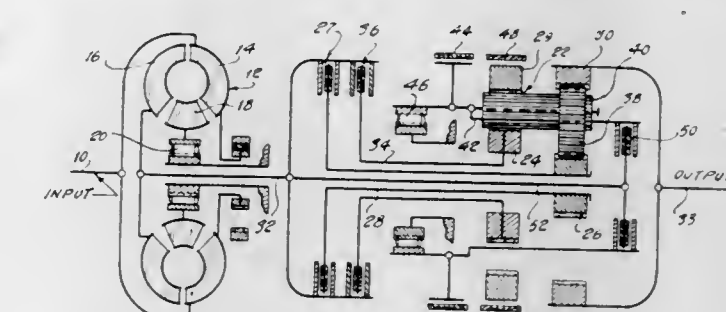
Stepas Smalinskas, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 13, 1970, Ser. No. 2,604

Int. Cl. F16h 57/10

U.S. Cl. 74-765

2 Claims



A multiple ratio power transmission mechanism having compound planetary gear elements, and clutches and brakes for controlling the relative motion of the gear elements to provide multiple, forward-driving speed ratios including an overdrive ratio wherein the numerical values for the ratios are evenly stepped and provide an increased ratio spread.



3,626,789

**AXIAL SUPPORT FOR A PLANETARY GEARING**

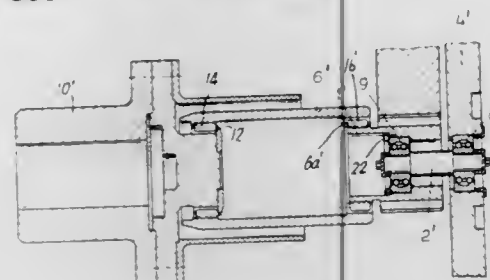
Hans W. Winter, and Karl Grimpe, both of Duisburg, Germany, assignors to Demag A.G., Duisburg, Germany  
Filed Oct. 22, 1969, Ser. No. 868,309

Claims priority, application Germany, Nov. 25, 1968, P 18 10 772.7

Int. Cl. F16h 1/28

U.S. Cl. 74-801

1 Claim



An axial support for a planetary gearing includes a planet gear carrier for rotatably supporting one or more planet gears for meshing engagement with a central sun gear. The sun gear is connected through a universal connection to a driving shaft. The sun gear is freely supported on a rod member which is affixed to the planet gear carrier but which permits axial displacement of the sun gear between a collar and a spacer member arranged around the rod adjacent the respective ends of the sun gear. A clutch sleeve, engaged between the drive shaft and the sun gear, permits universal movement of the shaft. In a further embodiment, the supporting rod for the sun gear is rotatably mounted within the planet gear carrier and rotatably supports the sun gear without any axial displacement. The rotatable bearings are pendulum-type bearings.

**ERRATUM**

For Class 83-490 see:  
Patent No. 3,626,783

3,626,790

**PRESS FEEDING**

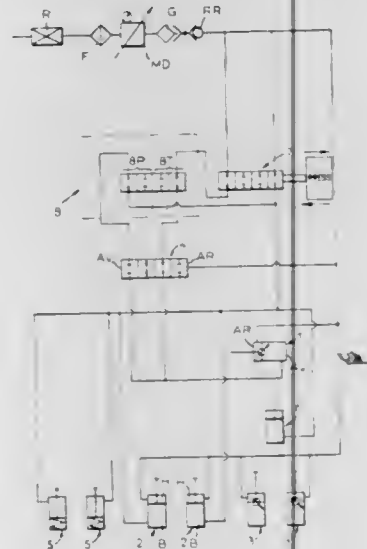
Roger Jean Pinat, 9, rue des Capucines, 78 Poissy, France  
Filed Aug. 4, 1969, Ser. No. 847,093

Claims priority, application France, Aug. 2, 1968, 161,641

Int. Cl. B65h 17/34

U.S. Cl. 83-277

1 Claim



A two-position cycle selector operates a control valve to control operation of a press feed device in either of two opposite directions. Each of two fluid outlets of the control valve is opened and closed in response to movements of the press. One of the outlets is connected to each of two locking flanges which alternately lock the strip material fed to the

press and is also connected to a stop valve. The other outlet is connected to the stop valve and operation of the selector selectively blocks the intake of fluid to the stop valve from each of the control outlets in accordance with the position of the stop valve.

3,626,791

**INDEXABLE TURRET STOP ASSEMBLY**

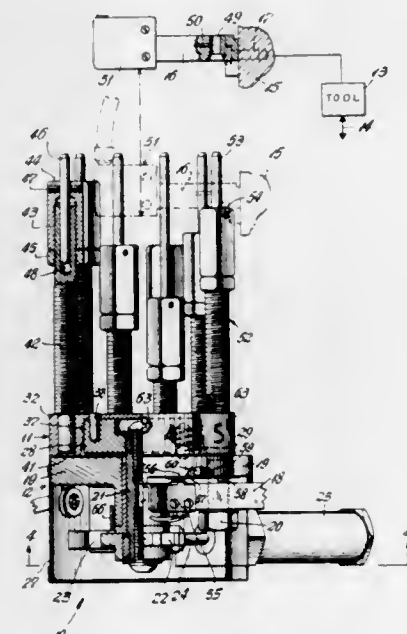
Paul D. Henderson, Avon, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 15, 1970, Ser. No. 37,740

Int. Cl. B23b 25/06

U.S. Cl. 82-34 D

8 Claims



A turret stop assembly for use with a machine tool for controlling the extent of movement of a tool in which there is a plurality of adjustable stops and indexing means for positioning the stop desired to control the tool. The indexing means is permanently mounted on the tool while the adjustable stops are mounted on a turret which is only detachably secured to the indexing unit to enable easy replacement of one turret with preset adjustable stops for another with a different set of preset adjustable stops.

3,626,792

**SWING STOP CONSTRUCTION FOR SCREW MACHINES**

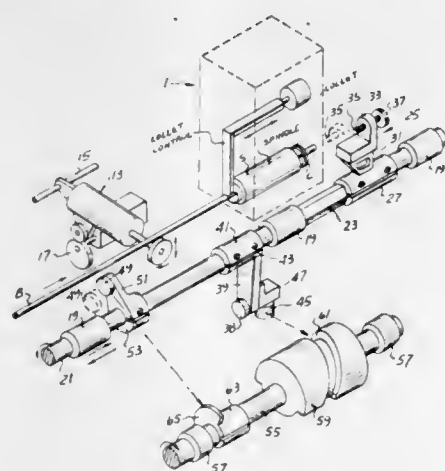
Josef Eichenhofer, 120 Oakdale Road, Brampton, Downsview 479, Ontario, Canada

Filed Apr. 13, 1970, Ser. No. 27,791

Int. Cl. B23b 13/12

U.S. Cl. 82-34 A

3 Claims



For a screw machine having a power spindle and collet and an automatic bar feeder for feeding bar stock through said collet and spindle, an improved swing stop rotatably mounted

3,626,795

**GLASS-CUTTING APPARATUS AND METHOD**

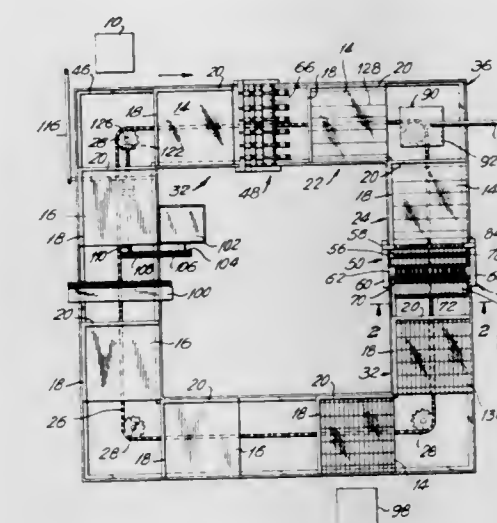
James C. White, Rutherford, N.J., assignor to Propper Manufacturing Company, Inc.

Filed Sept. 15, 1969, Ser. No. 857,981

Int. Cl. B26d 3/08

U.S. Cl. 83-7

10 Claims



A glass-cutting apparatus for subdividing a rectangular sheet of glass into sections of predetermined rectangular configuration and size. A conveyor coacts with a plate which carries a sheet of glass to move the latter along a predetermined path. A pair of glass-cutting assemblies are situated along this path so that each of the assemblies will score an exposed surface of the glass sheet with a given number of straight parallel lines in preparation for subdividing the glass into the smaller sections. The conveyor and glass-supporting structure as well as the pair of glass-cutting units all coact with each other to provide between the glass and one of the glass-cutting units an orientation which is perpendicular to the orientation provided between the glass and the other of the glass-cutting units, so that the lines cut into the glass by one of the cutting units will be perpendicular to the lines cut into the glass by the other of the cutting units.

3,626,794

**ARBOR WITH LIVE HEAD**

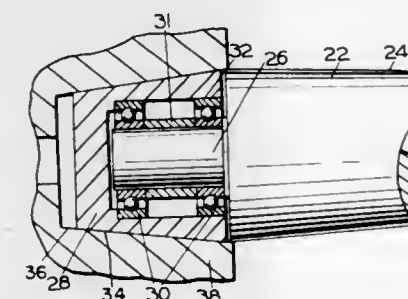
Raymond J. Seethaler, 2044 N. Willis Blvd., Portland, Oreg.

Filed Mar. 24, 1969, Ser. No. 809,868

Int. Cl. B23b 25/00, 23/02

U.S. Cl. 82-38

8 Claims



An arbor for use on lathes or the like having a body member with a tapered rear portion adapted to be mounted in the tailstock of a lathe. The body member at its forward end has a head arranged for rotatably connecting a chuck or the like with the arbor. The rotatable connection comprises a roller or ball bearing connection. In one embodiment of the invention the front end of the body member terminates in a spindle which supports a head by bearing means. The outer surface of the head is tapered for fitting into a tapered recess of a chuck. In association with this embodiment, an adapter head may be provided which has a tapered recess for receiving the tapered head of the arbor and which may have a selected outer diameter and configuration to fit various sizes of recesses which may exist in chucks. In another embodiment of the invention, the forward end of the arbor is tapered, and the head comprises a body portion fitted on the tapered end of the arbor and having bearings on its exterior which rotatably support the chuck.

3,626,796

**SHEET MATERIAL CUTTING APPARATUS WITH FAIL-SAFE MEANS**

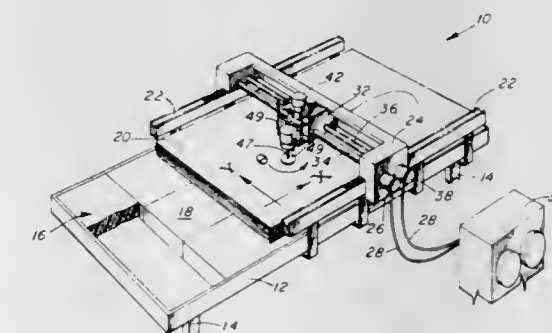
David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, East Hartford, Conn.

Filed Apr. 1, 1970, Ser. No. 24,717

Int. Cl. B26d 5/06

U.S. Cl. 83-58

5 Claims



An apparatus for cutting sheet material includes a cutter mounted on an automatically controlled carriage for movement along a desired line of cut relative to an associated surface for supporting one or more layers of material to be cut. The cutter includes a reciprocating cantilevered cutting tool, and means are provided for immediately withdrawing the cutting tool from the material being cut in the event of a



power failure to prevent it from cutting as it and the cutter coast uncontrolled to a stop.

3,626,797

## SYNCHRONOUS CUTTER MECHANISM

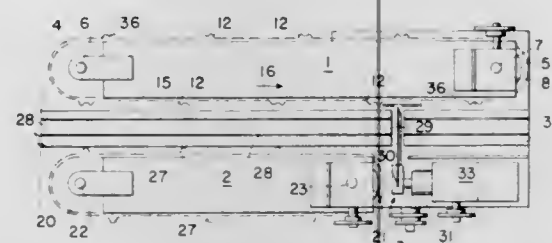
Rodney K. Calvert, Dunwoody; Arthur B. Viescas, Decatur, and Alton J. Fishback, Austell, all of Ga., assignors to The Mead Corporation

Filed Mar. 9, 1970, Ser. No. 17,459

Int. Cl. B26d 5/22

U.S. Cl. 83—62

7 Claims



Continuous movement is imparted to a chain made up of packets which are interconnected in end-to-end spaced relation by means of a pair of endless conveyor elements disposed on opposite sides of the path of movement of the chain of packets, a plurality of spaced projections being provided on each conveyor and being disposed in the space between packets so that movement of the working reaches of the conveyors in the same direction imparts movement to the chain of packets. A continuously rotatable cutting element is mounted alongside the chain of packets and synchronized to swing through the space between adjacent packages and thereby to sever the packets one from another. The cutter element is mounted on a shaft which is parallel to the conveyors and to the path of movement of the chain of packets as viewed in a horizontal plane and which is disposed at an angle to the path of movement of the packets and to the conveyors as viewed in a vertical plane thereby to compensate for movement of the packets during cutting so as to effect a vertical cutting operation.

3,626,798

## APPARATUS FOR SLITTING LENGTHWISE MOVING WEBS

Hew McInnes Grierson, Beaconsfield, England, assignor to Wiggins Teape Research & Development Limited, London, England

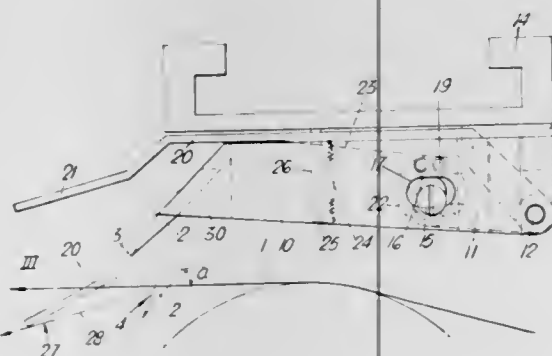
Filed Feb. 9, 1968, Ser. No. 704,307

Claims priority, application Great Britain, Feb. 15, 1967, 7,310/67

Int. Cl. B26d 5/02, 5/16

U.S. Cl. 83—105

13 Claims



Apparatus for removing samples from a lengthwise moving web comprises at least one cutting element supported for movement towards and away from the web and actuating means which are operatively connected with support means for the cutter elements and which first effect entry of the

cutting element into the web at a controlled rate and after insertion of the cutting element through the web effect transverse movements of the cutting element so that the web is slit between the longitudinal edges of the web.

3,626,799

## APPARATUS FOR CUTTING AND NOTCHING SHEET MATERIAL

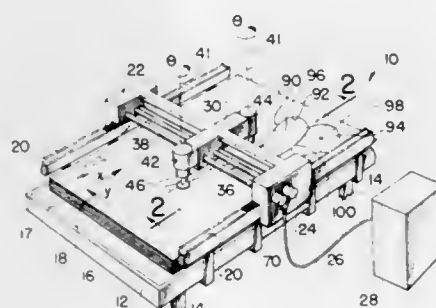
Heinz Joseph Gerber, and David R. Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, East Hartford, Conn.

Filed Feb. 24, 1970, Ser. No. 13,506

Int. Cl. B26d 7/06, 11/00

U.S. Cl. 83—132

10 Claims



Apparatus for cutting and notching layups of sheet material includes a layup support means and a main carriage slidably mounted for movement in a first coordinate direction relative to such support means. First and second cutting heads are movably supported on the carriage for movement therewith in said first coordinate direction and for movement with respect thereto in at least one other coordinate direction. The carriage as well as the first and second cutting heads move in response to positioning signals supplied by a computerized controller. A first movable blade or cutting tool is driven by the first cutting head and is adapted to engage the layup to form a cut thereon as the cutting head is moved in a plane parallel to the layup. A second blade or cutting tool is driven from the second cutting head and is adapted to move in a plunging fashion relative to the layup to form a notch or cut therein.

3,626,800

## CONDUCTIVE CUTTING PAD

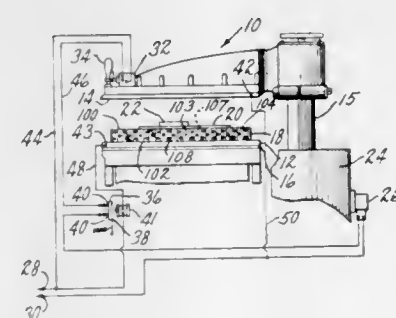
Charles G. Newton, Jr., Beverly; Daniel Appleton, Topsfield; Milton R. Radcliffe, Marblehead, and William Tabroff, Peabody, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Dec. 10, 1969, Ser. No. 883,460

Int. Cl. B26d 7/20

U.S. Cl. 83—658

8 Claims



A conductive cutting pad of solid polyurethane cast about a soft metal, cellular structure so that cell walls of the structure extend between cutting surfaces on the pad.

3,626,801

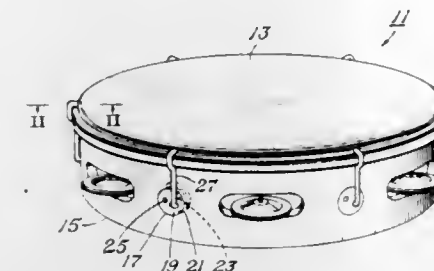
## TUNING OF PERCUSSION INSTRUMENTS

William T. Moore, 1805 Woods Drive, Arlington, Tex.  
Filed Apr. 8, 1969, Ser. No. 848,653

Int. Cl. G10d 13/02

U.S. Cl. 84—411

20 Claims



A tuning mechanism for percussion-type instruments having a tunable head adjacent a shell characterized by a friction-type tuning pin fitted within an aperture in the shell to frictionally engage the walls thereof and connected with the tunable head, whereby rotation of the friction-type tuning pin varies the tautness in the tunable head and retains the tautness by frictional engagement with sides of an aperture in the shell into which the pin is fitted. Percussion instruments employing the tuning mechanism and details of material and construction are also disclosed.

3,626,802

## CHORD CONSTRUCTION GUIDE

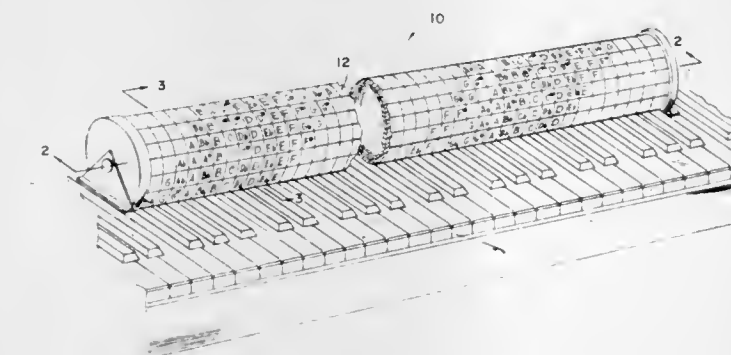
Bernard Halpin, 97-40 62nd Drive, Rego Park, N.Y.

Filed July 14, 1970, Ser. No. 54,676

Int. Cl. G09b 15/00

U.S. Cl. 84—478

6 Claims



A chord construction guide, i.e., a training aid for use in teaching musical keys and their associated chords and for displaying and placing the same into close association with the keys on an instrument having standard keyboard spacing is disclosed including, a display means having a graphic presentation thereon of various musical keys, the notes associated with each key in predetermined spaced relation and indicating the combination of notes to form chords in each particular key illustrated, a container for containing the display means in such a manner as to permit viewing of the display means therethrough, and a support means for rotatably supporting the container in close proximity to the keyboard with which it is associated, so that the particular chords for any given key are available adjacent the fingertips of the user by mere rotation of the container to present selective portions of the display means to the person using the chord construction guide.

3,626,803

## EXPANSION ANCHOR

Heinrich Liebig, Pfungstadt, Hessen, Germany

Filed Dec. 10, 1968, Ser. No. 782,553

Claims priority, application Germany, Dec. 16, 1967, P 16 25 394.4

Int. Cl. F16b 13/06

U.S. Cl. 85—72

2 Claims



An expansion anchor has an expansion anchor sleeve having in the region of its leading end and inwardly spaced from the leading end two sections of a central passage which converge in the direction from the leading end towards the trailing end. Expander members are provided each of which cooperate with one of the converging sections and an actuating screw or the like is provided which extends through the central passage of the sleeve from the leading end towards the trailing end, engaging the expander members and drawing them in the direction towards the trailing end, thereby effecting radial expansion of the sleeve at two longitudinally spaced locations and in one and the same direction.

3,626,804

## EQUIPMENT FOR LAYING MINES CONTINUOUSLY ON THE MOVE

Michel Paramythioti, Angers, France, assignor to French State, represented by the Minister of Armed Forces, Ministerial Delegation for Weapons, Technical Direction of Land Weapons, Technical Experiments Station of Angers, Paris, France

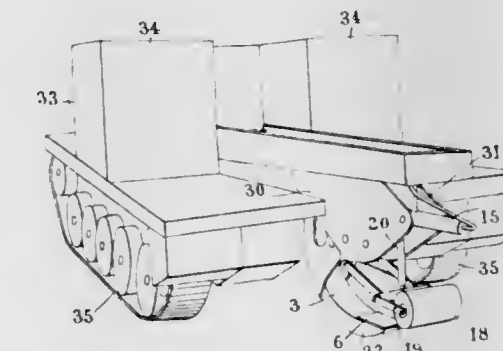
Filed Apr. 22, 1968, Ser. No. 725,259

Claims priority, application France, July 31, 1967, 116313

Int. Cl. F41f 7/00

U.S. Cl. 89—1 A

7 Claims



The invention relates to equipment for mounting on a special vehicle to form therewith a mine-laying device for the continuous laying of mines at high speed during movement of the vehicle with optimum concealment. A mine-laying carriage is held stationary with respect to the ground by displacement on the vehicle at a speed equal and opposite to the speed of advance thereof, the carriage mounting a tool in the form of a curved casing constituting a means for introducing the mines into the ground, which is pivoted about a



horizontal axis of the carriage, a pusher of the same curvature also pivoted about this axis, and means for effecting the working stroke and return of the tool and for maintaining each mine in its buried position on withdrawal of the tool.

3,626,805

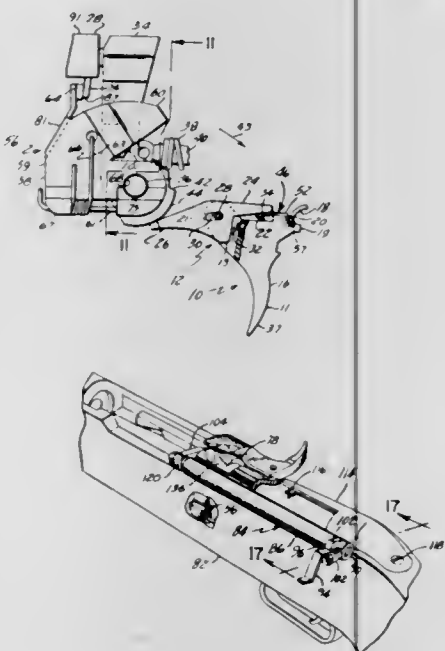
# MODIFICATION ASSEMBLY FOR CHANGING SEMIAUTOMATIC FIREARMS SELECTIVELY INTO FULLY AUTOMATIC FIREARMS

Lewis D. Shiplee, III, 818 Concord Road, Tallahassee, Fla.  
Filed Oct. 16, 1969, Ser. No. 866,898

Int. Cl. F41d 11/02

U.S. Cl. 89-128

9 Claims



A modification assembly for a semiautomatic firearm includes a sear disconnecter, a hammer catch and a fire control selector that cooperate in enabling the weapon to be selectively fired in either a fully automatic or semiautomatic mode of operation. The sear disconnecter prevents the sear piece from catching the hammer during counterrecoil of the bolt if the trigger piece is fully depressed and is carried by and movable with the trigger. The hammer catch is spring biased to a position at which it interrupts forward movement of the hammer during the fully automatic mode of operation and is so arranged in the modified firearm as to be actuated to release the hammer by the movement of the firing pin as the bolt closes during its counterrecoil. The fire control selector is manipulatable to permit the weapon user to select the desired mode of operation and has a bolt catch which during the semiautomatic mode of operation is spring biased to a position at which it catches the bolt during its counterrecoil and thus interrupts its movement into its locked position. Release of the bolt is accomplished during the semiautomatic mode of operation by a separate manipulation of the selector by the weapon user.

3,626,806

# PROTECTIVE AND DECORATIVE EDGING

Alton L. Fritz, Phoenix, Ariz., assignor to Royal Industries, Pasadena, Calif.

Original application Mar. 3, 1969, Ser. No. 803,864, now Patent No. 3,513,521. Divided and this application Mar. 2, 1970, Ser. No. 18,801

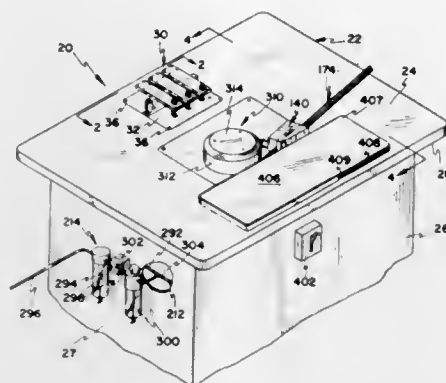
Int. Cl. B23c 1/06

U.S. Cl. 90-19

2 Claims

Method and apparatus for preparing a workpiece and affixing protective and decorative edging, preferably T-edging, to the peripheral edge of the workpiece, the apparatus providing (a) a slotting head for guiding the workpiece in a predetermined orientation and a moving slotting blade for

cutting a groove in the peripheral edge of the workpiece; (b) a cutting tool for guiding the displacement of the T-edging, for maintaining the leading end portion of a T-edging in a proper orientation and for selectively, at the election of the operator, notching out a length of the tongue of the T-edging at a well defined position and/or completely severing the T-edging at a precise location; and (c) a hammer for forcing the tongue of the T-edging into the slot formed in the workpiece, the hammer operating only when displaced from the at



rest position by force applied to the workpiece. An indicator provides reference marks which, when aligned with a corner of the workpiece, indicates to an operator when to notch the tongue of the T-edging so that the notch will be properly located at the corner of the workpiece. Similarly, the location of the severed end of the T-edging can be predetermined to eliminate any gap between or overlap of the free ends of the T-edging disposed around the entire periphery of the workpiece.

3,626,807

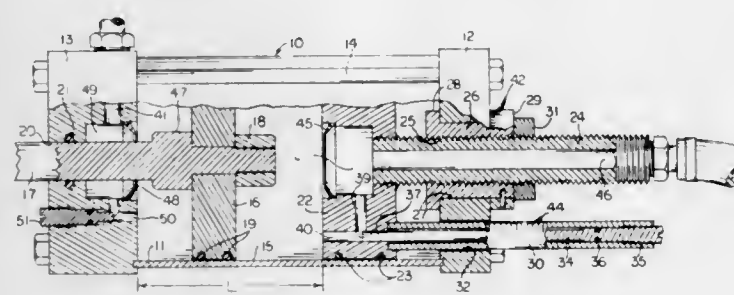
# ADJUSTABLE STROKE CYLINDERS

Kenneth B. Shartz, 2416 Randolph Road, Janesville, Wis.  
Filed Oct. 21, 1969, Ser. No. 870,497

Int. Cl. F15b 15/22

U.S. Cl. 91-1

8 Claims



A simple and reliable hydraulic or pneumatic cylinder is provided with an axially adjustable internal head which permits highly accurate selective variation of the stroke of the cylinder piston. A piston-cushioning device is carried by the adjustable head and can be regulated independently of the stroke adjustment to control the cushioning of the piston at the end of its stroke.

3,626,808

# RECIPROCATING ENGINE

Norman EnHolm, P. O. Box 113, Briarcliff Manor, N.Y.  
Filed Nov. 26, 1969, Ser. No. 880,287

Int. Cl. F01b 15/06; F01b 31/14

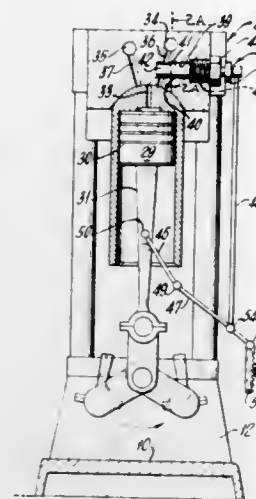
U.S. Cl. 91-176

7 Claims

A multicylinder reciprocating engine having pivotally mounted cylinders to permit oscillation of the cylinders during operation of the engine and improved valving means ac-

tuated by the motion of the piston to control the flow of steam or compressed gas through the inlet port and means

members or eccentric rings which, though adjustable, are always restrained against rotation; and the flow of fluid generated by the piston movements being controlled by one



3,626,809

# BILATERAL SERVOSYSTEM

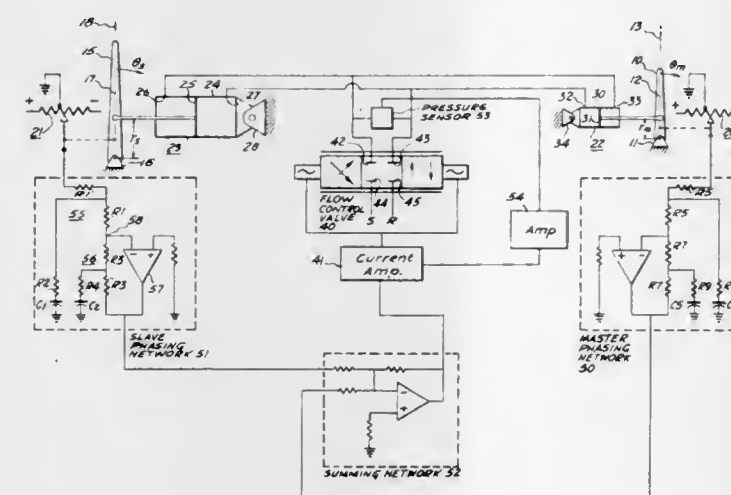
Donald L. Pieper, Schenectady, N.Y., assignor to General Electric Company

Filed Sept. 29, 1970, Ser. No. 76,562

Int. Cl. F15b 9/03, 9/09, 13/14

U.S. Cl. 91-363 R

5 Claims



A single control valve is utilized in the slave loop and in the master force feedback loop of the system. Instabilities in the master loop resulting from the high gain required in the slave loop and inherently existing therein in relation to the slave loop are eliminated by utilization of phase lag and phase lead networks in the master loop. Slew error in the system resulting from the use of such networks is minimized by the provision of phase lag and phase lead networks in the slave loop.

3,626,810

# VARIABLE REVERSIBLE PISTON PUMP

Carl Morey, Cincinnati, Ohio, assignor to Silent Hydropower, Inc., Mariemont, Ohio

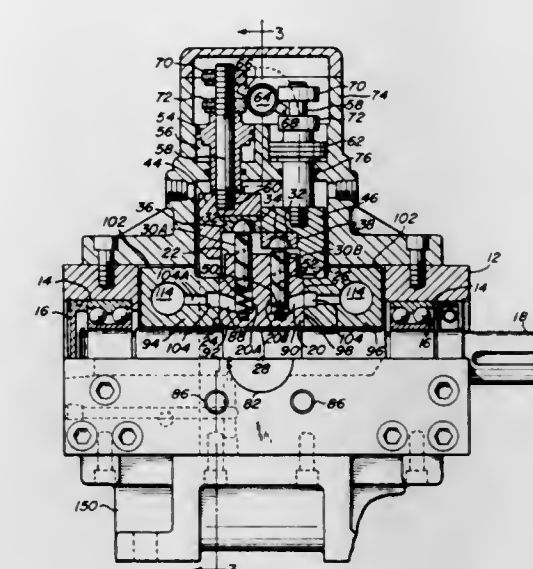
Filed Jan. 21, 1969, Ser. No. 792,360

Int. Cl. F04b 1/10, 49/08

U.S. Cl. 91-486

31 Claims

The pump is of the variable displacement, reversible flow, positive displacement, radial piston type, characterized by a single rotatable part or rotor which carries a group of pistons; the pistons being reciprocated progressively by means of cam



3,626,811

# ROLLING DIAPHRAGM SEAL MEANS FOR REMOVING AND RECOVERING DIFFUSED GAS

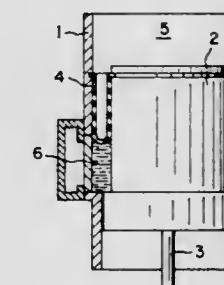
Roelf Jan Meijer; Henricus Cornelis Johannes Beukering; Herman Fokker, and Albert August Dros, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Original application May 21, 1968, Ser. No. 732,492, now Patent No. 3,487,751, which is a continuation of application Ser. No. 514,293, Dec. 16, 1965, now abandoned. Divided and this application Oct. 16, 1969, Ser. No. 871,189

Int. Cl. F15b 21/04

U.S. Cl. 92-79

3 Claims



For use in a hot-gas engine, compressor, and expansion machine, a partition wall permitting diffusion for removing and recovering gas diffused through a rolling diaphragm seal into a liquid diaphragm supporting column. The device includes an apparatus for maintaining a pressure differential across the diaphragm seal, a liquid storage chamber, and wire gauzes as a separator in a liquid container.

3,626,812

# CYLINDER-CUSHIONING ARRANGEMENT

Robert E. Trick, Racine, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed July 9, 1970, Ser. No. 53,337

Int. Cl. F01b 11/02

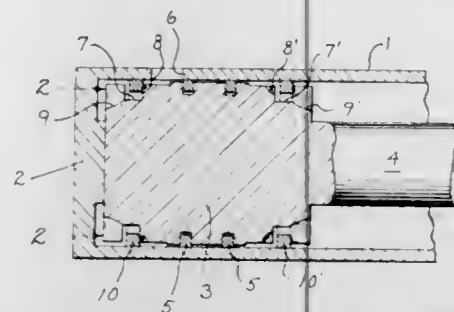
U.S. Cl. 92-85

4 Claims

The piston of a hydraulic cylinder is provided with a cushioning groove which is between the closed end of the cylinder and a fluid port when the piston nears the end of its



stroke. A relatively small damping passage in the piston communicates between one side of the groove and the fluid port, and a relatively large flow passage in the piston communicates between the opposite side of the groove and the closed end of the cylinder. A damping ring is axially movable in the groove in response to fluid pressure, and when the



piston nears the closed end, the ring moves to a damping position in which it partially blocks the damping passage to impede exhaust fluid flow through the port and provide a cushioning effect on the piston. When pressurized fluid is introduced through the port in a return action, however, the ring moves away from the damping passage to allow relatively unrestricted fluid flow.

3,626,813

## DIFFERENTIAL PRESSURE CELL

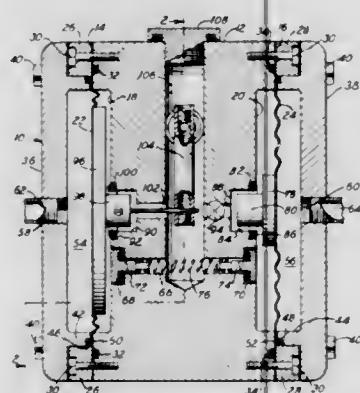
Kenneth G. Kreuter, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 23, 1970, Ser. No. 57,656

Int. Cl. F01b 19/00

U.S. Cl. 92-97

16 Claims



A differential pressure cell having a multiple-diaphragm structure which cooperates with a torsion assembly to convert pressure differentials into mechanical motion wherein the diaphragms are protected from exposure to high stress, from overtravel and from becoming locked in a high-limit position during extended periods of overpressure.

3,626,814

## LOAD-MEASURING DEVICES

Erik Edvard Andersson, Alphydevägen 35, 131 00 Nacka, Sweden

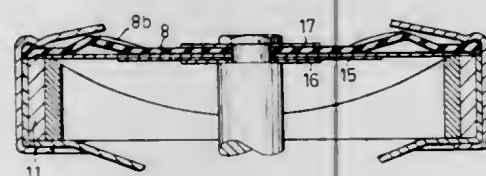
Filed Oct. 28, 1969, Ser. No. 871,838

Claims priority, application Sweden, Oct. 30, 1968, 14689/68

Int. Cl. G011 5/12

U.S. Cl. 92-98 R

5 Claims



A force-unloading device having a pressure chamber with a flexible wall connected with a movement-unloading means

and presenting an inlet for pressure medium. Adjacent the circumference of the inside of the chamber there is provided a guide surface with which the edge portion of the flexible wall engages when placed under load.

3,626,815

## PISTON

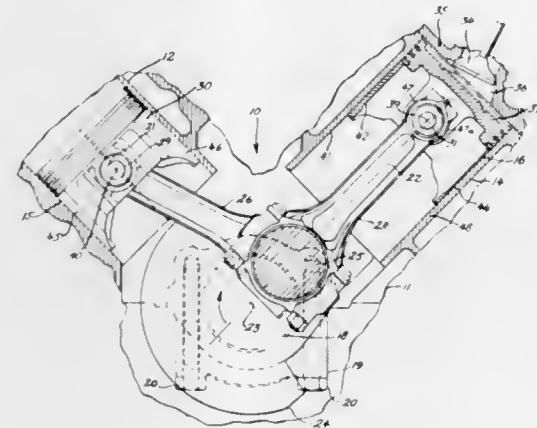
Max Fingeroot, Oak Park, and Robert G. Minty, Warren, both of Mich., assignors to American Motors Corporation, Kenosha, Wis.

Continuation of application Ser. No. 797,986, Feb. 10, 1969, now abandoned. This application May 25, 1970, Ser. No. 48,696

Int. Cl. F16j 1/04; F16h 21/40; F02b 75/06

U.S. Cl. 92-210

7 Claims



A piston constructed with a greater amount of its total weight located on one side of the longitudinal axis for the piston pin bore than on the other side. Where an offset piston pin mounting arrangement is utilized, the greater amount of the total weight of the piston is located on the same side of the longitudinal axis of the piston as the offset. The greater weight being provided, preferably, by making the thrust skirt of the piston of a greater wall thickness than the antithrust skirt. In another embodiment, the greater weight being provided by making the thrust wall of the piston pin bore of a greater thickness than the antithrust wall.

3,626,816

## HYDRAULIC APPARATUS

Kenneth R. Boydell, Bredons Harwick, Near Tewkesbury, England, assignor to Dowty Technical Developments Limited, Gloucester, England

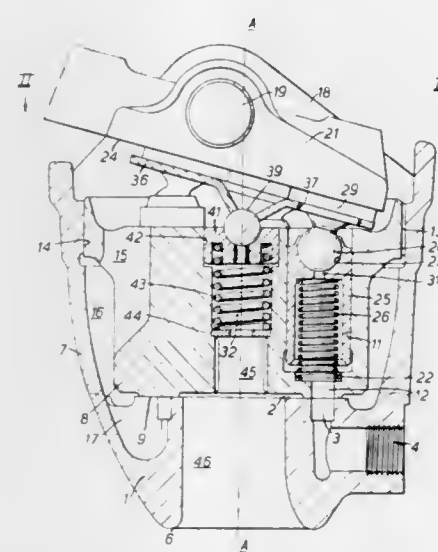
Filed Dec. 29, 1967, Ser. No. 694,717

Claims priority, application Great Britain, Feb. 23, 1967, 8,709/67

Int. Cl. F01b 3/00; F04b 1/02, 23/12

U.S. Cl. 91-504

10 Claims



A swashplate pump or motor comprising a rotary cylinder block having cylinders either parallel to or inclined to the

rotation axis, a valve on which the block is arranged to rotate, an inclined or inclinable swashplate located adjacent to one end of the cylinder block and engageable by pistons in the cylinders either directly or through the medium of sliders whereby the pistons are reciprocated as the block rotates and a structural member formed in one piece and having a flat valve surface forming the valve on which the cylinder block is arranged to rotate, a cylindrical bearing surface surrounding part of the cylinder block to locate it for rotation and apertures to support one or more transverse shafts which locate the swashplate in position.

3,626,817

## CONTAINER MANUFACTURE

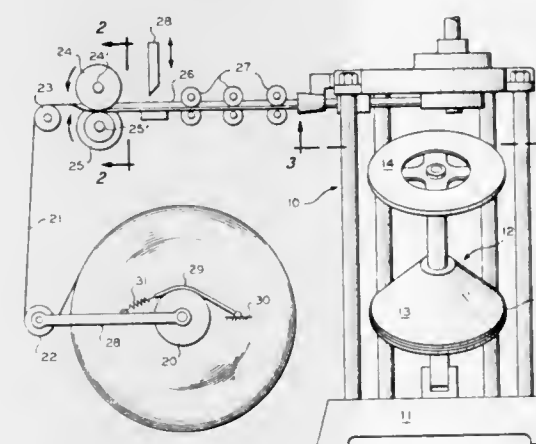
Howell T. McElvey, Decatur, Ga., assignor to Phillips Petroleum Company

Filed Apr. 11, 1969, Ser. No. 815,457

Int. Cl. B31b 1/72, 17/74; B23p 19/04

U.S. Cl. 93-36.5 R

3 Claims



Containers are formed of side and end members which are joined by crimped end rings. The rings are formed by bending a flat strip of material to form a channel member. The channel members are then bent and crimped to secure the container members together.

3,626,818

## PARTITION ASSEMBLING MACHINE

George Anson, Elwood, Australia, assignor to Andax Proprietary Limited, North Clayton, Victoria, Australia

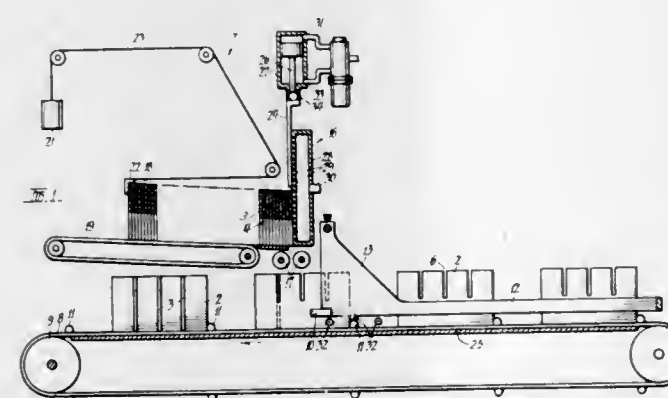
Filed Jan. 8, 1970, Ser. No. 1,528

Claims priority, application Australia, Jan. 8, 1969, 48843/69

Int. Cl. B31b 1/00

U.S. Cl. 93-37 R

9 Claims



A machine for assembling intersecting panels movement of the cross panels to engage them with the longitudinal panels being effected by means of rotating rollers or other continuously moving surfaces.

3,626,819

## DAUBER-TYPE ADHESIVE APPLICATOR FOR FOLDING BOX MACHINES

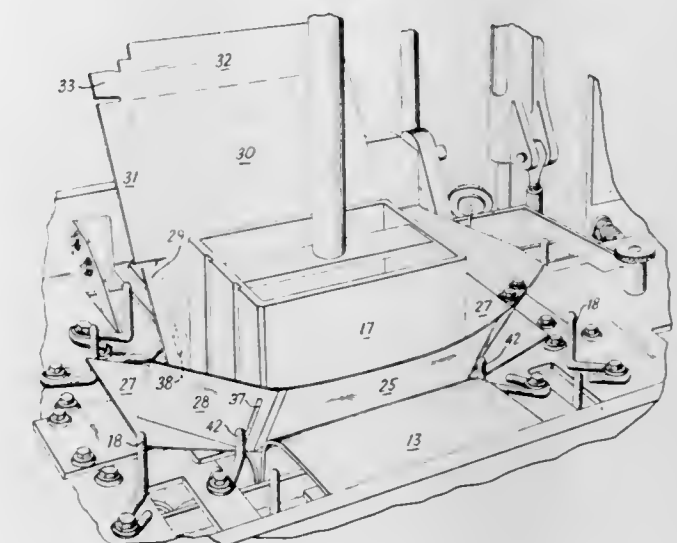
Sigurd J. Hoyrup, Monta Vista, Calif., assignor to Kliklok Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,993

Int. Cl. B31b 1/06, 1/48, 1/62

U.S. Cl. 93-51 R

3 Claims



In the forming of a flat blank into the shape of a glued folding box by pressing the blank through a folding die by means of a plunger, spots of adhesive are daubed on the undersurface of the flat blank at the die mouth by an adhesive applicator which rises from a pool of adhesive. Simultaneously the top surface of the blank is acted upon by a counter element which backs up the blank and moves in a direction opposite to the applicator. The counter element may be mounted on a reciprocating carrier which also carries a suction cup for transporting the blank to the die.

3,626,820

## APPARATUS FOR PRODUCING CARTONS

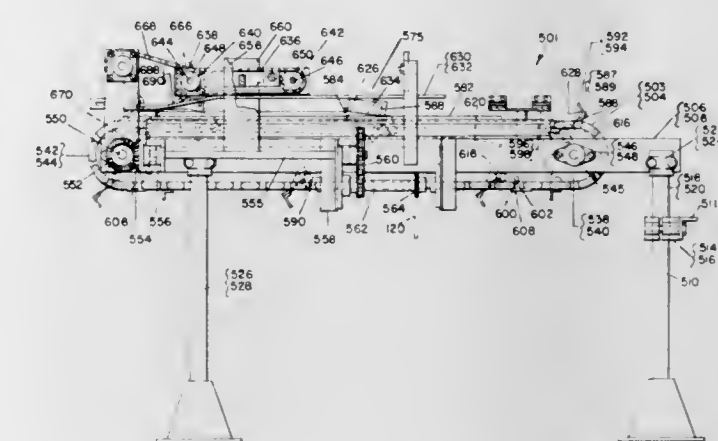
John W. Scully, Raynham, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Oct. 3, 1969, Ser. No. 863,436

Int. Cl. B31b 1/78, 5/74

U.S. Cl. 93-53 BF

10 Claims



Apparatus comprising a side-seaming device adapted to fold a prescored carton blank along two scored lines and to provide an adhesively secured side seam to form a flat tube. The apparatus embodies a reverse-folding device arranged transversely to the discharge end of the side-seaming device and which is adapted to first square up the side-seamed carton and then refold the carton in the opposite direction on the two remaining scored lines. This results in a side-seamed carton which has been prebroken along all four vertical score lines.



3,626,821

**METHOD FOR MAKING CONTINUOUS FORM ENVELOPES**

Wilfred H. Gendron, Wilbraham, Mass., assignor to United States Envelope Company, Springfield, Mass.

Filed Nov. 10, 1969, Ser. No. 875,289

Int. Cl. B31b 23/00

U.S. Cl. 93—63 M

12 Claims



Two assemblies of continuous form or series-connected envelopes are simultaneously made by advancing an elongated web of sheet material in a longitudinal direction, folding opposite marginal portions of the advancing web inwardly toward each other, joining each marginal portion in face-to-face relation to an associated underlying portion of the web along longitudinally spaced generally transversely extending lines of attachment to form two assemblies of envelope bodies connected together by an exposed intermediate portion of the web, and cutting the advancing web along its intermediate portion to simultaneously form closing flaps for the envelopes comprising each of the assemblies and to separate the two assemblies from each other. In accordance with a further method of the invention the envelopes of each assembly are further separated into sets, each set including a plurality of envelopes joined together in end-to-end relation and having connecting strips at the opposite ends thereof. The sets are arranged with the connecting strips thereof longitudinally aligned and are joined together in series-connected relation by attaching a pair of spaced carrier strips to the connecting strips.

3,626,822

**SEALING STRIP FOR EXPANSION GAPS, ESPECIALLY IN ROAD PAVEMENTS**

Waldemar Koster, Forsbach, Germany, assignor to Firma Friedrich Maurer Sohne, Munich, Germany

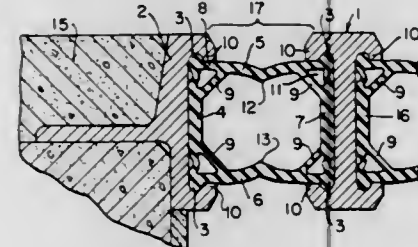
Filed Oct. 1, 1969, Ser. No. 862,679

Claims priority, application Germany, Oct. 3, 1968, P 18 00 775.5-25

Int. Cl. E01c 11/10

U.S. Cl. 94—18

9 Claims



This invention relates to a sealing strip for expansion gaps, especially in road pavements, which strips are shaped with at least one horizontal wall connected to sidewalls with ridges cooperating with gripping means in said gaps to hold the strip in the gap. The horizontal wall is connected to the sidewalls by means of a connection triangle-shaped and positioned to keep substantially free from obstructions the space confined by said horizontal and sidewalls, whereby the strip may fold itself as it yields when the gap narrows, for example, due to pavement expansion.

3,626,823

**COMBINATION STORM WATER RETENTION ASSEMBLY AND SIDEWALK**

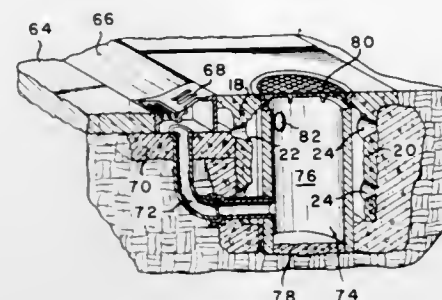
Andrew A. Toth, 3505 Springbrook Drive, South Bend, Ind.

Filed Feb. 2, 1970, Ser. No. 7,660

Int. Cl. E01c 11/24

U.S. Cl. 94—31.1

8 Claims



This invention includes a series of longitudinally aligned double-tee sections, each of which includes an upper horizontal section at ground level for accommodating pedestrian traffic, and spaced vertical supporting legs pending from the horizontal section below ground level. There is a void between the support legs forming a dry well for receiving runoff water. The support legs are perforate for releasing collected water into an adjacent stone or gravel bed for absorption purposes. A catch basin located either inside or outside the double-tee section receives the runoff water and feeds it to the dry well, the catch basin collecting and retaining debris and sediment for ready removal.

3,626,824

**COMPOSING METHOD AND APPARATUS**

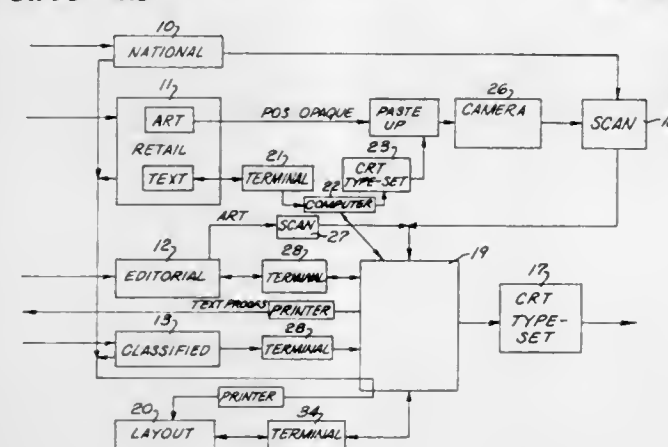
Edwin R. Kolb, University Heights, and Norman Morrison, Beachwood, both of Ohio, assignors to Harris Intertype Corporation, Cleveland, Ohio

Filed Feb. 20, 1970, Ser. No. 13,069

Int. Cl. B41b 27/18

U.S. Cl. 95—4.5

9 Claims



Composing method and apparatus for publications such as newspapers in which copy from various sources is entered into a computer in coded form for use in controlling a phototypesetter to prepare a page copy. Certain copy including artwork which may be halftone or continuous tone is scanned to provide the numerical data necessary for controlling the phototypesetter while text material is first edited on an editing terminal and then stored with or without phototypesetting instructions in the computer. Each item to be included in the publication is identified by a heading and a layout department instructs the computer as to where the items are to appear. For this purpose the layout department has a layout terminal for displaying page areas with previously assigned sections outlined and identified and for entering coordinates of newly assigned sections into the computer. The terminal can display magnified portions of the page area. In reproducing

continuous-tone copy, dot characters are stored in a character memory and used to provide different halftone screen sizes.

3,626,825

**RADIATION-SENSITIVE CAMERA SHUTTER AND APERTURE CONTROL SYSTEMS**

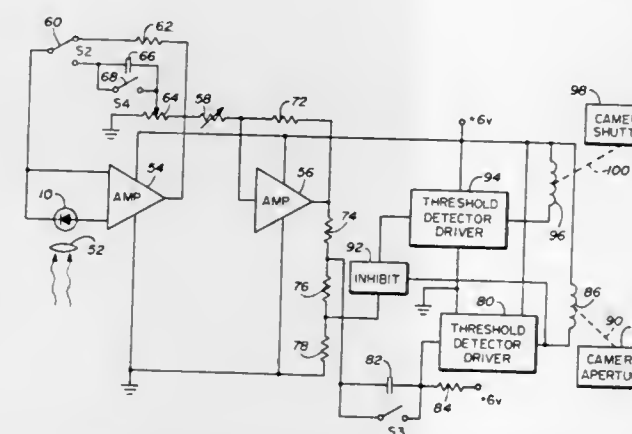
Kenneth E. Years, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1970, Ser. No. 41,402

Int. Cl. G01j 1/00

U.S. Cl. 95—10 C

8 Claims



A voltage that varies linearly with light intensity variation is generated by an amplifier having a differential input stage connected to a light-responsive diode. Two high-gain transistors are included in the differential input stage to provide amplification of the signal currents of the light-responsive diode. In a camera shutter and aperture control system, the linearly varying light intensity voltage is amplified to control two threshold detector circuits. An inhibiting circuit prevents one of the threshold detector circuits from responding to the light intensity voltage until the first threshold circuit has completed its desired operation.

3,626,826

**PHOTOGRAPHIC APPARATUS WITH ELECTRONIC EXPOSURE CONTROL MEANS**

Johann Putscher, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

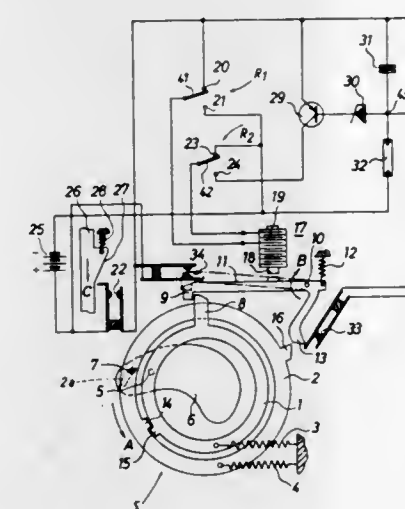
Filed Sept. 10, 1970, Ser. No. 71,184

Claims priority, application Germany, Sept. 13, 1969, P 19 46 533.9

Int. Cl. G03b 7/08

U.S. Cl. 95—10 CT

18 Claims



An electronic control for a shutter which respectively opens and closes on movement of a first and a second ring to the circuit of the exposure control has an

electromagnet whose armature normally holds the rings in cocked positions and releases the first ring on actuation of the camera release. The second ring is released with a delay which is a function of scene brightness. The electromagnet has a permanent magnet core which is too weak to move the armature against the bias of a spring from a first retaining position in which both rings are held in cocked positions, and a winding which is energized in a first way on actuation of the camera release to assist the core in moving the armature to a second retaining position in which the armature holds only the second ring in cocked position whereby the shutter opens. The condition of energization of the winding is changed by a timer element with a delay which depends on scene brightness whereby the winding opposes the action of the core and enables the spring to displace the armature which releases the second ring to thus close the shutter.

3,626,827

**AUTOMATIC EXPOSURE ADJUSTMENT DEVICE FOR FLASH PHOTOGRAPHY**

Akio Yanagi, Shoichiro Kakuta, and Takeo Iida, all of Tokyo, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

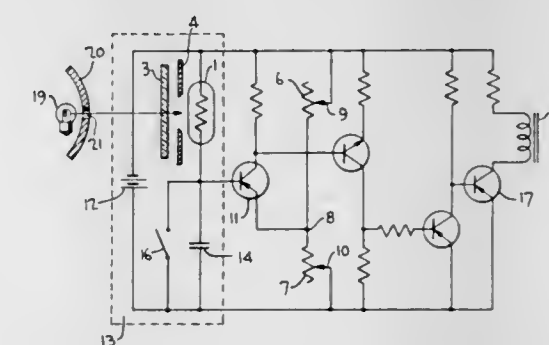
Filed Oct. 25, 1968, Ser. No. 770,634

Claims priority, application Japan, Oct. 26, 1967, 42/68557

Int. Cl. G03b 9/62, 7/08

U.S. Cl. 95—10 C

2 Claims



An automatic exposure adjustment device for flash photography wherein part of the light rays of the flashbulb enter the photoelectric element and thus the flashlight intensity can be measured by the photoelectric element. The exposure adjustment factors, except the exposure time, are made to correspond with the light intensity control part, such as a filter or a stop, which controls the light intensity of the beam on the photoelectric element and also with the variable resistance which adjusts the switching starting voltage of the transistor which is operated by the electric delay circuit. The photoelectric element is the time constant factor and optimal conditions for the subject's distance, the camera lens stop, the film sensitivity and the flash for flash photography may be automatically established and the exposure time determined.

3,626,828

**STEREO PHOTOMICROGRAPHY SYSTEM**

Walter F. Lindsey, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 27, 1969, Ser. No. 811,038

Int. Cl. G03b 35/08

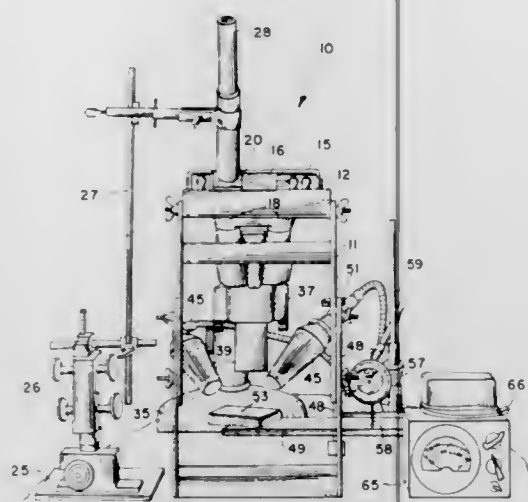
U.S. Cl. 95—18

5 Claims

A stereo photomicrography system having a stereo microscope capable of viewing a specimen at various magnifications. Support structure for holding a stereo camera which can be optically aligned with the stereo microscope. A focusing microscope with a very shallow depth of field positionable over the stereo camera and adjustable to focus on a reticle that can be placed at the film plane of the stereo



camera. A specimen holder which has height adjustment with respect to the stereo microscope and indicating mechanism associated therewith for producing readings of the height of the specimen. A photometer which can be utilized to measure the light intensity in the specimen image of the film



plane. The use of this equipment wherein the various heights of the specimen and the light intensities taken at various magnifications of the microscope can be utilized in conjunction with the film speed to obtain stereo microphotographs at various magnifications providing sharp and clear stereo photos.

3,626,829

# **AUTOMATIC FILM-SENSITIVITY SETTING DEVICE FOR A CAMERA HAVING A BUILT-IN EXPOSURE METER**

Yozo Iida, Tokyo, and Yoshihisa Katsuyama, Yokohama-shi, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

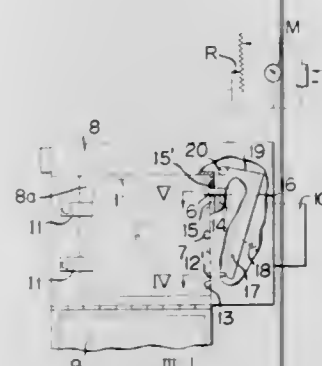
Filed Oct. 1, 1968, Ser. No. 764,256

Claims priority, application Japan, Oct. 13, 1967, 42/65592

Int. Cl. G03b 19/18

U.S. Cl. 95—31 FS

5 Claims



An automatic film-sensitivity setting means is provided for a camera having a built-in exposure meter and using a film cartridge. The film cartridge is formed with a positioning member which mates with a positioning member in the camera body, and is also formed with a film sensitivity determining member spaced from the cartridge positioning member in accordance with the sensitivity of the film loaded into the cartridge. A film-sensitivity sensing pin within the camera and interlocked with a variable resistance element in the exposure meter circuit is movable by the insertion of the cartridge into the camera body and then permitted to abut the sensitivity member of the cartridge to vary the resistance characteristics of the exposure meter circuit in accordance with the positioning of the sensing pin.

# **3,626,830 CHARACTER VIEWING AND REPRODUCING APPARATUS FOR A PHOTOCOMPOSING MACHINE** Dieter Sobottka, Middelstfahr, and Rolf Gruner, Jever, both of Germany, assignors to Olympia Werke Aktiengesellschaft, Wilhelmshaven, Germany

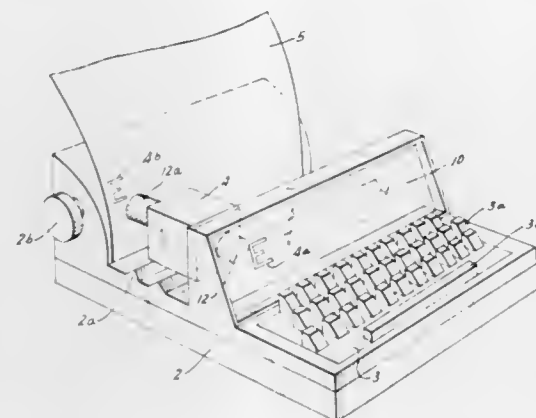
Filed June 20, 1969, Ser. No. 835,099

Claims priority, application Germany, June 22, 1968, P 17 61 675.0

Int. Cl. B41b 15/08, 25/24; H01j 31/50

U.S. Cl. 95—4.5

16 Claims



Light pulses in the form of selected character images are retained by a luminescent layer which is activated by the illuminated portion of a superimposed photoconductive layer onto which the character images are projected. Due to feedback from the luminescent layer to the photoconductive layer, the character image is retained for viewing as long as a voltage is applied to the superimposed layers. The character is also projected onto a record carrier which receives a light pulse only when a shutter is operated after the correctness of the selected character has been determined by viewing the character image, which is then erased.

3,626,831

# **APPARATUS FOR AUTOMATICALLY PROCESSING AND DRYING PHOTOGRAPHIC FILM AND PAPER**

Arnold Reginald Kennington, Ealing, London, England, assignor to The Pavele Corporation, New York, N.Y.

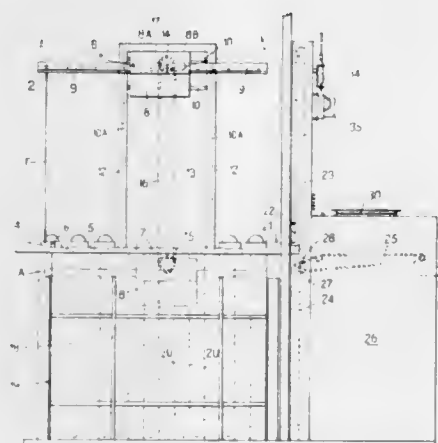
Filed Sept. 26, 1967, Ser. No. 670,670

Claims priority, application Great Britain, Sept. 28, 1966, 43,276/66

Int. Cl. G03d 3/08

U.S. Cl. 95—89

1 Claim



An automatic apparatus in which photographic films can be developed and dried in batches of several strips suspended from a rod which includes an automatic mechanism for sequentially lowering and raising each rod of films into and out of a series of baths. The film is moved into, held for a timed interval in, and moved out of each bath in the same vertical plane and moved horizontally to the next bath only while lifted completely out of the bath.

3,626,832

# **PHOTOGRAPHIC PROCESSING APPARATUS WITH LIQUID LEVEL CONTROL**

Hans Kappeler; Josef Christen, both of Zurich, Switzerland, and Albert Petrus Wagemans, Edegem, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

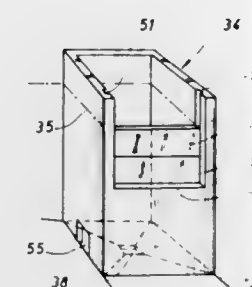
Filed Mar. 17, 1969, Ser. No. 807,529

Claims priority, application Belgium, Sept. 25, 1968, 48,330

Int. Cl. G03d 3/02

U.S. Cl. 95—89 R

2 Claims



Photographic processing apparatus including an adjustable overflow conduit for varying the level of a bath of processing liquid and thus the effective processing time for the material, the conduit also including an outlet aperture adjacent the bottom of the liquid bath for discharging the liquid from the bath at a predetermined rate, the liquid from the overflow conduit emptying into a liquid reservoir from which the liquid is recirculated to the processing bath at a rate such that the amount of liquid discharged through the lower outlet opening makes up the bulk of the liquid being recirculated in order to create agitating currents along the bottom of the liquid bath.

3,626,833

# **LIQUID DEVELOPING APPARATUS**

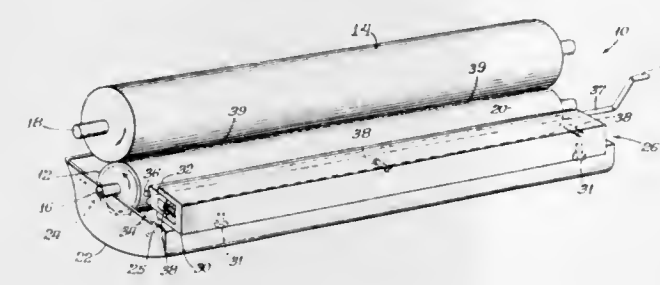
Robert M. Koch, Wheaton, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 606,178, Dec. 30, 1966, now abandoned. This application June 9, 1969, Ser. No. 831,685

Int. Cl. G03d 5/06

U.S. Cl. 95—89 R

10 Claims



A roller-type developing apparatus with a wiping control for developing sensitized materials. The roller arrangement includes at least an applicator roller and a pressure-applying member in contacting engagement forming a developing zone. The wiping control is a rod coated with fluorocarbon plastic or a fluorocarbon coated blade that wipes controlled amounts of fluid from the applicator roll which has a surface finish smoothness expressed in terms of the average depth of the depressions or recesses formed therein, in microinches. An applicator roll having a smoothness of from 10–200 microinches centerline average smoothness (or roughness), together with the fluorocarbon plastic coated wiping control, applies less than 3.0 grams liquid per square meter of the copy sheet.

3,626,834

# **PHOTOGRAPHIC PRINT DEVELOPING UNIT**

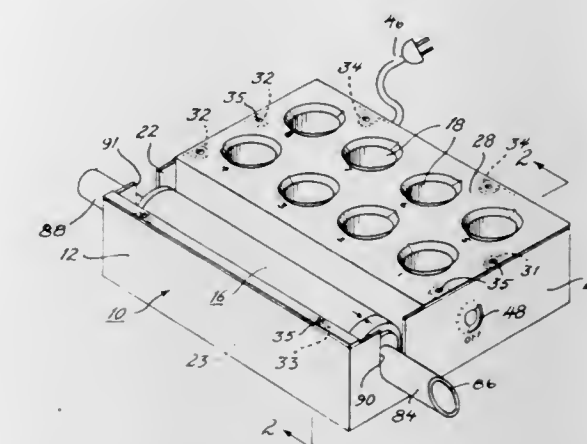
Sebastian Speranza, Philadelphia, Pa., assignor to James D. Weinstein, Philadelphia, Pa., a part interest

Filed Sept. 16, 1969, Ser. No. 859,614

Int. Cl. G03d 3/10

U.S. Cl. 95—93

9 Claims



A photographic print developing unit comprising a housing including a cover and opposed walls for supporting a rotatable canister for developing photographic prints. The housing defines a compartment within which is placed a heater. The housing supports beakers containing the liquid chemistry to be used during the development process. The processing liquids are sequentially introduced into the canister while in a substantially vertical orientation and maintained out of contact with the print by a fluid guide element until the canister is placed in a horizontal orientation. The canister and the beakers are preheated and thereafter maintained at a uniform temperature during the development process.

3,626,835

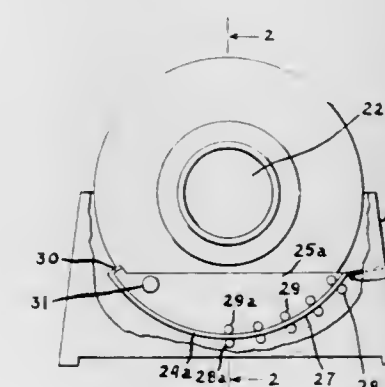
# **PHOTOGRAPHIC PROCESSING MACHINE**

Werner W. Buechner, 4407 Gladding Court, Midland, Mich. Continuation-in-part of application Ser. No. 402,545, Oct. 8, 1964, now Patent No. 3,411,424, which is a division of application Ser. No. 342,459, Feb. 4, 1964, now Patent No. 3,349,686, which is a continuation-in-part of application Ser. No. 23,313, Apr. 19, 1960, now Patent No. 3,124,051, Continuation-in-part of application Ser. No. 677,265, Oct. 23, 1967, now abandoned. This application July 19, 1968, Ser. No. 746,210

Int. Cl. G03d 3/08

U.S. Cl. 95—93

13 Claims



A photographic processing machine for the treatment or development of stationary, limp flexible photographic materials, face down on a rotating textured horizontal drum. The lower portion of the drum is contained in a curved bottom troughlike receptacle which receives the treating liquids. A mechanism is provided for quick dumping of the spent treating liquids from said receptacle.



3,626,836

**DRILLING OPERATION SHELTER**

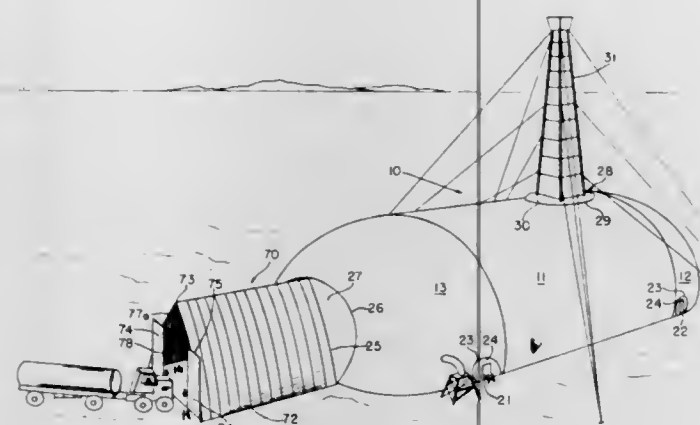
Joh G. Schneider, Seattle, Wash., assignor to Schneider Industries, Inc., Seattle, Wash.

Filed Dec. 4, 1969, Ser. No. 881,979

Int. Cl. F24f 13/00

U.S. Cl. 98—33

16 Claims



An enclosed system providing a shelter large enough to permit unhampered oil well drilling operations under adverse weather and wind conditions includes an air inflated enclosure large enough to surround a drilling site and drilling rig of a drilling operation, the upper part of the mast of the drilling rig extending through the roof of the air-inflated enclosure without any load from the enclosure being exerted on it. Entry into the air-inflated enclosure is through a prefabricated double-door air lock. A venting system provides continuous exhaust of gases from the drilling area. A quick release emergency venting system is provided to exhaust large volumes of gas adjacent the wellhead in the event of a major gas blowout. The air supported enclosure can be erected in a minimum amount of time using the mast of the drilling rig to assist in the erection. The air-inflated enclosure is made up of sections of flexible, gastight, water-impervious material which are laced together so they can quickly be assembled and disassembled.

3,626,837

**DUAL PLENUM FOR VENTILATING CEILINGS IN CLEAN ROOMS**

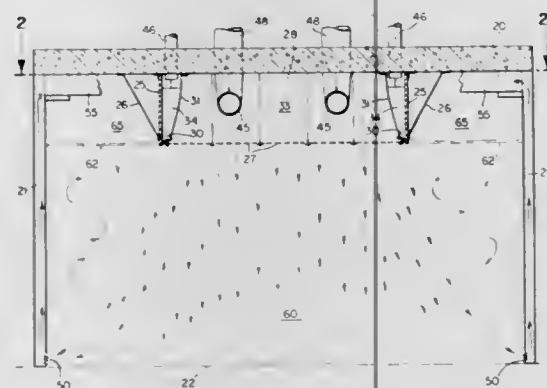
Michael H. Pelosi, Jr., Broomall; Frank J. Calderbank, Philadelphia, both of Pa., and James T. Wilson, Willingboro, N.J., assignors to CHS Industries Inc., Conshohocken, Pa.

Filed Feb. 13, 1970, Ser. No. 11,053

Int. Cl. F24f 9/00

U.S. Cl. 98—36

9 Claims



A bounded clean air space within a room is provided by a dual plenum located directly above the clean air space, the

plenum formed of the pre-existing room ceiling, a lower plenum ceiling and plenum walls, and divided into two chambers by a membrane, the inner chamber being a supply chamber for providing clean air to the clean air space, and the outer chamber providing a supply source for air delivered through a slot extending around the periphery of said lower plenum ceiling. An air curtain which laterally bounds the clean air space is formed by the air supplied through the slot, which air is removed through peripheral air openings at the bottom of the room.

3,626,838

**CONTINUOUS MICROWAVE GRAIN COOKER**

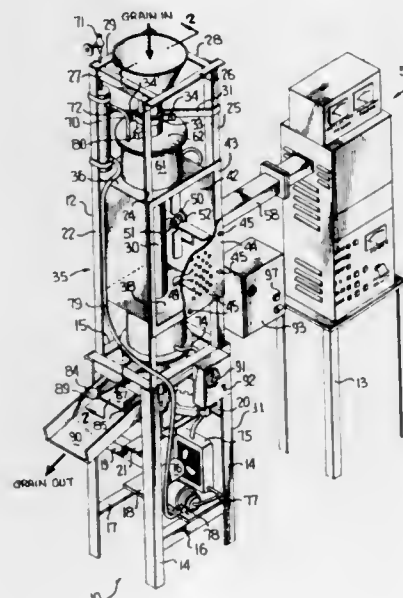
Homi D. Gorakhpurwalla, Sioux Falls, S. Dak., assignor to DorRan Electronics Inc., Ellis, S. Dak.

Filed Nov. 24, 1969, Ser. No. 879,420

Int. Cl. A23l 1/10

U.S. Cl. 99—237 R

3 Claims



Apparatus for continuously cooking grain by means of microwaves in which the grain is fed continuously through a glass cylinder which extends through a microwave cavity. Water load jackets at the bottom and top of the cavity prevent undue leakage of microwave power at the input and output ports to maintain a safe level of leakage of microwaves.

3,626,839

**HOT WATER SPRAY HEAD FOR COFFEE MAKING MACHINE**

John C. Martin, and Eugene G. Rescho, both of Springfield, Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.

Continuation-in-part of application Ser. No. 3,013, Jan. 15, 1970, now Patent No. 3,593,650, dated July 20, 1971. This application July 29, 1970, Ser. No. 59,296

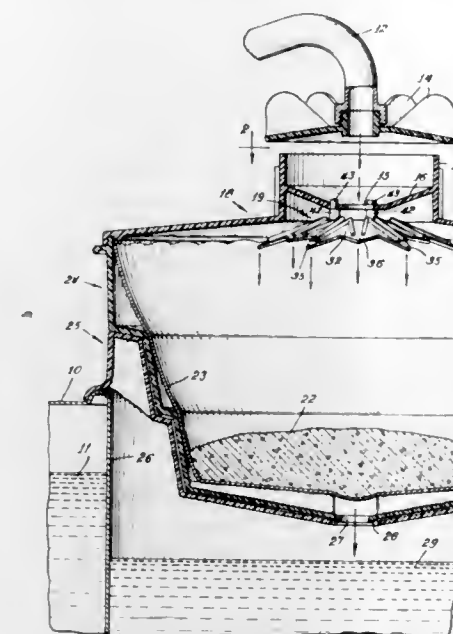
Int. Cl. A47j 31/00

U.S. Cl. 99—315

7 Claims

Hot water is distributed over ground coffee to make coffee extract by a frustoconical one piece plastic spray head having a serrated periphery with alternate serrations of different lengths. Channels formed by inverted V-shaped integral ribs direct the flow of the hot water to the tips of the serrations.

Upstanding support pins from the flat upper surface are aligned with certain of the channels which are wider at the entrance than the other channels to compensate for the presences of the support pins.



3,626,840

**FOOD FRYER**

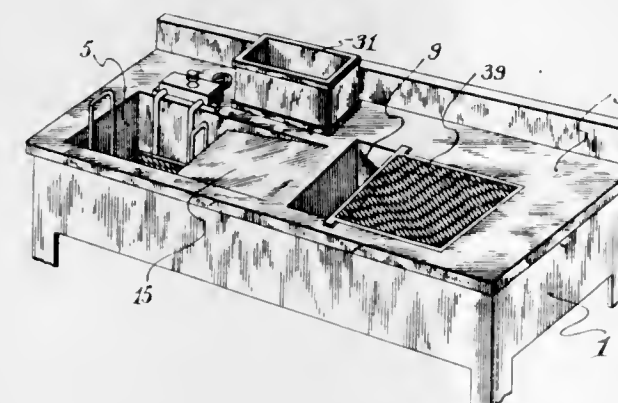
William T. Day, 7315 East 24th St., Tulsa, Okla.

Filed May 14, 1970, Ser. No. 37,128

Int. Cl. A47j 37/12

U.S. Cl. 99—355

3 Claims



A food fryer comprises a table having three recessed receptacles in the top thereof. The first contains a heater for cooking oil to fry food submerged in or floating on the oil, and has a laterally extending sloped drain recessed below the table top, that not only returns draining oil to the first receptacle but also receives what would otherwise be overflow from the first receptacle. A second receptacle receives a removable draining receptacle for cooking racks; while the third receptacle may for example comprise a reservoir for glazing or other liquids and has a sloped drainboard beneath a draining rack.

3,626,841

**ABRASIVE PROPELLENT APPARATUS**

Zvi Harry Schachter, 16247 Dickens St., Encino, Calif.

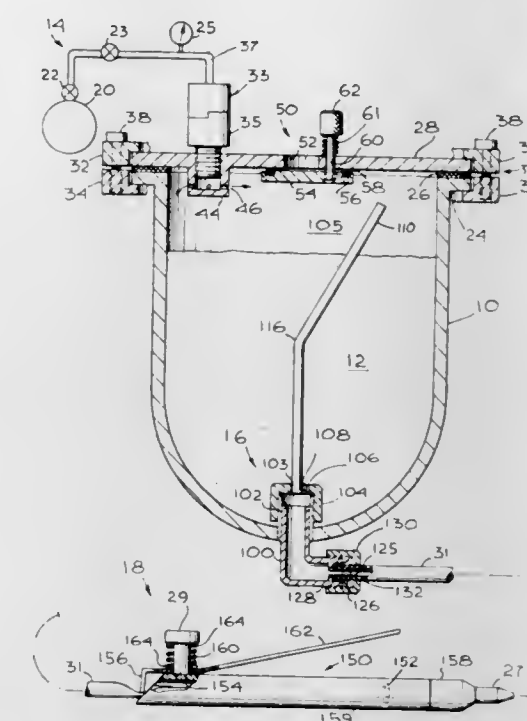
Filed July 3, 1969, Ser. No. 838,741

Int. Cl. B24C 3/06

U.S. Cl. 51—8

5 Claims

An apparatus for dispensing at sonic velocity a jet stream of a dispersion of flowable material in a gas. The apparatus includes a container for storing a body of flowable material and a mixing chamber associated with the bottom of the con-



material. The pressure drop through the tubing provides a pressure differential metering material through the orifice into the chamber.

3,626,842

**APPARATUS FOR GRINDING THE CORNERS OF FLAT GLASS PLATES SUCH AS GLASS SLIDES**

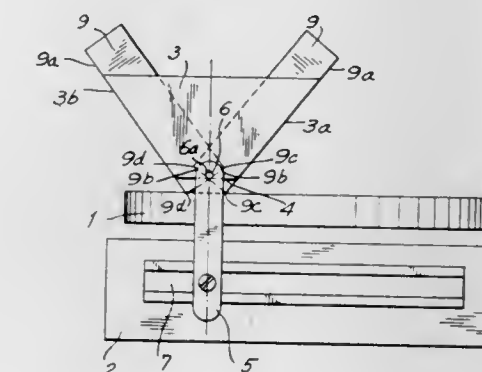
Gerhard Menzel, Braunschweig, Germany, assignor to Propper Manufacturing Company Inc., Long Island City, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,586

Int. Cl. B24b 9/08

U.S. Cl. 51—125

4 Claims



An apparatus for grinding or rounding the corners of flat glass plates such as glass slides. The apparatus includes a rotary grinding wheel having a grinding surface over which an elongated, bottomless trough is located. This trough has a pair of opposed sidewalls oppositely inclined toward each other in a downward direction to provide the trough with the cross section of a funnel, and groups of the slides which are to be treated are supported by the opposed walls of the trough in the latter with lower end regions of the slides extending through the open bottom of the trough into engagement with the grinding surface of the grinding wheel. A positioning rod extends parallel to the opposed walls of the trough along the center line of the open bottom thereof to engage and support the slides at their lower edges while their corners are rounded by engagement with the grinding surface of the grinding wheel.



3,626,843

## ULTRASONIC MARKING

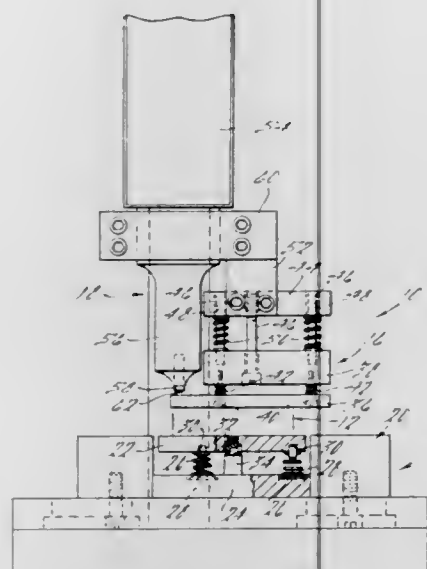
Richard G. Willing, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Detroit, Mich.

Filed June 19, 1969, Ser. No. 834,704

Int. Cl. B44b 5/00

U.S. Cl. 101-3

11 Claims



Apparatus for marking identifying numbers and/or other indicia on parts by use of an ultrasonic transducer for driving stamp means generally against a part whereby the part will be marked with the desired numbers and/or indicia.

3,626,844

## PRINT-EMBOSSING SEAL PRESS

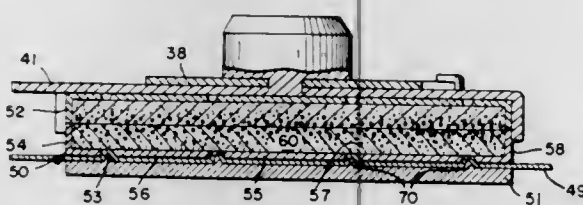
Charles Priesmeyer, Park Ridge, Ill., assignor to Consolidate Foods Corporation

Original application Mar. 31, 1961, Ser. No. 99,871, now Patent No. 3,522,769. Divided and this application July 14, 1969, Ser. No. 870,968

Int. Cl. B44b 5/02

U.S. Cl. 101-3 SP

7 Claims



An embossing and printing seal press provided with a female die structure having an internal portion of porous material for retention and flow control of pigmented fluid and withstanding embossing pressures to coat by capillarity and contact the crown portion of characters embossed in paper.

3,626,845

## AUTOMATICALLY LOADED HAND STAMP

Glenn Edward Whitaker, Montesano, Wash., assignor to Lamb-Grays Harbor Co., Inc., Hoquiam, Wash.

Filed Feb. 10, 1969, Ser. No. 797,817

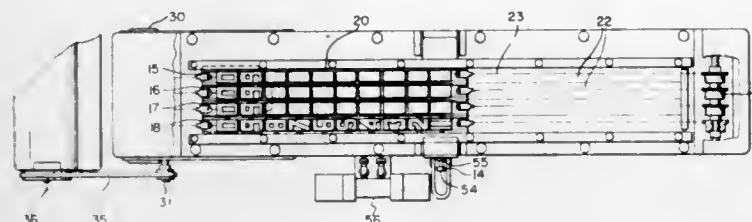
Int. Cl. B41j 7/32

U.S. Cl. 101-93

9 Claims

A hand-held printing stamp is automatically loaded with printing blocks representative of alpha, numeric or symbolic data, such as, the weight of an object as measured by a weigh scale. The stamp is part of a printing device having a plurality of printing blocks contained in one or more trays. The data output device, such as, a scale is coupled to the printing device and commands a motor to drive the trays past the

stamp. The controls cause the trays to stop independent of one another when printing blocks designated by the output device or scale are beneath the stamp. The designated printing blocks are locked to the stamp by a locking pin. The



stamp is then removed from the printing device, inked and used to mark a printing surface. The locking pin is removed from the stamp and the trays returned to an initial position when the hand stamp is replaced in the printing device.

3,626,846

## APPARATUS FOR PRINTING INDICIA ON A SERIES OF DOCUMENTS

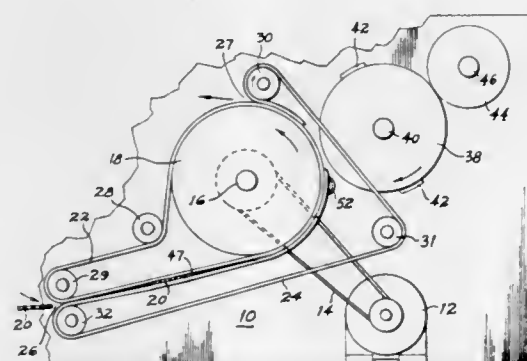
Albert C. Wiegert, and Casimir Nawrocki, both of 901 Elm-grove Road, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 26, 1969, Ser. No. 861,327

Int. Cl. B41f 13/20, 13/26

U.S. Cl. 101-233

6 Claims



Apparatus is disclosed for disposing indicia on a plurality of documents as they are moved through the apparatus. The apparatus includes a feed path along which the plurality of documents are moved one at a time, a printing member for placing indicia on the documents as they are fed along the feed path, and a backup member movable from a first, retracted position in response to the passage of a document to a second engaging position in which the backup member serves to support the document as suitable indicia are placed thereon by the printing member.

3,626,847

## ADDRESS PRINTING MACHINES USING YIELDABLE PRESSURE PADS AND THIN FOIL ADDRESS PLATES

Heinz Dieter Janzen, Berlin, Germany, assignor to Adrema-Werke GmbH, Berlin, Germany

Filed Feb. 17, 1969, Ser. No. 799,646

Claims priority, application Germany, Mar. 1, 1968, P 16 36 307.8

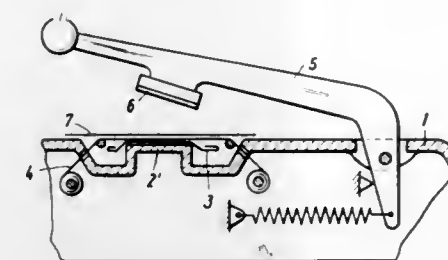
Int. Cl. B41j 11/12; B41l 47/44; B41j 1/38

U.S. Cl. 101-407

5 Claims

A pad or cushion for addressing machines comprises two

layers, the layer arranged to come closest to the embossed



addressing plate having a Shore hardness of 30 to 50 while an underlying layer has a hardness of 75 to 95.

3,626,848

## LOCKUP FOR THIN PLATES

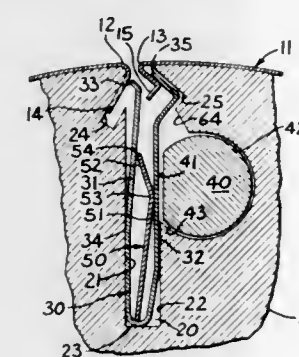
Leonard I. Tafel, La Grange, Ill., and Larry G. Taylor, Plano, Tex., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 9, 1969, Ser. No. 831,394

Int. Cl. B41f 27/12

U.S. Cl. 101-415.1

8 Claims



A lockup for a thin printing plate of the type having inwardly bent leading and trailing edges in which a U-shaped longitudinally extending spring is mounted in a slot formed in the printing cylinder with a cam shaft on one side of the spring for pressing the legs of the spring in the same direction for respectively holding the leading edge captive and for hooking onto the trailing edge to lock the plate to the cylinder and to provide continuous automatic takeup as the cylinder revolves.

of accumulating information by selective removal of certain indicia. Lands occupying coded positions are applied to an offset printing plate as an improved system for accumulating information in the publishing of successive issues of a bulletin or catalog using the same printing plate. The information is accumulated in code by obliterating or removing one or more of said lands prior to printing each issue. By subtracting lands to form a negative code current printing information constitutes a permanent part of the plate.

3,626,850

## EXPLOSIVE ASSEMBLY

Clyde Oliver Davis, Wenonah, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

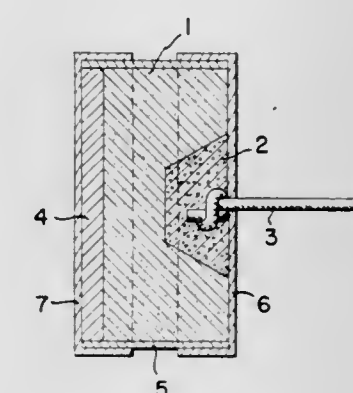
Continuation-in-part of application Ser. No. 231,773, June 15, 1951, now abandoned, which is a continuation-in-part of application Ser. No. 768,547, Aug. 14, 1947, now abandoned.

This application Oct. 26, 1954, Ser. No. 464,802

Int. Cl. F42b 3/00, 3/10

U.S. Cl. 102-24

10 Claims



The invention is an explosive assembly having a flat metal plate in contact with a flat surface on a high-density charge of high explosive.

3,626,851

## TELESCOPED CASELESS AMMUNITION HAVING A GAS BARRIER WITHIN THE PROPELLANT CHARGE

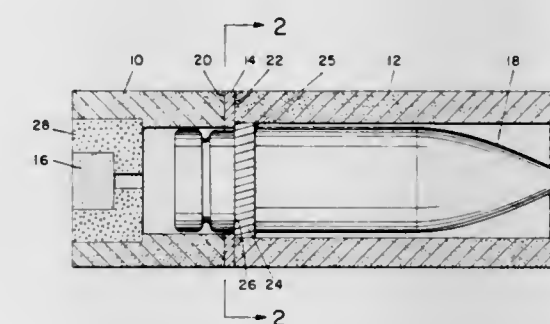
John A. Ruth, Westerlo, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 29, 1969, Ser. No. 861,886

Int. Cl. F42b 5/18

U.S. Cl. 102-40

11 Claims



A propellant charge for a telescoped round of caseless ammunition is provided with a gas barrier which separates the propellant charge into a forward-end and an aft-end. The gas barrier temporarily delays ignition of the forward-end of the propellant charge resulting in improved ballistic performance for the caseless round.

3,626,849

## METHOD OF PREPARING A PRINTING PLATE WITH A SUBTRACTIVE INDICIA SYSTEM

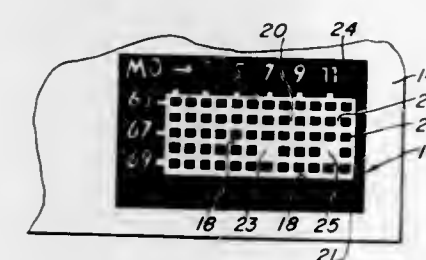
Dwight V. Sinner, Oak Park, Ill., assignor to Senn Custom, Inc., Oak Park, Ill.

Continuation of application Ser. No. 659,494, Aug. 9, 1967, now abandoned. This application Dec. 11, 1969, Ser. No. 884,318

Int. Cl. B41m 5/00; B41n 3/00

U.S. Cl. 101-463

1 Claim



An improved subtractive indicia system utilizing the initial provision of a grid or excess indicia and a subtractive system



3,626,852

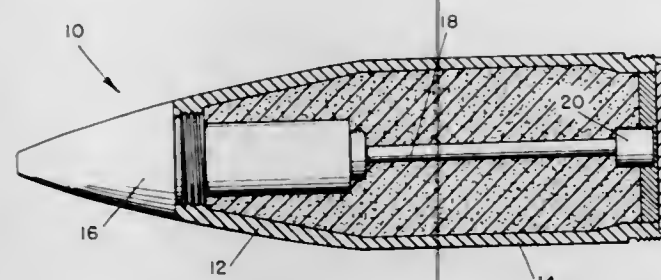
**WARHEAD INITIATION TRANSFER LINK**

Richard A. Plauson, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 16, 1968, Ser. No. 753,215  
Int. Cl. F42c 1/02, 1/04, 1/13

U.S. Cl. 102-73

8 Claims



A nose-fused warhead is provided with means for initiated detonation of the explosive charge from the rear. A detonating shock is passed through a transfer link from the nose-fuse to a booster charge at the rear of the warhead.

3,626,853

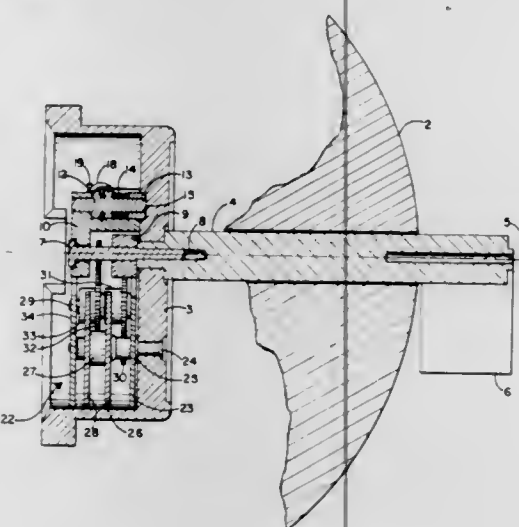
**MULTIPLE INPUT ARMING MECHANISM**

Arnum E. Kraemer, Mound, Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 27, 1970, Ser. No. 6,255  
Int. Cl. F42c 15/26

U.S. Cl. 102-79

7 Claims



An arming mechanism for a spinning projectile, whereby said mechanism is responsive only to the simultaneous existence of both a predetermined centrifugal force and a predetermined force caused by the airflow passing the projectile as it travels through the air. First means responding to the force caused by the airflow and second means responding to the centrifugal force unite to produce a driving force within the arming mechanism due to relative motion between the first means and the second means. The driving force is transmitted through the second means for moving a detonator from a safety position to an armed position.

3,626,854

**SELF-INFLATING TARGET PROJECTILE**

Jerry R. Brooks, 1716 Merrywood Way, Gainesville, Tex.

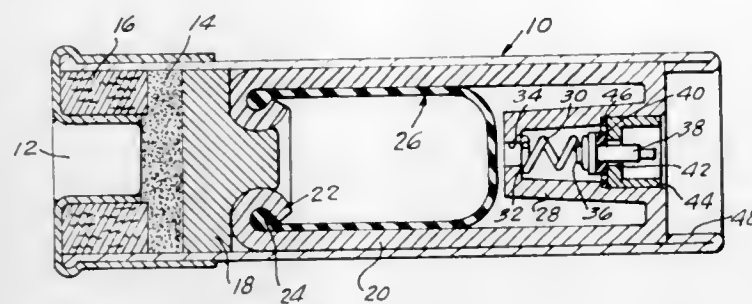
Filed Sept. 19, 1969, Ser. No. 859,405  
Int. Cl. F42b 5/22, 9/20

U.S. Cl. 102-41

4 Claims

A self-inflating target projectile comprising a tubular member with a gunpowder charge therein and adapted to be disposed in the barrel of a gun, with a hollow capsule in said

tubular member having an inflatable balloon therein and a check valve adjacent one end of the capsule with a plug adjacent the other end thereof, said capsule being adapted to



be ejected by the gunpowder and said check valve enabling the interior of the capsule to be charged with a gas for inflating the balloon therein.

3,626,855

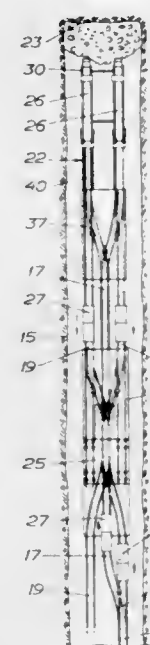
**METHOD AND TRACK SECTION FOR LAYING TRACK IN TUNNEL DRIVING**

Gosta Fogelstrom, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed June 20, 1969, Ser. No. 835,165  
Claims priority, application Sweden, July 1, 1968, 9070/68  
Int. Cl. E01g 3/00, 3/06; E01b 29/00

U.S. Cl. 104-3

4 Claims



A track section for laying a trackway during tunnel boring to provide support for equipment to be advanced as the tunnel progresses, which is longitudinally and slidably supported at the forward and rear end subsections thereof, respectively, on the tunnel floor in front of the tunnel haulage tracks and on said tracks. The track section is advanced slidably as a whole by application of hydraulic power jacks between the forward end section and the tunnel haulage tracks. Upon advancement, the tunnel haulage tracks are extended by laying additional tracks on the tunnel floor underlying the intermediate subsection. The track portions of the intermediate subsection may be swung up for increasing the accessibility to the underlying tunnel floor during tracklaying.

3,626,856

**OVERHEAD MONORAIL TRANSPORTATION SYSTEM**

Murel G. Goodell, 15 Briar Oaks Lane, Houston, Tex.

Filed June 23, 1969, Ser. No. 835,421

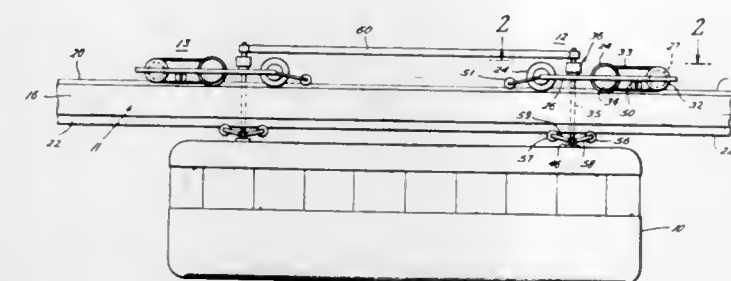
Int. Cl. B61b 3/02

U.S. Cl. 104-89

1 Claim

A monorail coach is suspended from a lightweight overhead rail structure by a coupling mechanism which provides

a laterally rigid coupling between the coach and the rail structure. This converts any lateral sway movement of the coach into a torsional force on the rail structure, thereby enabling the rail structure to control and minimize such sway movement. The overhead rail structure is supported from tower structures by means of cantilever type tower arms which are constructed to have a load deflection which is substantially the same as the load deflection of the rail structure



intermediate the tower structures. This enables the coach to ride at a substantially constant elevation during its passage along the rail system. The rail structure is further constructed to have a weight per linear foot such that the kinetic energy of the coach at a relatively low coach velocity exceeds the energy required to straighten a laterally deflected span of the rail structure. This enables operation of coaches at higher operating speed without producing undesirable vibration effects.

3,626,857

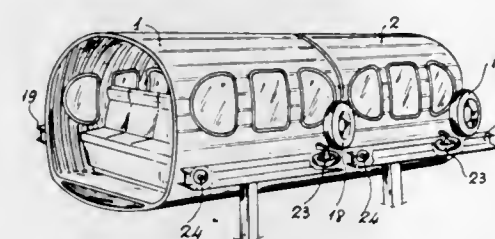
**ARTICULATED TRAIN**

Alejandro Golcochea Omar, Madrid, Spain, assignor to Sociedad Anonima De Trenes Verte Brados, Madrid, Spain  
Continuation-in-part of application Ser. No. 719,900, Apr. 9, 1968, now abandoned. This application Aug. 30, 1968, Ser. No. 756,561

Int. Cl. B61b 3/02, 13/04, 17/20

U.S. Cl. 104-119

20 Claims



A plurality of small, individual car units are provided, each measuring about 2-3 meters (7-10 feet) in length and 2-3 meters (7-10 feet) in width. A single drive wheel is mounted at each side of the car unit, so that the unit will be suspended between a pair of rails, the center of gravity being at, or below the suspension or surface. Adjacent car units are interconnected by weight-bearing couplings which keep adjacent car units from tipping about the single support wheels. These interconnections may be pins, interfitting truncated cones, spherical sections or the like, permitting relative movement of the car units.

3,626,858

**LINEAR INDUCTION MOTOR STATOR ASSEMBLY**  
Norman Whitfield Colling, and George Phillip Quayle, both of Fulwood, England, assignors to Tracked Hovercraft Limited, London, England

Filed July 10, 1969, Ser. No. 840,695

Claims priority, application Great Britain, July 11, 1968, 33,182/68

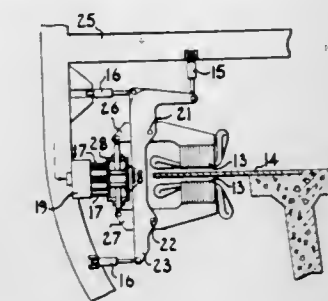
Int. Cl. B61b 13/00

U.S. Cl. 104-148

19 Claims

To control the thrust and hence the acceleration produced by a linear induction motor, an actuator is provided to vary the gap between the stator and the cooperating linear induction motor reaction rail. A tracked air cushion vehicle is

shown propelled by a double sided linear motor. In one arrangement the stator has two parts which are disposed one on either side of the reaction rail, the stator parts are pivoted



and a hydraulic actuator can pivot them apart. In another arrangement where the stator has two parts, the stator parts remain parallel to each other as the actuator moves them apart.

3,626,859

**IDLE CAR STORAGE AND DISPENSING SYSTEM**  
Bernard Bradbury, and Bruce D. Norlie, both of Chico, Calif., assignors to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Dec. 19, 1969, Ser. No. 886,521

Int. Cl. B61k 7/18

U.S. Cl. 104-252

8 Claims



Idle cars of a baggage handling system suitable for use in busy airports are stored on sidings in a storage area. Each siding has a retractable stop arranged to arrest the leading car on the siding and a plurality of powered drive wheels on a reciprocable frame, the drive wheels cooperating with a member on the car to drive the car. The member is of lesser length than the overall length of the car and the drive wheels are spaced at intervals equal to the overall length of a car such that the drive wheels are out of engagement with the members when the car or cars are arrested by the stop. To release a car from storage the stop is withdrawn and the frame shifted to engage the drive wheels with the car members. The first drive wheel provides a higher speed than the others to open a gap between the first and the following cars such that the stop may be returned to arresting position prior to arrival of the next car at that position.

3,626,860

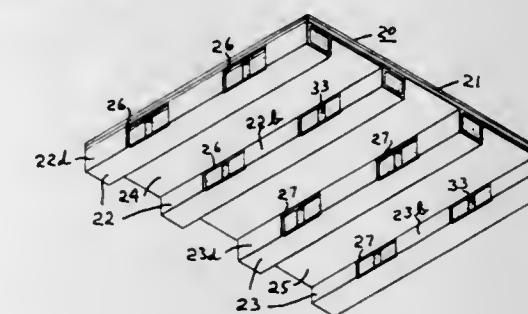
**FOLDABLE EXPENDABLE FOUR-WAY ENTRY PALLET**  
David H. Blatt, Melrose Park, Pa., assignor to Walnut Industries Company, Philadelphia, Pa.

Filed June 1, 1970, Ser. No. 41,809

Int. Cl. B65d 19/18

U.S. Cl. 108-58

16 Claims



A foldable expendable four-way entry pallet, merchandise container or other article carrier constructed of corrugated



paperboard including a planar deck and foldable, reinforcing log pockets or sleeves secured to the underside of the deck. Log sleeves are formed in pairs at opposite ends of a piece of double-faced single-wall corrugated board and the entire intervening web is adhesively secured to the underside of the deck. Single or multiple pairs of log sleeves may be used with the log orientation of plural pairs being parallel and the sleeves being foldable flatwise toward the deck when the reinforcing logs are removed. Each log sleeve is provided with a pair of windows having centers spaced apart the proper distance to permit projection therethrough of the fork of a fork lift truck, and the windows of the paralleled sleeves are aligned in rows orthogonal to the log sleeves. The reinforcing logs fit slidably closely within the log sleeves and may be of expanded polystyrene or any other suitable rigid frangible material. The portions of the logs exposed through the windows of the sleeves are notched or otherwise formed to break out cleanly when impacted by the fork of a fork lift truck to permit the fork to pass through the windows, and are also top-notched to provide for passage of banding straps.

3,626,861

# METHOD OF OPERATION OF A PLURALITY OF POWER TRANSMISSIONS

James B. Black, Kinnickinnic Road, Roscoe, Ill., and Samuel Luzaich, 1411 Forest View Drive, Santa Rosa, Calif.

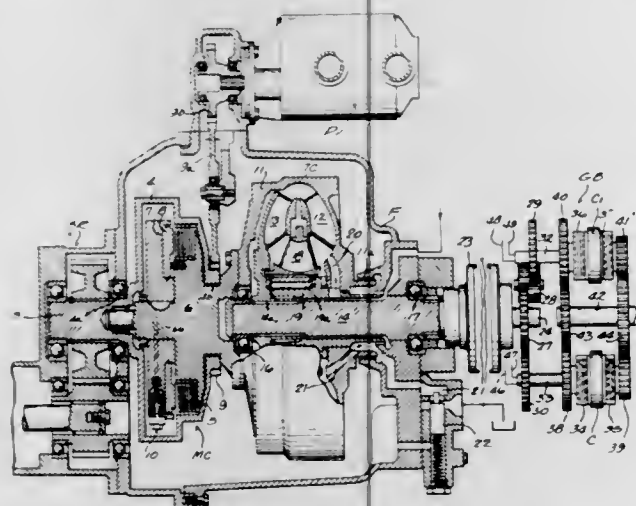
Division of Ser. No. 745,209, July 16, 1968, Pat. No. 3,561,367, which in turn is a division of Ser. No. 615,983, Feb. 14, 1967, Pat. No. 3,447,397

Filed July 16, 1970, Ser. No. 55,466

Int. Cl. B61c 9/32, 9/34

U.S. Cl. 105-130

3 Claims



A method of operating a plurality of power transmissions, each having a single-speed power source, such as a gas turbine, and each also including a torque converter, hydraulically actuated gear selection clutches, and a hydraulic system, to result in a very smooth shift of gears at full speed of the vehicle.

3,626,862

# RESILIENT DUAL AXLE DRIVE TRUCK

Gerhard Korn, Mulheim-Ruhr; Horst König, Hattingen, and Hans Dieter Klein, Heiligenhaus, all of Germany, assignors to Rhein Stahl Huttenwerke AG, Essen, Germany

Filed July 15, 1969, Ser. No. 842,441

Claims priority, application Germany, July 16, 1968, G 67 50 770

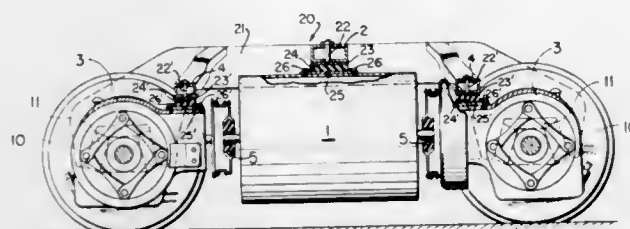
Int. Cl. B60b 35/12; B61c 9/44, 9/52

U.S. Cl. 105-131

6 Claims

A dual axle drive for rail vehicles, having a pair of axles supported in a truck frame and each carrying a pair of wheels, includes a driving motor unit oriented in the direction of travel and driving the wheels through angle transmissions connected to opposite ends of the motor unit. The motor unit and the angle transmissions are separately

supported from the truck frame, and each angle transmission includes a torque tube enclosing the central portion of an axle. Resilient torsional couplings connect each transmission to a respective opposite end of the motor unit. Torque tubes are provided on each axle, each enclosing the axle with clearance and each extending between the transmission torque tube and the adjacent wheel. Compensation couplings connect one end of each of these torque tubes to the trans-



mission torque tube and the other end thereof to a wheel. The compensation couplings may be designed as torsion-resistant steel plate couplings and may connect either the web or a hub bushing flange of a wheel to the adjacent torque tube end. Braking devices are arranged on the input shafts of the angle transmissions.

3,626,863

# RAILWAY VEHICLE STUB AXLE TRUCK

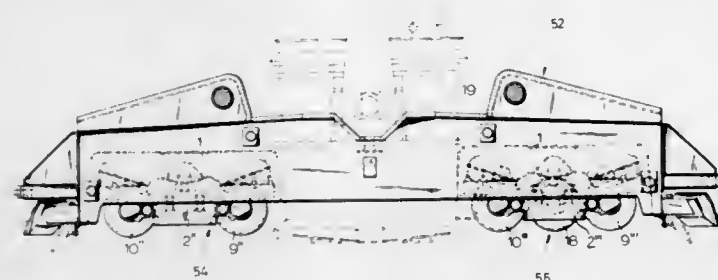
Werner Trost, Duisburg-Wanheimerort, Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed July 15, 1969, Ser. No. 841,896

Int. Cl. B61d 15/00; B61f 3/16, 5/36

U.S. Cl. 105-180

6 Claims



A transport vehicle particularly having a truck of a type adapted to be run over a track and including a multiple number of axles and which is useable for the movement of molten metals inside and outside of a metallurgical plant includes a central balancer beam member having a centrally arranged journal which is adapted to receive the load of the vehicle. The balancer beam is connected to hinge pins which are eccentrically arranged in respect to the axles of a supporting wheel on each side of the balancer beam. The pivot pins are formed as eccentric extensions around the shafts of the associated wheels, and they also carry rocker arm members which extend outwardly from the respective wheels and are supported on transverse members which are located centrally below the journal of the balancer beam. The load which is transmitted downwardly to the balancer beam through the journals is transmitted to the pivot pins of each wheel and thence through the rocker arm members which bear downwardly on the transverse members. The transverse members are supported on springs in a manner to permit their upward or downward movement. In one embodiment, the springs are supported on fixed elements carried by the balancer beam. In still another embodiment, the springs are supported upon extensions of bearings for a third wheel which is adapted to be positioned between the other two.

3,626,864

# FLUID TRUCK SNUBBER

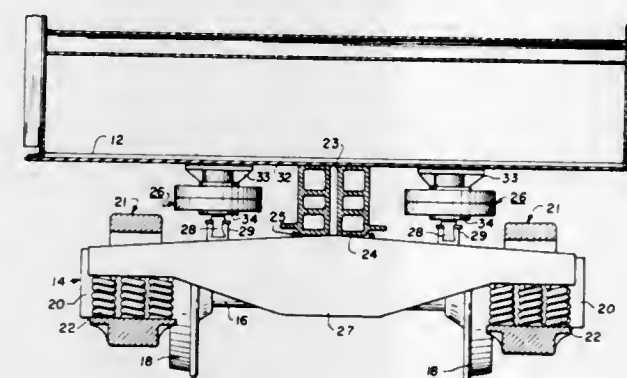
Donald Wiebe, Sewickley, Pa., assignor to A. Stucki Company, Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 534,220, Mar. 14, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 468,850, July 1, 1965, now abandoned, and a continuation-in-part of 579,709, Sept. 15, 1966, now abandoned. This application Oct. 23, 1968, Ser. No. 801,884

Int. Cl. B61f 5/12, 5/14, 5/16

U.S. Cl. 105-199 R

42 Claims





3,626,868

**TRANSPORTATION SYSTEM AND COMPONENTS THEREOF**

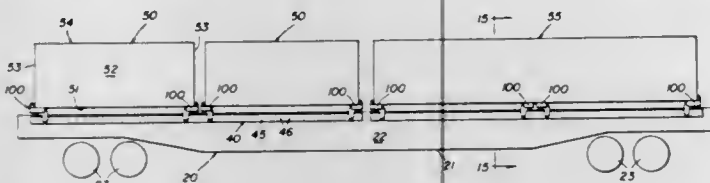
Erling Mowatt-Larsen, Warren, Ohio, and Edward Milton Melin, Lansing, Ill., assignors to General American Transportation Corporation, Chicago, Ill.

Filed Sept. 4, 1969, Ser. No. 855,305

Int. Cl. B65j 1/22

U.S. Cl. 105-366 A

30 Claims



This invention is directed to a freight transportation system comprising a railway car for transporting freight containers including a frame, a pair of elongated longitudinally extending narrow beams carried by the frame, at least one pair of longitudinally extending rub rails mounted on the frame, the rub rails of each pair of rub rails being laterally spaced apart and including respectively outer surfaces having longitudinally spaced and laterally opposed openings therethrough, at least two pairs of bolsters arranged on the top surfaces of the beams and slidable longitudinally therealong, a lock assembly on each bolster selectively engageable with the openings in the rub rails for locking the bolster thereto in position to support a freight container on the upper surface thereof, a longitudinal stop mounted on each bolster and being shiftable between an operative position and a storage position, and a side lock assembly mounted on each bolster and engageable with the freight container to prevent lateral and vertical movement thereof, whereby freight containers of different lengths and different numbers of freight containers may be secured to the rub rails of the railway car by the two pairs of bolsters.

3,626,869

**LOAD-CARRYING PALLET**

Francois Colas, Bourg La Reine, France, assignor to Cegedur GP, Paris, France

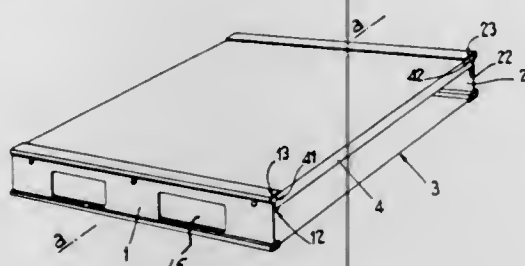
Filed Nov. 29, 1968, Ser. No. 779,740

Claims priority, application France, Dec. 15, 1967, 132453

Int. Cl. B65d 19/18

U.S. Cl. 108-51

10 Claims



A pallet for supporting materials comprising a pair of end sections of similar construction formed of a vertically disposed end plate, a pair of flanges extending inwardly substantially perpendicularly from the upper end portion of the end plate in vertically spaced apart parallel relation and a slideway in the form of a tubular section on the lower end portion of each of the end plates, a panel dimensioned for its ends to be received between the respective flanged pairs of the end plates and a baseplate extending across the pallet with the ends of the baseplate received in engagement within the slideways and means for securing the elements in their assembled relationship to form the pallet.

3,626,870

**SHELVING CONSTRUCTION**

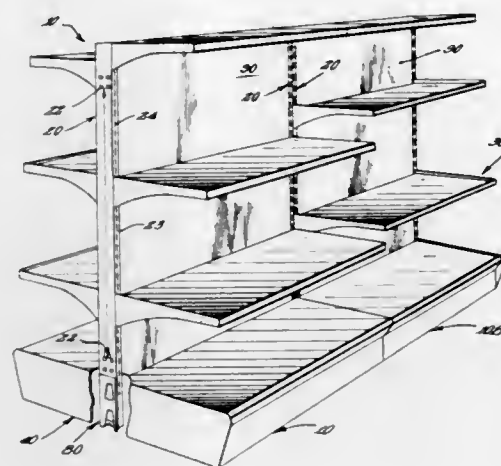
Edwin F. Schild, Palatine, Ill., assignor to Airway Products Corporation, Schiller Park, Ill.

Filed May 6, 1969, Ser. No. 822,239

Int. Cl. A47b 57/06

U.S. Cl. 108-108

8 Claims



A shelving construction of the type wherein long rows of shelving are assembled from shelving units connected end to end. The shelving construction is provided with apparatus for connecting shelves to upright columns wherein the shelf-supporting brackets are provided with extended lever arms and the columns are provided with embossments or lances for bearing against the extended lever arms for increasing the permissible moment of the shelf. The shelving unit is also provided with apparatus for securing and supporting the upright columns of the shelving units for connection on an end-to-end basis wherein the lower end of the upright columns are provided with stiffening plates for increasing the rigidity thereof and the transverse supporting gussets are provided with members for aligning the end columns of adjacent shelving units and for supporting the aligned columns.

3,626,871

**COLLAPSIBLE POLE SEAT**

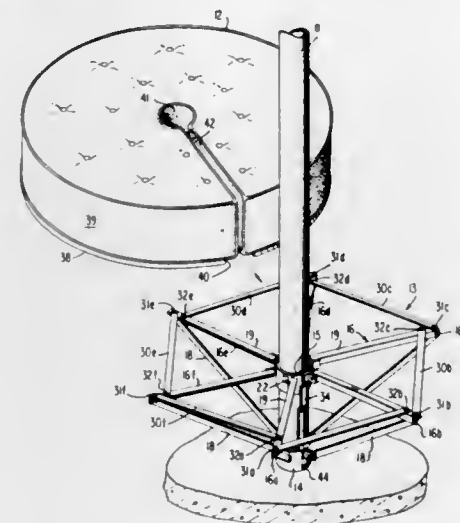
Washington Oliver McClendon, 2632 High Tower Ct., Atlanta, Ga.

Filed May 6, 1969, Ser. No. 822,169

Int. Cl. A47b 57/06

U.S. Cl. 108-151

6 Claims



A platform or seat assembly for placement about a pole or post comprising a substantially annular platform positionable with its center opening surrounding the pole, and a framework positionable beneath the platform and around the pole for supporting the platform. The framework comprises a plurality of foldable support leg assemblies connected at their

3,626,874

**SYSTEM FOR COLLECTING AND DISPOSING OF ORDINARY REFUSE BY CONVERTING IT INTO USEFUL ENERGY, WITHOUT POLLUTION**

Lloyd R. Grant, Penfield, N.Y., assignor to Action Concepts Technology, Inc., Rochester, N.Y.

Filed Oct. 22, 1968, Ser. No. 769,547

Int. Cl. F23g 3/00

U.S. Cl. 110-8 R

15 Claims

3,626,872

**TIE-DOWN PALLET**

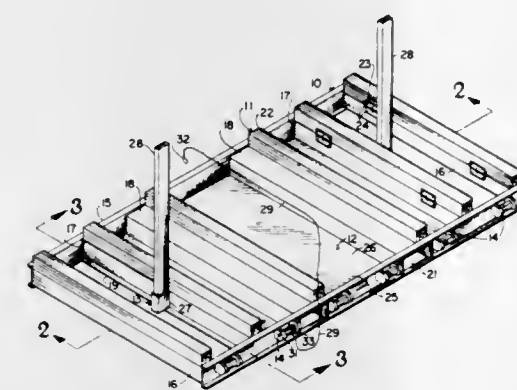
Samuel J. Cully, East 6523 Broadway, Spokane, Wash.

Filed July 29, 1970, Ser. No. 59,287

Int. Cl. B65d 19/18

U.S. Cl. 108-55

3 Claims



A large supportive pallet, having self-contained tiedowns and alignment posts, to carry relatively large arrays of lumber in combined truck-rail transportation. The pallet is of sufficient rigidity to be movable in loaded condition by forklift truck. The particular configuration provides wooden supports for both lumber and pallet with an internal void to carry ancillary structures and an external configuration adapted to allow pallet stacking for transportation and storage. The pallet is designed to make possible the economical rail transportation of lumber with truck delivery to and from railheads.

3,626,873

**CONTINUOUSLY FIRED BATCH-TYPE INCINERATION**

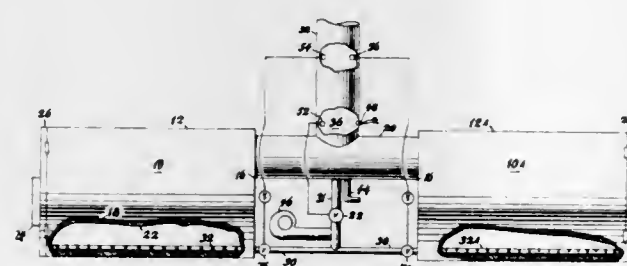
Richard F. Stockman, Friendship, and William M. Anderson, Wellsville, both of N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed May 22, 1970, Ser. No. 40,293

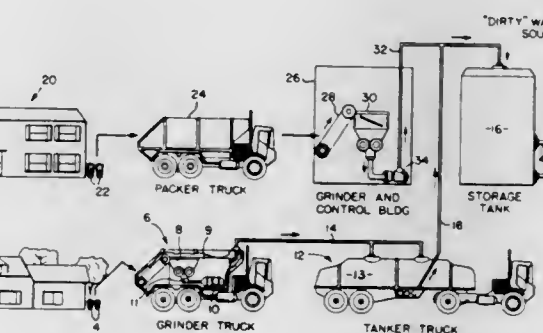
Int. Cl. F23g 5/00

U.S. Cl. 110-8 R

2 Claims



A "batch"-type incinerator that may be continuously loaded and fired to effect continuous incineration of waste material. The incinerator defined therefore has the advantages of both the "batch" and "continuously" loaded incinerators without the inherent disadvantages of either type.



Ordinary refuse is collected, ground-up, oxidized by the liquid environmental combustion thereof, the combustion being controlled to generate heat in excess of that required to maintain the combustion, and the excess heat is converted into useful energy, such as electricity and steam.

3,626,875

**REFUSE DISPOSAL SYSTEM**

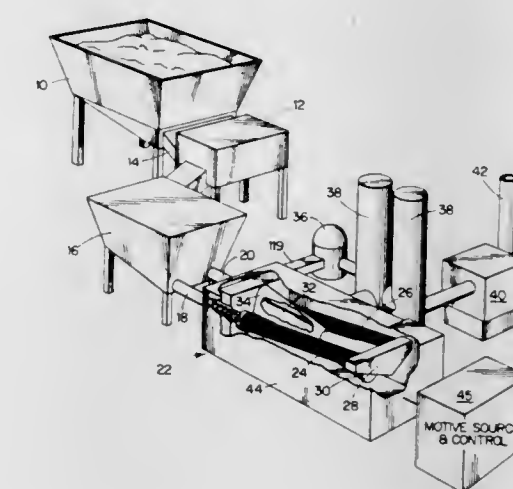
Charles N. Cleaves, Northboro; Alvin M. Keller, and David C. Mauro, both of Marlboro, all of Mass., assignors to KCM Industries, Inc., Marlboro, Mass.

Filed Dec. 7, 1970, Ser. No. 95,832

Int. Cl. F23g 5/04

U.S. Cl. 110-14

18 Claims



A system for the efficient disposal of solid and liquid refuse in which substantially uniform and complete combustion is achieved within a closed system with substantially no emission of harmful pollutants into the atmosphere. The system includes one or more rotary drying chambers for the drying and transport of shredded waste material to a rotary combustion chamber in which such material is consumed. Solid residue, mainly in the form of flyash, is collected in a water bath, while the gases of combustion are ignited in a secondary combustion chamber and processed to remove substantially all pollutants and cooled before release into the atmosphere.



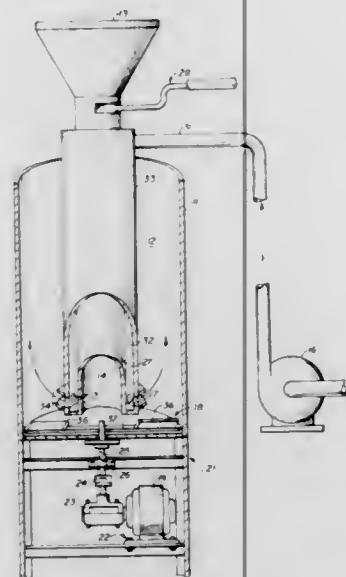
3,626,876

## RICE HULL BURNERS

Orian R. Gardner, 1866 23rd Ave., San Francisco, Calif.  
Filed May 5, 1969, Ser. No. 821,897  
Int. Cl. F23b 1/36

U.S. Cl. 110-29

18 Claims



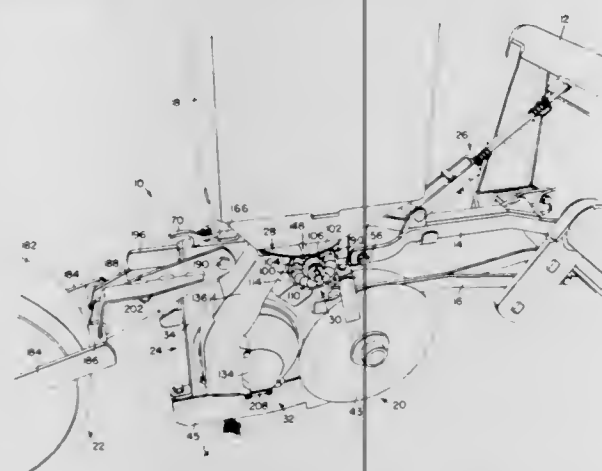
Apparatus for continuous burning of light combustible materials such as rice hulls under closely controlled condition, including a combustion chamber, means for feeding the combustible material and air to the chamber base and an agitator for dispersing the combustible material so that it is ignited and simultaneously carried upwardly through the combustion chamber. Use of the burning apparatus is further contemplated in combination with means for curing ash produced in the combustion chamber.

3,626,877  
PLANTER

Harold Valentine Hansen, Cordova; Robert Leroy Chidester, East Moline, and Hans Joachim Roehricht, Rock Island, all of Ill., assignors to Diere & Company, Moline, Ill.  
Filed Apr. 12, 1968, Ser. No. 720,895  
Int. Cl. A01c 7/04

U.S. Cl. 111-85

4 Claims



A row planting mechanism having a single seed hopper, the discharge of the hopper being selectively directed to either a sliding finger seed selector operable to select corn and similar crop seed for planting at evenly spaced intervals of 6 inches or more, or a single-run seed selecting mechanism operable to select sorghum, soy beans and similar crop seed for planting at intervals appreciably less than 6 inches.

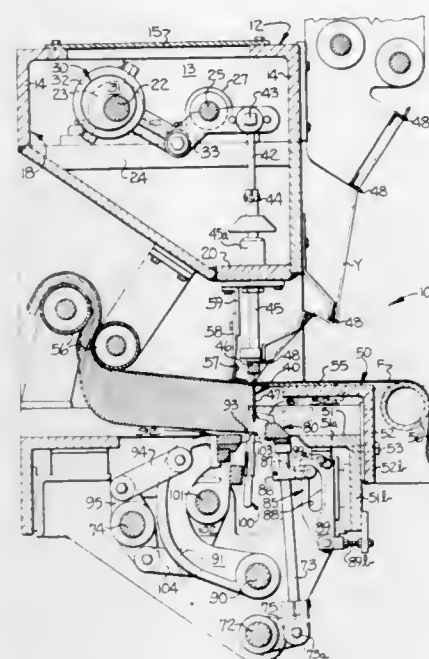
## ERRATA

For Classes 111-77 and 111-6 see:  
Patent Nos. 3,627,050 and 3,626,895

3,626,878  
TUFTING MACHINE FOR FORMING SHAG-TYPE PILE FABRIC  
James T. Cobble, Dalton, Ga., assignor to B & J Machinery Co. Inc., Dalton, Ga.  
Filed Apr. 8, 1970, Ser. No. 26,603  
Int. Cl. D05c 15/22

U.S. Cl. 112-79 R

1 Claim



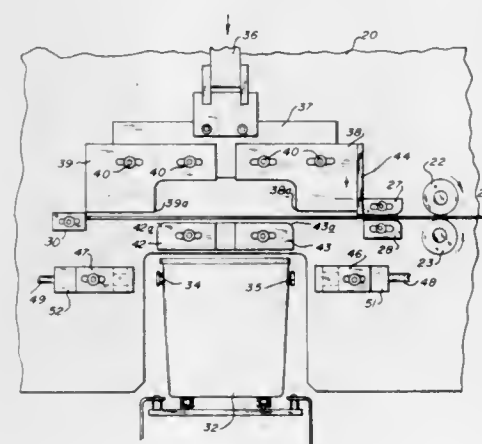
This disclosure relates to a tufting machine for and method of forming a pile fabric of the shag-type. The apparatus includes means for supporting a backing fabric, means for feeding backing fabric across the supporting means and at least one tufting needle mounted above the supporting means for reciprocation and adapted to penetrate and carry a yarn through the backing fabric to successively form tufting loops therein. A first looper engages the tufting loops formed by the needle and reciprocates substantially perpendicular to the supporting means to elongate the tufting loops to shag pile length and a second looper cooperates with the first looper for receiving the elongated loops from the first looper and holds the elongated loops thereon and cooperates with a knife for severing these loops.

3,626,879  
APPARATUS FOR APPLYING PLASTIC BAILS TO CONTAINERS

Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes, N.J.  
Filed May 20, 1970, Ser. No. 39,045  
Int. Cl. B21f 45/00

U.S. Cl. 113-1 J

16 Claims



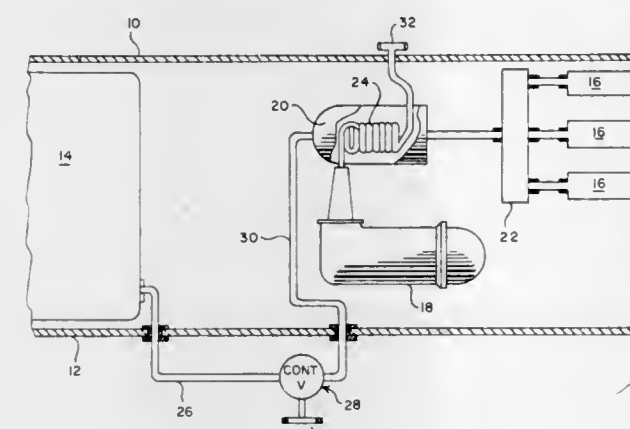
Apparatus is provided for forming and applying plastic bails or straps to eared containers whereon the ears are

diametrically disposed buttonlike protuberances attached or mounted on the sides of the containers. There is disclosed means for feeding the plastic bails or straps in both a longitudinal and in side-aligned manner to the applying mechanism. This mechanism causes the apertured ends of the straps to be brought into a condition and position to be pressed onto the large buttonlike protuberances formed or attached to the sides of the container.

3,626,880  
HOT GAS AUGMENTED BALLAST EXPULSION SYSTEM  
Jules J. Schwartz, Wilmington, Del.; Herbert W. D. Cassidy, Elkton, Md.; Stanley A. Racik, Newark, and George M. D. Hart, Middletown, both of Del., assignors to Thiokol Chemical Corporation, Bristol, Pa.  
Filed Feb. 25, 1970, Ser. No. 14,128  
Int. Cl. B63g 8/00

U.S. Cl. 114-16 E

3 Claims

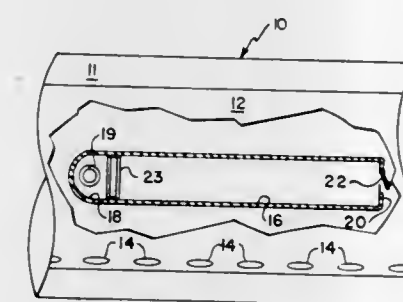


An improved compressed air ballast expulsion system for submersible craft with a thermal augmentation system for the working fluid so as to increase the expulsion work and rate thereof. A gas generator surrounds the conduit between an air tank and a ballast tank. The gas generator discharges the hot gases externally of a submersible.

3,626,881  
BALLAST EXPULSION FOR DEEP DIVING SUBMERSIBLES  
Joseph J. Lovingham, Madison, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.  
Filed Feb. 25, 1970, Ser. No. 14,129  
Int. Cl. B63g 8/00

U.S. Cl. 114-16 E

4 Claims

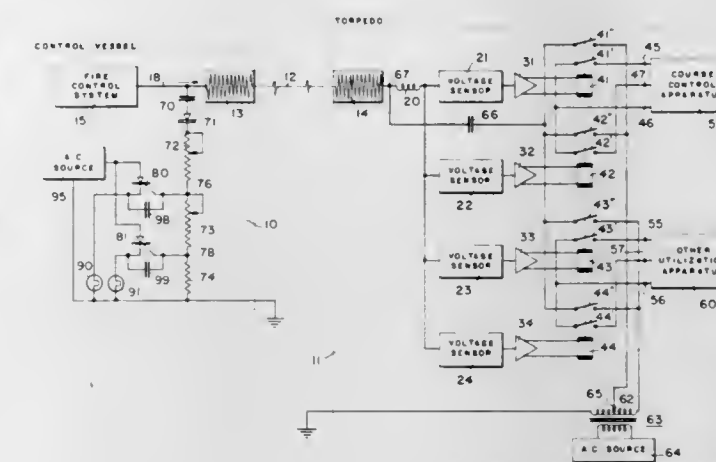


An improved ballast expulsion system for deep diving submersibles which employs a high-pressure auxiliary tank within the conventional ballast tanks to effect positive expulsion of the water ballast and additional buoyancy. A piston is mounted in each auxiliary ballast tank and moves towards a discharge end to expel ballast therefrom.

3,626,882  
MONITORING APPARATUS  
Gilbert E. Russo; Kenneth J. Meyers, both of Elkton City, and Carl O. Buhlman, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy  
Filed May 18, 1965, Ser. No. 457,543  
Int. Cl. F41g 7/02, 7/06; F42b 19/36

U.S. Cl. 114-21 R

8 Claims



Apparatus for monitoring the operation of a wire-guided torpedo of the type having a number of control relays in the torpedo responsive to DC voltages from the control station. Each relay when actuated connects an AC source into the line, with a characteristic amplitude for each relay, providing an answer-back signal indicating proper operation of the relay. A voltage discriminating silicon controlled rectifier circuit in the control station responds to the answer-back signal lighting an indicator lamp to indicate which relay is actuated.

3,626,883  
SAILING VESSEL WITH THE LUFF OF THE MAINSAIL CLEAR OF THE MAST  
David W. Ellis, 271 Lincoln Ave., Barrington, R.I.  
Filed Nov. 10, 1969, Ser. No. 875,443  
Int. Cl. B63b 35/00; B63h 9/00

U.S. Cl. 114-39

5 Claims



A sailing vessel in which the mainsail luff is set on a different plane than the mast to avoid wind turbulence aft of a supporting mast. A track is secured athwartship just aft of the mast and the tack of the mainsail moves along the track. The luff of the mainsail is sparless so as not to interfere with the airfoil.



3,626,884

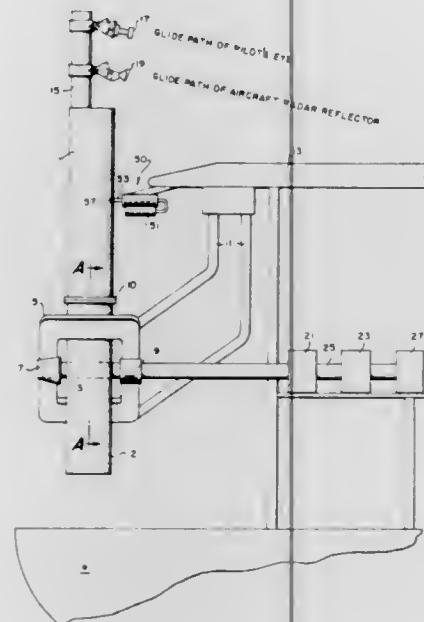
## LANDING AID ALIGNMENT MAST

Joseph R. Annibale, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 7, 1970, Ser. No. 61,956  
Int. Cl. B63b 35/44

U.S. Cl. 114—43.5

5 Claims



A pivoting mast which may be quickly raised or lowered and which has means for separating the mast from the pivoting support in cases of an emergency. The mast support structure is capable of supporting a mast structure heavy enough to have a natural frequency outside the range of ship's vibrations and capable of erecting the mast and holding it in its erected position within narrow tolerances so the landing aids may be critically aligned.

3,626,885

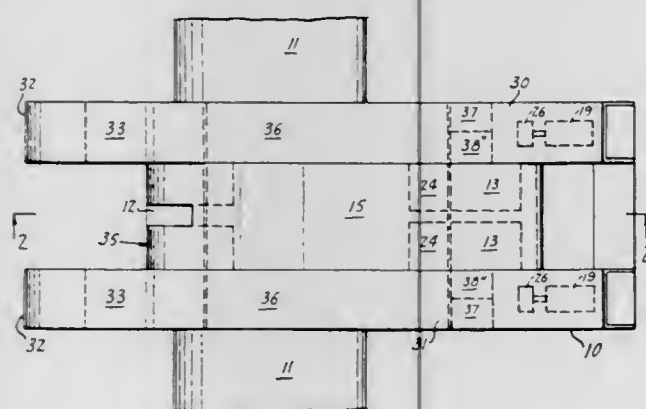
## HIGH-SPEED PASSENGER SHIP

Andrew Beusch, 4806 West Ridge Road, Erie, Pa.  
Filed Sept. 24, 1969, Ser. No. 860,556

Int. Cl. B63b 1/10

U.S. Cl. 114—61

2 Claims



A ship for hauling passengers at high speed. The ship has a fuselage in the shape of a hydrofoil; relatively short wings extend from each side of the ship. Propellers driven by engines, one at each side, provide power for the ship. The ship has side compartments in the form of enlarged pontoons which contain passenger compartments and an intermediate section set back from the front and having a contoured top and recessed bottom.

3,626,886

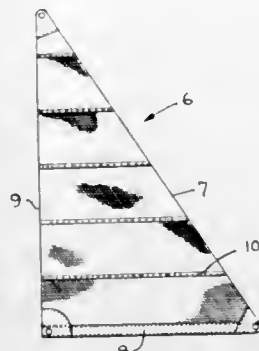
## SAILS

Thomas Cafiero, 40 Stoneleigh Road, Scarsdale, N.Y.  
Filed Jan. 27, 1970, Ser. No. 6,143

Int. Cl. B63h 9/04

U.S. Cl. 114—103

6 Claims



Sailcloth is provided wherein the woof is arranged at a predetermined angle, less than 90°, to the warp. Sail woven in this manner is protected against stretch along its leach and foot.

3,626,887

## TROLLING ATTACHMENT FOR BOATS

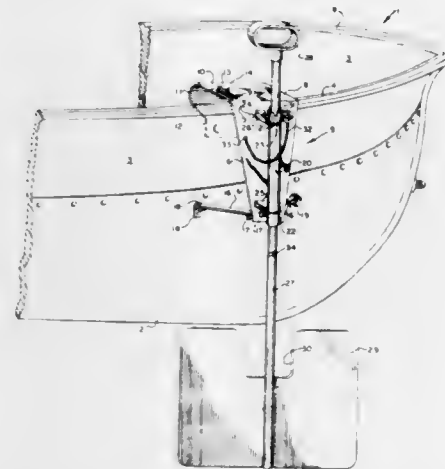
Norman K. Schutt, 2860 Badger, Saginaw, Mich., and Leon L. Byron, 1411 Birney, Saginaw, Mich.

Filed Aug. 8, 1969, Ser. No. 848,579

Int. Cl. B63h 25/44

U.S. Cl. 114—145 R

6 Claims



A trolling attachment for boats comprises a mounting bracket for attachment to one side of a boat and having a tubular support sleeve within which is rotatably and slideably accommodated a rod at the lower of which is secured a flat, substantially planar blade. The blade may be so oriented to the longitudinal axis of the boat as to impede forward progress thereof or to deter lateral drift of the boat. The blade is adjustable vertically to positions either above or below the boat keel. The supporting sleeve is adjustable relative to the mounting bracket so as to enable the blade supporting rod to be positioned in a vertical plane, regardless of the configuration of the boat.

3,626,888

## ANCHOR LINE LOCK

Donald L. Cameron, 83213 N. Rodgers Road, Creswell, Oreg., and Robert L. Gielish, Route 8, Box 5913, Pleasant Hill, Oreg.

Filed July 14, 1969, Ser. No. 841,403

Int. Cl. B63b 21/08

U.S. Cl. 114—199

2 Claims

A device for adjustably securing an anchor line to the hull of a boat is disclosed. A housing through which the line

3,626,890

## BARGE HAULING APPARATUS

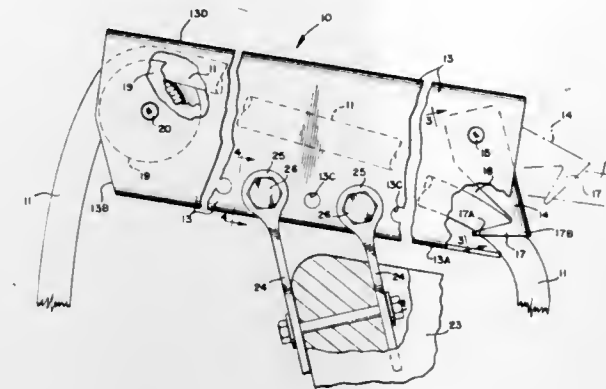
Bennie A. Rose, Mount Lebanon Township, Pa., assignor to Heyl and Patterson, Inc., Pittsburgh, Pa.

Filed July 29, 1970, Ser. No. 59,250

Int. Cl. B63b 21/00

U.S. Cl. 114—235 R

10 Claims



anchor line. In a lowermost position the locking member wedgingly engages the line, locking the same against the housing while in a raised position the locking member permits unrestricted paying out of the line.

3,626,889

## HATCH COVER SYSTEM

Per E. Hover, Oslo, Norway, assignor to Kvaerner Brug A/S, Oslo, Norway

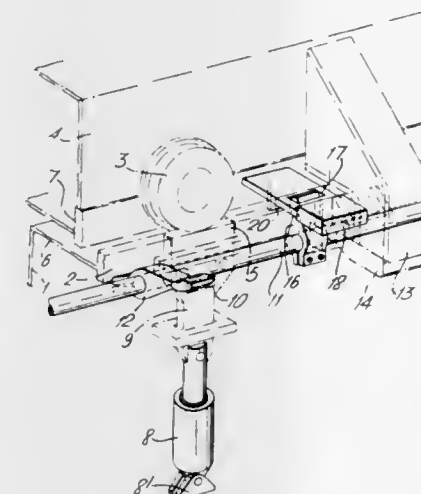
Filed July 9, 1970, Ser. No. 53,349

Claims priority, application Norway, July 9, 1969, 2871/69

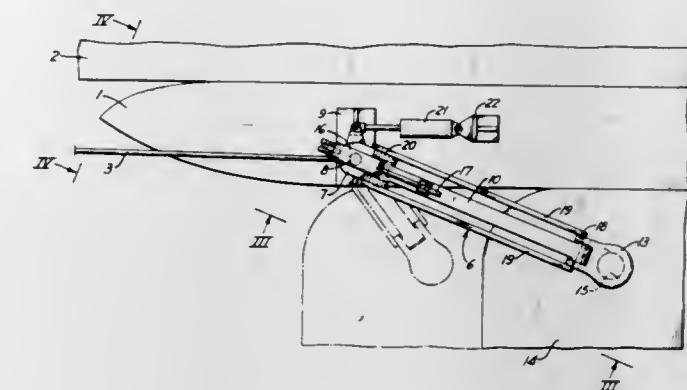
Int. Cl. B63b 19/18, 19/24

U.S. Cl. 114—203

4 Claims



A hatch cover system comprising a hatch coaming and a number of horizontally movable cover sections. A set of rails mounted on the hatch coaming and serving as tracks to rollers mounted on the cover sections. Vertically moveable rail sections spaced correspondingly to the roller spacing on the cover section. Vertically extendable devices mounted on the hatch coaming in association with the vertically moveable rail sections. Horizontally extendable locking devices mounted in the hatch coaming adapted to engage the cover sections. A rotatable shaft mounted on the hatch coaming longitudinally of the same. Arms secured to the rotatable shaft and cooperating with the vertically and horizontally extending devices, respectively, such arms being angularly displaced relatively to each other.



A long and narrow shuttle float is adapted to be towed back and forth along a barge-unloading dock. Movably connected to an end of the float is an arm that extends outwardly away from the outer side of the float. The outer end of the arm carries means for detachably connecting it to one end of a loaded barge beside the float. There are means for swinging the outer end of the arm inwardly toward the float to hold a barge engaged by it against the outer side of the float while it tows the barge back and forth by means of the arm. Means may also be mounted on the opposite end of the float to help hold the barge against the float.

3,626,891

## AMPHIBIAN TRAILER

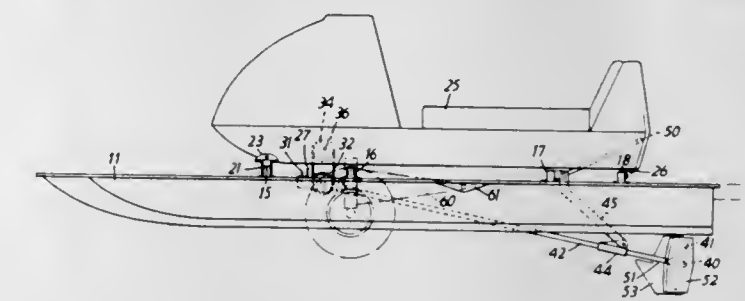
Donald Wilfred Sessions, Angmering-on-Sea, England, assignor to Forward Ideas Limited

Filed July 9, 1969, Ser. No. 840,285

Int. Cl. B60f 3/00

U.S. Cl. 115—1

4 Claims



A watercraft comprising a buoyant body, a propeller shaft, connecting means on said body for attaching a power unit to the body, drive means for drivably connecting a driven part of the power unit to the propeller shaft, and means for pivotally moving the propeller shaft from a raised position above the lower part of the body to a lowered position below the water line.

3,626,892

## HANDLE STRUCTURE FOR A WATER SKIING TOWLINE

Jack M. Humbert, 1878 Thelma St., Fortuna, Calif.

Filed Mar. 20, 1970, Ser. No. 21,437

Int. Cl. A63c 11/10

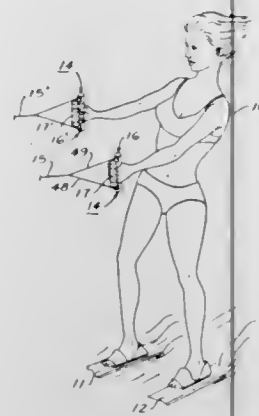
U.S. Cl. 115—6.1

15 Claims

A handle structure attached to the free end of a towline to enable the same to be releasably gripped by a water skier.



The handle structure functions to augment or enhance the natural grip of the skier, and it may include a pair of individual handle structures respectively gripped by opposite hands of the skier or a single handle structure sufficiently large to be gripped by both hands. The handle structure in-



cludes a handhold component adapted to be gripped by the hand of a skier, and a compression member movable with respect to the handhold component and urged there toward into compressive engagement with the fingers of a hand gripping the same whenever a tensile force is applied to the towline.

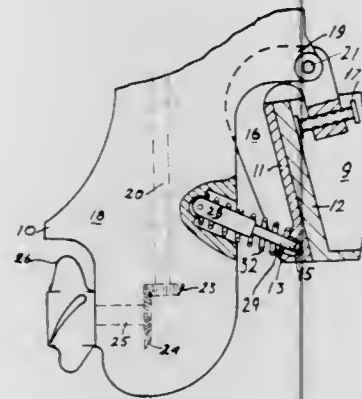
### 3,626,893 MOTOR MOUNT

Jan Zurakowski, Kartuz Lodge, Barry's Bay, Renfrew, Ontario, Canada

Filed May 12, 1969, Ser. No. 823,696  
Int. Cl. B63h 21/26

U.S. Cl. 115-17

14 Claims



A motor unit for boats featuring an improved mounting structure. The mount of the motor is such to render it self-adjusting as to its orientation under conditions of changing thrust. The advantages of the invention are particularly evidenced under conditions of sudden and pronounced acceleration, under with conditions the motor will self-orient to stabilize the related boat and thereby avoid a substantially increased drag.

### 3,626,894 TUNNEL STERN BOAT

Robert B. Stuart, Penn Yan, N.Y., assignor to Penn Yan Boats Incorporated, Penn Yan, N.Y.

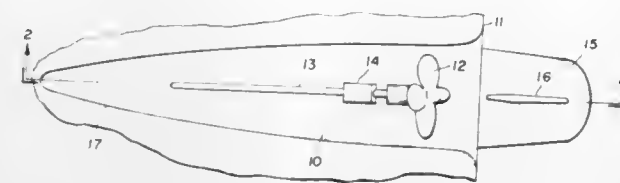
Filed June 1, 1970, Ser. No. 41,838  
Int. Cl. B63h 5/16

U.S. Cl. 115-39

11 Claims

The tunnel of a tunnel stern planing boat is given an improved shape for greater efficiency. The tunnel is gradually and smoothly enlarged as it extends aft toward the propeller, and it has a semicylindrical top fitting relatively closely over

the propeller in the plane of the propeller. Then the tunnel extends aft of the propeller a short distance with a gradually



enlarging cross-sectional area preferably formed by divergent sidewalls of the tunnel.

### 3,626,895 DEVICE FOR EXPOSING BURIED OBJECTS

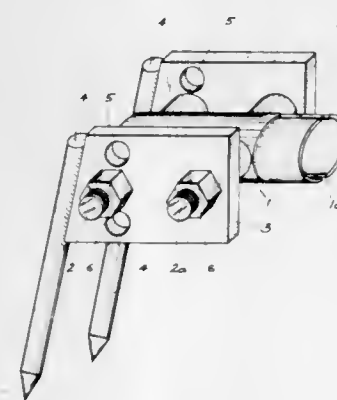
David Enden, Kiryat Malachi, Moshav Dorot, Israel

Filed Sept. 15, 1969, Ser. No. 857,999

Int. Cl. A01c 23/02

U.S. Cl. 111-6

2 Claims



Apparatus for exposing a buried object comprising pronglike digging means for loosening the soil surrounding the buried object and means for projecting a stream of air toward the soil loosening end of the digging means for removing (i.e. for blowing away) the loosened soil.

### 3,626,896 HIGHWAY SIGN

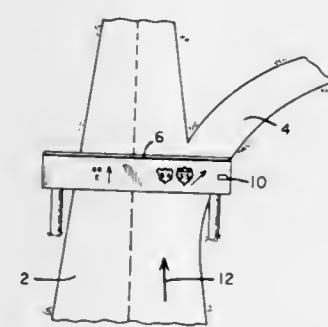
Frank W. Preeshl, 2620 London Ct., Village of Brunsville, Minn.

Filed Nov. 1, 1968, Ser. No. 772,503

Int. Cl. E01f 9/10

U.S. Cl. 116-63

1 Claim



A highway sign having indicia thereon to indicate the location of an on-or-off ramp with respect to the sign.

### 3,626,897 RETENTION CAP FOR EXTENSIBLE STAFF-TYPE TEMPERATURE INDICATOR

George G. Kliever, Fresno, Calif., assignor to Dun-Rite Manufacturing Corp., Fresno, Calif.

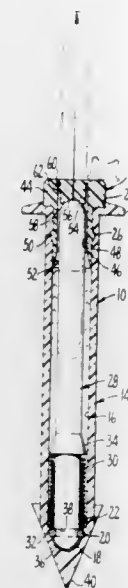
Continuation-in-part of application Ser. No. 801,362, Feb. 24, 1969, now Patent No. 3,548,780. This application Dec. 18,

1970, Ser. No. 99,337

Int. Cl. G01k 11/00

U.S. Cl. 116-114.5

6 Claims



A retention cap for use in combination with a temperature indicator of the type having a staff received within a housing for axial extension relative thereto upon the attainment of a predetermined internal temperature. The cap is secured over the staff to restrain the staff against extension under cooking conditions wherein the predetermined internal temperature is achieved at a point in time prior to the time the cap reaches a predetermined external temperature greater than said predetermined internal temperature. The cap comprises a plug held in place by a membrane which, upon attainment of said predetermined external temperature weakens sufficiently to permit release of the plug and substantially unrestricted extension of the staff.

### 3,626,898 HIGH-SPEED MAGNETIC BRUSH DEVELOPER APPARATUS

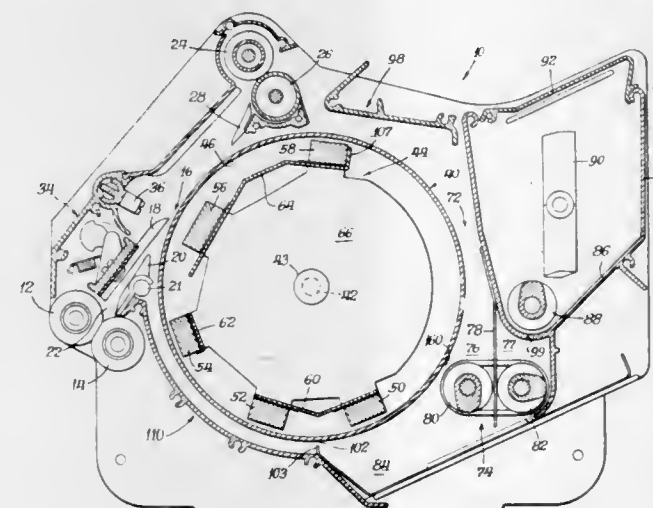
Stanley A. Gawron, Arlington Heights, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Feb. 6, 1970, Ser. No. 9,316

Int. Cl. B05b 5/02

U.S. Cl. 118-637

5 Claims



A high-speed magnetic brush assembly is provided in which an array of magnets are arranged inside a nonmagnetic

cylinder to control the movement of the developer mixture of iron powder and toner. The cylinder rotates about the fixed magnets. One set of magnets attracts a quantity of mix to the cylinder and subsequent magnets transport the mix to the next station where a single or multiple magnets brush develops the paper. At another station, the magnet discharges the mix from the cylinder. The assembly is enclosed to contain the mix and includes a spillway for the mix leading to mixing chambers where the mix is reconditioned for reuse.

### 3,626,899 TRAINING PADS FOR YOUNG DOGS

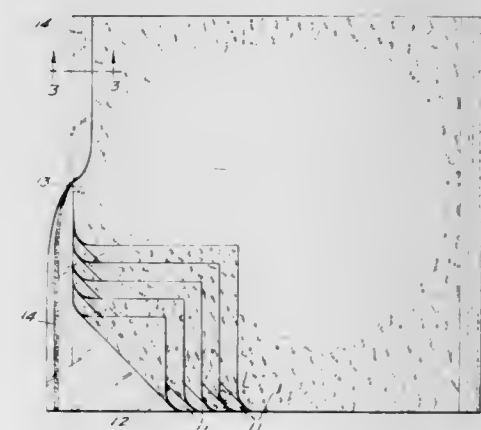
Frederick R. Spellman, Blue Bell, Pa., assignor to Spellman & Zenon Products Corporation, Blue Bell, Pa.

Filed July 14, 1970, Ser. No. 54,788

Int. Cl. A01k 67/00

U.S. Cl. 119-1

6 Claims



Absorbent material lined on one side thereof with fluid impervious material is impregnated with an odor imparting substance which attracts young dogs to the pads for the purpose of urination and defecation and discourages chewing of the pad by the young dog.

### 3,626,900 DISPOSABLE DOG COMMODE

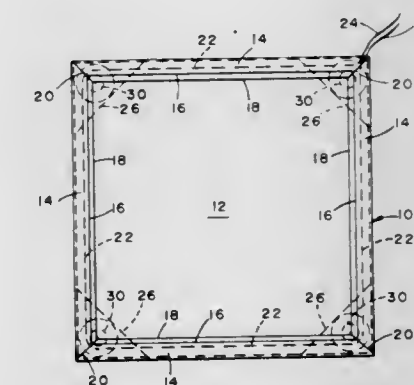
Fred Failla, 172-42 133rd Ave., Jamaica, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,368

Int. Cl. A01k 15/00, 29/00

U.S. Cl. 119-1

10 Claims



An inexpensive disposable dog commode comprising a preferably square, flexible sheet of moistureproof material adapted to be spread upon a flat-supporting surface such as a floor, pavement or the like and be held in such position while the dog uses the same, followed by the contraction of the edges and corners of the sheet to enclose the excrement for disposal in a suitable waste receptacle.



3,626,901

**PROCEDURE AND ARRANGEMENT FOR BREEDING OF FISH**

Sixten Engleson, Djursholm, Sweden, assignor to Stenberg-Flygt AB, Solna, Sweden

Filed May 13, 1969, Ser. No. 824,120

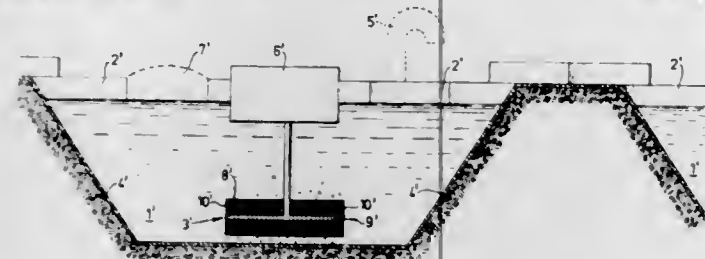
Claims priority, application Sweden, Jan. 23, 1969, 924/69

July 1, 1968, 9040/68

Int. Cl. A01k 63/00

U.S. Cl. 119-3

9 Claims



A fish-breeding pond is covered with a highly insulating floating layer so as to effectively diminish the losses of heat to the atmosphere and thus with the aid of the heat of the soil to maintain the temperature of the water rather above 5° C., at the same time achieving an effective supply of oxygen through aeration of the water.

3,626,902

**EDUCATIONAL OBSERVATORY**

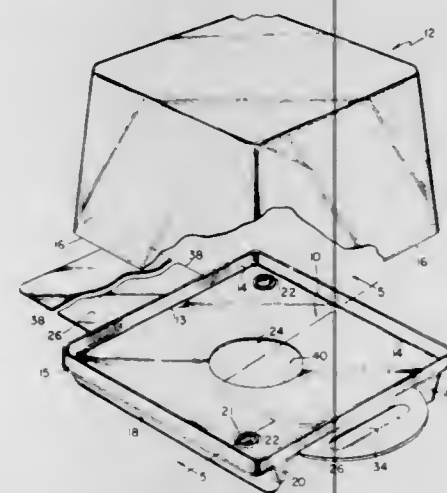
John B. Orfei, N. Revere, Mass., assignor to American Science and Engineering Inc., Cambridge, Mass.

Filed Dec. 8, 1969, Ser. No. 883,041

Int. Cl. A01k 1/00

U.S. Cl. 119-15

14 Claims



A multiple-purpose educational device which may be used to observe or breed insects and the like. The device includes a detachable base and transparent cover which are sealed in normal use to define a cage-like enclosure. The base has an orifice for access to the interior of the device. A specially constructed slide is mounted to the base and cooperates with the orifice to open or close the orifice to permit insects, food or other material to be introduced into the device while maintaining a seal from the surrounding environment.

3,626,903

**ANIMAL PEN STRUCTURE**

Carl Van Gilst, Goshen, Ind., assignor to Bangor Punta Operations, Inc., New York, N.Y.

Filed Feb. 9, 1968, Ser. No. 704,482

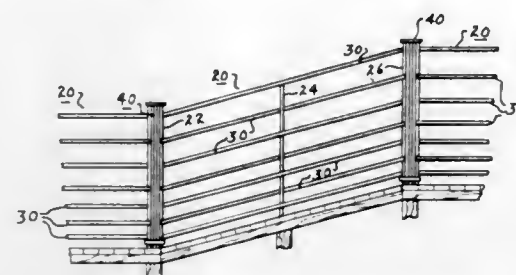
Int. Cl. A01k 1/02

U.S. Cl. 119-20

6 Claims

A structure for pens for animals such as hogs, in which the panels are constructed of a plurality of horizontal members

connected to one another by a single pinlike element to permit the panel to adjust to off-level surfaces. A postlike



member is used to connect the ends of the panels to form pens of various configurations.

3,626,904

**CONCRETE SLAT ANIMAL FLOOR STRUCTURE**

Edward J. Hatten, Stacyville, Iowa

Filed May 7, 1970, Ser. No. 35,319

Int. Cl. A01k 1/00

U.S. Cl. 119-28

5 Claims



An animal slat floor structure of precast reinforced concrete slats. Each slat includes an integral precast spacer only on one end and in the assembly of a plurality of slats to form a floor structure, the relative position of the spacer end is alternated so that no spacer end on any one slat is in contact with the spacer end on an adjacent slat. This slat provides a self-spacing floor arrangement and the selected size of the spacer end determines the desired spacing dimension between adjacent slats.

3,626,905

**REMOVAL OF EGGS FROM TIERED CAGES**

Hans Giesbert, Mombris; Walter Fecher, Aschaffenburg; Eberhard Fabian, Kleinkahl, and Walter Sauer, Aschaffenburg-Lieder, all of Germany, assignors to Hans Giesbert Kommandgesellschaft, Mombris, Germany

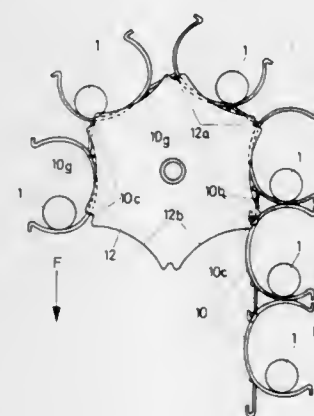
Filed Jan. 20, 1970, Ser. No. 4,276

Claims priority, application Germany, Jan. 31, 1969, P 19 38 895.5

Int. Cl. A01k 31/06, 31/16

U.S. Cl. 119-48

3 Claims



The present invention provides a solution to the problem of removing eggs from a multitier laying battery composed of a plurality of stacked juxtaposed cages. The floors of the cages are so inclined that eggs lying on the floors roll by gravity to a common plane in each tier level. In each such plane there is a conveyor means for receiving and advancing

eggs from the cages of the tier to a common vertical plane from which latter there is spaced a horizontal conveyor. A second conveyor means in one path thereof parallels the aforesaid vertical plane and this second conveyor means is provided with cup-form egg receivers for "grasping" an egg during transport of the egg on said second conveyor means. The apparatus also includes injection means between the second conveyor means and the aforesaid vertical plane for moving eggs into said cups and also ejection means for removing eggs from said cups onto said horizontal conveyor. The several parts of the apparatus may be coated with plastics.

3,626,906

**EGG GUARD FOR POULTRY CAGES**

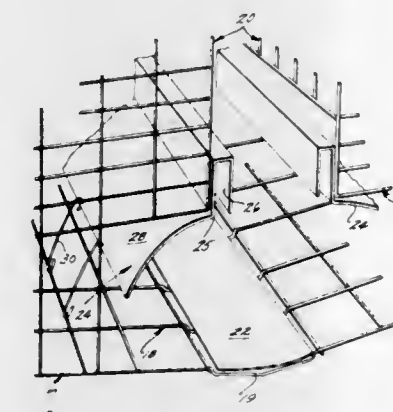
Willis R. Voran, Zeeland, Mich., and Harvey Z. Burkholder, Ethrata, Pa., assignors to U.S. Industries, Inc., New York, N.Y.

Filed Dec. 22, 1967, Ser. No. 692,841

Int. Cl. A01k 31/16

U.S. Cl. 119-48

5 Claims



An egg guard for poultry confinement cages of the type having openings at the juncture of a side and the bottom of the cage through which eggs laid in the cage may move outwardly to be collected, the egg guard comprising an elongated member extending along the aforesaid juncture of side and bottom and over the egg-passage openings and having a smoothly curved cross-sectional configuration devoid of angular corners.

**ERRATUM**

For Class 122-479 see:  
Patent No. 3,627,062

3,626,907

**HIGH-TEMPERATURE HOT-WATER VACUUM SYSTEMS**

Edward F. Slattery, Los Angeles, Calif., assignor to Norman Engineering Co., Los Angeles, Calif.

Filed Nov. 10, 1966, Ser. No. 593,388

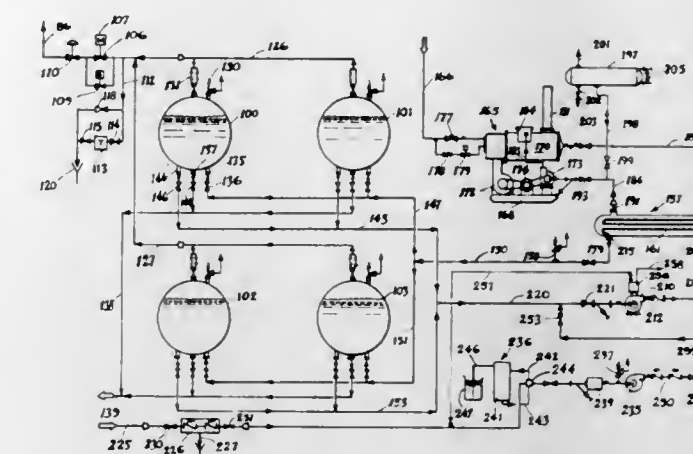
Int. Cl. F22b 37/22

U.S. Cl. 122-35

9 Claims

The invention is a system for generating steam particularly adapted for providing steam for economical, intermittent vacuum-pumping capability for process systems utilizing steam-driven ejectors. There is no boiler in the system. Water accumulators are provided connected to a shell- and tube-

type heat exchanger in which the water is heated under gradually increasing pressure up to a given maximum. The



water under substantial pressure in the accumulators is flashed into steam as desired, thru a control valve for use at the steam-driven vacuum ejectors.

3,626,908

**SEALING ARRANGEMENT FOR SECTIONAL BOILER CONSTRUCTION**

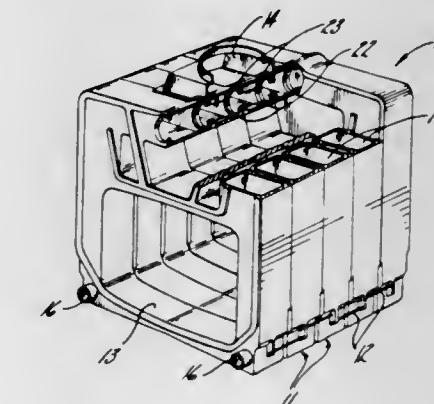
William C. Arndt, Michigan City, Ind., assignor to Weil-McLain Company, Michigan City, Ind.

Filed Dec. 22, 1969, Ser. No. 886,843

Int. Cl. F22b 23/00

U.S. Cl. 122-231

8 Claims



An arrangement for sealing the intersectional fluid passages of a sectional boiler. A rigid ring or other member is used to align and retain in position the adjacent boiler sections, while a deformable seal is used to provide a fluidtight seal between the sections.

**ERRATUM**

For Class 123-185 see:  
Patent No. 3,626,937

3,626,909

**ROTARY PISTON INTERNAL COMBUSTION ENGINE**

Motoyuki Hayashida, and Mutsuo Wakamoto, both of Hiroshima, Japan, assignors to Toyo Kogyo Company Limited, Hiroshima, Japan

Filed June 17, 1970, Ser. No. 46,851

Claims priority, application Japan, June 17, 1969, 44/48094

Int. Cl. F02b 53/12

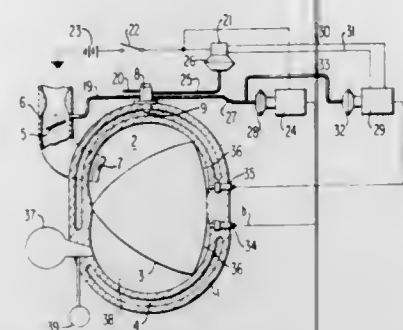
U.S. Cl. 123-8.05

5 Claims

A rotary piston internal combustion engine has two spark plugs in one combustion chamber and divides the range of the operating states of the engine into those lying below and above a predetermined temperature value for the engine or



exhaust gas and below or above a predetermined intake vacuum pressure wherein the ignition timing of the respective spark plugs is controlled depending upon the state so as



to reduce the unburned detrimental components in the exhaust gas while maintaining the performance of the engine responsive to the four operating states.

3,626,910

### IGNITION AND INJECTION CONTROL FOR INTERNAL COMBUSTION ENGINE

Ferdinand Anton Ernst Porsche, Stuttgart-Nord, and Paul Breyer, Rutesheim, both of Germany, assignors to Firma Dr. Ing. h. c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

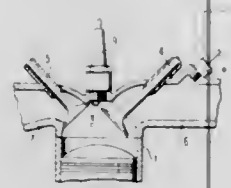
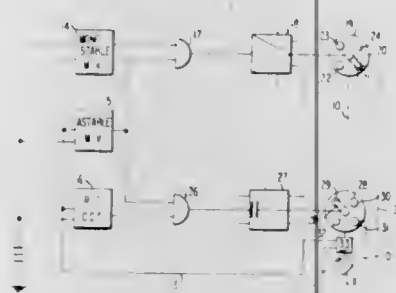
Filed Nov. 25, 1968, Ser. No. 778,561

Claims priority, application Germany, Dec. 20, 1967, P 15 76 323.2

Int. Cl. F02m 57/00

U.S. Cl. 123—32 EA

3 Claims



An external ignition internal combustion engine is provided with semiconductor controls for the fuel injection and spark plug ignition, which provide a plurality of injections and ignitions for each cycle of each cylinder at low speeds, which plurality reduces in number in correspondence with increased engine speed.

3,626,911

### ROTARY MACHINES

Harry Shaw, Aldershot, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 2, 1970, Ser. No. 7,678

Claims priority, application Great Britain, Feb. 4, 1969, 5,893/69

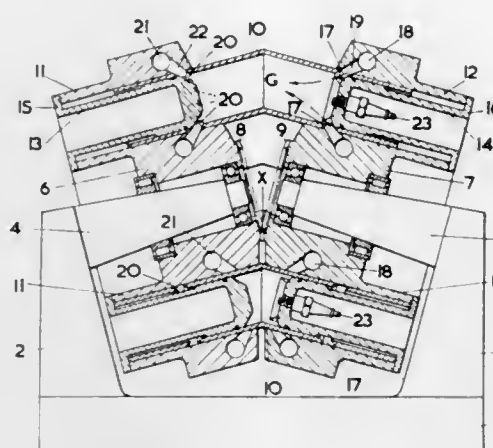
Int. Cl. F02b 53/00

U.S. Cl. 123—45

12 Claims

An engine has two rotor drums having their axes set at an included angle of 150° to each other. A similar number of

bores is provided in each rotor and are connected by sleeves which are cranked at their midpoints to the same angle as that between the rotor axes. The sleeves are free to slide and rotate in the bores and have their outer ends closed by cylindrical members attached to the respective rotors and extending axially into the sleeves. On rotation of the rotors, the cylindrical members reciprocate relative to the sleeves and may be regarded as opposed pistons. Inlet ports are provided



in one arm of each sleeve and come into cyclic register with inlet ducts by rotation of the sleeves in the bores. Large exhaust ports in the other arm of each sleeve are uncovered by relative axial movement of the respective cylindrical member. Port arrangements suitable for use in a compressor of generally similar configuration are described and combinations such as engine/compressor, power unit/transmission are envisaged.

3,626,912

### DEVICE FOR REGULATING THE SUPPLY OF CARBURANT TO AN INTERNAL COMBUSTION ENGINE

Fernand Grosclaude, 49, rue du Midi, 2610 Saint Imier, Switzerland

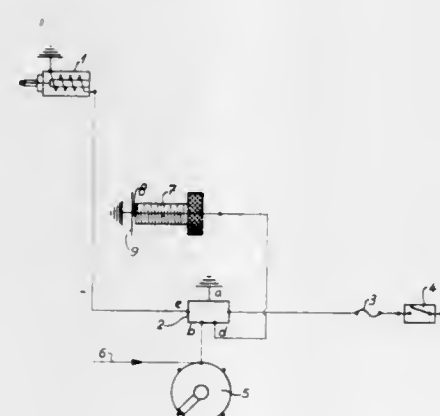
Filed Mar. 11, 1970, Ser. No. 18,640

Claims priority, application Switzerland, Mar. 28, 1969, 4796/69

Int. Cl. F02d 9/00, 11/10

U.S. Cl. 123—97 B

6 Claims



An internal combustion engine is fitted with an electromagnetically operated slow running jet and switch means operated by the accelerator pedal controlling means for interrupting the feed from the slow running jet during deceleration and idle running. A transistorized circuit reestablishes the supply from the slow running jet when the engine drops below a given speed according to the frequency of impulses supplied to the circuit, this frequency depending upon the engine speed.

3,626,913

### EXHAUST VELOCITY CONTROL OF EXHAUST RECYCLING

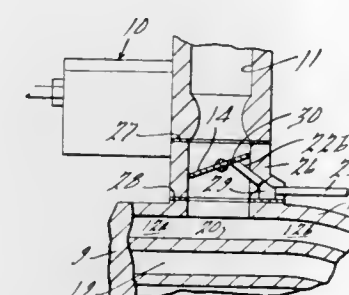
Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Original application Mar. 17, 1969, Ser. No. 807,785, now Patent No. 3,542,003. Divided and this application Apr. 13, 1970, Ser. No. 27,553

Int. Cl. F02m 25/06

U.S. Cl. 123—119 A

5 Claims



Automobile exhaust gases are recycled by means of a restricted bypass conduit having an upstream end comprising a pitot opening exposed to the velocity flow of exhaust gases and having a downstream end discharging into the fuel and air inlet system, such that the bypass flow of exhaust gases into the inlet system is a function of engine load. The downstream end may also comprise a pitot-type opening exposed to the velocity pressure of the inlet flow at wide open throttle and being increasingly shielded by the customary throttle valve as the latter closes from the wide open position.

3,626,914

### IGNITION TIMING CONTROL AND VACUUM CONTROL UNIT

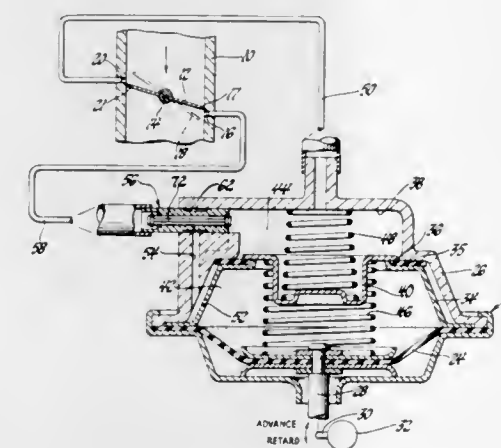
Donald A. Brownson, Flushing, and Wayne S. Schoeppach, Mount Morris, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 15, 1969, Ser. No. 885,059

Int. Cl. F02p 5/10

U.S. Cl. 123—117 A

7 Claims



A vacuum control unit in an ignition timing control system has a stop member which permits only partial vacuum advance during closed throttle operation and which is moved to permit full vacuum advance during open throttle operation.

3,626,915

### VEHICULAR AIR-POLLUTION PREVENTIVE SYSTEM

Yasuo Nakajima, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

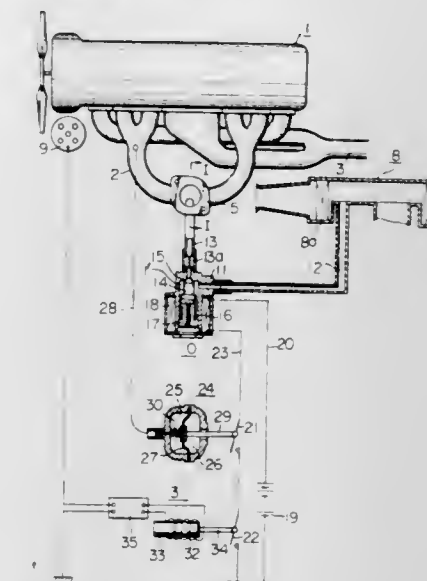
Filed Mar. 6, 1970, Ser. No. 17,142

Claims priority, application Japan, Mar. 13, 1969, 44/18565 Sept. 11, 1969, 44/71594

Int. Cl. F02m 23/04

U.S. Cl. 123—124 B

11 Claims



A vehicular air-pollution preventive system for use with an internal combustion engine, which system is adapted to reduce the quantity of nitrogen oxides produced during acceleration or hill climbing in such quantities as to cause a serious air-pollution problem especially when the vehicle is driven in urban areas, having switches closing when the vehicle is driven under predetermined conditions providing the acceleration or hill climbing and a solenoid valve which is adapted to pass atmospheric air to the intake manifold to lean out of the air-fuel mixture in the engine combustion chamber when the switches are closed concurrently. The conditions in which the switches are closed concurrently are represented by variables such as the combination of intake manifold vacuum and engine speed or vehicle speed and of vehicle speed and angular position of the carburetor throttle valve. Atmospheric air to be admixed to the air-fuel mixture may be heated before it is drawn into the engine combustion chamber.

3,626,916

### ATTACHMENT MEANS FOR CONTROL APPARATUS ON ENGINES

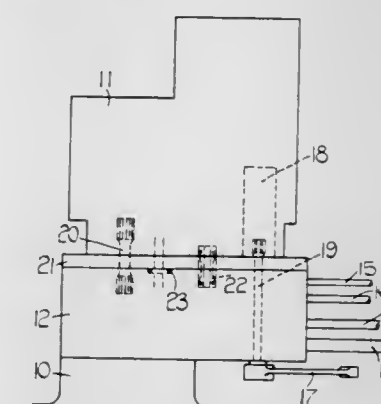
Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation of application Ser. No. 721,854, Apr. 16, 1968, now abandoned. This application Jan. 12, 1970, Ser. No. 1,977

Int. Cl. F02d 51/00

U.S. Cl. 123—139

1 Claim



Attachment means for attaching a fuel control apparatus to an engine comprises formations on the body of the ap-



paratus, engaging complementary formations on the engine or on a part attached thereto, the formations enabling simultaneous mechanical, fuel pipe and/or other connections to be made.

3,626,917

**DIESEL ENGINE STARTING AID**

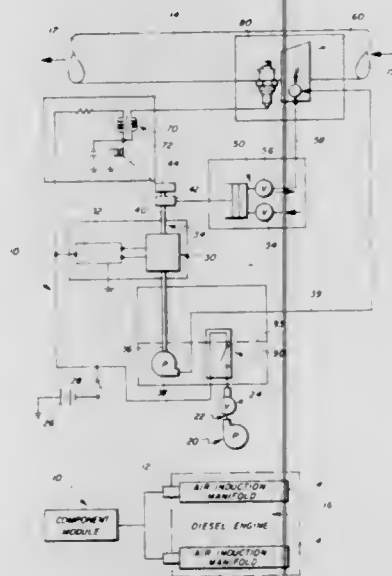
Richard H. Tromel, Canoga Park, and Paul C. Thys, Pacoima, both of Calif., assignors to North American Rockwell Corporation

Filed July 7, 1970, Ser. No. 52,875

Int. Cl. F02n 17/02; F02m 31/02

U.S. Cl. 123—142.5 R

10 Claims



A self-contained air heating apparatus adapted to be mounted on an intake manifold of a diesel engine basically consists of a DC motor which performs the triple function of driving a liquid fuel pump, an air compressor, and the breaker points of an autotype of ignition distributor by a system of direct coupling and cam rings on a single shaft of the motor. A fuel atomizer cooperating with the components driven by the motor sprays a fine mist of liquid into at least one air induction manifold whereupon it is ignited by a sparkplug located adjacent the mist pattern.

3,626,918

**STARTING SYSTEM FOR DIESEL ENGINES**

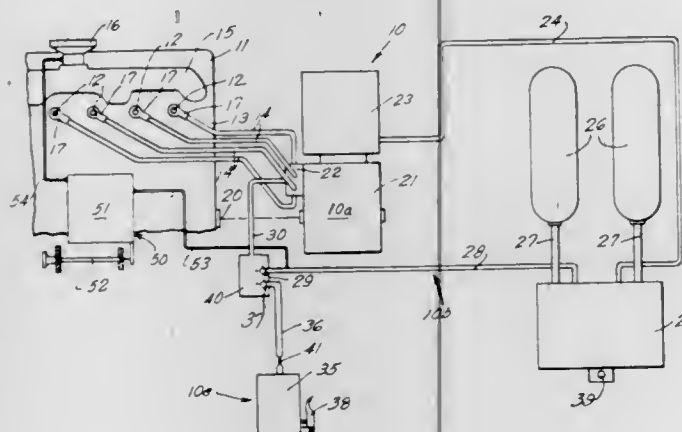
Arthur M. Brenneke, New Castle, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed July 18, 1969, Ser. No. 842,901

Int. Cl. F02n 17/00, 7/00, 13/00

U.S. Cl. 123—179 F

1 Claim



A starting system for diesel engines which sequentially provides pressurized gas directly to the cylinders to initiate engine

turnover. The gas is supplied either from a compressed air storage or from a chemical pressure generator capable of supplying high-pressure, high-temperature gases. The chemical pressure generator supplied gases initiate engine turnover while heating the engine to a point necessary for combustion in low-temperature environments.

3,626,919

**FAIL-SAFE THROTTLE CONTROL**

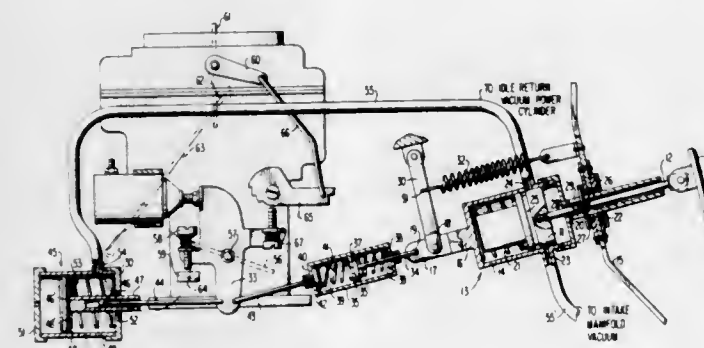
Charles W. MacMillan, 3400 20th St. Ct., Rock Island, Ill.

Filed Nov. 10, 1970, Ser. No. 88,450

Int. Cl. F02b 77/08; F02d 11/04; B60k 27/08

U.S. Cl. 123—198 DB

14 Claims



A spring-actuated valve or switch means which is interposed into the accelerator linkage of a motor vehicle acted upon by opposing forces of the accelerator pedal foot pressure and the throttle return spring pressure either to return the engine to idle or disconnect the ignition when in cooperation these forces indicate throttle linkage sticking or failure.

3,626,920

**POSITIONER, CONTROLLER AND GOVERNOR OR SAFETY SHUTOFF MECHANISM FOR A PRIME MOVER**

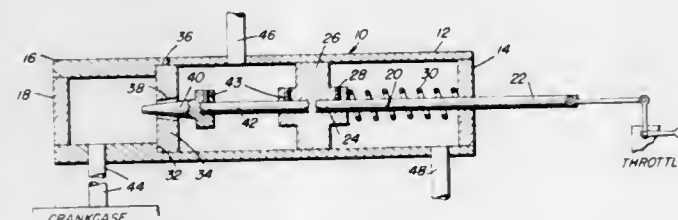
James F. Maher, P.O. Box 68, Kirtland, N. Mex.

Filed Oct. 28, 1969, Ser. No. 871,896

Int. Cl. F01m 1/24; F02b 77/00

U.S. Cl. 123—198 DB

4 Claims



This invention provides a positioner, controller and governor or safety shutoff mechanism for a prime mover having a reciprocable control rod, and uses the crankcase lubricating oil pressure or turbine oil pressure as a means of adjusting or governing the prime mover's rate of speed or causing it to stop on cessation or oil pressure.

3,626,921

**ABRASIVE CUTTING ELEMENT**

Richard L. Lane, Penfield, N.Y., assignor to Kayex Corporation

Filed Nov. 28, 1969, Ser. No. 880,694

Int. Cl. B28d 1/04

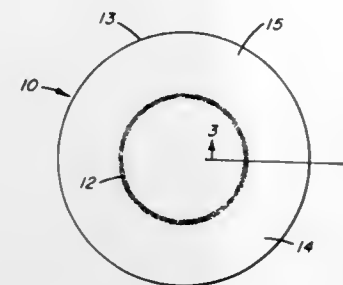
U.S. Cl. 125—15

7 Claims

A sawblade having an abrasive grid bonded to an edge so as to form a cutting portion. The surfaces of the sawblade at

the edge to which the abrasive grit is bonded are convergent or tapered toward each other and the outer surfaces of the abrasive grit forming the cutting portion are also convergent

relation immediately above and in covering relation with upwardly facing edges of wall portions defining the open top of the receiving chamber and the flow passages extending therefrom to define a substantially continuous fuel exit slot



or tapered in an opposite sense so that the cutting portion has additional thickness and is provided with a cutting clearance angle.

3,626,922

**FORCED CONVECTION OVEN**

Donald Richard Borge, London, England, assignor to The Gas Council, London, England

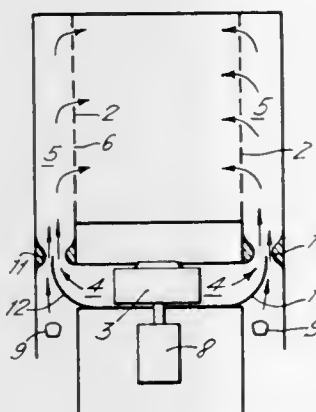
Filed Feb. 2, 1970, Ser. No. 7,684

Claims priority, application Great Britain, Jan. 31, 1969, 5,403/69

Int. Cl. F24c 15/32

U.S. Cl. 126—21 A

3 Claims



A gas fired forced convection oven comprises a heating or cooking zone, fan means for circulating a hot gaseous atmosphere in said zone, the gas distribution means including at least one fuel gas burner located in a passage leading to said zone, a throat located in the passage downstream of said burner and means for deflecting the circulating atmospheric gas issuing from said fan away from said burner and into said throat whereby the circulating atmospheric gas mixes with the combustion gases from the burner and enters the said heating or cooking zone.

3,626,923

**GAS BURNER**

Norman L. Martin, Lake Quivira, Kans., assignor to Locke Stove Company, Kansas City, Mo.

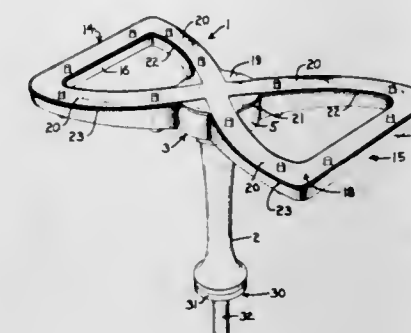
Filed Apr. 9, 1970, Ser. No. 26,822

Int. Cl. A47j 37/00; F24c 3/00

U.S. Cl. 126—41 R

12 Claims

A gas burner for grills and the like has a fuel supply conduit communicating with a fuel receiving chamber having an open top and a plurality of open top flow passages extending therefrom. A cap member is securely positioned in spaced



therebetween whereby gas flows outwardly in substantially continuous sheets from an exterior side of the chamber and opposite sides of the flow passages to form a large substantially continuous flame area when the gas sheets are ignited.

3,626,924

**DOWN DRAFT SPACE HEATER**

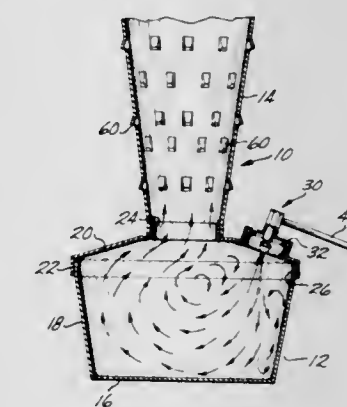
Kenneth J. Sheppard, Sunnyside, Wash., assignor to Spot Heaters, Inc., Sunnyside, Wash.

Filed Aug. 12, 1969, Ser. No. 849,385

Int. Cl. A01g 13/06

U.S. Cl. 126—59.5

7 Claims



The heater comprises a large volume vaporization-combustion chamber formed by bottom, side and top walls of sheet metal. An outlet-radiation stack extends upwardly from a central outlet opening in the top wall. A fuel nozzle extends downwardly through a central opening in a mounting cap and primary air inlet openings are formed in the cap about the fuel nozzle. The cap fits on an upstanding flange which borders an inlet opening formed in the top wall, radially outwardly of the outlet opening. Fuel flow regulation is used to automatically control the amount of primary air induced into the chamber. The flame travel is initially downwardly towards the bottom wall.

3,626,925

**OVEN DOOR SUPPORT ARRANGEMENT**

Robert F. Dalton, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 17, 1970, Ser. No. 55,823

Int. Cl. F23m 7/00; F24c 15/04

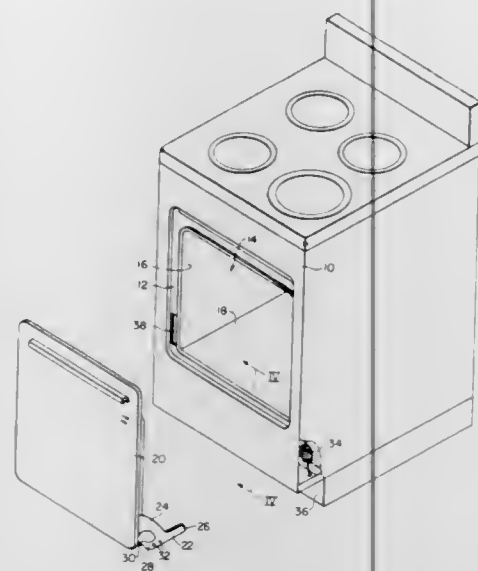
U.S. Cl. 126—194

9 Claims

An inexpensive oven door support arrangement in which the hinge arms of the door are supported by a frame including a pivot bar forming an upper portion of the frame which



is held in place by the range body structure, and a lower portion of the frame which is supported for vertical adjustment from another portion of the range body the arrangement also



including tension springs which pull the hinge arms into a position in which open sided slots on the hinge arms seat on the upper portion of the frame assembly.

3,626,926

# APPARATUS FOR CONTROLLED INHIBITION OF THE CENTRAL NERVOUS SYSTEM IN MAN OR ANIMAL, MOSTLY FOR ELECTRONARCOSIS

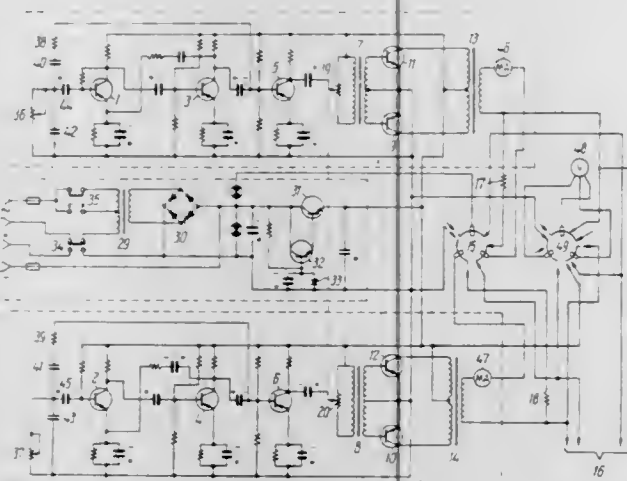
Mikhail Ilich Kuzin, Leninsky prospekt, 60/9, kv. 76; Samvel Artushovich Agasarian, 3 Parkovaya ulitsa, 33, kv. 35; Vladimir Davydovich Zhukovsky, Sadovaya-Samotechnaya ulitsa, 7, kv. 6; Nikolai Alexeevich Volkov, 3 Parkovaya ulitsa, 46, korpus 2, kv. 57; Vladimir Iosifovich Sachkov, Podsozensky pereulok, 18, kv. 6.; Isaak Zakharovich Rukhovets, 6 proezd Mariinoy Roschi, 28/30, kv. 3.; Nikolai Mitrofanovich Liventsev, Novodevichy proezd, 2, kv. 115, and Boris Ivanovich Panfilov, 2 Frunzenskaya ulitsa, 10, kv. 34, all of Moscow, U.S.S.R.

Filed Mar. 29, 1968, Ser. No. 717,127

Int. Cl. A61n 1/08, 1/34

U.S. Cl. 128-1 C

1 Claim



An apparatus is provided for controlled inhibition of the central nervous system of humans and animals, mostly for electronarcosis. The apparatus comprises a pair of electrodes adapted for controlled application of current to a patient and at least two alternators coupled to the electrodes and adapted for generating different frequency currents capable of applying interferential currents to the patient. Each alternator has a respective voltage amplifier and power amplifier

and a power supply unit is provided for the alternators. Connected to the outputs of the voltage amplifiers is an electromechanically operated current regulator for controlling the degree and intensity of the inhibition applied to the electrodes and thus to the central nervous system.

3,626,927

# REFLEX HAMMER

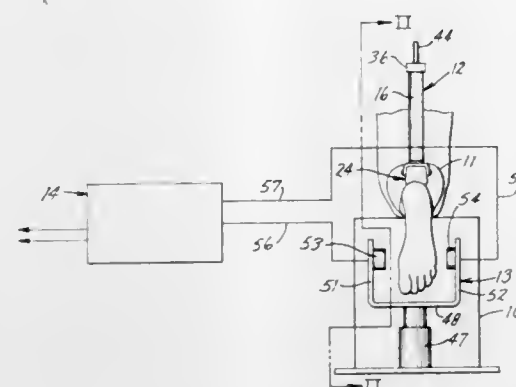
James C. Breneman, 10571 Miller Drive, Galesburg, Mich.

Filed May 1, 1970, Ser. No. 33,626

Int. Cl. A61b 05/16

U.S. Cl. 128-2 R

5 Claims



A method for causing a reflex action in a foot by striking the Achilles tendon so that a part of the foot passes through light directed from a source at a photosensitive device and thereby produces a signal which is converted into a linear trace accurately indicating the movement of the foot.

3,626,928

# INTRAUTERINE WASHING APPARATUS

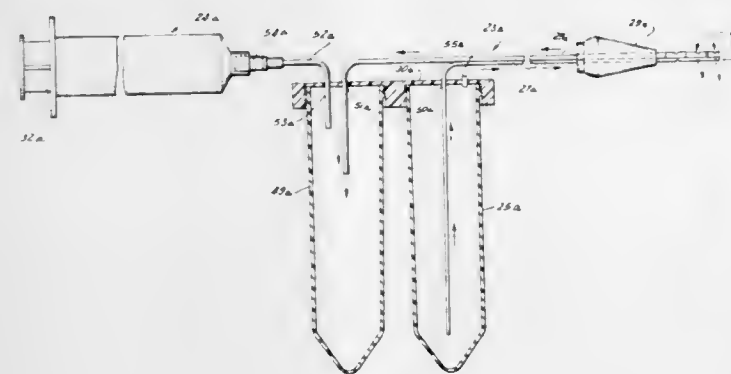
Hulbert Van Rensselaer Barringer, Hohokus; George Brody, Waldwick, both of N.J.; Robert Gandi, New York, N.Y., and Arduino Riuli, Wayne, N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed June 22, 1970, Ser. No. 48,023

Int. Cl. A61b 10/00

U.S. Cl. 128-2 R

11 Claims



An intrauterine washing device including an inlet and an outlet tube in adjacent relationship with their forward end portions adapted to be inserted into the uterus. The tubes are open at their rear ends and have a plurality of openings in their forward end portions. Adjustable sealing means is positioned on the tubes so that when the forward end portions of the tubes are inserted into the uterus, the sealing means may be positioned so as to seal the entrance to the uterus. A connector is mounted on the rear end of at least one of the tubes and is associated with the rear end of the other tube. Means are positioned on the connector for mounting a source of washing fluid thereon in communication with the rear end of the inlet tube. Additionally, means are positioned on the connector for mounting a source of suction thereon in communication with the rear end of the outlet tube. In this manner,

when suction is applied to the device sealed in position with respect to the uterus a negative pressure will be provided in the uterus and washing fluid will flow from a connected source of washing fluid through said inlet tube and into the uterus through the openings in the forward end portion of the inlet tube. Cells and other matter will be accumulated from the uterus and will enter the outlet tube with the washing fluid through the openings in the forward end portion of the outlet tube and will continue to pass through the length of the tube for collection at the rear end thereof.

3,626,929

# APPARATUS FOR OBTAINING A PERCUTANEOUS AND DIGITAL BLOOD SAMPLE

Manuel Sanz, Grand-Lancy, Geneva, and Georges Revillet, Petit-Lancy, Geneva, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

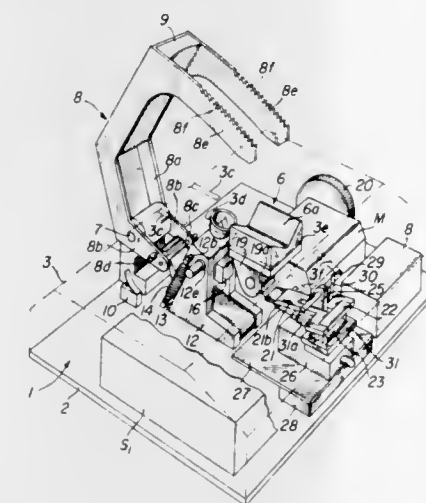
Filed July 18, 1969, Ser. No. 843,016

Claims priority, application Switzerland, July 26, 1968, 11272/68

Int. Cl. A61b 10/00

U.S. Cl. 128-2 R

12 Claims



Apparatus for automatically obtaining a percutaneous and digital blood sample in conjunction with a blood collector device having a resiliently crushable mouthpiece housing a pair of incisor lancets, the apparatus including a mounting for the collector device, clamping means for holding the tip of a finger on the crushable mouthpiece, a mechanism for striking the collector device in the mounting to drive the lancets into the finger, and means for massaging the finger to cause blood to flow out of the resulting incisions.

3,626,930

# LENS RADIATION COLLECTING AND SENSING DEVICE

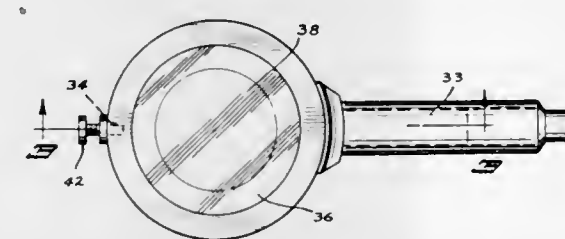
Irving N. Toftness, 1425 2nd Ave., Cumberland, Wis.

Filed Dec. 15, 1969, Ser. No. 885,150

Int. Cl. A61b 06/00

U.S. Cl. 128-2 H

7 Claims



A housing embodying a lens system, the lenses of said system being comprised of components providing a clear window for a radiation on the order of 69.5 GHz. the lower of

said lenses having a greater lens area and a greater focal length than the upper of said lenses to collect a wide spherical angle of said radiation to focus the same upon a detection plate carried by said housing for sensory detection of said radiation, and means carried by said housing for adjustably positioning said detection plate to focus said radiation thereon.

3,626,931

# VIBRATOR DEVICE FOR APPLICATION OF VIBRATION TO EROTIC PARTS OF FEMALE GENITALS

Bireswar Bysakh, 127, Raja Dinendra Street, Calcutta 4, India

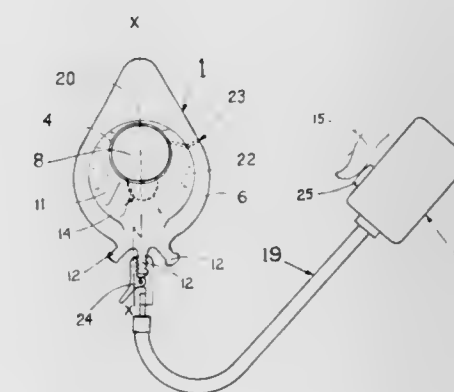
Filed June 26, 1969, Ser. No. 836,899

Claims priority, application Great Britain, July 1, 1968, 31,237/68

Int. Cl. A61h 1/00

U.S. Cl. 128-32

5 Claims



A vibrator device for vibrating the erotic parts of the female genitalia including a human organ-engaging vibratable applicator element generally comprising an outwardly tapered sleeve and an extension for contacting the female erotic parts, and power means for vibrating said element.

3,626,932

# EKG SYNCHRONIZED X-RAY DOUBLE PULSE EXPOSURE APPARATUS AND METHOD

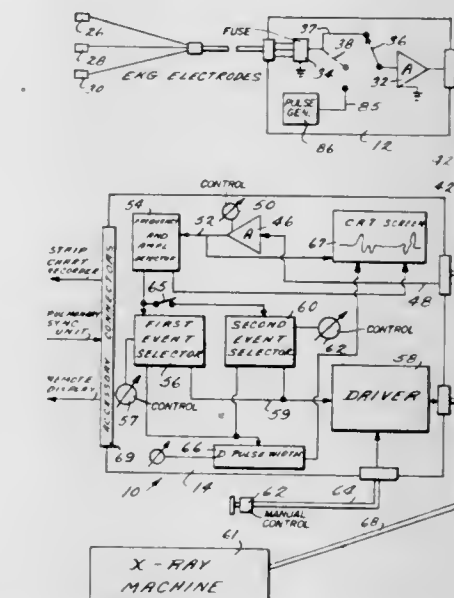
Hal C. Becker, New Orleans, La., assignor to Hal C. Becker and Phillip H. Meyers, Parish of Orleans, La.

Filed Oct. 11, 1968, Ser. No. 766,929

Int. Cl. A61f 5/04

U.S. Cl. 128-2.06 R

11 Claims



Method and apparatus for producing a double exposure X-ray photograph of a heart at two different points during the



cardiac cycle by causing an X-ray machine to produce an X-ray burst at a first given point in the cycle and then another burst at a second and different point during the cycle. Also, disclosed is a synchronizer for detecting the R-wave peak of a person, first means for producing a signal activating the machine at a first given adjustable time after the peak, second means for also activating the machine at a second given adjustable time after the peak, and means for producing and displaying a pulse each time the machine is activated having a duration equal to the inherent time delay between activation and burst production in the machine.

3,626,933

## FOOT REFLEX RELAXER

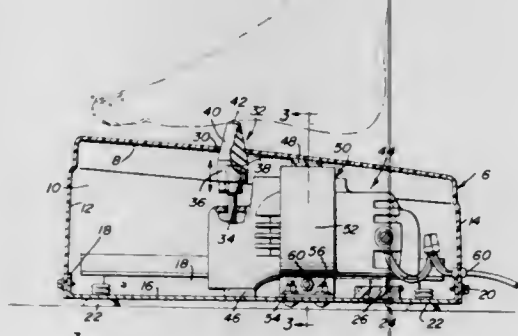
Robert M. Pollock, P.O. Box 271, Watsonville, Calif., and  
Ronald E. Chaddock, 120 S. Pacific Hwy., Talent, Oreg.

Filed Nov. 14, 1969, Ser. No. 876,905

Int. Cl. A61h 7/00

U.S. Cl. 128-52

4 Claims



A foot reflex and relaxing machine for use in accordance with theories and underlying principles having to do with reflexology and zone therapy. It comprises a casing having self-contained facilities which break down crystalline deposits in the vital nerve endings. A cushioned ventilated motor is clamped in the casing and removable with the bottom wall. The motor operates a shaft whose upper end actuates an applicator operating through a clearance hole in the corrugated top wall. The pointed but blunt upper end allows the user's foot to "float" thereon in a manner to act on selected nerve endings. The speed of the applicator is controllable by a manually regulable switch.

3,626,934

## MASSAGING DEVICE

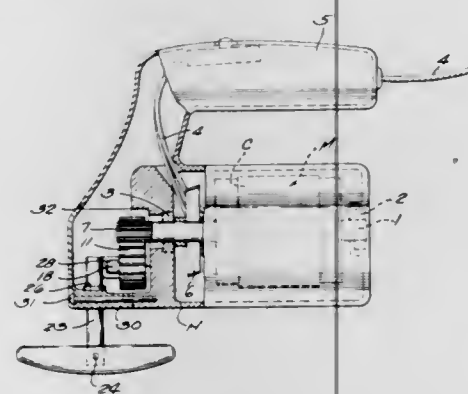
Ernest R. Andis, 5125 Darby Place, Racine, Wis.

Filed Apr. 6, 1970, Ser. No. 25,827

Int. Cl. A61h 23/00

U.S. Cl. 128-55

2 Claims



An electrically driven, hand operated and portable device for massaging the body. The device includes a pair of reciprocating patters which are timed so as to alternately pat the body. The drive is directly from the electric motor shaft,

through a pair of gears, each of which have an eccentric pin mounted therein and which pins are each connected to their respective reciprocating patters through a follower member. The drive is easily assembled.

3,626,935

## SURGICAL NAIL EXTRACTOR

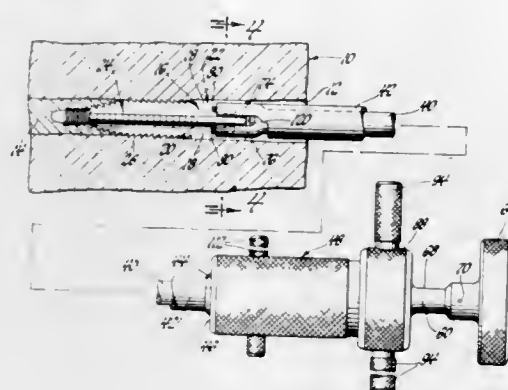
Samuel C. Pollock, Rochester, and Matthew K. Shields, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 12, 1969, Ser. No. 849,442

Int. Cl. A61f 5/04

U.S. Cl. 128-83

4 Claims



An extractor for removing a broken portion of an intramedullary nail includes an inner rod member and an outer concentric tubular member, each having a pair of axially extending fingers at one end. The fingers are arranged in respective pairs and each finger of such pair includes a pin having a portion extending beyond the inner surface of the finger, with the projecting portions of the pins axially and circumferentially converging with respect to each other. The other end of the inner member is secured to a drum rotatably and slidably received within a housing secured to the other end of the outer member. Fixed handles on the housing have their inner ends extending into an annular groove of the drum to limit axial movement of the drum and inner member relative to the housing and outer member. A manually rotatable handle on the housing has its inner end engaging the wall of an axially extending groove in the drum to rotate the drum and housing and the inner and outer members relative to each other and bring the projecting portions of the pins into clamping engagement with a land of the cruciform cross sectionally shaped nail. The inner member also includes an end anvil which can be used to shift the broken portion of the nail within the medulla to free the nail for easier removal. A handle assembly secured to the drum permits attachment of conventional instruments which apply intermittent axial driving forces to the inner member.

3,626,936

## RESUSCITATION MASK

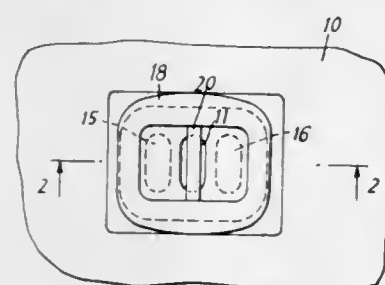
Daniel George John Barker, 11 Dankton Gardens, Sompting, Sussex, England

Filed Oct. 27, 1969, Ser. No. 869,727

Int. Cl. A61m 16/00

U.S. Cl. 128-145.5

4 Claims



A resuscitation device comprising a masking sheet to lay over the mouth of the patient, an opening in the sheet and a

valve device attached to the sheet to permit air to be blown through the opening into the patient's mouth, said opening being closed by the valve device by exhalation from the patient.

3,626,937

## APPARATUS

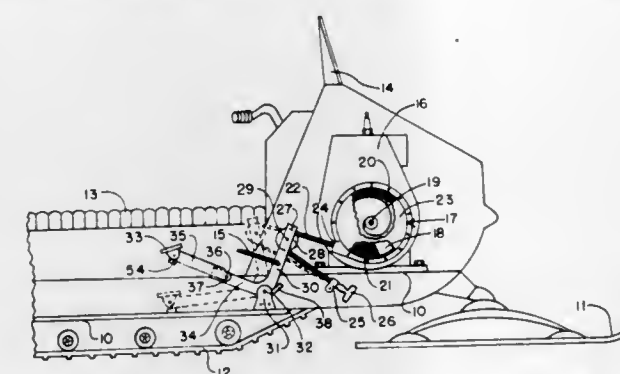
Rolan C. Gjovik, Spring Valley, Wis., assignor to Robert R. Gavic, Spring Valley; C. L. Haylord and C. M. Brye, River Falls, Wis., part interest to each

Filed May 26, 1969, Ser. No. 827,797

Int. Cl. F02n 1/00

U.S. Cl. 123-185 A

9 Claims



A starter assist apparatus is taught for use in combination with a recoil-type starter operably connected to an internal combustion engine. Recoil-type starters include a recoil pulley biased in recoil direction, and a cable wrapped about the recoil pulley with the outermost end of the cable extending outwardly for brisk withdrawal to impart a starting impulse for the internal combustion engine.

The arrangement of the new starter assist apparatus is such that, first of all, the cable from the recoil pulley is fastened to a frame element or to a special pivotable lever carrying a bight pulley assembly. When the cable is affixed to the lever, an idler pulley for entraining the cable is fastened to a frame element.

The bight pulley assembly engages a bight of the cable between the fastening point and the recoil pulley wrapping, so that shifting of the bight pulley assembly in response to shifting of the lever draws out cable to impart a starting impulse to the engine. A foot pedal is connected to the lever is spaced relationship from the fulcrum of it so that pivoting is accomplished by foot pressure. Limit stops restrict the range of pivot of the lever so as to reduce wear and tear of the recoil mechanism. Alignment of the elements, or a special guide member, serves to maintain the cable, during withdrawal and recoil of it with respect to the recoil mechanism, in substantially the same plane as the wrapping of that cable about the recoil pulley. This relationship is at least maintained for a sufficient distance beyond the rims of the recoil pulley to prevent abrading draw of the cable laterally over a rim of the recoil pulley.

3,626,938

## HEMODIALYSIS SHUNT VALVE DEVICE WITH BODY CONNECTING MEANS

Antonio A. Versaci, 1092 St. Jude Drive, Schenectady, N.Y. Continuation-in-part of application Ser. No. 764,542, Oct. 2, 1968, now abandoned. This application June 30, 1970, Ser. No. 51,202

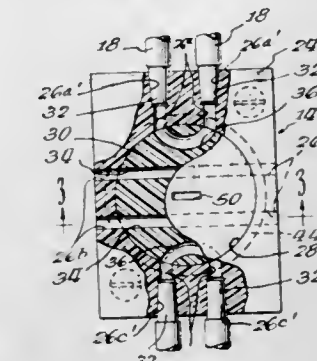
Int. Cl. A61m 05/00

U.S. Cl. 128-214 B

7 Claims

A shunt valve device for connecting an artery and vein to a dialysis machine, such as an artificial kidney or the like, including a shunt valve assembly which has a pair of passages extending therethrough and a valve means for selectively opening and closing the passages. The assembly is mounted

on a body member of a person and the passages are connected to the artery and vein. The assembly has means for receiving a pair of conduits from the artificial kidney and holding the conduits in communication with the passages through the assembly so that the valve means can be operated to open the passages and thereby connect the artery



and vein to the artificial kidney and permit the flow of blood therebetween. When the valve means is closed, the flow of blood is shunted back to the body member. A bubble sensor is provided between the artificial kidney and the shunt valve assembly to close the valve means on sensing a bubble in the stream of blood leading from the artificial kidney to the shunt valve assembly.

3,626,939

## DISPOSABLE DOUCHE WITH NESTING BELLOWS SECTIONS

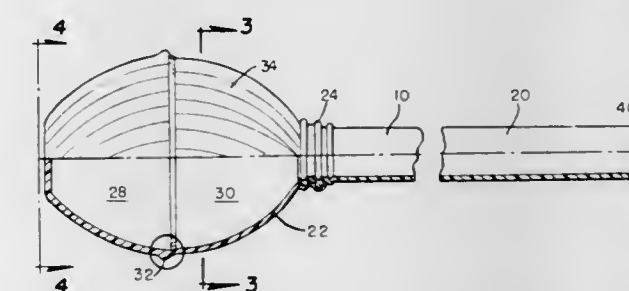
Martin S. Maltenfort, 7 Smith Road, Glen Farms, Newark, Del.; Harry M. Sokolic, and Leon Sokolic, both of 428 8th Street, Atlanta, Ga., assignors to Said Harry M. Sokolic and Leon Sokolic, by said Martin S. Maltenfort

Filed Feb. 16, 1970, Ser. No. 11,600

Int. Cl. A61m 1/00, 3/00

U.S. Cl. 128-232

3 Claims



A disposable douche fabricated in a single piece and which can be collapsed into a very small volume and can be carried in a woman's purse.

3,626,940

## OCULAR INSERT

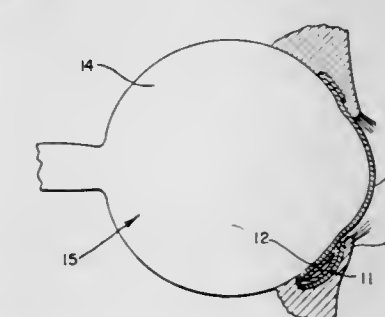
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation

Filed May 2, 1969, Ser. No. 821,468

Int. Cl. A61m 31/00

U.S. Cl. 128-260

4 Claims



Drug dispensing ocular insert for insertion into the cul-de-sac of the conjunctiva between the sclera of the eyeball and



the lid to dispense drug to the eye over a prolonged period of time is adapted for convenient insertion and removal by incorporation of a magnetically attractable substance therein. The ocular insert can be inserted and removed from the cul-de-sac using a magnetic tool.

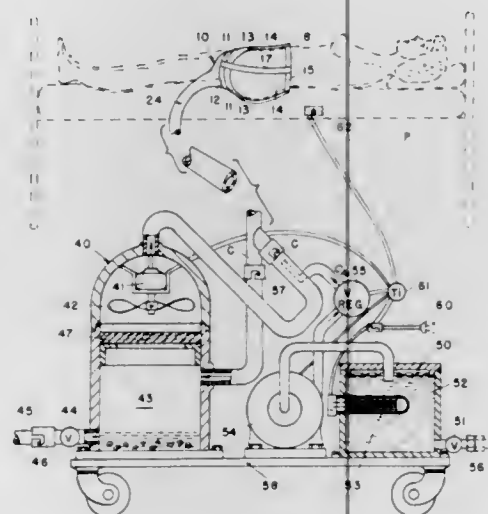
3,626,941

## EXCRETORY PROSTHESIS

Donald D. Webb, North 133 Stone, Spokane, Wash.  
Filed Aug. 6, 1968, Ser. No. 750,610  
Int. Cl. A61F 5/44

U.S. Cl. 128—283

9 Claims



A combination of a forced air-vacuum producing device and a water supply for cleansing and drying the perineal area of a body covered by a watertight cup having air and water supply means and a waste tube. Electrical energy operates the air-vacuum and water supply and has a manually activated timer to provide the cleansing and drying of the perineum in sequence.

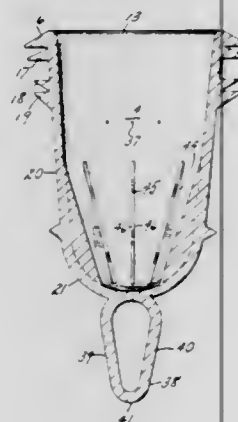
3,626,942

## VAGINAL CUP HAVING RADIALY ARRANGED INTERNAL SUPPORTING RIBS

Barbara M. Waldron, Lighthouse Point, Fla., assignor to Tassette, Inc., Stamford, Conn.  
Filed June 2, 1970, Ser. No. 42,668  
Int. Cl. A61F 13/20

U.S. Cl. 128—285

3 Claims



An improved vaginal cup having axially aligned inwardly extending ribs disposed on an inner surface adjacent the closed end thereof. A manually engageable loop is provided on the outer surface of said closed end, application of an axially aligned force on said loop for the purpose of withdrawing the cup serving to elongate the same along its axis, and simultaneously decrease the effective diameter to facilitate such withdrawal.

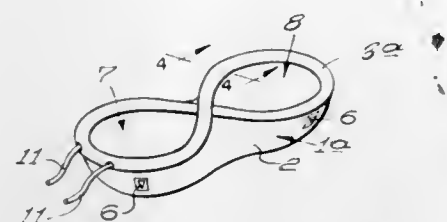
3,626,943

## SANITARY CLOTHING ARTICLE

Gurdon S. Worcester, High St., Gloucester, Mass.  
Continuation-in-part of application Ser. No. 842,817, July 8, 1969, which is a continuation-in-part of application Ser. No. 591,725, Nov. 3, 1966, now abandoned. This application  
Mar. 11, 1970, Ser. No. 18,599  
Int. Cl. A61F 13/16

U.S. Cl. 128—286

15 Claims



A sanitary clothing article is formed by a bag having flexible walls adapted to fit between the user's legs or buttocks with front and back portions extending upwardly toward the user's waist. The bag has soft pad means forming a lip opening into the bag and is adapted to fit in a position on and around an excretory organ of the body to hold the bag in direct communication therewith. Means are provided for holding the bag with said opening in said position, thereby to bar excreta from issuing exteriorly of the bag, these means including a belt to be worn on the user's waist, and either split band means cooperating with the lip, or fastener means on portions of the bag cooperating with said belt for supporting the bag by the belt. A check valve of flexible material attached inside the lip opening, or constricting closure means within the lip, are provided for closing the lip opening and confining the contents of the bag after detachment from the body. The flexible walls are made from a material substantially water-impenetrable from the inside, the outside of the walls being water-softenable to permit said walls to substantially disintegrate by placing them in water.

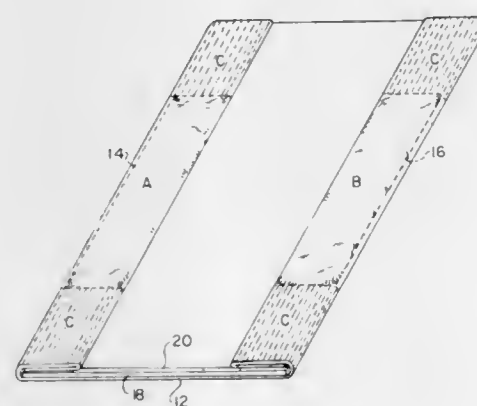
3,626,944

## DISPOSABLE ABSORBENT ARTICLE

Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Boston, Mass.  
Filed May 18, 1970, Ser. No. 38,324  
Int. Cl. A61F 13/16

U.S. Cl. 128—287

6 Claims



A disposable absorbent article having a backing comprising a sheet of liquid and air impervious material with one or more sealed pockets, having a volume of air trapped therein, being formed on the periphery of the sheet.

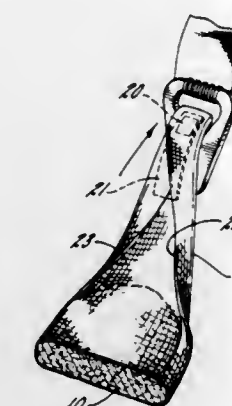
3,626,945

## TAB CONSTRUCTION FOR SANITARY NAPKIN

Carolyn R. Mobley, Appleton, Wis., assignor to Kimberly-Clark Corporation, Keenah, Wis.  
Filed Mar. 27, 1969, Ser. No. 811,169  
Int. Cl. A61F 13/16

U.S. Cl. 128—289

3 Claims



An improved tab construction for a sanitary napkin. The improved tab construction includes a narrow patch of pressure sensitive adhesive on the surface of at least one tab and near the end thereof, and a relatively stiff protective cover strip covering the adhesive strip. The protective cover is longer than the adhesive patch and is positioned on the adhesive so that an unattached portion of the strip extends inwardly toward the center of the napkin. The relatively stiff cover strip is also sufficiently narrow so that it can be used to facilitate threading the tab through a fixture such as the clasp or grip normally used with napkin supporting devices. When the used napkin is to be discarded, it is rolled on itself with the soiled surface on the inside, the protective strip is removed, and the adhesive patch is pressed against the rolled up body of the napkin to hold it in the rolled condition for disposal.

3,626,946

## EAR CLEANER

Edwin W. Messey, 246 Millbrook Drive, Willingboro, N.J.  
Filed Jan. 12, 1970, Ser. No. 2,070  
Int. Cl. A61b 17/22; A47k 7/02; A47l 1/06

U.S. Cl. 128—304

3 Claims



An ear cleaning device including a nonwoven fabric twisted and pressed about a cigar-shaped mandrel to form a member which can be inserted safely into the human ear.

3,626,947

## METHOD AND APPARATUS FOR VEIN AND ARTERY REINFORCEMENT

Charles Howard Sparks, 3725 S.E. Martins St., Portland, Oreg.

Filed Feb. 19, 1970, Ser. No. 12,817

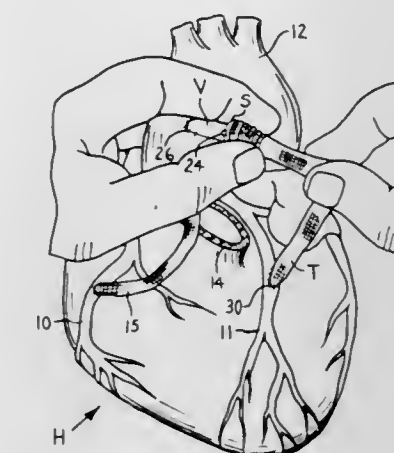
Int. Cl. A61b 17/04; A61F 1/24

U.S. Cl. 128—334 R

15 Claims

A novel method and apparatus are provided for applying a textile mesh reinforcing tube on a vein or artery. The mesh

tube is gathered on a spool and confined between the end flanges of the spool. After making a severed end of the vein or artery accessible, the spool containing the mesh tube is slipped onto the blood vessel. Then the vessel is anastomosed and blood flow is established through the vessel, expanding the collapsed vessel to normal size. One end of the mesh tube is pulled off one end of the spool and secured on the vessel. By sliding the spool along the vessel, the mesh tube is pulled



off the end of the spool and applied progressively to the vessel, the mesh being tensioned sufficiently to contract the tube to fit the vessel. The spool is split longitudinally so that the two halves may be removed from the vessel. The mesh tube subsequently becomes incorporated into the wall of the vessel, making it stronger than a normal artery. Such reinforcement is useful for strengthening an artery in situ and for strengthening a vein graft which is subject to arterial pressure.

3,626,948

## ABSORBABLE POLYGLYCOLIC ACID SUTURE OF ENHANCED IN-VIVO STRENGTH RETENTION

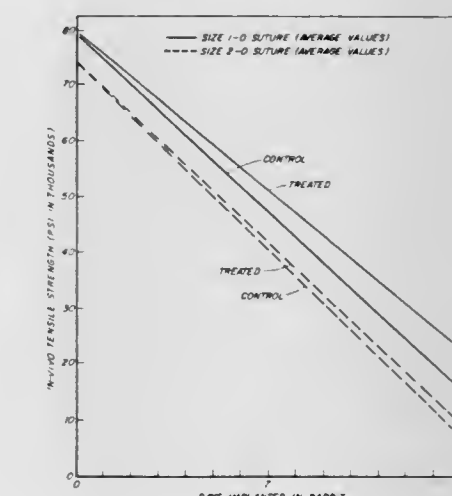
Arthur Glick, Danbury, and James B. McPherson, Jr., Cos Cob, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 23, 1968, Ser. No. 786,049

Int. Cl. A61F 17/00

U.S. Cl. 128—335.5

2 Claims



Polyglycolic acid in shaped form (i.e., a suture) which is substantially free from vaporizable impurities is provided which has significantly greater in-vivo strength retention than shaped polyglycolic acid containing said vaporizable impurities. The improved polyglycolic acid is prepared by vacuum heating shaped polyglycolic acid containing vaporizable impurities to vaporize the impurities therefrom, and then removing the vaporized impurities from the polyglycolic acid. An apparatus for conveniently carrying out the above process is also provided.



3,626,949

## CERVICAL DILATOR

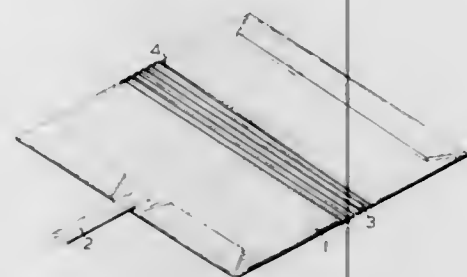
Wallace B. Shute, 340 McLeod St., Ottawa, Ontario, Canada

Filed Jan. 23, 1969, Ser. No. 793,369

Int. Cl. A61m 29/00; A61b 17/42

U.S. Cl. 128—344

2 Claims



A cervical dilator comprising a fluidtight bag formed from a flexible material and insertable in a collapsed state into the cervical canal, inlet means in said bag for periodically introducing fluid under pressure to alternately inflate said bag whereby the wall of said bag radially expands to directly contact the walls of said canal and to deflate said bag so as to cause dilatation of the cervix and simulate effects of labor contraction, a portion of the wall of said bag intermediate the ends thereof being adapted to be more resistant to radial expansion whereby to form on inflation of said bag a constricted waist portion which accommodates the edges of the cervix.

3,626,950

## CATHETER WITH AUGMENTED DRAINAGE MEANS

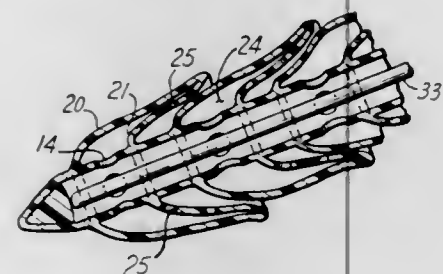
Rudolf R. Schulte, Santa Barbara, Calif., assignor to Heyer-Schulte Corporation, Santa Barbara, Calif.

Continuation-in-part of application Ser. No. 844,559, July 24, 1969. This application June 19, 1970, Ser. No. 47,657

Int. Cl. A61m 27/00

U.S. Cl. 128—350 R

5 Claims



A catheter for the drainage of a region of the human body into which region one end of the catheter is inserted, usually by means of an axial force. Means is provided for augmenting the drainage area of the catheter whereby to minimize clogging by such particulate matter as may be present in the region to be drained. In addition, means may be provided to shroud at least some of the drainage means while the catheter is being thrust into the region. The catheter comprises a pair of flexible fins which surround a catheter tube on each side of a passage through its wall. The passage is an inlet means to the lumen of the tube. These fins are joined to each other at a peripheral junction so as to form a chamber in communication with the passage. A plurality of perforations through at least one of the fins augments the inlet means in the sense of providing an increased total flow channel to the lumen of the tube without requiring enlargement of the passage, which could risk the passage of particulate matter of excessive size.

3,626,951

## THRESHING AND SEPARATING APPARATUS FOR COMBINES

Alexander Jan Vogelenzang, Wageningsestraat 28, Andelst, Netherlands

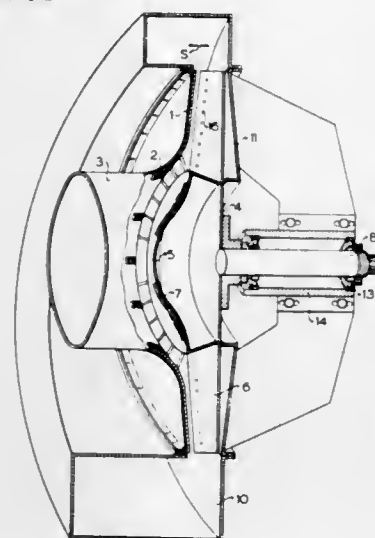
Filed Apr. 1, 1970, Ser. No. 24,707

Claims priority, application Germany, Apr. 3, 1969, Feb. 10, 1970, P 20 05 889.3; P 19 17 333.2

Int. Cl. A01H 12/20

U.S. Cl. 130—27 M

12 Claims



The threshing and separating device comprises a housing having a feed conduit extending from the vicinity of a cutting device and terminating at an issuing end within the housing. A curve merges said issuing end of said conduit with a threshing plate which is fixed within said housing. There are threshing blades on the side of said fixed threshing plate remote from said conduit. A rotary threshing plate is within said housing opposite said fixed threshing plate. Fan blades are fitted on said rotary threshing plate and extend towards but stop short of said fixed threshing plate to leave an annular gap opening into said housing. Lattice bars are concentrically disposed at radial intervals and pass through said blade.

3,626,952

## SMOKE FILTER

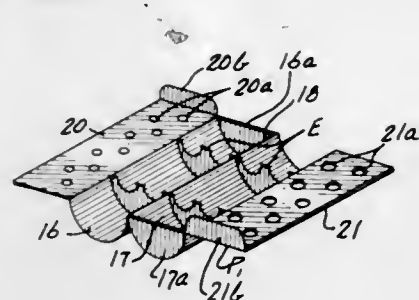
Karol J. Mysels, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 21, 1970, Ser. No. 30,488

Int. Cl. A24d 01/04; A24f 07/04, 13/06

U.S. Cl. 131—10.5

9 Claims



A tobacco smoke filter is provided which includes a hollow cylindrical member formed of smoke-impervious material. The member includes a pair of hinged connected semicylindrical sections and a pair of perforated panels hingedly connected to the semicylindrical sections and disposed therebetween. One of the panels and one of the semicylindrical members cooperate to form a first passageway having an open upstream end and a closed downstream end. The other panel and semicylindrical member cooperate to form a second passageway having a closed upstream end and an open downstream end. The passageways are in communication with one another only through the perforated panels.

3,626,955

## HAIRPIECE-TO-HAIR CONNECTOR AND FASTENER

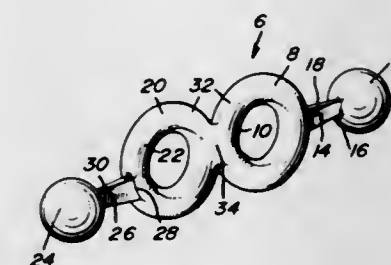
Phil J. Greenwood, P.O. Box 1062, Decatur, Ill.

Filed Aug. 6, 1970, Ser. No. 61,666

Int. Cl. A45d 8/00

U.S. Cl. 132—46 R

4 Claims



Smoke is adapted to pass through the perforations of the panel defining the first passageway as a plurality of high-velocity jets which impinge against the adjacent surface of the panel defining the second passageway.

3,626,953

## APPARATUS FOR WEIGHING CIGARETTES AND SIMILAR ROD-SHAPED ARTICLES

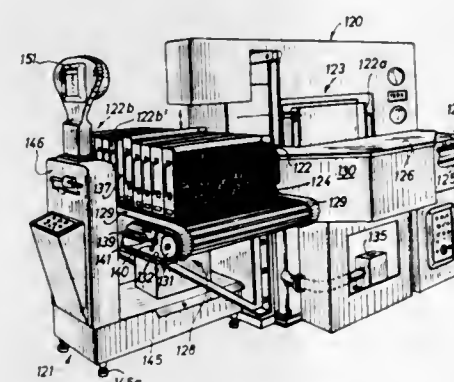
Kurt Korber, Am Pfingstberg 10, Hamburg-Bergedorf, and Hans Sottorf, Juthorskamp 2, Hamburg-Wandsbek, both of Germany

Original application Aug. 22, 1966, Ser. No. 574,245, now abandoned, Continuation of application Ser. No. 285,120, June 3, 1963, now abandoned, Continuation-in-part of application Ser. No. 217,777, Aug. 13, 1962, now abandoned. Divided and this application Mar. 10, 1970, Ser. No. 18,270 Claims priority, application Great Britain, Italy, Germany, Aug. 8, 1962, Aug. 10, 1962, Aug. 11, 1962, 30343/62; 26280/62; K47483

Int. Cl. A24c 05/32

U.S. Cl. 131—22

9 Claims



Apparatus for regulating the weight of cigarettes has a weighing scale which weighs trays containing arrays of stacked cigarettes and produces signals serving to control the operation of the trimmer and/or distributor in a cigarette-making machine. The cigarettes are lifted off a conveyor of the machine by a suction head and are transferred into trays in the form of layers by means of a reciprocable pusher. The spatial relationship of cigarettes in the trays is not changed preparatory to or during weighing. The trays descend stepwise during filling with layers of cigarettes.

3,626,954

## METHOD OF FORMING HAIRPIECE

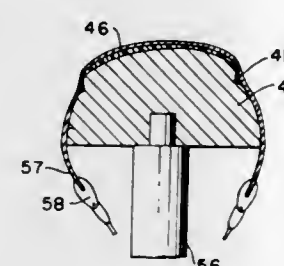
Donald W. Ostrom, 19625 W. 7 Mile Road, Detroit, Mich.

Original application May 15, 1967, Ser. No. 649,765, now Patent No. 3,472,246. Divided and this application Apr. 23, 1969, Ser. No. 818,710

Int. Cl. A41g 5/00; B29c 1/02

U.S. Cl. 132—5

3 Claims



Method of forming a hairpiece which comprises forming a concave cast conforming to the shape of the head, forming a mold from the cast, modifying the surface of the mold to produce a groove, and shaping a foundation element to conform to the mold.

Hairpiece-to-hair linking and fastening means through the medium of which one can expeditiously and reliably join postiches, for example, curls, wiglets, braids, falls, ponytails and the like to a lock of natural hair. It comprises at least one, usually two, ringlike or annular compressible resilient integrated but severable collars, each collar providing a circular opening across which an end portion of the lock of hair (artificial or natural) is placed, buckled and temporarily anchored by way of an insertable and removable compressible resilient ball-type fastener. A plastic strap links the ball fastener to the collar.

3,626,956

## ITEM TRANSPORT DEVIATION DETECTION DEVICE

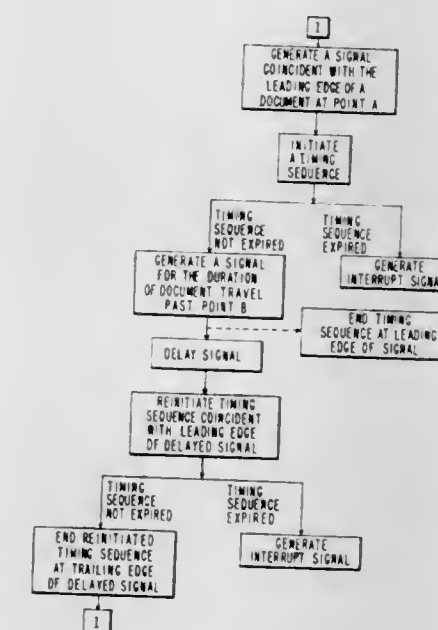
Oran A. J. Sauder, Oak Park, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 21, 1970, Ser. No. 65,949

Int. Cl. G08b 21/00

U.S. Cl. 340—259

5 Claims



A device and method for detecting interruptions or deviations of normal item transport in an item transport pathway wherein a signal indicative of an interruption or deviation is generated whenever a transported item takes longer than a predetermined time to be transported between two stations in the pathway, or whenever an item remains longer than a predetermined time at the second of the stations, the two consecutive time conditions being imposed by the same timing element.



3,626,957

**AUTOMATIC APPARATUS FOR THE CONTINUOUS  
DEGREASING OF PADLOCK BODIES AND THE LIKE**  
Gian Carlo Balducci, Via Conca d'Oro 287, Rome, Italy

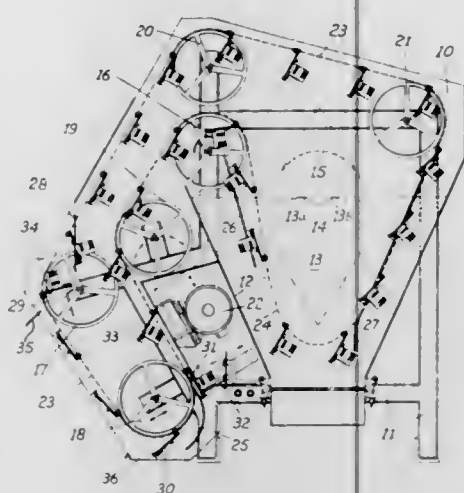
Filed June 23, 1970, Ser. No. 49,104

Claims priority, application Italy, June 28, 1969, 38293 A/69

Int. Cl. B08b 3/08, 11/02

U.S. Cl. 134-104

15 Claims



An apparatus for the continuous automatic degreasing of padlock bodies during the course of their production, and for the expulsion of shavings of brass from their holes. The apparatus comprises a tank of suitable configuration containing a degreasing liquid, in which the padlock are immersed by carrying bars and moved along an endless chain entrained around rotatable gearwheel, one of which is a driving gearwheel. A plurality of guide rails for regulating the orientation of said bars are provided in the tank.

3,626,958

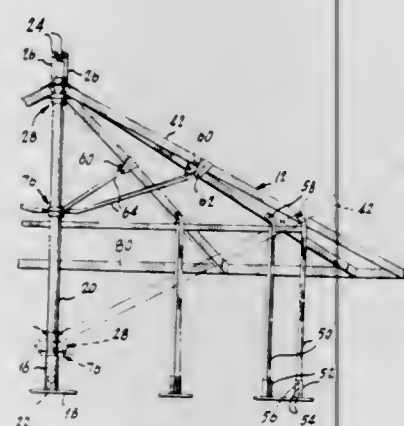
**EXHIBITION PORTABLE TENT**

Anthony L. Ross, 514 Taylor St., Riverside, N.J.  
Filed May 27, 1970, Ser. No. 40,856

Int. Cl. A45f 1/04

U.S. Cl. 135-2

9 Claims



A tent of the umbrella type, designed to be quickly erected or knocked down by a small crew working primarily at ground level. A collar is pivotally connectable, at or near ground level, to a series of radial beams. The beams pivot on uprights so that when the collar is moved upwardly along a standard or center pole, as for example, by a winch operated by a crewman on the ground, the beams rock on the uprights and are elevated to inclined canopy-supporting positions.

3,626,959

**INTRAVENOUS FLOW CONTROL**

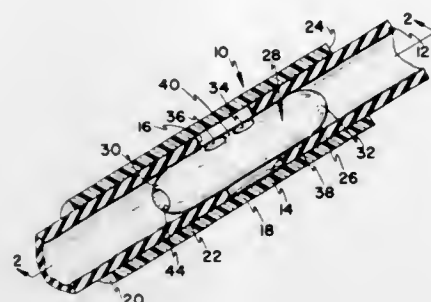
Louis S. Santomieri, Benicia, Calif., assignor to Deseret Pharmaceutical Company, Inc., Sandy, Utah

Filed Feb. 4, 1970, Ser. No. 8,580

Int. Cl. F03b 1/00; F16k 31/58

U.S. Cl. 137-1

5 Claims



A valve for controlling the flow of intravenous fluid through a flexible tube either alone or in association with a reservoir, the valve including an exterior flexible sleeve disposed over an aperture or separation in the tube and a spool which is displaceable within and along the axis of the tube by squeezing the exterior of the sleeve and/or tube near one end of the spool. The spool has a tortuous fluid passageway which is obstructed so that fluid flow is prevented except when the obstruction is disposed opposite the aperture. The method includes adjusting the position of the spool along the axis of the tube to control the rate at which the fluid flows through the tube.

3,626,960

**METHOD AND APPARATUS FOR DIVERTING FLUID  
FLOW**

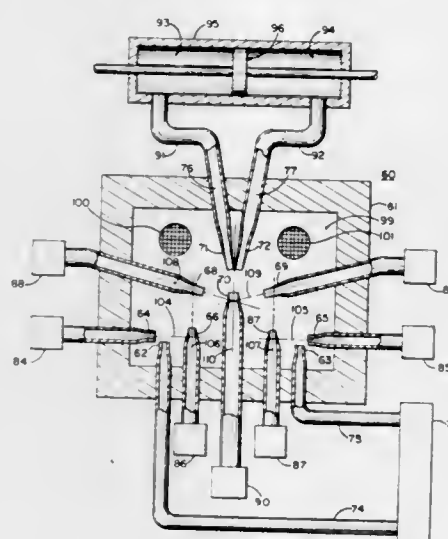
John G. Rupert, St. Anthony Village, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 7, 1970, Ser. No. 1,107

Int. Cl. F15c 1/14

U.S. Cl. 137-13

12 Claims



Fluid amplifier apparatus comprising a power nozzle for issuing a deflectable power stream, fluid receiver means for receiving a variable portion of the power stream, and control means for issuing a control stream in a variable transverse direction relative to the power stream so that a variable portion of the control stream intercepts the power stream, thereby varying the received portion thereof. The control means may comprise a series of nozzles, each adapted to issue a fluid stream, a variable portion of which, depending

on the deflection thereof, transversely impinges on the next succeeding fluid stream causing its deflection. Single-ended and differential output embodiments are disclosed.

3,626,961

**MAGNETIC HYDRANT LOCK**

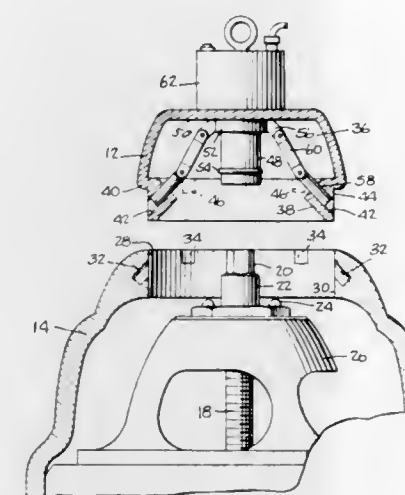
Carlos Manuel Quinones, 8420 Miramar Parkway, Miramar, Fla.

Filed Mar. 11, 1970, Ser. No. 18,657

Int. Cl. E03b 9/10; F16k 35/06

U.S. Cl. 137-296

9 Claims



A hydrant lock comprising an open-crown bonnet in combination with a closure cap to be seated thereon to enclose the bonnet, with the opening wall and cap base provided with spaced angled bores adapted to be aligned by engagement of teeth on the cap with notches in the crown. A central cylinder integral with the undersurface of the cap top slidably supports a sleeve having extensions pivotally linked to rods disposed in the cap bores adapted to partially enter the crown bores to interlock cap and crown. The cap, cylinder, links and rods are of nonmagnetic material and the sleeve of magnetic material whereby magnetic force applied to the top of the cap raises the sleeve along the cylinder, drawing the rods out of the crown bores to release the cap.

3,626,962

**FLUIDIC LOGIC DEVICE**

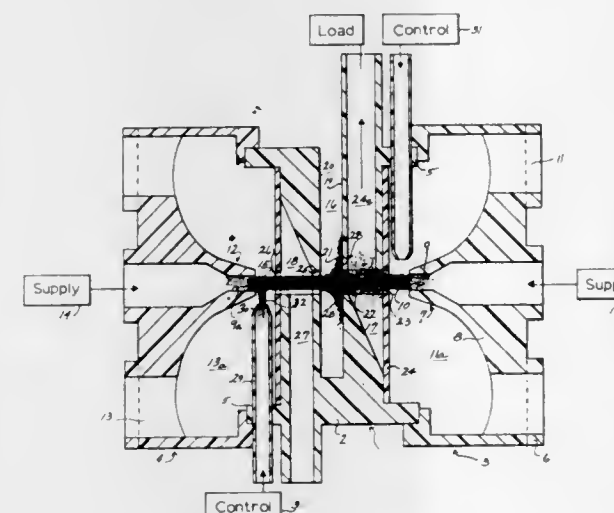
Louis D. Atkinson, New Berlin, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 26, 1970, Ser. No. 5,653

Int. Cl. F15c 1/20

U.S. Cl. 137-81.5

15 Claims



A fluidic flip-flop device of a set-reset type includes fluidic amplification. The impact position of a pair of opposed main streams occurs within a reference chamber between a pair of

output chambers having output orifices in the adjacent reference walls. The walls are flat planar surfaces such that with the impact position immediately adjacent the related orifice, the impacting emitted stream flow locks to the adjacent wall as a result of fluid entrainment phenomena. This establishes a stable position. The main streams pass through the output chambers which have isolating orifices in spaced aligned relation to the output orifices. Signal nozzles to the opposite sides of the output chambers are connected to a fluidic source and adapted to reduce the strength of the related main stream by secondary injection and thereby overcome the lock-on force established by the entrainment phenomena. The impact position then switches rapidly away from the locked wall toward the opposite or second output orifice and wall. When the impact position is adjacent such second wall, the entrainment phenomena locks the stream to the second wall and establishes the second stable position.

3,626,963

**FLUID MIXER UTILIZING FLUIDIC TIMER  
ACTUATING FLUIDIC AMPLIFIER VALVES**

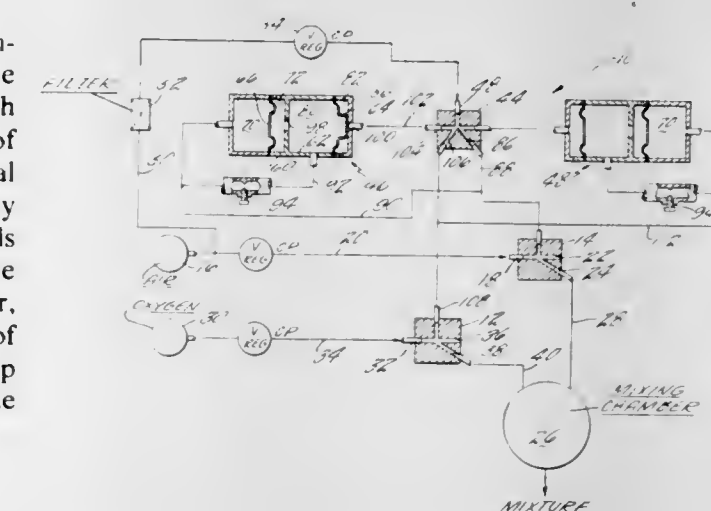
Hermann Ziermann, Cheshire, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 4, 1970, Ser. No. 8,569

Int. Cl. F15c 1/12

U.S. Cl. 137-81.5

13 Claims



Mixing of two or more gases is accomplished by controlling the switching frequency of fluid amplifier valves metering the different gases by fluid timing devices. A fluidic timer switches the power stream to the output channels of a fluidic amplifier operatively connected to the fluid amplifier valves.

3,626,964

**REGULATING VALVE FOR MAGNETIC MATERIALS**

Harvey G. Van Fossen, Mishawaka, Ind., assignor to The Wheelabrator Corporation, Mishawaka, Ind.

Filed Sept. 3, 1970, Ser. No. 69,299

Int. Cl. F16k 9/00

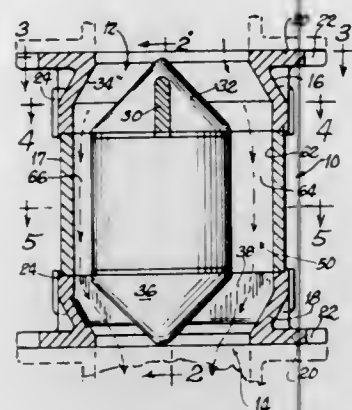
U.S. Cl. 137-81.5

8 Claims

A valve for regulating the flow of materials which are made up of a substantial portion of magnetic particles, the valve being characterized by improved flow rate control means. The valve includes an outer member and an assembly consisting of a permanent magnet and an electrical coil, this assembly providing a core member with a flow through passage being provided by spaces defined between the core member and the interior wall of the outer member. Means are provided for energizing the coil and for varying the input to the coil to vary the influence of the magnet on the particles and thereby regulate the flow of the material through the valve. The spaces defined between the pole pieces and the



terior wall vary between minimum and maximum dimensions, and the energization of the electrical coil is controlled



whereby the flow rate can be suitably maintained at desired levels and readily changed between different flow rates.

3,626,965

## FLUIDIC AND/OR GATE

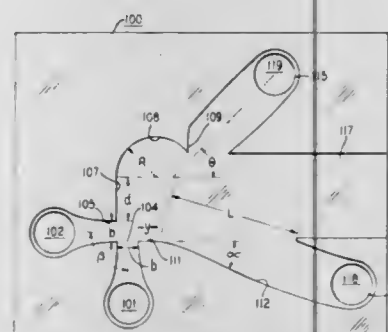
Anthony J. Healey, State College, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 9, 1970, Ser. No. 1,638

Int. Cl. F15c 1/10

U.S. Cl. 137-81.5

17 Claims



A fluidic gate having AND and exclusive OR outputs is disclosed in which the switching sensitivity of the gate is selectively determined by simple changes in the interior geometry of the gate.

3,626,966

## STEAM AND WATER MIXER

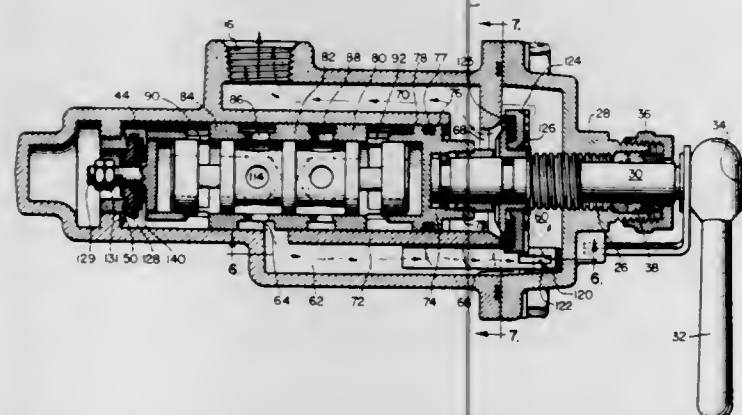
Liudas Vanagas, Chicago, Ill., assignor to Powers Regulator Company, Skokie, Ill.

Filed June 19, 1969, Ser. No. 834,661

Int. Cl. G05d 11/00

U.S. Cl. 137-100

4 Claims



A steam and water mixing valve to produce tempered water in which a control valve regulates the movement of

steam and water through separate passages in said mixing valve to a common mixing chamber. A deflector element is placed in the steam passage at a point where the steam enters the mixing chamber and contacts the water to ensure a direct and more efficient transfer of heat energy to the water from the steam, thereby resulting in quieter operation of the mixing valve. Also, the inlet to the steam passage is shut off before the outlet of the mixing chamber is. By shutting off in this order, the chances of obtaining live steam from the outlet at the time the mixer is being closed is eliminated.

3,626,967

## DISTRIBUTING AIR VALVE UNIT

Donald J. McCarthy, Wethersfield, Conn., assignor to The Jacobs Manufacturing Company, West Hartford, Conn.

Original application Oct. 21, 1968, Ser. No. 769,141, now

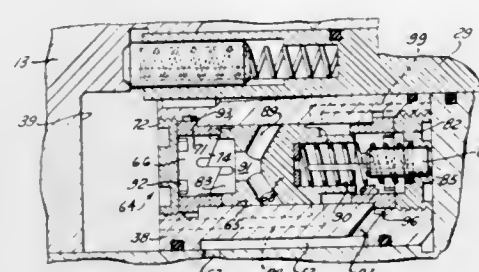
Patent No. 3,521,894, dated July 28, 1970. Divided and this

application Jan. 30, 1970, Ser. No. 7,120

Int. Cl. G05d 7/00

U.S. Cl. 137-106

6 Claims



A pneumatically operable air-distributing valve unit designed for incorporation in the body of a collet-actuating piston of an air chuck. It is selectively operable to cause live source air to be applied to one or the other ends of the piston chamber. It includes a pair of end cams between which a porting valve is reciprocable. As the valve is reciprocated from one position to another, it cooperates with one or the other of the cams to cause the valve to be indexed angularly 45° from its last position. In this action, air feed and exhaust ports are caused to be brought alternately into register with ports leading to one or the other ends of the piston chamber or are caused to be shut off from both ends of the chamber.

3,626,968

## PRESSURE RISE DELAY VALVE

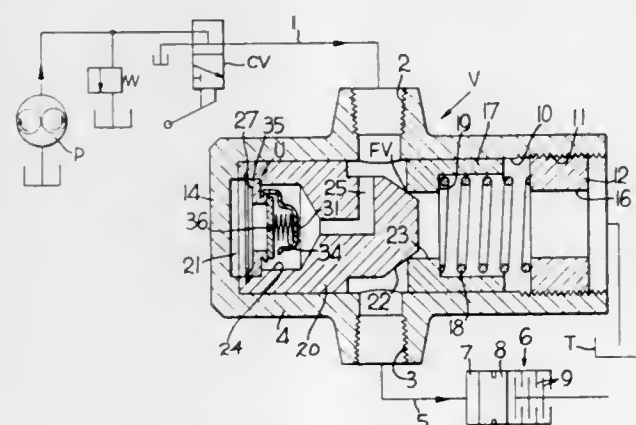
Peter D. Hancock, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Sept. 8, 1970, Ser. No. 70,357

Int. Cl. F16k 17/04

U.S. Cl. 137-115

15 Claims



A valve for controlling the application of fluid pressure to an actuating device and which provides a brief dumping of a portion of the pressure fluid and consequently a gradual rise in pressure. The valve includes two parts which move in the same direction, that is, the piston which moves first in one

direction when initial pressure is applied, and a poppet which then moves in the same direction. The piston and poppet are abuttable to form a fluid valve which regulates the dumping of pressure fluid. The poppet includes an orifice through which fluid flows to the rear of the poppet when pressure is applied to the valve, to consequently cause the poppet to move in the same direction as the piston. The poppet also includes a check valve for providing a quick return of the poppet and piston a reset position. The orifice and check valve can be combined together in the poppet as a unit, and because they are both located in the time control poppet, no extra fluid lines are required to the poppet.

3,626,969

## METHOD AND APPARATUS FOR INSTALLING AND REMOVING GAS LIFT VALVES IN A WELL

Henry U. Garrett, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Original application May 1, 1964, Ser. No. 379,064, now

Patent No. 3,334,690, Continuation-in-part of application Ser.

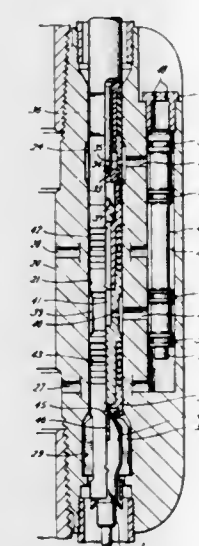
No. 315,976, Oct. 14, 1963, now abandoned. Divided and this

application Dec. 19, 1966, Ser. No. 603,015

Int. Cl. F04f 1/08

U.S. Cl. 137-155

7 Claims



This patent discloses a system for landing tools such as gas lift valves in a well, and particularly by doing so utilizing hydraulic fluids. The patent also discloses equipment to carry out landing of tools hydraulically. These tools include mandrels, gas lift valves, control valves, motors, latching devices, and other structures.

3,626,970

## AIR VOLUME CONTROL FOR HYDROPNEUMATIC TANKS

Phillip T. Jones, Los Altos, and Dresden G. Smith, San Jose, both of Calif., assignors to Aqua-Mec Inc.

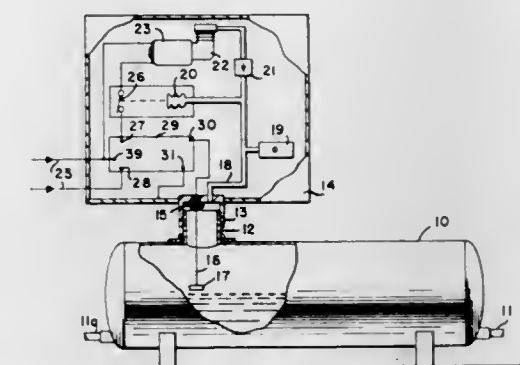
Filed Jan. 2, 1970, Ser. No. 109

Int. Cl. F04f 1/06; B67d 5/54

U.S. Cl. 137-209

3 Claims

An air volume control for hydropneumatic tanks employing a motor-driven air compressor which is controlled by an air pressure switch and an electronic liquid level responsive switch. These switches are mounted in a common housing which is attached to the top of the hydropneumatic tank by a pipe nipple. A wire with an electrode at its lower end extends into the tank through an insulator positioned in the nipple to sense the water level in the tank. A check valve in the air compressor exhaust line isolates the air compressor from tank pressure when the compressor is not pumping and a safety relief valve connected to the air pressure line insures against overpressurization of the tank by the air compressor in the event the pressure switch fails to open or if for some



hydropneumatic tank or on a side of the tank at the water line, in which case an aspirating electrode is substituted for the electrode wire. A part of the aspirating electrode insulator is adapted to flex when the pressure in the tank increases or decreases so that minerals deposited thereon break off as rapidly as they form.

3,626,971

## APPARATUS FOR ADDING LIQUID TO A LIQUID FLOW SYSTEM

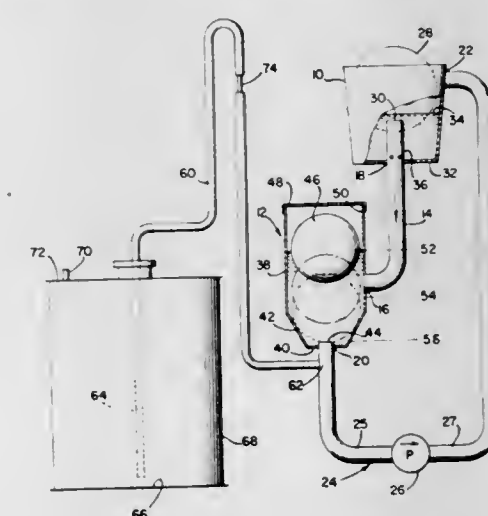
Henry G. Joel, New York, N.Y., assignor to Ing. C. Olivetti & C.S.p.A., Ivrea, Italy

Filed Dec. 11, 1969, Ser. No. 884,095

Int. Cl. E03b 7/07; E03j 11/00

U.S. Cl. 137-263

12 Claims



Apparatus for automatically adding a liquid to a liquid flow system to maintain the proper quantity and composition of the liquid in the liquid flow system. The liquid is added to the flow system by means of a valve which senses the quantity of liquid in the flow system and actuates a fluid circuit to automatically provide the necessary quantity of liquid to be added.

3,626,972

## SOLUBLE GRANULE FEEDERS

Walter C. Lorenzen, Hacienda Heights, Calif., assignor to Anzen Products, Inc., Arcadia, Calif.

Continuation-in-part of application Ser. No. 809,605, Mar. 21, 1969, now abandoned. This application Sept. 18, 1970, Ser. No. 73,564

Int. Cl. E03c 1/046

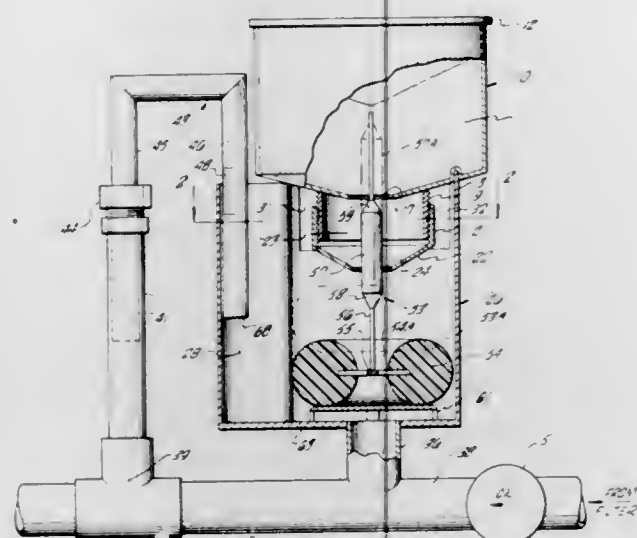
U.S. Cl. 137-268

8 Claims

A tank through which a proportion of return line liquid from a pool is bypassed when the pool pump is on receives



soluble granules from an adjustable metering cup depending from a granule supply bin connecting to the tank. A valving cylinder responsive to a float in the tank alternately opens the bin to the metering cup or the cup to the tank in response



to the on-off cycling of the pool pump. Flow through the tank is from the pool water circulation line bypass into the tank, through the tank to a return line independent of or downstream of the pump. A check valve intervenes between the tank and the pump.

3,626,973

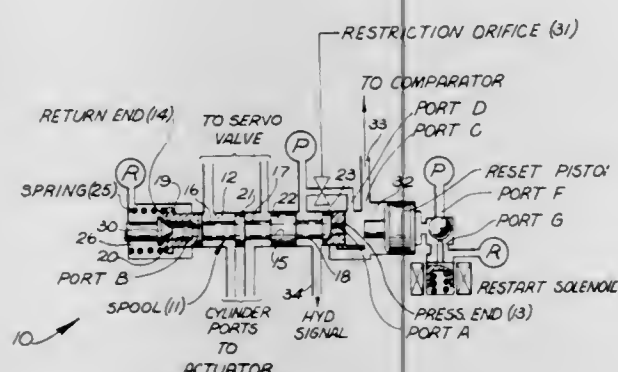
**IMPROVED ON-OFF FLOW CONTROL VALVE**

Richard K. Mason, 17425 Ludlow, Granada Hills, Calif.  
Filed Nov. 28, 1969, Ser. No. 880,773

Int. Cl. F16k 17/08

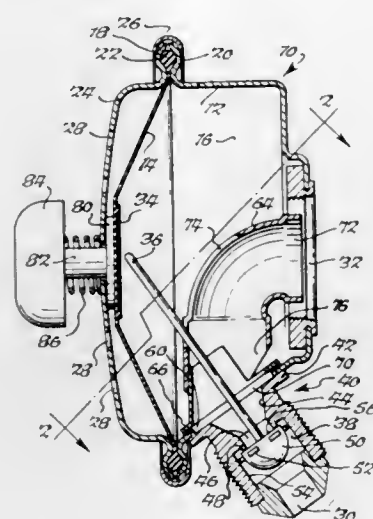
U.S. Cl. 137-460

6 Claims



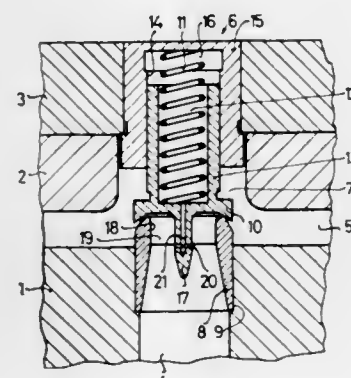
A slide valve having first and second limit positions for the control of fluid under pressure therethrough by either permitting the fluid to flow or blocking the fluid from flowing. The slide valve is maintained in one position through the application of fluid under pressure to an end area thereof and is translated from that position to the other position by application of force from a spring thereto. The pressure acting upon the end area of the slide valve during normal conditions, overcomes the spring force. Upon relief of the pressure, the spring commences movement of the slide valve. This slide valve is ported from the one end where pressure is applied to the opposite end which is connected to exhaust, or system return, to latch the slide valve in its other position and to provide rapid translation thereof from its one limit position to the other limit position.

3,626,974  
**DEMAND REGULATOR**  
John B. Garrison, Akron, N.Y., assignor to A-T-O Inc., Cleveland, Ohio  
Filed Aug. 12, 1969, Ser. No. 849,331  
Int. Cl. A62b 7/00  
U.S. Cl. 137-484.2 6 Claims



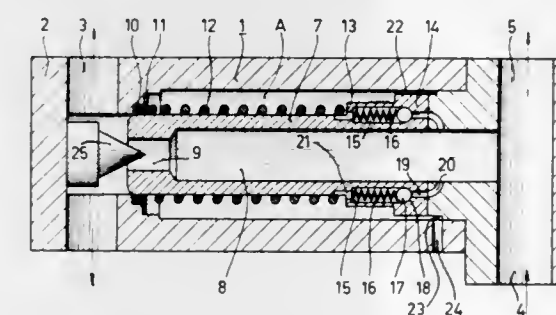
A demand regulator chamber closed by a flexible diaphragm exposed on the opposite side to ambient pressure has an outlet leading to a user and an inlet communicating with a pressurized breathing fluid source. A valve actuated by the flexible diaphragm and interposed in the inlet controls admission of breathing fluid to the chamber. A conductor in the chamber confines and conducts breathing fluid from the inlet through the chamber at high velocity to the outlet in a controlled manner assisting the user in opening the valve.

3,626,975  
**PRESSURE RELIEF VALVE**  
Gerhard Bobst, Oensingen, and Kurt Christiansen, Oberbuchsiten, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland  
Filed Sept. 9, 1969, Ser. No. 856,270  
Claims priority, application Switzerland, Nov. 8, 1968, 16712/68  
Int. Cl. F16k 31/38  
U.S. Cl. 137-494 2 Claims



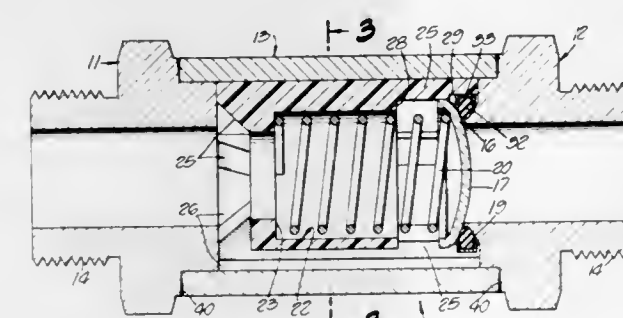
dimensioned only for a partial area of the valve seat opening. The construction provides the advantage that the valve disc stroke-blowoff or discharge quantity characteristic is such that the seating pressure can be varied to any desirable extent in dependence upon the stroke.

3,626,976  
**PRESSURE TIME DELAY DEVICE**  
Hillebrand Johannes Josephus Kraakman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.  
Filed Sept. 10, 1969, Ser. No. 856,645  
Claims priority, application Netherlands, Sept. 18, 1968, 6813310  
Int. Cl. F16k 21/10  
U.S. Cl. 137-508 2 Claims



A device for delaying the pressure buildup in a fluid path in which the fluid is used for performing effective work. The device has a cylinder within a housing through which a duct communicates at one end with the path of fluid flow and a valve is arranged at the other end for closing the duct to a communication with an outlet port. When the pressure in the fluid path begins to build up, the fluid acts on the cylinder to move it in an axial direction so as to close the valve. The device also has ducts for communicating with a space surrounding the cylinder and pressure also acts on the cylinder in the opposite direction along with a spring so that the closing of the valve occurs slowly to thereby delay the buildup of pressure in the fluid path.

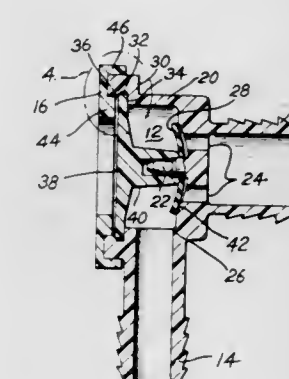
3,626,977  
**COMBINATION CHECK AND PRESSURE RELIEF VALVE**  
James H. Riley, Fullerton, and Mathias Plotkin, Huntington Beach, both of Calif., assignors to Circle Seal Corporation, Anaheim, Calif.  
Filed Jan. 21, 1970, Ser. No. 4,683  
Int. Cl. F16k 15/02  
U.S. Cl. 137-516.25 14 Claims



A combination check and pressure relief valve utilizing a lightweight poppet valve member held closed by a calibrated spring and supplemented by a floating self-aligning resilient O-ring seal held against dilation by an encircling channel-shaped retainer ring. The poppet and O-ring units are held captive in a one-piece cage permanently assembled between the surrounding valve housing components by welded seams,

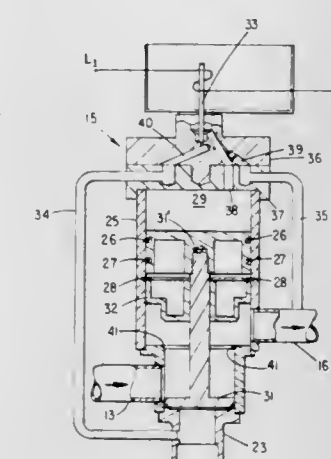
the cage being contoured to provide separate stops for the poppet and for the O-ring retainer unit.

3,626,978  
**CHECK VALVE**  
Herman M. Hoekstra, South Bend, Ind., assignor to The Bendix Corporation  
Filed Apr. 27, 1970, Ser. No. 32,017  
Int. Cl. F16k 15/14  
U.S. Cl. 137-525.3 7 Claims



A support member preventing extrusion of a cap member from an opening in the housing of a check valve.

3,626,979  
**FLUID COMPRESSION SYSTEM CONTROL**  
Richard S. Abell, Cazenovia, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.  
Filed Jan. 28, 1970, Ser. No. 6,621  
Int. Cl. F17d 1/02  
U.S. Cl. 137-608 3 Claims



An unloading valve for controlling the capacity of a compressor comprising a housing defining a bore, an inlet to said housing connected to the discharge side of a compressor, a first outlet from said housing connected to the suction side of said compressor, and a second outlet from said housing connected to the discharge manifold of the compressor. Disposed in the bore is a piston assembly and poppet operable in response to changes of pressure in the bore. The piston and poppet move as a result of changes of pressure in the bore, created by the bore being selectively communicated with the side of the compressor and with the discharge side of the compressor. Movement of the piston assembly and poppet selectively communicates the inlet of said valve with either the suction side of the compressor when reduced capacity is required or with the discharge manifold when rated capacity is required.



3,626,980

**BACTERIA BARRIER DEVICE**

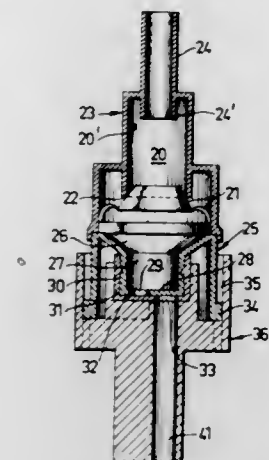
Jan Axel Svensson, Bredbackavag 7, Bjarrad, Sweden

Filed Dec. 8, 1969, Ser. No. 882,882

Claims priority, application Sweden, Dec. 13, 1968, 17090/68

Int. Cl. A61f 5/44

U.S. Cl. 137—614.2



A device for body fluid inlet to a receptacle from the body which device includes means providing a barrier to the reverse movement of bacteria from the receptacle to the body.

3,626,981

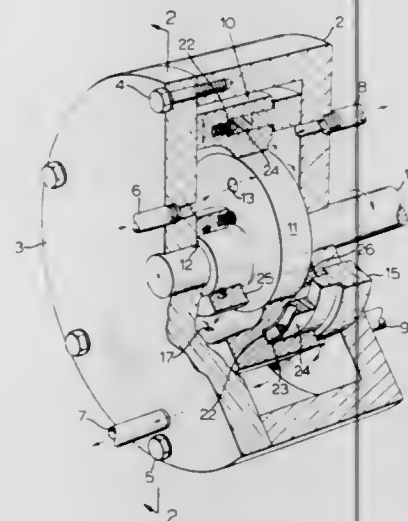
**ROTARY SLIDE VALVE**

Olav Bauer-Nilsen, Norheim 5500, Haugesund, Norway

Filed Oct. 19, 1970, Ser. No. 81,743

Int. Cl. F16k 11/02

U.S. Cl. 137—625.21



This invention relates to a valving arrangement for a hydraulic power transducer of the type which has cylinders and pistons located radially of a crankshaft. The valving arrangement comprises a hollow cylindrical rotating slide valve which is driven eccentrically about a central point in a valve chamber by the crankshaft of the power transducer so that the slide valve rotates exactly in synchronism therewith. The slide valve chamber is provided with connecting passages for conducting the hydraulic fluid to and from between the working chambers of the power transducer. Provision is made to have the slide valve bear with suitable bearing force against a pair of opposed substantially parallel walls by making the slide valve from two cooperating cylindrical pieces. A chamber is provided between the two cylindrical pieces which is arranged to be fed with high-pressure hydraulic fluid to cause the two valve pieces apart against the opposing walls of the valve chamber no matter which direction the power transducer is rotating.

3,626,982

**FLUIDIC CONTROL DEVICE**

Thomas F. McDuffie, 11926 Taylor-Crest, Houston, Tex., and

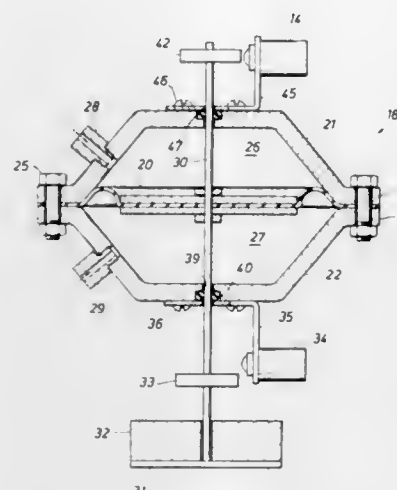
Neal G. Smith, 143 Ravenhead, Houston, Tex.

Filed Mar. 9, 1970, Ser. No. 17,602

Int. Cl. F16k 11/02

1 Claim U.S. Cl. 137—625.61

7 Claims



For use in controlling fluid pressure, two pressure sources, one being connected with the pressure to be controlled and the other connected with a known pressure, the two pressures being applied to the opposite sides of a relatively large diaphragm which deflects in response to pressure variations, there being a thin rodlike member secured to the diaphragm and extending therefrom, the thin rodlike member carrying a pair of deflectors in proximity of jets from fluidic devices which note the presence or absence thereof, the fluidic devices being connected with a control system for operation in response to movement of the diaphragm.

3,626,983

**SERVO VALVE**

Ronald Bernard Walters, Wembley, and John Anthony Gordon

Hammond, Portsmouth, both of England, assignors to

Sperry Rand Limited, London, England

Filed Dec. 22, 1969, Ser. No. 887,396

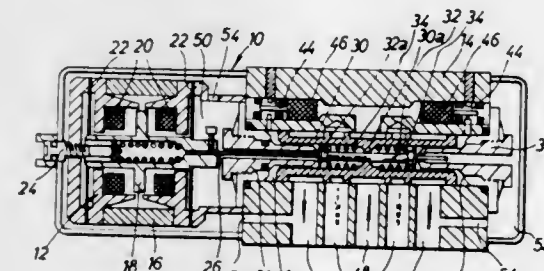
Claims priority, application Great Britain, Dec. 24, 1968,

61,263/68

Int. Cl. F16k 11/07; F15b 5/00

U.S. Cl. 137—625.64

7 Claims



Servo valve in which movement of a flow controlling element is effected through a flapper located and movable within the flow controlling element. Compression springs also located within the flow controlling element serve to interconnect the flow controlling element and the flapper. The flow controlling device is slidable directly within a bore in the valve body.

3,626,984

**VENTING ARRANGEMENT FOR STORAGE TANKS**

Will Pratt, Kenley, and Geoffrey Joseph Grocott, Maidstone,

both of England, assignors to The British Petroleum Company Limited, London, England

Original application Oct. 8, 1968, Ser. No. 765,910, now

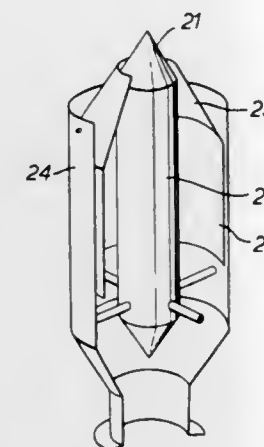
Patent No. 3,557,740, dated Jan. 26, 1971. Divided and this

application June 25, 1970, Ser. No. 49,720

Int. Cl. F15d 1/00

U.S. Cl. 138—46

3 Claims



Petroleum storage tanks or the cargo tanks of a tank ship have an upwardly directed minimum velocity escape valve in the vent line or lines. During filling this ensures that no flammable concentration of petroleum vapors forms below the valve, e.g. at the deck level of a tank ship.

A suitable valve has a tapered sleeve which cooperates with a pointed core. The sleeve lifts to provide a larger annular opening to prevent too high-pressure drop at high mass flow rates and falls to reduce the opening to keep a high velocity at lower mass flow rates.

3,626,985

**SELF-EMPTYING HOSE**

Lennart G. Erickson, 2075 Pioneer Court, San Mateo, Calif.,

and Max C. Eastman, San Anselmo, Calif., assignors to said

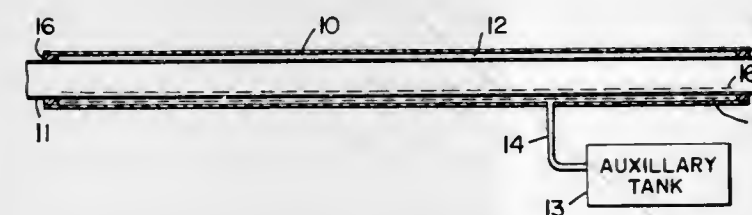
Erickson, by said Eastman

Filed Nov. 18, 1968, Ser. No. 776,501

Int. Cl. F16l 9/18

U.S. Cl. 138—115

18 Claims



A self-emptying hose capable of discharging residual liquid in the hose after positive flow through the hose has been terminated. The discharge is accomplished by air contained in a pocket formed between an inner hose and an outer hose. When water is flowed through the inner hose under sufficient pressure, the air in the pocket is compressed and the inner hose is fully opened. When water flow is terminated and the pressure drops, the air in the pocket collapses the inner hose and squeezes out residual water.

S93 O.G.—20

3,626,986

**PIPELINE CONSTRUCTION FOR PNEUMATIC AND****HYDRAULIC CONVEYANCE OF SOLID MATERIAL**

Hermann Rapp, Aarburg, and Walter Allenspach, Niederuz-

will, both of Switzerland, assignors to Gebruder Buhler AG,

Uzwill, Switzerland

Continuation-in-part of application Ser. No. 646,401, June

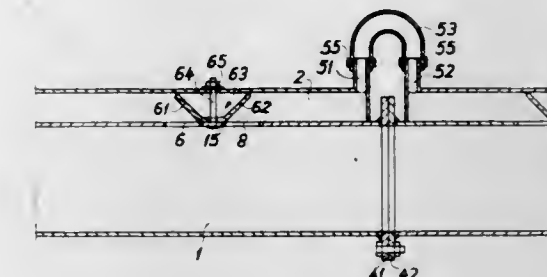
15, 1967, now Patent No. 3,524,478, dated Aug. 18, 1970.

This application Sept. 19, 1969, Ser. No. 859,539

Int. Cl. G05d 11/00

U.S. Cl. 138—111

10 Claims



Pipe sections, for use in constructing pipelines for conveying solid particles of material either pneumatically or hydraulically, are formed by a main conduit and a branch conduit. At least a portion of the branch conduit is made up of tubular members separate from the main conduit. Openings are provided in the main conduit and branch conduit for interconnecting their flow passageways and a web section is located within the branch conduit for directing the flow of material between the two passageways.

3,626,987

**COAXIAL PIPE SYSTEM WITH THERMAL INSULATION**

Herbert Bittner, am Heidekamp, Germany, assignor to Kabel-

und Metallwerke Aktiengesellschaft, Hannover, Postfach,

Germany

Filed Sept. 29, 1969, Ser. No. 861,983

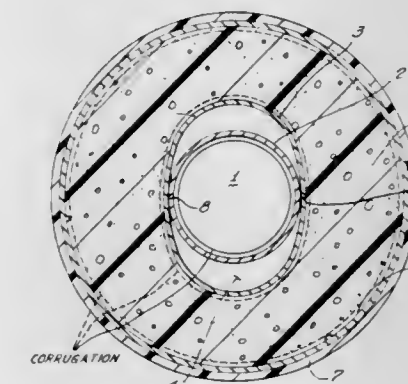
Claims priority, application Germany, Oct. 3, 1969, P 18 00

863.4

Int. Cl. F16l 9/18, 11/12

U.S. Cl. 138—114

9 Claims



A pipe system is disclosed in which there is an inner, an outer, and an intermediate pipe, the latter having elliptical cross section for conduction of heating or cooling medium around the inner pipe.

3,626,988

**UNBONDED CLOTH REINFORCED BELLOWS AND****METHOD OF MANUFACTURE**

Edward J. Chu, Parsippany, N.J., assignor to Resistoflex Corporation, Roseland, N.J.

Filed Nov. 12, 1969, Ser. No. 875,789

Int. Cl. F16l 11/00

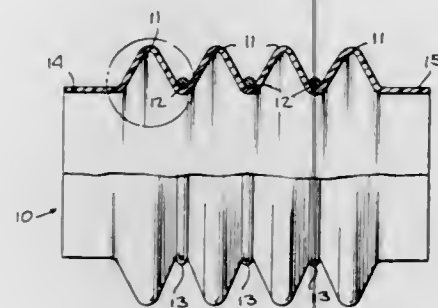
U.S. Cl. 138—121

10 Claims

The wall of a chemically resistant bellows is formed from a loosely constructed cloth tube (preferably metallic) sur-



rounding but not bonded to at least an inner tube of a substantially inelastic plastic material such as polytetrafluoroethylene resin. A second resin tube may be disposed over the cloth tube. Substantially nonexpandable rings are disposed externally within the valleys of the corrugations.



gations. The cloth may have a flat knit construction. The bellows can be formed by assembling the several tubes, adding the nonexpandable rings, and compressing the assembly axially in a suitable mold while the interior is filled with a medium under pressure.

3,626,989

**WEAVING METHOD AND APPARATUS**

Peter Erich Julius Held, London, England, assignor to Al-  
berton Limited, London, England

Filed Dec. 1, 1969, Ser. No. 881,133

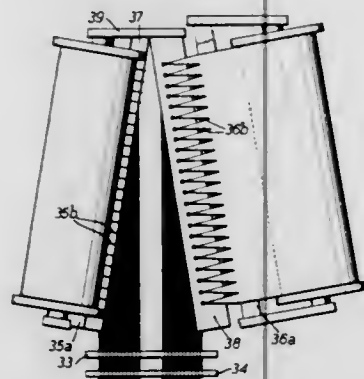
Claims priority, application Great Britain, Dec. 4, 1968,

57,561/68

Int. Cl. D03d 41/00, 49/00

U.S. Cl. 139—11

12 Claims



Webs including warp elements formed by multiply splitting an elongate sheet or plastics material are woven by disposing a warp beam carrying the unsplit sheet with its axis at an acute angle to the direction of the warp elements in the woven web so that the packing density of the elements in the web exceeds that of the elements as split from the sheet.

3,626,990

**METHOD AND APPARATUS FOR INTERMITTENTLY FEEDING MEASURED LENGTHS OF WEFT THREAD FROM A SUPPLY BOBBIN TO AN INJECTOR FOR INJECTION INTO A STORAGE-TYPE SHUTTLE**

Adolf Linka, Kaiserstrasse 91, 7417 Pfullingen, Germany

Filed Sept. 16, 1969, Ser. No. 858,455

Claims priority, application Germany, Sept. 20, 1968, P 17

85 416.9

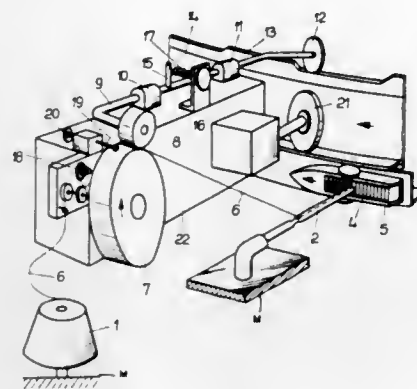
Int. Cl. D03d 47/34

U.S. Cl. 139—13

10 Claims

The thread is guided over a rotating drum, preferably of conical surface, turning in synchronism with the movement of the shuttle; a presser roller is resiliently urged to press the thread against the drum surface, the presser roller being lifted off engagement with the drum surface (and thus per-

mitting the thread to remain stationary) by a cam follower engaging a cam track on the loom, so that synchronous injection of picks into the storage magazine of a shuttle, and shuttle movement is ensured.



3,626,991

**SELVAGE-FORMING MOTION OPERABLE IN CONJUNCTION WITH A FILLING-CUTTING MECHANISM OF A SHUTTLELESS LOOM**

Franz Backenecker, Epe/Westphalia, Germany, assignor to  
George Fischer Ltd. Brugg, Brugg, Switzerland

Filed Jan. 20, 1970, Ser. No. 4,362

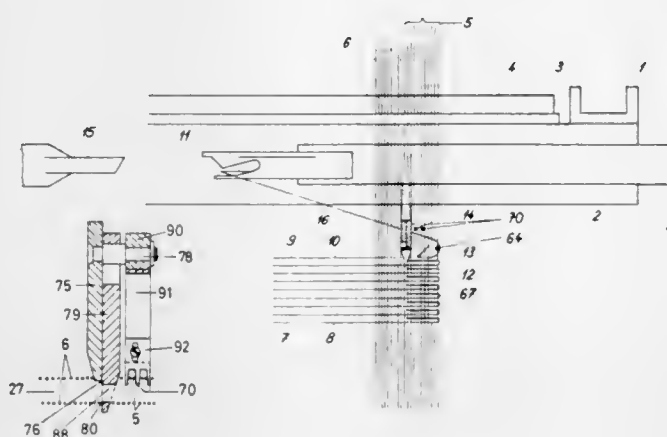
Claims priority, application Switzerland, Jan. 23, 1969,

967/69

Int. Cl. D03d 47/40

U.S. Cl. 139—122

9 Claims



This invention relates to a selvage-forming motion operable in conjunction with a filling-cutting mechanism of a shuttleless loom in which filling yarn supply packages and filling insertion members are situated outside of the warp shed. The cutting mechanism and its control devices have a cam shaft with a plurality of cams rotating synchronously with the motion of the filling insertion members for the actuation of that filling cutting mechanism. The loom also has a filling depressor and a filling clamp as shown in U.S. Pat. No. 2,604,123. Such a cutter and its control devices are shown in copending U.S. Pat. application Ser. No. 766,446, filed Oct. 10, 1968. In that application, it was one purpose of the invention to weave a fabric with nonfast selvages. According to the present invention, it is desired to weave a fabric with a fast edge or edges and the cutter has been modified to function within the fabric a short distance from the edge and to cut the filling a few millimeters from that edge thereby to leave the short cut end of filling in the shed as a tucked end. These ends do in many instances snap out of the shed before it can close on them, or at least, become displaced to leave a loop at the cloth edge. To obviate this, the cutter is provided with added functional parts which hold the tucked ends in place until they are locked by the shed.

3,626,992

**PROTECTION AND CONTROL MEANS FOR FLY-SHUTTLE LOOMS**

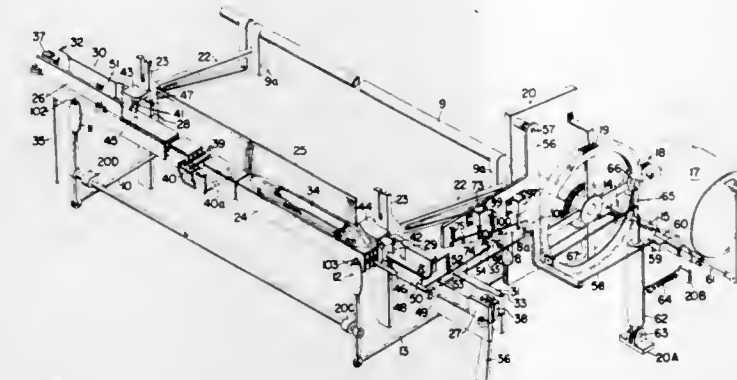
Edgar P. Turner, Watchung, N.J., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1965, Ser. No. 508,745

Int. Cl. D03d 51/02, 51/44, 51/36

U.S. Cl. 139—336

27 Claims



The invention disclosed herein relates in general to improvements in automatic and manual stopping of fly shuttle looms. The invention discloses a mechanical means for detecting late shuttle arrival at the throat of the shuttle-receiving box and brake means with associated linkage for quickly stopping the loom shocklessly. This system is operated by the linkage automatically tripping a quick-disconnect element unless a sensor in the path of the fly shuttle is displaced at the proper time. It also discloses linkage associated with a filler break detector of the same type as, and in combination with, the late shuttle detection system, to quickly and shocklessly stop the loom upon thread breakage. Also disclosed is a hydraulic and spring-operated energy absorption apparatus to aid the loom's normal braking system when a stop is desired. By means of a novel linkage, this apparatus is caused to engage the loom drive wheel upon either a manual or automatic stop signal being given. Additionally, the disclosure teaches a system for ensuring that on manual stops the loom will always stop at the same position in its cycle. This system is disclosed as either using the linkage of the first two stopping means or a similar system. There is also disclosed an electrical system for providing controlled loom stoppage in the event of an electrical power failure.

3,626,993

**LOOM STOPPING AND PROTECTOR MECHANISM**

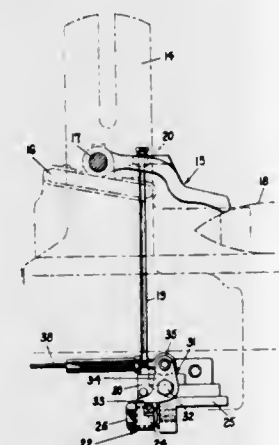
Rocco H. Mucciarone, Franklin, and Joseph M. Budzyna,  
East Douglas, both of Mass., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1965, Ser. No. 512,287

Int. Cl. D03d 51/02, 51/44

U.S. Cl. 139—336

5 Claims



A loom stopping and protector mechanism for fly-shuttle looms having a unitary clutch-brake motor and shuttle

sensing members pivotably mounted within each of the shuttle boxes and effective through forward motion of the lay to release the loom's operating lever to permit the latter to activate the brake of said motor upon indication of an improperly positioned shuttle in either of said shuttle boxes.

3,626,994

**METHOD OF FORMING CLIPS**

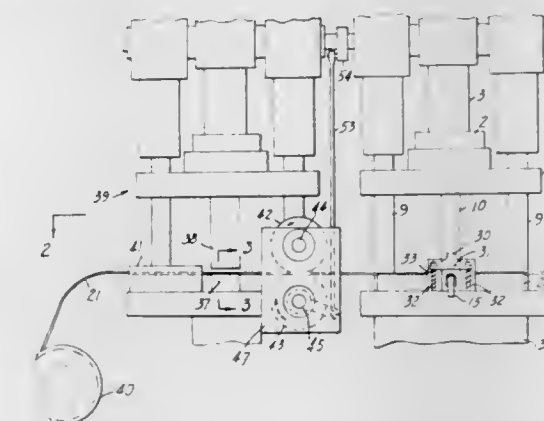
Karl A. Klentz, Oakland, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed May 18, 1970, Ser. No. 37,990

Int. Cl. B21f 45/22

U.S. Cl. 140—82

2 Claims



A wire clip of noncircular cross section is formed from a length of wire by swaging the wire to the desired noncircular cross-sectional shape. The wire is fed intermittently toward a wire-cutting and clip-forming device and the swaging step is carried out while the wire is stationary and the clip is being formed.

3,626,995

**CRIMPING TOOL**

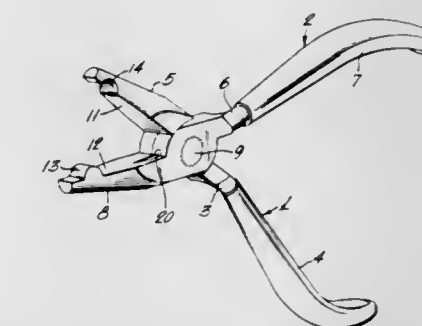
Bernard J. Keenan, Jr., West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Nov. 14, 1969, Ser. No. 876,870

Int. Cl. B21f 1/00

U.S. Cl. 140—106

6 Claims



A plierlike tool for crimping the pigtail leads of electronic components has a protuberance in the active face of one plier jaw and a matching groove in the active face of the other plier jaw. A hole is drilled through the pivotal connection between the two jaws, to accommodate a long pigtail lead being crimped.

3,626,996

**CONTAINER-FILLING METHOD AND APPARATUS**

Joseph P. Bingham, and Terry E. Nish, both of Salt Lake City, Utah, assignors to Servi-Tech Inc., Salt Lake City, Utah

Filed Apr. 8, 1970, Ser. No. 26,476

Int. Cl. B65b 1/04, 3/04

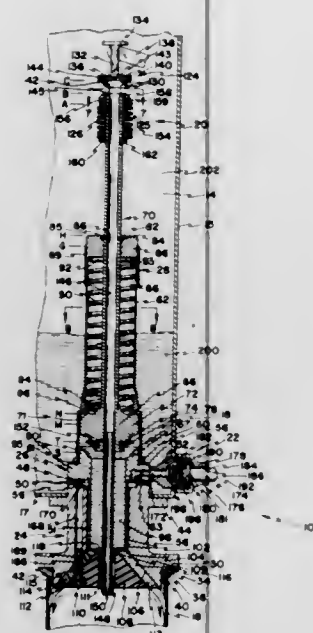
U.S. Cl. 141—5

10 Claims

Method and apparatus for filling a container or can with a carbonated liquid or beverage wherein: the can is indexed



into position beneath the filling apparatus; carbon dioxide gas is introduced into the can; carbonated liquid beverage flows into and fills the can; and the foam at the top of the liquid in the can, developed during filling, is evacuated through snift passageways which are isolated from the liquid-



filling passageway. The lower portion of the liquid-filling passageway adjacent the spreader is small in volume and has a screen disposed immediately above the spreader to confine the foam for ease of removal whereby the sequential filling and capping of cans is significantly accelerated.

3,626,997

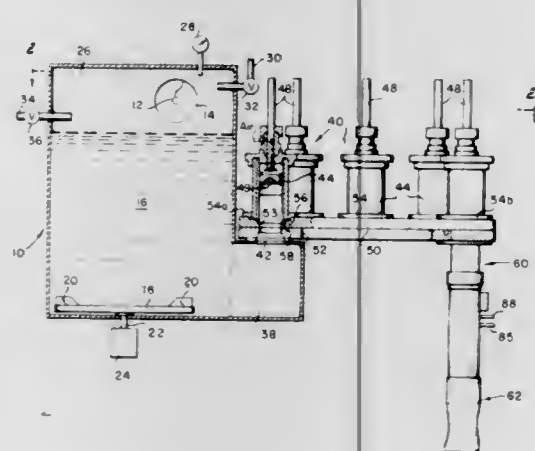
#### METHOD OF AN APPARATUS FOR PACKAGING A FOOD PRODUCT

William C. Whitaker, Richmond, and George D. Bryan, Jr., Mechanicsville, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Apr. 27, 1970, Ser. No. 32,194  
Int. Cl. B65b 1/04, 3/04

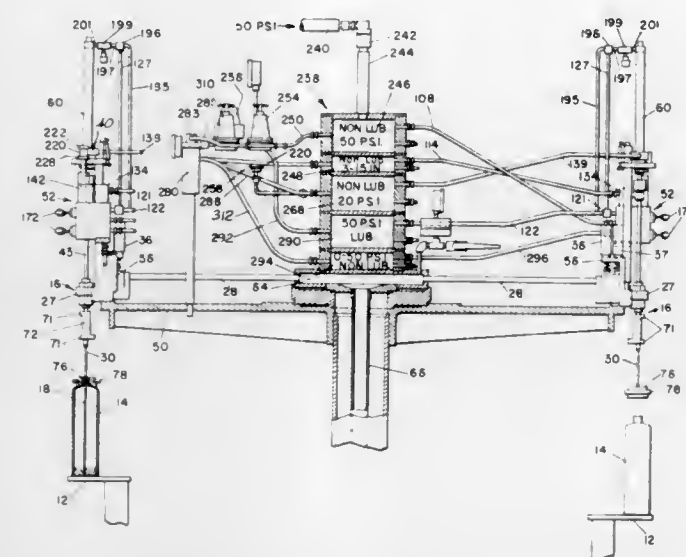
U.S. Cl. 141-9

14 Claims



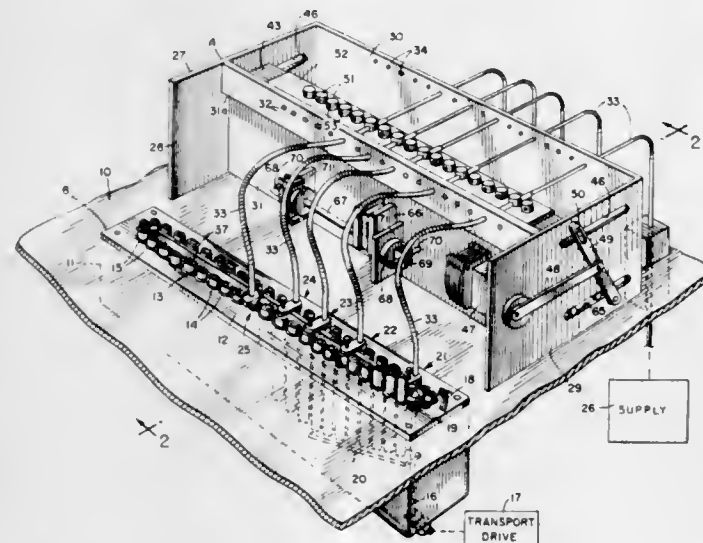
A method of and apparatus for packaging a food product wherein a slurry of the food product and a brine solution is used to facilitate the advance of the food product. The slurry is collected in a vessel from which a portion of the food product is removed under pressure and delivered to a bag or pouch-forming apparatus. The brine solution is removed from the food product while it is being delivered to the pouch-forming apparatus. The latter also includes means for preventing the food product from being entrapped in the seal area of the pouch which would prevent a satisfactory seal from being formed.

3,626,998  
**CONTAINER-FILLING MACHINE**  
William H. Trusselle, Braintree, Mass., assignor to Pneumatic Scale Corporation, Braintree, Mass.  
Filed Apr. 18, 1969, Ser. No. 817,501  
Int. Cl. B65b 3/26  
U.S. Cl. 141-198 14 Claims



A container-filling machine of the gravity or pressure type having control means for automatically starting and stopping the filling operation and which is particularly adapted for filling bottles with liquids subject to foaming. The filling operation consists in first depositing a small amount of liquid into the container at slow speed so as to inhibit foaming; simultaneously lowering the filling nozzle into the container until the nozzle outlet is covered by the initially deposited liquid; and then introducing the liquid at a more rapid rate. Releasing the liquid into the container while the outlet from the nozzle is disposed below the surface of the liquid reduces agitation and turbulence to a minimum and thus prevents the formation of foam. This expedient may also be employed for liquids which do not have a tendency to foam, and in either event affords a faster filling operation than can be obtained by conventional filling procedures.

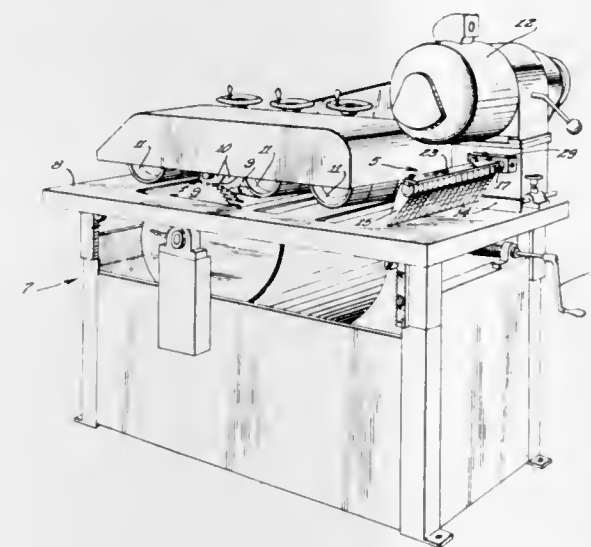
3,626,999  
**FLUID DELIVERY APPARATUS**  
Alan R. Jones, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.  
Filed Mar. 12, 1969, Ser. No. 806,493  
Int. Cl. B65b 3/32  
U.S. Cl. 141-243 4 Claims



A fluid handling device especially suited for use in automatic chemical analysis which delivers measured amounts of

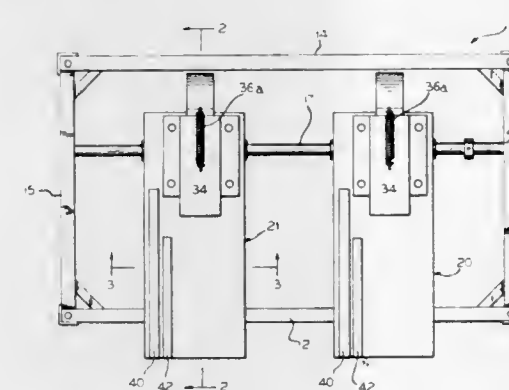
selected fluids to intermittently advancing sample tubes at selected stopping stations and then, after selected intervals, withdraws predetermined amounts of the mixed fluids from said tubes for photometric analysis.

3,627,000  
**COMBINATION FLYBACK CURTAIN AND SNUBBER FOR RIPSAP MACHINES AND THE LIKE**  
Lloyd George Alden, deceased, late of Plainfield, Ill. (by Verna R. Alden, executrix, 804 Barlett, Plainfield, Ill. 60544)  
Filed Nov. 5, 1969, Ser. No. 874,104  
Int. Cl. B27g 19/02  
U.S. Cl. 143-159 C 11 Claims



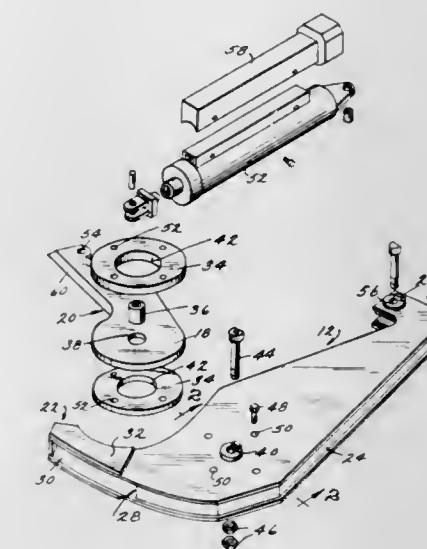
Downwardly biased relatively sharp-tipped fingers are pivotally mounted in a curtain row across the infeed end portion of a powered rip saw machine table, with upper end shoulders on the fingers normally separably engaging a stop bar but permitting forward passage swinging of those fingers of which the tips are contacted by a piece of lumber during infeed.

3,627,001  
**ROUTING DEVICE WITH STATIONARY ROUTING TOOL**  
Kenneth N. White, Orland Park, Ill., assignor to Harold E. Meyer, c/o White-Meyer Wood Products, Inc., Orland Park, Ill., a part interest  
Filed Dec. 31, 1969, Ser. No. 889,631  
Int. Cl. B27f 5/02  
U.S. Cl. 144-27 5 Claims



Routing devices that can conveniently and quickly cause door panels, or the like, to be slotted on a mass production basis for purposes of associating hinges therewith that require slots formed in the panels. The routing tools thereof are held stationary and the panels are fed toward the routing tools.

3,627,002  
**TIMBER SHEAR CONSTRUCTIONS**  
Oscar T. Fulghum, Jr., Wadley, Ga., assignor to Fulghum Enterprises, Inc., Wadley, Ga.  
Filed Aug. 3, 1970, Ser. No. 64,149  
Int. Cl. A01g 23/02  
U.S. Cl. 144-34 E 21 Claims



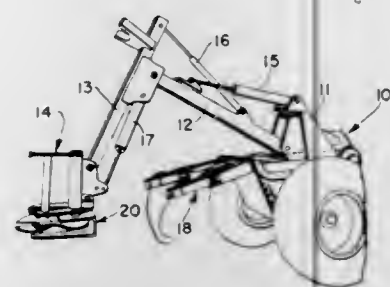
An improved shear construction is provided for cutting and felling trees and for maintaining a shear in tight engagement with a tree while a cutting operation is taking place. The shear is of a type having a pivotally mounted blade. An improved mounting arrangement for the blade provides a pair of bearing plate elements for supporting and mounting a cutting blade for pivotal movement about an offset axis relative to a jaw carried by the main body of the shear. The main body of the shear includes a jaw towards which a cutting edge of the cutting blade may advance for effecting a cutting action. The jaw may be provided with an anvil, or alternatively, may be constructed to permit an unobstructed passage of chips, bark and other debris through the jaw as a cutting action is taking place. The cutting blade is operated by a hydraulic cylinder, and the entire shear may be mounted on a vehicle. The main body of the shear may be constructed from a pair of spaced plate members which receive and support a base end of the cutting blade means, and a tree pushing and handling element may be provided adjacent to the jaw of the main body for lifting the butt end of a log after it is cut and for pushing the log by forward movement of a vehicle which carries the shear. The cutting blade means may be provided with a cutting edge which is either plain or serrated. Cutting teeth of the serrated embodiment of a cutting blade means are formed with leading edges which function as cutting edges and with trailing edges which do not cut so that a tree is retained within the confines of the shear while a cutting operation is taking place.

3,627,003  
**TREE SHEAR**  
Kenneth Quentin Kessler, Bettendorf, Iowa, and Earl Crittton Davis, Jr., Moline, Ill., assignors to Deere & Company, Moline, Ill.  
Filed June 20, 1968, Ser. No. 738,590  
Int. Cl. A01g 23/02  
U.S. Cl. 144-34 E 6 Claims

A tree-shearing device that includes a horizontal frame, a pair of levers supported to swing horizontally on the frame toward and away from one another, a pair of blades sup-



ported to swing horizontally on the respective levers, and cam means on the main frame that engage the blades that



cause the blades to shift in a desired pattern in response to the levers swinging horizontally.

3,627,004

## ROTATABLE TREE SHEAR DEVICE

Kenneth J. Ramey, P.O. Box 146, Two Harbors, Minn.

Filed Dec. 17, 1969, Ser. No. 885,742

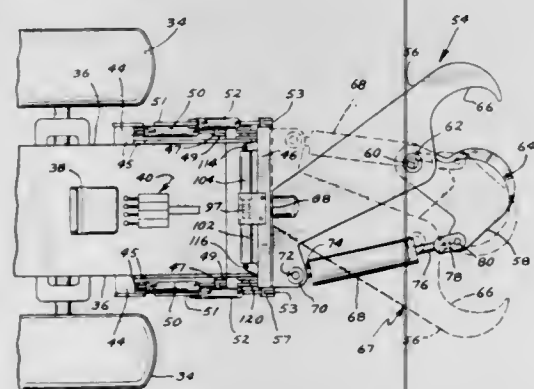
Int. Cl. A01g 23/02

U.S. Cl. 144-34 E

11 Claims

U.S. Cl. 144-327

25 Claims



A tree shear device adapted to attach to the frame of a vehicle is disclosed. The shear includes a shear frame, an anvil member, a shear blade pivotally mounted on and carried by the anvil member to form a tree-cutting portion in association with the anvil member, a controlled rotatable drive mounted on the shear frame and attached to the tree-cutting portion for supporting it and for rotating it to a desired angle, and a device attached between the shear blade and the anvil for causing the blade to pivot relative to the anvil to cut a tree positioned therebetween. Since the tree-cutting portion can be rotated and since the edge of the blade is specifically designed to cause the tree being cut to always fall to one side, as respects the blade and anvil, the tree being cut may be caused to fall to one side or the other by rotating the tree-cutting portion through an angle of 180°.

3,627,005

## MACHINE FOR CUTTING PEELER CORES OR LOGS INTO STUDS AND CHIPS

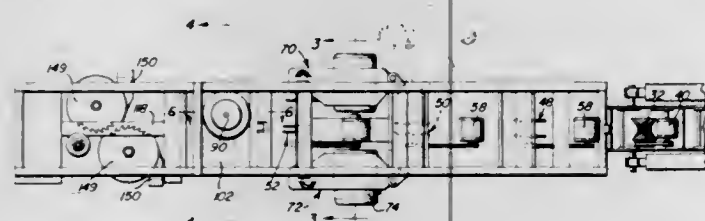
David L. Morton, 4503 Federal Way, Boise, Idaho, and Adrian L. Landers, 570 Courthouse St., Many, La.

Filed Apr. 15, 1969, Ser. No. 816,355

Int. Cl. B27c 9/04; B27 11/02

U.S. Cl. 144-39

9 Claims



A core-handling apparatus for supporting a core or log for horizontal longitudinal advancement along a path past vari-

ous tool heads operably to cut the core or log into a plurality of studs and chips. The core and log-handling apparatus includes structure operable to move cores or logs along a predetermined path, independent of any displacement of the core or log other than longitudinally of the path, and the tool heads are disposed along the intended path of movement of the associated cores and logs and operable to sequentially chip material from the opposite sides of the cores or logs to form parallel opposite side planar faces on the cores or logs, chip material from the upper and lower portions of the cores or logs to form planar parallel upper and lower surfaces on the cores or logs, and form at least one horizontal kerf through the cores or logs after the latter have been shaped.

3,627,006

## METHOD AND MEANS FOR PRODUCING WOOD VENEER

Melvin Swillinger, and Charles F. Hobbs, both of Cincinnati, Ohio, assignors to Polymer Chemical Company, Cincinnati, Ohio

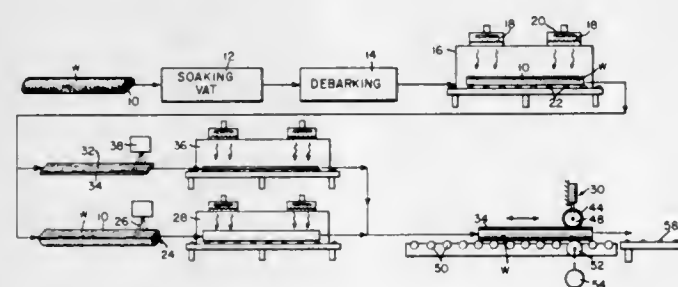
Filed Mar. 2, 1970, Ser. No. 15,713

Int. Cl. B27 5/06

11 Claims

U.S. Cl. 144-327

25 Claims



The veneer-cutting procedure involves the new step of supporting the workpiece for slicing for forcing a strong backing board to transfer inherent stress to an inherent warp of the workpiece, so that the backing board takes the warp out of the workpiece as the thickness of the workpiece approaches zero value during slicing.

3,627,007

AX

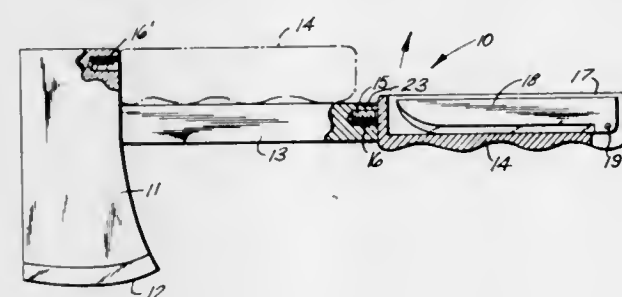
Alfred H. Rieffer, 1236 W. 13th #20, Merced, Calif.

Filed Nov. 22, 1968, Ser. No. 778,128

Int. Cl. B25g 1/06; B26b 23/00

U.S. Cl. 145-2 R

3 Claims



A handtool in the form of an ax having a removable handle that may be screwed or otherwise fastened to the axhead which will render the device to be adapted for compactness. This tool carries various tool elements within the handle in order that it may be used for a variety of purposes.

3,627,008

## SAFETY BLENDER JAR

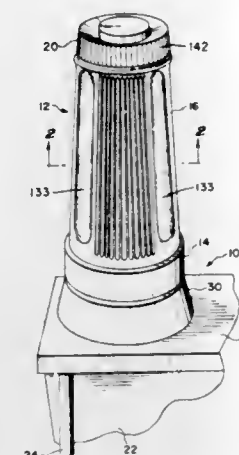
Maurice P. Samuelian, West Hartford, Conn., assignor to Dynamics Corporation of America

Filed Nov. 12, 1969, Ser. No. 875,998

Int. Cl. B02c 18/12; A47j 43/042

U.S. Cl. 146-68 A

13 Claims



A liquidizer container having an upwardly tapering shape that is narrow at the top to maximize the assistance of gravity in recirculating the centrifugally swirled material while minimizing deflector sizes on the container wall for optimum capacity of the container. A horizontal flange around the access opening at the top provides an external pouring lip and an internal deflector defining an access opening smaller than the average hand size of users. The flange is shaped to obstruct insertion of a hand but is tapered radially inside the container to facilitate withdrawal of a hand that may have been inserted. The bottom opening receives a cutter-carrying closure that is removable for the full access cleaning of cutters and container.

3,627,009

## CHOPPING MACHINES

Ronald Hugh Alexander, Ayr, Scotland, assignor to National Research Development Corporation, London, England

Filed Apr. 21, 1969, Ser. No. 817,933

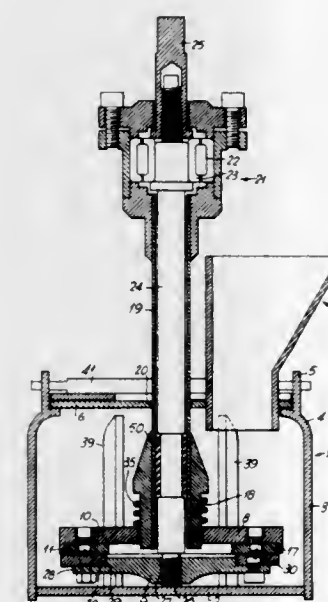
Claims priority, application Great Britain, Apr. 24, 1968,

19,432/68

Int. Cl. B02c 18/12

U.S. Cl. 146-68

7 Claims



A chopping machine comprising a stationary member and a rotary member each of which carries a plurality of cutting edges each of which has an edge of a copying lathe tool of triangular-section prism shape. The rotary and stationary

3,627,010

## FLAIL ASSEMBLY

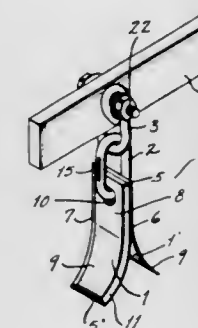
Robert C. Rueff, St. Louis County, Mo., assignor to Nixdorff-Krein Mfg. Co., St. Louis, Mo.

Filed Aug. 4, 1969, Ser. No. 847,200

Int. Cl. A01d 55/22

U.S. Cl. 146-117 R

8 Claims



A flail assembly for use with shredding machines, comprising a clevis member engaging the mounting bar of the machine, an endless chain link suspended from said clevis member, and at least one knife blade supported dependently from said chain link. Said clevis incorporates legs having hook portions at their free ends; with the transverse distance between said hook portions being substantially equivalent to the cross section of the stock forming said link, which latter is provided with a cross-sectionally reduced portion to allow for facile assembly and disassembly of the clevis with respect to the said link.

3,627,011

## METHOD AND APPARATUS FOR PEELING BANANAS

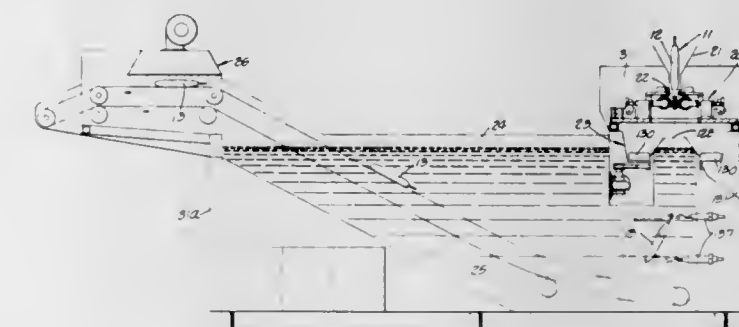
John E. Pond, Granada Hills, Calif., assignor to Universal City Studios, Inc., Universal City, Calif.

Filed June 29, 1970, Ser. No. 50,739

Int. Cl. A23n 7/00

U.S. Cl. 146-223

43 Claims



An apparatus for removing the peel from the fruit of a banana includes means to guide and position the banana after it is fed into the apparatus and peeling means which cause a plurality of grip members to engage and grip longitudinal segments of the peel and, as the fruit of the banana moves past the peeling means, the grip members pull each segment from the fruit and continue to pull until the peel is completely removed. The removed peel segments are then released from the grip members and the whole fruit is passed on for further processing.



3,627,012

## PNEUMATIC TIRES

Henry R. Fletcher, deceased, late of Birmingham, England (by Agnes Marion Fletcher, executrix), assignor to Dunlop Holdings Limited

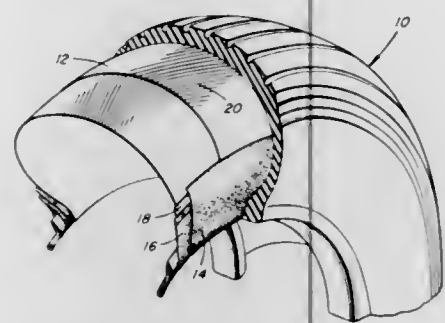
Filed July 16, 1969, Ser. No. 20,266

Claims priority, application Great Britain, July 16, 1968, 33,745/68

Int. Cl. B60c 9/16

U.S. Cl. 152—357

11 Claims



A pneumatic tire, especially an aircraft tire, having at least one carcass ply of steel cord fabric comprising individual wires of diameter of substantially 0.003 of an inch or less.

3,627,013

## PNEUMATIC TIRE

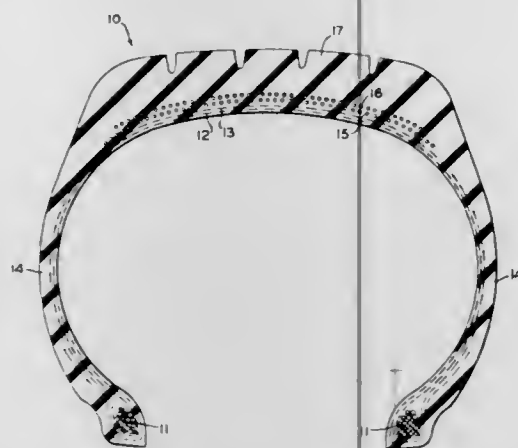
David William Chase, Stow, and Robert Charles Purcell, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 8, 1969, Ser. No. 848,613

Int. Cl. B60c 9/18

U.S. Cl. 152—361

4 Claims



This disclosure is related to a novel tire construction comprising a conventional body construction of layers of conventional body plies with the cords of each ply at conventional angles and a belt of plies with the cords in the belt at an angle different from the cords in the body plies and the cords comprised of regular modulus, low twist rayon cords. The twist of the rayon cord is between 40 and 75 percent of the standard twist and preferably 50 percent of the standard twist.

3,627,014

## HEAT-EXCHANGER SYSTEM

Hideo Nishikawa, Akashi; Akihiro Kawaguchi, Akashi, and Koichi Washimi, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kaishiki Kaisha, Tokyo-to and Mitsubishi Jyukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 17, 1970, Ser. No. 12,072

Claims priority, application Japan, Feb. 20, 1969, 44/12444

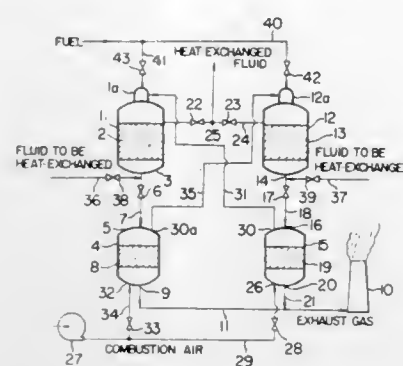
Int. Cl. F23f 15/02

U.S. Cl. 165—4

4 Claims

Heat exchanger system comprises a plurality of heat exchangers, each being provided with heating means, and

preheaters mutually paired and connected by connecting tubes having control valves. The preheaters are heated by exhaust gas generated in the heating means and sent from the



heat exchangers, and the heated air in each preheater is fed back to the heating means by interchanging operations of the control valves from heat accumulation to heat release or vice versa in the heat exchangers.

3,627,015

## COCOON CASTING OF DIRECTIONALLY SOLIDIFIED ARTICLES

Anthony F. Giamei, Middletown; Merton F. Hornbecker, Woodbury, and Bruce E. Terkelsen, Cheshire, all of Conn., assignors to Hughes Aircraft Corporation, East Hartford, Conn.

Filed June 1, 1970, Ser. No. 42,423

Int. Cl. B22d 25/06

U.S. Cl. 164—60

9 Claims



Unidirectionally solidified articles either columnar grained or single crystal are investment cast by enclosing the mold for the articles in a surrounding mold arranged to make a control casting of two separable parts located on opposite sides of the article cast in the article mold. This permits more precise control of the thermal gradient in the article mold during solidification of the cast material and provides removal of the cast article from the surrounding material.

3,627,016

## METHOD FOR CONDUCTING A DUMMY BAR INTO A MOLD

Max Burkhardt, Zurich, Switzerland, assignor to Concast Aktiengesellschaft, Zurich, Switzerland

Filed Sept. 26, 1969, Ser. No. 861,295

Claims priority, application Switzerland, Sept. 30, 1968, 14606/68

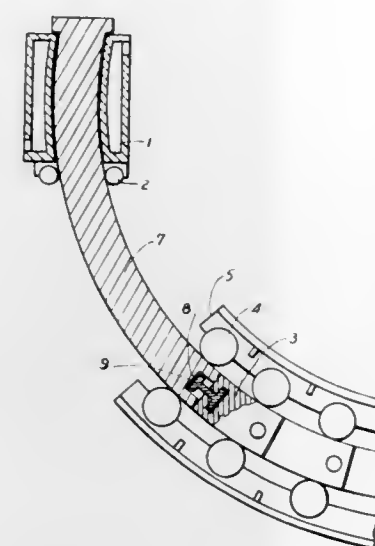
Int. Cl. B22d 11/08

U.S. Cl. 164—82

1 Claim

A dummy bar is conducted up into an open-ended continuous casting mold by a guide element which is lowered down

through the mold, connected to a dummy bar below the mold and moved up until the dummy bar is received in the mold.



The guide element is then disconnected from the dummy bar and lifted up out of the mold.

3,627,017

## DUMMY BAR HEAD FOR CONTINUOUS CASTING AND METHOD OF USING SAME

Bernhard Knell; Armin Thalmann, both of Zurich, Switzerland, and Klaus Brock, Dusseldorf, Germany, assignors to Concast Aktiengesellschaft, Zurich, Switzerland and Schloemann Aktiengesellschaft, Dusseldorf, Germany

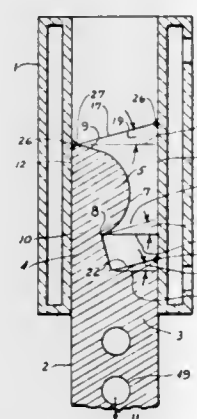
Filed Apr. 29, 1969, Ser. No. 820,048

Claims priority, application Switzerland, Germany, Apr. 29, 1968, May 21, 1968, 6359/68; P 17 58 379.8

Int. Cl. B22d 11/08

U.S. Cl. 164—82

15 Claims



In continuously casting steel wherein the bottom end of an open-ended chill mold is closed for the start of casting by the head of a dummy bar, the upper end of the dummy bar head which is received within the mold is undercut on one side to form with an adjacent wall of the mold a cavity into which molten steel poured into the mold is received and solidifies. The undercut side of the head has a projection to extend into the cavity and toward said first wall of the mold. The face of the upper end of the head in back of the projection has at least a part of its surface bearing against the mold wall which is opposite said first mold wall, when the head is in the mold. The projection and the cavity are shaped to enable the upper end of the head to be separated from the steel that has solidified in contact therewith in the mold, after the head and said solidified steel are withdrawn from the mold, by transverse circular movement of the lower end of the head away from the portion of the steel that solidified in the cavity.

3,627,018

## METHOD FOR PRODUCING CASTINGS IN A PERMANENT MOLD

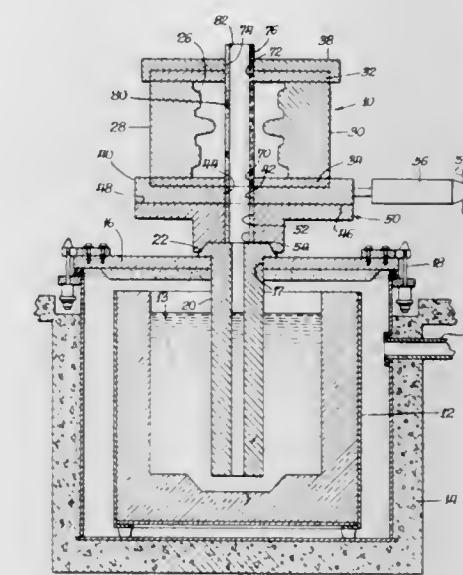
Richard C. Costello, West Chicago; Albert J. Jean, Forest Park, and William J. Kucera, Elmhurst, all of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Sept. 23, 1969, Ser. No. 860,294

Int. Cl. B22d 15/00

U.S. Cl. 164—113

2 Claims



Hollow castings are produced in a permanent mold having a hollow refractory core disposed in the interior of the mold. The core has a number of small sprues through which the casting cavity of the mold is filled, and excess metal is retained within the core to feed shrinkage within the interior of the casting. After the surface of the casting has chilled, the mold is separated from the casting to prevent binding, but the core is retained therein until the casting has completely solidified. The core and solidified metal therein are then removed.

3,627,019

## METHOD OF CASTING A CONTINUOUS SERIES OF SLUGS

Robert Edward Hitchcock, Hartfordshire, and Alan Younger, Buckinghamshire, both of England, assignors to R. T. Z. Metals Limited, London, England

Filed Oct. 3, 1968, Ser. No. 764,905

Claims priority, application Great Britain, Oct. 6, 1967,

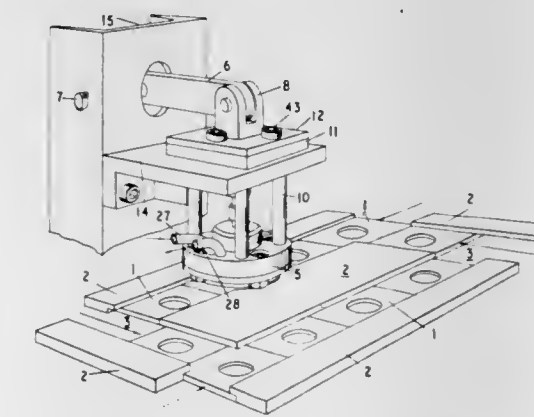
Oct. 6, 1967, Oct. 6, 1967, Oct. 6, 1967, 45,907/67;

45,908/67; 45,909/67; 45,910/67

Int. Cl. B22d 33/04

U.S. Cl. 164—130

1 Claim



Making castings, such as slugs, in low and medium melting point metals and alloys, by vacuum casting, wherein the metal is introduced through an entry port in a bottom plate into a mold cavity defined by a mold plate, the bottom plate and a top plate, the top plate being so constructed as to allow



evacuation of the mold cavity, the metal being caused to solidify progressively towards the entry port in the bottom plate, characterized in that after solidification the mold plate is moved transversely to shear the casting from any solidified metal in the entry port without any movement of the bottom plate.

3,627,020

## MOLD-BREAKING DEVICE

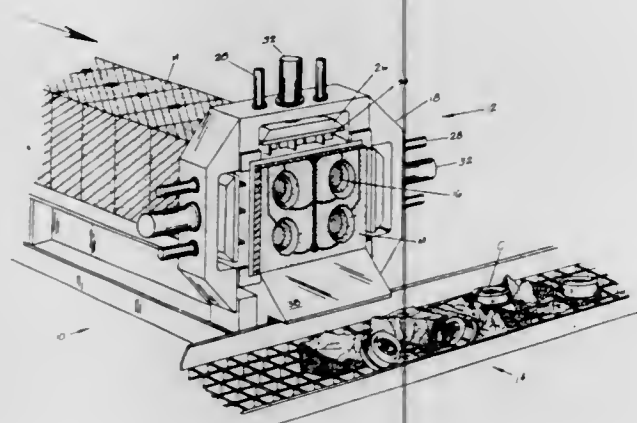
Russell W. Taccone, Erie, Pa., assignor to Bangor Punta Operations Inc., Greenwich, Conn.

Filed Sept. 8, 1970, Ser. No. 70,000

Int. Cl. B22d 29/00

U.S. Cl. 164-131

11 Claims



In a molding operation, sand molds containing castings are conveyed by the cooling conveyor to a mold-breaking station for breaking the molds and releasing the castings. The rectangularly shaped molds and the castings therein are conveyed in a vertical position into an opening with a frame. Fluid actuated cylinders mounting mold-breaking tools are carried by the frame on each of the four sides of the mold. The tools are cruciform in cross section. Upon actuation of the cylinders, the tools simultaneously break into and fracture the sand mold on each side thereof. Further advancement of the conveyor carrying the molds and castings, pushes the fractured mold and castings from the frame onto a shakeout conveyor to complete the breakup of the sand mold whereby the castings can be removed.

3,627,021

## CONTINUOUS CASTING CONTROL SYSTEM USING VACUUM VESSEL PRESSURIZATION

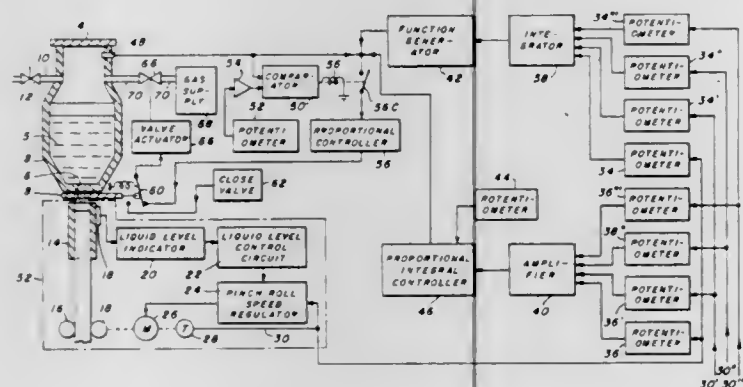
Ronald G. Schultz, Bay Village, Ohio, and Stevan N. Vojnovic, Monroeville Borough, Pa., assignors to United States Steel Corporation

Filed July 25, 1969, Ser. No. 844,949

Int. Cl. B22d 11/10

U.S. Cl. 164-155

9 Claims



A repressurization control system provides a uniform flow from a batch vacuum degassing vessel for continuous casting. A function generator provides a vessel pressure signal which

maintains a uniform effective metal head during the cast and is controlled by the amount of metal cast. System sluggishness is overcome by feedback controls correcting the signal for actual vessel pressure and for departure from desired casting speed.

3,627,022

## FOUNDRY MOLDING MACHINE

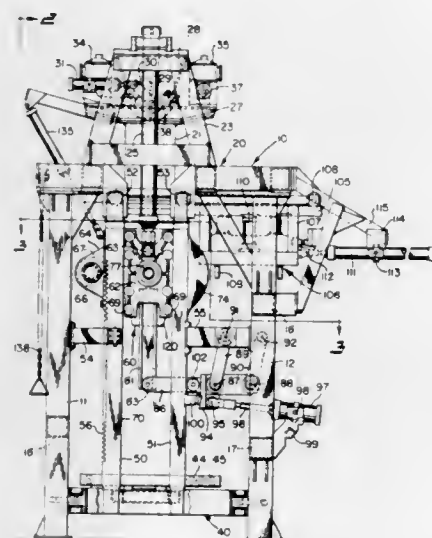
Robert G. Shields, Chagrin Falls, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Feb. 26, 1969, Ser. No. 802,510

Int. Cl. B22c 17/08

U.S. Cl. 164-224

11 Claims



A foundry molding machine for forming foundry sand articles such as molds or cores having a mold box mounted on a trunnion cradle for vertical movement, such cradle including an extending guide, and a retractable pivot roller confined in the guide and normally aligned with the cradle trunnion pivot in a vertical direction, such pivot roller being cammed out of such vertical alignment as the cradle moves therepast to invert the box for drawing and stripping of the formed article onto a horizontal conveyor, such article being spaced a predetermined distance from the conveyor before the box is stripped therefrom.

3,627,023

## APPARATUS FOR CASTING AND SHEARING SOLIDIFIED SPRUES

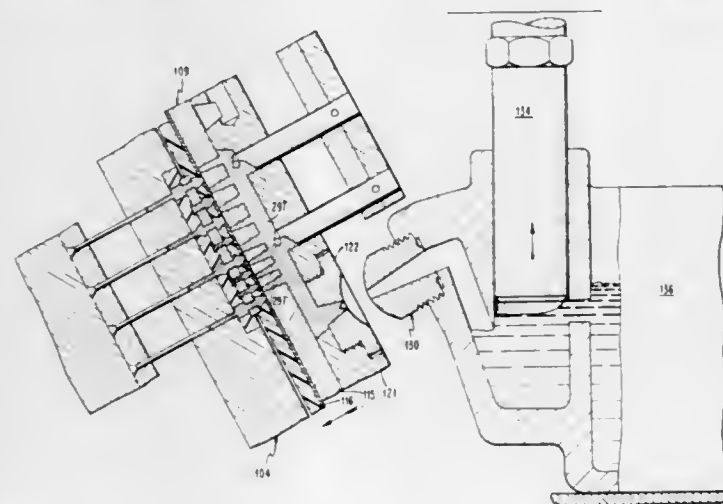
Kendall Clark, Poughkeepsie, and William A. Klein, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 25, 1969, Ser. No. 860,936

Int. Cl. B22d 31/00

U.S. Cl. 164-264

6 Claims



Metal is cast onto a body within a die cavity having preformed areas of relatively small size into which metal may

be deposited. The metal, which is exterior of the die cavity after the metal within the cavity has solidified, is removed by shearing means.

3,627,024

## APPARATUS FOR HANDLING AND COOLING FOUNDRY SAND

Joseph S. Schumacher, Cincinnati, Ohio, assignor to International Minerals and Chemical Corporation, Skokie, Ill.

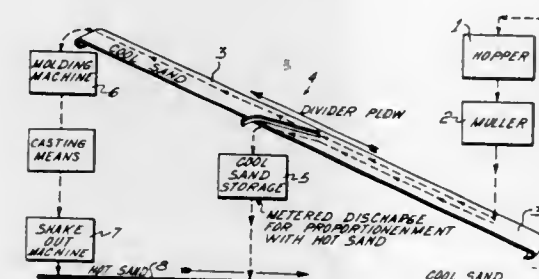
Continuation-in-part of application Ser. No. 714,339, Mar. 19, 1968, now Patent No. 3,461,941, dated Aug. 19, 1969.

This application July 7, 1969, Ser. No. 839,259

Int. Cl. B22c 5/16; B22d 47/02

U.S. Cl. 164-270

8 Claims



Apparatus for handling and cooling foundry sand. No apparatus that uses air or water to cool the sand is used. Instead, conventional equipment including a muller, conveyors, storage tanks, a molding machine, a shakeout machine, a new sand dividing device, and a new sand-metering device, are employed.

3,627,025

## TRAVELLING-BELT-TYPE APPARATUS FOR THE CONTINUOUS CASTING OF METAL STRIP

Kristof Tromel, and Georg Bollig, both of Buderich, Germany, assignors to Schloemann Aktiengesellschaft, Steinstrasse, Duesseldorf, Germany

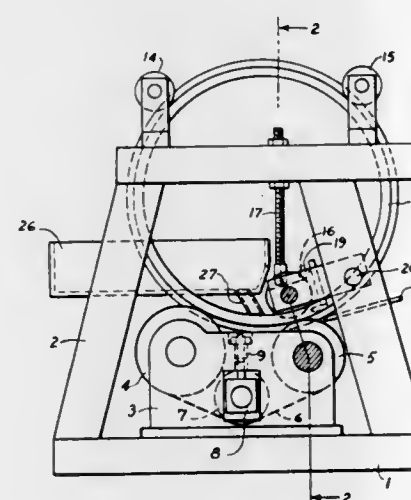
Filed Aug. 5, 1970, Ser. No. 61,271

Claims priority, application Germany, Aug. 6, 1969, P 19 39 930.5

Int. Cl. B22d 11/06

U.S. Cl. 164-278

6 Claims



In an apparatus for the continuous casting of metal strip, liquid metal solidifies between a casting belt carried on a pair of guide rolls and a casting roll spaced from one of said guide rolls, and a pair of casting rings engage opposite edges of the upper stretch of said casting belt to form a basin and to retain molten metal supplied to said basin.

3,627,026

## CURVED STRAND GUIDE

Gunter Bohne, Dusseldorf-Oberkassel; Walter Hess, Dusseldorf, and Adolf Meitz, Ratingen-Tiefenbroich, all of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

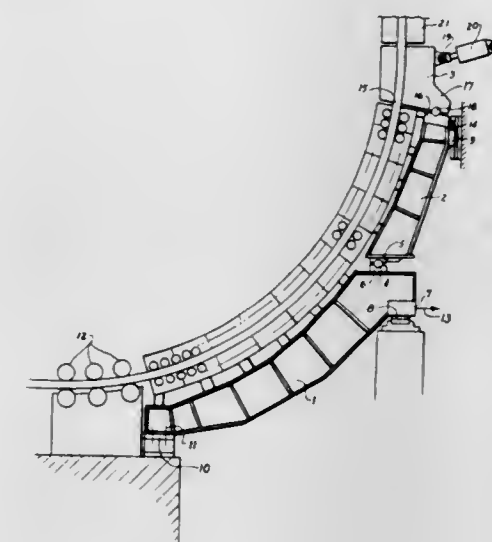
Filed May 2, 1969, Ser. No. 821,334

Claims priority, application Germany, May 4, 1968, P 17 28 271.7

Int. Cl. B22d 11/12

U.S. Cl. 164-282

7 Claims



A curved guide for a strand emerging from the mold of a continuous casting machine for guiding the strand from an approximately vertical path into an approximately horizontal path includes a frame defining the curved guide. The frame is in two sections, one above the other, with an articulated joint between. The lower section is mounted to be displaced horizontally in the plane of curvature of the guide when it thermally expands, while the upper section is mounted to be displaced vertically in said plane when it thermally expands.

3,627,027

## CASTING MOLD ASSEMBLY FOR CASTING CONTINUOUS STRIP

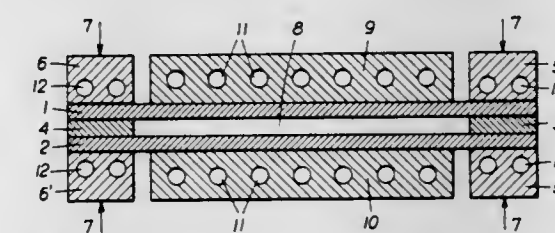
Alfred Adamec, and Roland Leder, both of Vienna, Austria, assignors to Wiener Schwachstromwerke GmbH, Vienna, Austria

Filed Oct. 6, 1969, Ser. No. 863,860

Int. Cl. B22d 11/12

U.S. Cl. 164-283

4 Claims



A mold comprises opposite sidewall portions defining between them a longitudinally continuous gap, which is open only at respective opposite ends. Cooling means for uniformly cooling metal moving longitudinally through said gap throughout the cross section of said gap comprise two plate coolers, each of which contacts one of the sidewall portions on the outside thereof over less than the width of the sidewall portion. Each of the plate coolers is formed with a duct system extending therethrough which is adapted to conduct a coolant for dissipating heat from the associated wall portion.



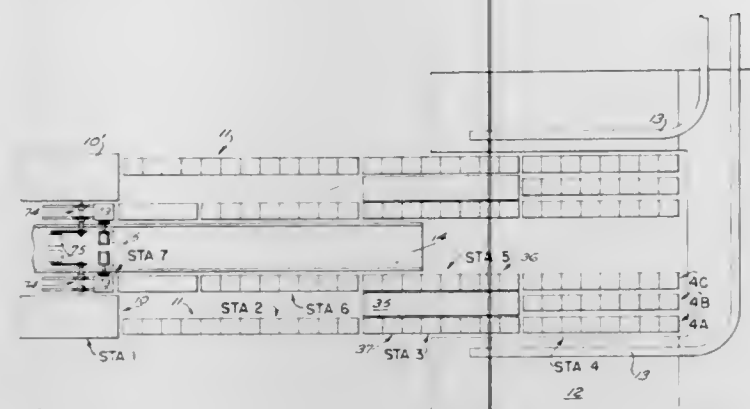
3,627,028

**MOLD-HANDLING APPARATUS**

Lucien W. Carignan, East Providence, R.I., assignor to New England Malleable Iron Company  
 Filed Nov. 29, 1968, Ser. No. 780,129  
 Int. Cl. B22d 5/00

U.S. Cl. 164—323

10 Claims



A conveying system used in connection with a mold-forming machine which will eliminate manual mold handling. The molds, upon transport plates as issued from the mold-forming machine, are lined up in groups, each group comprising a plurality of molds. A group when so assembled is advanced to a shifter's station where shells or casings are put about the molds. The group is then, in another step, advanced to a pouring station where weights are applied to the molds and the molds are filled with molten metal. The group is then advanced through two cooling stations and then to a shifter's station where additional cooling takes place and the shells or casings are removed from the molds. The group is then advanced to a dumping station where the sand is dumped from the transport plate of each of the molds of the group and then the transport plates are returned and stacked into the molding machine from which they originally issued.

**ERRATUM**

For Class 165—4 see:  
 Patent No. 3,627,014

3,627,029

**METHOD AND APPARATUS FOR LOW-TEMPERATURE HEAT EXCHANGE**

Donald Vernon Osborne, Norwich, and Michael Francis Whelan, Peterborough, both of England, assignors to National Research Development Corporation, London, England

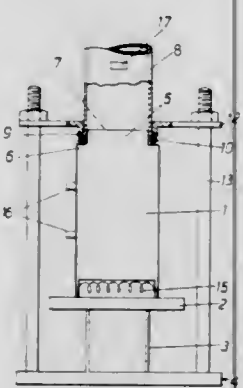
Filed Apr. 11, 1969, Ser. No. 815,287

Claims priority, application Great Britain, Apr. 16, 1968,  
 17,841/68

Int. Cl. F28f 13/18

U.S. Cl. 165—1

10 Claims



A method of exchanging heat between a solid and a fluid at very low temperatures comprising disposing at the interface thereof a film of material and exchanging heat through the film, the film material being chosen so that the value of

the acoustic impedance as herein defined of the film is related to the acoustic impedances of the solid and the fluid, whereby the quantity  $Kr$  as herein defined is reduced relative to its value if no film were disposed at the interface.

3,627,030

**HEATING, COOLING, DEHUMIDIFYING, AIR-CONDITIONING SYSTEM CONTROL**

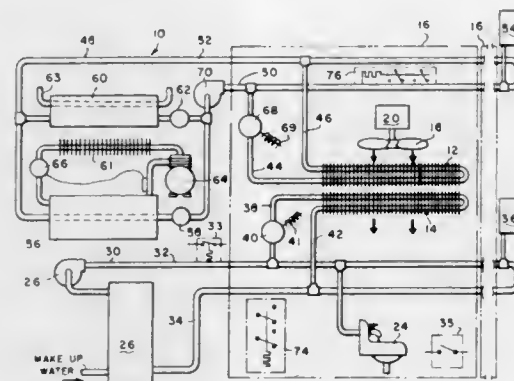
John W. Lorenz, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Jan. 2, 1970, Ser. No. 312

Int. Cl. F24f 3/00

U.S. Cl. 165—22

8 Claims



A zone-type heating, cooling, dehumidifying air-conditioning system is shown wherein each zone or unit is provided with a primary heat exchanger circuit and a secondary heat exchanger circuit. The primary heat exchanger is arranged to be supplied with warm water during the heating season and chilled water during the cooling season. The secondary heat exchanger is arranged to be supplied with domestic warm water. Each of the heat exchangers is provided with a control valve for controlling the circulation of heat exchange liquid therethrough. A fan is arranged to circulate air of the respective zone serially in heat exchange relationship with the primary heat exchanger and the secondary heat exchanger. A zone control system responsive to the temperature and humidity of the respective zone and the temperature of the heat exchange fluid being supplied to the heat exchangers controls the operation of the valves. Where domestic warm water is used for obtaining dehumidification, an overriding control prevents the use of domestic warm water for dehumidification in excess of the supply to thereby maintain the desired domestic warm water temperature.

3,627,031

**AIR-CONDITIONING SYSTEM**

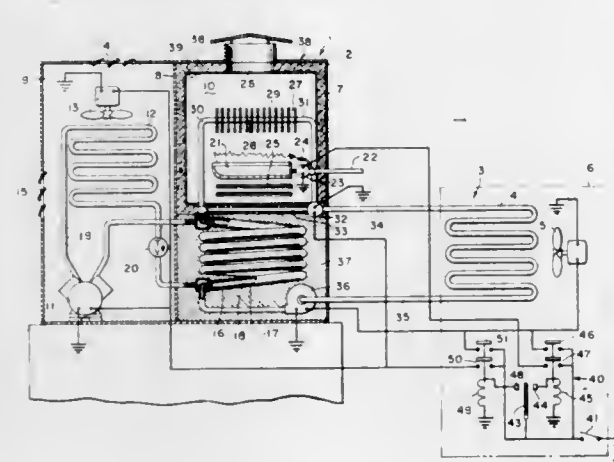
Chester D. Ware, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Oct. 27, 1969, Ser. No. 869,835

Int. Cl. F24f 3/10

U.S. Cl. 165—22

4 Claims



An outdoor hydronic heating-cooling unit provides hot and chilled liquid to an indoor fan coil unit. The outdoor unit has

3,627,034

**HEAT EXCHANGER MOUNTING BASE AND HEAT EXCHANGER ASSEMBLY**

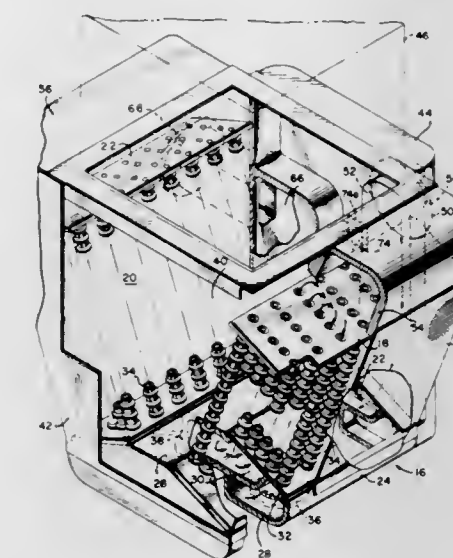
Frank D. Howe, Painted Post, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Mar. 12, 1970, Ser. No. 18,862

Int. Cl. F24h 3/08

U.S. Cl. 165—47

16 Claims



A heat exchanger mounting base and a heat exchanger assembly for use with and in combination with a gas compressor for defining an improved inter- and after-cooler configuration. The base comprises upper and lower mounting surfaces; upper surfaces are provided for mounting a plurality of heat exchanger units. The lower, ported surface accommodates the transfer of gas to and from a compressor stage housing. Ducting formed within the base accommodates the transfer of gas from a given exhaust port of the compressor to the inter-cooler stage and therefrom to a second stage of the compressor. The base accommodates the transfer of gas from the second stage of the compressor through several passes of a second heat exchanger unit. The heat exchanger units are mounted in spaced relationship upon the base and, with end walls, define a chamber therewith. Grille work mounted on the outer surfaces of the heat exchanger units accommodates for the influx of coolant air through both heat exchanger units simultaneously and an updraft of the coolant air to an exhaust plenum. The cooling air is forced to flow through the grille work, and the chamber subsisting between the heat exchanger units, by means of a single fan motor mounted above the chamber. A manifold, comprising one of the end walls of the chamber has a plurality of apertures formed therethrough. One of the apertures accommodates for the inflow of a compressed gas product, from a first stage of the compressor, for communication therefrom through the base member to a first of the heat exchanger units. The other aperture in the manifold is provided for exhausting cooling air from the first stage of the compressor for the venting thereof through the chamber. Finally, there is an aperture provided in the base member for the conduct of cooling air from the second stage of the compressor for passage into the chamber and for exhausting thereof therefrom.

3,627,035

**JUNCTION PLATES FOR MULTIPLE HEAT EXCHANGER UNITS**

William V. Astrup, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

Filed July 20, 1970, Ser. No. 56,609

Int. Cl. F28f 7/00

U.S. Cl. 165—81

9 Claims

The essential concept of this invention involves an improved arrangement of pairs of expansion module supports for the multiple section side frames for massive heat

a compression cycle refrigeration system for cooling a liquid heat exchange fluid. The outdoor unit also includes a liquid heater with gas burner. A single pump is used to circulate heat exchange liquid between the indoor fan coil unit and the outdoor heating and cooling unit. The liquid heater is arranged above the liquid chiller within a single enclosure.

3,627,032

**COOLING TOWER WATER TREATMENT SYSTEM**

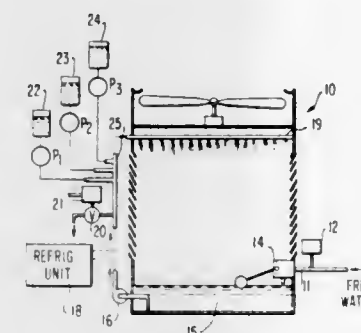
Philip S. Glad, Decatur; Frank D. Parker, Sr., Atlanta, and Richard W. Glad, Atlanta, all of Ga., assignors to Parker Engineered Chemicals, Inc., Atlanta, Ga.

Filed June 12, 1970, Ser. No. 45,621

Int. Cl. G05d 23/00

U.S. Cl. 165—32

9 Claims



A water treatment system for a large capacity air conditioner or similar heat exchange system which includes a reservoir, a refrigeration unit, a cooling tower for spraying the water to the reservoir, and flow means for flowing water from the reservoir through the refrigeration unit to the cooling tower. Water makeup means is provided for adding additional fresh water to the reservoir, and a water drain system functions to drain away the stale water of the reservoir in response to the inflow of fresh makeup water. Chemical additive pumps function to add chemical compositions to the circulating water as makeup water is added to the system.

3,627,033

**AIR HEATERS WITH ENCLOSING DAMPERS FOR PROTECTION AGAINST FREEZING**

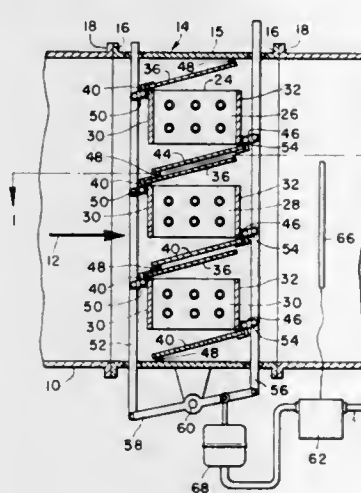
Clarence L. Ringquist, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Oct. 6, 1969, Ser. No. 864,002

Int. Cl. B60h 1/00

U.S. Cl. 165—40

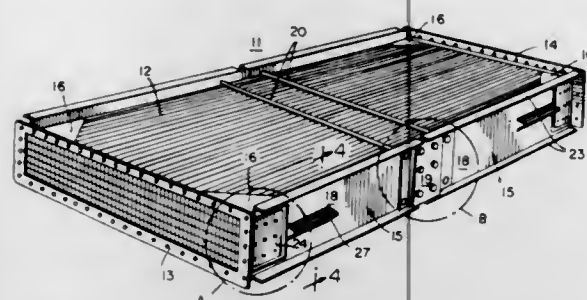
2 Claims



Apparatus for heating outside air having dampers which can be adjusted to fully enclose the heat exchange surfaces to reduce the heating effect without reducing the flow of heat exchange medium. The risk of damage to the coil from freezing is thereby eliminated.



exchanger core units required for cooling engines for large size transport vehicles, which expansion modules accom-



modate the expansion-contraction differentials in the metals required for the core unit per se and the metals required for the supporting side frames and attached header plates.

3,627,036

## HEAT EXCHANGE SYSTEM

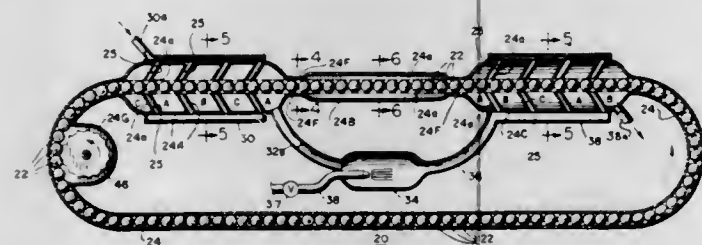
William W. Gilbert, 372 South Williamsburg, Birmingham, Mich.

Filed Jan. 29, 1970, Ser. No. 6,893

Int. Cl. F28d 19/02

U.S. Cl. 165-107

9 Claims



A high-temperature heat exchange system utilizing bodies of solid material as a heat exchange medium comprising a tubular conduit defining a flow path between a hot zone and a cooler zone, a conduit arranged to define, contain, and direct movement of the solid bodies in single file around a closed loop or path in heat exchange relation with fluid to be heated or cooled.

3,627,037

## FACTORY-ASSEMBLED HEAT EXCHANGER

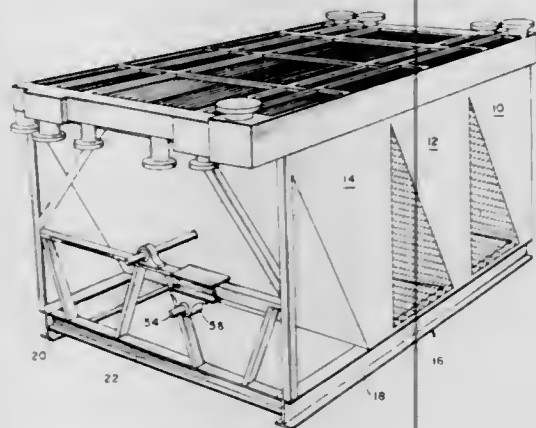
Raymond Murray Carr, Jr., Tulsa, Okla., assignor to Heat Fluid Engineering Corp., Tulsa, Okla.

Filed Apr. 27, 1970, Ser. No. 32,098

Int. Cl. F24h 3/06

U.S. Cl. 165-122

2 Claims



A factory-assembled air-cooled heat exchanger including two or more modular air supply units connected in end-to-end relation, each modular unit having a vertical end wall

and an opposite sloping end wall which converges downwardly towards, and connects with, the bottom of the vertical end wall. The resulting triangular sides are closed and the upper end of each unit is open to provide an exhaust leading to the heat-exchanger means. The vertical wall of each modular unit is provided with a circular fan opening in which is mounted a multiblade fan which is secured to a separate fan shaft rotatably mounted in each unit. Means are provided for connecting the ends of the fan shafts together so that the fans of all modular units can be rotated in unison. The heat exchange means will be mounted above the upper ends of the modular units and the resulting structure will be mounted on a skid of suitable size commensurate with the number of modular units employed.

3,627,038

## HEATERS

Philip Arthur Wilkins, Codsall, England, assignor to Wilkins & Mitchell Limited, Darlaston, Stafford, England

Filed Nov. 12, 1969, Ser. No. 875,860

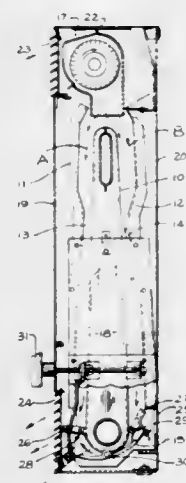
Claims priority, application England, Nov. 12, 1968,

53,548/68

Int. Cl. F24h 3/06

U.S. Cl. 165-126

5 Claims



A space heater including first and second passages along which air is forced to flow on opposite sides of the heat-exchanger core to respective first and second outlets. Movable flaps are respectively associated with the first and second outlets and are coupled by lost motion devices to a pivotally mounted end member which defines in combination with the heat-exchanger core a third passage extending between said first and second outlets. The end member is setable into first intermediate and second positions and the coupling between the end member and the flaps is such that the end member is in its first position the flaps are arranged to direct air to the first outlet from both passages and when the end member is in its second position the flaps are arranged to direct air to the second outlet from both passages while when the end member is in its intermediate position the flaps are arranged to direct air from the first and second passages respectively to the first and second outlets.

3,627,039

## HEAT EXCHANGER, ESPECIALLY FOR NONSTATIONARY GAS TURBINES

Eberhard Tiefenbacher, Ludwigshurg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Oct. 24, 1969, Ser. No. 869,108

Int. Cl. F28f 9/02

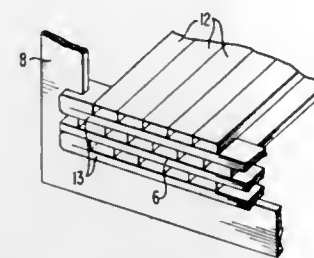
U.S. Cl. 165-158

8 Claims

A heat exchanger in which one of the two media is conducted through tubes while the other medium flows externally along the tubes in counterflow principle. The tubes are

arranged in several planes axially parallel to one another and the ends of the tubes, flattened off into rectangles, are com-

a pipe sectionally perforated, which section is filled with steel balls to provide internal bracing to the pipe against the explosion compressive shock and to insure a flow path for released



bined in a common mounting for the connection of a group of tubes to a respective inlet or outlet aperture.

3,627,040

## SIMPLIFIED HEAT EXCHANGER FOR PAPER MILLS AND THE LIKE

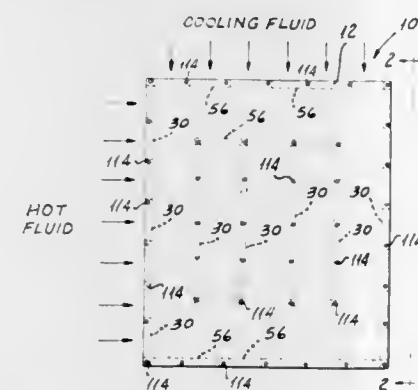
Joseph A. Villalobos, Ramsey, N.J., assignor to Aer Corporation, Ramsey, N.J.

Filed Nov. 24, 1969, Ser. No. 879,489

Int. Cl. F28f 3/00

U.S. Cl. 165-166

14 Claims



A high-capacity, simplified heat exchanger for a paper mill or the like in which alternate pairs of adjacent plates of a multiplicity of flat, generally rectangular metal plates have lines of interlocking open spacers along a first pair of opposite edges and lines of interlocking closed spacers along a second pair of opposite edges while the other pairs of adjacent plates have lines of interlocking closed spacers along their first opposite edges and lines of interlocking open spacers along their second opposite edges so that each pair of adjacent plates have interlocking spacers extending continuously around their peripheries with the plates and spacers assembled by means of elongated bolts extending through the plates and the interlocking portions of the spacers thus to provide respective paths for the flow of fluid at right angles to each other through the spaces between the plates of adjacent pairs. Additional open and closed spacers may be bolted in position between adjacent plates within the peripheries thereof for rigidity, to reduce vibration of the structure, and to generate turbulence in the fluid to enhance the heat exchange provided by the structure.

3,627,041

## GAS-RECOVERY SYSTEM

Richard A. Heckman, Castro Valley, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

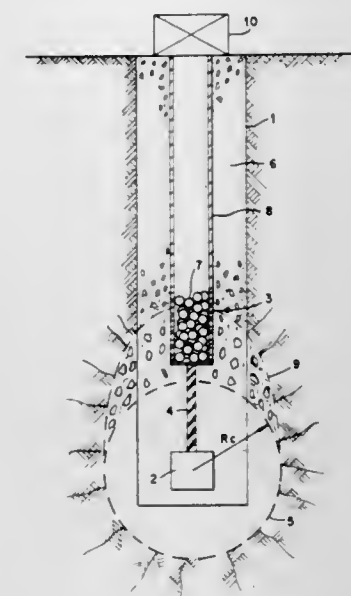
Filed Apr. 28, 1970, Ser. No. 32,678

Int. Cl. E21b 43/00

U.S. Cl. 166-63

2 Claims

A system for recovering gas from a gas-bearing rock formation comprising means for fracturing the rock formation by a nuclear explosive and means for gas collection including



3,627,042

## SUBSURFACE WELL SAFETY APPARATUS

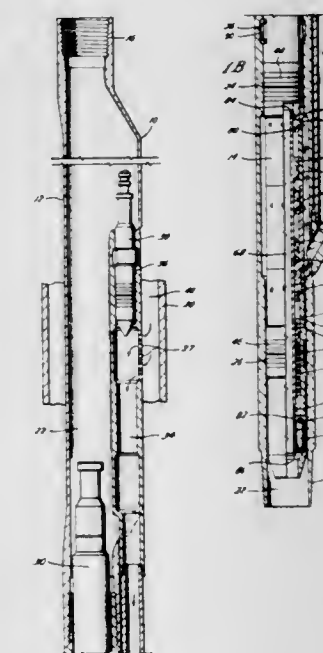
Harold Edward McGowen, Jr., and Gilbert Henry Tausch, both of Houston, Tex., assignors to Camco Incorporated, Houston, Tex.

Filed June 30, 1970, Ser. No. 51,199

Int. Cl. E21b 33/00

U.S. Cl. 166-224

10 Claims



A subsurface well safety apparatus for installation in a well fluid production tubing in a casing which is responsive to the casing pressure. A mandrel having a first open bore passageway and a second passageway laterally offset from the first passageway and a safety valve positioned in the mandrel first passageway. The valve including pressure responsive means acting to control the safety valve and in communication and controlled by pressure in the second mandrel passageway. The first mandrel passageway including first and second spaced apart smooth portions for receiving spaced apart seals on the safety valve and including latch receiving means above the smooth portions for receiving the well lock for supporting the safety valve in the first passageway. A



safety valve including an outer valve body having first and second spaced seals with a flap valve pivotally carried at the lower end of the valve body for normally closing the bottom of the valve body and an inner tubular member telescopically movable in the valve body which holds the flap valve in the downward position when the inner member projects out the bottom of the valve body and a plurality of longitudinally spaced pistons connected to the exterior of the inner member, the valve body including an opening leading to the top side of each piston and in communication with the mandrel second passageway for receiving a control fluid acting to keep the valve open.

3,627,043

## TUBING INJECTION VALVE

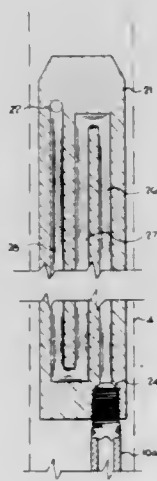
William Henry Brown, 3418 39th St., Red Deer, Alberta, Canada

Filed Jan. 17, 1969, Ser. No. 792,061

Int. Cl. E21b 33/00

U.S. Cl. 166—224

1 Claim



An injection valve is provided for admitting inhibiting fluid from the casing annulus of a gas well into the tubing. The valve consists of a check valve assembly and an elongate, upwardly extending standpipe connecting the valve assembly with a port leading into the tubing. A buffer column of inhibiting fluid is always present between the valve assembly parts and the corrosive flow within the tubing.

3,627,044

METHOD OF PRODUCING TAR SANDS WITH  
LATERALLY CRATERED NUCLEAR EXPLOSIONS

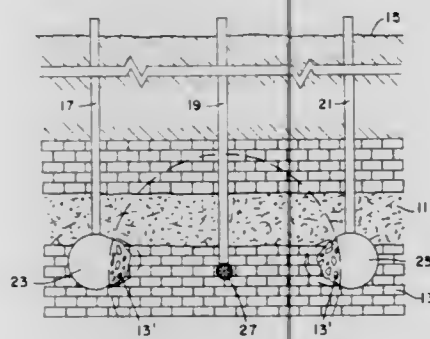
Henry F. Dunlap, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of application Ser. No. 628,143, Apr. 3, 1967, now Patent No. 3,470,953. This application Sept. 25, 1969, Ser. No. 861,132

Int. Cl. E21b 43/24, 43/26

U.S. Cl. 166—247

22 Claims



Two or more nuclear explosives are detonated a predetermined distance below a tar sand in a manner such that one explosion craters laterally into a cavity formed by an earlier

explosion to form a relatively thin unique zone of rubble below the tar sand. The rubble is composed of material other than tar sand. The predetermined distance below the tar sand does not exceed 250 feet or three cavity radii whichever is smaller. Fluids are injected into this rubble to assist in producing oil from the tar sands.

3,627,045

METHODS FOR COMPLETING WELLS TRAVERSING  
EARTH FORMATIONS

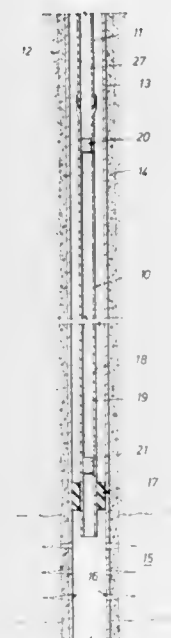
Maurice P. Lebourg, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,528

Int. Cl. E21b 43/04, 43/26, 43/27

U.S. Cl. 166—278

13 Claims



This application discloses new and improved methods for completing wells having earth formations which are to be fractured, acidized, or treated for inhibiting the production of unconsolidated formation materials. In one manner of practicing the present invention, a tool string is arranged for suspension from a string of pipe and includes a well packer coupled to an elongated tubular member defining an enclosed chamber of a substantial volume and which is maintained at a reduced pressure by normally closed valves at the opposite ends of the chamber that are adapted to be selectively opened in succession. This tool string is then positioned in a cased well bore and the packer is set above a previously perforated interval traversing an earth formation which is to be treated. Once the packer is set to isolate the perforated interval from the well bore thereabove, the first of the two valves is selectively opened. Upon opening of the first valve, formation fluids will be suddenly exhausted into the reduced-pressure chamber for removing contaminants that may have previously entered the formation following the perforation of the casing so as to leave only uncontaminated formation materials immediately surrounding the perforations. Thereafter, the second valve is selectively opened for suddenly injecting pressured treating fluids from the supporting pipe string through the perforations and back into the adjacent earth formations.

3,627,046

METHOD AND APPARATUS FOR POSITIONING AND  
GRAVEL PACKING A PRODUCTION SCREEN IN A  
WELL BORE

Henry W. Miller, and Malcolm G. Coone, both of Houston, Tex., assignors to Lynes, Inc.

Filed Nov. 10, 1969, Ser. No. 875,191

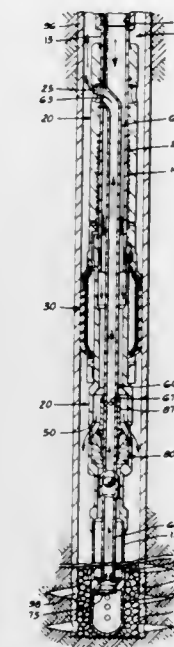
Int. Cl. E21b 43/04

U.S. Cl. 166—278

22 Claims

A method and apparatus for positioning and gravel packing a production screen in a well bore wherein a housing

provided with a reinforced inflatable element and the production screen is coupled to a tubular means which is positioned in a well bore on a tubular string. The tubular means and housing are coupled together and form a crossover mechanism whereby fluid may be circulated in the well bore and then to the apparatus when the reinforced element is not sealed in the well bore to accomplish desired opera-



tions. When the element is inflated to seal in the well bore it actuates slip means to anchor the apparatus in the well bore. The tubular means then can be positioned longitudinally of the housing so that the crossover mechanism provides suitable flow passages for gravel packing the well bore around the production screen. Thereafter, the tubular string and means can be manipulated to deflate the element and disconnect the housing from the production screen, as desired.

3,627,047

## GAS PRODUCING METHOD

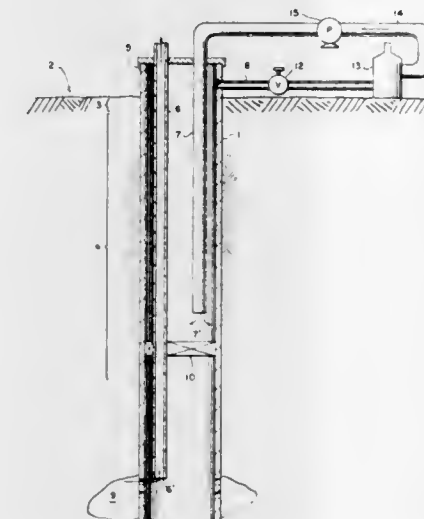
Leland E. Wilson, and Jerry M. Trickey, both of Anchorage, Alaska, assignors to Atlantic Richfield Company, New York, N.Y.

Filed May 19, 1970, Ser. No. 38,755

Int. Cl. E21b 43/24

U.S. Cl. 166—302

9 Claims



A method and apparatus for producing a gas well wherein gas is produced through a well bore and the well bore passes through a permafrost zone. The method and apparatus prevent solid hydrate from forming in the gas while passing through the permafrost zone toward the earth's surface.

3,627,048

## HYDRAULIC WELL PUMPING METHOD

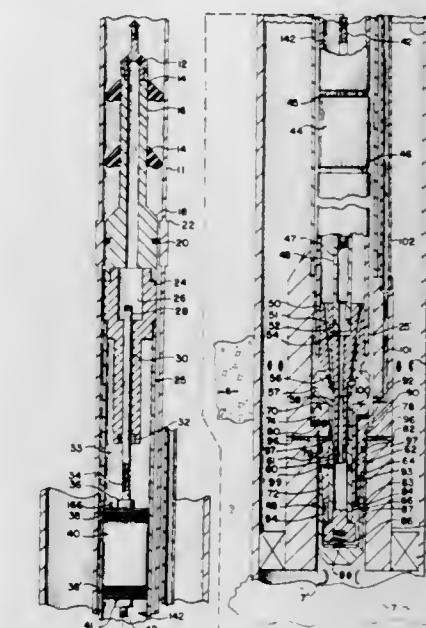
George K. Roeder, P.O. Box 4335, Odessa, Tex.

Original application June 3, 1968, Ser. No. 733,954, now Patent No. 3,517,741. Divided and this application June 1, 1970, Ser. No. 41,887

Int. Cl. E21b 43/16

U.S. Cl. 166—305 R

10 Claims



Method for operating a downhole hydraulic well pumping system. One aspect of the invention is directed to a method for injecting spent power fluid into a lower or upper stratum of the ground while extracting energy from the power fluid in order to pump oil from another stratum to the surface of the ground. This expedient enables the spent power fluid to be advantageously used as a water flooding agent, and further enables chemical treatment of the upper or lower stratum to be carried out by utilizing the spent power fluid as the vehicle for transporting the chemical into the stratum. The associated apparatus comprehends a new combination of a production unit having a piston and control valve assembly which forms an engine for actuating a downhole pump. The piston and control valve assembly cooperates with the downhole pump motor in a manner to enable spent power fluid from the engine to be injected through a standing valve assembly into a stratum located below or above the producing formation.

3,627,049

METHODS AND APPARATUS FOR COMPLETING  
PRODUCTION WELLS

David E. Young, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,068

Int. Cl. E21b 43/00

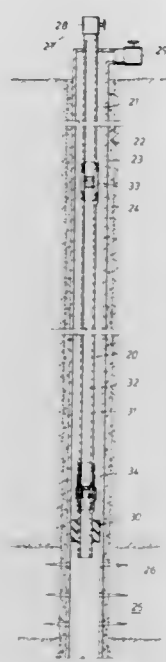
U.S. Cl. 166—314

21 Claims

This application discloses new and improved methods and apparatus for completing production wells having perforations which either are to be cleaned or penetrate earth formations which are to be fractured, acidized, or treated such as, for example, to inhibit the subsequent production of unconsolidated formation materials. To practice the present invention, a new and improved production tool is arranged for coupling into a string of production tubing and includes a typical well packer coupled to an elongated tubular member defining an enclosed chamber of a substantial volume and which is initially maintained at a reduced pressure by new and improved normally closed pressure-actuated valves arranged at the opposite ends of the tubular member and adapted to be selectively opened in succession. The production string and the tool are installed in a cased well bore with the packer being set above a previously perforated interval



traversing an earth formation which is to be subsequently produced. Once the customary wellhead equipment is installed to provide selective communication from the surface with the tubing and casing, the first of the two normally closed valves is selectively opened by increasing the pressure of the well bore fluids in the annulus above the packer. Upon opening of this first valve, formation fluids will be suddenly



exhausted into the reduced-pressure chamber for removing contaminants that may have previously entered the formation following the perforation of the casing so as to leave only uncontaminated formation materials immediately surrounding the perforations. Thereafter, the second normally closed valve is selectively opened by injecting selected fluids by way of the production string through the perforations and into the adjacent earth formations.

### 3,627,050 SEED CONVEYOR

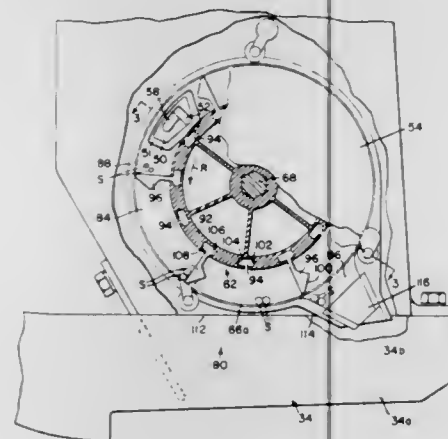
Harold Valentine Hansen, Cordova, and Lester Carl Wolf, East Moline, both of Ill., assignors to Deere & Company, Moline, Ill.

Continuation of application Ser. No. 720,951, Apr. 12, 1968, now abandoned. This application June 18, 1970, Ser. No. 47,621

Int. Cl. A01c 5/00

U.S. Cl. 111-77

4 Claims



A seed conveyor for a planter having a seed-selecting mechanism of the type having an apertured plate against which individual seeds are slidingly carried until they are ejected through the aperture. The seed conveyor receives the seed discharged through the aperture and conveys the seed to the ground. The conveyor is provided with a plurality of removable rubber paddles mounted upon a wheel. Seeds may

be conveyed to the ground individually by using all the paddles, or they may be conveyed to the ground in groups by removing selected paddles.

### 3,627,051 DEBRIS-GATHERING MEANS

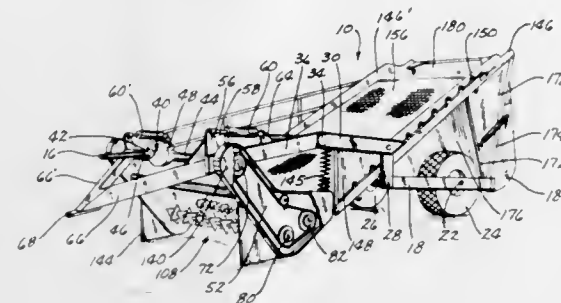
James E. Schmitz, Ventura; Duard J. Suby, Clear Lake, and Donald E. Ransom, Ventura, all of Iowa, assignors to James F. Rhodes, Mason City, Ind., a part interest

Filed Jan. 26, 1970, Ser. No. 5,741

Int. Cl. A01d 17/06

U.S. Cl. 171-89

16 Claims



A debris-gathering means comprising a wheeled frame means having a forwardly extending tongue portion secured to a prime mover. A rotor means extends across the forward end of the frame means and is adapted to penetrate the ground and to remove debris therefrom and to convey the debris rearwardly to a conveyor means extending outwardly and rearwardly therefrom. The rotor means includes front, intermediate and rear loaders. The conveyor means conveys the debris to a hopper means at the rearward end of the frame means. The hopper means is emptied by actuating a hydraulically operated dumping gate. Means is also provided for raising and lowering the rotor means with respect to the ground.

### 3,627,052 MACHINE FOR LIFTING BEETROOTS

Raoul Georges Duquenne, 3, rue Ligny, Gaurain-Ramecroix, Belgium

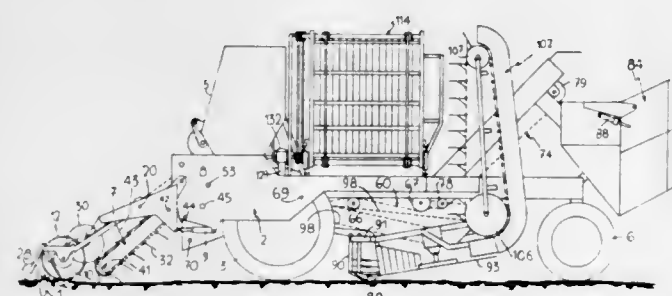
Filed Dec. 19, 1969, Ser. No. 886,588

Claims priority, application Belgium, Dec. 12, 1968, 82686

Int. Cl. A01d 23/00

U.S. Cl. 171-101

11 Claims



Apparatus for digging beets and other underground objects, comprises a transverse series of blades for cutting off the beet leaves at their base, one blade for each beet row, followed by an endless rake for gathering the beet leaves, and oppositely pitched transversely extending helical conveyors for moving the beet leaves toward centrally positioned longitudinally extending conveyors that deliver the beet leaves to a bin at the rear of the apparatus. A transverse row of diggers behind the blades digs the objects from the ground, and openwork rotors behind the diggers move the objects centrally and rearwardly toward a shelf elevator conveyor which delivers them into a bin that can be discharged by tipping or by a scraper conveyor.

### 3,627,053 HYDRAULIC POWER LIFT SYSTEM FOR TRACTOR AND TRAILING IMPLEMENT

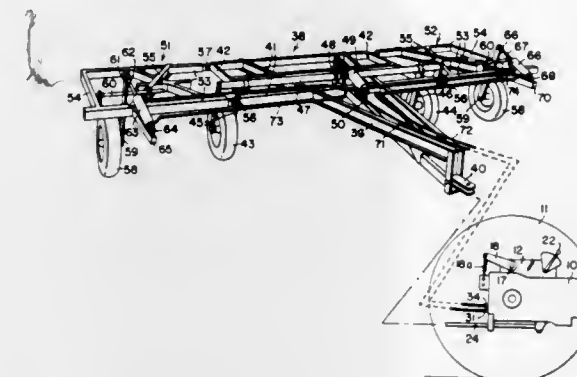
Richard Wayne Hook, Des Moines; William Wayne Jackson, Altoona; Lamar William, Cedar Falls, and Kenneth Earl Murphy, both of Cedar Falls, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 28, 1969, Ser. No. 819,615

Int. Cl. A01b 63/112, 63/22; F15b 11/00

U.S. Cl. 172-9

20 Claims



A tractor and trailing earthworking implement combination in which the implement includes a transverse series of frames pivotally connected together and mounted on vertically movable wheels operated by a plurality of series connected double-acting hydraulic cylinders which are connected to the tractor position and draft responsive hydraulic power lift system in series with the tractor rockshaft cylinder so that the implement frames are raised or lowered in unison and in substantially equal amounts in response to variations in draft loads.

### 3,627,054 LAWN EDGER WITH INSULATED HANDLE

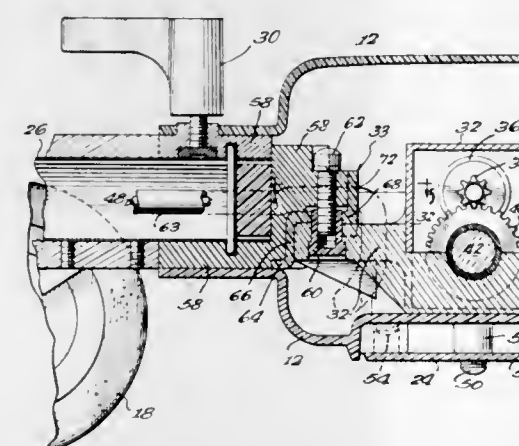
Michael T. Lay, West Chicago, Ill., assignor to G. W. Murphy Industries, Inc.

Filed July 17, 1969, Ser. No. 842,596

Int. Cl. A01b 45/00

U.S. Cl. 172-14

3 Claims



A device having a plug-in electrical cord for running a motor which drives a cutting blade. The device has an electrically conductive handle insulated against electrical spark jump from the motor and electrically insulated from the blade in the event the blade cuts the power cord. More specifically an edger-trimmer is described in which an insulating shaped barrier separates conductive portions of the motor and drive mounting frame from the handle and in which insulating elements space the guide plate, which is adjacent the blade, from the casing providing an airgap electrically isolating the guide plate from the conductive frame portions and from the handle of the device.

### 3,627,055 LAWN EDGER WITH GUIDING DEVICE

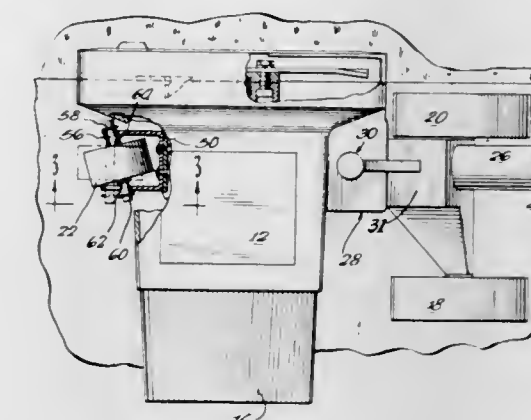
Michael T. Lay, West Chicago, Ill., assignor to G. W. Murphy Industries, Inc.

Filed July 17, 1969, Ser. No. 842,597

Int. Cl. A01b 45/00

U.S. Cl. 172-14

6 Claims



An inwardly turned wheel is used as part of the carriage for a lawn edger having a guide plate for guiding along a pavement edge. The wheel functions to retain the guide plate against the pavement edge. In one form, the wheel is mounted for pivotal movement between its turned position and a straight ahead position and turns to the straight ahead position during backward movement of the carriage.

### 3,627,056 VIBRATING PLOW WITH BALANCED FORCES

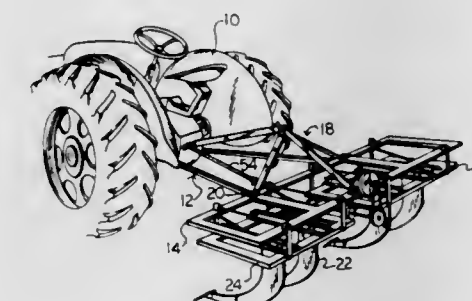
Thelmer A. Rogers, P.O. Drawer 1589, Lubbock, Tex.

Filed Dec. 23, 1968, Ser. No. 786,232

Int. Cl. A01b 35/00

U.S. Cl. 172-40

1 Claim



This plow implement is made with a main frame and two plow-carrying subframes which are mounted for lateral swinging movement below the main frame. An eccentric arrangement between the two subframes laterally vibrates the subframes equally and opposite. Therefore, the main frame is isolated from vibration and is adapted to be attached to tractors or to have other machinery placed on it.

### 3,627,057 ROW MARKER SAFETY MECHANISM

Donald R. Hartwig, Rock Island, and Harold Valentine Hansen, Cordova, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Oct. 24, 1969, Ser. No. 869,311

Int. Cl. A01b 35/32, 61/00

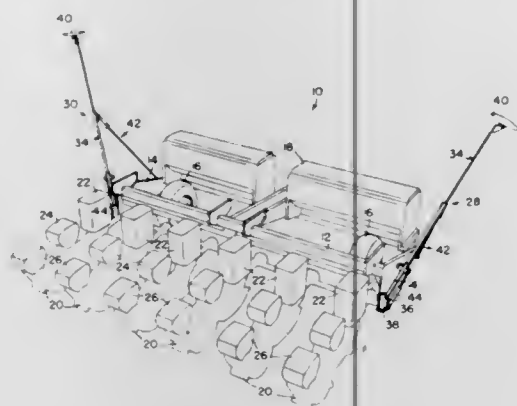
U.S. Cl. 172-126

13 Claims

A planter row marker includes a safety mechanism for preventing damage during marking operations to the marker arm and supporting structure in case the marker tool or outer portions of the arm should strike a relatively immovable object. The safety mechanism includes a rod which has one end reciprocally received in the bight portion of a spring clevis



and a spring pressure nut at the end of the rod holds a compression spring between the nut and the bight of the clevis. The safety mechanism is adapted for use with either nonfolding or folding markers and in the case of the former, the opposite ends of the safety mechanism are pivotally connected to the planter frame and an intermediate point along the marker arm and in the case of the latter, the opposite ends of



the safety mechanism are pivotally connected to the inner and outer arms of the foldable arm assembly. The rod of the safety mechanism includes two parts interconnected by a shear pin and should the load on the compression spring reach a predetermined value, the shear pin will break permitting outer sections of the nonfolding and folding marker arms to pivot rearwardly relative to inner arm sections.

3,627,058

**TWO-WAY PLOW WITH AUTOMATIC LANDING**

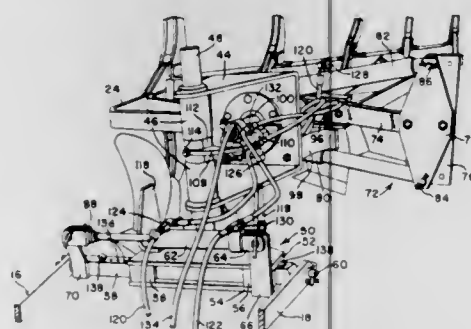
Bruno Bernhardt Johannsen, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed July 9, 1969, Ser. No. 840,395

Int. Cl. A01b 3/42, 3/46, 65/02

U.S. Cl. 172-206

1 Claim



A semimounted rollover two-way plow having right- and left-hand plow bottoms rotatably mounted about a generally longitudinally extending tubular member, the tubular member being supported at its rear end by a steerable rear furrow wheel and at its front end by a transversely shiftable hitch crossbar. A pair of single-acting hydraulic cylinders rotate the plow bottoms between their alternate plowing positions while a first double-acting hydraulic cylinder sets the rear furrow wheel at alternate angular positions for right- and left-hand plowing so that the rear furrow wheel will be laterally offset from the centerline of the tractor and a second double-acting hydraulic cylinder sets the crossbar at alternate lateral positions for right- and left-hand plowing. The double-acting hydraulic cylinders are connected in parallel with each other and each of the single-acting cylinders is connected in parallel with one end of each of the double-acting cylinders so that when the plow bottoms are rotated between their alternate positions, the rear furrow wheel and hitch crossbar are simultaneously moved to their respective alternate positions.

3,627,059  
**GAUGE WHEEL ASSEMBLY FOR AGRICULTURAL IMPLEMENTS**

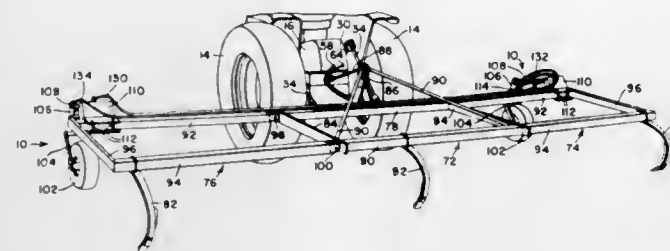
William Wayne Jackson, and Richard Wayne Hook, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 22, 1969, Ser. No. 887,126

Int. Cl. A01b 63/22

U.S. Cl. 172-413

10 Claims



A flexible agricultural implement has a center frame mounted on a tractor three-point hitch and a pair of outrigger frames pivotally connected to the center frame for independent vertical pivotal movement relative to the center frame. The outrigger frame ends are raised and lowered by vertically adjustable gauge wheel assemblies which are operated by extensible and retractable hydraulic cylinders. The hydraulic cylinders for the gauge wheel assemblies are connected in series with each other and in series with the tractor rockshaft cylinder. The linkage of the gauge wheel assemblies is such that a single-size wheel assembly is compatible with several sizes of tractor rockshaft cylinders, and when attaching the implement to a different size tractor, only a single pin in each gauge wheel assembly needs to be repositioned to alter the location of one of the cylinder anchors. The cylinders on the wheel assemblies are large enough not to limit the stroke of the largest tractor rockshaft cylinder with which they are intended to be used, and when used with a smaller tractor rockshaft cylinder, only a portion of the stroke of the cylinders on the gauge wheel assemblies is used.

3,627,060

**DRAFT LINK SWAY CONTROL MECHANISM**

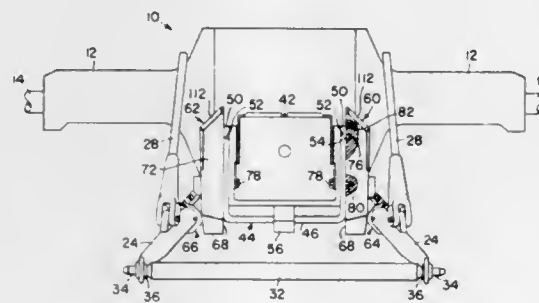
Norman Frederick Lemmon, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 11, 1970, Ser. No. 18,561

Int. Cl. A01b 59/043

U.S. Cl. 172-450

13 Claims



The draft links of a tractor carry clamplike bumpers which contact sway blocks mounted on a drawbar support on the opposite sides of the power takeoff housing. Each bumper is eccentric and tapered with respect to the longitudinal axis of the associated draft link and is clampable in positions spaced 180° about the axis to provide sway control for different hitch spacings or categories and is shiftable along the draft link to provide minor lateral adjustment.

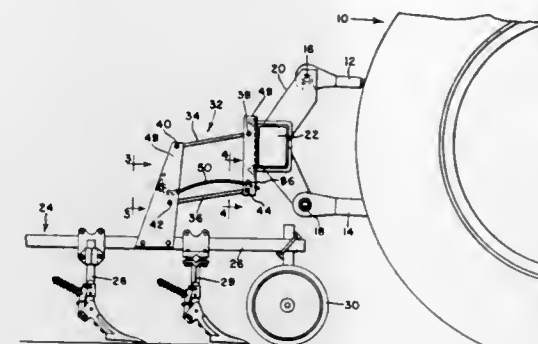
3,627,061  
**EARTHWORKING TOOL MOUNTING MEANS**  
John Warren Sample, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 7, 1969, Ser. No. 864,459

Int. Cl. A01b 65/06, 71/02

U.S. Cl. 172-462

2 Claims U.S. Cl. 172-627



A resilient, two-way, vertically effective leaf spring means is operative between a support and an associated earthworking tool such as a cultivator to provide a down pressure on the cultivator when the support is lowered and to resiliently lift the cultivator when the support is raised.

3,627,062

**HEAT DISTRIBUTION CONTROL IN ONCE-THROUGH BOILERS**

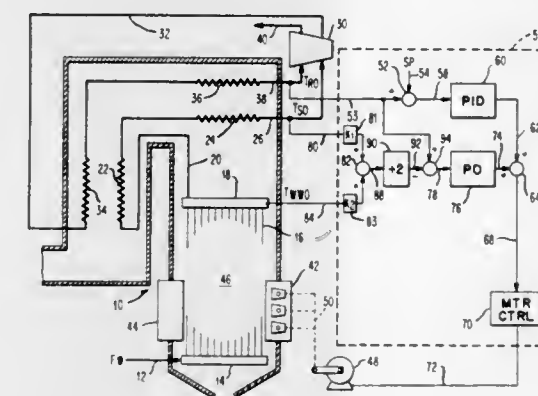
Theron W. Jenkins, Jr., Ambler, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.

Filed June 1, 1970, Ser. No. 48,585

Int. Cl. F22g 5/06

U.S. Cl. 122-479 R

12 Claims



The reheater outlet temperature of a once-through boiler is controlled by adjustment of a manipulated variable which modifies the heat distribution in the boiler. By using only a small amount of proportional and rate response to the reheater outlet temperature deviations, the response of the control may be made relatively insensitive to transient disturbances for causes which do not change the heat distribution. A significant proportional and rate response is provided from an index of the heat distribution and that response is added to the control response from the reheater temperature deviation to provide an effective control of those disturbances which do affect the heat distribution. The index is calculated as the difference between the reheater outlet temperature and the average of the superheater outlet temperature and the waterwall outlet temperature.

3,627,063  
**ROTARY HOE**

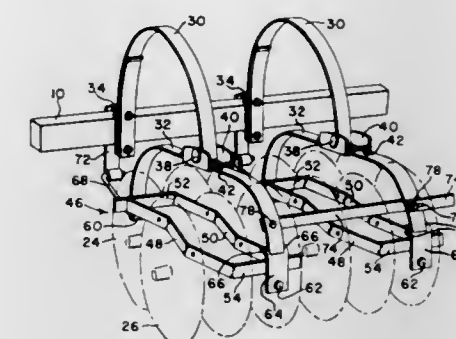
Edward Clyde Ryan, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 7, 1969, Ser. No. 874,858

Int. Cl. A01b 35/28, 39/08

2 Claims U.S. Cl. 172-627

11 Claims



A plurality of transverse sets of tandem gangs of hoe wheels are individually mounted on a toolbar by leaf springs which will transfer the weight of the toolbar to the gangs and allow a high degree of flexibility between the sets of gangs and between the gangs of a single set so that the gangs can follow the ground contour. Each set of gangs is mounted on a subframe which in turn is mounted on a first leaf spring for rotational movement about a fore-and-aft extending axis so that the subframes can pivot to the side and conform to the contour of the ground when working bedded crops. The first leaf spring is pivotally connected to one end of a second leaf spring which has its opposite ends rigidly secured to the toolbar. A draft link extending between each subframe and a toolbar relieve the leaf springs of draft forces.

3,627,064

**IMPLEMENT WITH GROUND-BREAKING IMPACT TOOL**

Ake Lennart Sjoberg, Torsdagsgrand 15, 302 53 Halmstad, and Carl Gustaf Nordstrom, 302 42 Halmstad, both of Sweden, assignors to said Sjoberg, by said Nordstrom

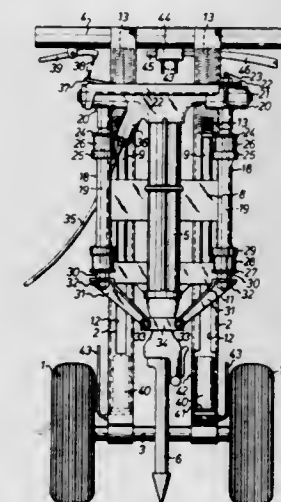
Filed Aug. 25, 1970, Ser. No. 66,702

Claims priority, application Sweden, Aug. 26, 1969, 11793/69

Int. Cl. E01c 23/09

U.S. Cl. 173-24

7 Claims



An implement for ground breaking comprises a driving apparatus with a ground-breaking impact tool operable to reciprocate the tool in a longitudinal direction, and a cart with a planar frame having coaxial wheels at a bottom end and operating handle means at a top end. On one side of the frame are mounted guides in spaced relation to the plane of the frame. By mounting means the driving apparatus is



mounted on said guides for reciprocation in parallel with the longitudinal reciprocation direction of the tool and in parallel with the plane of the frame. Biasing means yieldingly counteract such reciprocation of the driving apparatus in relation to the guides. Control means for controlling the operation of the driving apparatus are mounted on the handle means.

3,627,065

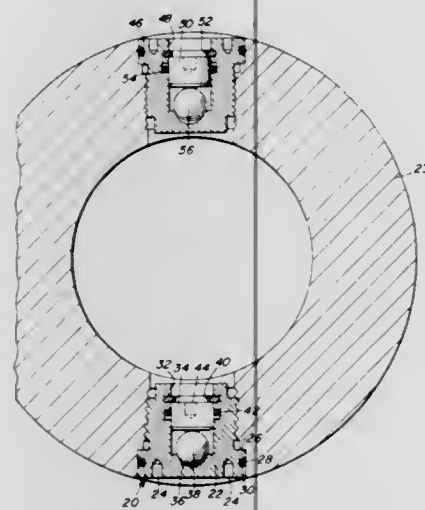
# WELL-DRILLING METHOD AND APPARATUS INVOLVING DETERMINATION OF PRESSURE OF DRILLING FLUID

Donald R. Murphy, 6245 Renwick, Apt. 213, Houston, Tex.  
Filed May 19, 1970, Ser. No. 38,807

Int. Cl. E21b 47/06

U.S. Cl. 175-48

14 Claims



The pressure of drilling fluid in well-drilling apparatus is determined from the amount of deformation of a member which is attached to the drilling string and subjected to forces exerted by the pressurized drilling mud.

The method involves determination of the pressure drop across the drilling bit by studying the extent of deformation of deformable members on the drilling string and changing the jet nozzles in the drilling bit when the pressure drop falls outside a prescribed range.

3,627,066

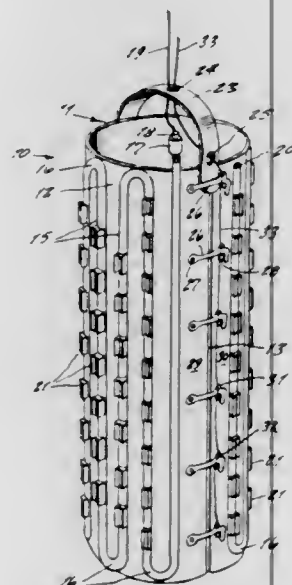
# PERFORATOR FOR WATER AND OIL WELLS

Woodrow W. Johnson, Box 348, Cle Elum, Wash.  
Filed July 8, 1970, Ser. No. 53,118

Int. Cl. E21b 43/17

U.S. Cl. 175-4.53

4 Claims



A device for perforating well casings so to increase a water or oil supply from the rock strata formation into the well, the

device comprising an elongated billet lowered into the well, the billet including a plurality of pads around its outer side for positioning against the inner wall of the well, each pad having sharp curving edges, each pad containing explosives which is electrically ignited from above ground so that upon explosion the sharp edges of the pads crack the well casing.

3,627,067

# CORE-DRILLING SYSTEM

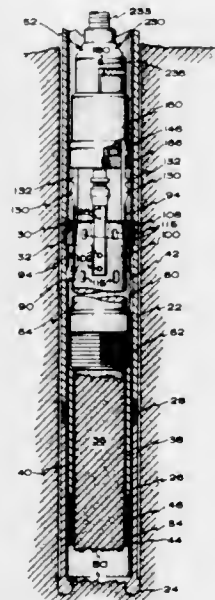
Lyle J. Martinsen, Murray, Utah, assignor to Boyles Bros. Drilling Co., Salt Lake City, Utah

Original application Aug. 27, 1968, Ser. No. 778,879, now Patent No. 3,537,743, Original application Aug. 10, 1966, Ser. No. 571,521, now Patent No. 3,441,098. Divided and this application Mar. 18, 1970, Ser. No. 20,709

Int. Cl. E21b 9/20

U.S. Cl. 175-58

3 Claims



A core-drilling system comprising a novel method which accommodates disablement of an overshot for selective or controlled release of its coupling relation with spearhead or latch structure of a core barrel assembly within a drill hole when an operator pumps the wire line to which the overshot is attached, up and down a prescribed number of times.

3,627,068

# ADJUSTABLE REAMER OR ROLLER ASSEMBLY

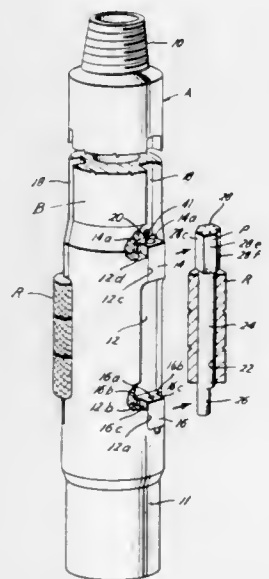
Hubert H. Wagon, and Robert A. Blair, both of Hobbs, N. Mex., assignors to Drilprodco, Inc., Hobbs, N. Mex.

Filed Mar. 13, 1970, Ser. No. 19,215

Int. Cl. E21b 9/24

U.S. Cl. 175-342

10 Claims



An adjustable roller assembly for use in the enlargement of a well bore, and on the inside of a collapsed casing or pipe to

roll same out to its original diameter, and for the other uses wherein reaming or other enlargement is desired. The assembly is adjustable in the field by inexperienced personnel and with a minimum of time and manipulation for effecting the adjustment.

3,627,069

# WEIGHER WITH OPTICAL DETECTOR

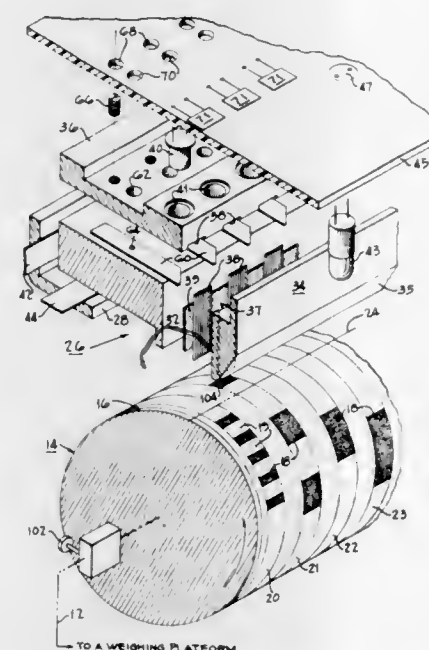
Robert H. Ray, Cinnaminson, and John M. Holt, Cherry Hill, both of N.J., assignors to Applied Information Industries

Filed June 12, 1970, Ser. No. 45,697

Int. Cl. G01g 23/32

U.S. Cl. 177-178

17 Claims



In a computer weigher, an optical device is used to detect the position of balance of the weigher mechanism by measuring the rotary position of a drum connected to the weigher mechanism. On the drum, a Gray code chart is arranged around the periphery of the drum with several channels extending axially. A mounting block is adjustably positioned adjacent to the drum and is used to mount fiber optics and photoelectric measuring means. For each channel of code on the drum chart, a fiber optics bundle picks up reflected light at one end adjacent to the chart and transmits it to its other end at a photoelectric sensor. Binary coded signals are generated from the sensor outputs which accurately identify each drum position.

3,627,070

# HYDROSTATIC TRANSMISSION FOR STEER BY DRIVING VEHICLES

Robert B. Colten, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 30, 1970, Ser. No. 33,256

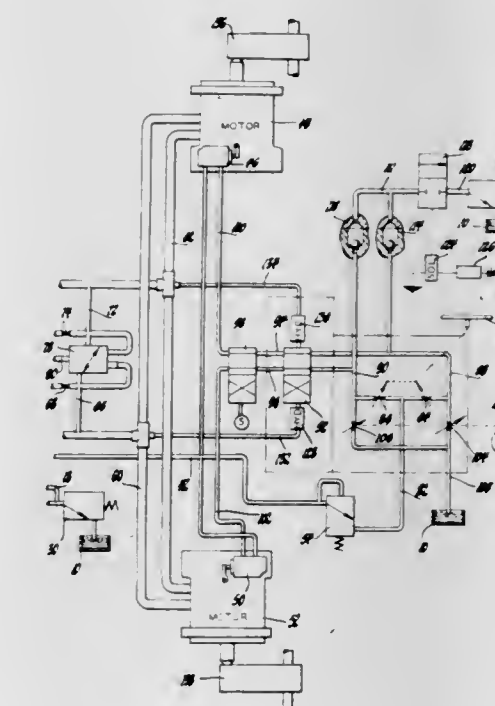
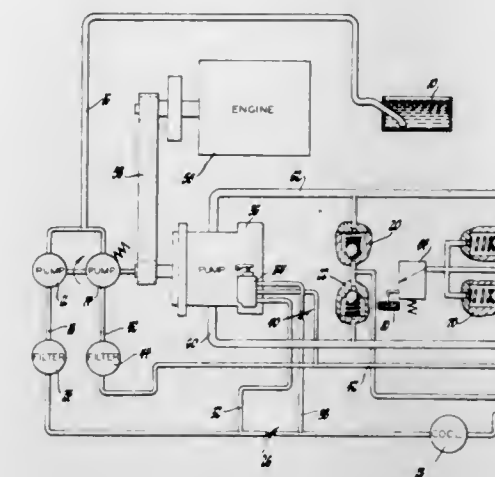
Int. Cl. B62d 11/04

U.S. Cl. 180-6.48

7 Claims

A fluid transmission having a pump and a pair of fluid motors for driving and steering a vehicle. Pump displacement is varied to control speed at low speeds. The displacement of both motors is concurrently varied to control speed at high speeds and direction at all speeds. The displacement of the fluid motors is independently varied for steering. The displacement of the pump and the motors is controlled by a fluid pressure control having a plurality of variable restrictions, two restrictions being varied by the vehicle steering mechanism to provide a torque differential between the motors and two other restrictions being varied by a manual control to control vehicle speed and direction. A directional

valve responsive to drive system pressure acts in combination with the steer restrictions for proper steer control during



coasting. A second directional valve responsive to the manual control provides forward or reverse steer control.

3,627,071

# TETHERING DEVICE FOR SELF-PROPELLED MACHINES

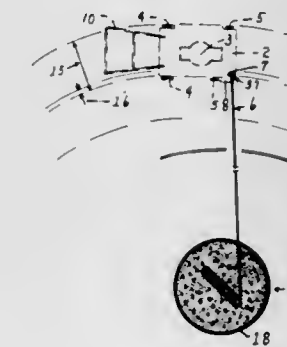
Walter H. Haupt, 604 Wayne Road, Covington, Ky.

Filed Jan. 12, 1970, Ser. No. 2,236

Int. Cl. B62d 1/24

U.S. Cl. 180-79

5 Claims



A tethering device for a self-propelled lawnmower which includes a circular reel base normally resting in flat stationary position on the ground and having a pair of upstanding winding stakes spaced apart from the central axis of the base, with a tether cord wound in loop formation about the stakes.



The outer or free end of the cord is connected to the mowing machine for guiding the machine. In operation, the self-propelled tethered mower describes a generally spiral cutting path or swath as it circles about the flat stationary base and unwinds the cord from the spaced winding stakes.

The circular base further includes a bearing sleeve located at its central axis, combined with a detachable handle having an angular limb or section arranged to be inserted into the bearing sleeve. The handle acts as a lever, permitting the circular base to be upended from its flat anchorage position to a vertical position resting upon its circular rim for rolling the circular base to a new location. The tether cord, which is disconnected from the mower, is reeled back upon the winding stakes automatically as a result of the rolling action. After the base is rolled to its new location with the tether cord reeled in, it is turned back to its flat position and the mowing machine is again connected to the free end of the tether cord for repeating the spiral mowing cycle at the new location.

3,627,072

### PLURAL OUTPUT PATH TORQUE TRANSMITTING MECHANISM—HYDRAULIC CLUTCH FOR FOUR WHEEL DRIVE VEHICLES

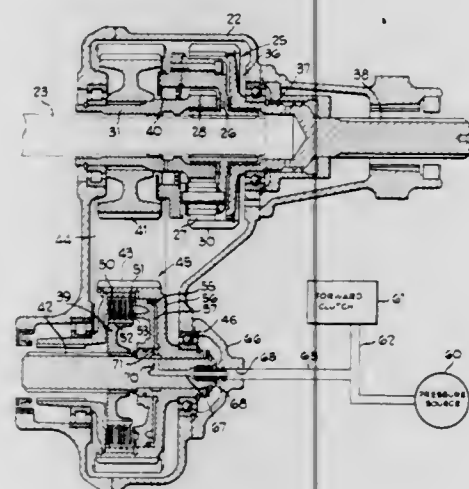
Richard L. Smirl, La Grange Park, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 5, 1969, Ser. No. 830,711

Int. Cl. B60k 17/34

U.S. Cl. 180—44

15 Claims



A multiple output path drive system for a vehicle having plural pairs of traction wheels including a torque transfer mechanism adapted to receive an input torque which incorporates a differential gear mechanism adapted to distribute the input torque to a plurality of drive axles and a fluid pressure responsive clutch between the differential gear mechanism and at least one drive axle in fluid communication with a pressure source of an automatic transmission, the clutch and fluid pressure source adapted to urge the clutch into a fully engaged condition only when the transmission is in a forward mode of operation.

3,627,073

### SEAT FOR POWERED VEHICLE

Larry L. Grimm, Route 1, Box 1D, Cannon Falls, Minn.

Filed May 28, 1970, Ser. No. 41,252

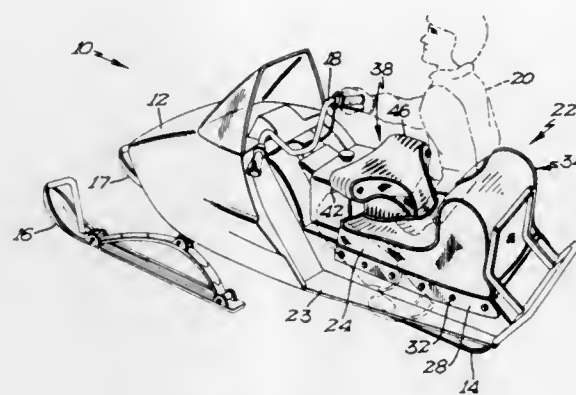
Int. Cl. B60n 1/00

U.S. Cl. 180—82

8 Claims

A novel seat for powered, operator-guided vehicles which are arranged to travel over land is disclosed. The preferred embodiment of such a vehicle disclosed herein is a snowmobile which includes a chassis, a motor mounted on the chassis, treads driven by the motor and arranged to propel the vehicle, handle bars connected to rotatable front skis for guiding and steering the vehicle, and a generally flat operator seat mounted upon the chassis. Novel apparatus for aiding

the operator in maintaining his position upon the operator seat is further disclosed including a vertically rising member arranged to attach to either the operator seat or the chassis, near the front of the operator seat and project above the operator seat. The vertical member is of a width which will allow the legs of an operator to fit around it. Two extensions



project leftward and rightward from the top of the vertical member and are spaced from the top surface of the seat by a distance sufficient to allow the legs of the operator to fit between the seat and the projections. An operator may thus position his legs around the vertical member and under the projections to securely maintain his position in the operator seat.

3,627,074

### INSTALLATION FOR THE EQUALIZATION OF EXCESSIVE ACCELERATIONS IN MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

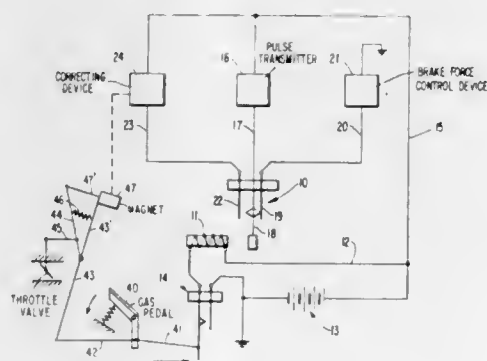
Filed May 9, 1969, Ser. No. 823,335

Claims priority, application Germany, May 10, 1968, P 17 55 454.0

Int. Cl. B60k 33/00

U.S. Cl. 180—82

17 Claims



An installation in which a pulse transmitter or a set of pulse transmitters is adapted to be connected either with a brake-force control device or with a correcting member reducing the engine output, depending on whether or not the gas pedal or brake pedal is depressed.

3,627,075

### SAWHORSE BRACKET ASSEMBLY

Sherwood G. Enders, and Avram M. Meshulam, both of Baltimore, Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Sept. 30, 1970, Ser. No. 76,692

Int. Cl. F16m 11/00; E04g 1/32

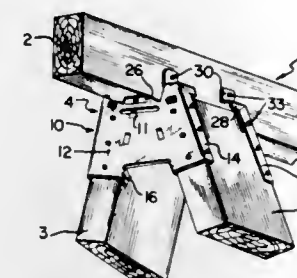
U.S. Cl. 182—224

5 Claims

A support bracket for use in the assembly of the rail and legs of a sawhorse comprising a plate including a generally triangularly shaped face having flanges angularly disposed

rearwardly to form sides and means formed rigid with the face and cooperating with the sides to locate the sawhorse legs. A slot in the upper portion of the face receives the rail

the last named means permits relative movement between the last named means and the pulley during raising and lowering one section upon engagement of that section with the latch means.



3,627,077

### MOTOR VEHICLE CHANGE-SPEED GEAR LUBRICATION ARRANGEMENTS

Otto Grupe, Gross-Gerau, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1970, Ser. No. 21,110

Claims priority, application Germany, Mar. 27, 1969, P 19 15 605.9

Int. Cl. F01m 9/06

U.S. Cl. 184—6.12

12 Claims

and is formed with sides converging toward the bottom to provide a biting contact when said rail is driven into place. The support bracket also has a means for facilitating a nesting feature for convenient packaging in sets of two or more.

3,627,076

### EXTENSIBLE LADDER CONSTRUCTION

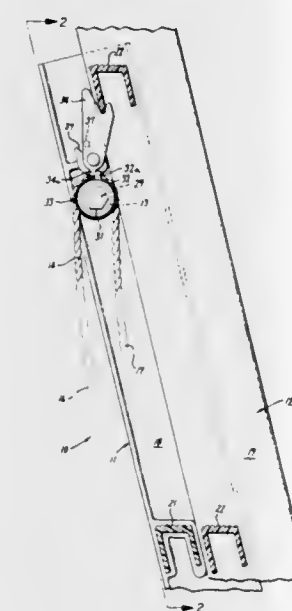
Merritt A. Robinson, Marin County, Calif., assignor to Industrial Ladder Company, Oakland, Calif.

Filed Nov. 16, 1970, Ser. No. 89,546

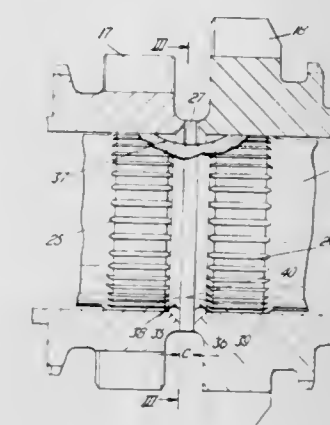
Int. Cl. E06c 1/12

U.S. Cl. 182—212

6 Claims



An extensible ladder construction of a type employing first and second sections extensible lengthwise relative to each other wherein the sections each comprise a pair of laterally spaced elongated stringers and tread members uniformly spaced longitudinally of each section and carried at their opposite ends by the stringers is arranged whereby the stringers are of channel shaped cross section to provide, in each instance, a web and parallel side flanges, the stringers of the first and second sections being turned 180° relative to each other and with the ends of tread members from both of the first and second sections disposed between the flanges of the stringers of the first section so as to retain the two sections in guided relation. Accordingly, one pair of stringers includes a guide channel for receiving a flange and the ends of the laterally extending tread members of another pair of stringers so as to provide a double width tread construction while increasing the thickness of the ladder on the order of no more than 50 percent. Means for lifting one section with respect to the other are provided which are movable with rotation of a pulley and operable therewith for engaging a portion of a latch means so as to move the latch between advanced and retracted positions for engaging and releasing the two sections. A slip drive means interposed between the pulley and



An annular flange portion rotatable with a shaft spaces apart two rotary gears mounted on bearing surfaces on the shaft. The flange has at least one peripheral slot whose sidewalls direct lubricant impinging thereon to the bearing surfaces.

3,627,078

### ROTARY LIQUID PICKUP

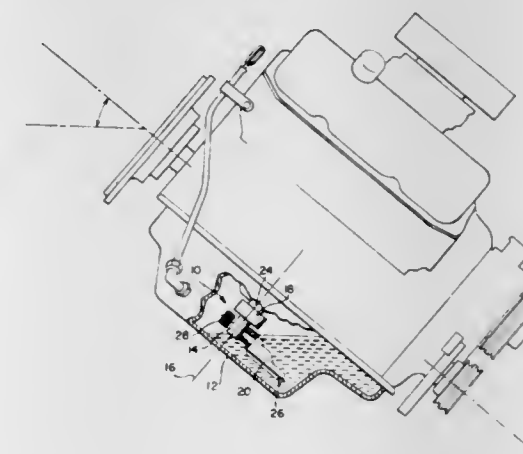
James C. Burrous, Cupertino, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 12, 1970, Ser. No. 88,558

Int. Cl. F01m 11/06

U.S. Cl. 184—6.2

7 Claims



An improvement in liquid pickup systems for drawing liquid from a tilting vehicular liquid reservoir. A pickup member is mounted to rotate within the reservoir by gravitational force when the reservoir is tilted, and an eccentrically mounted unbalancing member integral therewith provides positive rotation of the pickup member. The unbalancing member has a density substantially less than the density of the normally submerged portion of the pickup member so as to provide a substantial shift in the position of the gravita-



tional force acting on the pickup member as the unbalancing member changes from a submerged to a nonsubmerged state.

3,627,079

## ELEVATOR SYSTEM FOR MINE SHAFT

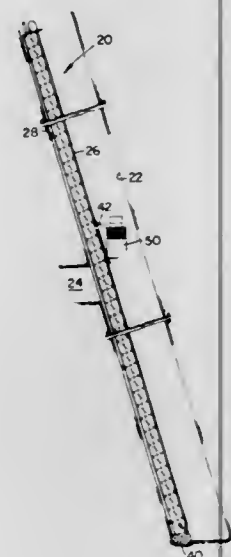
Swend F. L. Nielsen, San Mateo, and Guido K. Wegner, Pacifica, both of Calif., assignors to Norse Development Corporation, Rye, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,898

Int. Cl. B66b 9/06

U.S. Cl. 187—12

9 Claims



An underground elevator system for mine personnel comprised of support mast formed from a plurality of prefabricated structural sections that are connected in an end-to-end arrangement and secured to one side of an excavated shaft. The mast includes an emergency escape ladder enclosed by removable wire mesh and a cab movable along and guided by one side of the mast, the cab being mounted thereon by means that can be adjusted to maintain its level despite the degree of mast incline. The cab is driven by cable hoist means mounted at the top of the mast and includes an overspeed-catching means and a slip-sensing safety means.

3,627,080

## SPEED CONTROL SYSTEM FOR ELEVATORS

Takeo Yuminaka, Katsuta-shi, and Toshiaki Kurosawa, Hitachi-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

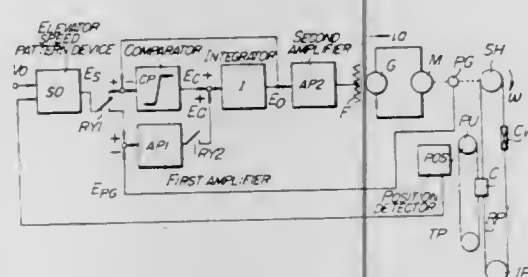
Filed Sept. 15, 1969, Ser. No. 857,755

Claims priority, application Japan, Sept. 16, 1968, 43/66106

Int. Cl. B66b 13/00

U.S. Cl. 187—29 R

3 Claims



A speed control system for elevators, wherein there is provided a speed pattern means SO for providing a constant speed pattern voltage during the accelerating operation and a deceleration pattern voltage which decreases in a stepped manner whenever the elevator cage arrives at each one of a plurality of present deceleration points during the decelerating operation, the output of the said means SO is supplied to

a comparator CP having positive and negative saturation characteristics, the output of the comparator CP is integrated by an integrator I, and the output of the integrator is negatively fed back to the input side of the comparator CP and at the same time to the elevator speed control system, and wherein during the accelerating operation the output of the speed pattern means SO is supplied to the comparator, and during the decelerating operation, a correction signal corresponding to the difference between the output of the said means SO and a voltage corresponding to the actual elevator speed is generated to be supplied to the integrator, thereby correcting the output of the said integrator in accordance with the actual elevator speed.

3,627,081

## BRAKE APPARATUS

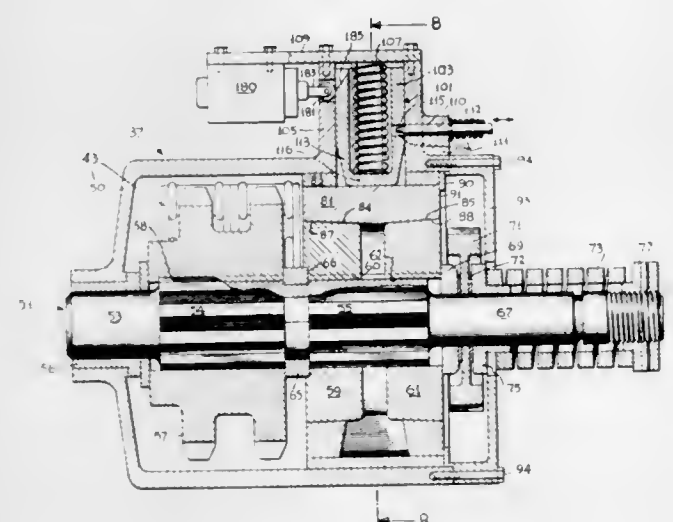
Gerard R. Santos, Levittown, Pa., assignor to Boothe Airside Services, Inc.

Filed July 31, 1969, Ser. No. 846,553

Int. Cl. B66b 1/24, 1/26

U.S. Cl. 187—38

7 Claims



Brake apparatus to prevent free fall of an elevatable body of a passenger transfer vehicle in event of failure of the lifting apparatus of the body. A control device senses an increase in normal lowering speed of the body and commands actuation of the brake apparatus. The control device also provides an electrical signal to disable the lifting apparatus of the body.

3,627,082

## ELEVATOR DOOR SAFETY DEVICE

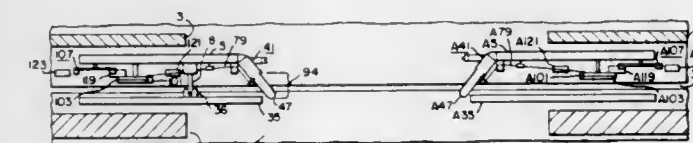
Harry Berkovitz, Glen Rock, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 7, 1970, Ser. No. 026,229

Int. Cl. B66b 13/00

U.S. Cl. 187—52

12 Claims



Mechanical safety edges mounted on the leading edges of the elevator car doors are projected into the path of the hoistway doors during door closing to protect objects from being struck by either the car doors or hoistway doors. A toggle device restrains a harmonic motion mechanism from extending the safety edges when the doors are preopened as the car approaches a landing. The edges can be adapted for use in conjunction with radiant energy detecting devices.

3,627,083

## DISC BRAKE ADJUSTING MECHANISM

Hermann Selp, Bad Vilbel, and Erich Rabich, Sprendlingen, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

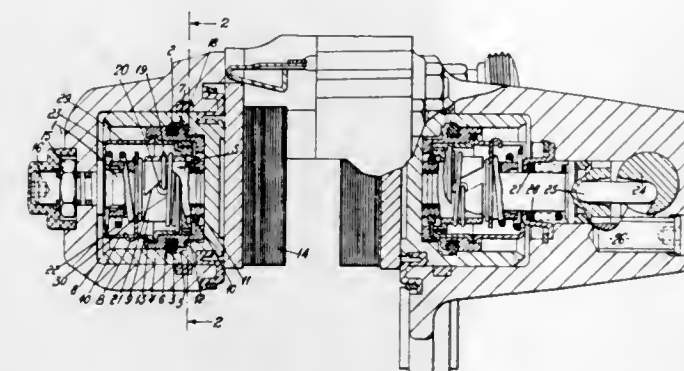
Filed Dec. 5, 1969, Ser. No. 882,526

Claims priority, application Germany, Dec. 9, 1968, P 18 13 560.9

Int. Cl. F16d 65/56, 55/18

U.S. Cl. 188—71.8

5 Claims



An improved automatic adjusting device for disc brakes which prevents damage to the adjusting device when the permissible actuator piston stroke is exceeded. The connection between the piston and the adjusting device is releasable when the axial force exceeds a predetermined limit. In the embodiment shown the connection is formed by a deformable ring mounted in facing grooves in the piston and adjusting parts so that the ring may be forced completely into one of the grooves to allow relative movement between the piston and the adjusting mechanism.

3,627,084

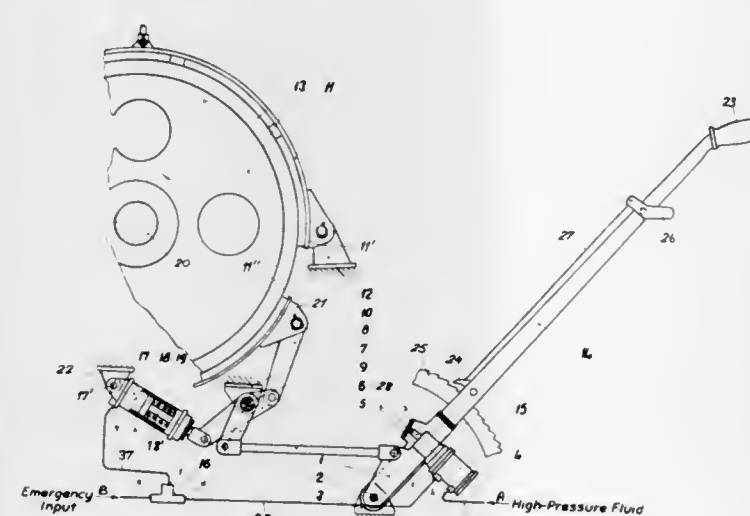
## DUAL-CONTROL HAND BRAKE

Vasile Benedek, Bucharest, Romania, assignor to Institutul de Proiectari si Cercetari Pentru Utilaj Petrolier

Filed Oct. 14, 1969, Ser. No. 866,217

Int. Cl. F16d 65/18

U.S. Cl. 188—105



A brake band for a drum brake is hydraulically or pneumatically tensionable by a servo piston under the control of a throttle valve mounted on a swingable arm which is mechanically linked with the brake band and whose pivotal axle supports an independently swingable operating lever. An abutment on that lever coacts with a spring loaded control pin for the throttle valve and also confronts a stop on that valve for rotative entrainment of the swingable arm to tension the brake band mechanically upon failure in the hydraulic or pneumatic circuit. The mechanical linkage between the

3,627,085

## AUTOMATIC BRAKING DEVICE IN SPRING MOTOR

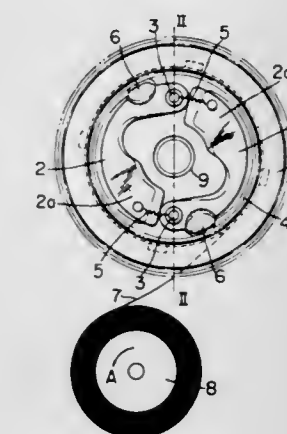
Ishi Habuka, Kazuko Habuka, and Takashi Habuka, all of 23-8, 3-Chome, Sengoku, Bunkyo-ku, Tokyo-to, Japan

Filed Nov. 4, 1969, Ser. No. 873,899

Int. Cl. B60t 7/12

U.S. Cl. 188—184

3 Claims



An automatic braking device in which a stationary cylinder is fixed to a dead shaft of a spring motor, at least two expanding brake shoes are pivoted on a rotatable drum of the motor and centrifugally operated to contact and apply frictional force to the inner surface of the stationary cylinder when the drum speed exceeds a predetermined value, and spring means for exerting return torque on the brake shoes. This braking device thus operates automatically to brake the drum and thereby absorb and dissipate kinetic energy which would otherwise cause impact.

3,627,086

## COMBINED SEAT AND ARTICLE CARRYING CASE

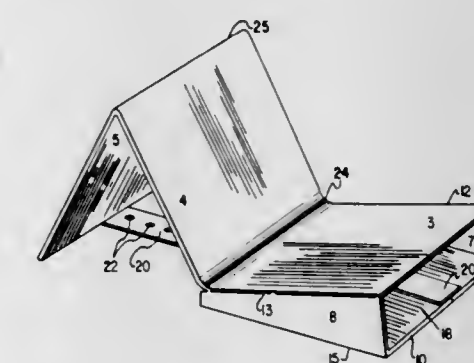
Robert A. Caigan, 1134 First Ave., New York, N.Y., and Gideon Loewenstein, 39-37 46th St., Long Island City, N.Y.

Filed May 7, 1970, Ser. No. 35,519

Int. Cl. A47c 13/00

U.S. Cl. 190—8

7 Claims



An inexpensive combined seat and article-carrying case is formed from a single, flat blank of paper stock. The blank is provided with score lines whereby an open-ended receptacle or case formation is provided, which case also serves as the seat. Other transverse score lines on the blank divide it into a backrest panel adjacent the seat and a backrest support panel adjacent the backrest panel. The transverse score lines between the panels act as hinge lines whereby the panels may be placed in various angular related positions. The panels are held in their placed position by a belt means, one end of which is fixed within the case formation and the other end of which is adjustably secured to the backrest support panel.



The seat can be converted into an article carrier by folding the backrest panels on the seat portion and thereafter passing the belt over the folded backrest panels and across the open front end of the case formation to engage a fastening means secured to the bottom of the case formation. Thus, the panels are held in a folded position, and the portion of the belt bridging the open end of the case serves as a handle to carry the unit.

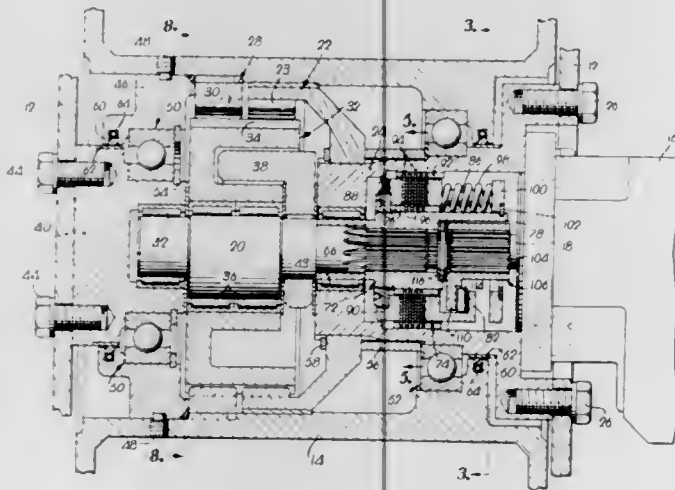
3,627,087

**ORBITING GEAR WINCH AND BRAKE THEREFOR**  
Wade A. Eskridge, Overland Park, Kans., assignor to A. B. Chance Company, Centralia, Mo.

Filed Dec. 9, 1969, Ser. No. 883,466  
Int. Cl. F16d 55/38, 59/02; B66d 5/12

U.S. Cl. 192-8

18 Claims



A gear apparatus and brake assembly for a power-operated winch having a rotatable winding drum are both completely contained within the drum. The gear apparatus includes an inner external toothed gear having first and second toothed sections which simultaneously engage first and second outer internal toothed ring gears, one of which is fixed and the other of which is secured to the rotatable winding drum. The two ring gears have different numbers of teeth, and the external toothed gear has fewer teeth than the least number of either one of the two ring gears. Thus, as an eccentric shaft moves the external toothed gear around the inside of the two ring gears in an orbital path, the movable ring gear and the rotatable winding drum coupled therewith are moved at a greatly reduced speed relative to the fixed ring gear.

The brake assembly is located at the input shaft of the apparatus to take advantage of the low torque value at this point. A plurality of side-by-side braking plates are provided in alignment with the drive shaft with certain ones being fixed against rotation while others are rotatable with the driven shaft of the gear apparatus. The plates are movable toward and away from each other and springs normally bias them into frictional interengagement to lock the driven shaft against rotation. Cam means in the form of a number of coupling pins interposed between the drive structure and the driven shaft are operable by the drive structure to remove the bias on the braking plates in response to rotation of the drive shaft when the drive is operated and to permit return movement of the cam pins to their initial positions within respective recesses therefor when the drive shaft ceases rotation whereby the spring bias on the braking plates causes the same to move back into braking disposition.

### 3,627,088 DRIVE RELEASE AND REPOSITIONING MEANS FOR A RECIPROCATING MEMBER

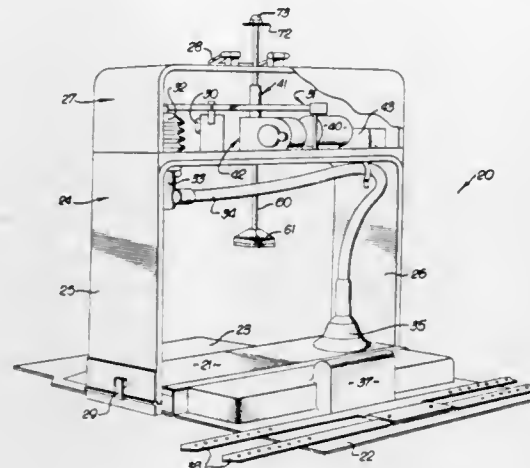
John T. Muller, Box 296, Hanover, N.J.

Original application Apr. 15, 1968, Ser. No. 721,301, now Patent No. 3,552,390, dated Jan. 5, 1971. Divided and this application June 24, 1970, Ser. No. 49,341

Int. Cl. F16d 71/02

U.S. Cl. 192-142 R

5 Claims



Cardiopulmonary resuscitating apparatus for automatically providing constant, substantial rhythmic heart perfusion at a rate equal to a normal heart beat and timed ventilation of the patient's lungs to provide artificial ventilation and circulation during cardiac arrest.

3,627,089

### CENTRIFUGAL CLUTCH

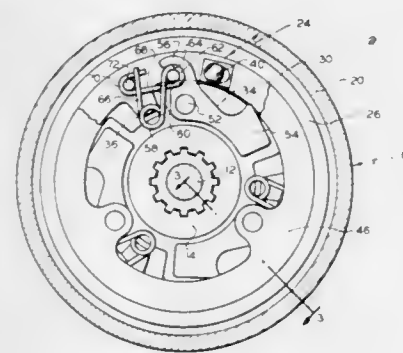
Donald S. Dence, Brooklyn, Mich., assignor to Clark Equipment Company

Filed July 13, 1970, Ser. No. 54,262

Int. Cl. F16d 43/24

U.S. Cl. 192-105 CP

13 Claims



A centrifugal clutch wherein swing levers adapted to pivot under a predetermined centrifugal force cause a pressure ring to index and thus compress a clutch pack for engagement of the clutch. The swing levers are operatively connected to the pressure ring by a plurality of springs that also serve to bias the swing levers and the pressure ring to a clutch disengaged position.

3,627,090

### SECTIONAL REFUSE CHUTE FOR CONSTRUCTION SITES

Edward Earl Dickey, R.R. #6, Brampton, Ontario, Canada

Filed Nov. 18, 1969, Ser. No. 877,766

Claims priority, application Canada, Dec. 21, 1968, 38,461

Int. Cl. B65g 11/14; E04f 17/12

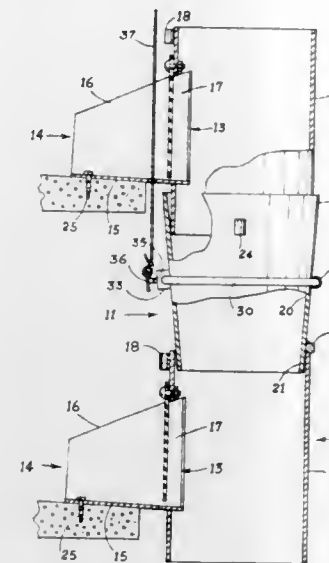
U.S. Cl. 193-34

8 Claims

A sectional sheet metal refuse chute, for use at a building site, which is adapted to be erected along side a building

under construction, and incorporating access hatchways at each floor level, and refuse funnel means for each hatchway, at least a part of the funnel means also providing the means of support for the refuse chute, and in which some of the sec-

dividually rotatable conveyor rollers to apply a self-energiz-



tions are tapered from one end to the other so that they may telescope with other sections to accommodate variations in dimensions of buildings permitting the chute to be reused many times at different sites.

3,627,091

### GRAVITY ROLLER CONVEYOR WITH PULSATING BAND BRAKE

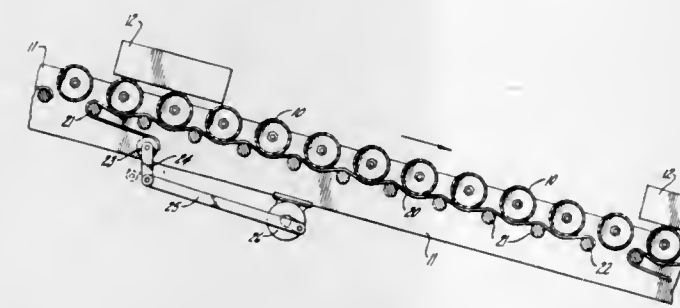
Fred J. Fleischauer, Oakmont, Pa., and Theodore A. Hammond, Grand Haven, Mich., assignors to General Logistics Corporation, Oakmont, Pa., by said Fleischauer and Ermanco Incorporated, Grand Haven, Mich., by said Hammond

Filed May 5, 1969, Ser. No. 842,046

Int. Cl. B65g 13/00, 13/075

U.S. Cl. 193-35 A

4 Claims



A braking device for gravity roller conveyors is disclosed in which a flexible band is disposed against certain conveyor rollers to apply a self-energizing frictional braking force upon being tensioned by a powered cyclical tensioner for tensioning and releasing the band at predetermined periodical intervals.

3,627,092

### BRAKE FOR GRAVITY ROLLER CONVEYORS

Fred J. Fleischauer, Oakmont, Pa., and Theodore Hammond, Grand Haven, Mich., assignors to General Logistics Corporation, Oakmont, Pa., by said Fleischauer and Ermanco Incorporated, Grand Haven, Mich., by said Hammond, part interest to each

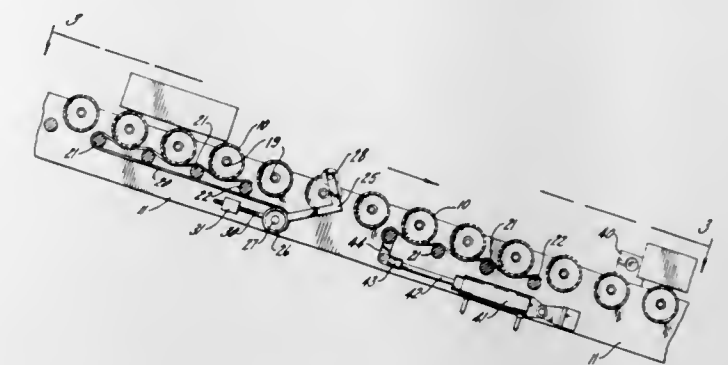
Filed May 5, 1969, Ser. No. 842,044

Int. Cl. B65g 13/00, 13/071, 13/075

U.S. Cl. 193-35 A

5 Claims

A brake for an accumulation gravity roller conveyor is disclosed in which a flexible band is disposed against certain in-



ing frictional braking force upon being tensioned by a downstream triggering device.

3,627,093

### CONTROL HAVING MEANS DETECTING DEVICE TO BE WORKED ON

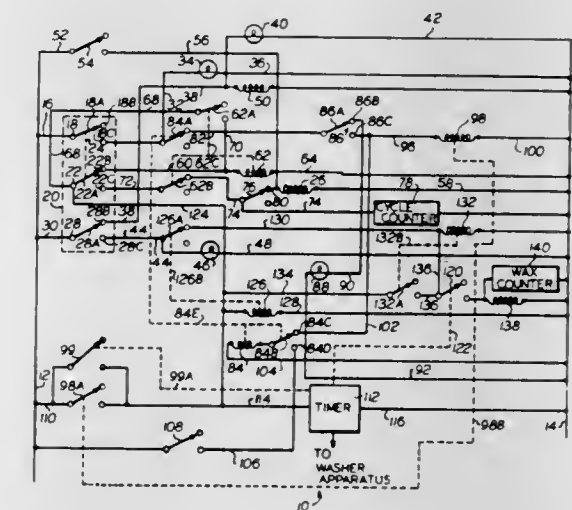
Harry Greenwald, Whitestone, N.Y., assignor to Greenwald Industries, Inc., Brooklyn, N.Y.

Filed Apr. 17, 1970, Ser. No. 29,484

Int. Cl. G07f 5/10

U.S. Cl. 194-9 T

13 Claims



Control apparatus for controlling the operation of a mechanism adapted to perform specified acts on an associated device comprising a coin responsive mechanism adapted to move from a rest to a first position upon the deposit of a first amount of money. Detecting means is actuated by the coin responsive mechanism when it moves to the first position to detect the presence of the device upon which the acts are to be performed. The detecting means actuates an operate means when the presence of the device is detected for operating the mechanism which performs the acts. Additionally, a homing device is provided which is responsive to the operation of the operate means to move the coin responsive mechanism back to the rest position so that additional amounts of money may be deposited in the coin responsive mechanism to move the coin responsive mechanism back to the first position.

3,627,094

### COIN CHUTE GUARD MEANS

Clarence D. Kaufman, Las Vegas, Nev.; Terrence A. Reedy, Jr., Skokie, and Joseph E. Lally, McHenry, Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Dec. 16, 1968, Ser. No. 784,049

Int. Cl. G07f 3/02

U.S. Cl. 194-97

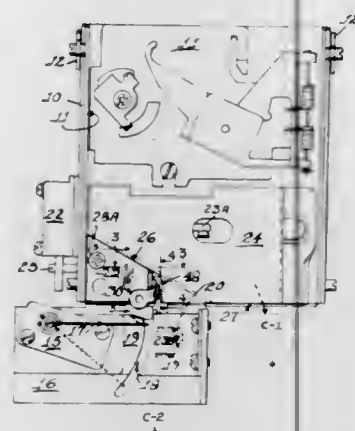
7 Claims

The disclosure provides a form of unidirectional coin gate or blocking means at the lower coin exit in drop- or gravity-



type testing chutes so as to be situated at a point interposed between the chute exit and a closely proximate auxiliary

to print improved characters having diagonally extending and curved segments.



coin-handling device in order to block off any space in which a fraudulent tethered coin can be manipulated for repeated withdrawal and reentry into the auxiliary device.

3,627,095

## NUTRITIVE PROTEIN FROM CELLULOSE

Vadake R. Srinivasan, and Clayton D. Callihan, both of Baton Rouge, La., assignors to The Louisiana State University Foundation, Baton Rouge, La.

Filed Aug. 5, 1969, Ser. No. 847,719

Int. Cl. C12d 13/00

U.S. Cl. 195-33

6 Claims

Comestible, digestible protein is produced from cellulose by the combined cultivation of a cellulase-elaborating micro-organism and *ALCALIGENES FAECALIS* on delignified cellulose. The resultant protein is high in nutritive value and is suitable for use as an animal feedstuff.

3,627,096

## WIRE PRINTING METHOD

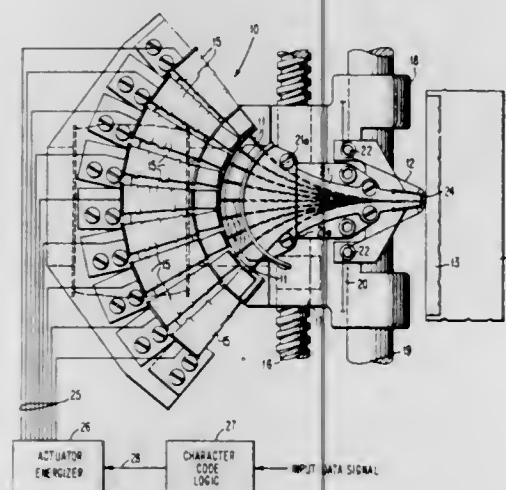
Edward D. Finnegan, Delray Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1969, Ser. No. 819,369

Int. Cl. B41j 3/04

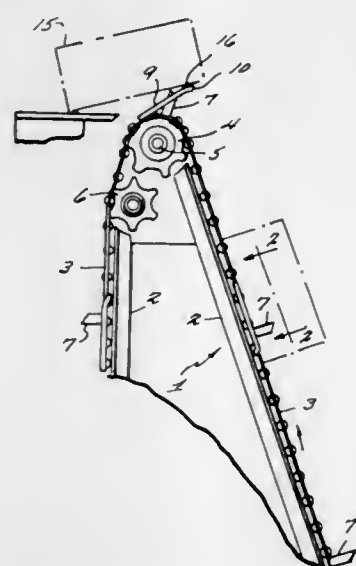
U.S. Cl. 197-1

5 Claims



A printing method for use with a wire printer designed for improved printing of both higher and lower case alphabetical characters wherein additional printing points and positions are added to write better-formed characters, and especially

A conveyor having a shedder arm to lift material from carrier lugs or bars thus avoiding tearing or wrapping.



3,627,097

## KEY FOR A KEYBOARD WHICH MAY BE MADE MORE OR LESS DIFFICULT TO DEPRESS

Hermann Plieninger, Neugilching, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

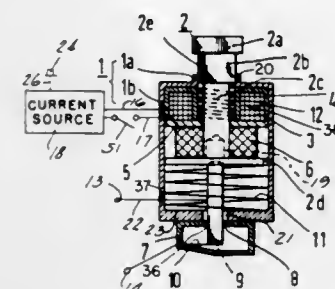
Filed Nov. 20, 1968, Ser. No. 777,298

Claims priority, application Germany, Nov. 29, 1967, S 113043

Int. Cl. B41j 5/22

U.S. Cl. 197-107

2 Claims



A key for a keyboard such as is used in control stations for computers, teletypewriters, and other machines, in which keys are used to transmit or record intelligence, and which may have one or more selected keys that may be rendered difficult to press, which pressure is substantially more than the normal operating pressure of the keys. Each key is operatively associated with a magnetizable disc and a permanent magnet and an electromagnet which provide the biasing force so as to block the key. The key is also spring-biased so that it may initially be pressed for a first distance.

## ERRATUM

For Class 198-177 see:  
Patent No. 3,627,595

3,627,098

## APPARATUS FOR CONVEYOR

Clyde Lorenz, deceased, late of Lenexa, Kans. (by Pauline Lorenz, administratrix, 12910 West 92nd St., Lenexa, Kans. 66215)

Filed Feb. 16, 1970, Ser. No. 11,620

Int. Cl. B65b 65/02

U.S. Cl. 198-7 BL

4 Claims

3,627,099

## TRANSFERRING AND STACKING ELONGATED MEMBERS

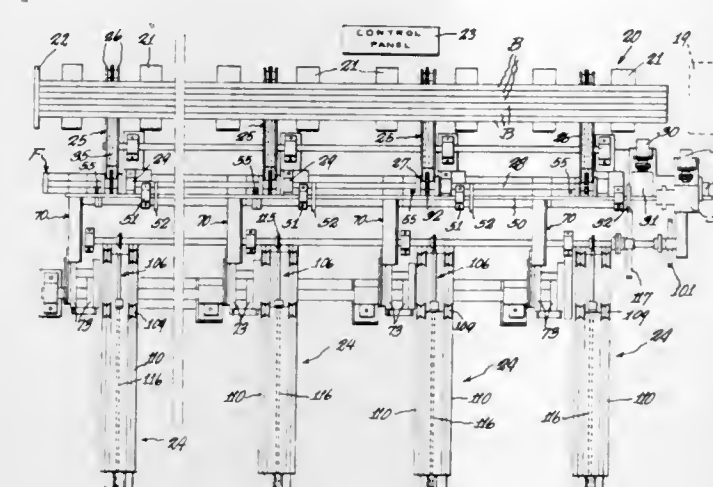
James O. Shaffer, Canfield, Ohio, assignor to Wean Industries, Inc., Youngstown, Ohio

Filed Oct. 8, 1969, Ser. No. 864,805

Int. Cl. B65g 47/30, 57/18

U.S. Cl. 198-20 R

6 Claims



Elongated members, such as bars of metal, are removed from a runout table, and one or more bars are transferred to star wheel means which lift the bars, one at a time, and deposit them on inclined slide means, the bars slide down the slide means and are stacked on a vertically movable support in rows. The slide means has telescoping sections to compensate for disposition of the bars in rows and the support lowers automatically to deposit the stacked bars, in rows, on car means on which they are banded and delivered to a station for removal.

3,627,100

## REORIENTING PAN TRANSFER SYSTEM

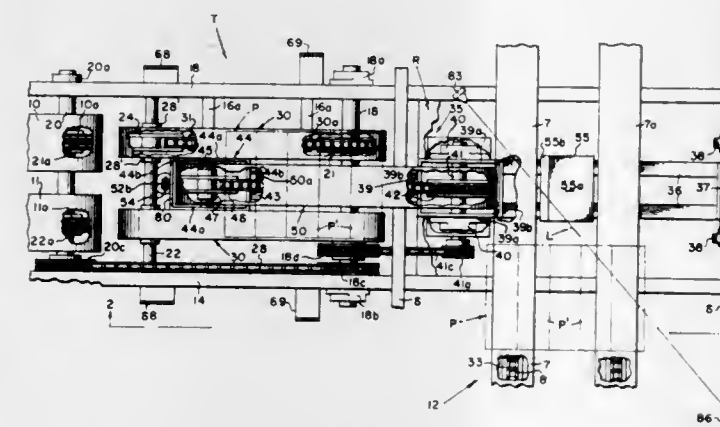
Gerald W. Bourbina; Robert W. Kluck; Richard Skarin, and Norman O. Krenke, all of Saginaw, Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed Oct. 5, 1970, Ser. No. 77,879

Int. Cl. B65g 47/26, 47/42

U.S. Cl. 198-21

15 Claims



High-speed transfer apparatus for transferring articles, such as pans or pansets of dough which may be proceeding lengthwisely on an endless delivery conveyor, to a pair of

laterally spaced-apart, parallel receiving conveyors, extending generally crosswisely to the delivery conveyor, in such a manner that the articles may be reoriented to proceed in a broadside manner. A vertically movable transfer conveyor extends generally in line with the delivery conveyor for receiving articles therefrom and mounts a support plate adjacent the discharge end thereof which is capable of movement between the laterally spaced-apart-receiving conveyors to a position suitable for receiving articles from the transfer conveyor. Apparatus is provided for raising the transfer conveyor and support plate from a lowered position to a raised position above the upper surface of the receiving conveyors so that articles traveling on the transfer conveyor are transferred to the support plate, and for lowering the transfer conveyor and support plate from the raised position to a lowered position to deposit the articles gently on the receiving conveyors.

3,627,101

## CONVEYOR ARRANGEMENT FOR FEEDING ARTICLES IN DISCRETE AND BULK FASHION

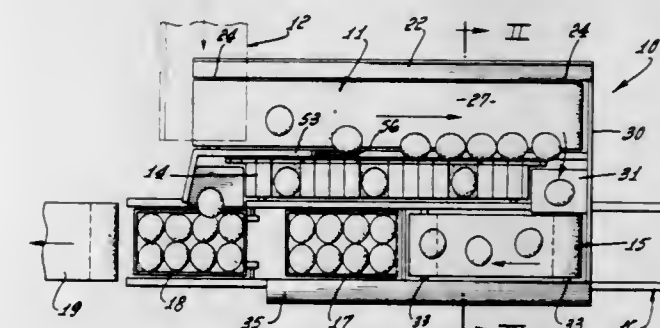
Stanley A. McClusky, 3001 Baylor Ave., Bakersfield, Calif.

Filed Dec. 18, 1969, Ser. No. 886,210

Int. Cl. B65g 47/56

U.S. Cl. 198-22

15 Claims



A conveyor arrangement for transporting, separating, and feeding to a receptacle in discrete and bulk fashion articles such as cantaloupe or other readily turnable articles of fruit or produce. The conveyor arrangement includes a first conveyor for transporting articles in one direction, a second conveyor along side said first conveyor and moving discrete articles separated from the articles on the first conveyor in the opposite direction, and a third conveyor for moving the remainder of said articles. Means to transfer articles from said first conveyor to the second conveyor includes a wall with spaced openings disposed between said first and second conveyors for turning an individual article into an opening to cause transfer of the article into a pocket or recess on the second conveyor.

3,627,102

## CONVERGER AND FEEDER FOR COOKIES FOR WRAPPING

Richard C. Talbot, Stokie, Ill., assignor to Peters Machinery Company, Chicago, Ill.

Filed Sept. 22, 1970, Ser. No. 74,418

Int. Cl. B65g 47/08, 47/26

U.S. Cl. 198-26

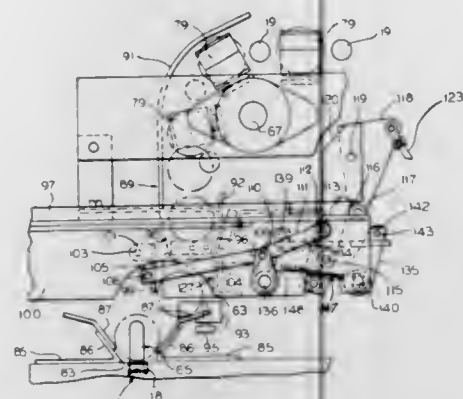
17 Claims

Apparatus for supplying cookies or other articles to be wrapped in side-by-side groups, and discharging the groups



of articles onto a wrapping machine conveyor in succession where they are conveyed in separated relation relative to

ference in the coefficients of friction of the surfaces of the articles to set the latter in positions in which the surface having a lower friction coefficient is directed upwards due to the fact that a helical chute mounted inside the vibrobunker has



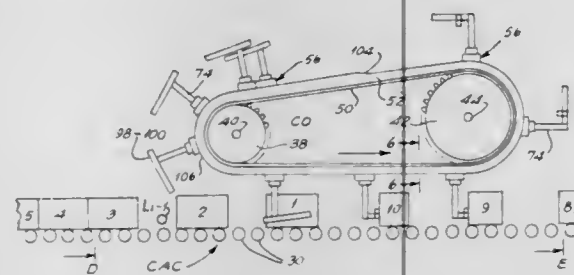
each other and in line to the wrapping machine, in a continuous operation without the use of manual labor.

3,627,103

## CASE PALLETIZERS

John M. Leach, P.O. Box 341, Port Jefferson, N.Y.  
Filed May 4, 1970, Ser. No. 34,201  
Int. Cl. B65g 15/14, 47/24  
U.S. Cl. 198—33 AB

13 Claims



A palletizing machine and method which are particularly applicable to high-speed loading of cases in tiers on pallets or sheets in that every case received at the tiering operation and which requires repositioning is contacted by a case orienter and conducted to a scheduled relative position to ultimately form the desired tier or layer pattern without stopping forward motion of any part of any case at any time. In addition, the tiers so formed are alternately stacked without overhead suspension directly from the stripper plate onto two separate pallets or sheets.

3,627,104

## DEVICE FOR SPATIAL ORIENTATION OF FLAT ARTICLES AND MEMBERS

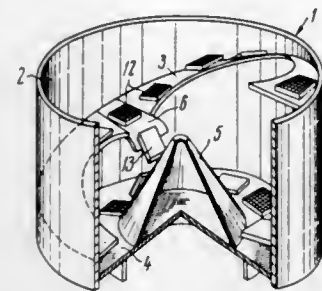
Vasily Romanovich Verchenko, Leningradsky prospekt, 69, kv. 128; Valery Alexandrovich Ilichov, A-482 Korpus 342, kv. 133; Vladimir Konstantinovich Andrianis, Bulvar Yana Raimisa, 18, Korpus 2, kv. 17; Vladimir Ivanovich Gorjunov, Belyaev, and Mikhail Grigorievich Gavrin, Leninsky prospekt, 85, kv. 429, all of Moscow, U.S.S.R.  
Filed Nov. 10, 1969, Ser. No. 875,117  
Int. Cl. B65g 47/24

U.S. Cl. 198—33 AA

4 Claims

A device for the spatial orientation of flat members and other such articles which makes it possible to use the dif-

a section inclined to the bottom thereof, the bottom being provided with an inwardly directed conical projection, a space being provided between said section of the chute and said projection for displacing the articles to the conical projection which is used for turning the articles over.

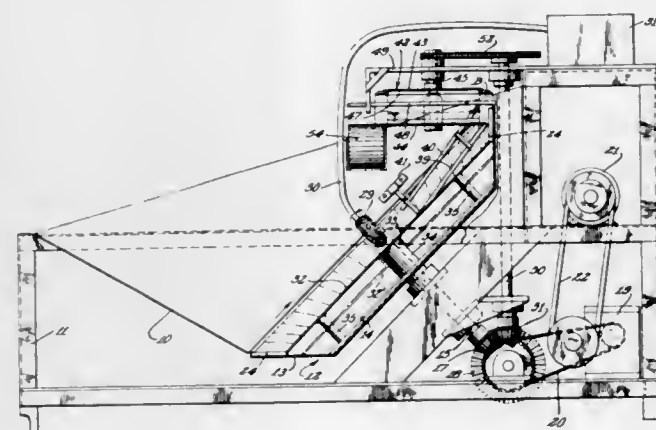


3,627,105

## PLASTIC BOTTLE UNSCRAMBLER

Donald T. Prodzinski, Glen Ellyn, Ill., assignor to Alpeda Industries, Inc., Golf, Ill.  
Filed Oct. 6, 1969, Ser. No. 863,896  
Int. Cl. B65g 47/26  
U.S. Cl. 198—33

14 Claims



Plastic bottles are adapted to be dumped randomly from a bulk supply into a receptacle wherein they are longitudinally oriented and from which the oriented bottles are taken off. More specifically, a rotary unscrambling drum on an oblique axis has a flaring, frustoconical rim provided with orienting pockets from which misaligned bottles are automatically ejected while the properly aligned bottles are delivered to a takeoff device.

3,627,106

## CONVEYOR INFEEED MECHANISM

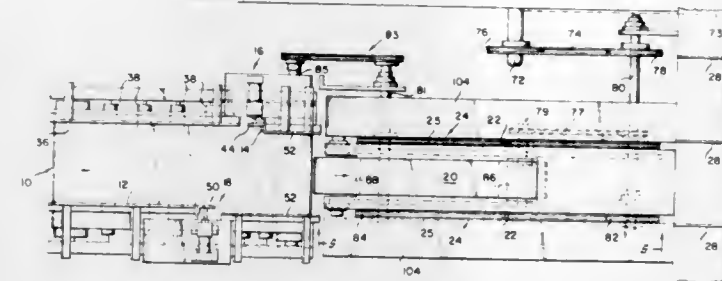
Edward L. Winfield, Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.  
Filed July 29, 1969, Ser. No. 845,801  
Int. Cl. B65g 47/26

U.S. Cl. 198—34

10 Claims

An apparatus for feeding articles from one conveyor means to another conveyor means at right angles thereto. Ar-

ticles are initially guided while being fed on a line conveyor into engagement with a protruding stop abutment producing a backlog of articles. In timed sequence, an article is released by escapement or article release means such as opposed pneumatic cylinders which move an article transversely on the line conveyor without skewing. A released article is fed by an overlap conveyor means to a feed finger means which



feeds the article to a cross feed conveyor means. Toward the end of the delivery of the cross feed conveyor, the article is decelerated. Means are provided for maintaining the feed fingers substantially vertical even as they pass over a forward sprocket adjacent the crossfeed conveyor. The apparatus permits the line conveyor, the overlap conveyor and a feed finger conveyor to advance continuously while the crossfeed conveyor advances intermittently.

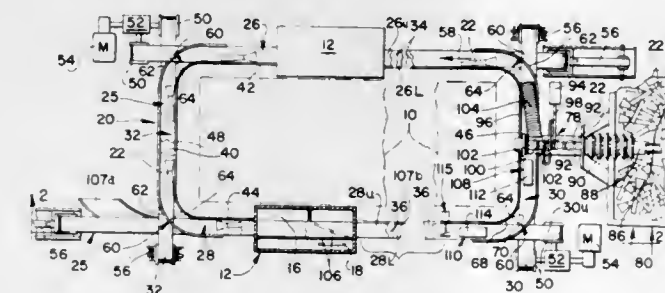
3,627,107

## BOBBIN-MONITORING SYSTEM

Frank C. Di Mauro, Providence, R.I., assignor to Leesona Corporation, Warwick, R.I.  
Filed Oct. 6, 1969, Ser. No. 863,858  
Int. Cl. B65g 47/26

U.S. Cl. 198—34

23 Claims



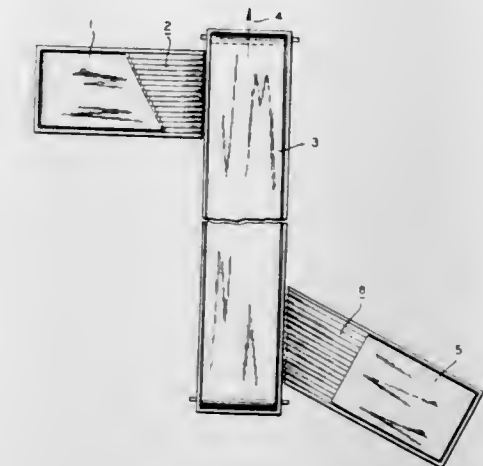
A bobbin-handling system for a self-tending spinning frame is disclosed. Tenders move back and forth along spinning stations and stop to service the stations as required. For example, the tenders doff filled bobbins, and then donn and thread-up empty bobbins. A belt conveyor encircles the spinning frame and has upper runs for carrying empty bobbins to the tenders and lower runs for receiving filled bobbins from the tenders and discharging the filled bobbins from the system. Special bobbin guides are provided at corners where the conveyor belts cross each other. Empty bobbins are automatically spaced from each other as they are delivered to the conveyor and apparatus is provided for automatically maintaining adequate spacing of the bobbins after they are delivered to the conveyor.

S93 O.G.—21

3,627,108  
ANGULAR CONVEYOR

Kenneth P. Hansen, 62 Belmont Ave., Plainview, N.Y.  
Filed Dec. 4, 1969, Ser. No. 882,090  
Int. Cl. B65g 37/00  
U.S. Cl. 198—102

7 Claims



An angular conveyor comprises a bed structure of substantially trapezoidal shape with one side at right angles to the two parallel sides, the fourth side extending relative to the third side at an angle which corresponds to the desired angular change in conveying travel. An axially elongated multiple driving pulley is rotatable along the third side, and individual belt pulleys are rotatable along the fourth side independently of each other. Endless conveyor belts of respectively different lengths are trained about the driving-pulley member and one of the respective individual pulleys. Each belt has a flattop portion in lateral proximity to the adjacent belt so that the belts conjointly form a substantially continuous top surface. The cross section of the belt is T-shaped with the lower portion forming a V-shape for engagement with V-grooves in the pulleys. A single such angle conveyor is sufficient for passing goods from a fixed counter top around any desired angle to another longitudinally undivided carryoff conveyor.

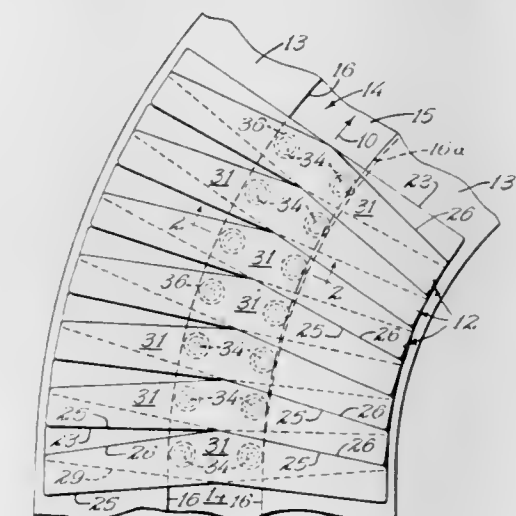
3,627,109

## CONVEYOR CONSTRUCTION

Richard E. Cabak, 3295 Golden Orchard Drive, Mississauga, Ontario, Canada  
Filed Sept. 19, 1969, Ser. No. 859,475  
Int. Cl. B65g 15/00

U.S. Cl. 198—137

10 Claims



A conveyor includes a series of connected overlapping plates capable of traveling along a tortuous path which may be curved about a vertical axis. The plates are equipped with frustoconical rollers having their larger diameters lowermost



and pivotally supported to the plates on generally vertical axes. A channel-shaped track has a wall shaped to the contour of the rollers to maintain the conveyor in place and reduce friction.

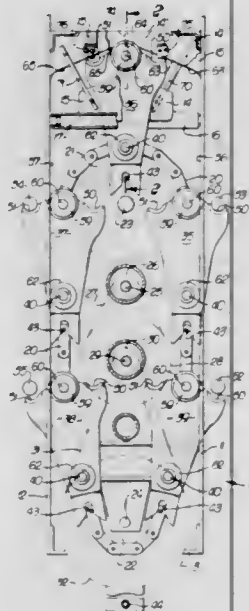
3,627,110

# TOP PICKUP TRANSFER GUIDE FOR ENDLESS CHAIN DRIVE

Robert D. Lichti, 3318 Warwood Road, Lakewood, Calif.  
Continuation-in-part of application Ser. No. 47,764, June 19, 1970. This application Aug. 21, 1970, Ser. No. 065,862  
Int. Cl. B65g 15/00

U.S. Cl. 198-155

7 Claims



A series of work arms are pivotally mounted on a chain drive and each has a pair of vertically spaced flanged wheels which roll against vertical track elements to hold the work arm erect as it lifts or lowers a load carried by a supporting cradle offset relative to the center of the work arm. Upper transverse track elements guide the upper wheel as it passes from one side of the chain drive to the other. To prevent the upper wheel, for example, from slipping back the wrong way during the crossover, a stop is located on each side of the center in positions where they will engage respective cradles so that, should the work arm tend to tilt too far from a vertical orientation, it will be prevented from doing so by engagement of one or the other cradle with its respective stop.

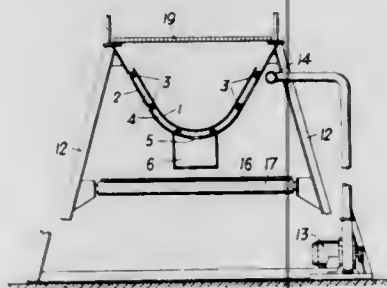
3,627,111

# TRANSPORT DEVICE

Bruno Hillinger, Vienna, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria  
Filed Nov. 12, 1969, Ser. No. 875,987  
Int. Cl. B65g 15/08

U.S. Cl. 198-184

14 Claims



A transport device for transporting bulk goods. The device includes an endless belt having an upper load-carrying run. This upper run of the belt is situated within an elongated

trough. Within the trough the upper run of the belt is supported longitudinally of the trough on rails. A source of fluid under pressure, such as a source of compressed air, communicates with the interior of the trough to supply an air cushion beneath the belt with the compressed air which forms the cushion being limited laterally by the rails. The pressure of the gas of the air cushion is greater than atmospheric pressure so that the rails themselves are substantially unloaded, enabling the belt to travel along the rails with very little friction.

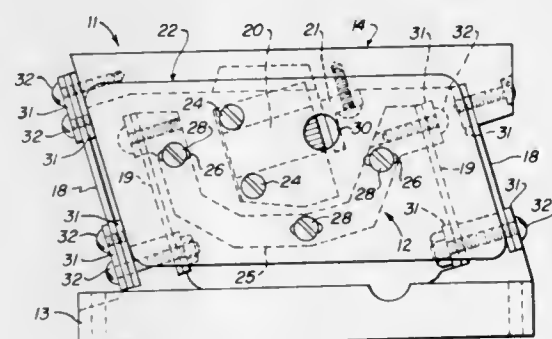
3,627,112

# IN-LINE VIBRATORY FEEDER ASSEMBLY

Floyd E. Smith, 5704 Brewster Lane, Erie, Pa.  
Continuation-in-part of application Ser. No. 792,303, Jan. 21, 1969. This application July 30, 1970, Ser. No. 059,549  
Int. Cl. B65g 27/00

U.S. Cl. 198-220 DC

9 Claims



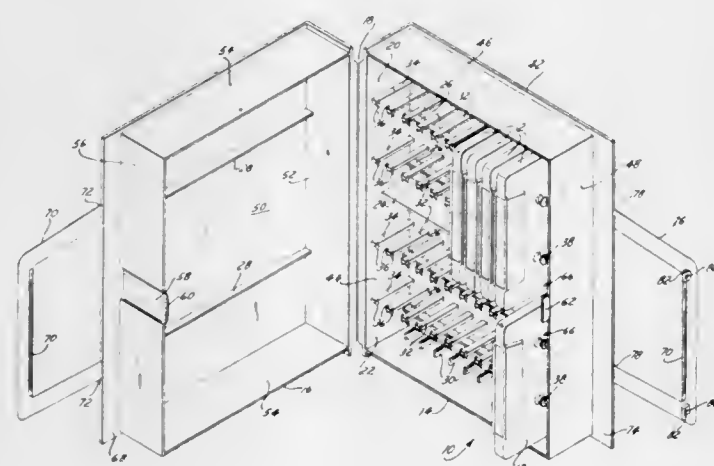
An in-line vibratory feeder having means for adjusting the coil-armature gap in the field under operating conditions to maximize the feed rate and vibratory amplitude.

3,627,113

# CASSETTE STORAGE AND CARRYING CASE

Albert A. Di Iola, Huntington Valley, Pa., assignor to Walco-Linck Corporation, Clifton, N.J.  
Filed Feb. 19, 1970, Ser. No. 12,752  
Int. Cl. A45c 11/00; B65d 25/28, 85/54, 81/00  
U.S. Cl. 206-1 R

6 Claims



A carrying case for a plurality of cassette type magnetic tape units in which the case has two hinged portions and means for interlocking the two portions together. A series of guides with retainers thereon are provided for holding the cassettes in place.

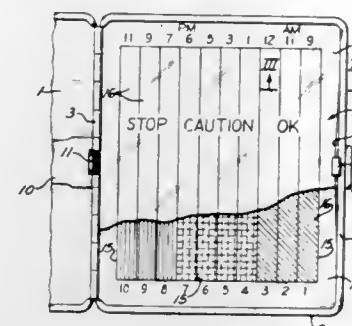
3,627,114

# CIGARETTE CASE FOR LIMITING SMOKING

Nicholas C. Mitchell, 996 Balmoral Drive, Pittsburgh, Pa.  
Filed Nov. 12, 1969, Ser. No. 875,941  
Int. Cl. A24f 15/12

U.S. Cl. 206-41 A

5 Claims



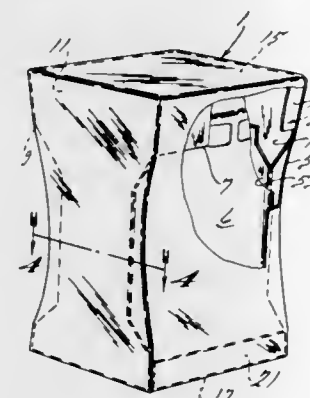
A hinged cigarette case is provided in its bottom section with a retaining bar that is hinged at one end to the case and is urged by a spring toward the bottom section to hold a row of cigarettes in place. Fitting in the bottom section is a chart provided with a plurality of spaced parallel lines extending lengthwise of it. The spaces between the lines correspond in number to the number of cigarettes the case is designed to hold and each has substantially the same width as a cigarette. The chart also is provided with a series of numbers at one end of the spaces designating predetermined hours of the day, whereby each cigarette in the case is designated by the hour it is to be removed from the case for smoking.

3,627,115

# TRANSPARENT FILTER PACKAGE

Eugene J. Samalon, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.  
Filed June 16, 1969, Ser. No. 833,589  
Int. Cl. B65d 5/04, 5/50, 65/16  
U.S. Cl. 206-45.14

9 Claims



A package for a throwaway oil filter has a housing with open front and back faces and reinforced sides which is formed from a one-piece folded blank and wrapped with a transparent plastic shrink film.

3,627,116

# SHRINK WRAPPED PACKAGE

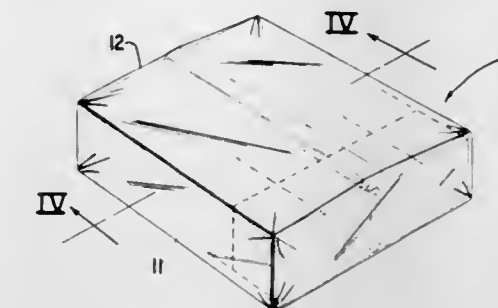
John Paul Cooper, Wilton, Conn., assignor to Borden Inc., New York, N.Y.  
Filed Dec. 18, 1969, Ser. No. 886,428  
Int. Cl. B65d 65/16

U.S. Cl. 206-45.33

4 Claims

A package composed of a single rectangular sheet of corrugated pasteboard providing a pair of juxtaposed compartments, the package construction includes a bottom wall, upstanding end walls and a top wall, the top wall being defined by the free ends of the pasteboard sheet disposed in over-

lapping relation over said brace; at least one integral upright brace formed by folding sections of the bottom wall; means



for securing sections of the brace to each other; and a heat-shrunk, transparent, thermoplastic film enveloping the package.

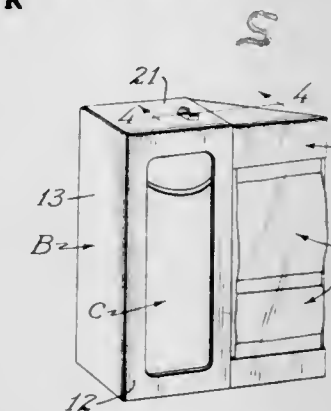
3,627,117

# COMBINATION PACKAGE

Jerry B. Giesler, Lombard, Ill., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.  
Filed June 19, 1970, Ser. No. 47,644  
Int. Cl. B65d 25/00

U.S. Cl. 206-47 R

10 Claims



An attachment for a carton is provided which is designed to support a second product or premium or which may merely provide added display space. Connecting flanges are provided at the top and bottom edges of the attachment which overlap, and are secured to, the top and bottom closures of the carton to hold a display panel substantially flush with a carton wall.

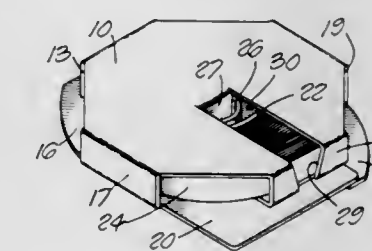
3,627,118

# RIBBON CARTRIDGE

Robert W. Daggs, Canoga Park, Calif., assignor to General Ribbon Corporation, Canoga Park, Calif.  
Filed Nov. 19, 1969, Ser. No. 877,970  
Int. Cl. B65d 83/00, 85/67

U.S. Cl. 206-52 R

8 Claims



A low-cost cartridge constructed from folded box board or the like for typewriter ribbon and similar articles. The cartridge permits handling of the ribbon and insertion into the machine without the operator's hands coming into contact with the ribbon. The unique manner in which the cartridge is folded from the box board permits it to secure the ribbon as



well as the core inside the cartridge and this is accomplished with a single fastening means.

3,627,119

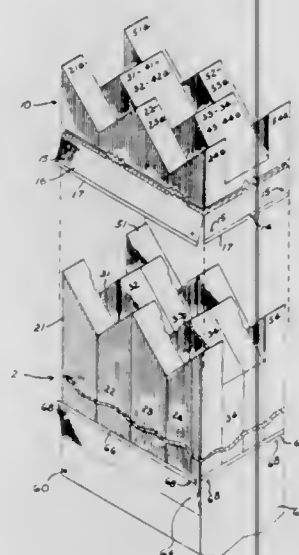
# JACKETED BUNDLES OF RIGID BEVELED STRIP MATERIAL

William T. Pearce, Route 1, Box 66G, Rogue River, Oreg.  
Continuation-in-part of application Ser. No. 749,669, Aug. 2, 1968, now abandoned. This application Sept. 22, 1969, Ser. No. 859,637

Int. Cl. B65d 85/30, 85/62, 71/00

U.S. Cl. 206—60 R

7 Claims



One or more protective jackets of cushioning and confining plastic may be provided for encapsulating and keeping in order sharply projecting ends of a bundle of bevel cut wooden strips, such as brick mold or fence pickets. The jacket or jackets maintain the strips in an orderly, compact arrangement, with the beveled tips desirably disposed in a common plane.

3,627,120

# SUTURE PACKAGE

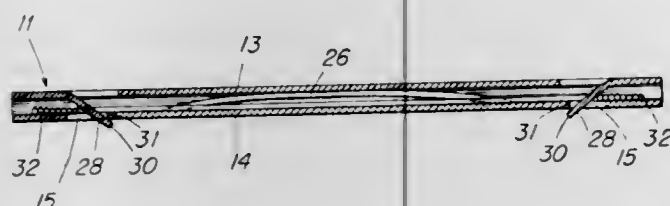
Robert L. Bordeau, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 856,087

Int. Cl. A61I 17/02

U.S. Cl. 206—63.3

8 Claims



A sterile suture package and method of assembling it comprising a double-panel cardboard holder with the suture coiled around a pair of spaced openings in a first one of the panels, and that panel having a pair of tabs, one at each side of the coil engaging over the suture strands at the corresponding side, the other panel having a pair of tabs complementary respectively to the holes in the first panel each tab being adapted to be pushed through the corresponding hole in the first panel and being positioned and shaped to extend beyond the edge of the hole and interlock releasably the two panels together until use of the suture when the folded panels are opened and the coiled suture exposed for progressive withdrawal.

## 3,627,121 COVERED TOP CONTAINER CARRIER

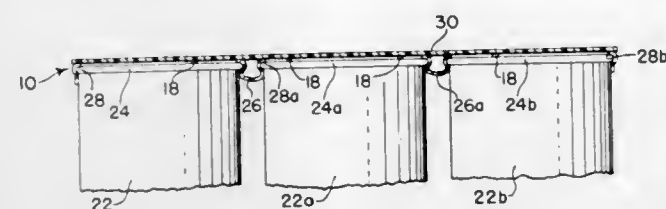
Raymond E. Deasy, Mt. Prospect, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jan. 5, 1970, Ser. No. 582

Int. Cl. B65d 71/00; B66f 19/00

U.S. Cl. 206—65 C

5 Claims



A package of a plurality of outwardly beaded or chimed containers, such as cans, each mounted within a corresponding aperture of an apertured plastic carrier sheet member with the carrier material round each aperture supportively engaging beneath the bead at the top of an inserted container and also enveloping the sides of the bead to present exposed carrier material thereabove, preferably overlying the top of the bead, so as to permit ready conversion of the thusly formed open top package unit to a closed top package unit by application of a flat protective cover sheet to the package unit and adhering the same to the exposed carrier material without manipulative deformation of the cover sheet.

3,627,122

# SYSTEM AND APPARATUS FOR THE ADMINISTRATION OF DRUGS

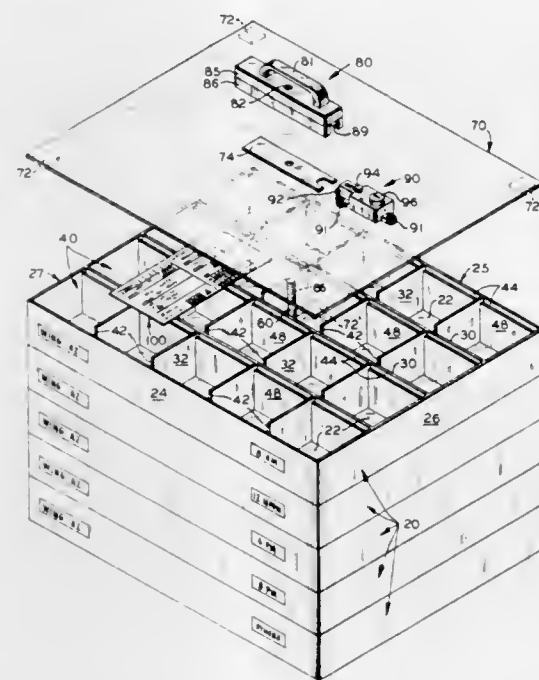
Robert Richard Garbe, Jr., 4778 Maize Road, Columbus, Ohio

Filed June 1, 1970, Ser. No. 41,811

Int. Cl. B65d 71/00, 1/34

U.S. Cl. 206—65 R

14 Claims



Special drug-carrying trays and associated equipment for pharmacists and nurses for the administration of drugs to a plurality of patients, such as in hospitals or nursing homes, comprising the separate packaging, sealing, and labeling of each drug dose for each patient and arranging these individually packaged drugs in compartments in such trays. These compartments correspond to each room or bed and are labeled to correspond to each patient and each dose to be administered with separate trays being used for different dose times. These trays have specifically designed compartments for retaining the labels and drugs during transport, and

for nesting and locking stacks of them together for transport between the pharmacy and the nursing facility. Thus the pharmacist prepares the trays and delivers one or more stacks of them to one or more nursing facilities all ready for the nurses to check and administer directly to their patients. This system also includes a form, slip, or card for checking the drugs, which form may be adapted for direct computerized billing.

3,627,123

# CARRYING DEVICE FOR GROUPS OF CANS

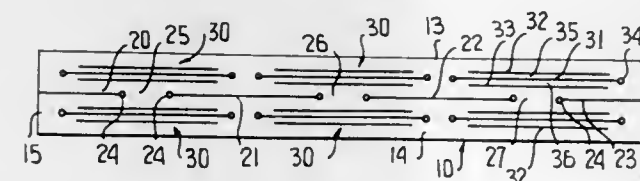
Richard G. Wachter, Palos Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 13, 1969, Ser. No. 849,640

Int. Cl. B65d 71/00

U.S. Cl. 206—65 C

10 Claims



This disclosure relates to a carrying device for groups of cans, and particularly a normally planar rectangular plastic strip which is provided with a plurality of cut lines along its longitudinal centerline, and pairs of transverse cut lines on opposite sides of the longitudinal centerline for forming openings which receive and snugly grip each can beneath its double seam. The carrying device is particularly adapted for association with necked-in cans, and for this purpose a pair of narrow bands are formed adjacent each opening for snugly surrounding the necked-in portions of each of the cans.

3,627,124

# METHOD FOR SEPARATING SELECTED ARTICLES FROM AN ARRAY

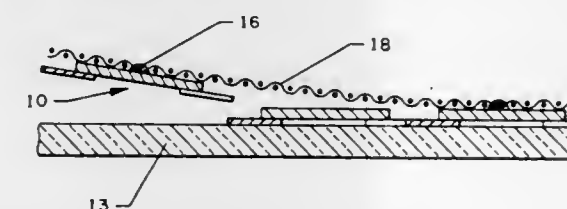
Peter R. Hance, Allentown; Ronald I. Strohl, Walnutport, and William R. Wanesky, Wescosville, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,678

Int. Cl. B07b 13/00

U.S. Cl. 209—45

7 Claims



A method for separating defective beam-lead semiconductor devices from an array of devices cemented by wax to a substrate. The devices are tested, the defective ones marked with epoxy ink, the array covered with a screen, the ink cured to fasten the defective devices to the screen, the wax melted and the screen removed to simultaneously separate all the defective devices from the array.

3,627,125

# APPARATUS FOR NIPPING AND SUPPLYING ONE OR MORE YARNS TO THE PROCEEDING PROCESS

Hideo Sugino, 18-2-1 Dogo, and Hiroshi Yamada, 2901, Oaza-minamiyoshida, both of Matsuyama-shi, Ehime-ken, Japan

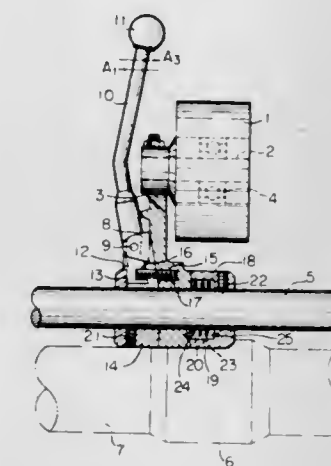
Filed Apr. 13, 1970, Ser. No. 27,958

Claims priority, application Japan, Apr. 15, 1969, 44/34585

Int. Cl. B65h 17/20

U.S. Cl. 226—90

4 Claims



In an apparatus for nipping and supplying one or more yarns to a proceeding process by a couple of rollers engaged with each other. One roller is supported freely rotatably by an arm mounted swingably on a shaft and the other roller is always rotated and supported by the other shaft. The former roller is easily kept engaged with the latter roller during the operation to supply said yarns to the proceeding process, while during out of the operation the former is easily kept disengaged with the latter not to supply said yarns to the proceeding process.

3,627,126

# APPARATUS FOR SIZING CANTALOUPE AND OTHER GENERALLY ROUND OBJECTS

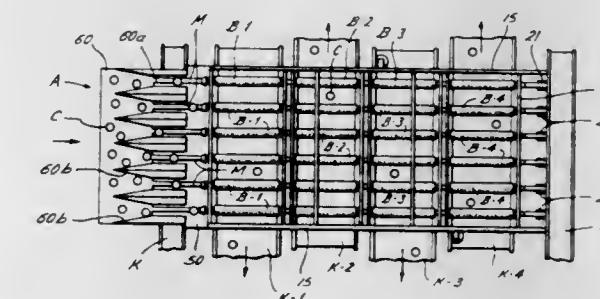
John R. Fitzgerald, and Lloyd E. Allen, both of Cameron County, Tex., assignors to Tri-Pak Machinery Service, Inc.

Filed Jan. 9, 1970, Ser. No. 1,697

Int. Cl. B07c 5/06

U.S. Cl. 209—91

7 Claims



Apparatus for separating cantaloupes or other generally round objects into groups according to size so that each separated group has objects within a predetermined size range, and wherein such sizing is accomplished with substantially no bruising, peeling or other damage to the cantaloupes or other objects.



3,627,127

## SORTING APPARATUS

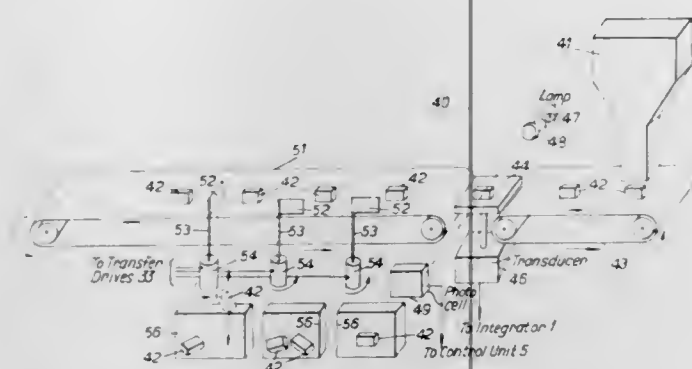
Scott Cunningham Whiteford, Highscape, Bayleys Hill, Nr. Sevenaaks, Kent, Croydon, England

Filed Dec. 9, 1969, Ser. No. 883,423

Int. Cl. B07c 5/16

U.S. Cl. 209—121

8 Claims



The invention relates to a channelizer or apparatus for sorting articles such as prepacked foodstuffs into channels each characterized by an individual weight band. The apparatus of the invention includes a weighting unit that weighs each article and produces information significant of the article weight that is transferred step by step through a train of preset registers storing channel weight band information until the transferred information agrees with the stored information. This agreement is effective to cause transfer of the article to the channel to which the stored information relates.

3,627,128

## SIFTER

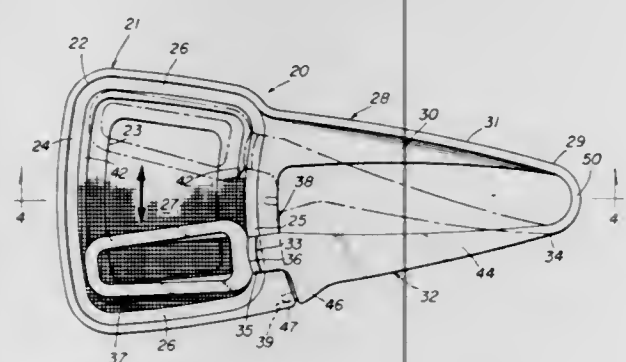
Efrem M. Ostrowsky, Highland Park, Ill., assignor to Nibot Corporation, Chicago, Ill.

Filed Jan. 23, 1969, Ser. No. 793,508

Int. Cl. B07b 1/02

U.S. Cl. 209—236

5 Claims



A sifter for use in connection with the sifting of flour or other powdered materials including an annular body defining a chamber open at the ends thereof, a screen mounted in the chamber adjacent one end thereof, a handle integral with the chamber adjacent the other end thereof, an arm spaced from the handle and including a sifter blade extending from one end thereof disposed within the chamber in use and a hinge integral with and resiliently interconnecting the other end of the arm and the outer end of the handle, and accommodating movement of the arm from an as-molded position with the blade disposed outside of the chamber to a rest position with the blade disposed within the chamber adjacent a wall thereof opposite the handle, and further accommodating movement from the rest position to an operated position adjacent the opposing wall of the chamber whereby material disposed within the chamber upon the screen may be sifted therethrough by movement of the blade from the rest position thereof to the operated positions thereof.

3,627,129

PROCESS AND APPARATUS FOR THE SEPARATING OUT OF COARSE AND/OR HEAVY PARTICLES FROM A VARIABLE PARTICLE SIZE AND/OR VARIABLE PARTICLE WEIGHT MIXTURE OF GRANULAR SOLIDS MAINTAINED IN A FLUIDIZED STATE

Rainer Hartmann, Frankfurt am Main; Oskar Dorschner, Bad Homburg, and Hans-Werner Gross, Buchschlag, all of Germany, assignors to Metallgesellschaft A.G., Frankfurt, Germany

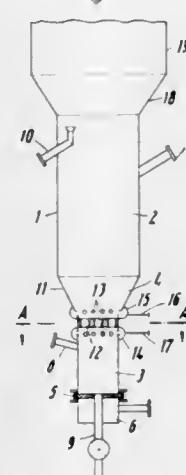
Filed Jan. 21, 1969, Ser. No. 792,682

Claims priority, application Germany, Jan. 24, 1968, P 16 07 648.5

Int. Cl. B07b 3/02

U.S. Cl. 209—474

15 Claims



Elutriation apparatus and process using apparatus comprising an upper and a lower member separated by a restricted intermediate cross section member wherein the lower member has a lesser cross section than the upper member. The process is carried out by operating the lower member as a dispersed suspension (known per se) elutriation apparatus and by operating the upper member as a dense fluidized bed (known per se) elutriation apparatus with the intermediate member causing an increase in the velocity, of at least 1.2 times, of the elutriant passing therethrough from the lower to the upper members.

3,627,130

## WASTEWATER CONCENTRATION METHOD

Walter J. Talley, Jr., Brentwood Park, and Howard W. Wright, Jr., San Gabriel, both of Calif., assignors to Sweco, Inc., Los Angeles, Calif.

Filed June 1, 1970, Ser. No. 42,100

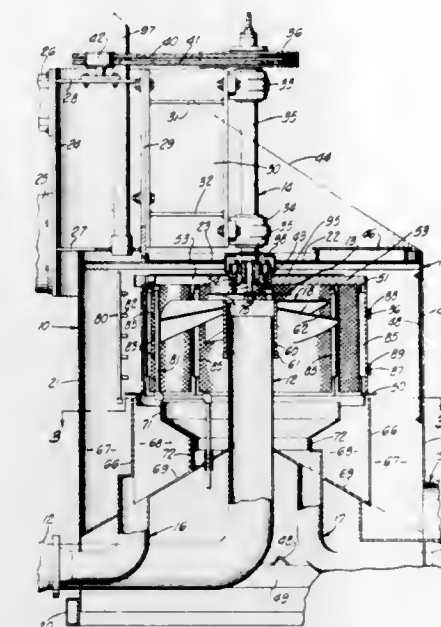
Int. Cl. B01d 21/26

U.S. Cl. 210—78

9 Claims

There are disclosed herein equipment and methods for screening and concentrating wastewater/overflow from combined sewer systems. Exemplary equipment includes a separator employing a substantially cylindrical rotating screen. Influent is piped upwardly into the equipment and deflected outwardly toward the inner surface of the screen in a manner to achieve a desired flow rate and flow pattern of the influent onto the screen. Means are provided for controlling the flow rate and for suitably directing the influent in a plurality of substantially discrete inclined streams toward the inner surface of the rotating screen. The screen is rotated at a speed to achieve a desired centrifugal force. Effluent passes through the screen to an outlet and the remaining concentrate passes to an outlet. A certain amount of the influent splashes from the inner surface of the screen, and is received by a backslash pan and may be recirculated and rescreened. The screen is in the form of a screen cage having a plurality of removable screen panels for facilitating replacement of damaged screens or changing of screen type or mesh size. Cleaning means is provided for directing a cleaning fluid periodically at the screen. The methods disclosed involve the

manner in which the influent, effluent, concentrate and backslash are handled, and the manner in which the influent is screened to achieve a fluid concentrate which is pumpable



to other treatment equipment for ultimate disposal. Additionally, a sequence of influent feed and screen cleaning is described.

3,627,131

## METHOD AND APPARATUS FOR FILTERING SOLIDS FROM LIQUIDS

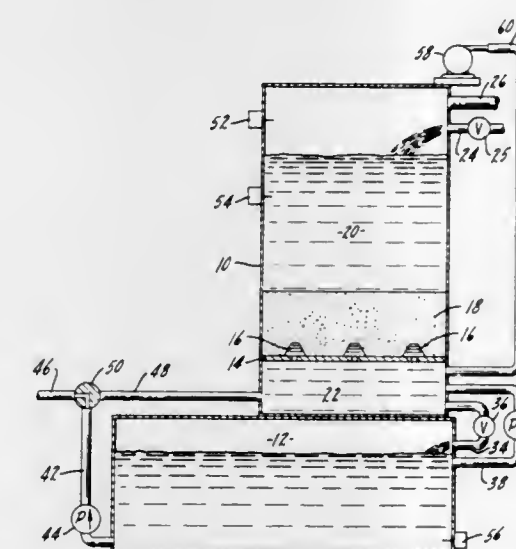
Brian L. Goodman, Overland Park, Kans.; Frank G. Weis, Kansas City, Mo., and Kenneth A. Mikkelsen, Overland Park, Kans., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Jan. 31, 1969, Ser. No. 795,541

Int. Cl. B01d 23/24

U.S. Cl. 210—82

2 Claims



In removing suspended solids from a liquid in a filter tank containing a filter bed and forming an underdrain compartment beneath the bed, liquid is passed downwardly through the filter bed while maintaining a pressure head above the bed. Intermittently, liquid is pumped from the underdrain compartment to increase the flow through the filter bed when the pressure head increases above a predetermined maximum level. Preferably, this pumping is halted when the pressure head drops below a predetermined minimum level.

Apparatus which may be employed to carry out the method comprises a filter tank having a filter bed separating it into an upper inlet compartment and a lower underdrain compartment. Sensing means are provided for sensing a

predetermined maximum liquid level in the inlet compartment, and suction means communicate with the underdrain compartment for withdrawing liquid at an increased rate. The suction means are activated by the liquid in the inlet compartment rising to the maximum level. In the preferred embodiment, upper and lower sensing means are provided, and the suction means are deactivated by the liquid reaching a predetermined minimum level according to the position of the lower sensing means.

3,627,132

## SCUM-SKIMMING METHOD AND APPARATUS

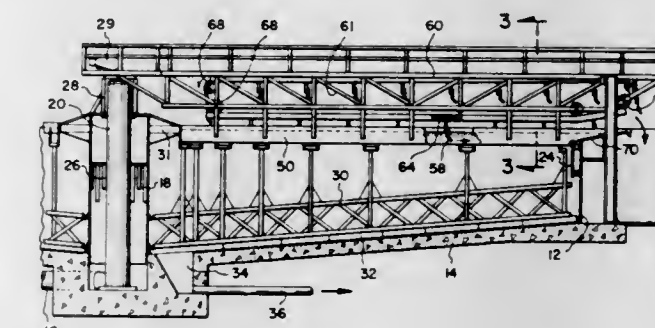
Earl M. Kelly, Hillsborough, Calif.; Jack W. Pratt; Ralph B. Haymore, both of Salt Lake City, and Jay M. Smith, Bountiful, all of Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Oct. 30, 1969, Ser. No. 872,517

Int. Cl. B01d 21/06

U.S. Cl. 210—83

13 Claims



Scum removal apparatus and method, including a biased skimming blade mounted to span the surface of a confined liquid body and to move toward a baffle positioned in the path of the approaching blade to block and, thereby collect the scum pushed ahead of the blade. A cam, located ahead of the baffle, depresses the approaching blade to disengage it from the scum so that it passes below the baffle, leaving the collected scum deposited in front of the baffle.

In a particular modification, a two-sided channel is formed by parallel baffles, the cam is formed as a ramp coextensive with the entire lower edge of the first baffle and extending upwardly therefrom to terminate above the liquid surface. The moving blade is depressed as it follows the ramp, thus forcing the scum under the first baffle, whence it is released to refloat within the channel. In both modifications, the collected scum is engaged by a supplemental high capacity conveyor which moves the scum radially of the tank to discharge.

3,627,133

## CHLORINE GENERATOR FOR WATER SOFTENERS

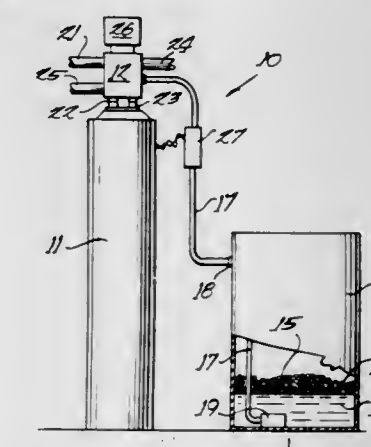
Stanley F. Rak, Mundelein, Ill., assignor to Culligan International Company, Northbrook, Ill.

Filed Mar. 16, 1970, Ser. No. 20,000

Int. Cl. B01d 35/06, 23/26

U.S. Cl. 210—98

10 Claims



A chlorine generator to be inserted in the brine flow line between a water softener unit and a brine tank providing



brine regenerant for the softener to sanitize the water softener simultaneously with the regeneration cycle for the exhausted water softener material. The chlorine generator includes a cell inserted in the brine flow line so that the brine flows therethrough when being educted to the water softener, a pair of electrodes formed of inert material in the cell contacting the brine, and a control circuit for supplying current flow to the electrodes and actuated by suitable means upon initiation of the softener regeneration cycle.

3,627,134

## WATER TREATMENT DEVICE

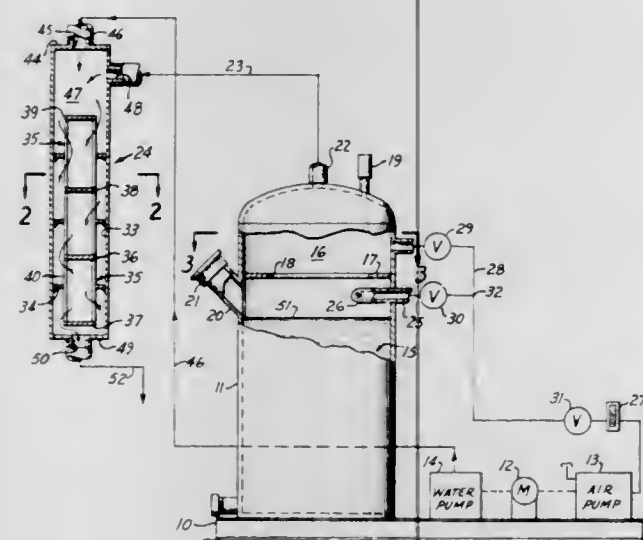
Arvel H. Mattson, W. Covina, Calif., assignor to Chemical Corporation, Santa Fe Springs, Calif.

Filed Nov. 12, 1969, Ser. No. 875,854

Int. Cl. C02b 1/18

U.S. Cl. 210-192

5 Claims



Apparatus for burning sulfur under a forced air draft to produce gaseous sulfur dioxide which is then introduced into a mixing system where the sulfur dioxide is dissolved in a continuing flow of irrigation water to acidify the water. The treated water is then added to a greater flow of irrigation water to increase the effectiveness of the irrigation water in soaking into soil to greater depths and to chemically leach undesirable minerals from the soil such as salt. The sulfur is burned in a two-zoned tank having a sealable lower burning chamber fed with metered air for combustion and an upper gas collection chamber in which the gaseous products of combustion are mixed with additional air and from which they are piped to a mixing chamber for solution in water which is then pumped to the irrigation water.

3,627,135

## SEPTIC TO AEROBIC SEWAGE TREATMENT CONVERSION APPARATUS

Gerald J. Goodman, Chomedey, Laval, Canada, assignor to Air Gest International Corp., Montreal, Quebec, Canada

Filed Nov. 21, 1969, Ser. No. 878,844

Claims priority, application Canada, Oct. 31, 1969, 066372

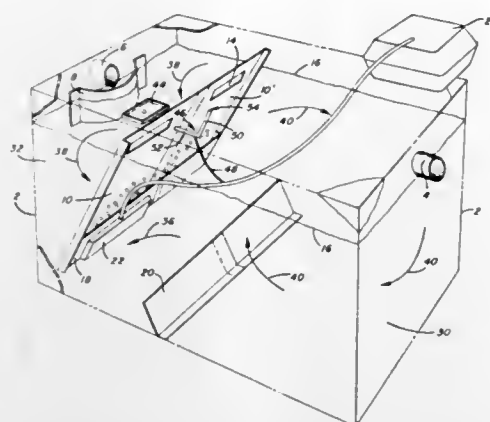
Int. Cl. C02c 1/12

U.S. Cl. 210-195

7 Claims

Apparatus for use in converting septic bacterial-action sewage systems to aerobic sewage treatment systems. The apparatus consisting of a baffle to be positioned within a septic tank structure, having inlet and outlet ports, in an inclined position dividing the tank into an aeration chamber adjacent the inlet port and a settling chamber adjacent the outlet port. At least one air diffuser mounted adjacent the lowermost portion of the baffle which is spaced from the bottom of the tank and a conduit connecting the air diffuser to an air compressor. With this arrangement and with air issuing from the air diffuser countercurrent flows are imparted to the sewage in the aeration and settling chambers whereby continuous

and complete aeration and mixing of the sewage in the tank is accomplished. In further aspect the baffle is provided with structure for returning scum from the surface of the liquid in



the settling chamber to the aeration chamber, and in a further aspect the baffle is longitudinally extensible to accommodate various size tanks.

3,627,136

## ARRANGEMENT FOR BIOLOGICAL CLEANING OF ORGANICALLY POLLUTED LIQUIDS COMPOSED OF BUILDING UNITS

Svatopluk Mackrle, Brno, and Vladimir Mackrle, Praha, both of Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Praha, Czechoslovakia

Filed July 1, 1970, Ser. No. 51,471

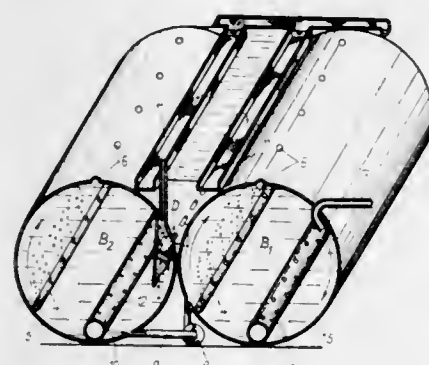
Claims priority, application Switzerland, July 10, 1969,

10698/69

Int. Cl. B01d

U.S. Cl. 210-201

6 Claims



An arrangement for biological cleaning of organically polluted liquids composed of building units including at least two substantially cylindrical horizontal bodies which are placed alongside the other, with the upper part of their mantles forming the bottom of a separating space of the cleaned liquid and of the coagulated suspension, said separating space being provided between the upper parts of the mantles of said cylindrical bodies.

The cylindrical bodies communicate with each other, one of the bodies communicates with the separating space which has a trough to discharge clarified liquid.

3,627,137

## DIALYZING MEMBRANE ENVELOPE

Milan Bier, 5341 East 7th St., Tucson, Ariz.

Filed Oct. 10, 1968, Ser. No. 766,592

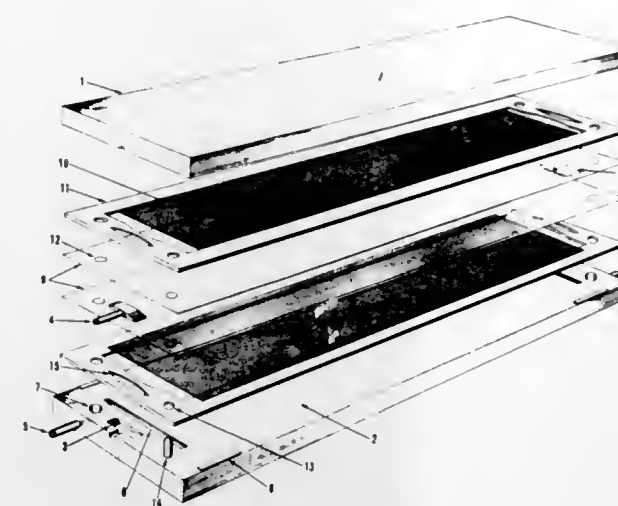
Int. Cl. B01d 31/00

U.S. Cl. 210-321

21 Claims

A parallel flow dialyzer suitable for use as an artificial kidney utilizes a dialyzing membrane envelope spread within and sealed to an outer frame. This membrane envelope may comprise plastic netting which provides the necessary support for the membranes and channels for the flow of dia-

lyzate, while at the same time causes some mixing of blood, thus improving on the performance of the dialyzer. It also



permits greatly simplified design of outer boards containing said envelope. The envelope is manufactured mainly through the use of double-coated pressure-sensitive adhesive tape.

3,627,138

## CENTRIFUGAL SEPARATOR

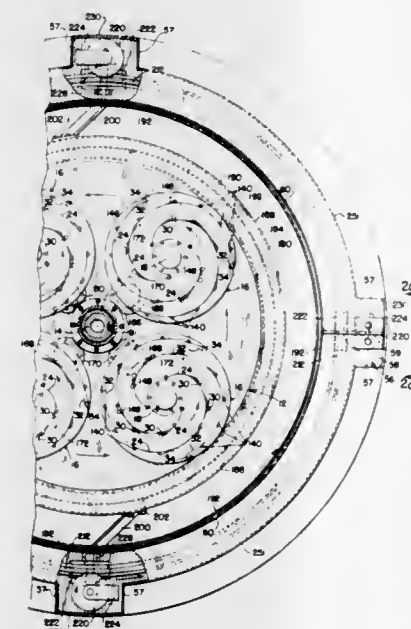
William H. Peck, Tulsa, Okla., assignor to Centrifugal Separators, Inc., Tulsa, Okla.

Filed July 23, 1970, Ser. No. 57,533

Int. Cl. B01d 33/60

U.S. Cl. 210-325

24 Claims



A centrifugal separator for the three-phase removal of clear liquid, semiclear liquid and solids from slurry. A high-speed carrier which rotates about a vertical axis carries two or more eccentrically disposed slurry-receiving baskets which are individually rotatable at low speed about their respective vertical axes, the carrier and baskets presenting a balanced arrangement. A spiderlike manifold which has radial distribution channels and rotates with the carrier deposits slurry in the central region of each basket where it is flung outwards under the influence of the centrifugal force that is exerted by the carrier, and in so moving it encounters one at a time the concave sides of a series of nested involute imperforate spiral carrier-mounted vanes at such times as these vanes assume outer ecliptic positions with respect to the central axis of the carrier and the orbiting axes of the baskets. The vanes function as individual centrifuge units and in the manner of pouring cups which restrain the slurry against outward movement long enough to effect radial settling of the solids toward the concave sides of the vanes. During such radial settling, the

less dense material or clear liquid is drawn off through the bottom walls of the baskets at inner radial regions, the denser or semiclear liquid containing solids that have not yet achieved separation is similarly drawn off at outer radial regions, while the remaining solids from which most of the liquid has been removed, are discharged over the receding or trailing edges of the vanes where they are flung radially from the baskets as well as from the carrier.

3,627,139

## CONTINUOUS DRUM VACUUM FILTER

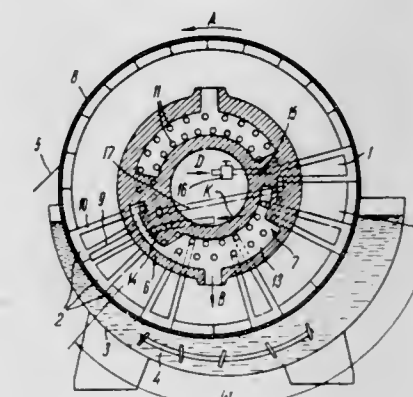
Nikolai Alexandrovich Burtsev, ulitsa Dagestans Kaya 20, kv. 12, Sverdlovsk, U.S.S.R.

Filed June 22, 1970, Ser. No. 48,106

Int. Cl. B01d 35/22

U.S. Cl. 210-393

2 Claims



A continuous drum vacuum filter wherein the drum, rotatable about its axis, has on its working surface cells whose external sides are formed by a filtering material. The cells are connected by means of ducts to the movable part of a valve installed coaxially with the drum and serving to connect the cells in the required sequence to suction and compressed air lines during rotation of the drum. The fixed part of the valve has an overflow channel so ensuring communication of a cell emerging from the suspension with a cell submerging into the suspension that overflowing of the filtrate from the former cell to the latter is ensured.

3,627,140

## PRINTED CIRCUIT CARD RACK

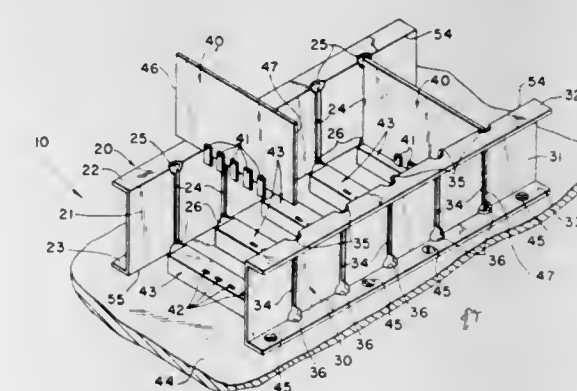
Florian F. Yanikoski, Braintree, Mass., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 18, 1970, Ser. No. 38,090

Int. Cl. A47g 19/08

U.S. Cl. 211-41

4 Claims



A rack for supporting a plurality of printed circuit cards in vertically stacked relation is formed by a pair of plates having U-shaped cross sections. Each plate has a wall member arranged in spaced-parallel relation to the other such member and a pair of outwardly turned flange members. Both wall members have a series of guide slots cut therethrough which



are correspondingly paired and vertically aligned for slidably receiving opposite ends of the individual cards. The guide slots have enlarged opposite ends that respectively define a series of apertures which communicate with the flange members in a manner facilitating receipt of the cards.

3,627,141

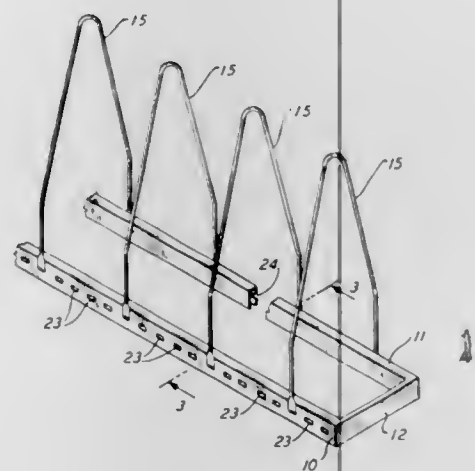
## DISPLAY APPLIANCE FOR FABRIC BOLTS

Rayfield B. Kurland, 7 Buckingham Road, and Leonard J. Kurland, 43 Buckingham Road, both of West Orange, N.J.  
Filed June 1, 1970, Ser. No. 42,079

Int. Cl. A47f 7/18

U.S. Cl. 211-44

4 Claims



A display appliance for fabric bolt holders comprising rails disposed in spaced relation to each other, each rail having an outer wall with elongated slots therethrough communicating with hollow interiors of the rail for complementary engagement by the lower ends of bracket arms, thus removably secured to the rails in predetermined spaced relation, pairs of adjacent so spaced bracket arms being adapted to receive and display fabric bolts therebetween.

3,627,142

## CLOTHES HANGING DEVICE

Walter Steiner, Oberseenerstrasse 14, Winterthur, Switzerland

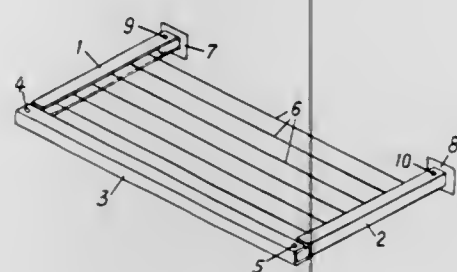
Filed July 10, 1970, Ser. No. 53,959

Claims priority, application Spain, July 17, 1969, 150,528

Int. Cl. A47f 5/08; D06f 53/00

U.S. Cl. 211-119.1

3 Claims



A clothes-hanging device of the type incorporating two lateral support rods and a connecting rod for operatively interconnecting both lateral support rods. The clothes-hanging device can be selectively either folded together into a position of nonuse or opened to assume a position of use. A locking mechanism is provided for retaining the clothes-hanging device both in its folded or collapsed position as well as in its open position.

3,627,143

## APPARATUS FOR HANGING CLOTHING

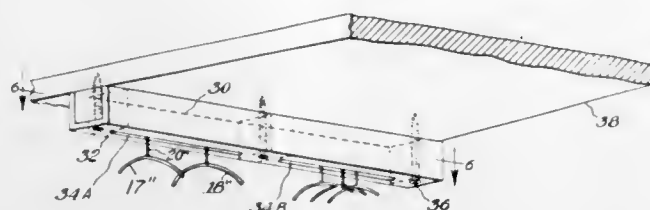
Una Pauline Hatton Alexander, 1311 East Second St., Pass Christian, Miss.

Filed Apr. 2, 1969, Ser. No. 812,806

Int. Cl. A47f 7/19; A47h 1/04

U.S. Cl. 211-123

4 Claims



The apparatus of the invention for hanging clothing includes a hollow, a horizontally extending elongated member having at least one longitudinal slot in its bottom surface. A plurality of hangers are supported by the elongated member, and each of the hangers is provided with clothing support means with a vertical shaft extending upward therefrom and having a horizontally extending bar at the top end. Each shaft extends upwardly through the longitudinal slot with the bars disposed inside the elongated member and extending in a direction transverse to the direction of elongation of the slot.

3,627,144

## COUPLER-POSITIONING DEVICE

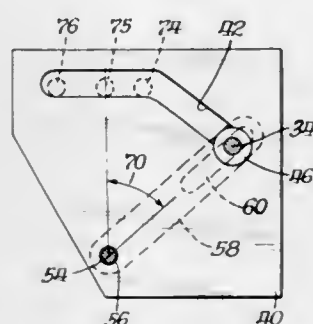
Howard I. Dwyer, Jr., Glen Ellyn, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed June 8, 1970, Ser. No. 44,289

Int. Cl. B61g 7/12

U.S. Cl. 213-16

7 Claims



A device for easily positioning a long shank railroad coupler by means of a worm gear and gear segment. The gear segment is rigidly attached to the bottom of the coupler shank in engagement with the worm gear which may be rotated from either side or both sides of the railroad car. Means are provided for automatically disengaging the worm gear from the gear segment after the coupler is positioned thereby allowing the coupler to operate freely during service conditions without damage to the worm gear or gear segment.

3,627,145

## COUPLER WITH MEANS TO SUPPORT A MATING PULLED-OUT COUPLER

Russell G. Altherr, Munster, Ind., assignor to Amsted Industries, Incorporated, Chicago, Ill.

Filed Jan. 12, 1970, Ser. No. 2,140

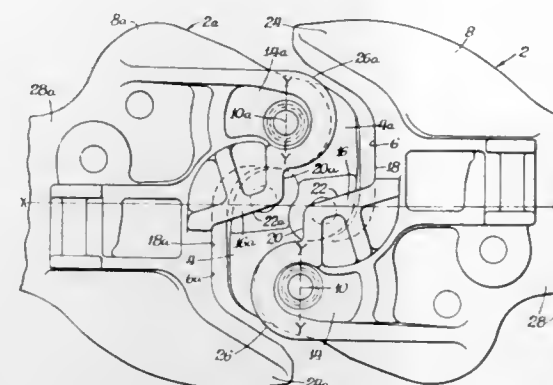
Int. Cl. B61g 3/04, 7/14

U.S. Cl. 213-153

6 Claims

A railway coupler having a coupler head with a knuckle pivoted thereto for interlocking engagement with a similarly pivoted knuckle of a mating coupler is provided with a downwardly and outwardly flaring skirt preferably in the form of a flange depending from the bottom ear of the cou-

pler head through which ear extends a pivot pin which pivotally connects the knuckle to the head. The skirt is engageable with a guard arm of the mating coupler when it has been pulled out of engagement with its supporting vehicle



and thus is supported solely by a shelf extending from the bottom ear to a coupler head throat beneath the knuckle of the mating coupler. The skirt is effective as a wedge to hold the knuckle of the mating coupler on said shelf.

3,627,146

## APPARATUS FOR SIDWISE TRANSPORT OF TUBES OR THE LIKE

Siegfried Berndt, Solingen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany

Filed Aug. 25, 1970, Ser. No. 66,740

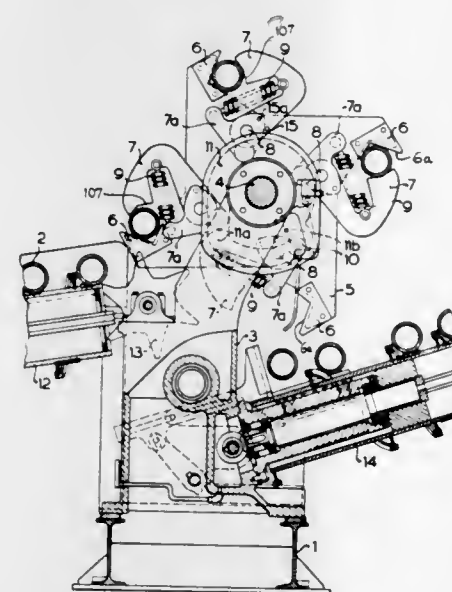
Claims priority, application Germany, Sept. 9, 1969, P 19 45

524.4

Int. Cl. B65g 29/02

U.S. Cl. 214-1 P

10 Claims



Apparatus for sidewise transport of tubes wherein a disk rotating with a horizontal shaft supports several transfer units each having a claw fixed to the disk and a second claw a portion of which is movable toward and away from the fixed claw in response to rotation of the carrier. The second claw is biased against the tube between the two claws by a spring which is stressed in response to engagement of the second claw with a tube and is permitted to dissipate energy when the second claw moves away from the first claw. In this way, the spring is not under substantial stress when the respective transfer unit does not transport a tube.

3,627,147

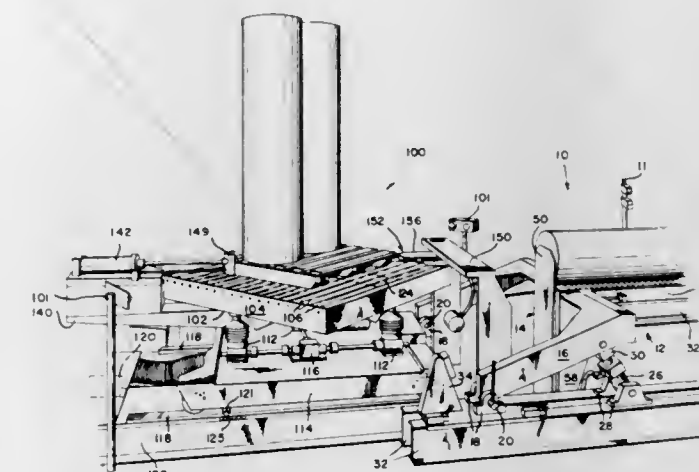
SYSTEM FOR UPENDING AND PALLETIZING OBJECTS  
James M. Yowell, and Thomas C. Soran, both of Hoquiam, Wash., assignors to Lamb-Grays Harbor Co., Inc., Hoquiam, Grays Harbor County, Wash.

Continuation of application Ser. No. 633,884, Apr. 26, 1967, now abandoned. This application July 10, 1969, Ser. No. 870,236

Int. Cl. B65g 7/00

U.S. Cl. 214-1 Q

9 Claims



An upender section receives an object, upends the object and displaces the upended object onto a pallet. The pallet is adjustably supported by a rotatable and axially movable turntable mounted on an undercarriage for movement toward and away from the upender frame. Forward and rearward pallet positioning assemblies are disposed on opposite sides of the turntable to position a pallet thereon.

3,627,148

## ASSEMBLY DEVICE

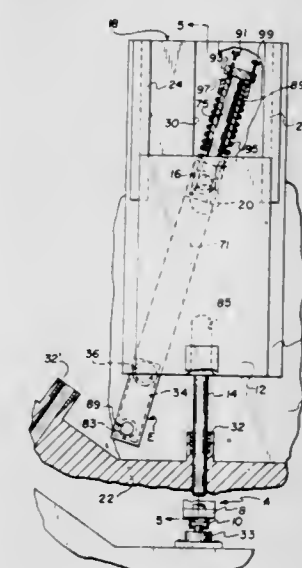
Edwin A. Hediger, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,515

Int. Cl. B66c 1/10

U.S. Cl. 214-1 BD

5 Claims



An assembly device having a reciprocally and pivotally movable workpiece holding mechanism for transferring a component or workpiece from a supply station to a work station where it is subjected to an assembly operation. The supply station is located in a plane transverse to the plane in which the work station is located, and when the workpiece holding mechanism of the assembly device is moved between the supply and work stations, it traces a path having an initial linear portion, an arcuate portion and a terminal linear portion.



3,627,149

**APPARATUS FOR STACKING AND DESTACKING BARRELS**

Gerhard Arnemann, Pinneberg, Germany, assignor to Fortertechnik Hamburg Harry Lassig, Muhlerdamm, Germany

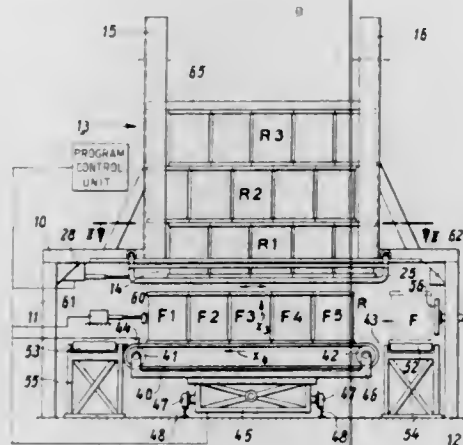
Filed Jan. 21, 1970, Ser. No. 4,549

Claims priority, application Germany, Dec. 20, 1969, P 19 63 968.0

Int. Cl. B65g 57/30

U.S. Cl. 214-6 BA

24 Claims



A method and an apparatus for stacking and destacking cylindrical as well as bulgy barrels which allow barrels to be stacked in several rows one on top of the other and to remove the rows of barrels one row after the other again. The apparatus includes a support frame with a storage bay for receiving the barrels. The storage bay includes a bottom feed and discharge opening through which several barrels which have been aligned in a row on a conveyor may be introduced into the bay. Means are provided for feeding the barrels to the feed and discharge opening, for aligning the barrels in a predetermined position, for lifting the barrels into the storage bay and for retaining the barrels within the bay.

3,627,150

**METHOD FOR THE STACKING OF BILLETS AND STACKER**

Michel G. Kazeef, Frederick, Md., and Roger Soulier, Oloron, Ste. Marie, France, assignors to Compagnie Pechinery, Paris, France

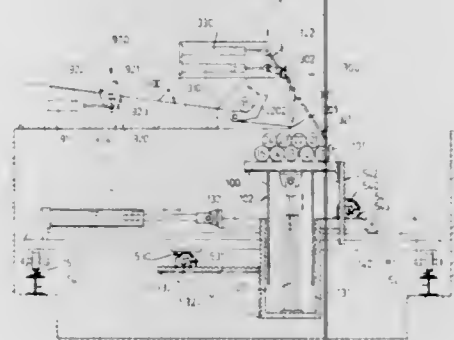
Filed July 8, 1970, Ser. No. 53,262

Claims priority, application France, July 9, 1969, 6923375

Int. Cl. B65g 57/18, 57/06

U.S. Cl. 214-6 H

15 Claims



A stacker for cylindrical billets which permits stacking of billets of any length and diameter D formed of a mobile platform mounted for movement in the vertical and in the horizontal directions and having an inclined plane provided at its lower end with a feed nozzle and a billet-holding means cooperating with the feed nozzle for movement between blocking and unblocking position, and power-actuating

means for movement of the platform vertically and in the horizontal directions to permit the platform to be placed in positions below the feed nozzle so that the billets released one by one by the feed and holding means drop onto the platform in an assigned position to form the package, and means for controlling the movement of the platform as well as the holding means.

3,627,151

**BAR BUNDLING CRADLE**

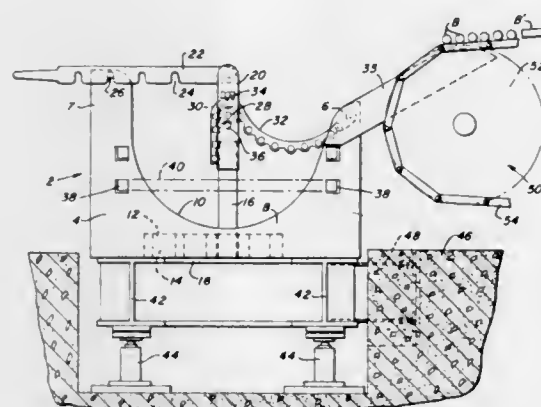
Donald M. Campbell, Westmont, Ill., assignor to United States Steel Corporation

Filed Nov. 10, 1969, Ser. No. 875,387

Int. Cl. B65g 1/14

U.S. Cl. 214-6 D

10 Claims



A bundling cradle for bars includes a plurality of longitudinally spaced-apart assemblies. Each assembly has two spaced-apart upwardly extending arms with a vertical post between the arms. A chain extends between one arm and the post with a chain-supporting sprocket attached to either the arm or post. The position of the post with respect to the arms is adjustable so that the catenary of the chain may be varied to vary the size of the bundle. After the desired number of bars are accumulated they are banded in position and then removed.

3,627,152

**SHEET FEEDING MECHANISM FOR A HOLE-PUNCHING MACHINE**

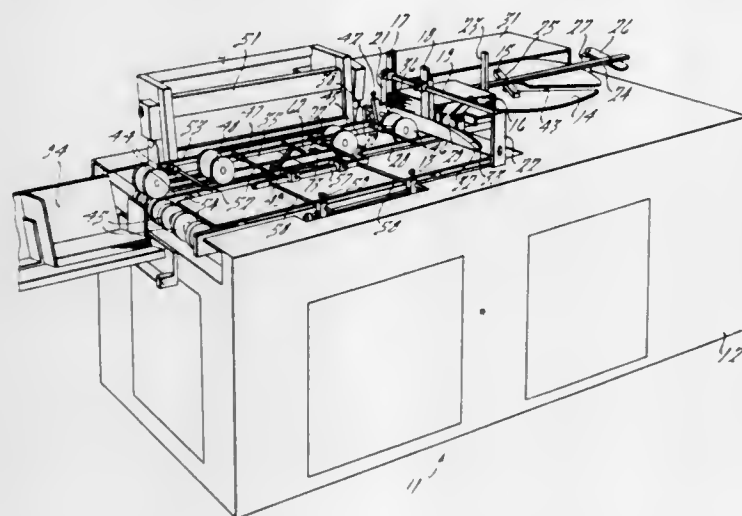
Ernst Pfaffle, Neuffen, Germany, assignor to Hans Sickinger Co., Pontiac, Mich.

Filed Dec. 29, 1969, Ser. No. 888,760

Int. Cl. B65g 59/06

U.S. Cl. 214-8.5 K

5 Claims



A machine for simultaneously punching a row of holes along one side of a group of sheets. A stack of sheets is supported by a slotted rotating disc and a finger enters one corner of the stack to separate a group of sheets at the bot-

tom. A rotating depressor shaft lowers the group along its forward edge to permit it to pass into a slot in the disc, thus permitting the group of sheets to drop onto conveyors which carry it toward the punches. A longitudinally adjustable locating stop and a similarly adjustable jogger align the sheet edges at the punching station.

3,627,153

**INTRAFACTORY SYSTEM AND METHOD FOR CONVEYING AND SEGREGATING NONUNIFORM ARTICLES**

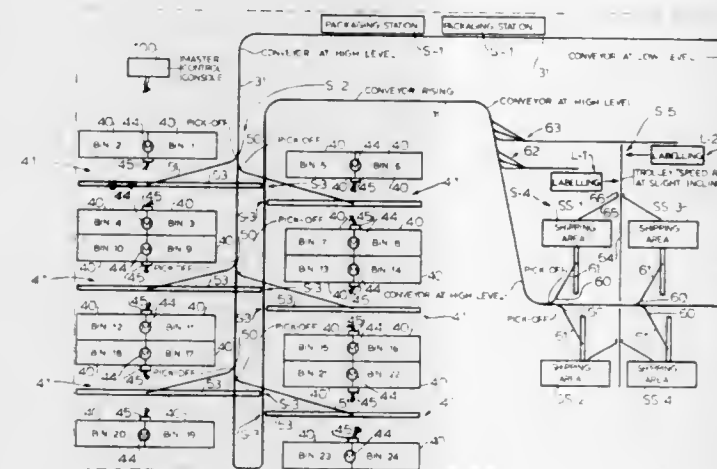
Paul L. Brummett, and Sigmund G. Isley, both of Smithfield, N.C., assignors to Amerel Company, Inc., Smithfield, N.C.

Filed May 6, 1970, Ser. No. 35,179

Int. Cl. B65g 1/06, 43/00

U.S. Cl. 214-11 R

16 Claims



An intrafactory system and method provides a semiautomated means for conveying, temporarily storing and segregating nonuniform articles which may be textile articles such as coats, dresses, blouses, shirts, piece goods and the like or other nonuniform articles such as tires, filled cartons and the like. A closed loop, continuously moving, coding-type, chain conveyor which operates at lower loading levels and higher pickoff levels codes the articles and circulates past loading, temporary vertical bin storage, labelling and shipping stations. Storage is provided by a plural group of vertical storage bins having storage rods which for each bin can be selectively positioned either locally at the bin or remotely at a master console. The articles are picked off the conveyor automatically and by gravity slide are directed to selected bins where they are temporarily stored and from which they are returned and recoded on the same conveyor for transfer to and pickoff at selected labelling or shipping stations.

3,627,154

**TRAILERABLE TOWING DEVICE AND JACK FOR VEHICLES**

Ralph E. Troup, 4240 N.E. 24th Ave., Lighthouse Point, Fla.

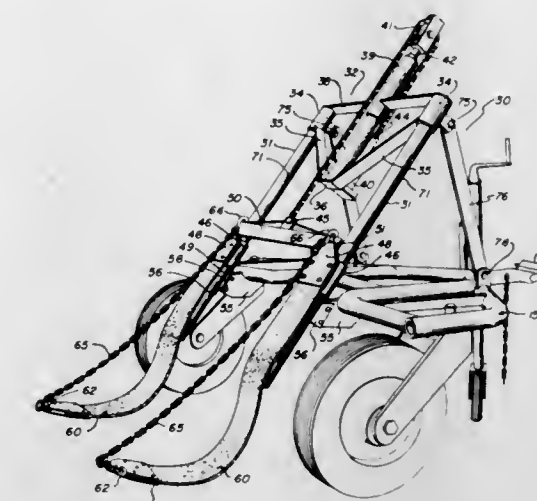
Filed June 3, 1970, Ser. No. 42,991

Int. Cl. B60p 3/12

U.S. Cl. 214-86 A

6 Claims

A trailerable towing device and jack for vehicles having a single source of lifting effort applied to an equalizer bar which is guided along parallel guide rails inclined upwardly and forwardly. The equalizer bar terminates in two flexible belts having chains at the end portion thereof for engaging the undercarriage of a vehicle, usually an automobile which has been disabled and is to be towed. A lower frame rides atop a pair of casted rear wheels with a retractable wheel



tire assembly, by removing several bolts may be knocked down for shipment in a flat configuration or similarly knocked down for storage.

3,627,155

**HYDRAULIC FLUID HOSE HANDLING MEANS FOR A SIDE SHIFTABLE BACKHOE**

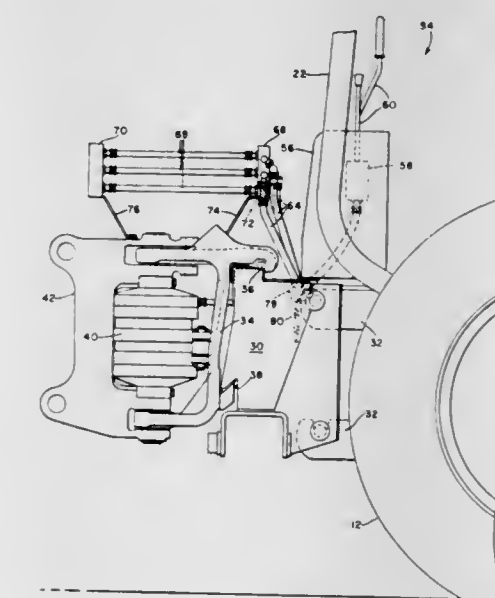
Roger Dale Van Der Zyl, Durango, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 9, 1970, Ser. No. 26,974

Int. Cl. B66f 9/00; E02f 3/00

U.S. Cl. 214-138

6 Claims



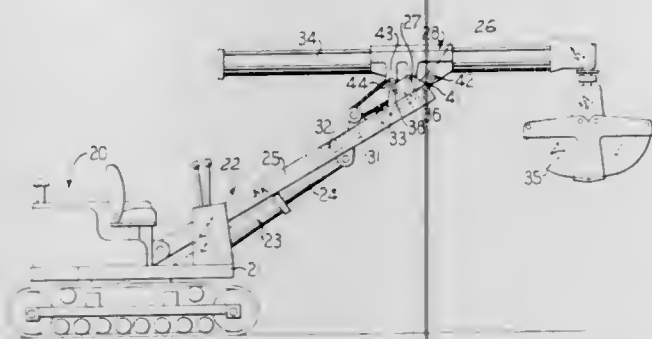
A side shiftable backhoe has an operator's station fixed centrally to a main transverse frame at a location under the protective canopy of the backhoe carrying tractor. A backhoe boom support is pivotally connected by means of a vertical pivot structure to a shift block that is mounted for transverse shifting movement on the main transverse frame. A first hydraulic fluid manifold is supported on the shift block by means permitting the manifold to swivel about a generally vertical axis and a second hydraulic fluid manifold is fixed to the backhoe boom support. A first set of fluid hoses interconnects a valve block at the operator's station with the first manifold and the hoses are of sufficient length the shift block to shift to the ends of the main frame and a spring means is connected between the hoses to withdraw excess portions thereof to a cavity in the main frame. A second set of hoses is interconnected between the first and second manifolds and the hoses undergo bending when the backhoe



boom structure is swung from side to side about the pivot structure, the bending causing the first manifold to pivot on its mounting axis to maintain the bend in the hoses at a minimum.

### 3,627,156 TORQUE BALANCING LINKAGE FOR EXCAVATOR DIPPER STICKS

Roy O. Billings, 6621 West Wisconsin Ave., Milwaukee, Wis.  
Filed Sept. 19, 1969, Ser. No. 859,461  
Int. Cl. B66c 1/00  
U.S. Cl. 214-147 G 1 Claim



A dipper stick is adjustably mounted in a saddle which is pivoted to upstanding brackets at the outer end of the boom of an excavating machine, there being an hydraulic cylinder pivoted at one end to the boom and having a piston rod projecting from its other end and connected to the lower converging ends of two sets of links. One set of links acts as a radius rod and has its upper ends pivotally connected to upper portions of the boom brackets inwardly of the pivotal connection for the saddle, and the other set of links has its upper ends pivotally connected to the saddle outwardly of the pivotal connection for the saddle.

### 3,627,157 LIFTING DEVICES

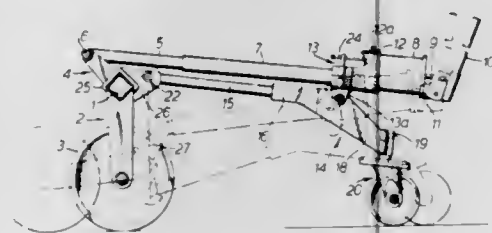
Herbert Frank Hamilton Blatchly, Cheltenham, England, assignor to Her Majesty's Postmaster General, London, England

Filed Mar. 28, 1969, Ser. No. 811,329  
Claims priority, application Great Britain, July 1, 1968,  
31281/68

Int. Cl. B66f 11/00

U.S. Cl. 214-394

8 Claims



A device for lifting manhole covers in which hooks for attachment to the cover are mounted upon and are rotatable with a lifting beam to produce vertical lifting movement of the hooks. The beam can be rotated by an hydraulically operated jack. The beam is mounted upon arms having wheels at their ends.

### 3,627,158 LOADER FOR VEHICLE TRUNK COMPARTMENT

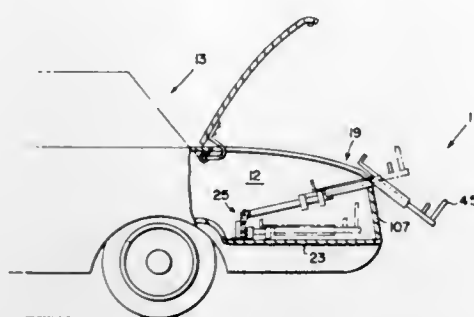
Frank Kobasic, 427 Harwicke Road, Springfield, Pa.  
Filed June 9, 1969, Ser. No. 831,369  
Int. Cl. B60r 9/00

U.S. Cl. 214-450

7 Claims

A collapsible loader for the trunk compartment of an automotive vehicle comprising a carriage adapted to support a

load, a slide member slidingly attached to the carriage, a track member slidingly attached to the slide member, a base member adapted for attachment to a floor of a trunk com-



partment of an automotive vehicle, and a link pivotally connected at one end to the base member and at its other end to the track member.

### 3,627,159 REFUSE-COLLECTING TRAILER AND POWER SYSTEM

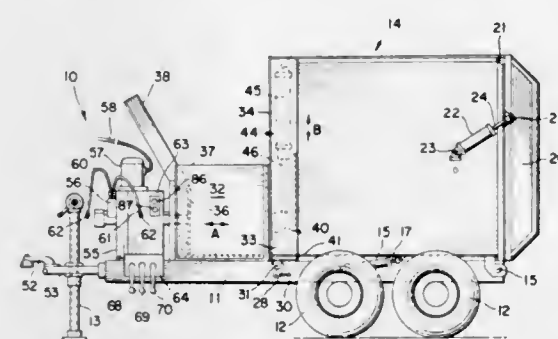
Harold Eugene Smith, Defiance, Ohio, assignor to Smithpac Canada Ltd., Toronto, Ontario, Canada

Continuation of application Ser. No. 703,214, Jan. 18, 1968.  
This application Jan. 19, 1970, Ser. No. 3,744

Int. Cl. B60p 1/16

U.S. Cl. 214-508

7 Claims



A refuse-collecting trailer includes a movable unit comprising a wheeled trailer chassis with a refuse-receiving receptacle pivotally mounted thereon for movement between a generally horizontal position and a tilted dumping position. A loading aperture extends through a wall of the refuse-receiving receptacle for alignment with a loading chamber. A loading plunger pushes refuse from within the loading chamber through the loading aperture for compaction by a vertically reciprocable compacting plunger provided in the refuse-receiving receptacle. A hydraulic pressure system mounted on the chassis for operating the loading plunger and the refuse-compacting plunger includes flexible hydraulic hoses with quick-disconnect couplings to permit operation of the plungers and of a hydraulically operated dumping cylinder and hydraulically operated tailgate cylinders by a hydraulic pump provided on a towing vehicle used for moving the trailer from its loading location to a refuse dump.

### 3,627,160 SAFETY CAP

William Horvath, Chatham, N.J., assignor to Diamond International Corporation, New York, N.Y.

Filed Oct. 8, 1970, Ser. No. 79,172

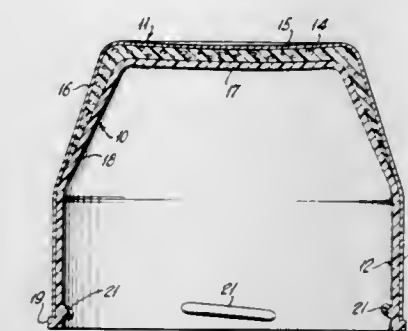
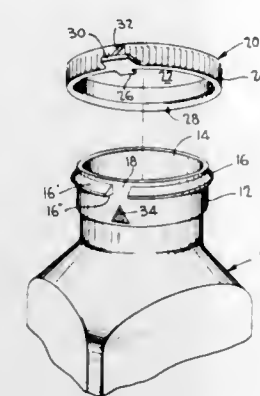
Int. Cl. A61j 1/00; B65d 55/02

U.S. Cl. 215-9

10 Claims

A safety cap of resilient plastic material having a depending skirt within which is formed an annular rib having an anchor portion and a radially inwardly projecting locking lug diametrically opposed to such anchor portion, the rib and the locking portion being of substantial radial extent for positive engagement beneath the locking rib around the container

neck to strongly resist removal of the cap. The remainder of the annular rib within the cap skirt is of reduced radial width to function in the manner of a snap rib on the lug side of the skirt. The skirt rib has a continuous annular upwardly presented cam surface for cooperation with the locking rib of the container neck to maintain the end wall of the cap in sealing engagement with the end of the neck. Rotation of the cap to bring the lug into registry with the cap through the



closed bottom of the outer shell, and foamed hardened bonding material throughout the space between said walls and in intimate and substantially complete contact with said walls and permanently bonded thereto.

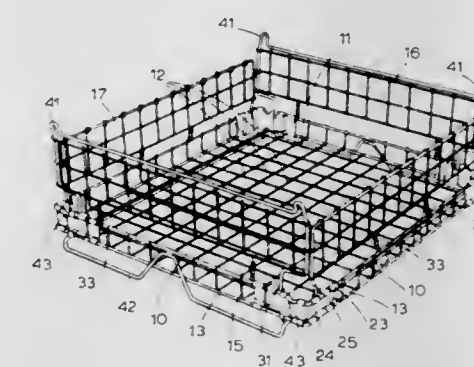
### 3,627,163 STORAGE CONTAINERS

Cyril Taylor, 67 Bittell Road, Barnt Green, and Ernest Edwin Baggot, 26 Canterbury Road, West Bromwich, both of England

Filed Feb. 10, 1970, Ser. No. 10,248  
Int. Cl. B65d 7/26, 7/20, 21/02

U.S. Cl. 220-6

4 Claims

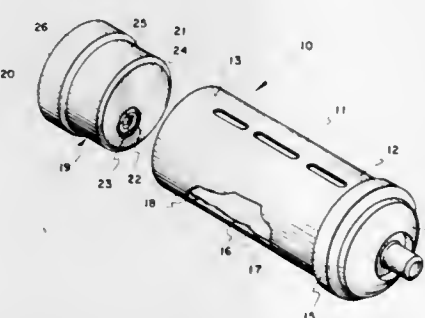


### 3,627,161 BABY BOTTLE AND MUSIC BOX UNIT

Marvin L. Wergeland, 37 Saviers Road, Oxnard, Calif.  
Filed Nov. 26, 1969, Ser. No. 880,010  
Int. Cl. A61j 9/00

U.S. Cl. 215-11 C

5 Claims



In order to soothe and calm a baby and encourage him to eagerly drink from a baby bottle, a cap retaining a music box is shaped to be detachably coupled to the bottom of the baby bottle. A closed end of the cap has a positioning hole through which a windup stem of the music box extends so a person can easily crank or wind up the music box at a desired time.

### 3,627,162 INSULATED CUP

Fred P. Dossin, Meriden, and Fred L. Nestrock, Avon, both of Conn., assignors to Union Manufacturing Company  
Filed Jan. 28, 1966, Ser. No. 523,637  
Int. Cl. A47j 41/00

U.S. Cl. 215-13

6 Claims

1. An insulated cup, comprising a hard outer cup shell, a hard inner cup shell received within the outer shell, both cup shells having peripherally contacting concentric cylindrical walls near the open end of the cup, the inner shell including a radially outward flange near the open end and the periphery of the open end of the outer shell being seated at said flange, the walls of said shells being otherwise of differing conver-

A storage container comprising a base, a first pair of upstanding sides mounted on opposed edges of the base, support means on said first upstanding sides for supporting above said one container a further similar container, at least one further side lower than said first sides such that its lower edge lies below said further container when mounted above said one container, socket-engaging portions on said further side, sockets on said base for engaging said socket-engaging portions in such a manner that when said portions are lowered in said sockets the further side is supported in an upright position by the socket-engaging portions in the sockets, but when said further side and socket-engaging portions are raised up, said socket-engaging portions are constrained at the top of the sockets and allow pivotal movement of said further side in an outward direction to provide access to the interior of the container even when a further container is stacked above said one container, further socket-engaging portions on said first sides, further sockets on said base for engaging said further socket-engaging portions in such a manner that when said portions are lowered into said further sockets the first sides are supported in an upright position by the socket-engaging portions in the sockets, but when said first sides and further socket-engaging portions are raised up, said further socket-engaging portions are constrained at the top of the further sockets and allow pivotal movement of said first sides in an inward direction to enable the container to be collapsed when empty.



3,627,164

**METHOD AND APPARATUS FOR MAINTAINING UNIFORM INSULATION DENSITY**

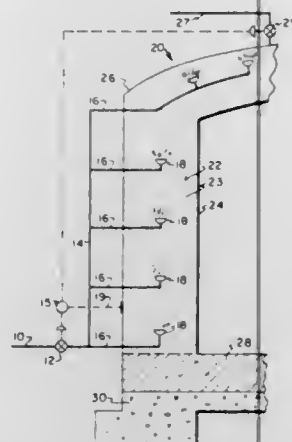
Robert A. Wilson, Cranford, N.J., assignor to Esso Research and Engineering Company

Filed Jan. 9, 1970, Ser. No. 1,726

Int. Cl. B65d 7/22

U.S. Cl. 220—10

16 Claims



A process and apparatus for maintaining uniform density of granular-type insulation which is subject to packing. Short gas blasts, from strategically disposed jets fluff the insulation when packing occurs to restore original density. The gas blasts can be triggered by automatic-type control devices which indicate a packed condition.

3,627,165

**REFRIGERATOR INNER LINER SUPPORT**

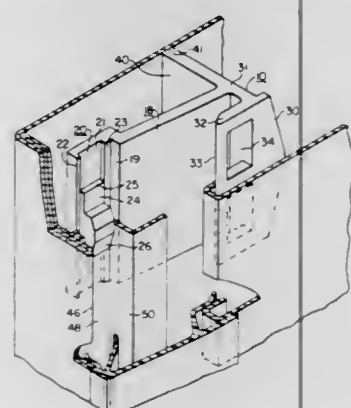
William R. Cobb, Galloway, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 8, 1970, Ser. No. 1,352

Int. Cl. B65d 25/02

U.S. Cl. 220—14

10 Claims



A molded plastic support for securing the inner liner of a refrigeration unit in proper disposition within the outer shell prior to being placed in a fixture for foamed-in-place insulation. The support is clipped through an aperture in the hat portion of the outer shell, and a shoulder on the support locks the clip in position. The support also has an upstanding leg portion for receiving a J-flange on the inner liner. The J-flange is crimped by a special tool into an aperture in the leg of the support so that the inner liner is securely supported in the outer shell prior to foaming.

3,627,166

**SAFETY CAN**

Richard T. Walter, Norristown, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Sept. 22, 1969, Ser. No. 859,796

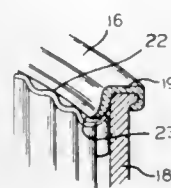
Int. Cl. B65d 17/24, 25/14, 25/34

U.S. Cl. 220—54

1 Claim

A tubular container having an end wall with a removable central portion, the latter having the exposed edge thereof

guarded by a liner extending along the wall of the container after the central portion has been removed. The liner may be separable from the container body, and may be folded upon



itself, so that the inner face of the liner may extend inward of the exposed edge an extra amount to provide a more effective guard than that incident to the thickness alone of the liner.

3,627,167

**PULL MEANS FOR TEAR STRIP**

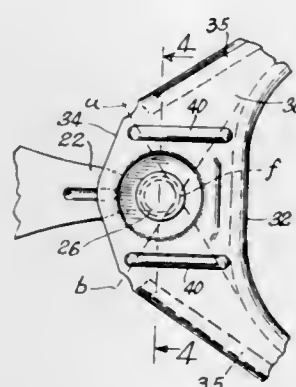
Richard D. Zenger, Downers Grove, and Audie L. Lambert, Rosemont, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Filed Sept. 16, 1969, Ser. No. 858,454

Int. Cl. B65d 17/24

U.S. Cl. 220—54

4 Claims



The present invention relates to pull means for an easy opening container that includes an end panel provided with a weakened score line defining a tear strip. The pull means acts in the manner of a second class lever and fulcrum action on the tear strip to initiate tearing the tear strip. The pull means includes an end portion having an opening which receives a connecting member interconnecting the pull means with the tear strip and further includes a pair of spaced parallel ribs which are transversely spaced from a plane defined between the axis of the opening and the point at which an opening force is applied to the pull means. The spaced parallel ribs dissipate the forces from generally straight line paths from the edge of the end portion which defines the fulcrum, to a major area of the end portion so as to prevent a weakening of the end portion along the straight line paths which may cause elongation of the opening in the pull means.

3,627,168

**EASY OPENING CONTAINER WALL WITH VENT OPENING**

Ermal C. Frazee, 355 West Stroop Road, Dayton, Ohio

Filed Nov. 13, 1969, Ser. No. 876,236

Int. Cl. B65d 17/24, 17/00

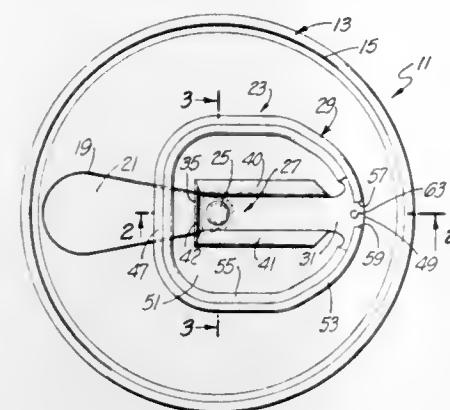
U.S. Cl. 220—54

8 Claims

An easy opening container wall including a container wall having a line of weakness therein defining a tear portion. The container wall has a rupturable region other than the line of weakness. A tab is attached to the container wall and is

movable sequentially through at least first and second movements. A vent opening is formed in the container wall in

pansion of the top. A plurality of spacers are provided on the top which interlock with the peripheral lip of the bottom portion of the next container when the containers are stacked. A



response to the first movement, and the line of weakness is ruptured in response to the second movement.

3,627,169

**MEMBER AND METHOD FOR CLOSING AN OPENING IN A PRESSURE CHAMBER**

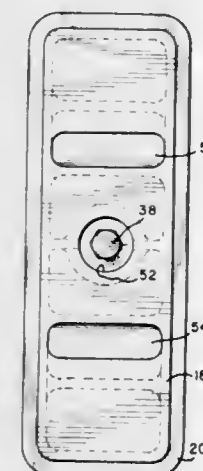
Frank D. Howe, and Robert W. Decker, both of Painted Post, N.Y., assignors to Ingersoll-Rand Company, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,887

Int. Cl. B65d 45/00

U.S. Cl. 220—55 B

4 Claims



An inside-out closure member for closing an access opening in a pressure chamber, and a method for practicing its use. The member is a plate of greater overall dimension than the opening and carries a jacking bolt, in penetration thereof, for bearing against an inner surface of the chamber. Chamber pressure holds the plate in closure position after, according to the method, the jacking bolt is used to first constrain the plate in alignment over the opening.

3,627,170

**CONTAINER**

Dudley C. Pulliam, and Dana B. Bates, both of Seattle, Wash., assignors to Simpson Timber Company, Seattle, Wash.

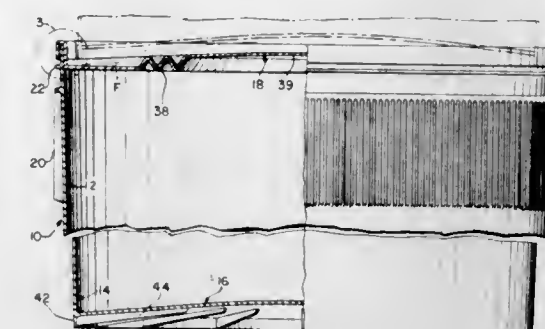
Filed Sept. 15, 1969, Ser. No. 857,753

Int. Cl. B65d 43/10, 21/02

U.S. Cl. 220—60 R

2 Claims

A plastic food container is provided with a straight walled top portion and a tapered bottom portion. The bottom portion terminates in a peripheral lip surrounding a concave bottom. The container has a removable top which is provided with a peripheral locking flange having an enlarged edge which snaps over an enlarged rim on the container. The top is also provided with an accordion fold to allow upward ex-



peripheral bead is provided on the top and engages a groove in the top portion of the container for providing a seal. Ribs are provided to space the containers in a stack to allow air circulation.

3,627,171

**VENTING CONTAINER FOR PRESSURIZED PRODUCTS**

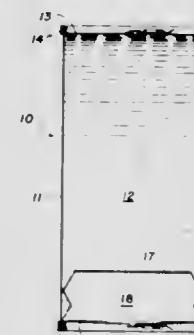
Milton Kaplow, White Plains, N.Y., and Stephen Linn, Tenafly, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,599

Int. Cl. B65d 25/00

U.S. Cl. 220—85 B

8 Claims



A container for pressurized products having an interior flexible or displaceable membrane of product-impermeable material effectively dividing the container interior into a product-containing chamber and a pressure relief chamber. A vent device when actuated places the pressure relief chamber in communication with atmosphere which enables interior expansion of the product-containing chamber with consequent reduction of the positive interior pressure thereof.

3,627,172

**INCLINED SHELF PRODUCT VENDING MACHINE**

Le Roy D. Gore, Independence, Mo.; Kermit W. Dyer, Overland Park, Kans., and Charles A. Moss, Lee's Summit, Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed Dec. 15, 1969, Ser. No. 884,811

Int. Cl. B65g 59/00

U.S. Cl. 221—129

10 Claims

An inclined shelf article dispensing machine having a stack of vertically spaced article support structures each provided with a series of side-by-side inclined article supports adapted to receive articles in a line thereon which are restrained against gravitational discharge by a blocking wall at the lower end of the structure. Selectively operable mechanism is provided for lifting a lowermost product on a support of a selected structure through a displacement for gravitational discharge over the blocking wall engaged thereby. Clutch and cam means are provided in association with each structure for effecting discharge of articles from the supports



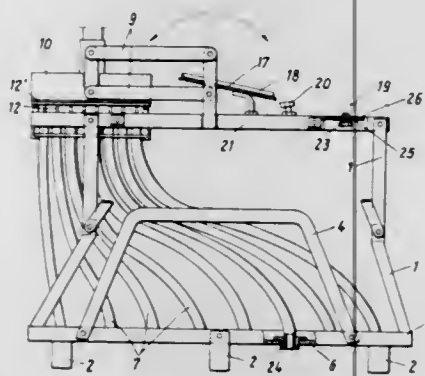
thereof in a repeated pattern upon successive operations of corresponding clutch means by the operating mechanism.



**3,627,173**  
**HORTICULTURAL APPLIANCE FOR DISPENSING SEEDS ONTO SEED BEDS**  
Reinhard Kerker, Meerwiese 784, Brake, Germany  
Filed Feb. 26, 1970, Ser. No. 14,565  
Int. Cl. A01c 5/00

U.S. Cl. 221-211

20 Claims

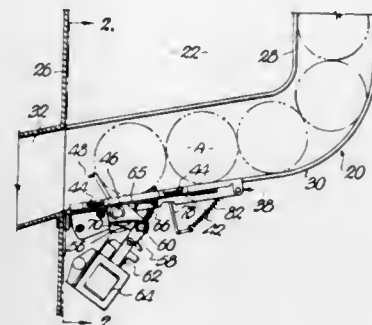


A frame is positionable over a surface area on which seeds are to be individually deposited at predetermined spacing. A plurality of elongated hoses are carried by the frame and have respective upper open ends located in a common plane and lower open ends which are also located in a common plane and which are positioned at the aforementioned predetermined spacing. A pickup element has a hollow interior and includes a plurality of nozzles communicating with the hollow interior and each dimensioned to pick up a single seed. Mounting means mounts the pickup element for movement between two positions in one of which the nozzles communicate with a supply of seeds and in the other of which each of the nozzles registers with one of the upper open ends. Actuating means is operable for applying suction to the hollow interior when the element is in its one position, and for applying pressure to the hollow interior when the element is in its other position, to thereby respectively engage individual seeds with and discharge them into the upper open ends from the nozzles.

**3,627,174**  
**LOCK AND INDEXING MECHANISM FOR CONTROLLING INCREMENTAL ROTATION OF ROTATABLE STRUCTURE**  
John W. Baxendale, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.  
Continuation-in-part of application Ser. No. 832,093, June 11, 1969, now abandoned. This application Mar. 26, 1970, Ser. No. 22,868  
Int. Cl. B65g 59/00

U.S. Cl. 221-295

21 Claims

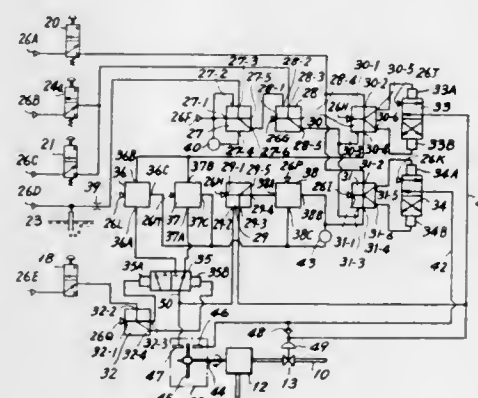


A lock and indexing mechanism for controlling successive equal increments of rotational motion of rotatable structure, such as a paddle wheel type article release structure in a vending or dispensing machine. The shaft of the structure extends into the mechanism and is provided with a rotor section that carries a number of balls or rollers which are radially shiftable toward and away from locking positions received within angularly spaced recesses in a stationary control member of the mechanism. To index the structure, the balls are permitted to move out of respective recesses by the operation of a rotatable control member of the mechanism coaxial with the stationary member, the rotatable member being momentarily actuated and then returned to a standby position causing each ball to relock in the next recess to interrupt rotation of the structure after one increment of rotation.

**3,627,175**  
**FIXED QUANTITY LIQUID SUPPLYING APPARATUS USING FLUIDIC DEVICES**  
Takeo Hisada, and Takeshi Nishi, both of Tokyo, Japan, assignors to Tokico Ltd., Kawasaki, Kanagawa-ken, Japan  
Filed July 31, 1970, Ser. No. 60,046  
Claims priority, application Japan, July 31, 1969, 44/60565, Sept. 16, 1969, 44/73343  
Int. Cl. B67d 5/30

U.S. Cl. 222-14

9 Claims

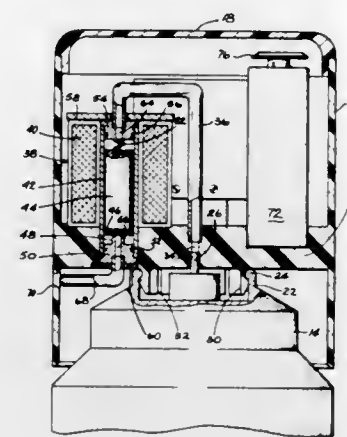


A fixed quantity liquid supplying apparatus performs a liquid supplying operation of fixed quantity through multiple stage valve closing. The liquid supply is controlled by a control circuit comprising fluidic devices or amplifiers which closes the valve in a fuel supplying pipe in multiple stages. The fluidic devices are operated by fluid such as air.

**3,627,176**  
**AUTOMATIC SPRAY DISPENSER FOR PRESSURIZED FLUID**  
William M. Sailors, 807 B 26th St., Santa Monica, Calif.  
Filed Sept. 24, 1969, Ser. No. 860,702  
Int. Cl. B67d 5/08

U.S. Cl. 222-70

10 Claims

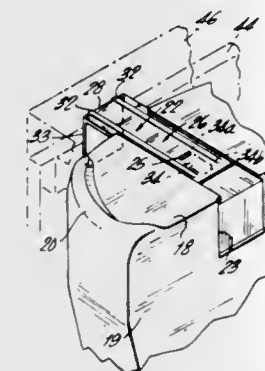


A solenoid operated valve has a moveable armature piston restricting the flow of pressurized fluid introduced at the inlet end of a cylinder towards an outlet at its opposite end. A resilient closure member on the outlet end of the piston contacts a protruding outlet valve seat to maintain the valve closed until the solenoid coil is energized, at which time the outlet is opened momentarily to release a predetermined amount of pressurized fluid at the outlet end of the cylinder to a spray nozzle. The substantial flow impedance between the cylinder inlet and outlet results in a pressure differential between opposite ends of the piston that reseats and holds the closure member against the valve seat to prevent leakage.

**3,627,177**  
**DISPENSER COMBINED WITH HANGING CLIP FOR INVERTED SUPPORT**  
Paul Marcus, Pearl River, and James R. King, Northport, both of N.Y., assignors to Knomark, Inc., Jamaica, N.Y.  
Filed Apr. 22, 1970, Ser. No. 30,742  
Int. Cl. B67d 1/00

U.S. Cl. 222-181

3 Claims

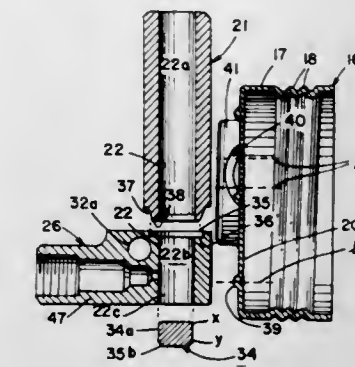


The combination of a liquid dispensing container and a hanging device for suspending the container in an inverted position from the upper interior of a conventional flush tank. The hanging device is adjustable from a storage position to a hanging position and includes means cooperating with a guide groove in the container for facilitating motion of the device between the storage position and the hanging position. The hanging device further includes a ribbed construction for increasing the strength thereof.

**3,627,178**  
**DISPENSING HEAD FOR LEVER-OPERATED HAND GREASE GUN**  
Edwin P. Sundholm, R.R. 1, Albert City, Iowa  
Filed Sept. 2, 1969, Ser. No. 854,581  
Int. Cl. B67d 3/00

U.S. Cl. 222-383

14 Claims

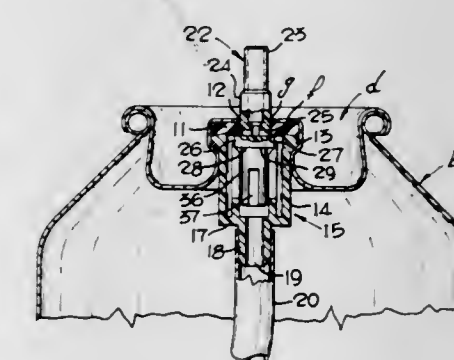


A built-up, fused head assembly for a lever-operated hand grease gun and adapted for use with a thin walled grease container provides a high-pressure cylinder, formed from at least two parts, one of which is preferably made from round metal stock and the other from rectilinear metal stock. The cap is formed from relatively thin sheet metal stock and includes a channel-shaped wall area for receiving and supporting the high-pressure cylinder part formed from the round metal stock. The cap sidewalls have corrugated, roll-type threads for mating corresponding threads on the grease container. The head part, which is preferably formed of the rectilinear metal stock, can also provide the housing for the outlet check valve, and an extension of the cylinder bore can pass through the sidewall of the part, the extension being closed by a press-fitted plug, locked in place by metal deformation. Alternatively, the head part may comprise an integral part formed of rectilinear bar stock and providing an oversized extension of the cylinder bore. An enlarged depression is formed about the mouth of the oversized bore extension to provide a seating surface for receiving the round metal stock and being welded to it.

**3,627,179**  
**DISPENSING VALVE ASSEMBLY INCLUDING INTEGRALLY MOLDED SPRING**  
Christian T. Scheindel, Glen Gardner, N.J., assignor to Clayton Corporation, St. Louis, Mo.  
Filed Oct. 17, 1969, Ser. No. 867,168  
Int. Cl. B65d 83/14; F16k 31/58

U.S. Cl. 222-402.1

8 Claims



A dispensing valve for pressure packaging has a flow adapter cup with integral spring portions molded to extend upward in a circle around the bottom flow inlet. Tips of the spring portions abut against a face on the lower part of the rigid valve stem. On displacing the valve stem downward or by tilting, the spring portions bias it to closed position.



3,627,180

**STOPPER ROD WITH ASSEMBLY FOR ALIGNMENT WITH NOZZLE**

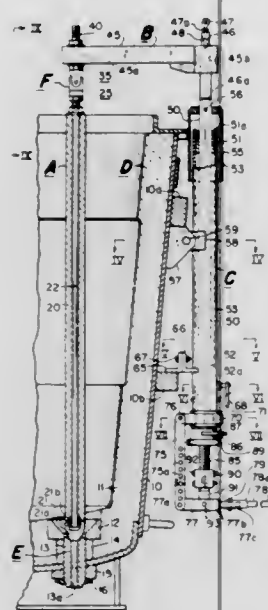
Harry T. Montgomery, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, New Castle, Pa.

Filed Feb. 12, 1970, Ser. No. 10,805

Int. Cl. B22d 37/00

U.S. Cl. 222-505

5 Claims



A stopper rod assembly for a molten-metal-dispensing ladle is provided with a double clevis connection between its vertical stopper and its support arm such that the stopper rod can and will align its flow controlling lower end or head portion with the tap hole in the ladle, irrespective of misalignment that may have occurred with reference to its supporting arm, associated slide rod, etc.

3,627,181

**RIFLE SLING**

John E. Bianchi, Bradbury Estates, Calif., assignor to Bianchi Leather Products, Inc., Monrovia, Calif.

Filed Jan. 7, 1970, Ser. No. 1,185

Int. Cl. A41c 33/00

U.S. Cl. 224-1 A

7 Claims



A rifle sling is made from an elongated flexible strap which has a portion adjacent one end wider than the remainder of the strap. A pouch is secured to the strap for holding ammunition. The pouch is formed from a single elongated flexible piece which is wider at one end than the remainder of the piece. The wider end is secured at its side edges to the side edges of the wider portion of the sling strap. The more narrow portion of the piece forming the pouch is folded back under the wider portion of the piece to extend under and beyond the wider end of the piece to form a flap for closing the pouch.

3,627,182

**PEN HOLDER ATTACHMENT DEVICE**

Forrest I. Calkins, 336 Malcolm Ave., Belmont, Calif.

Filed Dec. 5, 1969, Ser. No. 882,475

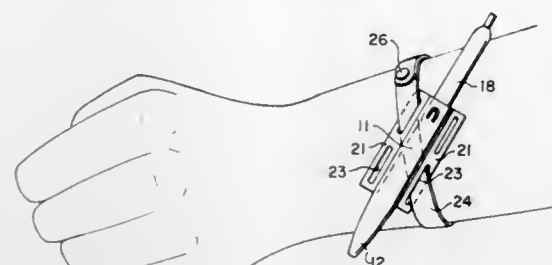
Int. Cl. A45c 11/34

U.S. Cl. 224-28 D

5 Claims

A tapered, tubular sheath is shaped to receive, and retain against unintentional dislodgment, the end of a conventional

ballpoint pen. Ears project from opposite sides of the sheath providing a flat attachment surface. Apertures are formed in the ears to receive a wrist-encircling strap. As an alternate means of attachment to a telephone base or other structure, a fiber backing carrying pressure sensitive adhesive on top and bottom surfaces may be applied to the attachment sur-



3,627,183

**TICKET DISPENSER DEVICE**

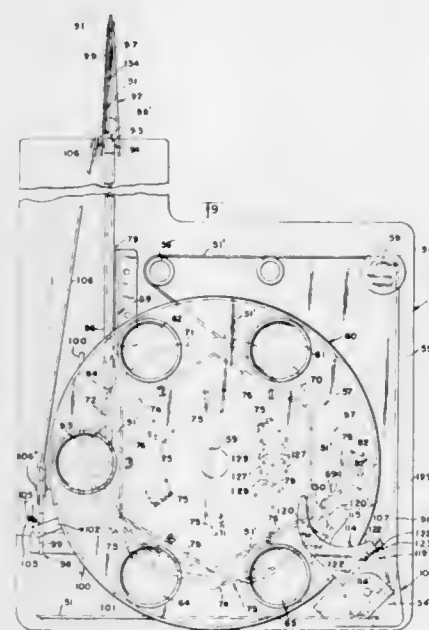
Vern K. Mason, 2542 Clover Drive, Grand Forks, N. Dak.

Filed Feb. 6, 1970, Ser. No. 9,202

Int. Cl. B26f 3/02; B65h 17/04

U.S. Cl. 225-96.5

3 Claims



A ticket dispenser having a six-sided drum with a dial for rotating the drum. The drum is surrounded by an arcuate guide and a length of tickets is fed therebetween. The rotating action of the drum feeds the tickets around the drum, with the corners of the drum folding the tickets at the perforation lines for easier separation. A channel receives the tickets after passing about the drum and the dial has a spring return so that after dialing the return action of the dial actuates a movable channel portion for partially severing the tickets. The dispenser also has a mechanism to prevent the drum from overtraveling while feeding the tickets.

**ERRATUM**

For Class 226-90 see:  
Patent No. 3,627,125

3,627,184

**APPARATUS FOR TRANSPORTING LOOPED ROD THROUGH A COOLING STAGE**

Gerhard Berz, Dusseldorf, and Klaus Vorkamp, Neuss, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

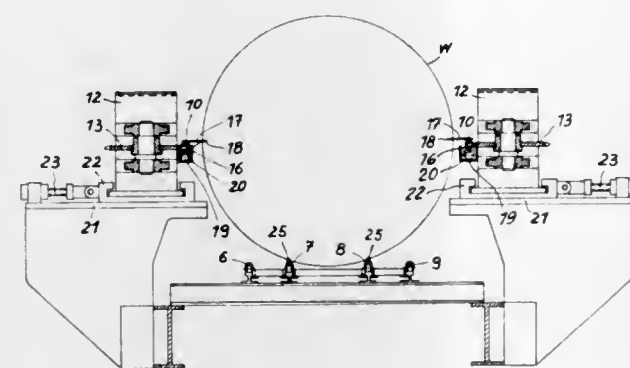
Filed June 3, 1969, Ser. No. 829,983

Claims priority, application Germany, June 8, 1968, P 17 52 519.8

Int. Cl. B65h 29/16

U.S. Cl. 226-74

3 Claims



This invention relates to an apparatus for transporting looped wire from a loop former through a cooling stage to a collector, the apparatus comprising three conveyor chains each having teeth for engaging loops of the looped wire, a first conveyor chain arranged to engage the wire from beneath, and second and third conveyor chains arranged to engage the wire from opposite sides.

3,627,185

**TAPE RECORDING SYSTEM MECHANISM**

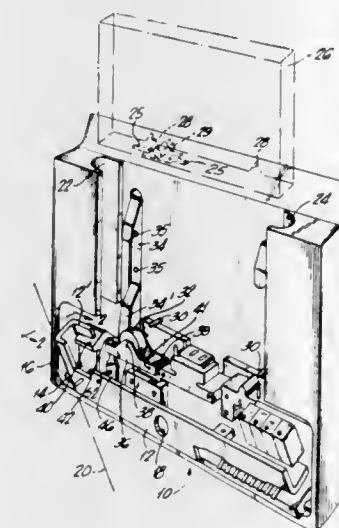
James R. Trammell, Parma Heights, Ohio, assignor to Scanfax Systems Corporation, New York, N.Y.

Filed Jan. 5, 1970, Ser. No. 585

Int. Cl. G11b 15/66

U.S. Cl. 226-90

4 Claims



A pinch roller positioning mechanism for use in a tape recording system is described as including a linear cam having a cam extension, a spring detent and a latch, all affixed to a cassette-receiving module for controlling the motion of a pinch roller with respect to a capstan shaft and a recording tape in a desired loading sequence. The control is in response to the loaded and unloaded condition of the cassette-receiving module and the position of the cassette-receiving module with respect to the system operational panel, so that the pinch roller is in contact with the tape and capstan shaft only when the cassette-receiving module is loaded and the cassette-receiving module is in a position within a few degrees of being parallel to the panel.

3,627,186

**RECORD HANDLING AND RECORDING APPARATUS**

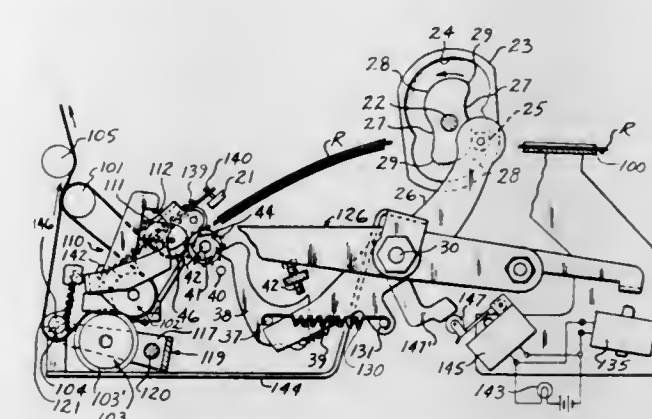
Ralph L. Berke, Park Ridge, and Clayton H. Clark, Mundelein, both of Ill., assignors to SCM Corporation, New York, N.Y.

Filed Sept. 15, 1969, Ser. No. 857,977

Int. Cl. B65h 25/30

U.S. Cl. 226-100

7 Claims



There is disclosed a recorder together with verification, tape-motion, slack-tape, and out-of-tape alarms. In particular, the incoming signal is temporarily mechanically stored in the recorder by selectively positioning mechanical elements in either one of two positions. A signal is generated in response to the position of these elements and is verified by comparing the generated signal with the incoming signal. A lack of comparison results in an alarm condition. An alarm condition also exists when the tape-feeding mechanism operates without feeding the record medium, when the tape becomes too slack indicating either that the tape is not being taken up or that the tape has left its predetermined path of movement, or when the tape supply is exhausted.

3,627,187

**TRANSPORTING APPARATUS FOR PIPES OR THE LIKE**

Heinz Hartkopf, Solingen, Germany, assignor to Th. Kieserling &amp; Albrecht, Solingen, Germany

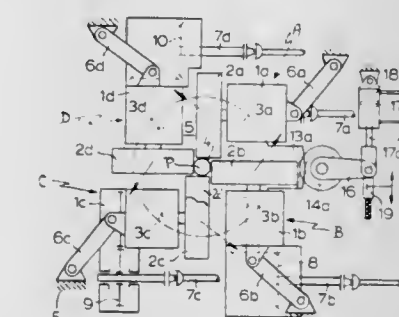
Filed Jan. 28, 1970, Ser. No. 6,345

Claims priority, application Germany, Feb. 1, 1969, P 19 05 066.9

Int. Cl. B65h 17/20

U.S. Cl. 226-108

10 Claims



Transporting apparatus for tubes, bars or like workpieces wherein the housings for driven work-engaging rolls are pivotally mounted on a support which is turnable about the axis of a conveyed workpiece to thereby move the rolls radially and sideways and to enlarge or reduce the area of the passage for workpieces. The housings are coupled to links which hold them against changes in angular position during rotation of the support. The latter is rotatable by a double-acting cylinder and respectively reduces or increases the area of the passage between the peripheral surfaces of the rolls when it is caused to rotate in a clockwise or in a counter-clockwise direction.



3,627,188

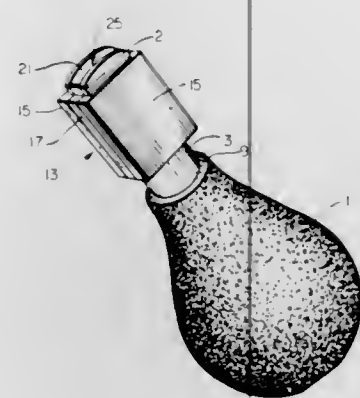
**DEVICE FOR EXTRACTING MAGNETIC TAPE FROM A CASSETTE**

John E. Horne, Hyattsville, Md., assignor to Rawdon Smith Associates, Inc., Washington, D.C.

Filed July 16, 1970, Ser. No. 55,420

Int. Cl. B66c 1/02

U.S. Cl. 226—200



A device for extracting tape from a cassette without disengagement from the spindles in the cassette, having suction means communicating with a relatively deep, elongated chamber which communicates with an open mouth of internal width closely approximating that of the tape to be extracted. The mouth of the device has front and sidewall parts extending from the chamber of outer dimensions which fit into the well of a magnetic tape cassette so that the tape to be extracted may be speedily and easily sucked into the elongated chamber in a loop gently, without damage by applying a relatively instantaneous suction.

3,627,189

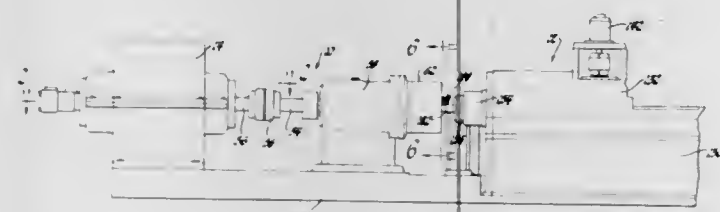
**FRICTION WELDER**

Edwin D. Ditto, Ann Arbor, and William S. Stone, Trenton, both of Mich., assignors to General Electric Corporation, Detroit, Mich.

Filed Nov. 25, 1968, Ser. No. 778,720

Int. Cl. B23k 27/00

U.S. Cl. 228—2



Friction welder and friction welding methods in which plural flywheels can be selectively connected to a single workpiece drive spindle at different times so that kinetic energy can be stored in one flywheel as the kinetic energy of another flywheel is being used to relatively rotate and frictionally weld two workpieces engaged under thrust load. After the workpieces are welded, new workpieces are inserted into the welder so that the energy of the second flywheel can be utilized to relatively rotate and frictionally weld the other workpieces engaged under thrust load as kinetic energy is being stored in the first flywheel for subsequent friction welding. As the workpieces are being relatively rotated, they can be slid laterally relative to each other so that all parts of the interface are cleaned and directly heated by friction. Both workpieces are rotated during welding so that a single tool can be employed to facilitate removal of hot-weld flash.

3,627,190

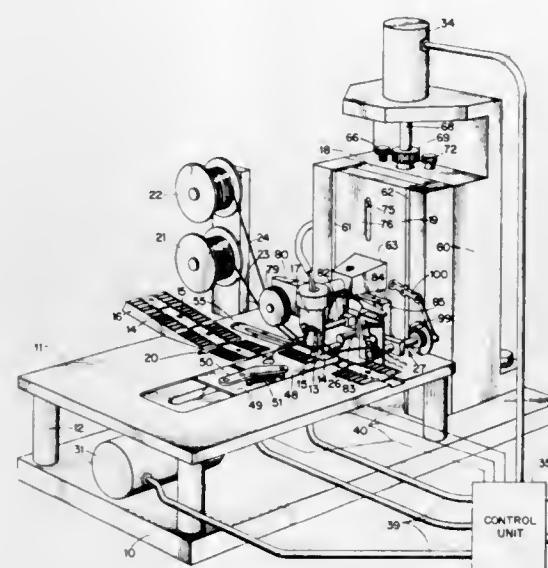
**APPARATUS FOR BONDING SEMICONDUCTOR ELEMENTS**

Hubert J. Ramsey, Burlington, Mass., assignor to GTE Laboratories Incorporated

Filed Oct. 28, 1969, Ser. No. 871,873

Int. Cl. B23k 1/00, 5/00

9 Claims U.S. Cl. 228—4



Apparatus for compliant bonding beam-leads of a semiconductor element to metallized areas of a substrate. Lengths of uniform ribbon of a deformable material are disposed between a heated bonding tool and the beam-leads. The bonding tool is pressed against the lengths of ribbon to compress the beam-leads between the ribbons and the metallized areas for bonding. After bonding, the used lengths of ribbon are replaced by new lengths from continuous supplies stored on reels.

3,627,191

**SOLDER WICK**

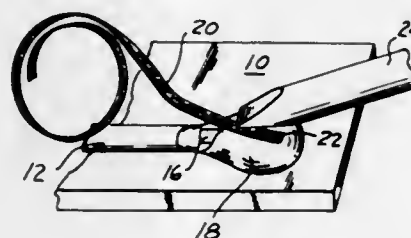
Jesse Carl Hood, Jr., 817 Dumaine Ave., San Dimas, Calif.

Filed Mar. 18, 1968, Ser. No. 713,976

Int. Cl. B23k 1/00, 5/22

U.S. Cl. 228—19

2 Claims



A solder-removing wick of copper strands having an exterior capillary surface of copper directly and substantially entirely coated with a noncorrosive flux. The wick is coated by contacting it with a flux solution that wets it sufficiently to substantially entirely coat its exterior surface while retaining the capillary properties of the surface.

3,627,192

**WIRE LEAD BONDING TOOL**

William A. Killingsworth, Glendora, Calif., assignor to Bearings, Seals &amp; Gears, Inc., Redwood City, Calif.

Filed Feb. 3, 1969, Ser. No. 795,910

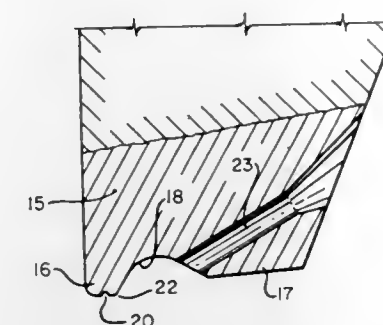
Int. Cl. B23k 3/02

U.S. Cl. 228—54

7 Claims

A bonding tool for wire lead bonding including a relatively

stiff shank, a wire guide and a bonding tip of relatively hard,



slightly ductile, inert material.

3,627,193

**CARRIERS FORMED FROM SLEEVES AND HAVING GUSSET FOLDED BOTTOM CLOSURE PANELS**

Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.

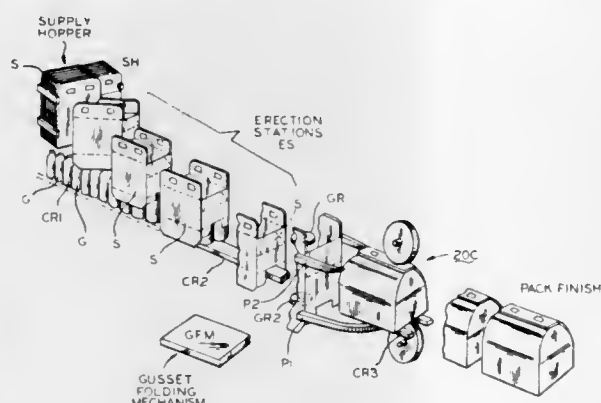
Continuation-in-part of application Ser. No. 754,331, Aug. 21, 1968, now abandoned, Original application Oct. 2, 1969,

Ser. No. 863,049, now abandoned. Divided and this application Apr. 22, 1970, Ser. No. 30,917

Int. Cl. B65d 5/02

U.S. Cl. 229—37 R

13 Claims



A discrete group of articles, such as cans or bottles, are enclosed in a carrier sleeve. The articles are arranged in a double row in a carrier sleeve or a basket style carrier, both having gusset folded bottom closure panels. The carriers are applied to container groups in the form of a sleeve as the group moves from a first conveyor reach having a width substantially equal to the width of the double row, and on to a second conveyor reach substantially less in width than the first reach. The sleeve forming the carrier being adapted to move into position around the container group as it moves from the first reach to the second reach to hold the articles stably in the carrier. The sleeve has lower closure elements adapted to embrace the second reach, and structure is provided for moving the lower closure elements into position against the bottom of the group as the group moves from the second reach to a third reach.

3,627,194

**HANDLE FOR CARTON**

William A. Hester, Memphis, Tenn., assignor to Eastex Packaging Inc., Oak Brooke, Ill.

Filed June 17, 1970, Ser. No. 47,014

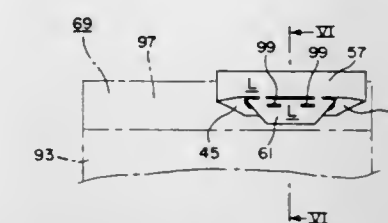
Int. Cl. B65d 5/46

U.S. Cl. 229—52 AL

5 Claims

A preformed foldable blank made of pliable sheet material, e.g., polyethylene coated boxboard, made use of in forming a bail-like handle that is attached to a gabled top carton for packaging various products. The blank includes a plurality of panels formed by various predetermined fold lines. Folding the blank in a predetermined sequence along the fold lines

provides a retracted handle which is fixedly attached to the crown of the carton by staples. The handle remains retracted while the carton is processed through the normally automatic casing and filling sequence, while stored and while being transported before use. The user, e.g., retail customer, ex-



pands or opens the handle at the time of purchase for the purpose of conveniently carrying the carton. Breakaway tabs provide reinforcement of the attachment means of the handle to the carton and hold the handle in its retracted form prior to use. The breakaway tabs are separated from the remaining structure by the user prior to expanding the handle.

3,627,195

**ENVELOPE BLANK**

Kurt Hauer, Warmbronn/Wuerttemberg, Germany, assignor to Ernst Hauer &amp; Co., Stuttgart, Germany

Filed Sept. 12, 1969, Ser. No. 857,372

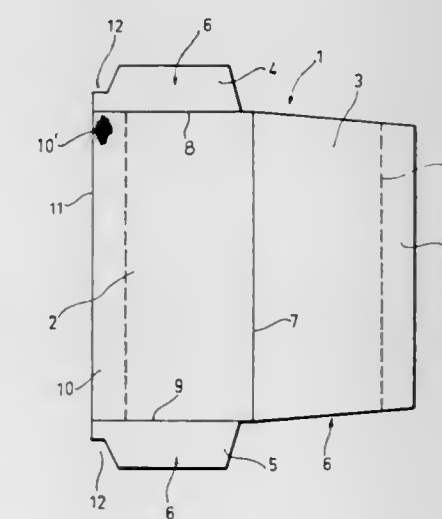
Claims priority, application Germany, Sept. 14, 1968, P 17

86 310.4

Int. Cl. B65d 27/18

U.S. Cl. 229—68 R

5 Claims



An envelope blank of predetermined configuration is made from sheet material. An enclosure for an envelope to be made from the blank is placed onto the latter in predetermined orientation with reference to the same. Thereupon, the blank is converted into a finished envelope containing the enclosure. The blank is also disclosed.

3,627,196

**MACHINE OPENABLE ENVELOPE**

William W. Smith, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Original application May 2, 1968, Ser. No. 726,176. Divided and this application Dec. 29, 1969, Ser. No. 1,938

Int. Cl. B43m 7/00

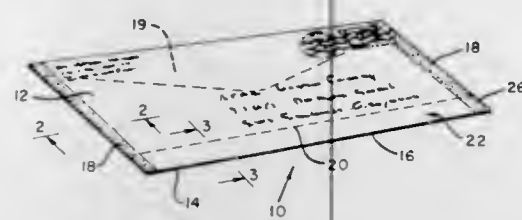
U.S. Cl. 229—85

4 Claims

An envelope having front and back panels defining a cavity therebetween with lines of weak tear strength extending longitudinally across each panel from one side edge to the other overlapping the cavity so that when the lower tear strip portion of the envelope is removed, any contents within the envelope will be exposed sufficiently for gripping along that portion thereof which projected into the tear strip cavity, and



restricting means to prevent contents within the tear strip cavity from intruding between front and back panels in an operation, in response to a multiplicand setting motion of register, to disengage the link mechanism and hence the division mechanism from the "=" key whereby a multiplication operation is prepared to start.



area about which the tear strip portion is gripped for severing from the envelope.

3,627,197

**AUXILIARY KEYBOARD FOR CARD PUNCH MACHINE**

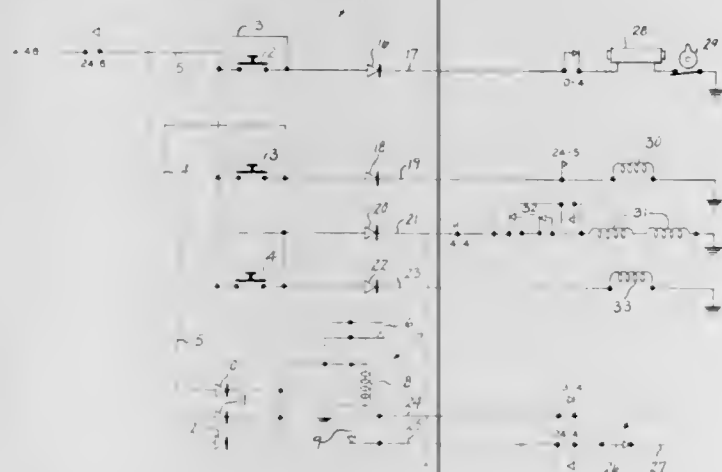
Daniel J. Stevens, 2690 S. Stoughton Road, Madison, Wis.

Filed Oct. 15, 1969, Ser. No. 866,672

Int. Cl. G06k 1/08

U.S. Cl. 234-18

2 Claims



An auxiliary keyboard for use as an accessory to a card punch machine that punches information into data processing cards, such keyboard having lead wires connected into the circuit of the card punch machine for applying an operating voltage to preselected portions of the circuit in response to manual depression of finger keys of the keyboard. The keyboard has three keys, the first for causing the card punch machine to space in automatic succession without requiring repeated depressions of the key for traversing across the individual spaces, the second for causing the machine to skip spaces at a higher rate than the first key, and the third being for operating the duplicating function of the machine at a greater rate than ordinarily achieved when the machine is in its manual mode of operation.

3,627,198

**SINGLE CONTROL DEVICE FOR STARTING THE MULTIPLICATION AND DIVISION OPERATIONS IN CALCULATING MACHINES**

Gian Piero Barozzi, and Giancarlo Horeschi, both of Crema, Italy, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1970, Ser. No. 080,023

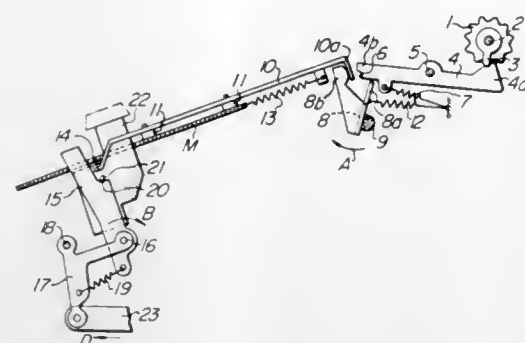
Claims priority, application Italy, Feb. 11, 1970, 20471-A/70

Int. Cl. G06c 15/08, 21/04

U.S. Cl. 235-63 E

4 Claims

A device for selectively starting the calculating operations of multiplication and division mechanisms of a calculating machine having a single "=" key held in operative connection with the multiplication mechanism. A pivotable link mechanism having one end held in operative connection with the division mechanism is held by a spring in operative connection at the other end with the "=" key only when a multiplicand is not set on the machine to thereby connect the "=" key with the division mechanism. A rod is provided for



3,627,199

**ANNEALING TIME CALCULATOR**

Robert R. Hill, Westlake, Ohio, assignor to Lee Wilson Engineering Company, Inc., Cleveland, Ohio

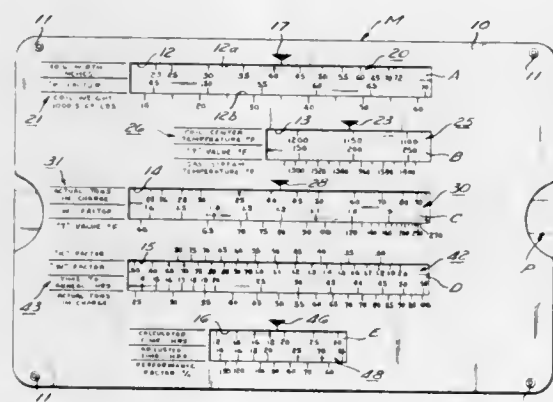
Continuation-in-part of application Ser. No. 9,896, Feb. 9, 1970, now abandoned, which is a continuation-in-part of application Ser. No. 764,192, Oct. 1, 1968, now abandoned.

This application May 18, 1970, Ser. No. 38,135

Int. Cl. G06c 3/00, 27/00

U.S. Cl. 235-85

21 Claims



A calculator for determining the minimum length of time to operate an annealing furnace, such as a hood or bell-type, to anneal a charge of coils of strip metal, some of which may have different sizes or weights, wherein a plurality of interrelated slide rule type scales cooperate to determine and indicate the minimum annealing time sought.

Optionally, the calculator may have other scales, such as a scale to account for the difference between the temperature to be reached at the center of the coils and the temperature of the surrounding heating medium; or a scale to compensate for difference in types or efficiencies of furnaces, types of steel, and the like.

3,627,200

**MECHANICAL GOLF HANDICAPPER**

Jesse W. Sadler, P. O. Box 489, Richland, Wash.

Filed Aug. 19, 1970, Ser. No. 65,028

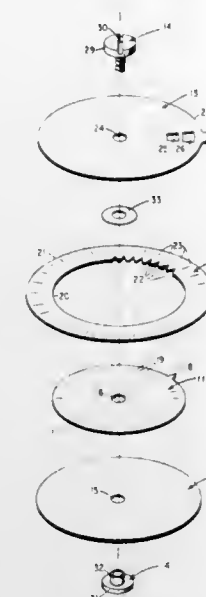
Int. Cl. G06c 3/00

U.S. Cl. 235-88

3 Claims

A circular slide rule to mechanically determine golf handicaps. Circular scales are arranged on two discs adjustably

mechanically related by a particular course par score to allow the reading of a golfer's handicap through one finder right angles to each other, respectively operate the valves. One rod is actuated by an electromagnet and the other by a fluid pressure responsive diaphragm connected to a venturi. The venturi is in a water circuit that includes the heater, two



window when his score be arrayed under a second finder window both defined in a third disc.

3,627,201

**ATMOSPHERE CONTROL ARRANGEMENT FOR MACHINERY**

Ernst Partsch, Felsenau 128, Frastanz, 6820 Vorarlberg, Austria

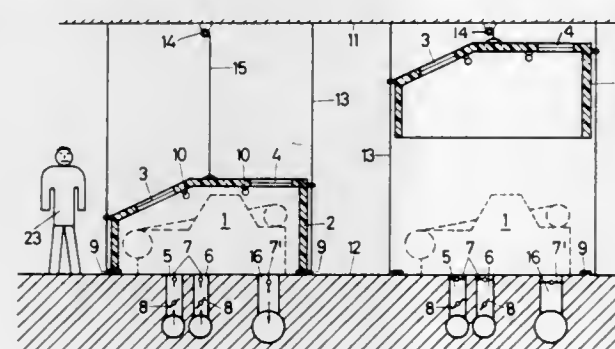
Filed Apr. 28, 1969, Ser. No. 819,643

Claims priority, application Austria, Apr. 30, 1968, A4179/68

Int. Cl. D03d 49/00; F23j 11/02

U.S. Cl. 236-44

6 Claims



The automatic weaving looms of a textile plant are individually enveloped by hoods of acoustical insulation material suspended from hoists and sealingly engaging the floor about the associated machines. Air at controlled temperature and humidity is supplied to the interior of each hood and exhausted from that interior through a system of manifold pipes having orifices in the floor under each hood, and valves in the orifices which open automatically as the hood descends into the operative position and close when the hood is lifted.

3,627,202

**FORCED CIRCULATION GAS WATER HEATER**

Hans Meier, Remscheid, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany

Filed Feb. 13, 1970, Ser. No. 11,125

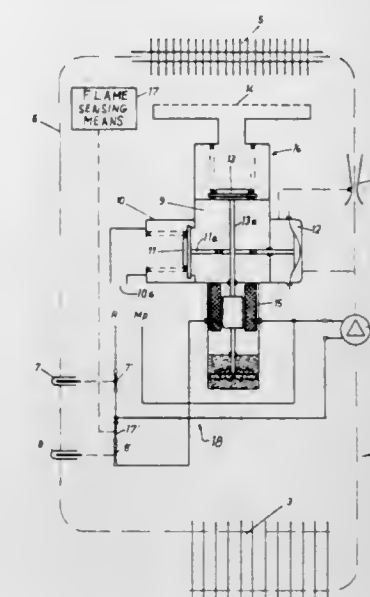
Claims priority, application Germany, Feb. 18, 1969, P 19 08 071.8

Int. Cl. F24d 3/02

U.S. Cl. 237-8

4 Claims

A gas valve for the burner of a water heater is L-shaped with valves in each branch of the L. Push rods, positioned at



temperature-limiting thermostats, a radiator and a circulating pump. An electrical circuit has two branches; one of which includes a switch controlled by one thermostat and the circulating pump motor; and the other of which includes switches controlled by both thermostats and the electromagnet.

3,627,203

**PURGE SYSTEMS**

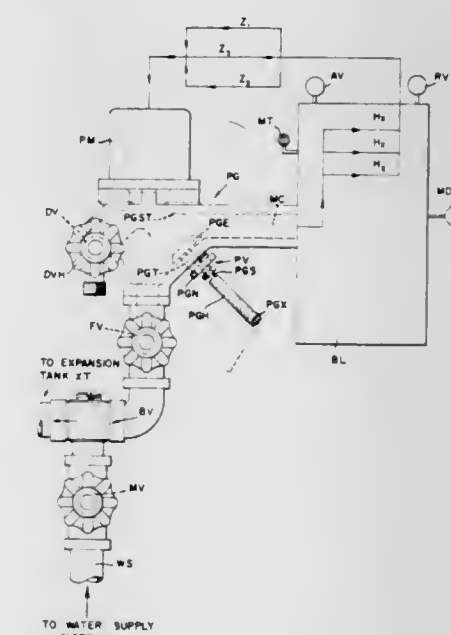
Allan E. Martin, Tonawanda, N.Y., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,515

Int. Cl. F24d 3/02

U.S. Cl. 237-63

8 Claims



Covers a hot water heating system employing a purge valve structure and other structural components which are affixed to each other and to the boiler system. The purge valve structure includes a slide valve mechanism which may be locked and sealed in its normal or open position and, when locked, the accidental closure of the purge valve structure is rendered impossible. To close the purge valve structure when the purging operation is to be performed, a handle affixed to the stem of the valve must first be released from its locked open position and, upon the release of the handle, the valve stem may be pushed to the closed position. When the valve is thus closed, the boiler and the hot water system may be



purged and thereafter filled with water for the normal operation of the system. The purge valve structure provides a seat for the pump (sometimes called a "circulator"), and it provides a housing for a drain valve and for a fill valve. The purge valve structure and these several components may be assembled at the factory and shipped along with the boiler as a package so that they may be easily installed at the building where they are to be operated.

The purging operation is performed with water flowing upwardly through the boiler and then through the rest of the hot water system. The water path for purging is in the same direction as is taken by the water when the system is providing normal heating service. The removal of air from the entire system is virtually perfect.

3,627,204

## SPRAY NOZZLE FOR PLASMA GUNS

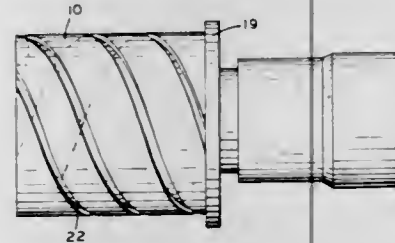
Mille Stand, New York, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed June 18, 1969, Ser. No. 834,293

Int. Cl. B05b 7/10

U.S. Cl. 239—81

5 Claims



A spray nozzle having a series of helical grooves cut in the outside surface of the nozzle in order to shape and confine the flame ejected from the interior of the gun. The force of the flame draws air through the grooves and thereby provides a helical shield which prevents the flame from spreading and makes it more stable.

3,627,205

## SPRINKLER HEAD APPARATUS

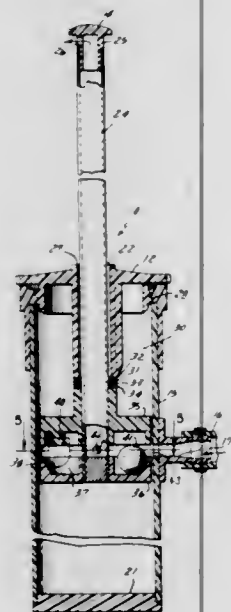
Mark Healy, Orange County, Fla., assignor to Senninger, Irrigation, Inc., Orlando, Fla.

Filed Aug. 20, 1970, Ser. No. 65,647

Int. Cl. B05b 3/04

U.S. Cl. 239—206

7 Claims



A sprinkler head apparatus is provided having a casing adapted to be connected to a waterline in which the casing has a tube passing through the top thereof with a nozzle on the end exterior to the casing and a raceway attached to the other end of the tube inside the casing. The raceway is circular and has a ball therein and has a protrusion extending from the top in a manner so that the ball following the raceway

will be raised by the centrifugal force and will collide with the protrusion. The ball is pushed by the water entering the water inlet in the side of the casing tangential to the raceway. The water thereafter passes through the tube and out the nozzle. The water pressure in the casing is also adapted to force the tube to slide through the opening in the casing until the raceway becomes level with the water inlet.

3,627,206

## DIP-TUBE LIQUID VAPORIZERS

Michel Boris, Paris, France, assignor to Societe Technique De Pulverisation, Paris, France

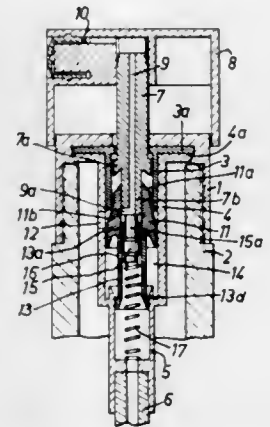
Filed July 7, 1970, Ser. No. 52,881

Claims priority, application France, July 7, 1969, 6922664 Mar. 26, 1970, 7011073

Int. Cl. B05b 9/04

U.S. Cl. 239—321

11 Claims



A dip-tube vaporizer has a cylinder in which a piston member is slidable. The interior of the cylinder communicates through a slide-valve-controlled opening with a chamber formed between the piston and the cylinder wall. The chamber is filled by a previous stroke so that when a plunger rod is depressed a shoulder thereon engages the piston and the latter acts to pressurize the liquid in the chamber and thus to deliver it through a passage in the plunger rod to an atomizer nozzle. As the plunger rod rises it draws up liquid through the dip tube and delivers it to the chamber ready for the next dispensing stroke of the plunger.

3,627,207

## INJECTION VALVE FOR INTERNAL-COMBUSTION ENGINES

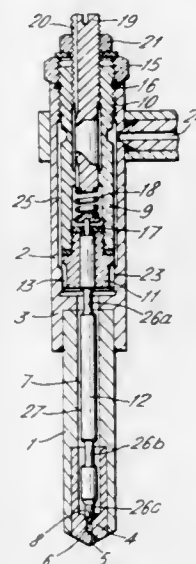
Gunter Hohmuth, Lengenfeld, Germany, assignor to VEB Barkas-Werke Ifa-kombinat für Kraftfahrzeugteile Renak-Werke, Reichenbach, Germany

Filed July 30, 1970, Ser. No. 59,498

Int. Cl. B05b 1/30

U.S. Cl. 239—533

3 Claims



An internal-combustion engine fuel injection valve is so constructed that the fuel cools the valve needle and the un-

seating pressure and the stroke of the needle are independently adjustable.

3,627,208

## FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES OF THE LIQUID-FUEL-INJECTION COMPRESSION-IGNITION TYPE

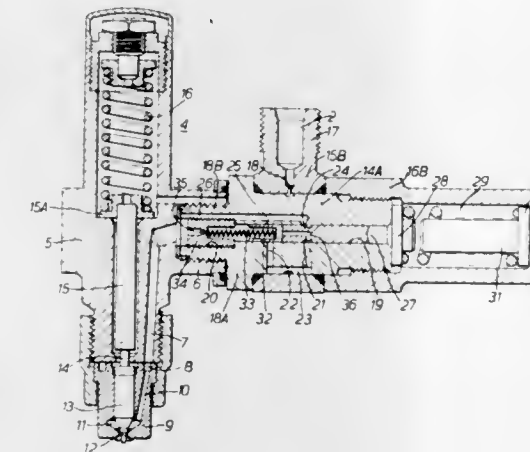
William M. Scott, Patcham; Brian W. Millington, North Lancing, and Royston Gordon Freese, Upper Beeding, all of England, assignors to Ricardo & Co., Engineers (1927) Limited, Shoreham-by-Sea, Sussex, England

Filed Oct. 6, 1969, Ser. No. 864,123

Int. Cl. B05b 1/30

U.S. Cl. 239—533

13 Claims



A fuel injection system for an internal combustion engine of the liquid-fuel-injection compression-ignition type, having a fuel pump arranged to deliver fuel under supply pressure via a pressure-reducing valve to a pressure chamber of an injection plug, the said plug having an injection valve arranged to open in response to the pressure in the pressure chamber and controlling the injection of fuel from the chamber through the nozzle into the associated combustion chamber. The pressure-reducing valve is of the spring-loaded-piston variable-orifice type and when operative controls the fuel pressure in the pressure chamber, and hence the injection pressure, to a predetermined reduced value for the purpose of reducing engine noise during periods of idling. Means is provided however for rendering the pressure-reducing valve inoperative when full injection pressure is required, either by bypassing the pressure-reducing valve altogether so that the fuel pump delivery passes directly to the pressure chamber throughout the whole of each pump delivery stroke, or by bypassing the restricted orifice of the pressure-reducing valve during the final stage only of each delivery stroke of the fuel pump. In either case the bypassing means may be operated by a running control member of the engine, for example a fuel or speed control member.

3,627,209

## LIQUID FUEL INJECTION NOZZLE UNITS

Peter Frank Scott, Kingston-Upon-Thames, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Oct. 23, 1969, Ser. No. 868,760

Claims priority, application Great Britain, Nov. 14, 1968, 54,067/68

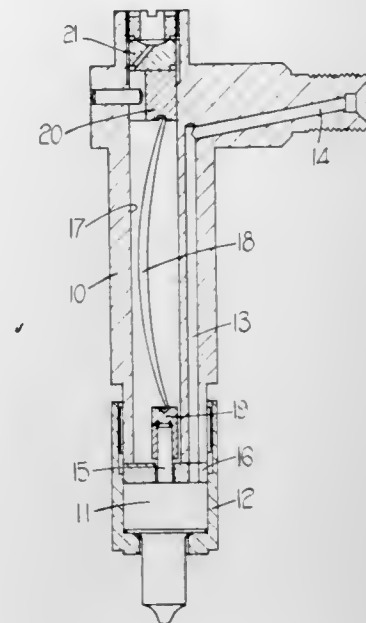
Int. Cl. B05b 1/30

U.S. Cl. 239—533

1 Claim

A liquid fuel injection nozzle unit including an elongated body part to which at one end, is secured a nozzle head which incorporates a valve member movable by the pressure of fuel supplied through an inlet, the valve member moving

against the action of a resilient means. The resilient means takes the form of a bowed leaf spring which is accom-



modated within a chamber formed in the body part of the nozzle unit.

3,627,210

## WAGONS

Cornelis van der Lely, 7, Bruscherain, Zug, Switzerland

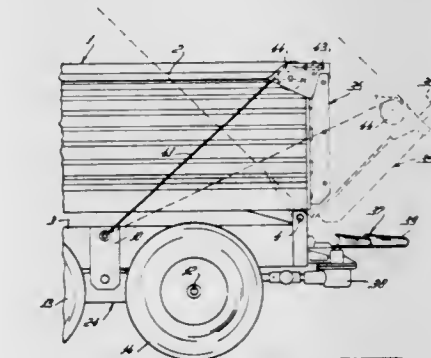
Filed Mar. 28, 1969, Ser. No. 811,383

Claims priority, application Netherlands, Mar. 29, 1968, 68,04406

Int. Cl. A01c 19/00

U.S. Cl. 239—657

28 Claims



A wagon has a tiltable, enclosed loading space which pivots adjacent the rear of the supporting frame. A spreader is positioned under an outlet opening in the rear wall of the space. A closing member in the opening is opened as the loading space is tilted to unload more or less material through the opening depending on the angle of tilting. The frame is connected by flanges to a drawbar so that the height of the drawbar can be changed.

3,627,211

## METHOD AND APPARATUS FOR SHREDDING FOAM

Irby H. Leach, 2094 Emerson, Napa, Calif.

Filed July 25, 1969, Ser. No. 844,896

Int. Cl. B02c 18/22, 18/44

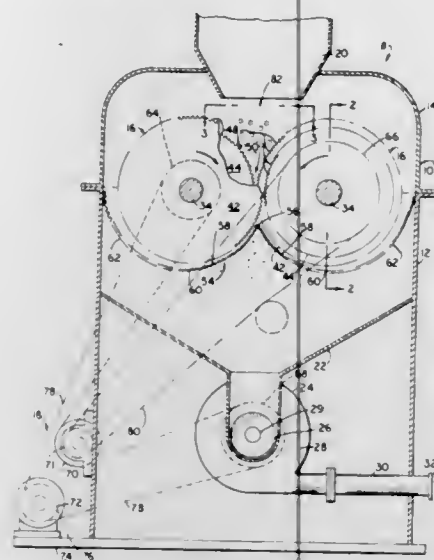
U.S. Cl. 241—3

10 Claims

Foam, such as foamed beads, are shredded into irregularly shaped particles having random and irregular exterior surfaces, tears and ragged edges to rupture and open a substantial number of the foam cells. The foam beads are passed between relatively moving, opposing shredding surfaces including toothlike serrations. Oversize shredded particles are separated on a screen from which they are recycled for



reshredding and size reduction. The apparatus also includes structure for feeding the foam beads to the shredding sur-



faces and collecting the shredded and screened particles for removal from the apparatus.

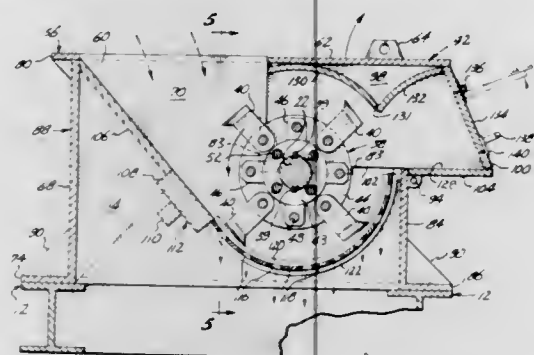
### 3,627,212 HAMMER HOG

James H. Stanton, 4211 43rd Ave. N.E., Seattle, Wash.  
Filed Nov. 24, 1969, Ser. No. 879,074

Int. Cl. B02c 13/16, 13/04

U.S. Cl. 241-73

1 Claim



A hammer hog in various sized embodiments is arranged with respect to each embodiment to be quickly converted to reduce various materials into different sizes. After a quick pivoting of a hinged housing top, a rotatable assembly of hammers and/or impactors, with their spacers, etc., is conveniently and intermittently turned through a partial revolution, to position respective rows of hammers at the top of the rotatable assembly, so they may be replaced and/or repaired, without the need for removing this rotatable assembly from the hammer hog. If a complete interchange of the rotatable assembly is ever desired, after adjustment of the bearings and a coupling, it is conveniently lifted straight up to clear the housing. Likewise, a sizing screen is quickly replaced, as necessary, to match the reduction performance sought upon change of the hammers and/or impactors. Moreover, an anvil is readily replaced without necessitating any change in the housing of the hammer hog. In addition, main power units are quickly substituted and modified.

### 3,627,213 GRINDING MACHINE

Helmut Thumm, and Willy Schaich, both of Heidenheim, Germany, assignors to J. M. Voith GmbH, Heidenheim, Germany

Filed Nov. 21, 1969, Ser. No. 878,790

Claims priority, application Germany, Nov. 27, 1968, P 18 11 187.0

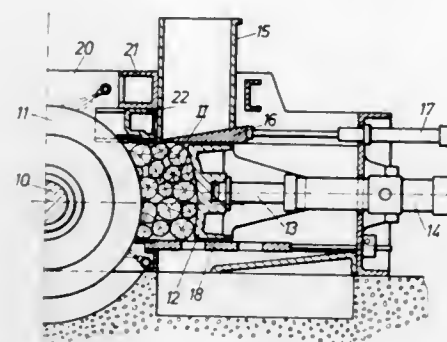
Int. Cl. B02c 4/00

U.S. Cl. 241-151

5 Claims

The specification discloses a two-press grinding machine for the reduction of wood to small particle sizes. A grinding

wheel is fixed to a horizontal shaft and is rotated thereby. Two presses are provided on opposite sides of the wheel to press logs of wood against the periphery of the grinding wheel and the axes of the presses are horizontal and are located above the axis of rotation of the grinding wheel. The



location of the press axes above the horizontal plane of the shaft axis has the advantage that the shaft of the grinding wheel in any condition of operation of the machine will always make contact with the lower region of its bearing surfaces while, furthermore, the horizontal arrangement of the presses results in a simple construction of the machine.

### 3,627,214 JAW CRUSHER

Jan Willem Hilbrands, Hattingen, Germany, assignor to Maschinenfabrik Koppert & Co. K.G.

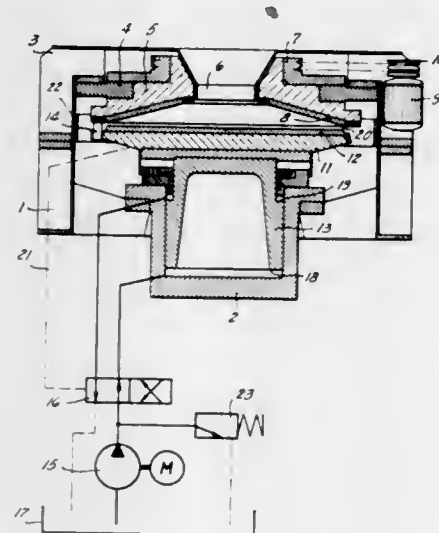
Continuation-in-part of application Ser. No. 625,383, Mar. 23, 1967, now abandoned. This application Oct. 9, 1969, Ser. No. 844,150

Claims priority, application Germany, Apr. 4, 1967, M68874

Int. Cl. B02c 1/02, 7/08, 19/00

U.S. Cl. 241-205

27 Claims



A jaw crusher consists of two opposing plate-shaped jaws, one of which is axially immovable but which may be rotated, the other jaw being hydrostatically mounted for both axially reciprocating motion as well as rotary motion.

### 3,627,215 STRAND-HANDLING EQUIPMENT

Hans H. Richter, Warwick, R.I., assignor to Leeson Corporation, Warwick, R.I.

Continuation-in-part of application Ser. No. 724,875, Apr. 29, 1968, now abandoned. This application Feb. 3, 1969, Ser. No. 801,232

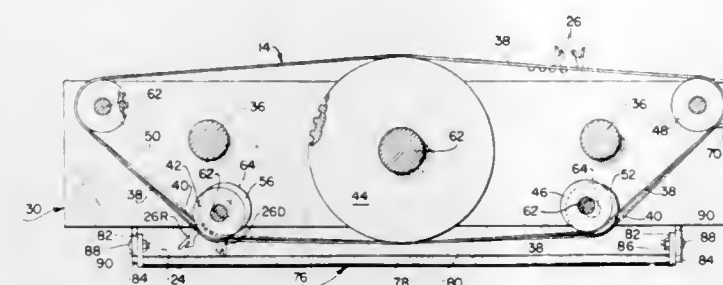
Int. Cl. B65h 54/28

U.S. Cl. 242-43

38 Claims

Strand-traversing mechanism having a pair of oppositely traveling belts each with yarn-engaging guides for moving the yarn along a traversal path with effectively uniform controlled movement and transferring the yarn to an oppositely moving guide at reversal ends of the path. During transfer of

the yarn from one guide to another, the portions of the belts on which the guides are mounted are directly supported on pulleys which steady the guides. Pulleys intermediate the traversal path further steady the guides and cause the guides to move to and fro across the strand of yarn for effectively preventing grooving of the guides. The traverse belts are



preferably formed from timing belts having on one belt face teeth for direct positive drive by correspondingly notched pulleys and each yarn engaging guide is preferably connected to its belt by a clamp passing at least substantially entirely around the belt and replacing one of the teeth on the belt face.

### 3,627,216 ROLLED PAPER RECEPTACLE

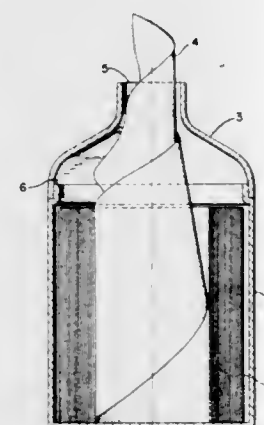
Kenji Ekuan, 308-1 Kamishakujii, Nerima-ku, Tokyo, Japan

Filed Sept. 3, 1969, Ser. No. 854,823

Int. Cl. A47k 10/22

U.S. Cl. 242-55.54

4 Claims



A rolled paper receptacle comprising a cylindrical container in which may be placed a coreless roll of paper, and a cover in the shape of an inverted funnel with an opening aligned with the axis of the container, through which the paper may be removed continuously from the inside of the roll.

### 3,627,217 REEL STANDS

Noel John Baker, London; Roy Bevan, Hertfordshire, and Cyril Henry Drew, Stanmore, all of England, assignors to Witten-James Limited, Wembley, England

Filed Aug. 27, 1969, Ser. No. 853,338

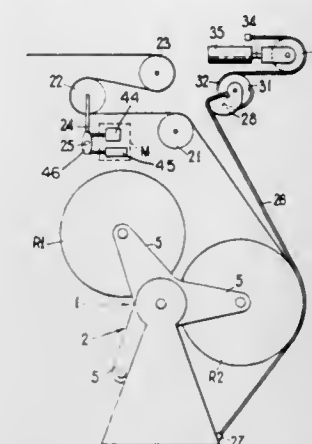
Int. Cl. B65h 19/10

U.S. Cl. 242-58.1

10 Claims

A reel stand for supporting reels on which can be wound webs of paper, metal foil, polythene film or like material, comprises a pair of supporting arms between which two reels are supported for independent rotation about a common axis, while webs are drawn from the reels simultaneously and a web-tensioning system incorporating an arrangement common to the webs for monitoring the web tension and produc-

ing a controlled output dependent on the combined tension in the webs. Each reel has a tension strap which engages its peripheral surface, and a control arrangement responsive to



the monitoring arrangement is arranged to vary the tension in the straps, each strap being associated with a cam over which the strap passes and which is arranged to modify the tension applied to the strap by the control arrangement.

### 3,627,218 AUXILIARY STRIP TO FACILITATE THE WINDING OF AN ELONGATED STRIP UPON A TAKEUP LEVER

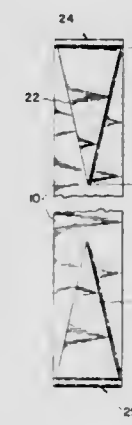
Charles T. Feldschau, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 13, 1969, Ser. No. 832,965

Int. Cl. B65 75/00

U.S. Cl. 242-67.1

4 Claims



An auxiliary strip of flexible material for disposing consecutive windings of an elongated strip onto a takeup core. The auxiliary strip is secured to the elongated strip to extend a distance therewith and is of such configuration to form a simulated crown as the auxiliary strip is being wound about the takeup core, which in turn positions and prevents the axial shifting of the elongated strip with respect to the takeup core.

### 3,627,219 INK-RIBBON FEEDING AND REVERSING ASSEMBLY

Franklin H. Hanson, Round Lake, and Spencer C. Heynis, Island Lake, both of Ill., assignors to SCM Corporation, New York, N.Y.

Filed June 11, 1969, Ser. No. 832,390

Int. Cl. B65h 17/02

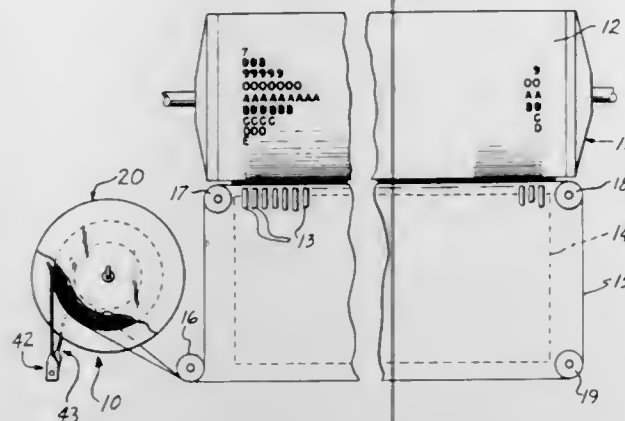
U.S. Cl. 242-67.4

11 Claims

There is disclosed a data recorder in the form of a drum printer, together with an ink-ribbon feeding and reversing assembly for an ink-ribbon which is used in data recording. The assembly includes a first clutch member for driving a first ribbon carrier, a second clutch member for driving a second ribbon carrier, and a third clutch member mounted on a drive shaft for rotation with the drive shaft but pivotal into



clutching and driving engagement with either the first clutch member or the second clutch member. The third clutch member includes a permanent magnet driver which



cooperates alternately with the first clutch member and with the second clutch member. Sensing and actuating members control switching of the third clutch member.

3,627,220

# PROTECTIVE END CAP CONSTRUCTION

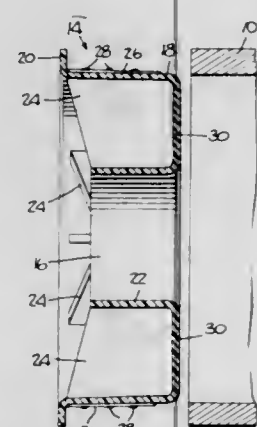
Walter G. Vogel, 1827 Haight Ave., Bronx County, N.Y., assignor Poly Guard, Inc., Yonkers, N.Y.

Continuation-in-part of application Ser. No. 817,875, Apr. 21, 1969, now abandoned. This application Feb. 9, 1970, Ser. No. 9,829

Int. Cl. B65d 85/67; B65h 19/00

U.S. Cl. 242-68.6

14 Claims



Protective single- and double-end caps which fit into the ends of a hollow paper core about which sheet material is wound and having splines which accommodate variations in core diameter and toothlike projections superimposed on the splines to provide a barblike holding action.

3,627,221

# PAPER ROLL SHIPPING PLUG

Tarry W. Nichols; Robert L. Nichols, and Marion A. Kirby, all of 1022 S. Bolton, Jacksonville, Tex.

Filed Jan. 16, 1970, Ser. No. 3,320

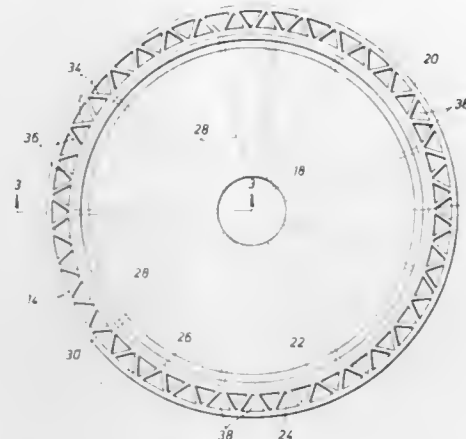
Int. Cl. B65h 75/02

U.S. Cl. 242-68.6

8 Claims

A paper roll shipping plug formed of molded plastic material for insertion in the ends of a central tube in a paper roll and having a disklike central portion and a peripheral rim portion of channel shape in cross section surrounding the disk portion and to whose inner wall the disk portion is connected. The disk portion is positioned in a plane located mediate the ends of the inner wall of the rim and connected to the edge of the inner wall at the open end of the channel by an inner bevelled annular wall portion and an outer annular wall portion disposed in a plane parallel to the plane of the disk portion. The rim portion has inner crosswebs disposed in angular relation to radii of the plug and forming

generally triangular cells open at the open end of the channel, and the outer wall of the rim has a bevelled portion at the closed end of the channel forming a taper for insertion into the end of the central tube of a paper roll. Radially extending webs or fins are provided connecting the disk portion with the inner wall of the rim and which taper radially inwardly of the disk portion.



The device thus constructed forms a strong and durable plug which has sufficient resiliency to allow it to be readily driven into the end of the central tube of a paper roll while providing sufficient rigidity to maintain the plug in tight engagement with the inner surface of the tube.

3,627,222

# CLUTCH DEVICE FOR LINEAR MEASURING INSTRUMENTS WITH TAPE

Andre Quenot, Besancon, France, assignor to Quenot & Cie S.a.r.l., Besancon, France

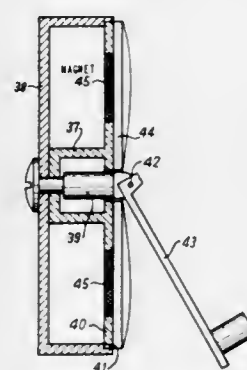
Filed Jan. 30, 1969, Ser. No. 798,857

Claims priority, application France, Mar. 18, 1968, 144243

Int. Cl. B65h 75/00

U.S. Cl. 242-84.8

8 Claims



In a clutch device for linear measuring instruments, at least one of the driving and driven elements is equipped with magnetic members which can become secured against ferromagnetic members on the other element, wherein the driven and driving elements can be provided with antiskid means.

3,627,223

# SPINNING REEL WITH WINDING DRUM BRAKE

Pierre Monthulet, Cluses, France, assignor to Carpano & Pons, Cluses, France

Filed Nov. 26, 1968, Ser. No. 778,951

Claims priority, application France, Dec. 12, 1967, 132272

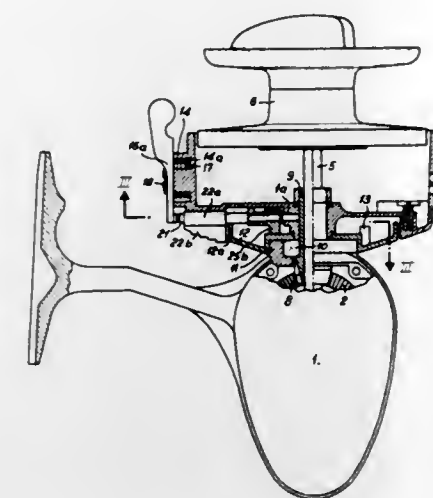
Int. Cl. A01k 89/02

U.S. Cl. 242-84.2G

4 Claims

This spinning reel has a winding drum rotated about a normally stationary spool to wind line thereon, and includes a pickup bail pivoted on the drum and spring biased form a casting position clear of the line to a winding position where it engages the line. When placed in the casting position a

slidable plunger retains the pickup in casting position while an associated spring biased, friction brake is applied to prevent accidental rotation of the winding drum. When it is



desired to wind in the line, rotation of the winding drum causes a stop member to shift the plunger and thereby remove the friction brake application and permit the biased pickup to move to its winding position.

3,627,224

# REEL DEVICE

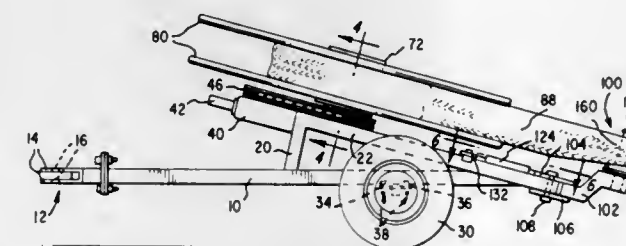
Richard E. Diggs, 210 N. River St., P.O. Box 588, Carthage, Mo.

Filed Jan. 5, 1970, Ser. No. 595

Int. Cl. B65h 75/40

U.S. Cl. 242-86.2

13 Claims



A frame means is supported by wheels mounted on an axle which is removably connected to the frame means. Reel support means is carried by the frame and is drivingly connected with drive means supported by the frame means. The reel support means includes a plurality of drive members. A removable reel has means for receiving said drive members to provide a driving connection therewith. A rotatable guide portion is mounted in spaced relationship to the reel. The guide means is mounted on a support portion which is pivotally connected with the frame means, and locking means is provided for locking the support portion in desired operative position.

3,627,225

# RECORD MEMBER CONTAINER

Paul J. Badum, Boulder, Colo., and Henry Zeiger, New Caanan, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 790,709, Nov. 13, 1969, now abandoned. This application July 30, 1970,

Ser. No. 59,668

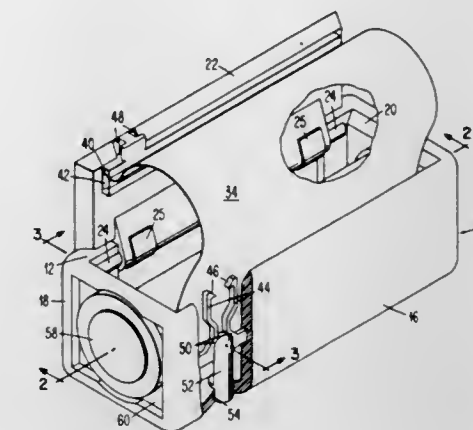
Int. Cl. G11b 15/58, 23/10

U.S. Cl. 242-182

13 Claims

A container for a record member of the flexible web type which includes a box having one wall hinged to provide an openable cover. A single reel may be journaled for free rotation on an axis parallel to the plane of the cover wall. The

record member is wound on the reel with its inner end firmly secured to the reel and its outer end firmly secured to the cover at a point spaced from the hinged edge of the cover. Other means of web retention may be used. Drive connection means for the reel are provided through the container to per-



3,627,226

# SYSTEM FOR AUTOMATIC THREADING OF AN ELONGATED FLEXIBLE MEDIA

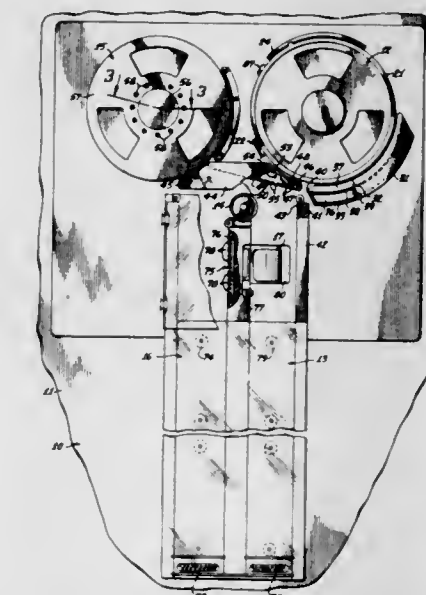
Ralph E. Setter, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc.

Filed Feb. 19, 1970, Ser. No. 12,590

Int. Cl. G11b 15/58, 15/66

U.S. Cl. 242-185

16 Claims



An automatic tape- or film-threading system for use on a tape transport including means for directing a tape leader from a file reel onto a machine reel and into vacuum buffer bins. To accomplish the tape-controlling objectives, a novel fluid-operated system is controlled by sensing devices for determining tape position during threading operations.

3,627,227

# LIGHTTIGHT FILM MAGAZINE

Sanford W. Foor, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,572

Int. Cl. G03b 1/04; G11b 15/32, 23/04

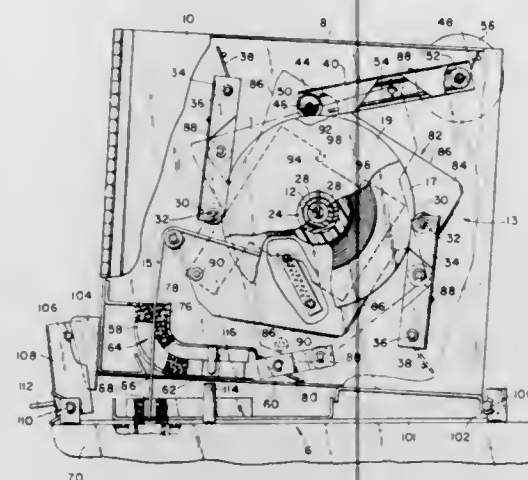
U.S. Cl. 242-197

9 Claims

A lighttight film magazine for use with a film receptor, such as a processor or the like, having one or more pressure



rollers engageable with a film spool mounted in the magazine to accomplish one or more of the following functions, namely (1) controlling axial movement of the spool, (2) imposing the required frictional drag on the spool to control film tension, and (3) sensing film spool rotation and film transport to the film receptor. The magazine has a light-lock mechanism



at the magazine exit movable from a normally closed, light-locked position to an open position by cooperating apparatus on the film receptor when the magazine is mounted thereon. When unmounted, a cam mechanism on the magazine moves the pressure roller to a spool disengaged position, and the light-lock mechanism to its open position to permit loading of the magazine.

3,627,228

## TAPE POSITION MARKING AND SENSING DEVICE

Ernest Carrington Wolfe, Tokyo, Japan, assignor to Tamura Electric Works Limited, Tokyo, Japan

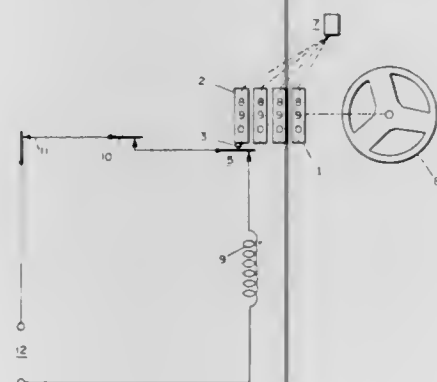
Filed Sept. 3, 1968, Ser. No. 756,911

Claims priority, application Japan, Nov. 29, 1967, 42/76178

Int. Cl. G11b 15/18

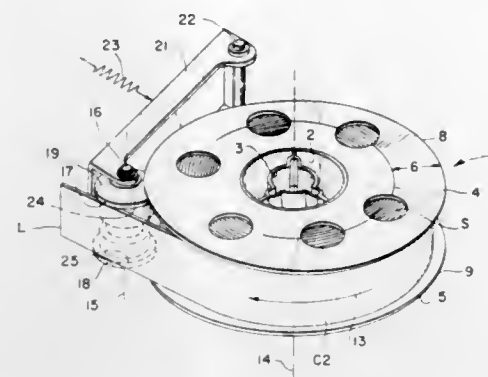
U.S. Cl. 242-201

3 Claims



A tape position sensing and control device operates in conjunction with a multidigit tape position counter which is adapted to reset through the null position, i.e., between 0000 and 9999 and derive a control signal such as a switch closure from the nine position on the most significant digit dial of the counter. By pressing the reset button a particular position of the tape is identified and thereafter in conjunction with other controls such as rewind or repeat the return of the tape to the marked position generates a control signal which can be used to control the tape drive.

3,627,229  
STRIP-FEEDING APPARATUS AND METHOD  
Elmer O. Wangerin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed Aug. 27, 1970, Ser. No. 67,455  
Int. Cl. G11b 15/66; B65h 17/06  
U.S. Cl. 242-210 13 Claims



The outermost convolution of a roll of strip material is transversely compressed by the opposed flanges of a reel on which such strip is wound. Upon rotation of the reel about the roll axis, a roller arm temporarily flexes successive opposed regions of the flanges away from each other as such regions are respectively rotated therepast. Such local flexing of the flanges releases corresponding successive portions of the outermost convolution of strip material on the reel from transverse compression and effects a separation and feeding of the leading strip end from the rotating roll.

3,627,230

## APPARATUS FOR FEEDING STRIP MATERIAL

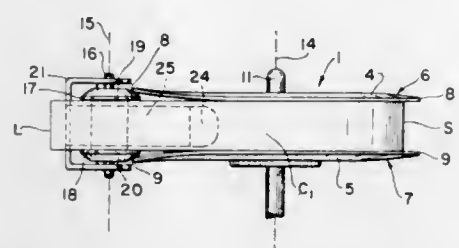
Elmer O. Wangerin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,456

Int. Cl. G11b 15/66; B65h 17/06

U.S. Cl. 242-210

10 Claims



The outermost convolution of a roll of strip material is restrained from unwinding by transverse engagement with the opposed flanges of a reel on which such strip is wound. Upon rotation of the reel about the roll axis, a roller arm temporarily flexes successive opposed regions of the flanges away from each other as such regions are respectively rotated therepast. Such local flexing of the flanges releases corresponding successive portions of the outermost convolution of strip material on the reel from transverse engagement therewith and effects, by a strip guider member on the roller arm, separation and feeding of the leading strip end from the rotating roll.

3,627,231

## ARTICLE CARRIER TRANSFER AND TRACKING SYSTEMS

Clement H. Kalthoff, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 14, 1970, Ser. No. 54,710

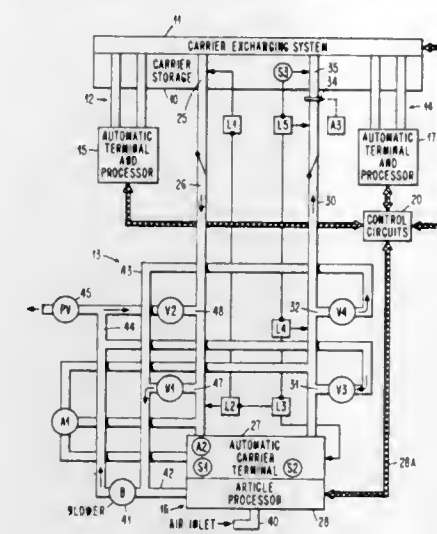
Int. Cl. B65g 51/04, 51/36

U.S. Cl. 243-16

9 Claims

An article in a carrier, such as magnetic media, is pneumatically dispatched through an incoming pneumatic tube to

an automatic carrier terminal. The carrier is automatically unloaded with the article being processed. Upon completion of the processing, the carrier terminal supplies the carrier with the article therein through an outgoing tube to be picked up by a carrier exchanging system. The carrier is tracked throughout the dispatch system. A status byte is generated and memorized which indicates location of every



carrier in a system. This tracking system is applicable not only to pneumatic dispatch systems but to other article carrying systems as well. A plurality of dispatch systems operate with one carrier exchanging system. A common control circuit controls article processing, the carrier exchanging system, the automatic carrier terminals and pneumatic dispatching.

3,627,232

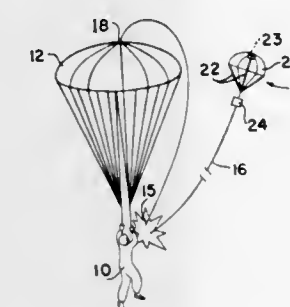
## ACQUISITION AND RETRIEVAL METHOD AND APPARATUS FOR RECOVERING EJECTEES FROM DISABLED AIRCRAFT

James W. Ramsay, Yuma, Ariz., assignor to The United States of America as represented by the Secretary of the Navy  
Filed July 17, 1970, Ser. No. 55,795

Int. Cl. B64d 17/00

U.S. Cl. 244-1 R

8 Claims



A method for snaring the inflated parachute of an ejectee while descending from a disabled aircraft by an accompanying high-speed aircraft and towing the parachute and the suspended aircrewmembers to a safe recovery area where the parachute and its load is released to resume its normal free descent into the safe area for rescue by conventional means.

3,627,233

## FIN DEVICE FOR MISSILE

Gunnar Jacobson, and Olof Bertil Olsson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden  
Filed Oct. 24, 1969, Ser. No. 869,101

Claims priority, application Sweden, Nov. 1, 1968, 14.844/68

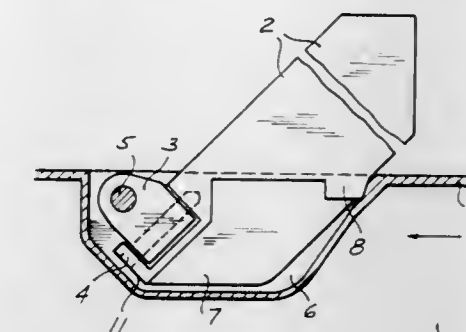
Int. Cl. F42b 15/16

U.S. Cl. 244-3.27

7 Claims

A stabilizing fin for a missile. One end of the fin is mounted in a hingelike fashion on a holder so that the fin can be folded in relation to the holder about a first axis parallel

with the leading edge of the fin. The holder is mounted in a recess in the body of the missile and is rotatable about a second axis at right angles to the longitudinal extension of



the missile. The first axis is so positioned in relation to the second axis that by rotation of the holder the first axis can be moved from a position within the recess to a position entirely outside the body of the missile and vice versa.

3,627,234

## AIRCRAFT WITH LIFT ROTORS

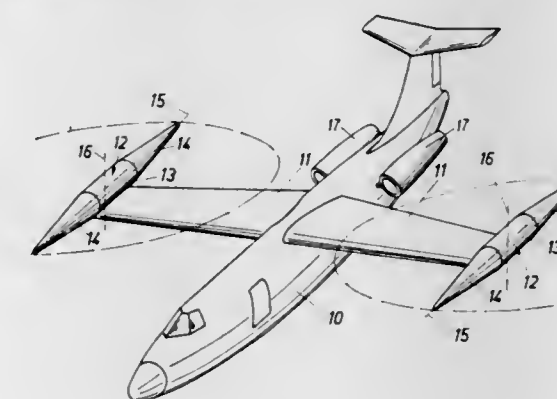
Dietrich Dziallas, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke-Fokken GmbH, Bremen, Germany

Filed July 24, 1970, Ser. No. 58,005

Int. Cl. B64c 27/22

U.S. Cl. 244-7 A

16 Claims



An aircraft having at least one horizontal engine unit and lift rotors disposed symmetrically with respect to the fuselage. Each of the rotor blades of the lift rotors includes a rotating drum for producing a lifting effect in an air current according to the Magnus effect. The drums are rotated by means of turbines driven by a jet of gas which is simultaneously utilized to produce the rotation of the lift rotors.

3,627,235

## WING ARRANGEMENT

Alexander M. Lippisch, 1416 Oakland Road Apt. 6, Cedar Rapids, Iowa

Filed Dec. 3, 1969, Ser. No. 881,676

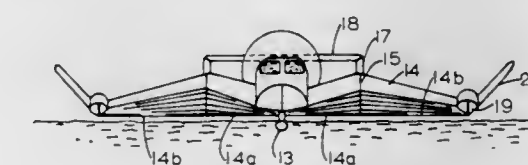
Claims priority, application Germany, Dec. 7, 1968, P 18 13

311.4

Int. Cl. B64c 3/10

U.S. Cl. 244-12 R

7 Claims



A combination air and water and/or land takeoff vehicle that in an amphibious or seaplane version, operates as a boat at low speeds and through a transition state at higher speeds



to, at low altitude, as a ground effect flying vehicle, and at higher altitude at sufficient speed as a true aircraft. The vehicle has a center fuselage with two generally, triangularly shaped wings extending one to each side from the fuselage with a rear edge of each originating from opposite sides of the stern portion of the fuselage extending backwards and outward to a rearward tip end and then an outer rear edge extending forward and outward to an outer end auxiliary upwardly angled winglet. An engine is positioned in the fuselage in the vicinity of the center of gravity toward the stern and drives a pusher propeller mounted reasonably low and safely between the wings. Each wing defines a concavity open at the front end terminated with combined side and rear edges, generally, common to the same plane.

3,627,236

### AUTOMATIC THROTTLE CONTROL WITH AIRSPEED ANTICIPATION

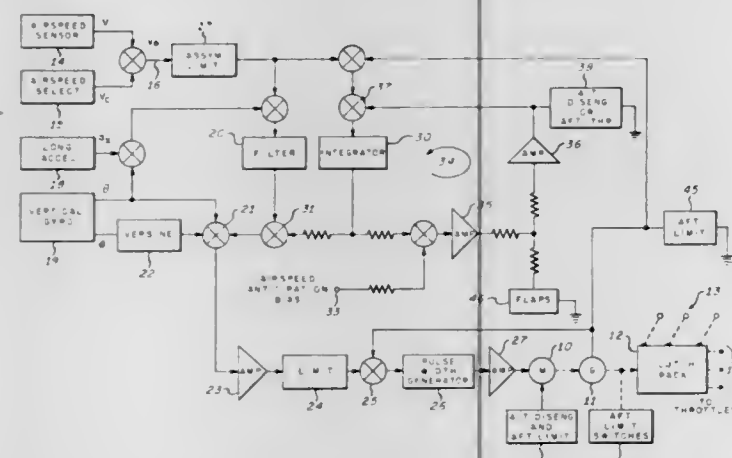
Richard F. Hess, Scottsdale, Ariz., assignor to Sperry Rand Corporation

Filed June 30, 1970, Ser. No. 51,085

Int. Cl. B64c 13/18

U.S. Cl. 244—77 D

6 Claims



Automatic throttle control servomechanism for aircraft of the type employing an integrator for the derivation of throttle position feedback from throttle rate wherein during large changes in airspeed reference commands or during large changes in airspeed reference commands and aircraft flap configurations, an airspeed anticipation bias is introduced into a feedback loop around the integrator in order to effectively increase the initial throttle position reference and thereby prevent undershoots of the commanded reference airspeed.

3,627,237

### AIRCRAFT THROTTLE CONTROL

Hueray J. Smith, Renton, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Feb. 7, 1969, Ser. No. 797,586

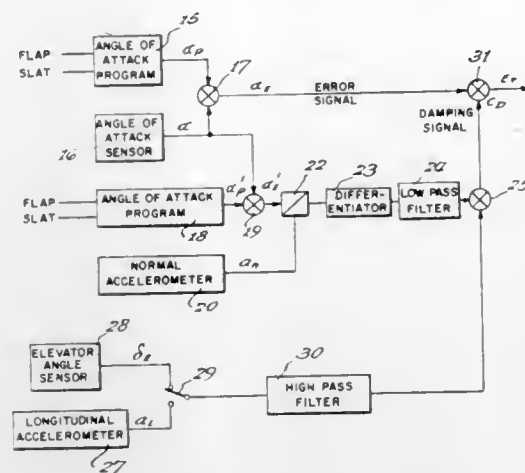
Int. Cl. B64c 13/18

U.S. Cl. 244—77 D

11 Claims

An automatic throttle control for an aircraft in which the rate of throttle movement is a function of the control signal amplitude. The control signal is modified by a signal transfer means which has a ratio of out-put to input that is a function of signal amplitude and aircraft configuration, as flap position. The control signal is a combination of an error signal

and a damping signal. A bypass circuit around the signal transfer means is rendered operative if the underspeed error



signal becomes excessive to apply a throttle advance signal directly to the throttle.

3,627,238

### SPEED COMMAND GENERATION SYSTEM FOR VERTICAL DESCENT CONTROL

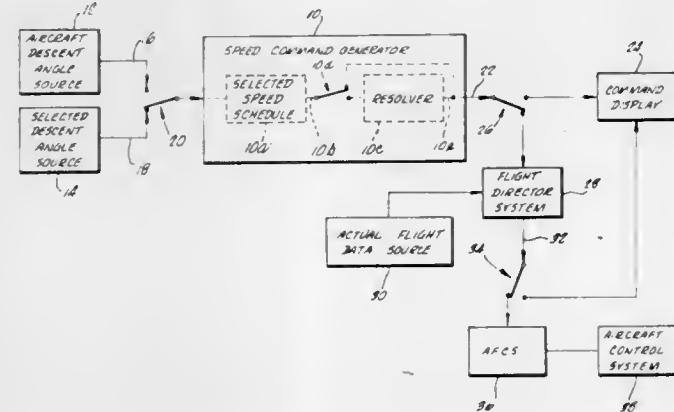
Bruce E. Menn, Woodland Hills, Calif., assignor to Lear-Siegler, Inc., Santa Monica, Calif.

Filed May 29, 1969, Ser. No. 829,060

Int. Cl. B64c 13/18

U.S. Cl. 244—77 D

30 Claims



A vtol or vistol aircraft has a control system for generating safe speed commands during letdown as a function of instantaneous descent angle. The speed commands generated are preferably fed to a flight director system which produces commanded speed error signals for airborne instrument panel display or for coupling to an automatic flight control system. In one form of the invention, speed commands are derived from a speed schedule wherein desired vector speed is a function of the tangent of the descent angle. In another form of the invention, speed commands are derived from a speed schedule wherein desired vertical speed is a function of the descent angle.

3,627,239

### AIRCRAFT ENGINE FUEL SYSTEM

Thomas N. Hull, Jr., Marblehead, Mass., assignor to General Electric Company

Filed Apr. 20, 1970, Ser. No. 30,073

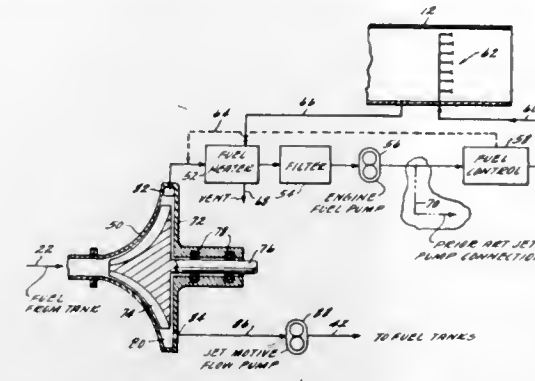
Int. Cl. B64d 37/34

U.S. Cl. 244—135 R

5 Claims

An engine fuel system is disclosed for use in conjunction with an aircraft fuel transfer system wherein high-pressure fuel from the engine system is provided to power jet pumps for delivering fuel from the aircraft fuel tanks to the engine and for transferring fuel between two aircraft tanks. The engine fuel system includes means associated with the engine

boost pump wherein clean fuel is withdrawn from the boost pump and provided to a jet motive flow pump, which pres-



surizes the extracted fuel and supplies it to the jet pumps of the aircraft fuel transfer system.

3,627,240

### KITE

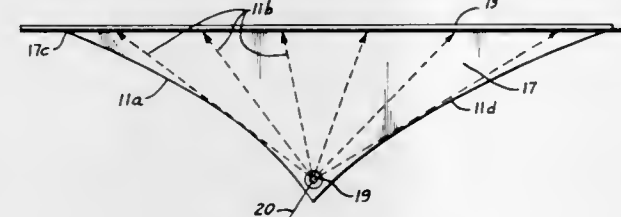
Julius M. Christoffel, and Lester F. Phillips, both of Houston, Tex., assignors to Gayla Industries, Inc., Houston, Tex.

Filed Nov. 24, 1969, Ser. No. 879,104

Int. Cl. B64c 31/06

U.S. Cl. 244—153

5 Claims



This invention relates to an improved kite having a steady-ing and guiding keel, the leading edge of which is so shaped as to prevent the direct transmission of tension forces from the kite string to the leading point of the keel's attachment to the kite body, thereby making the keel less likely to tear away from the kite body.

3,627,241

### PROJECTED IMAGE VIEWER SUPPORT

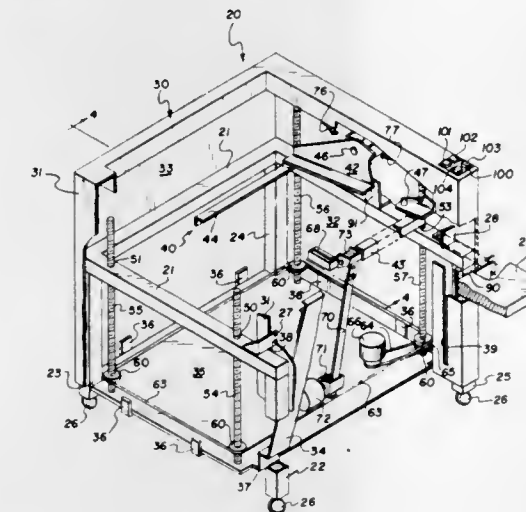
Louis J. Santirocco, and Richard C. Lathrop, both of Rochester, N.Y., assignors to The United States of America as represented by the Secretary of Commerce

Filed June 2, 1970, Ser. No. 42,649

Int. Cl. F16m 1/00

U.S. Cl. 248—11

7 Claims



A support for a projected image viewing apparatus of the kind having a screen which displays an image projected thereon for viewing by an observer, is respectively provided

with mechanisms for vertically adjusting the apparatus to any one of a plurality of elevations relative to the observer and angularly adjusting the apparatus to any one of a plurality of tilted positions relative to a selected one of the plurality of elevations, so as to vary the elevation and the angle at which the screen can be viewed by the observer. The vertically and angularly adjusting mechanisms are interconnected to maintain the center of the screen at a selected elevation when the apparatus is angularly adjusted to a selected one of the plurality of tilted positions.

3,627,242

### BAG HOLDER

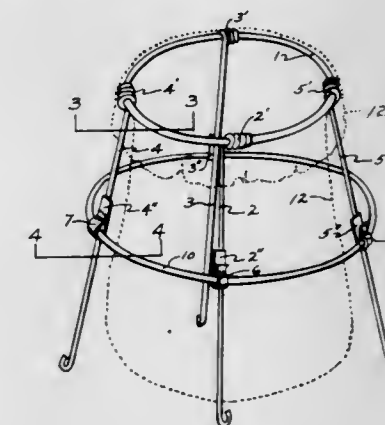
Adolph P. Vandermast, 423 Oak Lane, Towson, Md.

Filed Mar. 25, 1970, Ser. No. 22,608

Int. Cl. B65b 67/12

U.S. Cl. 248—97

2 Claims



A device for holding large bags in open position for receiving trash, leaves, cut grass, etc. The device is formed of conventional rigid bendable material such as steel, aluminum, plastic and other suitable materials, and is provided with a top ring, depending legs and a detachable support ring releasably secured intermediate of the top and bottom of the legs, all of which are so arranged that the device may be folded flat in order that it will take up only a minimum amount of space when not in use.

3,627,243

### BAG EXPANDER

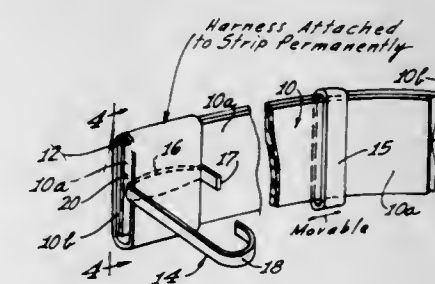
Kai Ropche Farrelli, 5450 Russell Ave., Apt. 1, Hollywood, Calif.

Filed Nov. 24, 1969, Ser. No. 879,391

Int. Cl. B65b 67/12

U.S. Cl. 248—99

12 Claims



A plastic belt is expanded inside a paper bag to convert the paper bag to an upright self-supporting disposable waste receptacle, the belt having the equivalent of a buckle means which may be used to suspend the receptacle from a hook on a wall.



3,627,244

**BOTTLE HOLDER**

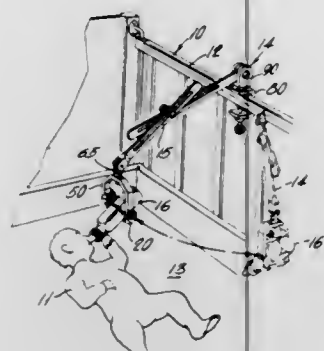
Charles P. Nicholas, 5726 Nassau St., Philadelphia, Pa.

Filed Jan. 19, 1970, Ser. No. 4,008

Int. Cl. A47d 15/00

U.S. Cl. 248-103

5 Claims



A holder for suspending an infant's bottle from the rail of an enclosure containing an infant to enable unattended feeding of the infant. The holder comprises a collar in which the bottle is clamped, a yoke mounting the collar for restrained pivotal movement on a horizontal axis and an adjustable arm assembly pendulously mounting the yoke on one end. The arm assembly is mounted at its other end into the rail by means of a bracket which permits pivotal movement on a vertical axis so that the bottle and holder may be displaced toward the side of the enclosure when the feeding is finished.

3,627,245

**LADDER SUPPORTED BRUSH AND CAN HOLDER**

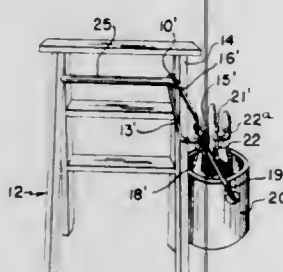
Andrew J. Lewis, 14718 Onaway Road, Shaker Heights, Ohio

Filed Nov. 26, 1969, Ser. No. 880,224

Int. Cl. B44d 3/12

U.S. Cl. 248-113

2 Claims



A simple device is disclosed for supporting a paint can on a ladder. An intermediate bend in the wire engages behind a step of the ladder near a side rail while a lower end portion extends beneath the step and out to the front of the side rail where the end thereof embraces the side rail. An upper and portion extends across the upper side of the step to a position slightly laterally outside of the side rail of the ladder and is there provided with an upwardly opening generally vertical reverse bend adapted to receive and hold a paint can bail. A further improvement provides at the end of the reverse bend one or more generally horizontally extending U-shape bends adapted to receive and retain a paint brush handle holding the brush directly above a paint can whose bail is held in the reverse bend. A modification provides that the distal end of the lower end portion is adapted to snap into the reverse bend portion of the upper end portion of the wire so as to lock the device in place.

3,627,246

**ISOLATING LEG STRUCTURE FOR TABLES AND THE LIKE**

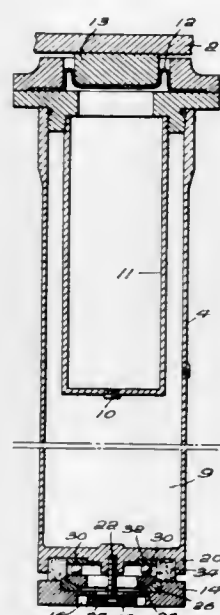
Fred B. Widding, and Arthur Shull, both of Ithaca, N.Y., assignors to Lansing Research Corporation, Ithaca, N.Y.

Filed Sept. 22, 1969, Ser. No. 859,838

Int. Cl. F16m 11/22

U.S. Cl. 248-188.8

4 Claims



A table is supported on pistons carried by rolling diaphragms at the top of hollow legs. Sensing devices are provided which detect any deviation of the table from a preselected level position and which furnish air under pressure to the legs and permit it to be released therefrom so as to maintain the desired level position. Each leg is mounted at the bottom on thrust bearings having balls mounted between plane parallel surfaces.

3,627,247

**BRACKET FOR HOLDING BINS, ETC. TO SLOTTED UPRIGHTS**

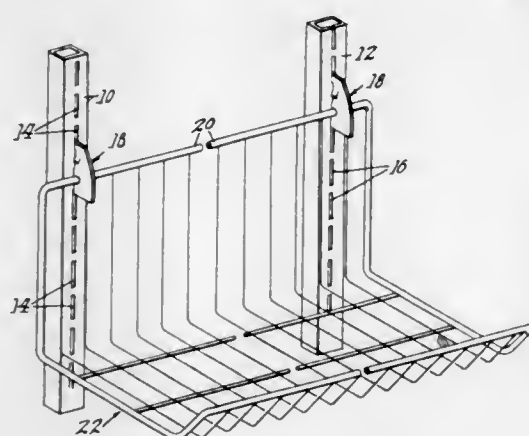
George Krikorian, 64 Main St., Spencer, Mass.

Filed Feb. 17, 1970, Ser. No. 12,054

Int. Cl. A47g 29/02

U.S. Cl. 248-243

4 Claims



A flat plate, a pair of spaced edge projections thereon in the same plane, said projections being slotted correspondingly for application to a slotted upright, and a rounded notch at the same edge for receiving and holding a rodlike member against the upright.

3,627,248

**APPLIANCE SUPPORT MEANS**

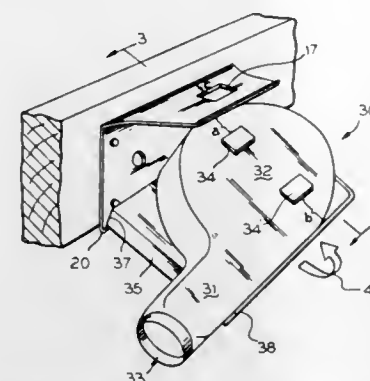
Gordon S. Nelson, Union, Ill., assignor to Aubrey Manufacturing, Inc., Union, Ill.

Filed Mar. 31, 1970, Ser. No. 24,110

Int. Cl. F24f 5/00

U.S. Cl. 248-309

6 Claims



A snap-in appliance support system comprises a metal bracket having an L-shaped cross section. The vertical part of the L-shape is formed from a plate having a plurality of nail holes for mounting the bracket. The horizontal part of the L-shape carries a clip-in latch. At the lower peripheral end of the L-shape, the vertical plate has a C-shaped channel for pivotally supporting an appliance housing which swings up and under the horizontal plate to snap in to the latch.

3,627,249

**MOUNTING ASSEMBLY FOR RADIO CONTROL HEAD**

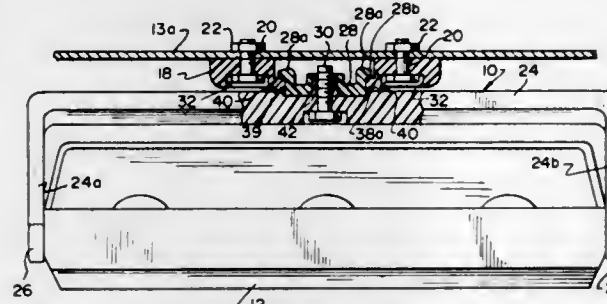
Richard D. Lipinski, Arlington Hgts., Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 13, 1970, Ser. No. 11,257

Int. Cl. A47f 5/00

U.S. Cl. 248-223

4 Claims



A mounting assembly for releasably holding a radio control head in an underslung position under the dashboard of a motor vehicle. The mounting assembly is formed of a retainer which is fixedly secured to the dashboard of the motor vehicle. A trunnion bracket fixedly secured to the radio control head and a releasable plug member is connected between the retainer and the bracket to be pulled apart upon impact with the radio control head.

3,627,250

**OVERHEAD ISOCENTRIC COUCH FOR THERAPY EQUIPMENT**

James Waring Pegrum, Carp, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed June 12, 1970, Ser. No. 45,626

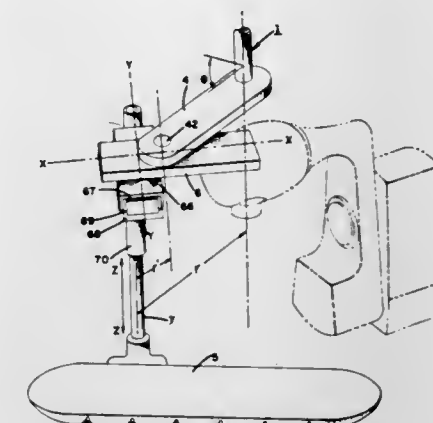
Int. Cl. A61g 13/00

U.S. Cl. 248-324

7 Claims

There is disclosed a patient positioning apparatus, particularly for use with therapy wherein an associated couch is suspended from above rather than forming an integral part of the therapy equipment. Also provided is a isocentric facility and

the ability to move the patient in rectilinear coordinates and also in  $r$  - relationship to a datum which may be the access



of emission of an X-ray device or a source line of a piece of radio therapy equipment.

3,627,251

**TEETHING GUARD EDGING FOR BABY CRIBS, PLAYPENS, AND THE LIKE**

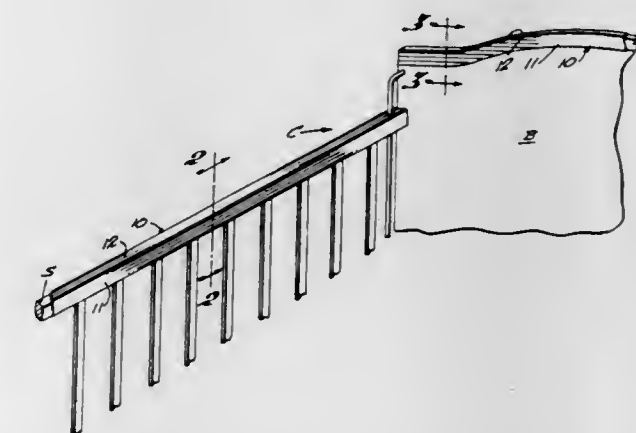
Peter J. Paulison, 91 Jacksonville Road, Pequannock Township, N.J.

Filed Sept. 9, 1970, Ser. No. 70,659

Int. Cl. A47b 97/00; A47d 7/00

U.S. Cl. 248-345.1

1 Claim



Teething guard edging strips are described for application along the top and inside wall portions of the guard rails of babycribs, playpens and the like, to prevent biting of the paint and wood of such guard rails. Extruded strips of a comparatively soft synthetic plastic material are formed in the cross-sectional shape of an inverted L to completely cover the top and inside surfaces of a painted wood rail. A coextensive web portion extending perpendicularly inwardly from a central portion along the top-covering portion of the strip, and having sawtooth serrated sidewalls, is provided for interfitting securement in a cooperative slot provided centrally along the top of the painted wood rail to which the teething guard edging strip is applied.

3,627,252

**TILTING CHAIR**

Yoshiomi Yamaguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Imai Seisakusho, Tokyo, Japan, a part interest

Filed Dec. 22, 1969, Ser. No. 886,822

Int. Cl. A47c 1/026

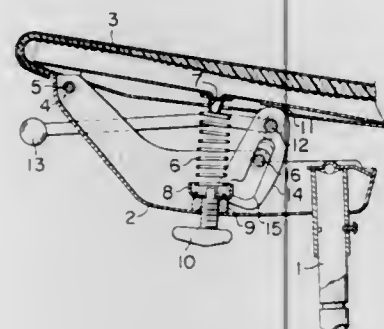
U.S. Cl. 248-384

7 Claims

An improved chair for combined office and rest use is disclosed which includes a support member carried by a support leg and having its front end portion extended obliquely upward, a chair seat pivotally mounted at its front edge to the front end portion of the support member, a rotary shaft



rotatably mounted on the chair seat transversely thereacross and having an operation handle fixedly secured thereto. A cam is fixedly secured to the rotary shaft and has a hook-shaped slot opening for slidable cooperation relative to a fixed pin transversely traversing the slot and mounted on the support member, and resilient means are interposed between the chair seat and its support member. Normally the pin is



engaged within the hook tip portion of the cam slot opening to lock the chair seat in a substantially horizontal position. A rotational operation of the handle is accompanied with a disengagement of the pin from the hook tip portion of the cam slot, and thereby the chair seat becomes rockable about the pivot at the front end portion of the support member aided by slight shifting of the occupant's weight.

3,627,253

#### DEVICE FOR INTERLOCKING TWO RELATIVELY SLIDABLE ELEMENTS

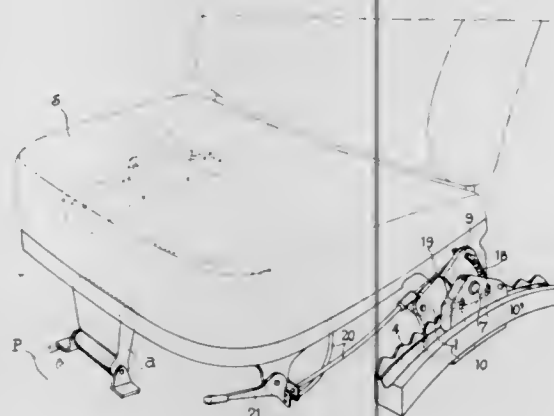
Gerard Germain, Hericourt, and Alain Barriere, Montbeliard, both of France, assignors to Automobiles Peugeot, Paris and Regie National des Usines Renault, Billancourt, France

Filed June 9, 1970, Ser. No. 44,784

Claims priority, application France, Sept. 10, 1969, 6930765 Int. Cl. F16m 13/00

U.S. Cl. 248—429

10 Claims



Device interlocking two relatively slidable elements, such as a vehicle seat and a floor.

The device comprises a rack integral with one element, a slideway integral with the rack, slide means integral with the other element and movable along the slideway. Two locking rollers carried by the slide means are releasably engageable with the rack. A cam rotatable on the slide means maintains the rollers engaged with the rack in an operative position and allows the rollers to be withdrawn from the rack in an inoperative position. A control device shifts the cam to its inoperative position in opposition to spring means.

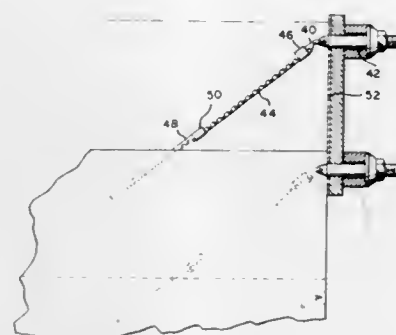
3,627,254  
CONCRETE FORM TIE ASSEMBLY  
Otis D. Pruitt, Mossyrock, Wash., assignor to Arthur R. Linden and William T. Neelands, Mossyrock, Wash., part interest to each

Filed July 28, 1967, Ser. No. 656,762

Int. Cl. E04g 11/20, 17/06

U.S. Cl. 249—20

5 Claims



A concrete form wall is braced inwardly (i.e., on the concrete pour side) by a form tie assembly comprising at least two rod members mechanically spliced together. The tie rods are provided at least with serrated end sections that are overlapped and interconnected by a collar member that is drive fitted onto the cooperating overlapped serrated end sections to bind the tie rods together against tensile load forces resulting from the weight of the concrete pour bearing against the form wall.

3,627,255

#### UNFILLED FLONG

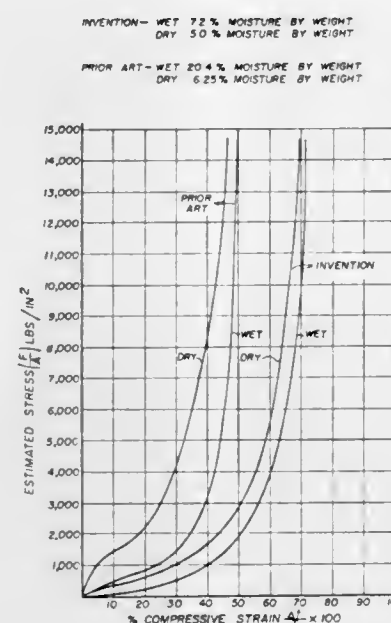
Chester J. Daniels, Rochester, N.Y., and Charles W. Bennett, deceased, late of Penfield, N.Y. (by Lincoln Rochester Trust Company, executor, Rochester, N.Y.), assignors to The Rochester Institute of Technology, Rochester, N.Y., by said Daniels

Filed Sept. 30, 1969, Ser. No. 863,036

Int. Cl. B29c 1/02

U.S. Cl. 249—134

10 Claims



A flong is formed of an unfilled, low-density, compressible base of cellulose fibers having open interstices between the fibers and a clay surface coating on one face. The surface coating meets the requirements for the working surface of a stereotype mat and prevents penetration of the relief printing form or molten stereotype type metal into the base material. The unfilled base is highly compressible and moldable in a drier than usual condition to reduce troublesome shrinkage.

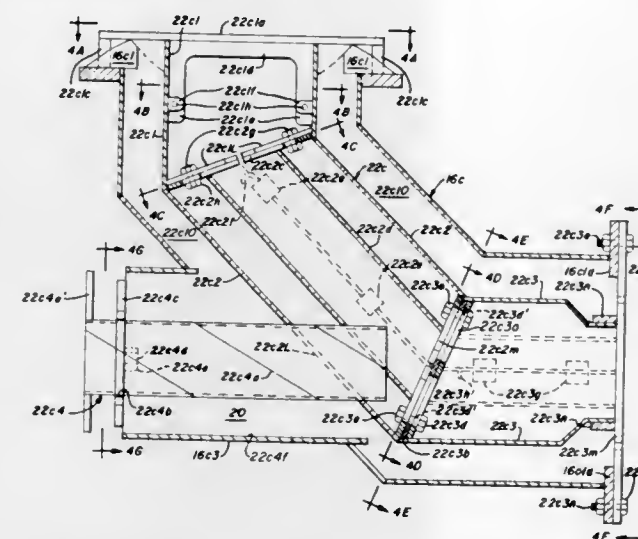
3,627,256  
FORM FOR CASTING A LINING IN A CONDUIT  
Malvern H. Culp, and August Giovanni, both of Youngstown, Ohio, assignors to United States Steel Corporation

Filed Feb. 24, 1969, Ser. No. 805,979

Int. Cl. B41b 11/60

U.S. Cl. 249—163

5 Claims



This invention relates to mold forms for, and a method of, casting a lining in a conduit and, more particularly, to an improved mold form for casting refractory linings in the conduit sections of a blast furnace.

The form for casting a lining in a conduit having a predetermined nonlinear conduit shell has a form shell substantially similar in contour to the conduit shell, and a locating member secured to one end of the conduit shell and to the form shell to support the form shell, to align the form shell with the conduit shell to define a lining cavity between the conduit shell and the form shell, and to close the one end of the lining cavity.

The method of casting a lining in a conduit having a predetermined nonlinear conduit shell includes the steps of securing a form shell to one end of the conduit shell to support the form shell, to align the form shell with the conduit shell to define a lining cavity between the conduit shell and the form shell, and to close the one end of the lining cavity, and casting a refractory lining in the lining cavity.

3,627,257

#### ELECTROMAGNETICALLY CONTROLLED FLUID-OPERATING VALVE

Harald Stampfli, Petit-Saconnex, Switzerland, assignor to Lucifer S.A. Chemin Lucifer, Carouge-Geneva, Switzerland

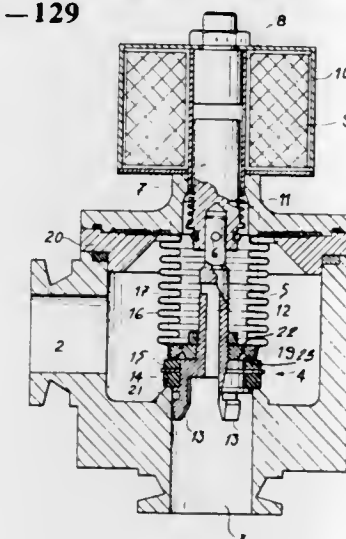
Filed Dec. 1, 1969, Ser. No. 881,167

Claims priority, application Switzerland, Dec. 23, 1968, 19127/68

Int. Cl. F16k 31/06

U.S. Cl. 251—129

1 Claim



A fluid-operating valve, wherein a magnetically controlled core shifts a flap valve between its operative and inoperative

positions. The side of the flap valve facing the channel in which it is seated communicates with the opposite side through ports opening inside a closed bellows-shaped chamber extending coaxially with the flap valve and the average diameter of which registers with that of the seat of the flap valve.

3,627,258

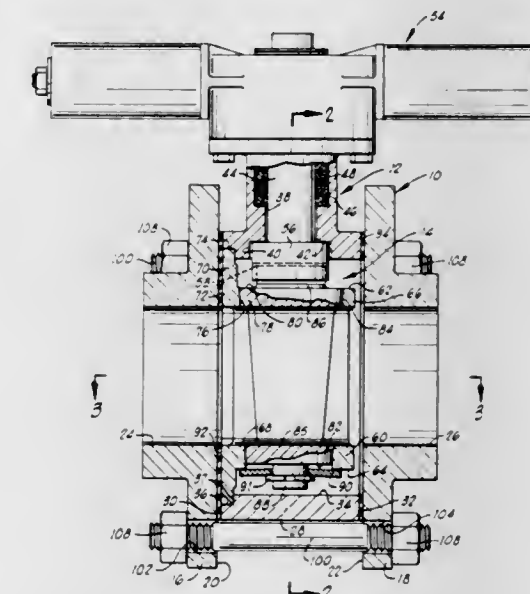
#### PLUG-TYPE VALVE ASSEMBLY

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.  
Continuation-in-part of application Ser. No. 763,644, Sept. 30, 1968, now Patent No. 3,531,081. This application Dec. 4, 1969, Ser. No. 881,988

Int. Cl. F16k 5/02, 5/100

U.S. Cl. 251—152

10 Claims



A valve assembly, particularly useful between flanges and in high-temperature applications, which utilizes a housing unit and a separate insertable valve unit. The housing unit provides a support housing adapted to be supported between the flanges and includes a valve operator and a valve stem. The valve unit includes a valve member and a valve body and is sized to be inserted lengthwise into the housing unit and is supported therein. The valve member has a portion thereof adapted to be interconnected to the valve stem, so the valve member may be rotated from a fully open to a fully closed position.

3,627,259

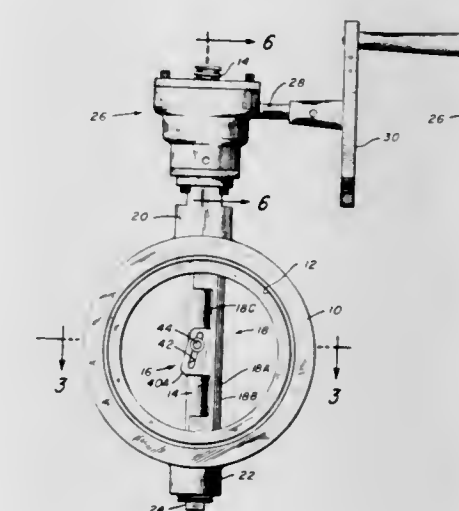
#### CAM SEAL BUTTERFLY VALVE

George C. Williams, 4123 E. 45th St., Tulsa, Okla.  
Filed Dec. 10, 1969, Ser. No. 883,885

Int. Cl. F16k 5/14

U.S. Cl. 251—163

6 Claims



This invention relates to an improved butterfly valve. More particularly, the invention relates to a butterfly valve having



a body with an axial flow passageway therethrough and a stem opening intersecting the fluid passageway, a stem member rotatably axially displaceably supported in the stem opening, a valve disc positioned in the flow passageway and movable between a closed position in which the plane of the disc is perpendicular to the axis of the flow passageway and an opened position in which the plane of the disc is parallel the axis of the flow passageway, a stem-actuating means external of the body for rotating and axially displacing the stem member, and attachment means securing the stem member to the disc whereby the rotation of the valve stem rotates the disc member between opened and closed positions and the axial displacement of the valve stem moves the disc into and out of sealing engagement with the valve body.

3,627,260

## VALVE CONSTRUCTION

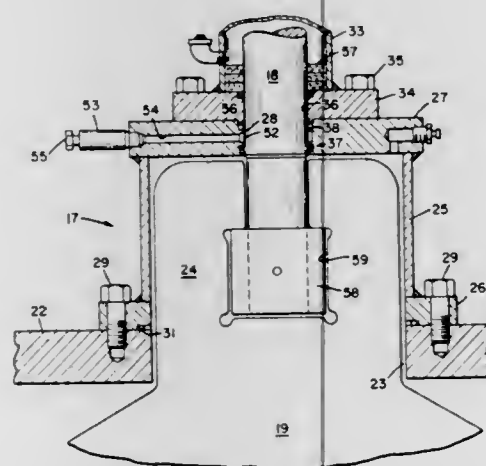
Marvin H. Grove, Houston, Tex., assignor to M & J Valve Company, Houston, Tex.

Filed Oct. 6, 1969, Ser. No. 864,023

Int. Cl. F16k 41/04

U.S. Cl. 251-214

5 Claims



A valve having a valve operating rod and sealing means to prevent leakage between the body and the rod. The primary sealing means consists of a plurality of annuluses made of nonmetallic resilient material or materials which are carried in an annular recess and which are dimensioned to form seals on their inner and outer edges. Also there is a secondary seal exterior of the primary seal and means for introducing a plastic material between the two seals. The primary seal is so constructed that it automatically relieves any excess pressure applied to the plastic material.

3,627,261

## BALANCED ROTARY PLATE VALVE AND METHOD OF MAKING

Edwin H. Ludeman, Red Bank, N.J., assignor to Andrews Industries Incorporated, Dayton, N.J.

Filed Sept. 17, 1969, Ser. No. 858,791

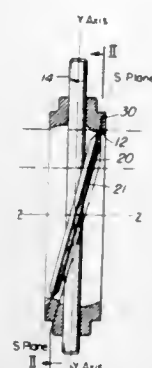
Int. Cl. F16k 1/22; B21d 53/10

U.S. Cl. 251-305

10 Claims

A valve structure which includes an edge-sealing valve plate which swings about an axis between closed and open positions. The valve plate is balanced by locating the plate with respect to the axis of rotation such that pressure-induced force-moments about the valve stem axis of rotation sum to zero when the valve is closed. The valve-sealing surfaces are shaped and positioned with respect to the axis such that every portion of the sealing periphery of the valve plate moves with a motion component normal to the corresponding sealing surface of the valve seat of the valve body to provide a compressive seal about the entire sealing periphery upon the application of closing torque. Upon opening, the

entire sealing periphery of the valve plate moves away from the valve seat.



entire sealing periphery of the valve plate moves away from the valve seat.

3,627,262

## VALVE HAVING AXIALLY SHIFTING CLOSURE MEANS

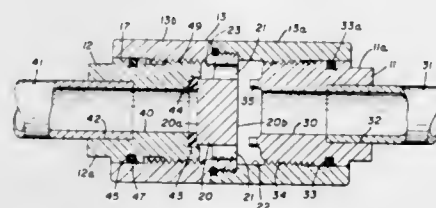
Dwight E. Hottle, 2866 Lakeland Parkway, Cuyahoga Falls, Ohio

Filed Jan. 22, 1970, Ser. No. 4,939

Int. Cl. F16k 31/44

U.S. Cl. 251-346

6 Claims



An in-line type of valve made up of first and second connector elements that are telescoped within opposed ends of a generally cylindrical housing unit that, in turn, has a central baffle, with the connector elements having a fixed relationship with each other during relative rotational movement of the housing so that the internal baffle having axial fluid orifices can be shifted into and out of sealing relationship with one of said connector elements.

3,627,263

## AEROSOL VALVES

William Edward Warren, Cuffley, and Frederick James Gallagher, Hayes, both of England, assignors to Bepak Industries Limited

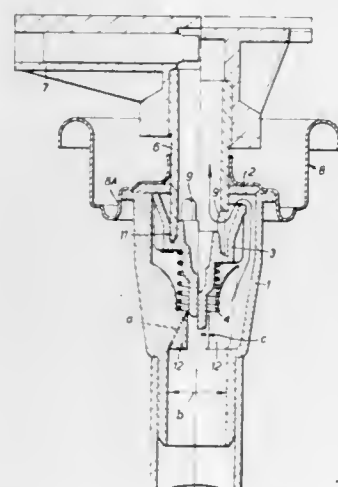
Filed Dec. 15, 1969, Ser. No. 884,785

Claims priority, application Great Britain, Dec. 18, 1968, 60,109/68

Int. Cl. F16k 31/58, 31/524

U.S. Cl. 251-353

5 Claims



The invention relates to improvements in a known form of aerosol valve having a cup-shaped valve member whose an-

nular, upper edge normally seals against a main seal under spring pressure. The interior of the cup communicates, through radial apertures in the wall of a hollow actuator member, with the interior of the member. The valve is opened by pressing the actuator member downwardly to unseat the valve member.

One improvement resides in shaping the interior surface of the valve member to guide the fluid flow radially inwardly towards the radial apertures in the actuator member. These apertures preferably account for at least 50 percent of the circumference of the actuator member. Also, flow velocity is increased by forming a progressively tapering flow passage between the valve member and the housing in which it is located.

3,627,264

## TIRE VALVE INSERT

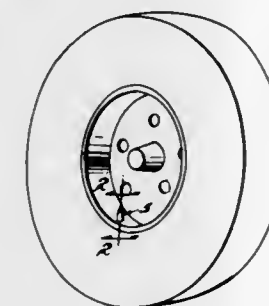
James F. Scherer, 2 Wal-Jo Trail, Milford, Ohio

Continuation-in-part of application Ser. No. 821,858, May 5, 1969, now abandoned. This application May 26, 1970, Ser. No. 40,691

Int. Cl. F16k 15/20

U.S. Cl. 251-366

13 Claims



A tire valve insert manufactured from a cylindrical metal tube by axially compressing the tube to form a peripheral flange, radially expanding the tube, forming internal tapers, and threading various internal as well as external sections of said tube.

3,627,265

## CONVEYOR BELT SPLICING APPARATUS

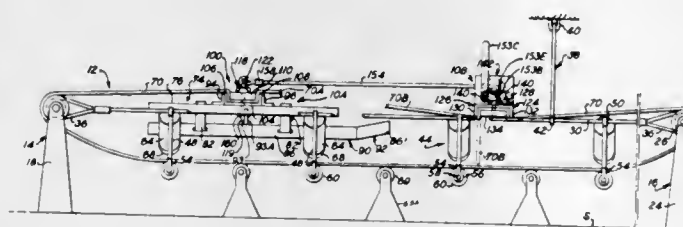
Elmer Payne, P.O. Box 93, Chapmanville, W. Va., and Ray Blevins, P.O. Box 99, Danville, W. Va.

Filed June 9, 1970, Ser. No. 44,807

Int. Cl. F16g 11/12

U.S. Cl. 254-53

10 Claims



In splicing together the separated ends of a normally endless belt conveyor, clamp means releasably connected on the belt proximate, respectively, the adjacent ends thereof, and power-operated winch means connected on and extending between the clamps, the winch means being operable to draw one end of the belt towards the other to bring the same into juxtaposition and to thereby facilitate their connection, one with the other.

3,627,266

## APPARATUS FOR PULLING TOGETHER FREE ENDS OF AN ENDLESS TRACK OR BAND

Willy Braun, Friedrich-Ebert-Strasse 47, Hellingenrode, Germany

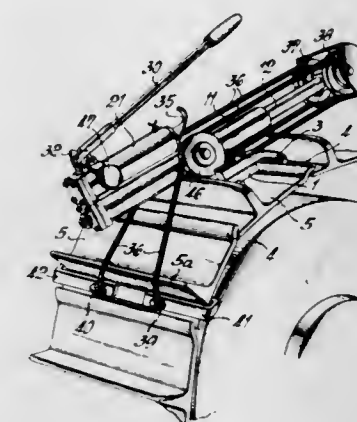
Filed July 3, 1969, Ser. No. 839,018

Claims priority, application Germany, July 3, 1968, P 17 03 729.5

Int. Cl. F16g 11/12

U.S. Cl. 254-53

15 Claims



An apparatus for pulling together the free ends of an endless track or band for coupling the ends together, comprising a tensioning device for mounting on one free end of the endless track, a flexible connecting member extending from the device and a coupling connecting the member and the other free end of the endless track.

3,627,267

## ARTICULATED PUBLIC WORKS MACHINE OR VEHICLE

Yves Kemper, Pontchateau, France, assignor to Etablissements J. Sambron, Pontchateau, France

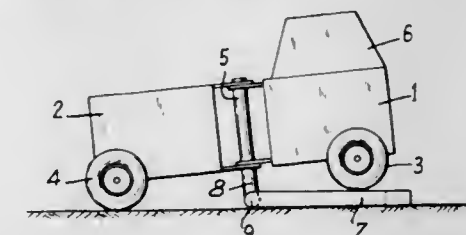
Filed Mar. 13, 1970, Ser. No. 19,163

Claims priority, application France, Mar. 25, 1969, 6908747

Int. Cl. B60s 9/02

U.S. Cl. 254-86 R

13 Claims



A device for partially raising a public works machine or the like comprising two articulated chassis elements wherein means are provided for partially raising the machine in such manner that in working position one of the elements rest on the ground through its normal rolling members such as wheels or through immobilizing means such as props, and through the said partial raising means, while the other chassis element is wholly raised from the ground and can turn relative to the first chassis part about the axis of articulation of the chassis and relative to the ground about the said partial raising means.

3,627,268

## FLUID-OPERATED JACK

Mac Gordon Wills, R.R. #2, Chelmsford, Ontario, Canada

Filed Apr. 24, 1970, Ser. No. 31,588

Int. Cl. B60s 9/02

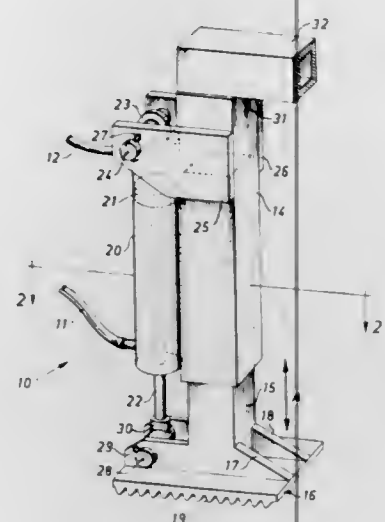
U.S. Cl. 254-86 H

11 Claims

A fluid-operated jack particularly suited for use as an outrigger on a rock-drilling vehicle includes first and second



telescopic guide members. The second guide member has a ground-engaging plate terminally and rigidly secured thereto and a hydraulic ram has a cylinder pivotally connected to the first guide member and a piston rod terminally and pivotally connected to the ground-engaging plate so that the piston



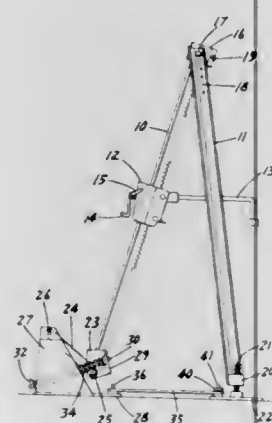
rod is disposed essentially parallel to a common axis of the first and second guide members. The guide members usefully have noncircular cross-sectional configurations so that the torsional and transverse stresses applied to the piston rod are significantly reduced so permitting the use of lighter weight cylinders and pistons for a given application.

3,627,269

**VEHICLE BUMPER JACK AND CONVERSION KIT**  
Oscar W. Olson, 3613 37th Ave. N.E., Minneapolis, Minn.  
Continuation-in-part of application Ser. No. 834,962, June 20, 1969. This application July 20, 1970, Ser. No. 56,505  
Int. Cl. B66f 3/08

U.S. Cl. 254-99

10 Claims



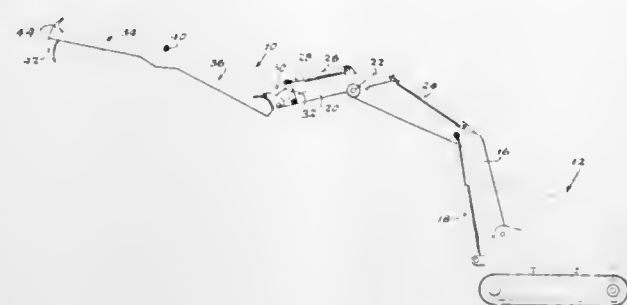
A stable multilegged vehicle bumper jack utilizing a removable single-post ratchet or screwjack. The conventional standard equipment single-post automobile jack is convertible to a safer more stable multilegged jack by incorporation into an auxiliary supporting frame which per se comprises a conversion kit. The jack is characterized by a fixed base movably supporting the jack column to permit variations of the angle of the jack column to compensate for differences due to lifting of the vehicle bumper, so as to avoid compensating movement of the supporting legs which are rigidly secured together.

**3,627,270**  
**WRECKING BAR FOR USE WITH A BACKHOE**  
Donald C. Schreiber, and George R. Schreiber, Jr., both of Eden, N.Y., assignors to Schreiber and Winkelman, Inc., Eden, N.Y.

Filed July 30, 1970, Ser. No. 59,535  
Int. Cl. B66f 3/00

U.S. Cl. 254-124

5 Claims



A wrecking bar attachable to the free end of the dipstick of a backhoe after the conventional earthmoving bucket has been removed therefrom. The bar is of dogleg-shaped configuration having attaching and wrecking end portions of metal box beam construction.

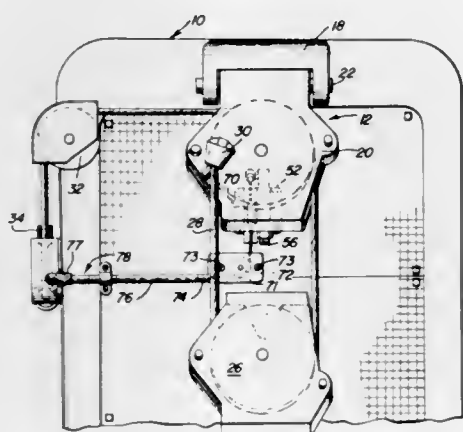
The wrecking end portion of the bar carries a dependent wrecking blade and an upstanding hook, whereas the attaching end portion is fitted to permit pivotal attachment to the dipstick of a backhoe.

**3,627,271**  
**LIMIT CLUTCH CONTROL FOR DOZER BLADE CABLE LIFT**

Woodrow Regenbrecht, Sealy, Tex., assignor to Maurice A. Lehmann, Houston, Tex., a part interest  
Filed Dec. 22, 1969, Ser. No. 887,074  
Int. Cl. B66d 1/48

U.S. Cl. 254-173

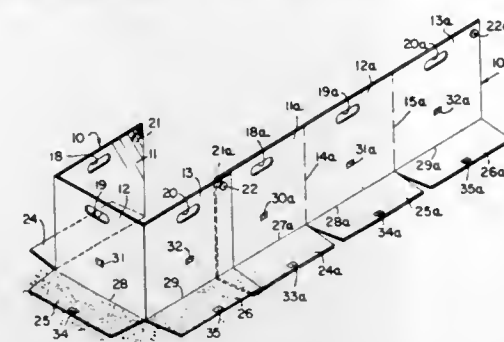
2 Claims



An automatic power release for the cable drum clutch of a bulldozer blade cable lift assembly consisting of a reciprocal actuator supported from the stationary block of the cable lift assembly and an abutment carried by the travelling block of the cable lift assembly. One end of a pull cable is attached to the actuator and trained to the rear of the associated bulldozer and attached to a plunger-actuating mechanism including a plunger actuated thereby and operatively associated with the cable drum clutch of the cable lift assembly. The abutment, when the travelling block approaches the upper block, is engageable with the actuator to shift the latter and movement of the actuator is transmitted through the cable attached thereto for inwardly displacing the associated plunger and releasing the cable drum clutch.

**3,627,272**  
**PROTECTIVE ENCLOSURE UNIT**  
Samuel Friedberg, Chelsea Tower, Atlantic City, N.J.  
Filed July 17, 1970, Ser. No. 55,668  
Int. Cl. E04h 17/16

U.S. Cl. 256-25

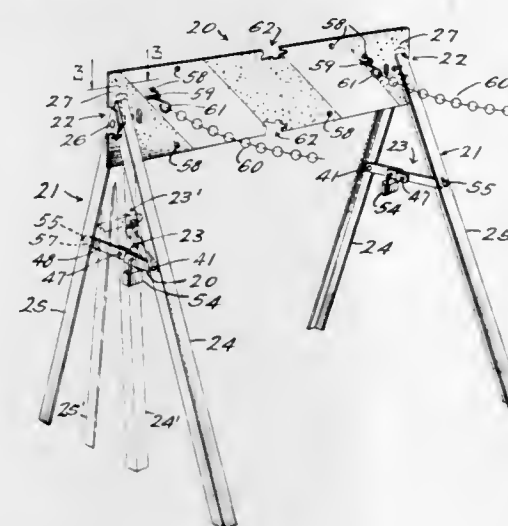


A series of substantially congruent generally rectangular panels hinged together in end-to-end relation, and flaps on aligned sides of at least the endmost panels, the panels and flaps being swingable between a collapsed condition in facing relation with each other, and an erected condition with the panels in angular relation with respect to each other and upstanding from said aligned sides and flaps.

**3,627,273**  
**BARRICADE**

Robert D. Birner, Toledo, Ohio, assignor to The Toledo Pressed Steel Company, Toledo, Ohio  
Filed Feb. 26, 1970, Ser. No. 14,515  
Int. Cl. E04h 17/14

U.S. Cl. 256-64



A collapsible barricade suitable for use in street traffic control. The barricade comprises a support and a plate or sign. The support includes pairs of divergently pivoted legs having jaws for gripping the sign. The sign is a rectangularly shaped uniplanar element having configured slots spaced along its edge and is adapted for interlocking engagement with the jaws to form a substantially rigid and stable structure. Toggle links provided on each of the pairs of legs have a latching mechanism by which the legs may be retained in an expanded position to prevent removal of the sign from the jaws.

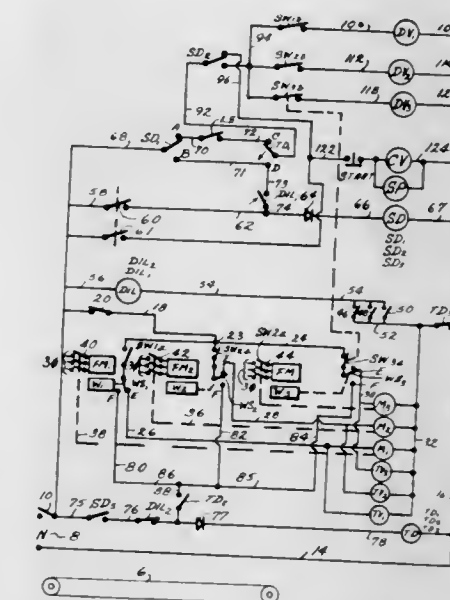
**3,627,274**  
**CAM STOP IMPROVEMENT**  
Dan S. Wise, and James L. Sosebee, both of Gastonia, N.C., assignors to Fiber Controls Corporation, Gastonia, N.C.  
Filed July 30, 1969, Ser. No. 846,130  
Int. Cl. B01f 3/00

U.S. Cl. 259-1

11 Claims

An improvement in a fiber-blending system of the type whereby a plurality of weighing pans are disposed above a

conveyor belt and are fed with fiber material, which is dumped onto the conveyor periodically after all of the pans have weighed a chosen amount. The conveyor onto which the fibers are dumped is normally caused to move forward after each dump for a given distance so that fiber sandwiches are formed on the conveyor to be delivered to other equipment. Normally connected in parallel with a relay energizing the conveyor for forward movement is a spraying relay which, when energized, causes a tint, dye or the like to be sprayed onto the fibers as they move with the conveyor so that the spraying relay is energized to spray a different sandwich each time that the conveyor moves forward. In the prior

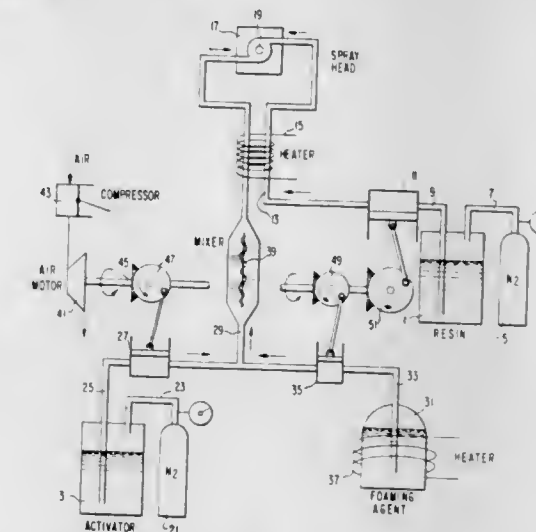


art circuit for controlling the operation of the equipment as described herein, the conveyor is normally energized briefly after the fibers in the pan are dumped to ensure that a switch, which is closed to stop the conveyor, is open, and then deenergized briefly before being once more energized to move forward the rest of the given distance. This double energization of the conveyor relay, and hence the spray relay, causes the fiber sandwiches to be sprayed twice for each dump rather than once as desired. The improvement of this invention, as disclosed below, overcomes this problem by providing a circuitry so that the conveyor relay, and hence the sprayer relay, is only energized once for each dump of the weigh pans.

**3,627,275**  
**APPARATUS FOR PRODUCING PLASTIC FOAM**  
Frederick E. Gusmer, 1121 Ocean Ave., Mantoloking, N.J.  
Original application Jan. 9, 1967, Ser. No. 608,050, now abandoned. Divided and this application May 13, 1970, Ser. No. 37,055  
Int. Cl. B01f 15/04

U.S. Cl. 259-4

5 Claims



A low-boiling foaming agent such as dichlorodifluoromethane is added to one of the reactive



liquids of a system for forming a foam such as polyurethane foam, by pumping the reactive components and the foaming agent to elevated pressure in three separate pumps that are mechanically linked so as to maintain a fixed delivery ratio to each other, then mixing the foaming agent with one of the liquids, and finally mixing that latter mixture with the other reactive liquid and ejecting a single stream of material that foams on a substrate and then cures.

3,627,276

## SAMPLE CONTAINER AND MIXING APPARATUS

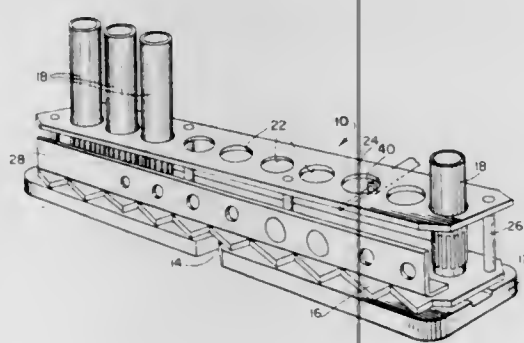
Saul R. Gilford, Oberlin, Ohio, assignor to Gilford Instrument Laboratories Inc., Oberlin, Ohio

Filed July 15, 1970, Ser. No. 55,180

Int. Cl. B01f 9/20

U.S. Cl. 259—50

9 Claims



A sample container is mounted for rotation in a rack of carrier with a plurality of other containers. The rack has bearings for providing bearing engagement with the containers. Each container has a corrugated outer surface and internal paddles. After reagents have been added to the contents of the containers, a jet of air is directed against the corrugations which act as turbine blades. The containers each rotate in turn as it reaches the station where the nozzle for the jet of air is located, whereby the contents of the containers are thoroughly mixed prior to testing the same. The containers may each be integrally molded or the corrugations may be applied to a conventional container by means of a flexible collar having the corrugations molded therein.

3,627,277

## SHAKER BED SYSTEM

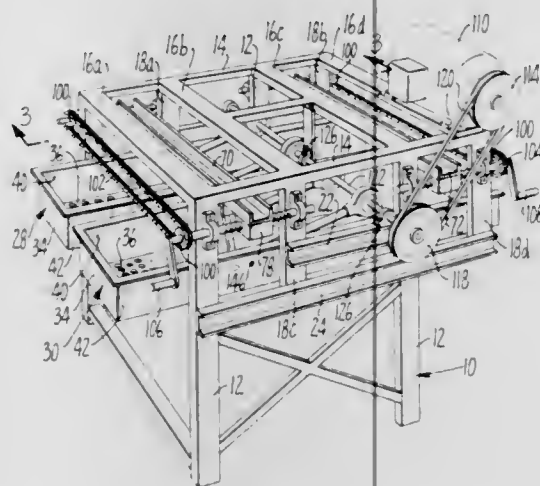
Joseph A. Amori, 1270 Pine Ave., San Jose, Calif.

Filed Apr. 17, 1970, Ser. No. 29,429

Int. Cl. B01f 13/00

U.S. Cl. 259—59

6 Claims



A shaker system including a plurality of shaker beds disposed in side-by-side relation and having head ends and tail ends. A plurality of first support links are pivotally connected to the head ends and extend upwardly therefrom. A

plurality of second support links are pivotally connected to the tail ends and extend upwardly from the tail ends. The upwardly extending ends of said first and second support links are pivotally connected to support members and drive means is provided for imparting reciprocable movement to the shaker beds relative to the support members. Adjustment means is provided for controlling the rate and direction of material flow along the beds by altering the paths of reciprocable movement thereof.

3,627,278

## VIBRATORY TREATMENT APPARATUS

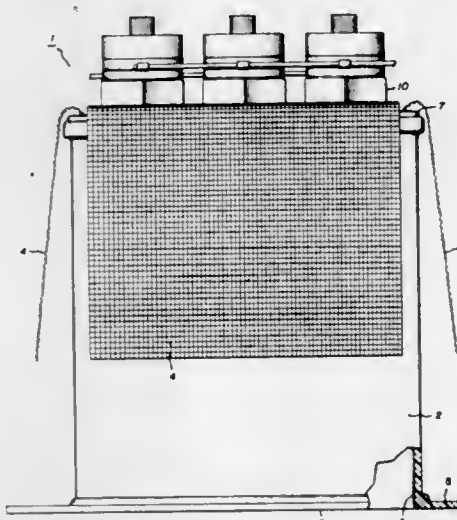
Paul L. Dee, Syracuse; Richard L. Edwards, North Syracuse, and Harold R. Lee, Auburn, all of N.Y., assignors to General Electric Company

Filed Jan. 5, 1970, Ser. No. 527

Int. Cl. B01f 11/02

U.S. Cl. 259—72

8 Claims



This invention relates to an ultrasonic vibratory treatment apparatus which is particularly useful in ultrasonically cleaning or etching semiconductor bodies comprising the following elements: an etchant-resistant receptacle having a plurality of retaining walls; at least one vibration-generating transducer; a vibration-transferring epoxy-adhesive layer having a vibration-transferring portion and an anchoring portion between the receptacle and the transducer; and a heat-transfer element which is imbedded in the adhesive layer. The vibration-transferring portion is directly adhered to both the bottom surface of the transducer and one of the retaining walls. The anchoring portion surrounds the vibration-transferring portion and part of the transducer thereby securing the transducer to one of the walls of the receptacle. The receptacle, the transducer, the epoxy-adhesive layer and the heat-transfer element are all correlated to produce a standing-wave system in a liquid having a known cavitation threshold in the receptacle responsive to a particular power input to the transducer.

3,627,279

## BARREL-TYPE PROCESSING APPARATUS

James Barton, Grosse Pointe Woods, and Patrick H. Norton, Birmingham, both of Mich., assignors to Ionic International Inc., Warren, Mich.

Original application July 27, 1966, Ser. No. 568,287, now Patent No. 3,521,650, dated July 28, 1970. Divided and this application Jan. 21, 1969, Ser. No. 821,532

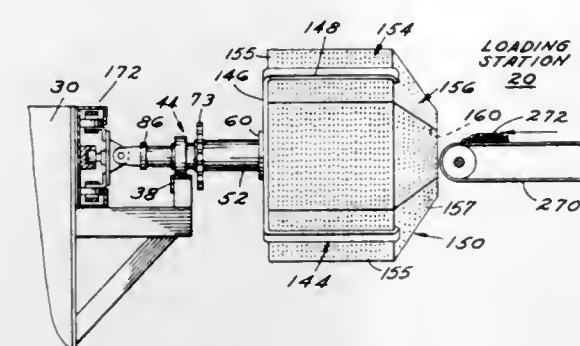
Int. Cl. B01f 9/02

U.S. Cl. 259—90

3 Claims

A workpiece holder receptacle has a sidewall in the form of a polygonal-shaped body, a generally flat rear end bottom wall and a top wall in the form of a generally frusto-polygonal-shaped front end cover. The top wall has edge portions which surround a generally centrally located relatively

large opening, and the receptacle is perforated throughout the greater portion thereof to permit treating solutions to escape. The polygonal side and top walls impart additional tumbling motion to the workpieces upon rotation of the



receptacle. The receptacle is mounted in a support bracket which has a base through which the receptacle axis extends. The base is provided with a plurality of elongated arms which engage the walls of the receptacle.

3,627,280

## APPARATUS FOR MIXING AND DISPERSING LIQUIDS AND LIQUIDS WITH SOLIDS

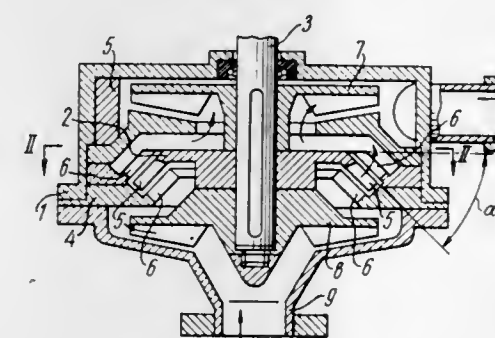
Viktor Milronovich Fridman, Karetny Ryad, 5/10, kv. 180; Stanislav Konstantinovich Ushanov, 2 Khutorskaya Ulitsa, 18/20, korpus 5, kv. 70, and Galina Alexandrovna Sapogova, Leningradsky prospekt, 57, kv. 110, all of Moscow, U.S.S.R.

Filed Jan. 14, 1970, Ser. No. 2,873

Int. Cl. B01f 7/16

U.S. Cl. 259—107

2 Claims



An apparatus for mixing and dispersing liquids and liquids with solids comprises a rotor with teeth on its periphery and a stator with at least two rows of teeth, the rotor teeth being arranged between the stator teeth and at least one face of the rotor tooth and the corresponding gap-forming face of the stator tooth being set at an oblique angle to the rotation plane of the rotor.

3,627,281  
MIXING TIMER

Norman L. Peterson, Wauwatosa, Wis., assignor to Rex Chainbelt, Inc., Milwaukee, Wis.

Filed Mar. 12, 1970, Ser. No. 18,844

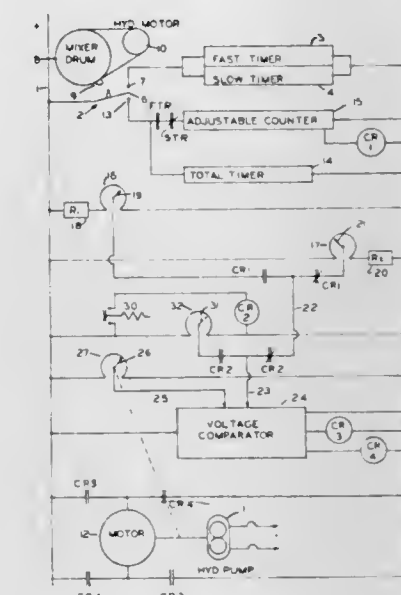
Int. Cl. B28c 5/20

U.S. Cl. 259—177

5 Claims

A control for a transmit-mix truck is arranged to indicate for each revolution of the mixer drum, whether the drum speed is below a predetermined minimum or above a predetermined maximum speed, to count those resolutions occurring at speeds between the predetermined speeds, and to initiate a change from mixing to a slower agitating speed when a predetermined number of counted revolutions are recorded. In a preferred structure a pair of slow drop out

timing relays and a control relay are briefly energized at least once each revolution of the mixer drum. Contacts on the relays are arranged such that a first capacitor is charged immediately following the brief energization of the relays and is discharged through an indicating light if the next relay energization occurs before the expiration of a first-timing inter-



val. The relay contacts are also arranged such that a second capacitor is charged at the expiration of the first-timing interval and is discharged through a counter in the event the relays are energized prior to the expiration of a second-timing interval or is discharged through a second-indicating light in the event that second-timing interval expires before the next energization.

## ERRATUM

For Class 263—52 see:  
Patent No. 3,627,857

3,627,282

## PATH ARRANGEMENT FOR PARISON HEATING

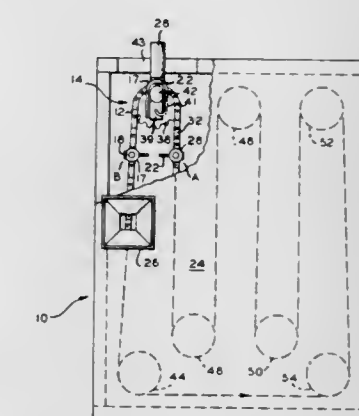
William G. Kinslow, Jr., Kansas City, Mo., assignor to Phillips Petroleum Company

Continuation-in-part of application Ser. No. 696,329, Jan. 8, 1968, now Patent No. 3,477,700. This application Nov. 10, 1969, Ser. No. 875,081

Int. Cl. F27b 9/24

U.S. Cl. 263—8

10 Claims



Preformed hollow parisons are received on vertically disposed pins attached to an endless chain which conveys these parisons through a heating oven and out at a point spaced away from the side walls of said oven. After the parisons have traveled through the oven and been heated to



the desired temperature, the pins are rotated 90° so as to transfer the parisons to a horizontal position. These horizontally disposed parisons are then ready to be received by a molding station. A preferred apparatus for accomplishing the transfer of the parisons from a vertical to a horizontal position comprises a support base to which the support pins are fixedly attached, this base being hinged at one end to a flange extending upwardly from a link plate on the chain; a cam follower fixedly attached to the other end of this base; and a stationary cam plate. The support base is biased so as to support the support pin in a vertical position by a spring or spring clip; as the chain advances the cam follower contacts the stationary cam plate; this cam follower riding against the cam plate causes the support base to pivot about the hinge so as to rotate the support pin from a vertical to a horizontal position, and then as the cam follower passes the high point on the cam plate the base is rotated back so as to return the support pin to a vertical position.

3,627,283

# DRIVE BELT AND RAILS TO MOVE ARTICLE THROUGH FLAME

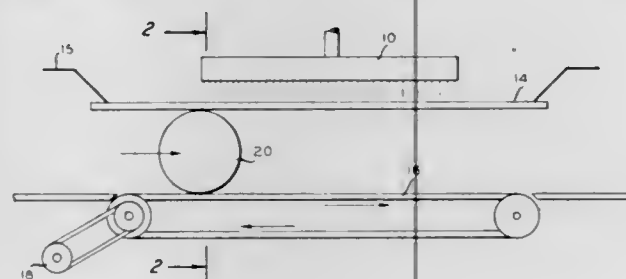
Neal A. Hittner, Garland, Tex., assignor to Phillips Petroleum Company

Filed Dec. 22, 1969, Ser. No. 887,284

Int. Cl. F27b 9/24

U.S. Cl. 263—8

5 Claims



A flame-treating apparatus for generally cylindrical articles such as bottles comprises a belt means spaced apart from a pair of rails. The article is rolled between the belt and the rails to thus pass same through a flame so as to effect a surface treatment of the article.

3,627,284

# HEAT REGENERATOR, PARTICULARLY HOT BLAST STOVES FOR A BLAST FURNACE

Jacobus Van Laar, Santpoort, and Johannes H. W. Ouwkerk, Ijmuiden, both of Netherlands, assignors to Didier-Werke A. G., Wiesbaden, Germany

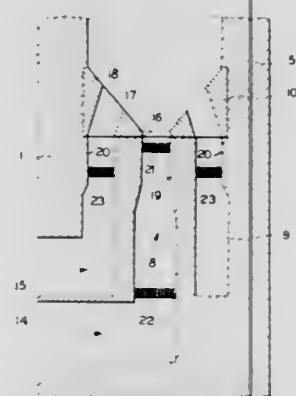
Filed Oct. 17, 1969, Ser. No. 867,301

Claims priority, application Germany, Oct. 19, 1968, P 18 03 985.5

Int. Cl. F23m 9/00

U.S. Cl. 263—19

6 Claims



A hot blast stove or heat generator for blast furnaces with structure for improving the mixture and combustion of the gas and air fuel components within the combustion chamber,

wherein the improved structure includes coaxially disposed but nonintercommunicating center and annularly encircling conduits for supplying respectively the gaseous fuel and air components with a pressure and flow equalizing rod lattice in one or both of the respective conduits. A preferred form utilizes two axially spaced lattices in the gas conduit and one in the air conduit, each of which is adjustable from outside of the furnace to help vary and better equalize the respective flows over the respective cross sections of the conduits.

3,627,285

# TOWER FURNACE

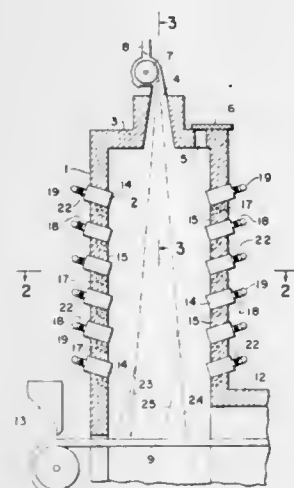
Ernst A. Siemssen, Gwynedd, Pa., assignor to Selas Corporation of America

Filed June 19, 1969, Ser. No. 834,696

Int. Cl. F27b 3/00

U.S. Cl. 263—21

6 Claims



A tower furnace having opposed rows of burners in its sidewalls which are regulated to control the bloating and the falling pattern of a sheet of bloatable particles and a method of controlling the furnace to obtain a slab of cellular ceramic material.

3,627,286

# APPARATUS FOR BURNING SCRAP MATERIAL

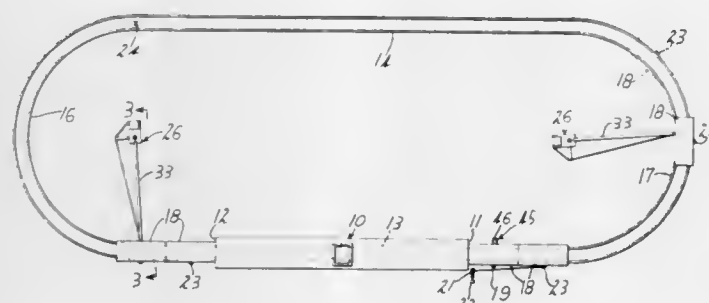
James T. Palmer, Jr., 1801 30th St. North, Birmingham, Ala.

Filed Oct. 8, 1970, Ser. No. 79,215

Int. Cl. F27b 9/00; F23g 7/00

U.S. Cl. 263—28

5 Claims



Apparatus designed primarily for burning used automobiles in the scrapping process. It includes an elongated burning tunnel having one tangent of a track for material carrying cars passing therethrough, the track having a second tangent and the tangents being connected by semicircular end sections. The track is higher at the exit end of the tunnel than at the entrance end and the cars run by gravity down the

second tangent for reloading. Means is provided to propel the cars from the exit end of the tunnel to the higher end of the second tangent and from the curved section at the entrance of the tunnel to a position for loading adjacent the entrance of the tunnel.

3,627,287

# ROTARY KILN CONTROL APPARATUS AND PROGRAMMING

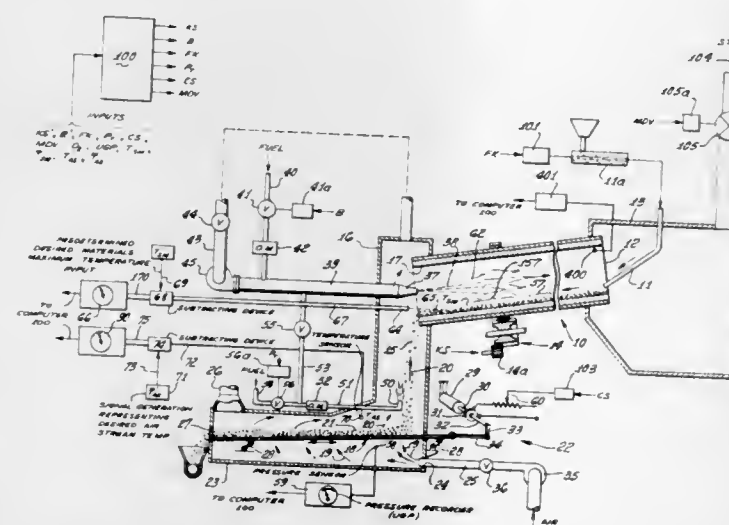
Joseph H. Herz, Yorba Linda, Calif., assignor to California Portland Cement Company, Los Angeles, Calif.

Filed Aug. 10, 1970, Ser. No. 62,424

Int. Cl. F27b 7/20

U.S. Cl. 263—32

19 Claims



Rotary kiln operation is controlled so as to result in satisfactory kiln performance and high quality clinker production over long periods of time. Main burner fuel supply is controlled when the maximum temperature of materials in the kiln is in one range, and kiln speed of rotation is controlled when such maximum temperature is in another range. Also, air is passed to the kiln via a clinker cooler, for preheating, and the cooler speed of movement is controlled in relation to kiln speed of rotation and raw mix feeder speed.

3,627,288

# DEOILING AND BRIQUETTING APPARATUS

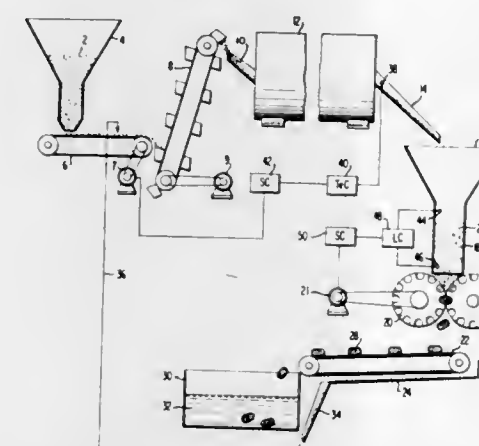
Ward D. MacDonald, North Muskegon, Mich., assignor to Michigan Foundry Supply Apparatus, Muskegon, Mich.

Original application Jan. 7, 1969, Ser. No. 798,571, now abandoned, which is a division of application Ser. No. 714,364, Mar. 19, 1968, now Patent No. 3,450,529. Divided and this application Feb. 24, 1970, Ser. No. 13,337

Int. Cl. F27b 7/00

U.S. Cl. 263—32

7 Claims



This disclosure relates to an apparatus for making metal briquettes for foundry operations from oily particulate material. The briquettes are made, for example, from oily metal particles, such as metal turnings, which are fed to a

furnace to burn the oil therefrom. In the furnace, the particles are heated to a high temperature of, for example, 1,200° to 1,400° F. The heated and deoiled particles are passed directly to a hopper which feeds the briquetting mechanism. The temperature of the deoiled particles is sensed and is maintained within a predetermined range for briquetting by adjusting the feed to the furnace in accordance with the sensed temperature. The amount of deoiled particles in the feed hopper is controlled to prevent overflow of the feed hopper and to maintain the density of the briquettes by sensing the level of deoiled particles in the feed hopper and adjusting the speed of the briquetting rolls accordingly to maintain the proper level.

3,627,289

# APPARATUS AND METHOD FOR REMOVING OIL FROM METAL TURNINGS

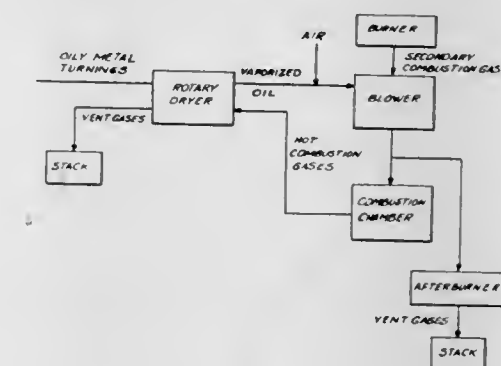
Walter Erman, 1300 North Lake Shore Drive, Chicago, Ill.

Filed June 22, 1970, Ser. No. 48,324

Int. Cl. F27b 7/00

U.S. Cl. 263—33 R

12 Claims



An apparatus and method are provided for use in removing oil from metal turnings. The apparatus includes a rotatable dryer equipped with an internal baffle arrangement used to suspend oily turnings in a stream of hot combustion gases which vaporize oil contained on the turnings, and a combustion chamber which generates hot combustion gases from a mixture of air and vaporized oil removed from the turnings and recirculates a portion of the combustion gases to the dryer. In addition, the apparatus is provided with a natural gas burner which generates secondary combustion gases for the combustion chamber when insufficient heat is generated by the combustion of the air-vaporized oil mixture alone, a blower which circulates air vaporized oil and secondary combustion gases to the combustion chamber and a control assembly to balance the flow of the air-vaporized oil mixture and secondary combustion gases.

The method for removing oil from oily turnings generally involves the use of heat of combustion of the removed oil to effect the removal of additional oil from the turnings.

3,627,290

# INDUSTRIAL HEATING APPARATUS WITH AIR-POLLUTION CONTROL

George Price Grieve, 2020 Spruce Drive, Glenview, Ill.

Filed July 23, 1970, Ser. No. 57,460

Int. Cl. F27b 3/02

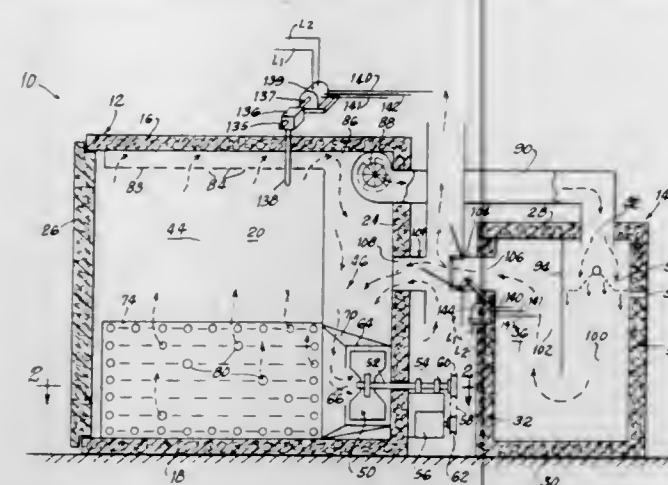
U.S. Cl. 263—40 R

12 Claims

A stream of hot gas and air, exiting from a drying, baking, or curing oven, and containing pollutants, is diverted through an incinerator where the pollutants are converted to harmless water and carbon dioxide vapors. Some of the hot, purified gas effluent from the incinerator is then directed back to the oven, via an arrangement of dampers, at a rate of flow sufficient to maintain the oven at a predetermined temperature. The dampers exhaust excess hot gas to atmosphere and draw in an equivalent volume of fresh, makeup air. Temperature in the oven is maintained by controlled power means which au-



tomatically moves the dampers to vary the proportion of



cool, makeup air and hot incinerator effluent entering the oven.

3,627,291

## DESKULLING METHOD AND DEVICE

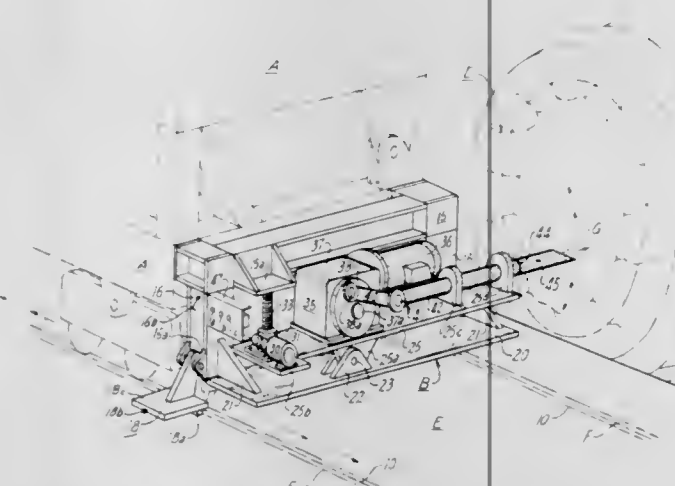
Harry T. Montgomery, and Howard M. Fisher, both of New Castle, Pa., assignors to Pennsylvania Engineering Corporation, New Castle, Pa.

Filed Jan. 5, 1970, Ser. No. 571

Int. Cl. C21c 5/28

U.S. Cl. 266—1 S

10 Claims



A ram device is adapted for attachment to a conventional moving carriage, such as of a scrap charger, has a frame for securing it in a projecting relation therefrom, and has an impact tool head projecting therefrom and adapted to thrust against, break, peel or pull-away solidified material, such as skull, from a mouth or other portion of a vessel, such as a BOF furnace. The tool is motor driven to reciprocate on a platform structure of the frame and is adapted for movement on or about the mouth area from which adhering skull or solidified material such as slag is removed. Thrust-absorbing means is carried by the frame to take up end thrust generated by the operation of the tool to enable its direct absorption independently of and in such a manner to minimize thrust force exerted on the carriage.

3,627,292

## APPARATUS FOR HOISTING AND POSITIONING LADLES

Francis Gallucci, North Huntingdon Township, Westmoreland County, and Joseph E. Urso, Shaler Township, Allegheny County, both of Pa., assignors to United States Steel Corporation

Filed Apr. 6, 1970, Ser. No. 25,807

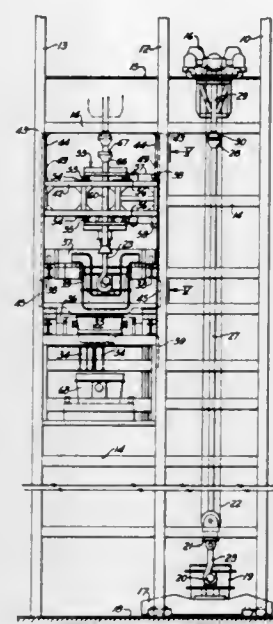
Int. Cl. C21c 7/00

U.S. Cl. 266—13

11 Claims

An apparatus for hoisting and positioning ladles of molten metal particularly for use in a continuous casting installation.

The associated apparatus includes a crane which lifts a ladle of molten metal to the necessary height, transports the ladle horizontally and lowers it to a ladle car, after which the crane hooks are disengaged from the ladle and moved clear. The car then carries the ladle to a position over an intermediate vessel (for example a tundish), from which the metal can be teemed into a continuous-casting mold in the usual fashion.



The novel structure is in the use of a vertically movable cage and a horizontally movable trolley mounted on the cage for guiding the ladle into the proper position on the car. Since the cage can move vertically, the ladle can be placed on cars at different heights, thus making it possible to use the same ladle-handling apparatus with receiving vessels of different vertical dimensions.

3,627,293

## APPARATUS FOR PURIFYING METALS BY POURING THROUGH SLAG

Franz Sperner, Hanau/Mair, Germany, assignor to Leybold-Heraeus Verwaltung GmbH, Cologne-Beyental, Germany

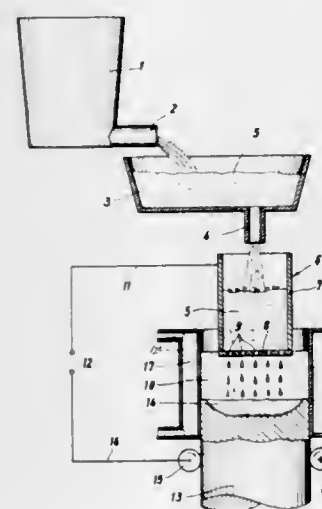
Filed Jan. 30, 1970, Ser. No. 7,121

Claims priority, application Germany, Mar. 14, 1969, P 19 12 935.2

Int. Cl. C21c 7/00

U.S. Cl. 266—34 R

8 Claims



Apparatus for the continuous purifying or refining and casting of metals, notably copper, by pouring a metal fused outside the slag layer through the slag layer.

3,627,294

## PROTECTION SLEEVE FOR DIP TUBES

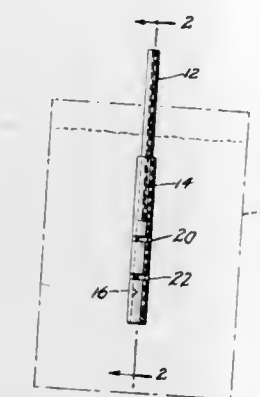
Clarence D. Hill, Aldan, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Mar. 25, 1970, Ser. No. 22,588

Int. Cl. C21c 7/00

U.S. Cl. 266—34 T

11 Claims



To prevent plugging of dip tubes used for bubbling gases into molten material a sleeve having a plurality of openings therein is attached to the end of the dip tube.

3,627,295

## BLOW LANCE ARRANGEMENT

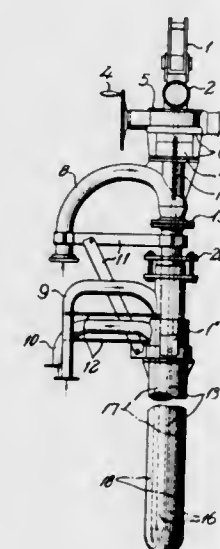
Jyo Doi, Kanagawa-ken, and Kunio Yoshioka, Kanagawa-ken, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Original application July 26, 1967, Ser. No. 656,241, now abandoned. Divided and this application Apr. 29, 1970, Ser. No. 32,997

Int. Cl. C21c 7/00

U.S. Cl. 266—34 L

6 Claims



A blow lance arrangement for controlling flow of gas through a blow lance arranged to blow gas onto the upper surface of a metal bath by moving the end of a spindle arranged in a longitudinal passage of the blow lance from a retracted position located upwardly spaced from a restricted throat portion of the passage through the throat portion to advanced positions into the outwardly flaring nozzle portion of the passage.

3,627,296  
COOLED BLOW MOLD FOR INDUSTRIAL FURNACES  
PARTICULARLY BLAST FURNACES

Johannes Uerlich, Woffelsbach/Eifel; Rudolf Muller, Merzenich, and Wilhelm Kuckertz, Konzendorf, all of Germany, assignors to Hermann Rappold & Co., Duren-Birkendorf, Germany

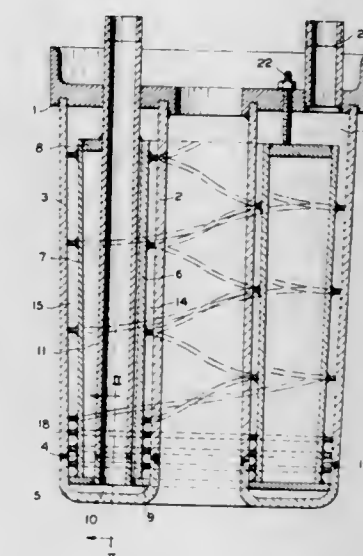
Filed Mar. 10, 1970, Ser. No. 18,066

Claims priority, application Germany, Mar. 10, 1970, P 19 11 938.1

Int. Cl. C21b 7/16

U.S. Cl. 266—41

9 Claims



A cooled blow mold for industrial furnaces, particularly blast furnaces, wherein the feeding of the cooling agent is led in between an outer and an inner blow mold jacket which enclose the cooling chamber directly to the blow head. A ring chamber is located at the blow head and the cooling agent is led from there through the cooling chamber to the outflow of the cooling agent connected to the blow mold foot. A concentric displacement body is set in the cooling chamber which receives the feeding line. The displacement body divides the cooling chamber into an outer, an inner and through a radial ring wall into an annular chamber of the blow head. Overflow openings are provided for the cooling agent in the ring wall in the cross-sectional area of the outer and the inner annular chamber, through which the cooling agent is led along both annular chambers to the outflow of the cooling agent.

3,627,297

## FLUID SPRINGS

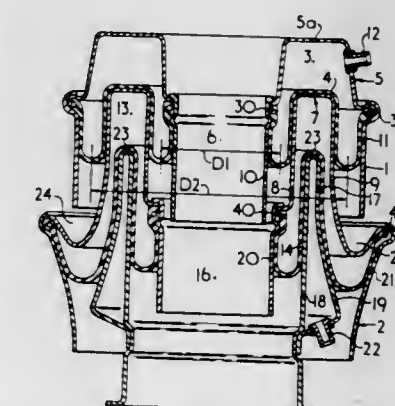
Jan Gaydecki, Leicester, England, assignor to The Dunlop Company Limited, London, England

Filed Feb. 11, 1970, Ser. No. 10,569

Int. Cl. F16f 5/00

U.S. Cl. 267—118

6 Claims



A spring assembly comprising a series arrangement of two rolling diaphragm fluid springs, each spring being of the kind



in which a piston operates in a cylinder against a flexible diaphragm, the diaphragm and cylinder together enclosing a fluidtight space. The springs are arranged so that the cylinder of one spring constitutes the piston of the other spring, of which the following is a specification.

3,627,298

## FLUID SPRINGS

Jan Gaydecki, Leicester, England, assignor to The Dunlop Company Limited, London, England

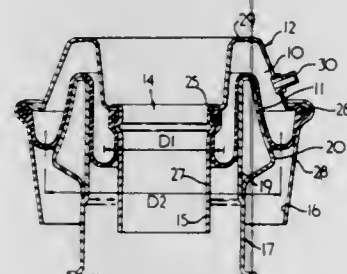
Filed Feb. 11, 1970, Ser. No. 10,568

Claims priority, application Great Britain, Jan. 18, 1969, 8662/69

Int. Cl. F16f 5/00

U.S. Cl. 267—118

5 Claims



A rolling diaphragm fluid spring comprising an annular cylinder in which an annular piston is arranged to operate against a flexible diaphragm, the diaphragm and cylinder together enclosing an annular fluidtight space so as to form a spring with an axial extending central throughway. The opposing walls of the cylinder and piston may be cylindrical to give a diaphragm effective area not dependent on the stroke of the piston or alternatively the opposing walls may diverge to give a stroke-variable diaphragm effective area, of which the following is a specification.

3,627,299

## SUCTION CLAMPING PLATE FOR THE GRIPPING OF THIN-WALLED WORKPIECES

Karl Schwarze, and Udo Schmiedeskamp, both of Oeynhausen, Germany, assignors to Firma B. Schmiedeskamp K.G., Bad Oeynhausen, Germany

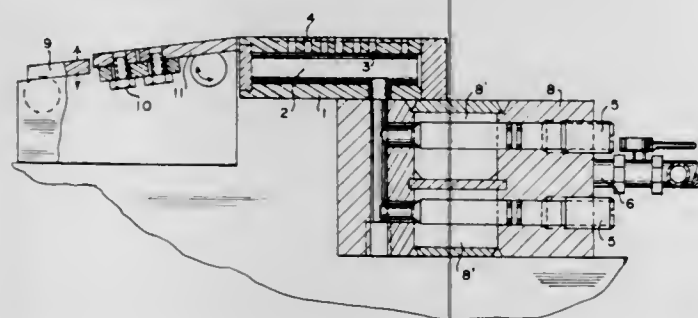
Filed Dec. 19, 1969, Ser. No. 886,625

Claims priority, application Germany, Dec. 23, 1968, P 18 16 639.7

Int. Cl. B25b 11/00

U.S. Cl. 269—121

4 Claims



A suction clamping plate for gripping of thin-walled workpieces. The suction space within the plate is subdivided into a pair of longitudinal channels. Suction bores extending from the channels are connected by annular grooves arranged to interengage on the bearing face of the plate. Dual screw valves are provided between the channels and suction lines for forming a vacuum in either one or both suction channels.

3,627,300

## WIRE CABLE HARNESS ASSEMBLY APPARATUS

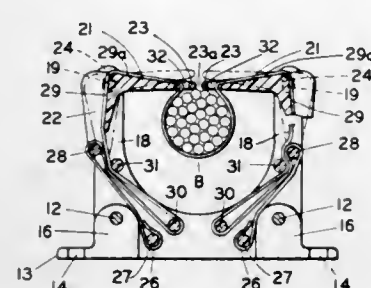
Jack E. Caveney, Chicago; Raymond F. Roberson, Tinley Park, and Joseph S. Rohaly, Alsip, all of Ill., assignors to Panduit, Tinley Park, Ill.

Filed Mar. 19, 1970, Ser. No. 20,926

Int. Cl. B65b 27/10, 67/00; F16l 3/22

U.S. Cl. 269—131

20 Claims



A holder for forming a plurality of strands of wire into a bundle for assembling a cable harness. The holder includes a frame having relatively movable arms of which the ends are in spaced relationship. An elastic band is fastened on the frame to yieldably hold the ends spaced and provide a cradle for the wires.

3,627,301

## APPARATUS FOR ALIGNING A WEB OF PATTERNED SHEET MATERIAL

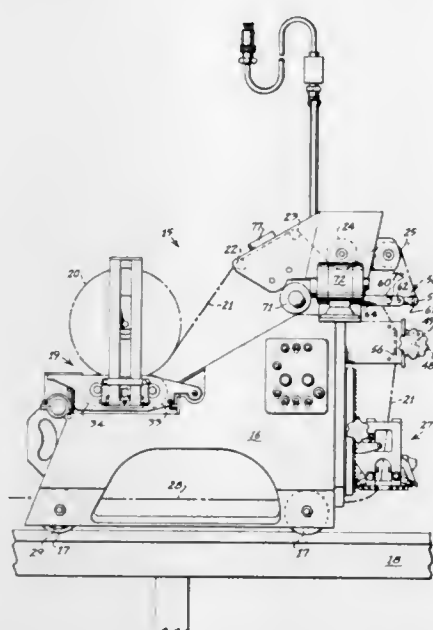
Robert W. Benson, and Robert G. Reed, both of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.

Filed May 4, 1970, Ser. No. 34,425

Int. Cl. B65h 29/46

U.S. Cl. 270—31

23 Claims



A machine for spreading patterned cloth having a longitudinal line or linear division, including a photoelectric line- or stripe-sensing head, a transversely shiftable cloth support, and an electric motor responsive to the stripe-sensing head for moving the cloth support transversely in a direction to maintain a line in said cloth on a true longitudinal course.

3,627,302

## APPARATUS FOR PROCESSING FOLDED ARTICLES

Lyle V. Dutro, 1060 Carriage House Road, Pasadena, Calif.

Filed July 19, 1968, Ser. No. 746,151

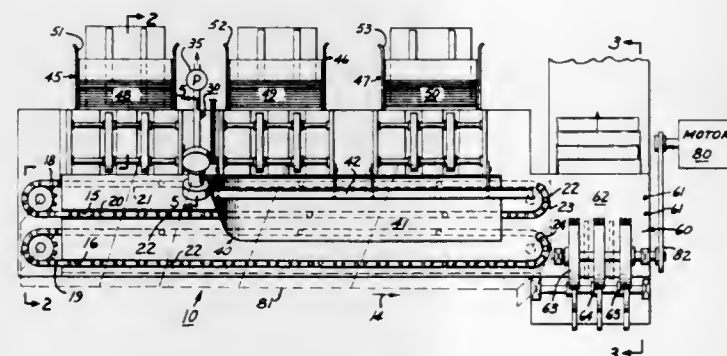
Int. Cl. B65h 5/30

U.S. Cl. 270—55

13 Claims

This invention relates to apparatus for handling folded paper sections, such as newspaper sections, which apparatus

includes a transport device, an opening device, and a delivery device which are adapted for expeditious stuffing of sections, and the delivery of the stuffed articles. The transport mechanism comprises a supporting table adapted to receive newspaper sections from a supply station or stations, there being a slot extending through and along the said table in the direction of forward motion of the newspapers. A peg is carried by and driven by a continuous chain so as to pass along the slot and transport the newspaper in one direction of its travel and then return to its starting location via a path not in said slot, to repeat its action. Means for opening and holding open the section comprises a rotating sucker wheel adjacent to the supporting surface along which the section is moved,



and adjacent to it there is an overhanging shelf adapted to support a free edge of the section so that additional sections can be inserted.

The delivery mechanism comprises a delivery wheel having a peripheral surface, a portion of which is an arcuate, resilient and yieldable contact section having a first radius, and the other portion of which is a relieved section of lesser projection in order that the delivery wheel may turn continuously to admit a section beneath it while the relieved section faces the supporting surface and to contact the section with the arcuate contact section in order to move the newspaper section off the table when it has reached a limit of forward motion. The yieldable resilience enables the mechanism to accommodate sections of varying thickness without interim adjustment.

3,627,303

## MACHINE CONTROL CIRCUIT

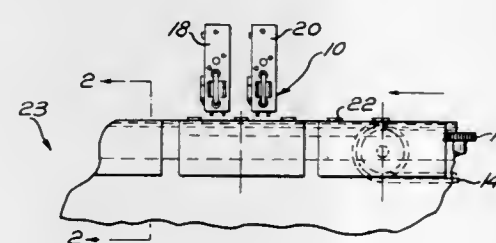
Abraham Zeewy, University Heights, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 7, 1969, Ser. No. 822,490

Int. Cl. B65h 43/02

U.S. Cl. 270—56

18 Claims



Signature-handling machine in which thickness of signature book is sensed by a detector wheel. Detector wheel operates switch whose output is integrated to provide signal for indicating a book of incorrect or correct thickness. Incorrect thickness signal operates with delay to prevent stitching and to effect a rejection of the signature book. Delay for rejection is introduced by a shift register which is shifted by a clock pulse derived from a switch through circuitry which prevents false clock pulses.

3,627,304

## APPARATUS FOR HANDLING CONTINUOUS STRIPS OF MATERIAL

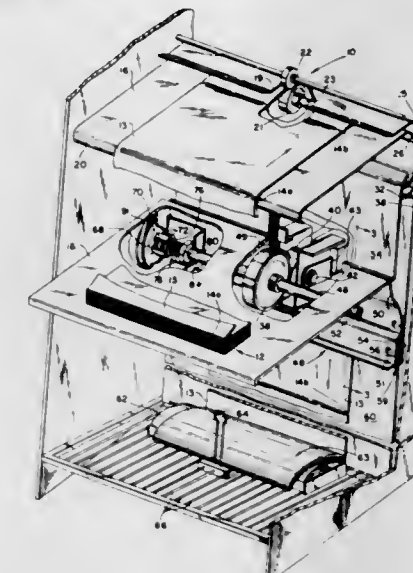
Terrence L. Reeder, and Albert C. Wiegert, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 22, 1969, Ser. No. 843,487

Int. Cl. B65h 45/101

U.S. Cl. 270—61 F

7 Claims



Apparatus is described for handling strips of material that have been folded in opposite directions so as to be easily stacked, e.g. computer readout. The apparatus for handling may be used illustratively with such photographic apparatus as a microfilmer and in particular, to aid the restacking of the folded continuous document after it has been photographed. In particular, the apparatus for handling, stretches the folds of the continuous document over a hump or raised portion and further directs the continuous document along a confined path which is abruptly offset to thereby provide a curvature in a continuous document and to eliminate wrinkles in the folds.

3,627,305

## COLLATOR FOLDER REGISTER ASSEMBLY

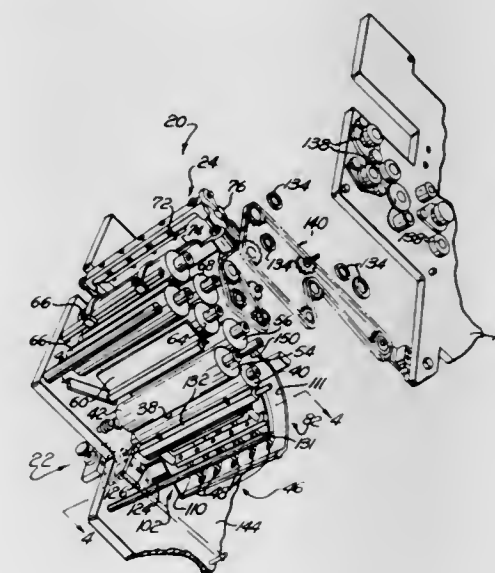
Carl H. Heigl, Westlake, and Keith S. Macey, Rocky River, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 738,031, June 18, 1968, now Patent No. 3,554,531. This application June 17, 1969, Ser. No. 834,122

Int. Cl. B65h 45/14

U.S. Cl. 270—68 A

17 Claims



An improved folder assembly for folding a gather or plurality of sheets along a predetermined fold line includes a



plurality of inclined feed and folder rollers. Front and side registers position the gather in a predetermined relationship with the folder rollers while the gather is supported on an inclined surface. The gather is then folded along the predetermined fold line by the folder rollers. A trimmer assembly having a single movable knife is operable to trim the folded gather to its final size in a single trimming operation.

3,627,306

# METHOD AND APPARATUS FOR FOLDING AND PACKAGING BANDS OF MATERIAL

Hans Affupper, 56 Wuppertal-Barmen, Gosenburg, 100, Germany

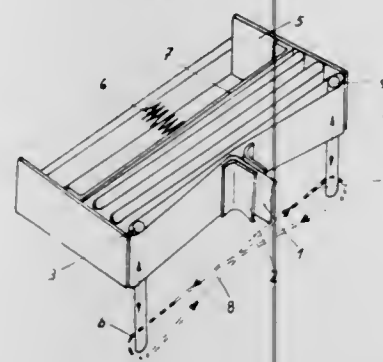
Filed Oct. 10, 1969, Ser. No. 865,256

Claims priority, application Germany, Oct. 12, 1968, P 18 02 889.2

Int. Cl. B65h 45/107, 45/20

U.S. Cl. 270-79

5 Claims



A method and apparatus for the zigzag folding and packaging of continuous bands of materials such as textiles wherein a feed nozzle is moved between at least two spaced-apart and generally parallel winding pins along several types of paths while the pins are selectively retracted along their axes to permit the band of material, which is dispensed from a feed nozzle to span across the pins.

3,627,307

# FILM-CHANGING DEVICE

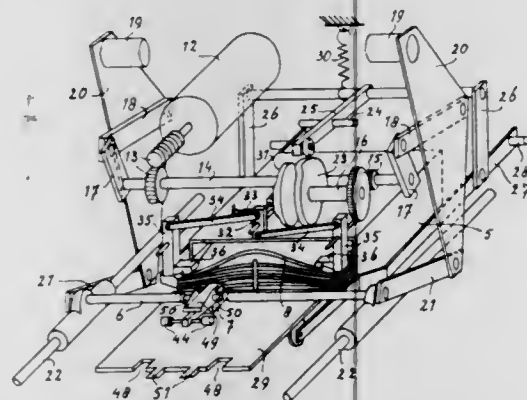
Lucas van der Does, Delft, Netherlands, assignor to N. V. Optische Industrie de Oude Delft, Delft, Netherlands

Filed Feb. 26, 1970, Ser. No. 14,309

Int. Cl. B65h 5/10

U.S. Cl. 271-3

3 Claims



Film-changing device for a photographic camera using film sheets, in which separation of the uppermost sheet from a stack is facilitated by means of pinchers bulging up the forward edge of the sheet. To remove the sheet the bulged edge is clamped by a clip member mounted on a reciprocable carriage and so pulled out of the supply magazine.

3,627,308

# SHEET SEPARATOR

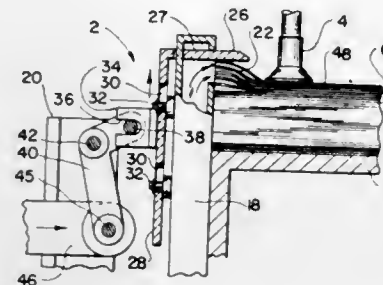
Hans O. Stoeber, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1970, Ser. No. 40,028

Int. Cl. B65h 3/48

U.S. Cl. 271-26

10 Claims



A sheet-separating apparatus is provided for use in conjunction with vacuum fingers for feeding sheets seriatim from a stack. The sheet separator comprises a plurality of stationary hollow tubes adjacent one end of a sheet support, each tube having an orifice in the form of a vertical slot facing the support. Air is supplied to each tube and is directed in a stream through the slot by an oscillating riffling finger associated with each tube and having a tab extending into the slot to vary the effective area thereof. When the riffling finger is in a lowered position against the top of the stack, air is forced through a small area of the slot at a high velocity to separate the edges of the upper sheets as a vacuum finger engages the uppermost sheet. As the riffling fingers move upwardly from the stack the effective area of each slot becomes larger, causing a gradual decrease in the velocity of the air and a gradual increase in volume. After the vacuum fingers have separated the uppermost sheet from the stack the riffling finger moves downwardly to grip the remaining sheets on the stack.

3,627,309

# PACKAGE-FORMING MACHINE

Robert H. Ganz, Bergenfield, N.J., assignor to Continental Can Company, Inc., New York, N.Y.

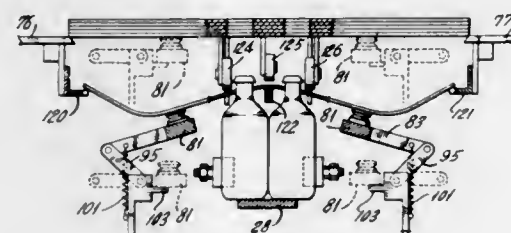
Original application Sept. 27, 1967, Ser. No. 670,882.

Divided and this application Aug. 1, 1969, Ser. No. 862,567

Int. Cl. B65h 3/08, 5/16

U.S. Cl. 271-32

17 Claims



This invention relates to an apparatus for forming a package from a plurality of containers and a wraparound carrier blank. The apparatus includes a mechanism for transferring a blank from a hopper to a mechanism which applies the same to a group of bottles. The mechanism includes means for at least partially separating a lowermost blank from immediately adjacent blanks and a pair of articulately mounted gripping heads which prevent slippage between each gripped blank and the heads, as well as means for bowing each blank during the removal thereof. Articles about which the blanks are wrapped are bottom supported by individual grouped supporting elements while being conveyed by pusher lugs. Means are provided for conveying different numbers of articles and/or different sizes thereof and means are provided for

adjusting the relative position of each pusher lug and associated supporting elements depending upon the particular number and/or size of containers being conveyed. The pusher lugs are articulately carried by endless members to components for accurately sized articles and prevent breakage or damage thereto during the conveying operation.

3,627,310

# FEED APPARATUS FOR CORRUGATED BOX BLANKS

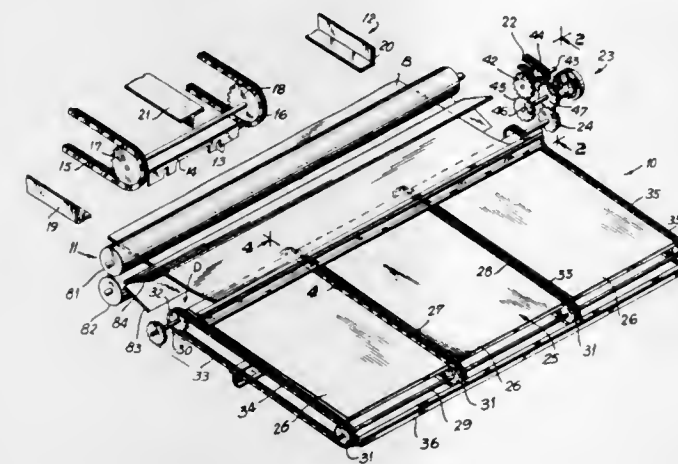
William F. Pulda, Edison, N.J., assignor to Universal Corrugated Box Machinery Corporation, Cranford, N.J.

Filed Feb. 6, 1970, Ser. No. 9,285

Int. Cl. B65h 5/16

U.S. Cl. 271-45

9 Claims



Apparatus for feeding in synchronous fashion box blanks to a box blank processing apparatus, to assure that the blanks are supplied in positive timed relation notwithstanding distortion of the box blanks. The apparatus includes speed change means to prevent interference between projections on the feeding apparatus and the trailing edges of the box blanks during transfer of the blanks to the processing apparatus.

3,627,311

# SHEET SENSOR

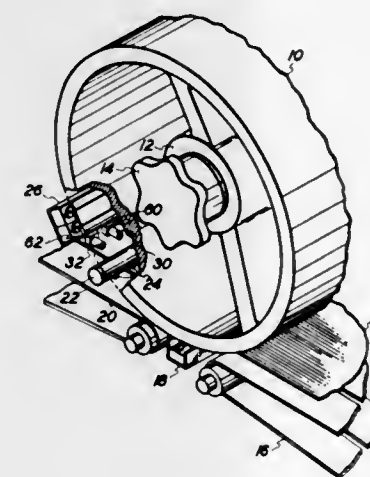
Thomas S. Spinelli, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,914

Int. Cl. B65h 7/06

U.S. Cl. 271-56

5 Claims



Apparatus which inactivates a xerographic machine in response to a copy sheet miss-puff. A sheet of paper remaining on the xerographic drum beyond the stripping station will move beneath a pneumatic sensor head. A second pneumatic sensor head adjacent the edge of the drum at an area beneath which misfed sheets will not pass is pneumatically coupled with the first sensor so that a change of pressure between the

two sensors, as caused by a miss-puffed sheet, will cause the tripping of a fluidic switch to energize a control relay and stop the machine.

3,627,312

# RESTACKING APPARATUS

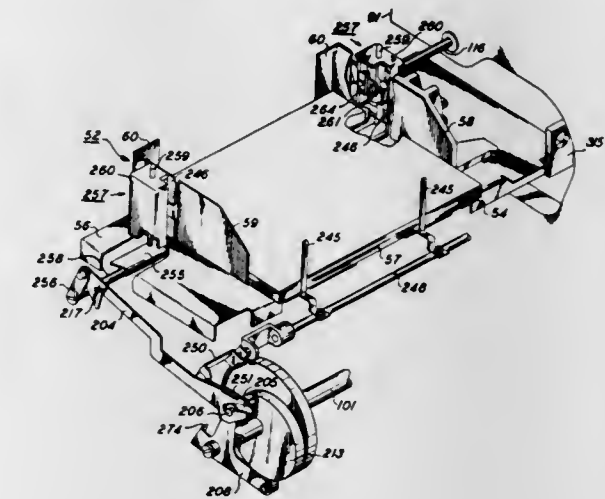
George E. Fackler, Louisville, Ky.; Merton R. Spear, Jr., Penfield, and Charles J. Kubasta, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,791

Int. Cl. B65h 31/38

U.S. Cl. 271-89

3 Claims



Apparatus for use in an automatic copying device is herein disclosed for storing cut sheets of final support material between processing stations. A supply tray is positioned intermediate the processing stations and is arranged to receive and store cut sheets in stack configuration. Jogging members are positioned to act upon the front margin and the side margin of the individual sheets forwarded into the tray wherein the sheets are placed in registration prior to their being forwarded to the next subsequent station.

3,627,313

# PORTABLE JOGGING RECORDER

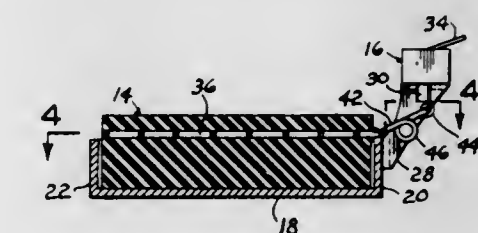
Lewis M. Schonfeld, 343 East 5th, New York, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,210

Int. Cl. A63b 25/04

U.S. Cl. 272-57

1 Claim



A base frame horizontally supports a resilient pad in turn supporting the feet of the user. A fulcrumed lever actuates a counter mounted on the base each time the padding is depressed by the feet of the user.

3,627,314

# POGO STICK TYPE EXERCISING DEVICE HAVING A TORROID SHAPE BOUNCING ELEMENT

Donald F. Brown, Crestwood, Mo., assignor to Tuff Industries, Inc., Hazelwood, Mo.

Filed June 1, 1970, Ser. No. 42,222

Int. Cl. A63b 25/08

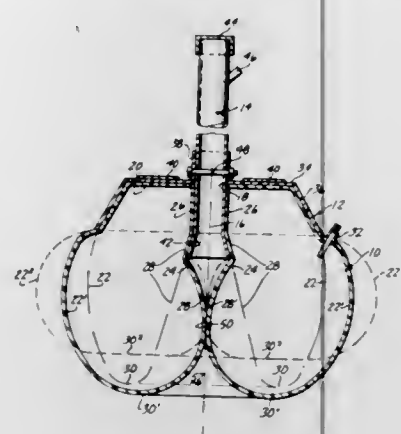
U.S. Cl. 272-57 E

5 Claims

A pogo stick type exercising device characterized by a resilient, inflatable ball in the shape of a torroid defining the



bouncing element of the device, a rigid foot-stand cover for the ball and a pogo stick handle therefor, structured and combined to produce a jumping or bouncing toy and exercising device having enhanced play value and an attractive and effective structure and assembly. The pogo stick handle ex-



tends through the axis of the torroid ball and through the cover, the ball, cover and handle being secured in assembled condition by the engagement of a part of the handle with a part of said torroid ball at its axis and by the attachment of the handle to the cover.

3,627,315

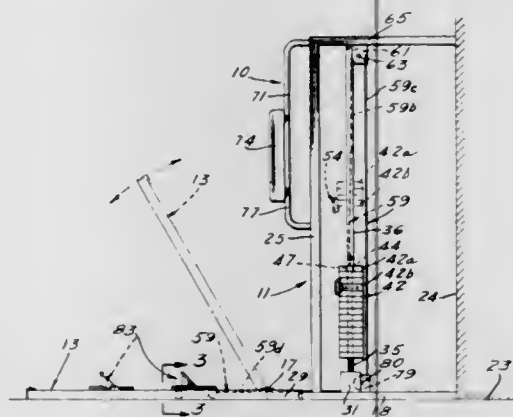
**LEG DEVELOPING DEVICE**

Walter Marcyan, 441 West Kenneth Road, Glendale, Calif.  
Continuation of application Ser. No. 530,506, Feb. 28, 1966,  
now abandoned. This application Nov. 26, 1968, Ser. No.  
779,283

Int. Cl. A63b 21/06

U.S. Cl. 272-81

10 Claims



A leg-developing machine for exercising and developing the important leg muscle and related muscle groups utilized by athletes in stressful contact sports, running and sprinting in natural postures, which comprises a pair of uprights adapted to be faced by the trainee and support the hands and shoulders of the trainee; a pair of reciprocative slidable skates, each to support a foot of the trainee; a pair of tracks each to guide one of the skates in substantial alignment with said uprights and adjustable resistance weights connected through to a pulley system each of the skates to present the desired resistance to the movement of the skates horizontally outwardly from the uprights.

3,627,316

**MAGNETIC FISHING GAME APPARATUS**

Edward Machinski, 3715 N. Milbury Ave., Baldwin Park, Calif.

Filed Feb. 6, 1969, Ser. No. 797,113

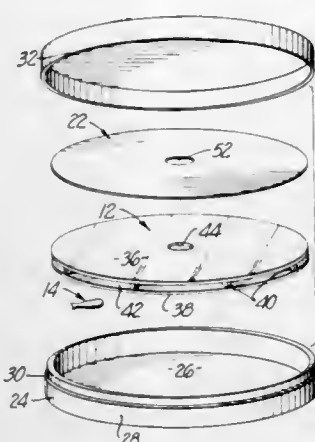
Int. Cl. A63f 9/14

U.S. Cl. 273-1 M

2 Claims

Magnetic fishing game apparatus having a hollow game table simulating a fishing facility such as a pond and provid-

ing an internal chamber for containing one or more magnetic elements simulating fish, and a fishing implement having a magnetic element simulating a lure attached to one end of a line. The object of the game is to simulate catching a fish by initially maneuvering the lure to a position wherein a fish within the table chamber becomes magnetically attached to the lure and then drawing the lure and attached fish toward



an opening in the upper wall or top of the table through which the fish may be pulled from the chamber by the lure. Features of the apparatus include a ramp below the opening for guiding the fish into the opening, a removable shield which permits the game to be played with the fish visible or hidden, a novel baffle arrangement which provides both a maze within and supports the upper plate of the game table, and a novel container for the table.

3,627,317

**GAME APPARATUS FOR WATER SKIERS**

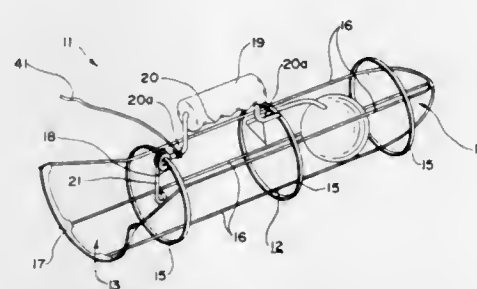
David H. Whitsitt, 1963 Pamela Drive, Memphis, Tenn.

Filed Mar. 13, 1969, Ser. No. 806,937

Int. Cl. A63b 69/18

U.S. Cl. 273-1 R

8 Claims



A game apparatus for water skiers including a ball device, and a ball-scooping device adapted to be held by the water skier for picking up one or more of the ball devices as the water skier moves past the ball devices floating on the water. The ball device includes a pennant mounted by means of a flexible wirelike member on a ball to aid in visual sighting of the ball. The ball-scooping device includes an elongated open framework body portion formed of wirelike members, with one end of the body portion being closed against passage of the ball devices, yet open for passage of water, and the opposite end being open for the reception of the ball devices in the water. A scoop is provided adjacent the end of the open end of the body portion and a fingerlike member is pivotally mounted adjacent the open end of the body member for retaining the ball devices in the body portion. The scoop and a handle are mounted on opposite sides of the body portion.

3,627,318

**FORCE DETECTING TARGET FOR PINBALL MACHINES AND THE LIKE**

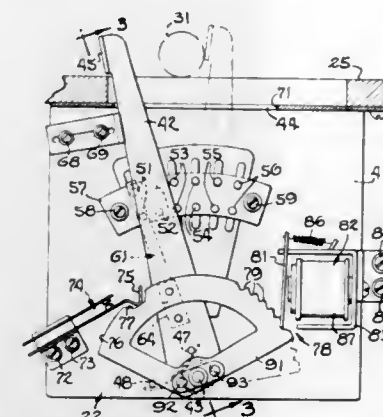
Roman F. Garbary, and Edward P. Krynski, both of Chicago, Ill., assignors to D. Gottlieb & Company, Chicago, Ill.

Filed Jan. 22, 1969, Ser. No. 792,920

Int. Cl. A63b 71/00

U.S. Cl. 273-121 A

12 Claims



A target mechanism for pinball machines and other target-type games which variably actuates an associated scoring mechanism to cause it to register a score representative of how directly and forcefully the target has been struck. The target mechanism has an arm which is driven from its initial position a distance dependent upon how directly and forcefully the target has been struck, and a pulse generating means for converting the distance the target arm is driven to a corresponding number of pulses which are supplied to actuate the scoring mechanism. The pulse generating means comprises a master switch which is operated to provide a predetermined number of pulses each scoring cycle and a plurality of auxiliary switches which are operated sequentially and in synchronism with the master switch such that the operation of each auxiliary switch tends to inhibit a respective one of the master switch pulses. The movement of the target arm at least a predetermined minimum distance from its initial position causes a bypass circuit to be completed around a number of such auxiliary switches corresponding to the extent of the movement so that the appropriate number of pulses are transmitted to the scoring mechanism.

3,627,319

**BATTING TRAINER APPARATUS AND METHOD**

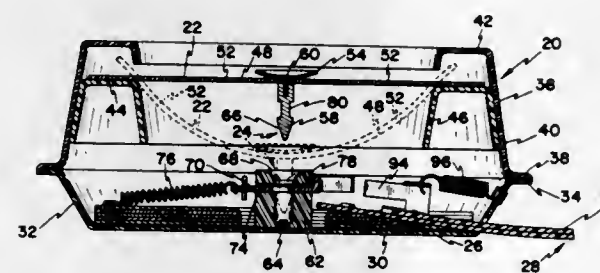
Norman J. Van Skyhawk, Salt Lake City, Utah, assignor to Harmon Killebrew Enterprises, Inc., Salt Lake City, Utah

Filed Oct. 23, 1969, Ser. No. 868,776

Int. Cl. A63b 69/40

U.S. Cl. 273-26 R

19 Claims



A cup for holding a ball is equipped on its underside with a necked plunger that extends downwardly and may engage a latch remotely operable by a treadle and fastened to the base of an annular housing. Planar spring means between the cup and the housing catapults the ball into the air when the plunger is released.

3,627,320

**SCORESHEET FOR RECORDING INDIVIDUAL AND COMPOSITE SCORES**

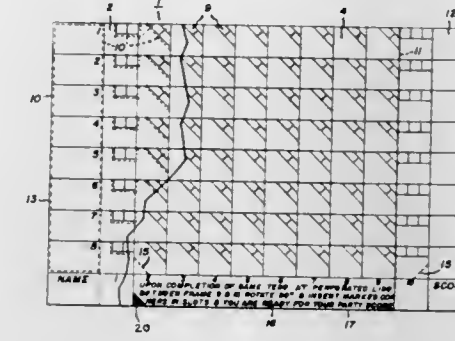
Edmund L. Dopieralski, 26 Angelus Drive, Rochester, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,982

Int. Cl. A63d 5/00; B41I 1/22

U.S. Cl. 273-54 C

8 Claims



A bowling scoresheet assembly having an individual scoresheet with score transfer means on the reverse side of the scoring spaces of all frames under the areas for receiving pin scores, and a partial composite scoresheet and a detachable score-exchange sheet both of which underly different frames of the individual scoresheet so that the pin scores entered in certain frames of the individual scoresheet are automatically transferred to the pin score boxes of the score-exchange sheet as the scores are entered while those entered in the remaining frames are transferred to composite scoresheet. The score-exchange sheet upon being detached from the composite scoresheet being rotatable through 90° to a new position in which it serves as an additional portion of the composite scoresheet to thereby effect a score-exchange operation.

3,627,321

**POOL BALL RACK**

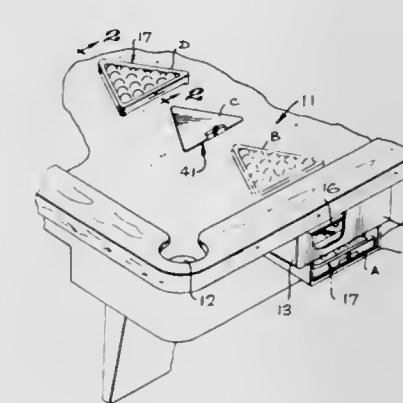
Philip A. Sardo, 17338 Hartland, Van Nuys, Calif.

Filed Apr. 1, 1970, Ser. No. 24,716

Int. Cl. A63d 15/00

U.S. Cl. 273-22

6 Claims



A ball rack for pool or pocket billiards having a removable bottom member adapted to fit into recesses formed in the inner faces along the lower edges of two sides of the rack. An inwardly extending support member on the underside of the toe of the rack and an inwardly projecting flange on the rear edge of the bottom member, the latter slidably engaging a recess in the outer face of the third side of the rack, support the bottom member in the recesses for movement of the rack from the ball return compartment to the surface of the game table. The lower edge of the third side of the rack is cut away to allow the rack and balls to be slid into the ball-spotting position on the table while the bottom member remains in place, its motion restrained by frictional means provided on its lower surface.



3,627,322

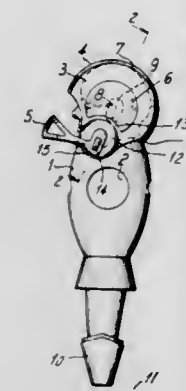
**PROTECTIVE HELMET FOR TABLE SOCCER GAME FIGURES**Xaver Leonhart, 8381 Harburg near Landau, Isar, Germany  
Filed Dec. 31, 1969, Ser. No. 889,528

Claims priority, application Germany, Jan. 20, 1969, G 69 01 966.5

Int. Cl. A63h 13/00

U.S. Cl. 273—85 D

5 Claims



A protective helmet for the head portion of table soccer game player figures, which is firmly resiliently attached to the head of the game figure by loose pivotal connections about the ear portions thereof such that the helmet has natural and free mobile movement relative to the player figure as the figure is pivoted back and forth during play to make the figure appear more active and animated.

3,627,323

**HIT DETECTION SHOCK SYSTEM**

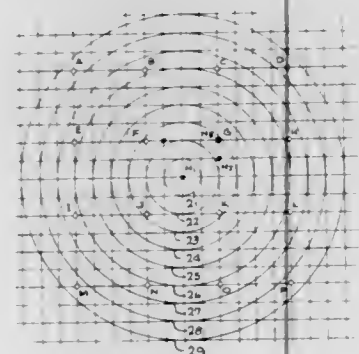
Daniel J. Bozich, and Charles E. Deckard, both of Huntsville, Ala., assignors to Wyle Laboratories, El Segundo, Calif.

Filed Sept. 25, 1969, Ser. No. 860,933

Int. Cl. F41j 5/00

U.S. Cl. 273—102.2 S

8 Claims



A hit detection system comprising energy-sensitive detectors arranged in an array over a target area of interest. Each detector is connected to a separate amplifier whose output is connected to the input stage of a separate shift register through a threshold circuit. The shift registers are clocked simultaneously by clock pulses from a synchronized clock, the clock pulse period being a function of the time required for energy to traverse a distance which equals the dimension of a hit location area of interest. For each hit location area of interest an AND gate is included. The inputs of each gate are connected to selected stages of the shift register so that only when an impact occurs in the hit location area, associated with the gate, does the latter provide a hit-indicating output.

3,627,324

**CHESS GAME**

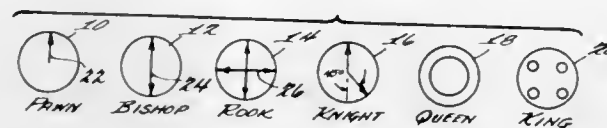
James B. Krepp, 2970 Barclay Square, North Columbus, Ohio

Filed Feb. 5, 1970, Ser. No. 8,976

Int. Cl. A63f 3/02

U.S. Cl. 273—131 B

3 Claims



A chess game wherein the pawn, bishop, and rook pieces are typically circular in shape and have an arrowlike designation on the top face thereof, which indicates the permissible direction or directions in which the piece can be moved. One feature of the game is that in addition to being able to move a piece from the square which it is currently occupying, it is also possible to execute a rotational move only with one of the above pieces. In one form the rotational pieces have octagonal projections engaging octagonal recesses on the board. In a simpler form, the weight of the piece holds it in its rotated position.

3,627,325

**COMPRISING ARTICLE ILLUSTRATING CARDS AND RELATED ODOR-PRODUCING CARDS**

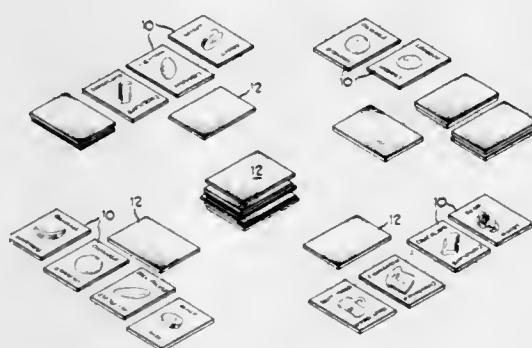
Jeffrey D. Breslow, Evanston, Ill., assignor to Marvin Glass &amp; Associates, Chicago, Ill.

Filed Sept. 9, 1970, Ser. No. 70,790

Int. Cl. A63f 1/00

U.S. Cl. 273—152.1

5 Claims



A card game including two decks of cards, wherein a card from one deck is to be matched with a card from the other deck. The cards of one deck are illustrated with various articles having different characteristic odors, and the cards of the remaining deck have no identification but are capable of producing an odor which must then be matched with one of the illustrated cards. The odor producing cards have a cellular outer surface which encapsulates many tiny fragrant oil particles, so that scratching of such surface exposes some of the fragrant oil to the atmosphere.

3,627,326

**GOLF PRACTICE DEVICE**

Elmer Lynden Berry, 1660 Parrott Drive, San Mateo, Calif.

Filed Oct. 2, 1969, Ser. No. 863,116

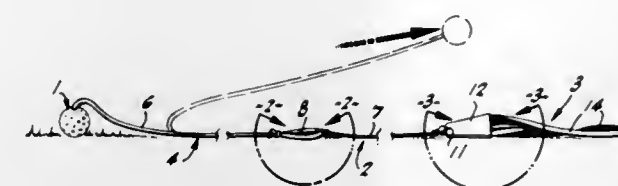
Int. Cl. A63b 69/36

U.S. Cl. 273—183 C

4 Claims

A plurality of streamers are secured to a golf ball for restricting the free flight thereof. The streamers may be of different colors and are connected to the ball by a single length of cord having one of its ends secured to a pair of parallel cords which also may be of different colors. The other end of the single cord is secured to the ball. The

streamers are secured to the pair of parallel cords. If a hook or slice influence is imparted to the ball, the pair of parallel cords will twist upon each other. The single cord is formed of



a heavier material than that used in forming the pair of parallel cords. During ground roll, the single cord absorbs twisting forces that would otherwise be imparted to the pair of parallel cords.

3,627,327

**GOLFING TARGET INCLUDING FREELY HANGING SHEETS AND BALL-COLLECTING RECEPTACLE**

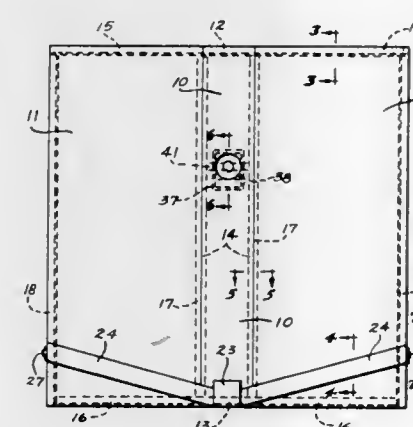
Carl W. White, 1017 Locust St., Kansas City, Mo.

Filed June 26, 1970, Ser. No. 50,133

Int. Cl. A63b 69/36, 63/00, 63/04

U.S. Cl. 273—185 R

6 Claims



A game played with a golf ball for practice to increase the accuracy in direction of the player in hitting the ball, comprising a vertical target which may be made of polyvinyl chloride closed-cell sponge sheet material that is shock absorbent and from which there will be no rebound of the ball, the ball falling dead downwardly along the surface of the target upon striking the target. A detachable return runway for the ball, made of the same material to prevent any bouncing of the ball upon dropping into the runway, is provided at the lower end of the target, inclined toward a receptacle for the ball. The target may be defined by three freely hanging detachable sheets, the center one of which has an opening representing a golf cup, and has a foldable frame to permit ready transportation of the target from place to place. A signal is actuated when the ball passes through the opening.

3,627,328

**GOLF PRACTICE DEVICE INCLUDING STANCE COORDINATOR**

Rudy R. Becker, 1660 W. Bell Road, Phoenix, Ariz., and Jacob Schrlner, 2076 E. Charleston, Phoenix, Ariz.

Filed Mar. 24, 1970, Ser. No. 22,247

Int. Cl. A63b 69/36

U.S. Cl. 273—197 R

5 Claims

A device to permit the practice of golf strokes both indoors and outdoors by striking a spring-loaded object

representing the golf ball and including an adjustable arm including a footpad at its free end for controlling the stance of



the golfer and holding the device in place on club impact. An indicia diagram is provided on the device to indicate to the golfer a yardage assimilation of his stroke.

3,627,329

**TURNTABLE GOVERNOR DRIVE SYSTEM**

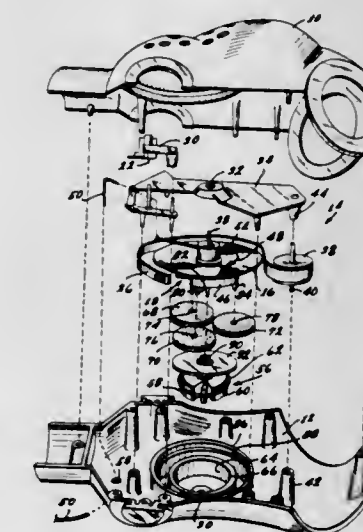
William A. Jacobs, Manhattan Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 5, 1968, Ser. No. 781,491

Int. Cl. G11b 25/04

U.S. Cl. 274—9 R

12 Claims



A mechanism useful in toy phonographs for driving a governor from the record turntable comprising three planetary discs of elastomeric material rotatably mounted on the turntable at different positions around its axis. The rims of the discs are engaged with a large stationary raceway, and with the small hub of a governor, to drive the governor at a high speed.

3,627,330

**PREGROOVED MAGNETIC TRACKS**

Panayotis C. Dimltrapoulos, 3435 Drummond St. Suite 26, Montreal, Quebec, Canada

Filed Oct. 30, 1969, Ser. No. 872,643

Int. Cl. G11b 3/72

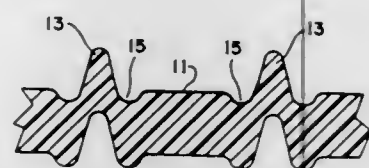
U.S. Cl. 274—41.4

5 Claims

A form of grooved track for pregrooved magnetic records, said records having spaced-apart raised walls defining



between them the surface area of the magnetic track, and there being a recessed groove, or "gutter," between an edge



of the track and the adjoining wall, this arrangement permitting improved seating of the pole shoe of an electromagnetic transducer on the magnetic track of the record.

3,627,331

## AUTOMATIC CARD DEALING MACHINE

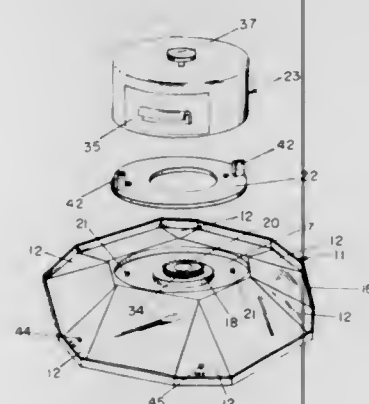
Marlo W. V. Erickson, 6968 S. San Fernando, Tucson, Ariz. 85706

Filed July 21, 1970, Ser. No. 56,893

Int. Cl. A63f 1/14

U.S. Cl. 273-149R

5 Claims



An automatic card dealing machine comprising a base member which contains a driving mechanism. A hollow top section is removably disposed on the base to be rotated about a vertical axis by said driving mechanism. Disposed between the base member and top section is one of a plurality of cam plates, each having a number of cams thereon corresponding to the number of dealing stations arbitrarily selected. The top section carries a horizontal shaft having a plurality of arms extending therefrom and so disposed as to incrementally rotate the shaft by engagement of successive arms with successive cams upon rotation of the top section. The incremental rotation of the shaft causes incremental rotation of a plurality of flexible arms with pliable tips past the cards to be dealt to eject the cards through an opening in the top section.

3,627,332

## SHAFT SEAL ASSEMBLY

Josef Tronser, North Tonawanda, N.Y., assignor to Buffalo Forge Company, Buffalo, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,837

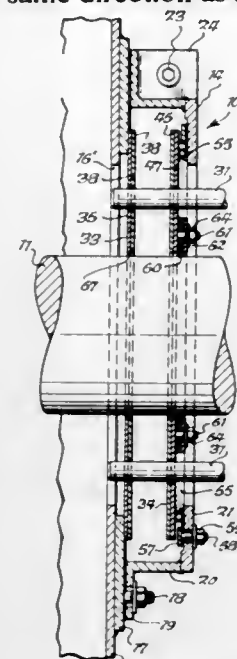
Int. Cl. F16j 15/32

U.S. Cl. 277-65

15 Claims

A shaft seal assembly for a shaft which extends through an enlarged opening in a housing wall which is radially movable with respect to the shaft including a seal housing mounted on the housing wall, a pair of spaced sealing discs bearing on opposite side portions of the seal housing under the bias of springs, said sealing discs having a relative radial sliding con-

nection with respect to the seal housing, and a pair of spaced pins extending in the same direction as said shaft for support-



ing the spaced discs in fixed radial relationship relative to the shaft.

3,627,333

## PISTON RING

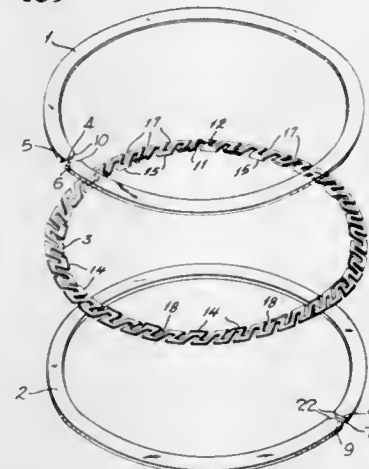
Donald C. Hill, Concord Township, St. Louis County, Mo., assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Jan. 22, 1970, Ser. No. 5,054

Int. Cl. F16j 9/06

U.S. Cl. 277-139

4 Claims



Multiple-piece piston rings for internal-combustion engines in which the cylinder-engaging ring members are biased outwardly by a circumferentially compressible noncylinder-engaging spacer-expander, which is notched in an off-radial direction to minimize the likelihood that the gap-ends of the cylinder-engaging members may hang on parts of the spacer-expander member, and wherein the surfaces which transmit radial thrust extend in a substantially off-axial direction to wedge the cylinder-engaging rings axially apart into so-called "side-sealing" relationship with the sides of a ring groove.

3,627,334

## FLUID-SEALING WASHER AND JOINT ASSEMBLY

Robert R. Reddy, 1195 Michillinda Blvd., Pasadena, Calif.

Filed Mar. 13, 1969, Ser. No. 806,848

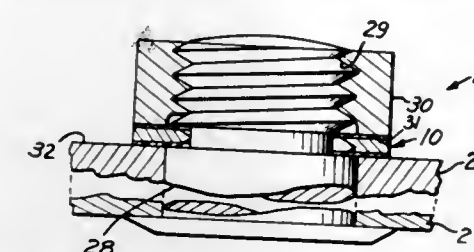
Int. Cl. F16b 43/00, 29/00

U.S. Cl. 277-166

4 Claims

A washer for making a fluid-type seal between a pair of surfaces. The washer has an opening through it which carries at least a fragment of a thread so as to prevent the washer from falling off the threaded end of a bolt or stud which forms part of a joint assembly. It also includes a pair of opposed parallel planar surfaces, each of which bears a layer of solid elastomeric material, said layers being not less than 0.001 and not greater than 0.004 inches thick, the material

of which in such a thin layer has the inherent property of



deforming to conform to irregularities in a surface brought against it, but without cold flow.

3,627,335

## PACKING MEMBER

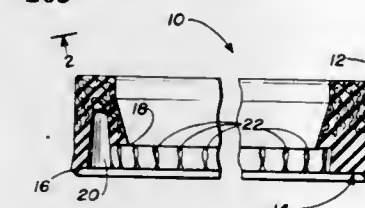
John H. Wheeler, 3921 Marquette St., Dallas, Tex.

Filed Dec. 8, 1969, Ser. No. 882,930

Int. Cl. F16j 15/32

U.S. Cl. 277-205

11 Claims



A packing member comprises an annular body having inner and outer sealing lips extending from one of its ends and from a point near its axial center, respectively. A plurality of holes extend axially into the body from equally spaced points along a circle concentric with the body. The member may be split along a line extending through at least two angles axially of the body, if desired.

3,627,336

## EXTRUSION RESISTANT PRESSURE RING ASSEMBLY FOR SLIDABLY TELESCOPING MEMBERS

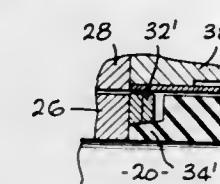
Gordon C. Lawson, 4693 Canoga St., Montclair, Calif.

Filed June 27, 1967, Ser. No. 649,175

Int. Cl. F16j 15/00, 9/00

U.S. Cl. 277-188

4 Claims



A pressure ring assembly to be installed between slidably telescoping members, the assembly having a resilient pressure ring which is compressed axially and thereby expanded radially into pressured contact with the members, and helical antiextrusion backup rings at the ends of the pressure ring which expand radially to prevent extrusion of the pressure ring between the members.

3,627,337

## PACKING RING FOR USE UNDER HIGH TEMPERATURES AND PRESSURES

Aaron J. Pippert, Houston, Tex., assignor to Universal

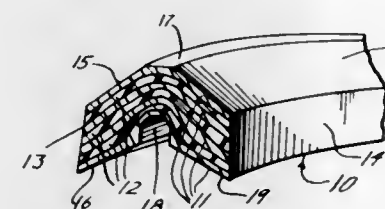
Packing &amp; Gasket Company, Houston, Tex.

Filed Jan. 17, 1969, Ser. No. 791,936

Int. Cl. F16j 15/08

U.S. Cl. 277-233

8 Claims



A packing ring which would normally be used in a stuffing box or the like but which may be of any of numerous cross

sections desired for specific installations, the packing ring being made up of alternating layers or laminations of thermosetting materials and thermoplastic materials respectively. The thermosetting materials and the thermoplastic materials could be of an desired materials of the type indicated but would preferably be selected so as to impart to the finished seal ring characteristics of the materials so selected which might be desired for a specific surface. Each layer or lamination would be made up of a fabric treated with rubber or some other suitable natural or synthetic resin and, in the case of the thermoplastic composition materials, would be made up of Nylon, tetrafluoroethylene, or acrylic plastic by way of examples, and in either case being impregnated with rubber or a synthetic resin or the like. The thermosetting materials would consist of fibers or fabrics of cotton, asbestos, fiber glass, or the like, by way of example, likewise impregnated with rubber or a resinous compound. These would be laid in alternating fashion one on top of the other to provide a sufficient volume for the body to be formed, and then would be pressure molded into the cross section shape desired and heat treated until both the thermoplastic and the thermosetting laminations would solidify and bond to one another to make up a monolithic ring.

3,627,338

## VACUUM CHUCK

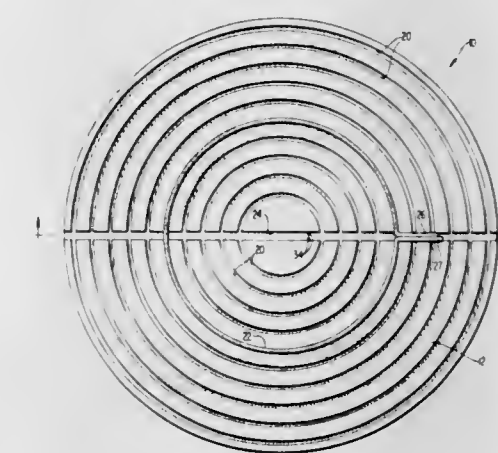
Sheldon Thompson, 2187 Twelfth St., Sarasota, Fla.

Filed Oct. 9, 1969, Ser. No. 864,996

Int. Cl. B23b 31/30

U.S. Cl. 279-3

16 Claims



A vacuum chuck having a workpiece holding face including a plurality of concentric circular grooves therein dimensioned to removably receive an elongated resilient sealing member which projects from the face of the chuck to seal against the workpiece when a vacuum is applied to the area enclosed by the seal below the workpiece. Vacuum is applied to the face of the chuck through a passage which terminates in a port opening in the face of the chuck in a diametrically extending cross groove which intersects all the circular grooves. The cross groove is also employed to receive the opposite ends of the sealing member, which is discontinuous to enable the sealing member to be adjusted into any one of the circular grooves depending on the size of the workpiece.

3,627,339

## BRACKET FOR MOUNTING SHAFTS

Lorenz J. Burweger, Millington, N.J., assignor to Lee Controls, Inc., Berkeley Heights, N.J.

Filed Feb. 2, 1970, Ser. No. 7,752

Int. Cl. B23b 31/10

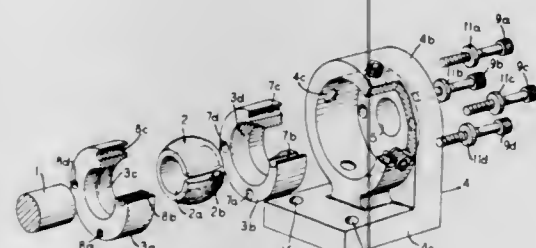
U.S. Cl. 279-8

4 Claims

A self-aligning mounting bracket for convenience in orienting work pieces comprising cylindrical shafts and rods. The bracket comprises a ball bushing having a cylindrical bore designed to accommodate the cylindrical work shaft. The ball bushing has a peripheral longitudinal slit parallel to



the axis of the bore. The slitted ball bushing, including the work piece, fits rotatably between a pair of bearings which are disposed coaxially to form a composite semispherical cavity. The assembled bearing members encasing the ball bushing are fitted at one end into a slightly oversized cylindrical socket in a pedestalled housing by means of a plurality of screws whose heads bear against recessed, slightly oversized holes in the rear face of the housing, and whose shanks are interposed longitudinally in aligned holes in symmetrical positions around the edges of each of the bearing elements.



3,627,340

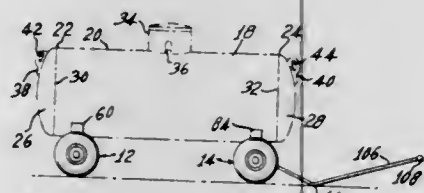
## TRANSPORTING SYSTEM

John E. Shippey, 2711 Dunn Ave., Jacksonville, Fla.

Filed Sept. 10, 1969, Ser. No. 856,670

Int. Cl. B60p 3/22

U.S. Cl. 280—5



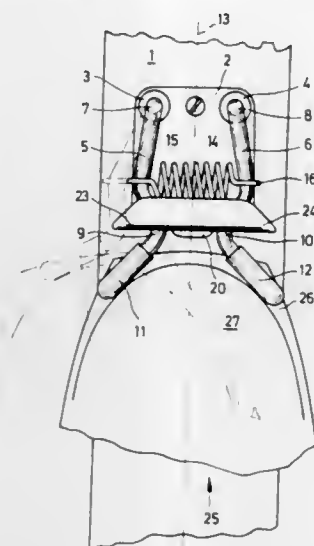
A system for transporting a cylindrical tank having a circular side and a pair of spaced horizontal legs extending outwardly therefrom including a pair of assemblies, each having a pair of wheels mounted on ends of an axle. Each assembly has a hollow box member positioned above and connected to its axle, the box including a spaced pair of sidewalls extending generally horizontally and vertically with the horizontal portion of each sidewall having a curved upper edge generally conforming to and supporting the tank's circular side adjacent thereto. Each assembly being arranged to engagingly receive between vertical portions of the box sidewalls one of the legs with the same being maintained between the sidewall vertical portions to inhibit relative longitudinal movement of the assemblies with respect to the tank.

3,627,341  
FRONT SAFETY BINDING FOR A SKI  
Robert Lusser, deceased, late of Munich, Germany (by Heinz G. Wagner II, executor), assignor to Lusser GmbH & Co., Ski-Sicherheitsbindungen KG, Munich, Germany  
Filed Feb. 6, 1970, Ser. No. 9,165  
Claims priority, application Germany, Feb. 7, 1969, P 19 06 244.9

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T

3 Claims



A front safety binding for a ski boot in which two rearwardly diverging jaws arranged on two independently swivable spring-biased arms serve, in their normal position, to engage the toe of the ski boot and which arms, when a predetermined torsional force is exceeded, can be displaced laterally against the action of the spring from a stop plate located between the arms until the toe of the ski boot is released by the laterally displaced jaw. The rear surface of the stop plate is provided with a support of material which, together with the material of the toe portion of the boot, has a lesser coefficient of friction than the material of the stop plate per se.

3,627,342

## COLLAPSIBLE BABY CARRIAGE

Francois Morellet, Cholet, France, assignor to Societe Anonyme dite: Morellet-Guerineau, Cholet, France

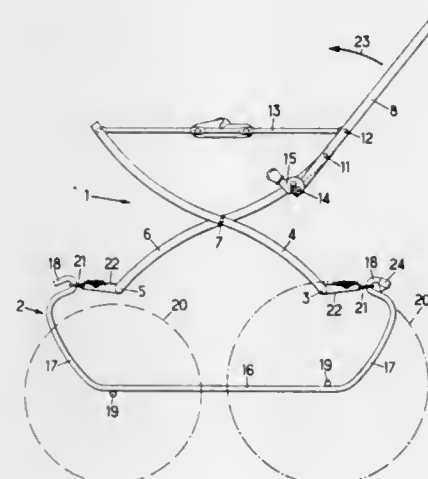
Filed Dec. 17, 1969, Ser. No. 885,732

Claims priority, application France, June 16, 1969, 6920002

Int. Cl. B62b 11/00

U.S. Cl. 280—36 B

5 Claims



Baby carriage having an X frame, the members of which are pivotally connected, and a U-shaped spring suspension.

The lower ends of the X are slidably attached to the arms of the U. When the X is short and tall, the frame tensions the spring members of the suspension and projects above it. When the X is wide and short, the frame slides down on the arms of the U so that it may be stored at a minimum height.

3,627,343

## COLLAPSIBLE INVALID CHAIR

Wilhelm Meyer, 3 Kleinbahnhofstrasse, 4973 Vlotho, Weser, Germany

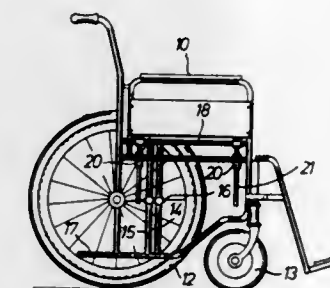
Filed Aug. 26, 1969, Ser. No. 853,035

Claims priority, application Austria, Oct. 16, 1968, A10123/68

Int. Cl. B62b 11/00

U.S. Cl. 280—39

10 Claims



An invalid chair has two side frames supporting a seat, and a wheel on each frame. The frames are joined by two crossing struts, with a joint between said struts at the crossing point which provides two axes of rotation for the struts. One (transverse) axis of rotation enables the frames to rotate relative to each other and thus assist progress over rough ground. The other longitudinal axis of rotation gives scissorslike movement to the struts, enabling the chair frames to be collapsed towards each other for transport.

3,627,344

## CONVERSION KIT FOR A SHOPPING CART

Anthony Rizzuto, 37-07-92nd St., Jackson Heights, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,304

Int. Cl. B62b 3/02

U.S. Cl. 280—47.2



A conversion kit is provided for a shopping cart including a basket portion having an axle with a pair of wheels rotatably mounted thereon, the cart also including a pair of spaced legs. The conversion kit includes axle means comprising a pair of portions relatively movable with respect to one another, and locking means is provided for locking the portions of this axle means in adjusted portion. Clamp members

are secured to opposite ends of the axle means of the conversion kit and receive the lower ends of the legs of the shopping cart to convert a two-wheeled shopping cart into a four-wheeled shopping cart.

3,627,345

## ENERGY ABSORPTION DEVICES FOR VEHICLES

Noel Le Mire, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

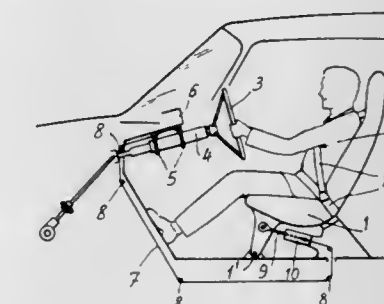
Filed Dec. 8, 1969, Ser. No. 882,843

Claims priority, application France, Dec. 9, 1968, 177205

Int. Cl. B62d 1/02

U.S. Cl. 280—87

2 Claims



Energy absorption device comprising a fixed element and a movable element both connected to a frame structure and to the seat of a vehicle equipped with anchor means for safety belts or harnesses, and adapted to pivot about an axis rigid with the vehicle against the resistant force of the energy absorption device, characterized in that a member rigid with said movable element of the energy absorption device or of said seat cooperates with another energy absorption device mounted on a retractable or collapsible element in the passenger's compartment, said other energy absorption device being disposed for example within the steering column.

3,627,346

## STEERING MOVEMENT TRANSMISSION SYSTEM FOR VEHICLES

Nikolaus Dorner, Kipfenberg, and Albert Dillenburger, Buchholz, both of Germany, assignors to Stabilus Industrie- und Handelsgesellschaft mbH, Koblenz-Neuendorf, Germany

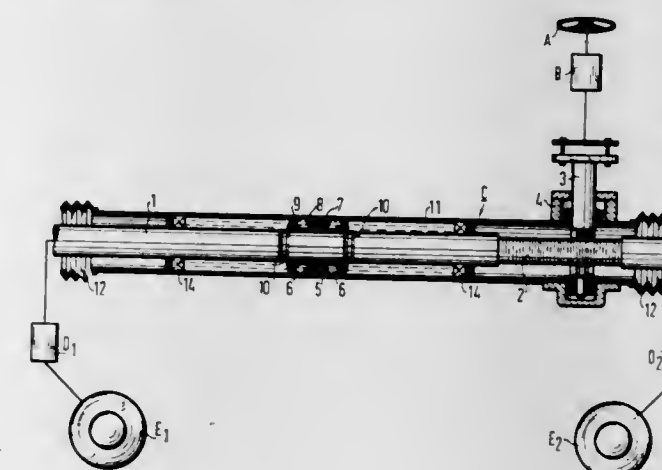
Filed Feb. 4, 1970, Ser. No. 8,602

Claims priority, application Germany, Feb. 4, 1969, P 19 05 306.6

Int. Cl. B62d 3/12

U.S. Cl. 280—90

7 Claims



Steering systems for vehicles comprise transmission members connected in series with one another. These transmis-



sion members transmit the rotational movements of the steering wheel to the road wheels for control of the direction of the road wheels. The transmission elements include a hydraulic damping cylinder which prevents heavy shocks from the road wheels from reaching the steering wheel and wobbling of the road wheels.

3,627,347

## IDLER ARM JOINT

Edward J. Herbenar, Detroit, Mich., assignor to TRW, Inc., Cleveland, Ohio

Filed Nov. 26, 1969, Ser. No. 880,283

Int. Cl. B62d 17/00

U.S. Cl. 280—95 A

4 Claims



A bracket support joint for an idler arm in the steering linkage of the dirigible wheels of a vehicle. The support includes a bracket portion and a joint portion, the bracket having a hollowed end internally threaded which receives an externally threaded bolt which in turn is press fitted into the idler arm linkage member with the bolt extending upwardly into the internally threaded end of the bracket member.

3,627,348

## LEVELING UNIT WITH INTEGRAL MOTOR-DRIVEN FLUID PUMP

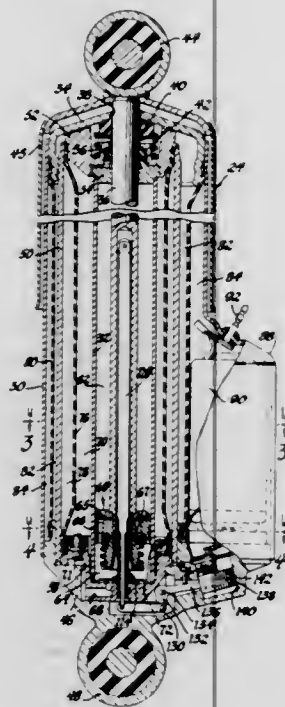
Gerard T. Klees, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 18, 1970, Ser. No. 47,421

Int. Cl. B60g 17/08

U.S. Cl. 280—124

3 Claims



In preferred form, a combination shock absorber and self-leveling unit for automotive suspension systems including an integral electric motor-driven fluid pump which draws hydraulic fluid from the shock absorber's reservoir chamber, pressurizes it and transfers it to a high-pressure booster chamber connected to the shock absorber's compression chamber where it produces a force on the piston rod area. A

height-sensing device which energizes the pump motor has a laterally deflectable cantilevered arm supported at one end by a flexible tube and whose other end is free to contact a cammed surface on the shock absorber piston rod. Lateral movement of the lever by the action of the cammed surface actuates an electrical switch to energize the electric pump motor when in one operative position and opens a bleed valve when in another operative position.

3,627,349

## SKIING DEVICE

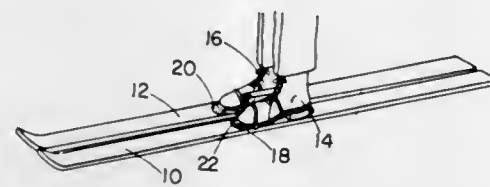
Jack T. Barry, 1322 Lucinda Way, Tustin, Calif.

Filed Oct. 15, 1969, Ser. No. 866,702

Int. Cl. A63c 11/00

U.S. Cl. 280—11.37 E

5 Claims



A device for use by a skier in maintaining his skis in parallel relation during use while permitting fore and aft and up and down relative movement thereof comprising plates strapped to the inside of the skier's feet or boots and a vertical channel means fixed to the interior surface of each such plate. The channel means of one plate carries a slide member therein for movement in vertical rectilinear directions and, in turn, carries a horizontally disposed channel. The other channel means also carries a slide member for vertical rectilinear movement therein, but also has a horizontal slide member which slidably fits in the horizontal channel of the other plate. Thus the vertical channels and respective slide members permit relative up and down movement of the skis while the horizontal channel and slide permit horizontal relative movement therebetween.

3,627,350

## BUMPER FLIP STEP

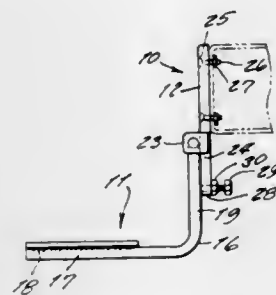
Denver F. Cross, 3036 N. Arlington Pl., Portland, Oreg.

Filed Dec. 31, 1969, Ser. No. 889,651

Int. Cl. B60r 3/02

U.S. Cl. 280—166

3 Claims



A retractable step for an automotive vehicle, the step comprising a horizontal plate forming a tread which is supported upon a pair of angle configured brackets which are pivoted at one set of ends. The tread when retracted rests over the vehicle bumper, and the tread is movable to an operative lowered position where a person may conveniently step thereupon when entering or leaving the vehicle.

3,627,351

## TREE SHEARING AND BUNCHING APPARATUS

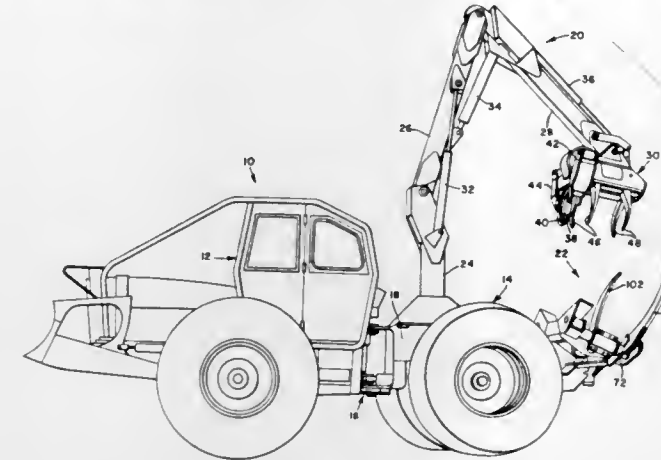
Robert Paul Zimmerman, Champaign, Ill., and Kenneth Quentin Kessler, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 22, 1970, Ser. No. 30,695

Int. Cl. B60p 7/00

U.S. Cl. 280—179 R

10 Claims



A tree shear assembly and an accumulator assembly are supported on a mobile vehicle. The tree shear assembly includes a shear head mounted at the end of an articulated boom structure and having tongs for grasping a tree during the shearing operation and for holding the tree while the tree is swung into a skidding position wherein the lower portion of the tree is placed for support at two points on the accumulator assembly. The accumulator assembly includes a pair of pivoted tongs or arms which are swung towards and away from each other by a hydraulic actuator respectively for holding trees on the accumulator bed and for either permitting additional trees to be placed on the bed, or for permitting the entire load to be dropped in a bunch. The actuator is connected in a hydraulic system which supplies a source of constant fluid pressure to the actuator which in turn urges the arms into holding engagement with the trees on the accumulator assembly. The accumulator assembly is pivotally mounted on the vehicle for movement about vertical and horizontal axes so that the trees being skidded trail the vehicle and follow uneven terrain without placing undue stresses on the accumulator assembly.

3,627,352

## DRAWBAR CONSTRUCTION

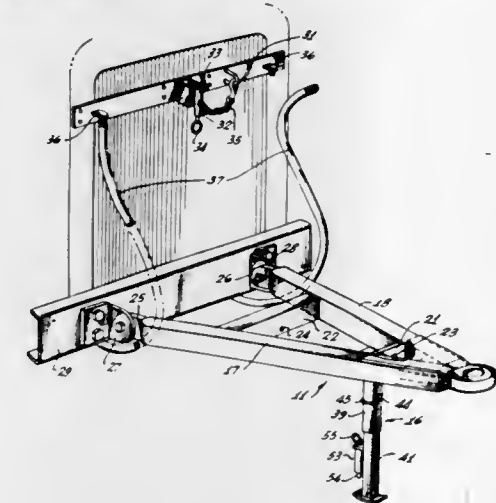
Jack Canole, Cerritos, Calif., assignor to Signal Trucking Service, Ltd., Los Angeles, Calif.

Filed Aug. 25, 1969, Ser. No. 852,638

Int. Cl. B60d 1/14

U.S. Cl. 280—475

10 Claims



A drawbar construction for a self-propelled vehicle adapted to be towed in tandem from a lead vehicle com-

prising of angularly disposed struts converging to a point where they support a hitch eye, and having their remote ends rotatably mounted on the frame of the vehicle to be towed. Latch means at the front of the vehicle hold the drawbar in inoperative, substantially vertical position against the front of the vehicle. Pivotaly mounted on a crossbar between the struts is a supporting leg adapted to be latched to the drawbar in inoperative position, and rotatable relative to the drawbar into a vertical position where it supports the drawbar hitch eye in position to be engaged automatically with a hitch on the lead vehicle. The supporting leg for the drawbar is vertically adjustable to locate the hitch eye in proper relation for its engagement with the forward hitch.

3,627,353

## PIPE JOINT

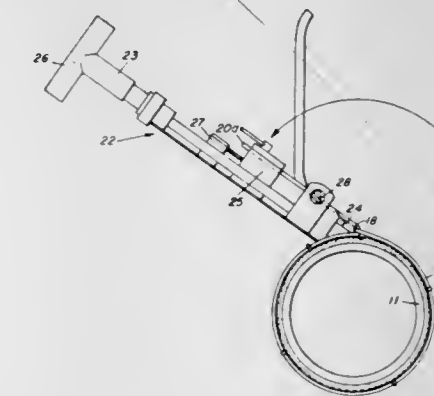
Barry J. Blumenfeld, Randallstown, and William T. Samuelson, Timonium, both of Md., assignors to Cast Iron Soil Pipe Institute, Washington, D.C.

Filed Nov. 3, 1969, Ser. No. 873,366

Int. Cl. F16l 35/00

U.S. Cl. 285—39

10 Claims



A pipe joint for two pipe sections, including an annular packing member of compressible, leakproof material bridging the adjoining pipe sections and a semistiff, flexible clamping band, transversely corrugated substantially throughout its length, overlying the packing member with its longitudinal extremities overlapping. A clamping wire unit secures the clamping band tightly around the packing member and adjoining pipe ends and consists of a single strand of wire bent into the form of a "U" to provide two leg portions or shanks connected by a bight portion. The leg portions are coiled around the clamping band one or more times and passed beneath and through the bight portion, and the respective coils are then tightened by a clamping tool, to compensate for tolerance differences in the pipes being joined simultaneously but independently after which the ends of the leg portions are bent back over the bight portion to lock the coils in their tightened positions. The corrugated clamping band is provided around its periphery with annularly aligned staples which loosely receive the respective wire coils and retain them in place on the clamping band, while permitting their relatively free sliding movement around the clamping band during tightening.

3,627,354

## REINFORCED FLEXIBLE CONNECTOR

George G. Toepper, Elgin, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 27, 1970, Ser. No. 23,354

Int. Cl. F16l 9/14

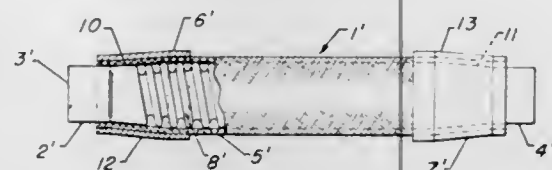
U.S. Cl. 285—55

7 Claims

A flexible connector and the method of fabricating the same. The connector includes a tubular member having a central corrugated portion and uncorrugated end portions. A sleeve of braided strands is disposed around the tubular



member to encompass the corrugated central portion and overlap at least a part of the uncorrugated end portions of the tubular member. A collar is disposed in a force-fit



manner around each end of the sleeve to overlap the part covering an uncorrugated end portion to thus secure the sleeve in place and provide reinforcement for the corrugated portion of the tubular member.

3,627,355

## FLUIDTIGHT SWIVEL JOINT

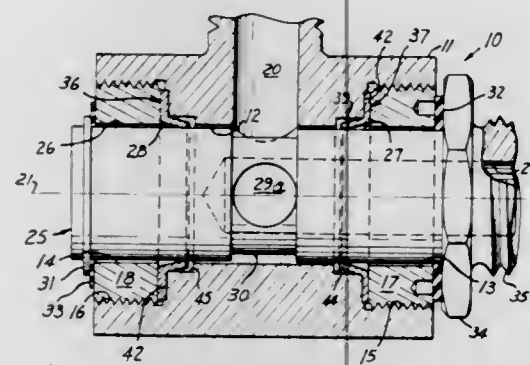
Robert R. Reddy, 1195 Michillinda Blvd., Pasadena, Calif.

Filed May 23, 1969, Ser. No. 827,404

Int. Cl. F16l 17/00

U.S. Cl. 285-110

1 Claim



A fluidtight sealing joint having a rotatable rotor mounted in a bore in a body, the bore being tapped by a port and the rotor having an internal passage communicating with said port. The rotor includes a pair of cylindrical portions on opposite sides of the port. Adjacent to each of these cylindrical portions is a lip seal having a mounting flange secured to the body, and a sealing lip bearing against the respective cylindrical portions. The sealing lips taper toward the cylindrical portion as they extend axially toward the port so as to form continuous seals symmetrical around the central axis of the bore and of the rotor so as to make a fluid seal at all rotational positions of the rotor.

3,627,356

## DIRECTIONAL DRILLING APPARATUS WITH RETRIEVABLE LIMITING DEVICE

Edwin A. Anderson, 1104 Chimney Rock Road, Houston, Tex.

Filed Nov. 19, 1969, Ser. No. 877,978

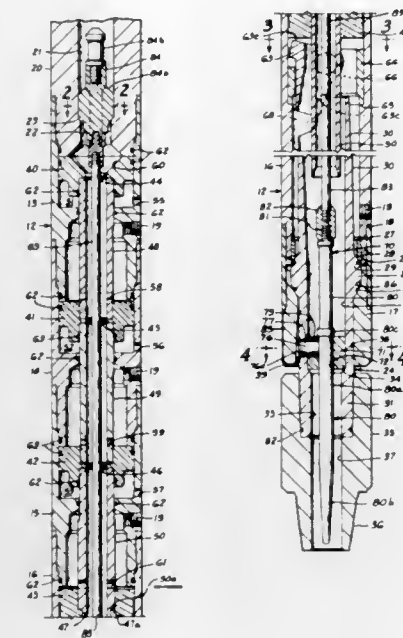
Int. Cl. E21b 7/08; F16l 27/04

U.S. Cl. 285-118

23 Claims

A deflection tool is provided for use in the directional drilling of a well bore into the earth. The tool includes a lower tubular assembly pivotally mounted within an upper tubular assembly. I use, the upper assembly is coupled to the lower end of a string of drill pipe and the lower assembly is coupled to a downhole fluid motor unit which drives a rotary drill bit. Drilling fluid flowing down the drill string drives a piston and lever mechanism located in the upper tubular as-

sembly for urging the lower tubular assembly to pivot relative thereto. When a zero or other less than maximum pivot angle is desired, a retrievable limiting probe is run into the deflec-



3,627,357

## PIPE CONNECTOR FITTING

Forest E. Sanders, Box 206, Green City, Mo.

Filed Oct. 22, 1969, Ser. No. 868,519

Int. Cl. F16l 55/00

U.S. Cl. 285-174

14 Claims



A pipe connector fitting for joining two sections of pipe in axial alignment where neither of the joinable ends of the pipe sections have fixed end flanges or where only one of the sections has a fixed end flange on the joinable end and including replacement of a section in a pipeline where the sections to which the replacement is to be attached may be rigidly anchored. The pipes connected may be metal or plastic or metal to plastic. A compressible gasket-and-flange-type compression ring are mounted on the joinable end of a pipe section having no fixed end flange. The gasket and compression ring have abutting tapered surfaces with the gasket projecting slightly beyond the face of the compression ring. Where one section has a fixed flange, the ring is joinable to such flange so that the gasket is tightened into sealing engagement with the exterior of the joined pipe and with the flange and ring. With no fixed flanges on the joinable pipe sections, a like compression ring and gasket are provided on the opposed joinable pipe ends with a spacer washer or wafer intermediate such ends so that the respective gaskets are compressed into sealing engagement against the pipe and against opposite faces of the washer. A stepped shaped spacer washer is provided for joining pipes of different diameters.

3,627,358

## COUPLING FOR IMPERFORATE FLANGES

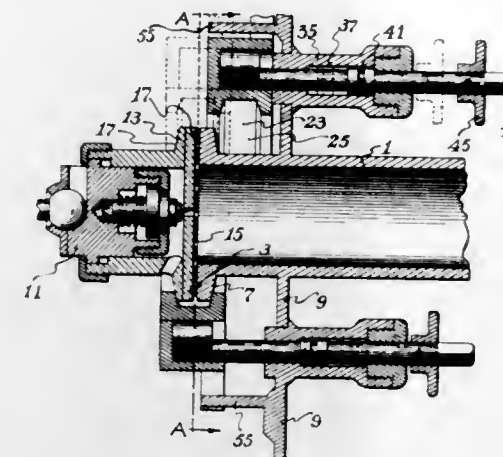
John Ray Polston, 3346 South Wheeling, Tulsa, Okla.

Filed Nov. 14, 1969, Ser. No. 876,894

Int. Cl. F16l 23/00

U.S. Cl. 285-406

4 Claims



Imperforate flanges are releasably coupled with a wedging action by a member that moves radially relative to the flanges and that has an arcuate recess having tapered sidewalls. The recessed member is engaged with and disengaged from the flanges by a rotatable cam and has a sliding connection that restrains its movement to movement in a plane parallel to the axis of the flanges.

3,627,359

## FRAME CORNER LOCK

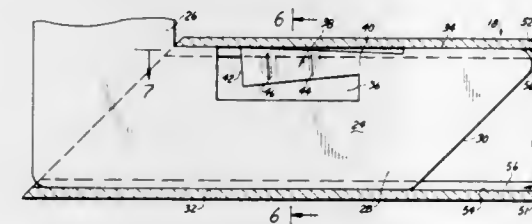
Richard D. Paul, Mentor, Ohio, assignor to National Screen Service Corporation, New York, N.Y.

Filed Jan. 6, 1970, Ser. No. 902

Int. Cl. F16b 7/16

U.S. Cl. 287-189.36H

4 Claims



A corner lock for coupling adjacent frame rails of a poster frame or the like comprises angularly disposed arms each adapted to be inserted into a channel of a different adjoining rail. Each arm comprises a body part adapted to be inserted into the rail and having a resilient member of generally sinusoidal shape attached thereto, said member having longitudinally spaced parts respectively extending laterally beyond sides of the body portion and adapted to be engaged and resiliently forced laterally inwardly by the side of the channel. The member has a biting edge adapted to dig into a side of the channel, thereby to ensure that the corner lock does not accidentally separate from the rail.

3,627,360

## CONTROL CABLE AND ANCHOR ASSEMBLY

Harmond E. Berno, Farmington, Mich., assignor to Pennsylvania Wire Rope Corporation, Williamsport, Pa.

Filed May 25, 1970, Ser. No. 41,156

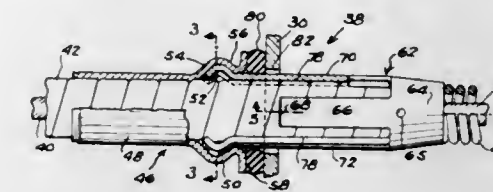
Int. Cl. F16b 9/00

U.S. Cl. 287-20 R

21 Claims

One part of a cable anchor comprises a sleeve adapted to be swaged around a cable sheath and having one or more

receptacles therein. The other part has resilient prongs bendable inwardly for insertion within the sleeve. Outward projections on the prongs engage within the receptacles when the prongs return resiliently outwardly to fasten the two parts



together. When the cable sheath is inserted into the fastened parts, it prevents inward movement of the prongs and locks the parts together. The sleeve is swaged down around the cable sheath to complete the assembly.

3,627,361

## FLUID MOTOR WITH A REMOVABLY LOCKED PISTON ROD CONNECTION MEANS

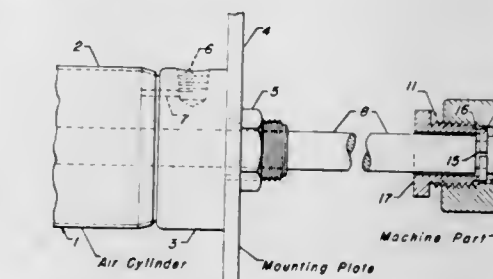
Charles W. Bimba, 101 Main St., Monee, Ill.

Continuation-in-part of application Ser. No. 646,052, June 14, 1967, now Patent No. 3,426,656. This application Oct. 28, 1968, Ser. No. 770,917

Int. Cl. F16j 7/00

U.S. Cl. 287-20 P

3 Claims



In an air cylinder or other fluid motor unit, a special connection means is provided which eliminates the problem of having threading on the end of the piston rod itself and in lieu thereof has a split ring in a groove positioned near the end of the rod such that a "slip-on" threaded locking nut attachable to the work load piece can bear against the ring and clamp the rod tightly into a rod receiving recess within such workload piece. Split-ring and clamping nut or bushing type connection means for the piston rod may also be provided for threadfree attachment to the piston in the motor unit.

3,627,362

## SPLINE AND SEAT CONNECTOR ASSEMBLIES

John H. Brenneman, 389 Prospect Ave., Princeton, N.J.

Continuation-in-part of application Ser. No. 837,495, Sept. 1, 1959, now abandoned, and a continuation-in-part of

514,573, Dec. 17, 1965, now abandoned, which is a

continuation-in-part of application Ser. No. 513,652, Nov. 26,

1965, now abandoned, which is a continuation-in-part of

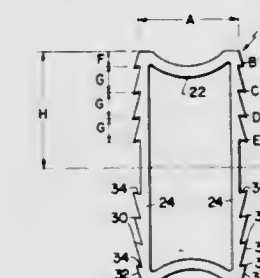
application Ser. No. 174,554, Feb. 20, 1962, now abandoned.

This application Aug. 13, 1969, Ser. No. 859,230

Int. Cl. F16b 5/07

U.S. Cl. 287-20.92 B

20 Claims



A continuous spline and seat connector assembly that is adapted for use in the construction of buildings such as hous-



ing. The spline may be inserted into a seat member in the direction of the depth of the seat member and its removal opposed by a locking action which occurs after the insertion of the spline.

3,627,363

# FASTENER FOR SECURING A MEMBER TO A SHAFT END

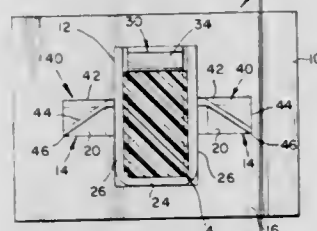
Harold S. Van Buren, Jr., Lexington, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 21, 1970, Ser. No. 65,829

Int. Cl. F16d 1/06

U.S. Cl. 287—53 H

6 Claims



A fastener for releasably securing a knob or the like member to a shaft end, wherein the knob has an open end cavity formed therein and a pair of opposed, relatively narrow slots extending along side the cavity in open communication therewith. The fastener has an open ended shaft receiving and retaining housing adapted to be seated in the knob cavity and a pair of relatively rigid wings joined to and extending laterally outwardly from the housing. The wings are adapted to seat in the opposed slots in the knob when the housing is pressed into the cavity. Each of the wings carries a barlike projection which bitingly grips the surfaces of the knob adjacent the slots to secure the fastener in the assembly. A leaf spring disposed within the housing is adapted to be placed in tensioned retaining engagement with a surface area of a shaft end inserted into the fastener housing.

3,627,364

# JOINT FOR CONNECTING PROFILED RODS

Martin Antoon Van Riet, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

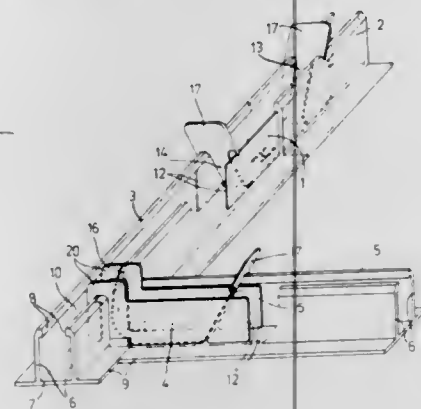
Filed Feb. 18, 1970, Ser. No. 12,295

Claims priority, application Netherlands, Feb. 25, 1969, 6902949

Int. Cl. F16b 7/22

U.S. Cl. 287—189.36

5 Claims



A joint for connecting two profiled rods of U-shaped section and having a coupling manufactured from sheet material and comprising two resilient lugs by which the coupling is clamped on the profiled rods to be joined; all the joints occurring in mounting a frame, for example, a longitudinal

joint, a transverse joint and a cross joint, can be made by means of only two types of couplings.

3,627,365

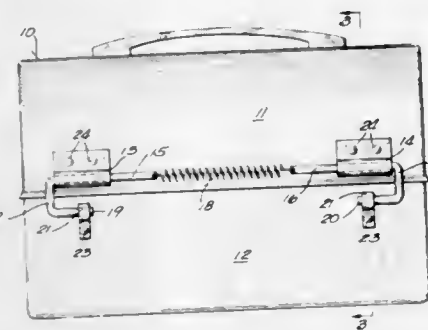
# CLOSURE FOR LUNCH BOX

Gertrude E. Mace, 825 South 10th St., Milwaukee, Wis.

Filed July 2, 1970, Ser. No. 51,763

Int. Cl. E05c 19/10

1 Claim



A pair of fasteners for a lunch box, said fasteners being spring pressed in the closed position, each unit formed of an elongate rod, a top portion housed slidably horizontally in a sleeve at the front lower portion of the lunch box cover, an intermediate integral portion of said rod bent vertically downwardly, and a return bent portion integral with said latter portion adapted to latch within an axially horizontal keeper on the top frontal portion of the lunch box body, and coil spring means connecting the upper elongate rod portions to maintain the closure in latched position.

3,627,366

# CLOSING DEVICE FOR CONTAINERS FOR THE TRANSPORT OF GOODS

Piero Cerutti, Sesto Calende Via Sempione 37, Verese, Italy

Filed Sept. 12, 1969, Ser. No. 857,329

Int. Cl. E05c 3/04

U.S. Cl. 292—218

4 Claims



A closing device for goods container doors in which the locking is done by means of two catches placed at the ends of motion shafts mounted on the door itself, and characterized by the fact that it consists of a channel piece which covers, at least in part, the catch motion shaft, protecting this shaft and reinforcing the container door, and being provided with units to support and guide the shaft.

3,627,367

# TOOL FOR REMOVING AND APPLYING CONNECTORS

Sidney Levy, Norwalk, Conn., assignor to Burndy Corporation

Filed Oct. 24, 1969, Ser. No. 869,304

Int. Cl. B25b 27/14; B23p 19/04

U.S. Cl. 294—16

17 Claims

A tool for swiftly applying a connector such as a terminator, to a contact bushing on a transformer and for also

removing the terminator. A push or pull firing piece can be moved into one or the other of opposed end positions in the casing in which it is locked by a detent while a spring is compressed against the firing piece. When the detent is moved by a trigger, it releases the firing piece for swift movement by the spring. The firing piece will move either to remove the

rounding the head and sealingly attached and a sheet of a material selected from the group consisting of heat-reflecting and heat-retarding materials and combinations thereof surrounding and covering the elastomeric material.

3,627,370

# EXPANDABLE SPREADER WITH BELOW-DECK MOBILITY

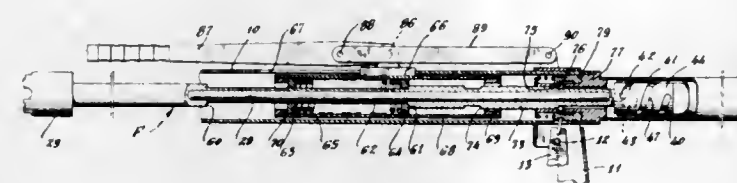
Donald R. Whiteman, R.D. 01, Fairfield Park, Roxboro, N.C., and Jack E. Fathauer, P.O. Box 24, Roxboro, N.C.

Filed Oct. 21, 1969, Ser. No. 868,107

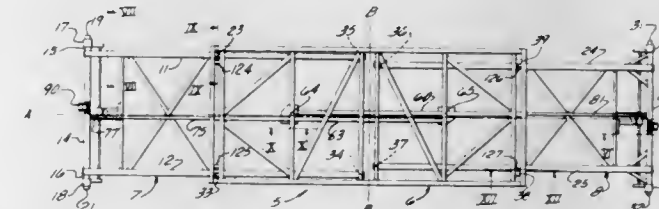
Int. Cl. B66c 1/00

U.S. Cl. 294—67 R

7 Claims



terminator from the contact bushing or to apply the terminator to the bushing depending on its locked position and the compression of the spring. The firing piece carries a gripper which is movable by a hand grip on the casing for gripping the terminator to the firing piece, and for releasing the terminator from the firing piece.



3,627,368

# LITTER COLLECTOR AND REMOVABLE HOOD MEANS THEREFOR

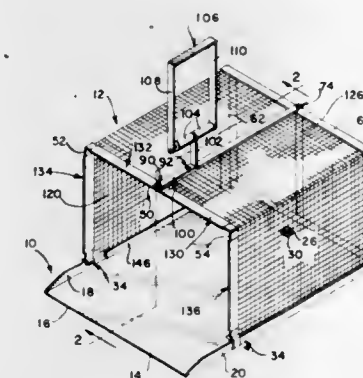
Harold Eugene Baughman, 243 San Fernando Way, Daly City, Calif.

Filed Sept. 11, 1970, Ser. No. 71,480

Int. Cl. A01d 11/00; A47f 13/08

U.S. Cl. 294—55

10 Claims



A receptacle means has three attaching portions secured to the two sides and the rear thereof. A removable hood means also includes three corresponding spaced attaching portions secured to the sides and rear thereof. The hood means comprises a rigid framework and an open covering such as a metallic screen thereover. The attaching portions on the receptacle means and the hood means enables the hood means to be quickly connected and disconnected with respect to the receptacle means. A carrying handle is provided in one form of the invention for carrying the overall assembly.

3,627,369

# HIGH-TEMPERATURE VACUUM PICKUP

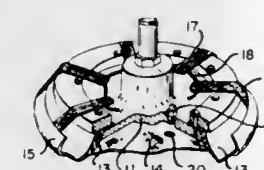
Charles H. Nixon, P.O. Box 141, Carnegie, Pa.

Filed Oct. 10, 1969, Ser. No. 865,266

Int. Cl. A47b 97/00

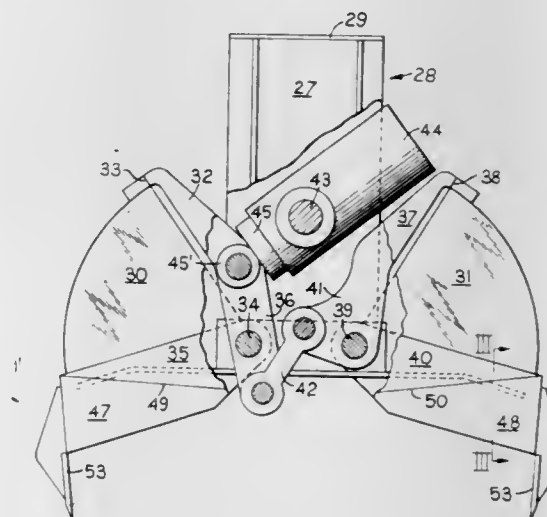
U.S. Cl. 294—64

6 Claims



A high-temperature vacuum pickup apparatus is provided having a vacuum head, a depending elastomeric ring sur-

A clamshell bucket has complementary bowl sections pivotally supported from a head. Arms which are welded at one end to the outer edge of a first bowl section extend inwardly over the top of said bowl section where they are connected to the head on the same pivotal connection which connects the bowl section to the head, said arms having extensions. Other arms have one end welded to the outer edge of the second bowl section where they are pivotally connected to the head on the same pivotal connection which connects said second bowl section to the head, said arms having upward extensions in the nature of a bellcrank and there being an equalizer link pivotally connecting said upward extensions with the extensions of the arms for the first bowl section. An obliquely disposed hydraulic cylinder is pivoted on the horizontal axis to the head above the bucket,





said cylinder having a piston rod which is pivotally connected to the arms of the first bowl section intermediate their length. Cutting lips at the sides of the bucket are flared downwardly and outwardly in a novel manner, when the bowl sections are open, to facilitate the digging of trenches and the like.

3,627,372

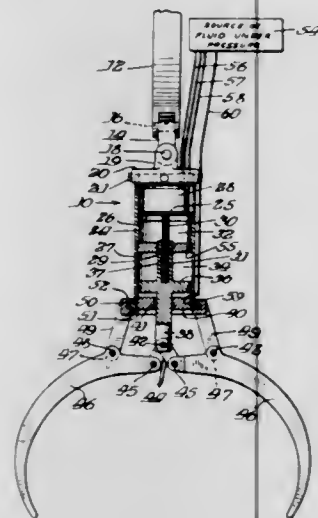
## CONTINUOUS ROTATION GRAPPLE

E. Robert Carpenter, Brookfield, and Eugene J. Kielb, Waukesha, both of Wis., assignors to Hydraulic Machinery Company, Inc., Milwaukee, Wis.

Filed Dec. 8, 1969, Ser. No. 883,120

Int. Cl. B66c 13/14

U.S. Cl. 294-88



A hydraulically powered material-handling device wherein rotation and/or clamping are required. Clamping force is provided down the centerline of rotation, allowing continuous rotation without the use of a swivel. This is accomplished by placing the motor or speed changer output shaft on the same centerline as the clamping cylinder. Also, all hydraulic connections are stationary, avoiding the winding of hoses around the clamping device during rotation.

3,627,373

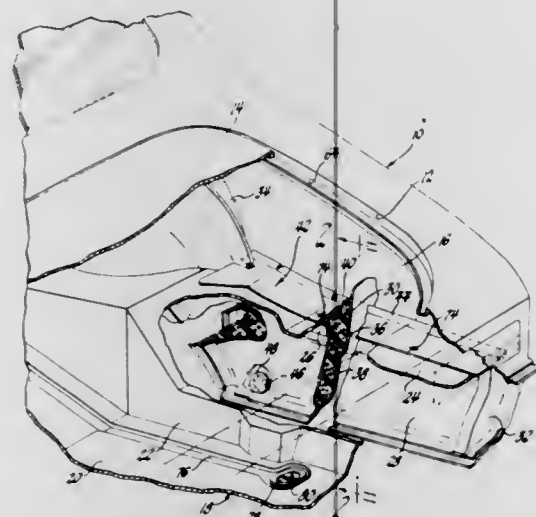
## VEHICLE BODY

Robert M. Fox, Warren, and Arthur W. Hoffmann, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1970, Ser. No. 12,808

Int. Cl. B62d 25/08

U.S. Cl. 296-28 R



The bootleg pocket of a vehicle body is completely filled with a foamed-in-situ mass of rigid synthetic resin which is

adhered to the body members defining the pocket. The upper exposed surface of the mass of resin is located angularly to the rear floor pan of the body and a cover adhered to this surface and supported by the mass of resin provides a continuation of the rear floor pan and also drains liquid to the floor pan.

3,627,374

## CLAMSHELL CAMPER

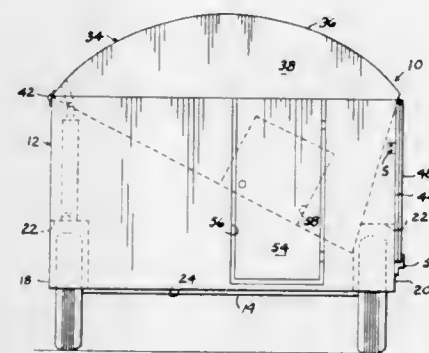
Eugene M. Richison, Kinta, Okla., assignor to Thomas H. Conklin, Stigler, Okla., a part interest

Filed Dec. 31, 1969, Ser. No. 889,460

Int. Cl. B60p 3/32

U.S. Cl. 296-23

4 Claims



A substantially boxlike housing is provided with a hingedly connected arched top having depending wall panels attached thereto for completing the enclosure when the top is raised for increasing the dwelling space.

3,627,375

## DETACHABLE VERTICAL STANCHION FOR VEHICLE PLATFORMS PROVIDED WITH A SUPPORT FOR A TARPAULIN COVER

Goran Rosen, Radagatan 5, Lidköping, Sweden

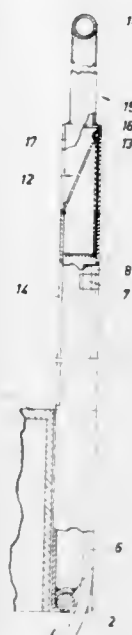
Filed Nov. 7, 1969, Ser. No. 874,897

Claims priority, application Sweden, Nov. 15, 1968, 15516/68

Int. Cl. B62d 25/00

U.S. Cl. 296-36

6 Claims



In order to facilitate the loading and unloading of vehicles having a load platform provided with a tarpaulin cover carried by a pillar structure in which each pillar thereof is composed of a lower stanchion and an upper support rod interconnected by an open hinge in such a manner that the rod

and the stanchion may be swung into an aligned position. The hinge is composed of a bearing journal at the free end of either the stanchion or the rod, and a bearing cup is located some distance from the free end of the rod or the stanchion, respectively, with the component provided with the bearing cup having a wall designed to guide the bearing towards the cup during an initial part of the fitting together operation.

3,627,376

## COVER MEANS FOR AGRICULTURAL TRANSPORT DEVICES

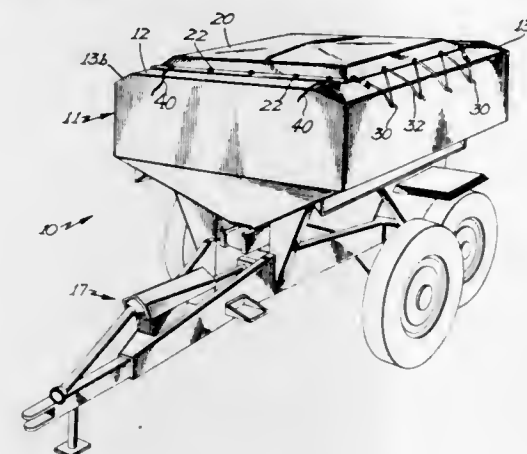
Loren E. Tyler, Wayzata, Minn., assignor to Letco, Inc., Long Lake, Minn.

Filed Sept. 4, 1969, Ser. No. 855,295

Int. Cl. B60j 11/00

U.S. Cl. 296-98

10 Claims



A fertilizer spreader including a hopper or tank for containing particulate material and having a large rectangular opening at the top thereof for loading the hopper and a cover for the opening. Around the opening the hopper has an up-standing flange and the cover which is of flexible material such as a tarp, is tightly secured to the hopper, outside of the flange, at one side of the opening, preferably at the front. The cover is sufficiently large so that it overlaps the flange on all sides and at the back end of the opening has a rigid member which permits it to be easily rolled forward and secured there when the opening is to be left open. It also has a plurality of elastic fastening members which cooperate with appropriate hooks on the hopper to provide quick release means for securing the cover under tension in its closed position wherein it extends tightly downward over the flange to provide a substantially weathertight seal with the flange. The cover, being secured at one edge to the hopper and having means which render it easily secured to the hopper in its extended position is easy to handle and can quickly be opened or closed by a single person.

3,627,377

## TOP LIFT ACTUATOR

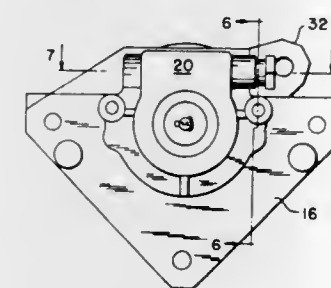
Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed Nov. 18, 1969, Ser. No. 877,623

Int. Cl. B60j 7/12

U.S. Cl. 296-117

13 Claims



An actuator for a collapsible top of a vehicle comprising a compact arrangement of series connected planetary or upper and a lower crossbar and lateral arms secured to the

epicyclic gear sets including a fixed ring gear common to all sets serving as a pivot mounting for an actuating arm.

3,627,378

## SEAT FUEL TANK

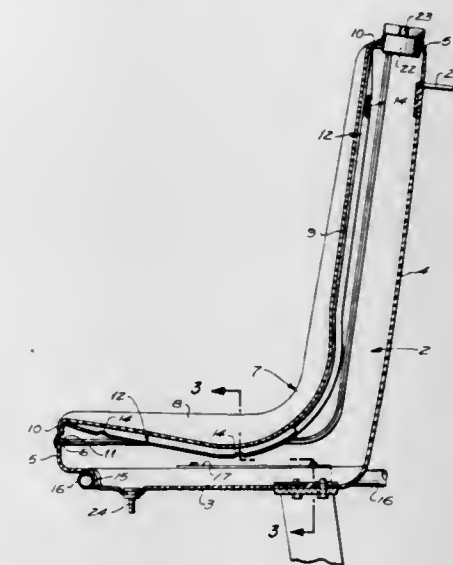
Kenneth E. Brock, 3084 West Ball Road, Anaheim, Calif.

Filed June 12, 1970, Ser. No. 45,853

Int. Cl. A47c 7/62

U.S. Cl. 297-194

8 Claims



A fuel tank, intended particularly for lightweight aircraft or sports vehicles, which is constructed in the shape of a seat; the tank comprising a rearward and underlying component and a complementary forward and overlying component which are joined together around their margins to form a hollow seat structure, there being a reinforcing member within the tank secured to the forward and overlying component and exposed fastening means for attaching the seat fuel tank to a vehicle.

3,627,379

## BACKREST FOR A SEAT ESPECIALLY OF A MOTOR VEHICLE

Eberhard Faust, Bernhausen, Germany, assignor to Recaro Aktiengesellschaft, Glarus, Switzerland

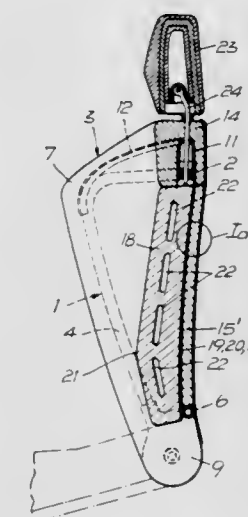
Filed Mar. 10, 1969, Ser. No. 805,644

Claims priority, application Germany, Mar. 13, 1968, P 17 53 009.5

Int. Cl. A47c 3/00

U.S. Cl. 297-284

1 Claim



A padded backrest for a seat which has a frame with an upper and a lower crossbar and lateral arms secured to the



crossbars, the upper crossbar extending within the upper part of the padding and the lateral arms being bent forwardly and downwardly from the upper crossbar and carrying lateral padding elements for supporting at least a part of the upper body of an occupant of the seat in lateral directions, and a shell-like padding support secured to the upper and lower crossbars and consisting of a stiff but deformable material. At least the central part of the padding which is adapted to engage with the back of the occupant is slidable upwardly and downwardly along the padding support relative to the frame. At least this central part is provided with transverse pockets into which, if desired, inserts may be placed to change the cross-sectional shape of the backrest.

3,627,380

## GUIDING MEANS FOR PLANING AND DIGGING IMPLEMENTS

Pal Frenyo; Karl-Heinz Hafer, both of Bochum, and Walter Pelka, Gelsenkirchen, all of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei mbH, Bochum, Germany

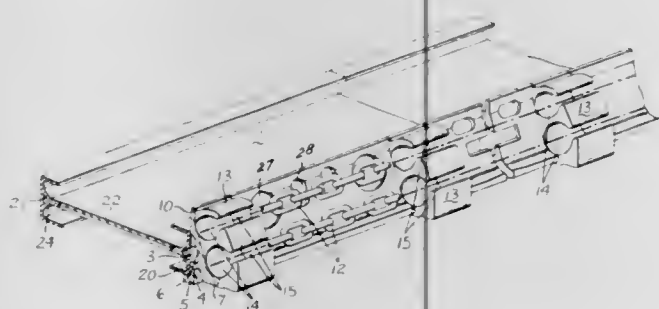
Filed Oct. 3, 1969, Ser. No. 863,527

Claims priority, application Germany, Oct. 7, 1968, P 18 01 612.1

Int. Cl. E21c 27/35

U.S. Cl. 299—34

8 Claims



A guiding arrangement for a linearly moveable tool supporting carriage in a mining machine in which a frame has a guiding rail member for the carriage on one side made up in sections in end to end relation. The guiding rail member has projections thereon extending toward the carriage and spaced along the rail member and each has a pair of tubular passages for the reaches of a link chain which drives the carriage. Each passage is longer than the distance between the adjacent ends of a pair of like links in the respective chain length and slots give access to the passages with each slot widening at its opposite ends.

3,627,381

## MOUNTING MEANS FOR CUTTER BITS

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Company, Cincinnati, Ohio

Filed Jan. 14, 1970, Ser. No. 2,874

Int. Cl. E21c 25/46

U.S. Cl. 299—86

6 Claims



Mounting means for cutting tools of the type having an elongated shank of circular cross section, a hard cutting tip

at one end and an abutment surface at the other end. The mounting means comprises a body having a forward surface, a rearward surface and a shank receiving perforation extending through the body from the forward surface to the rearward surface. The shank receiving perforation is of such diameter as to permit free rotation of the cutting tool shank therein, and is of such length that the abutment end of the cutting tool shank extends beyond the rear surface of the body. The body is mounted on a driven element of a mining machine. An abutment means is provided in association with the driven element, the abutment means presenting an abutment surface cooperating with the abutment surface on the cutting tool shank and spaced from the rear surface of the mounting means body.

3,627,382

## VEHICLE WHEEL

Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie General Des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

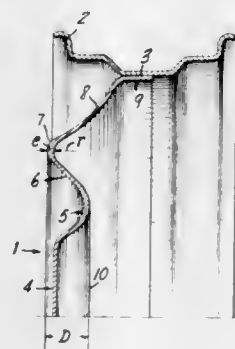
Filed Dec. 24, 1969, Ser. No. 887,959

Claims priority, application France, Dec. 24, 1968, 180571

Int. Cl. B60b 3/04

U.S. Cl. 301—63 R

4 Claims



A wheel, for instance a metal wheel, includes a well base rim, also known as a drop center rim, and a disk which has, between the plane of its attachment to the hub and the junction of the disk with the rim, an annular ridge which is pressed out of the disk, the thickness of the disk in the zone of the crest of the ridge being greater than in the adjacent parts of the ridge.

3,627,383

## PNEUMATIC DISCHARGE ARRANGEMENTS FOR HOPPERS

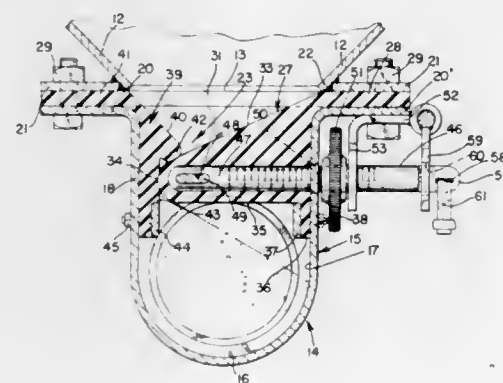
Franklin P. Adler, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed July 22, 1969, Ser. No. 843,560

Int. Cl. B65g 53/46

U.S. Cl. 302—52

4 Claims



A pneumatic discharge arrangement for hoppers includes a pneumatic tube having an upper slot for receiving materials and discharging them from the hopper. The tube is provided

with a valve arrangement that includes a resilient valve which during the discharging operation lies to one side of the slot in a retracted position. To close the slot a plurality of thrust elements stretch the valve from its retracted position across the slot into engagement with a valve seat supported on the other side of the tube.

3,627,384

## SAFETY RELIEF VALVE STRUCTURE FOR RAILWAY CARS

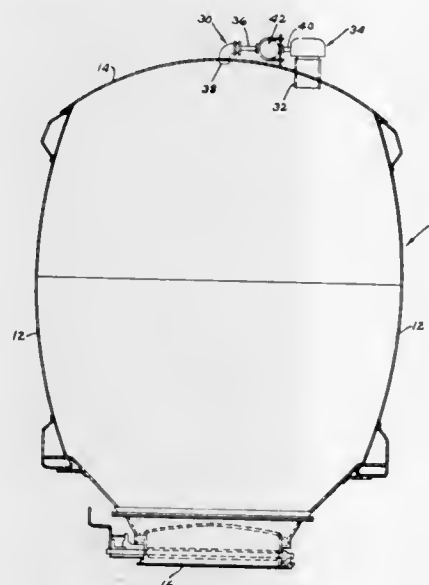
Dallas W. Rollins, St. Charles, and Richard H. Dugge, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 11, 1969, Ser. No. 857,098

Int. Cl. B65g 53/40

U.S. Cl. 302—53

1 Claim



A safety relief valve structure for a railway car having an enclosed shell which is adapted to be placed under an internal fluid pressure, especially for unloading particulate lading. A pilot-operated safety valve on the car has a main valve inlet communicating directly with the interior of the car, and a separate pilot line provides fluid communication between the interior of the car and the safety relief valve for controlling the operation of the valve. A filter is positioned in the separate pilot line and minimizes any passage of air entrained lading to the safety valve through the pilot line. The filter comprises a housing and a filter element within the housing through which the air and any entrained lading particles pass. The filter element has a micron rating between around five and 25 to entrap lading particles of a micron size greater than the micron rating of the filter element.

3,627,385

## CONTROL VALVE

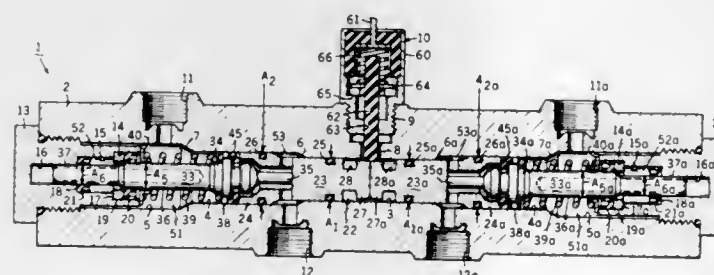
Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Feb. 4, 1970, Ser. No. 8,480

Int. Cl. B60t 8/26, 11/34

U.S. Cl. 303—6 C

19 Claims



A control valve for use in a split braking system having an indicating member movable from a normal position to a

translated position in the event of the failure of one of the separately supplied fluid pressures acting thereon. A proportioning member is biased toward the indicating member and movable in response to a predetermined value of the other supplied fluid pressure toward metering engagement with the indicating member in its normal position to thereafter effect a metered applied fluid pressure in a predetermined ratio with the other supplied fluid pressure. The proportioning member is provided with a pair of opposed areas respectively subjected to the other supplied and applied fluid pressures to effect the predetermined ratio, and a third area is also provided on said proportioning member for subjection to the other supplied fluid pressure and additive to one of the opposed areas to alter the predetermined value of the other supplied fluid pressure at which the proportioning member is actuated to effect metering engagement with the indicating member in its translated position.

3,627,386

## FOUR-WHEEL SKID CONTROL SYSTEM

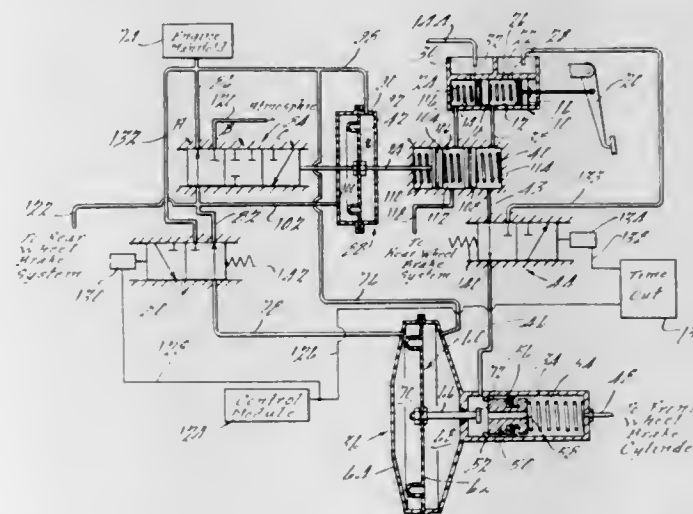
Peter Every, Livonia, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Oct. 8, 1969, Ser. No. 864,628

Int. Cl. B60t 8/02

U.S. Cl. 303—21 F

4 Claims



In a skid control system for a brake system, a master cylinder actuates a pneumatic booster valve which controls a power booster. A hydraulic skid control valve is connected between the master cylinder and the power booster. A pneumatic skid control valve is connected between the pneumatic booster valve and the power booster. A control module actuable upon the occurrence of a skid condition to control the hydraulic and pneumatic skid control valves. Actuation of the hydraulic skid control valve cuts off communication between the master cylinder and power booster and connects the power booster to a reservoir. Actuation of the pneumatic skid control valve deactuates the power booster to release the brakes. When the skid-signal is terminated a timeout circuit delays the return of the hydraulic skid control valve to its original position. This enables the power booster to be reactuated and to draw fluid from the reservoir.

3,627,387

## AIR PRESSURE-OPERATED BRAKING SYSTEMS

Wilbur Mills Page, and Alan Weeden Green, both of Lincoln, England, assignors to Clayton Dewandre Company Limited, Lincoln, England

Filed Sept. 12, 1969, Ser. No. 857,325

Claims priority, application Great Britain, Oct. 11, 1968, 48,316/68

Int. Cl. B60t 8/18

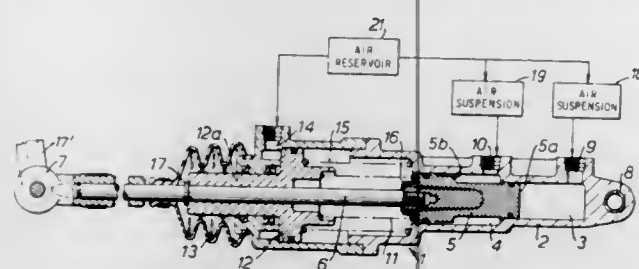
U.S. Cl. 303—22 A

2 Claims

In a vehicle-braking system which includes an apportioning valve actuated in accordance with vehicle load as determined



by pressures in the vehicle's air suspension system, said valve is controlled by a device comprising a control piston responsive to pressure in said suspension system and a further



piston responsive to reservoir pressure and which overrides the control piston to set the apportioning valve to the "fully-laden" position if reservoir pressure falls below a predetermined value.

3,627,388

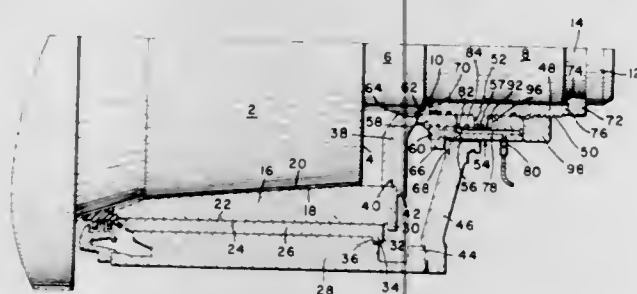
# HYDRAULIC LOCKING AND LOOSENING DEVICE FOR BEARING

Lewis C. Jennings, Worcester; Robert W. Tappin, Boylston, and Samuel S. Rickley, West Boylston, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Sept. 8, 1970, Ser. No. 70,445  
Int. Cl. F16c 17/02

U.S. Cl. 308-37

7 Claims



In the art of rolling metals, dual hydraulically actuated mechanism which is an integral part of a bearing structure for forcing the bearing tightly on the neck of a roll, positively maintaining the bearing in position during the rolling operation, and subsequently utilizing the same dual hydraulically actuated mechanism which is also integral with the bearing for removing the bearing from the roll neck.

3,627,389

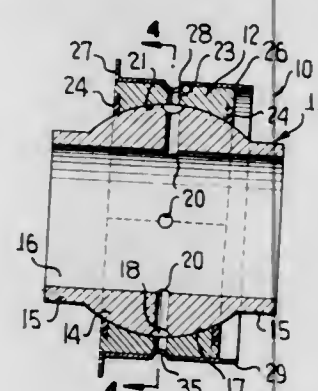
# SELF-ALIGNING BEARING ASSEMBLY

Philip H. Foote, Jr., Los Angeles, Calif., and Earl M. Curtis, Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Aug. 12, 1969, Ser. No. 849,806  
Int. Cl. F16c 23/04

U.S. Cl. 308-72

7 Claims



This disclosure relates to a self-aligning bearing assembly which includes an inner race member having a part spherical

outer surface, and an outer race member having a part spherical inner surface cooperable with the inner race member surface, the outer race member being split in an axial direction so as to facilitate the assembly of the inner race member within the outer race member. A sheet metal cylinder is placed around the assembled inner race member and outer race member to retain the outer race member against separation with this same cylinder being utilized to fixedly secure the bearing assembly within a housing.

3,627,390

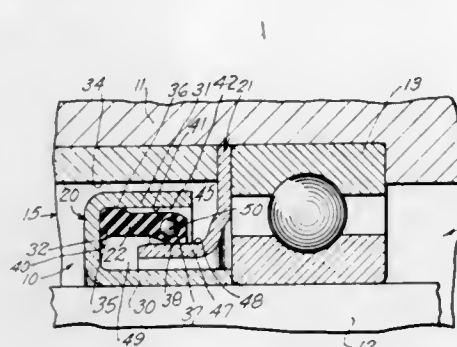
# STATIC SEAL

Arthur S. Irwin, Jamestown, N.Y., assignor to TRW Inc., Cleveland, Ohio

Filed Oct. 2, 1969, Ser. No. 863,041  
Int. Cl. F16j 15/16; F16r 41/00

U.S. Cl. 308-187.1

2 Claims



A static shaft seal for sealing pressure along the axis of a shaft in the absence of shaft rotation. The seal comprises three members, the first of which is a substantially U-shaped cross section ring press-fitted onto the shaft along the inner diameter of the inner leg with the outer leg spaced radially outwardly from the shaft. A second member is carried by the housing and has an annular wall extending between the legs of the U-shaped member. An elastomeric lip seal is bonded to the U-shaped member adjacent the intersection of the bight and outer leg and has a ring portion projecting axially with an outer diameter spaced from the inner diameter of the outer leg. The ring portion terminates in an increased mass portion having a sealing lip around the inner diameter thereof in static contact with the outer diameter of the second member. As the shaft rotates a centrifugal force acting on the increased mass portion causes the sealing lip to lift off of the outer diameter face of the second member.

3,627,391

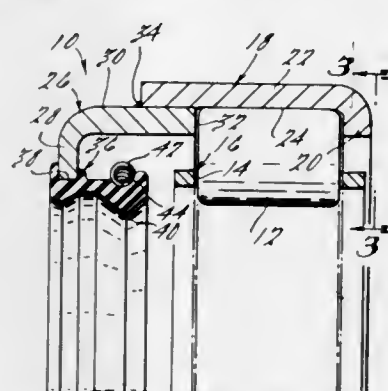
# COMPOSITE REAR WHEEL BEARING WITH INTEGRAL SEAL

Gerald L. Bingle, St. Clair Shores, Mich., assignor to Federal-Mogul Corporation, Detroit, Mich.

Filed Apr. 1, 1969, Ser. No. 812,141  
Int. Cl. F16c 33/78

U.S. Cl. 308-187.2

9 Claims



A roller bearing having a composite or multiple piece outer race with one of the pieces of the race having a seal integral therewith.

3,627,392

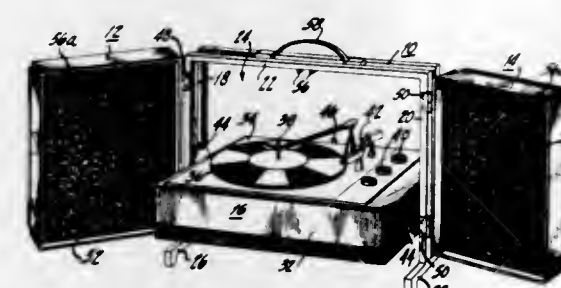
# STEREOPHONIC SOUND-REPRODUCING APPARATUS

Finley Ruppensburg, Indianapolis, Ind., assignor to RCA Corporation

Filed Dec. 29, 1965, Ser. No. 517,380  
Int. Cl. A47b 81/06

U.S. Cl. 312-8

11 Claims



1. A portable carrying case for sound-reproducing apparatus comprising:

a normally upright frame having a pair of spaced side members defining an opening therebetween;

tray means for receiving a record reproducing mechanism mounted between said side members for movement between a substantially horizontal operating position and a substantially vertical storage position, said tray means in its storage position providing a closed back covering the frame opening defined by said vertical side members;

a pair of enclosures for housing loudspeaker apparatus; and

means for mounting said enclosures on said side members for movement between an operating position wherein said enclosures face forwardly of said sound-reproducing apparatus in flanking relation to said tray means, and a storage position wherein said enclosures close toward one another to overlay the record reproducing mechanism in said tray means, said enclosures in the storage position providing a front covering of the opening defined by said frame side member,

whereby in the storage position of said apparatus, the bottom surface of said tray means and the rear surfaces of said loudspeaker enclosures cooperate to enclose said record-reproducing mechanism, and in the operating position of said apparatus the record-reproducing mechanism is exposed to facilitate easy record loading and operation.

3,627,393

# CONTAINERS

Paul Laurence Durham Hickson, Welwyn Garden City, and David Alexander Lindsay Seiler, Chorley Wood, both of England, assignors to Imperial Chemical Industries Limited, London and The Flour Milling and Baking Research Association, Chorley Wood, England

Filed Mar. 30, 1970, Ser. No. 23,778

Claims priority, application Great Britain, Apr. 1, 1969, 17,033/69

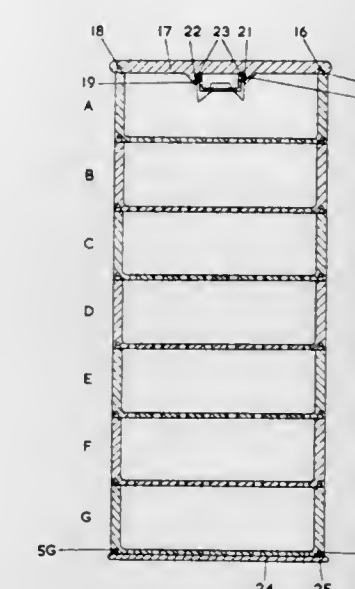
Int. Cl. A24f 25/00

U.S. Cl. 312-31.1

10 Claims

A container for perishable foodstuffs, e.g. bread, confectionery, meat and meat products, fruit and vegetables, has upstanding sidewalls and a perforated base section, means being provided at the top and bottom of the sidewalls whereby a number of containers can nest one within the other, a gasket being provided around either the top or bottom of the sidewalls to provide sealing between two adjacent containers. By placing solid carbon dioxide into the top of a

stack of these containers, or introducing some other preserv-



3,627,394

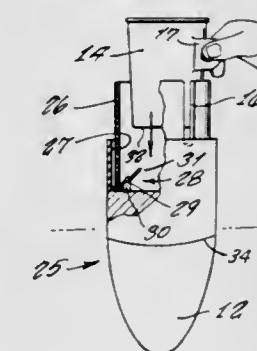
# CUP HOLDER

Constance M. Benn, and William J. Benn, both of 83-10 35th Ave., Jackson Heights, N.Y.

Filed Nov. 25, 1968, Ser. No. 778,650  
Int. Cl. A47f 1/00, 3/02

U.S. Cl. 312-43

3 Claims



A holder for supporting a cup or drinking glass at a beach, so to eliminate the necessity of placing it upon the sand. The holder comprises a tapered lower end for insertion into the sand so that it may be maintained upright and an upper end having a receptacle into which a cup may be removably placed. The holder may be hollow and in screwed-together pieces, so as to provide a compartment for the storage of cups.

3,627,395

# DOOR OPENING AND CLOSING MECHANISM FOR A REFRIGERATOR HAVING REVOLVING SHELVES

Earl Hoey, 31763 Shadyspring Road, San Francisco, Calif.

Filed Mar. 9, 1970, Ser. No. 17,381

Int. Cl. A47f 3/10

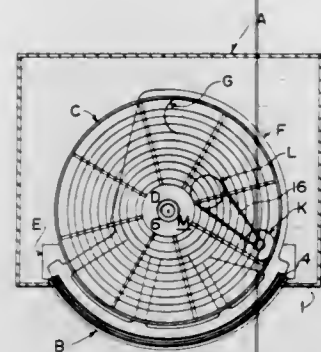
U.S. Cl. 312-125

10 Claims

A door opening and closing mechanism for a refrigerator having revolving shelves in which a single motor is used for revolving the shelves and novel means is provided for disconnecting the shelf rotating means from the motor and for connecting it to door opening and closing means when it is desired to gain access to the interior of the refrigerator. The



shelving may be manually rotated when the door is open to permit one or more items on the shelves to be removed and/or other items added. The novel means also includes auxiliary means for forcing the door into an airtight closing



position at the end of the closing movement of the door to keep the refrigerator door hermetically sealed. The closing of the door will automatically connect the shelf-rotating means to the motor for again causing the shelves to rotate.

3,627,396

**CABINET FOR CAMPER VEHICLES**

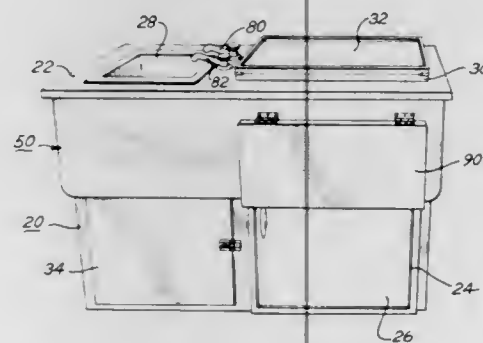
Lester D. Miller, Topeka, Ind., assignor to Bangor Punta Operations, Inc., New York, N.Y.

Filed Apr. 20, 1970, Ser. No. 29,903

Int. Cl. A47b 51/00; F24c 15/00

U.S. Cl. 312-229

13 Claims



A fold-down cabinet for campers in which a counter assembly having a sink and stove is mounted on a base for movement between raised and lowered positions. The mechanism for raising and lowering the counter assembly consists of a plurality of levers connected to the counter assembly and to the base, permitting the base to swing outwardly, forwardly, upwardly and rearwardly as the counter assembly is moved from its lowered to its raised position. A drain fixture having a vent is connected to the sink, and the fixture has a plurality of holes for receiving the drain and vent outlet when the counter assembly is in its lowered and raised positions.

3,627,397

**STORAGE DEVICES**

Henry F. Rominsky, 6333 W. Cold Springs Road, Greenfield, Wis.

Filed June 17, 1970, Ser. No. 46,892

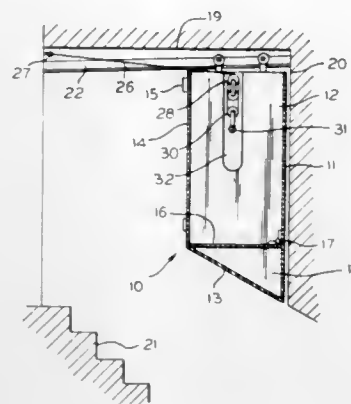
Int. Cl. H01r 39/40

U.S. Cl. 312-246

7 Claims

A transportable closet rolls on rails mounted near the ceiling line of a closet. A cable, block, and tackle arrangement is

included in the closet to raise and lower the cargo of clothes therein as the closet is moved into and out of dead storage.



Thus, the weight of the clothes counterbalances the weight of the closet and makes it easy to roll the closet.

3,627,398

**APPARATUS FOR STORAGE OF OBJECTS SUCH AS TAPE CASSETTES ENABLING EASY REMOVAL THEREOF**

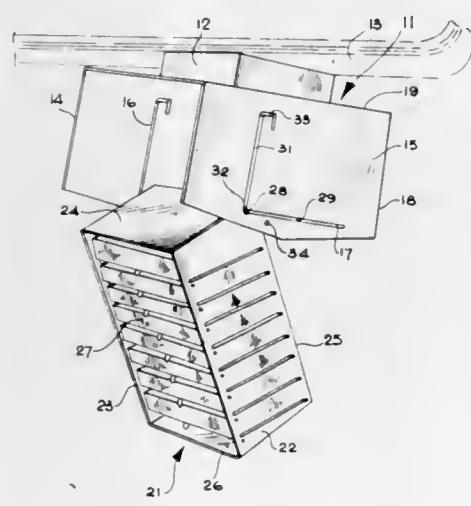
Laurence E. Reese, 4926 W. 134th St., Hawthorne, Calif.

Filed Oct. 9, 1969, Ser. No. 865,121

Int. Cl. A47b 67/02; A47f 5/08; B65d 5/50

U.S. Cl. 312-246

1 Claim



Disclosed is a storage apparatus adapted for easy mounting in a position for use such as under the dashboard of an automobile. The storage apparatus includes a support or housing member adapted for mounting as above indicated and disposed therewithin is an object-containing member in the form of an open top box which is slidable from a closed position in the housing (for temporary storage) to an open and secured position with the open side of the box exposed so the contents retained therein may be readily removed therefrom. The contents in the box are stored in enclosures which are slidably mounted within the box and may be individually partially removed therefrom.

3,627,399

**PORTABLE COOLER AND SUPPORT FOR A PRESSURIZED KEG**

Eugene B. Addison, Lake Side Drive, Box 38, Hope Valley, R.I., and Earl R. Pitcher, Moonstone Beach, R.F.D. 1, Wakefield, R.I.

Filed Oct. 6, 1969, Ser. No. 863,934

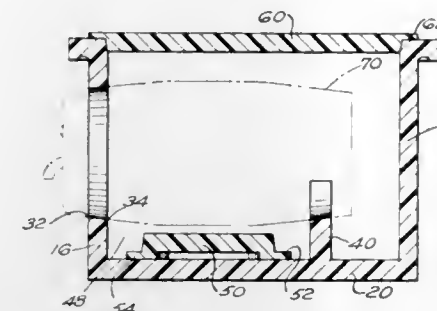
Int. Cl. A47b 81/00

U.S. Cl. 312-351

2 Claims

A portable cooler of lightweight material having an opening in one end through which a beer container, such as a

pressurized keg complete with its own tapping system may extend. The opening is sloped such that the keg when in-



troduced into the opening forms a watertight fitting. The cooler unit may be made of a minimum of three molded pieces.

3,627,400

**ADDRESSING HOLOGRAPHIC APPARATUS FOR USE WITH SPACE DIVISION MULTIPLEXED HOLOGRAMS**

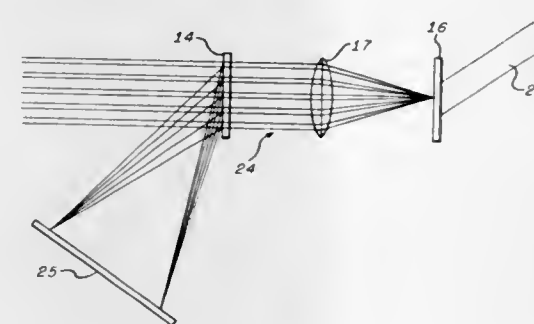
Henry John Caulfield, Carlisle, Mass., assignor to Sperry Rand Corporation

Filed Oct. 9, 1970, Ser. No. 79,578

Int. Cl. G02b 27/00

U.S. Cl. 350-3.5

4 Claims



Holographic apparatus for addressing a space division multiplexed holographic storage medium having a plurality of holograms mutually interspersed and distributed over a given area, each hologram being recorded with a distinct sampling mask of a set of spatially complementary masks which are also used to construct the addressing holograms. Each addressing hologram is spatially distinct so as to be able to function individually in holographic reconstruction apparatus to direct substantially all the light in the reconstructing reference beam onto the discrete regions occupied by the particular multiplexed hologram recorded with the same mask as the operative addressing hologram.

3,627,401

**BINARY-CODED HOLOGRAM RECORDING SYSTEM**

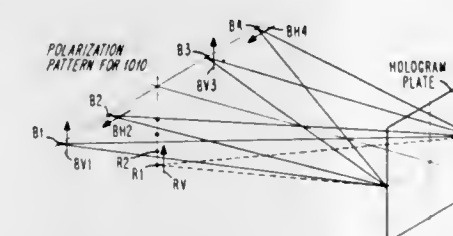
Joseph P. Kirk, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,520

Int. Cl. G02b 27/00

U.S. Cl. 350-3.5

1 Claim



The invention relates to an information storage system in which the basic storage element is a hologram. Information is

recorded (or written) by selectively orienting the plane of polarization of either the reference beam or the information beam as the two beams converge upon the hologram.

3,627,402

**HIGH-CAPACITY HOLOGRAPHIC MEMORY**

Rodger L. Gamblin, Pound Ridge, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1969, Ser. No. 863,479

Int. Cl. G02b 27/22

U.S. Cl. 350-3.5

5 Claims



System capacity in a holographic memory is maximized by a reduction in spatial frequencies by reducing the angle of incidence of the reference and object beams during construction and eliminating the effects of the cross correlation image by minimizing the angle of incidence of the readout beam relative to different holograms in the hologram array, this being achieved by bringing all readout beams to an area of convergence spaced from the system optical axis and the readout-detecting means. To obtain maximum capacity for a given geometrical arrangement between the hologram array and the diode readout array, parameters such as number of holograms per hologram array, size and number of readout diodes in the diode array, can be maximized in order to be within the capabilities of the film resolution on which the holograms are constructed.

3,627,403

**ROADWAY REFLECTORS**

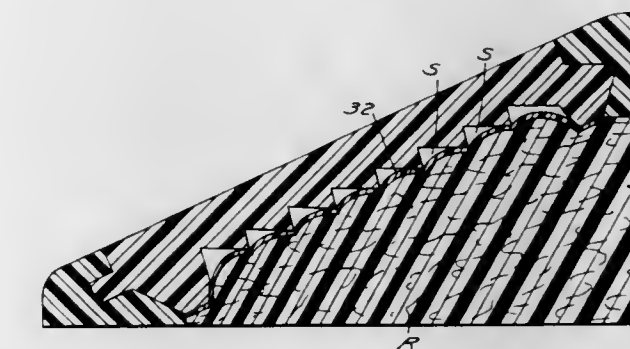
Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada

Filed Sept. 11, 1969, Ser. No. 856,957

Int. Cl. G02b 5/12

U.S. Cl. 350-103

3 Claims



A roadway reflector comprising an integral hollow housing of plastic material including a base portion and a wall extending upwardly and inwardly and having a portion of transparent plastic material with a smooth outer surface and inner surfaces formed with retroreflective prisms. A layer of this plastic film is adhered to the periphery of the portion of the wall containing the prisms and a resin fills the housing, an air space thereby being provided between the film and the surfaces of the prisms.



3,627,404

**ELECTRICAL FOCUSING DEVICE**

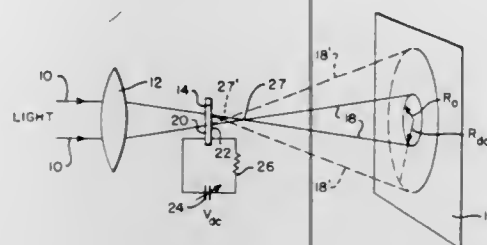
Wen-Chung Wang, 25 Trescott Path, Northport, N.Y.

Filed Mar. 3, 1969, Ser. No. 803,623

Int. Cl. G02f 1/28

U.S. Cl. 350—160

5 Claims



A device for focusing light comprises a transparent photoconductor plate and means for applying a direct voltage across the plate. When the voltage is at a sufficient level, the focal point relative to the plate can be changed.

3,627,405

**ACOUSTO-OPTIC LIGHT DEFLECTION**

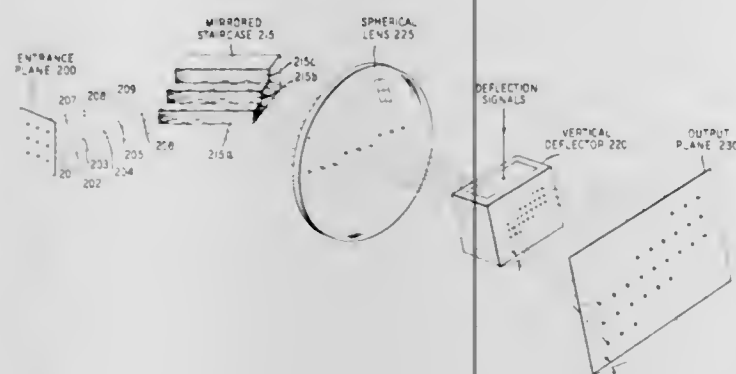
Martin Feldman, Springfield, and Jack Page Griffin, Short Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 22, 1970, Ser. No. 39,583

Int. Cl. G02b 5/08

U.S. Cl. 350—161

3 Claims



Two orthogonally disposed acousto-optic deflectors produce a rectangular matrix of light spots in the usual way. A series of mirrors arranged to form a staircase convert the rectangular matrix to a close approximation of a linear array. The number of resolvable spots in the linear array is equal to the product of the capacities of the individual deflectors. In turn, by adding a third acousto-optic deflector the linear array can be expanded to form an enlarged rectangular matrix. In principle, this process can be repeated as often as desired, thereby to realize relatively simple light deflection systems characterized by advantageous capacity-speed products.

3,627,406

**SPECTACLE FRAME WITH FLEXIBLE SIDEBARS**

Oreste Blumenthal, Corso Montevicchio n., 36 Turin, Italy

Filed Jan. 28, 1970, Ser. No. 6,518

Claims priority, application Italy, May 28, 1969, 52012-A/69

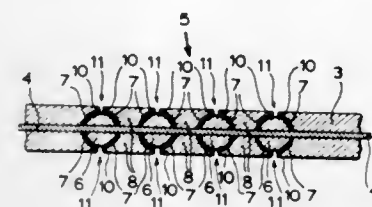
Int. Cl. G02c 5/16

U.S. Cl. 351—114

3 Claims

A spectacle frame with flexible sidebars is provided by inserting a series of elements in the sidebars which are al-

ternately convexly and concavely cylindrical, with a flexible member transecting and interconnecting them. Part cylindri-



cal shells are interposed between each two adjacent elements.

3,627,407

**MOTION PICTURE FILM PRESSURE PLATE ASSEMBLY**

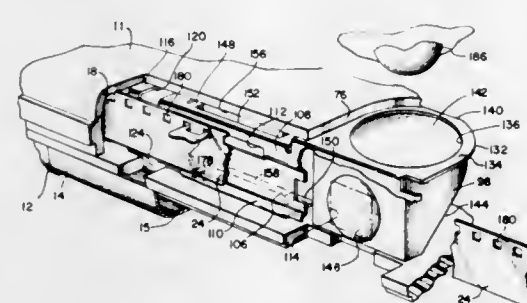
Gerald H. Cook, Lynnfield, and Rogers B. Downey, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed July 3, 1969, Ser. No. 838,822

Int. Cl. G03b 1/48

U.S. Cl. 352—221

11 Claims



An assembly formed of an integral piece of sheet metal comprising an elongated pressure plate, a leaf-type spring, a bracket for mounting a light-reflecting element in operative relationship to an aperture provided in the pressure plate and an arrangement for reflecting extraneous light rays in a direction away from the light-reflecting element. In a preferred embodiment, this assembly is incorporated into a unique motion-picture-film-handling cassette adapted to be first mounted in a camera to facilitate exposure operations and then in a processor-projector unit to facilitate film-processing and projection operations.

3,627,408

**ELECTRIC FIELD DEVICE**

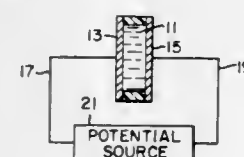
James L. Ferguson, Verona, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 29, 1965, Ser. No. 467,852

Int. Cl. G02f 1/16

U.S. Cl. 353—84

20 Claims



An electric field sensitive device for providing a visual indication in response to an electric field incorporating liquid crystalline materials of the type exhibiting the cholesteric phase.

3,627,409

**SLIDE TRAY SUPPORTING MEANS**

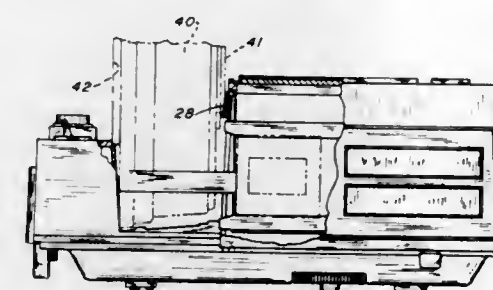
Israel Nesson, Fair Lawn, N.J., assignor to Keystone Division of Berkey Photo, Paramus, N.J.

Filed Sept. 22, 1969, Ser. No. 859,983

Int. Cl. G03b 23/04

U.S. Cl. 353—116

6 Claims



A slide projector for holding a rotary tray in a vertical condition in a troughway is also adapted to hold rectangular trays in the same troughway. The advancing mechanism is adapted to sequentially move either type tray while providing for the ready removal of the vertical or rectangular tray from the troughway. The rotary tray is provided with extending hub portions sized to seat in open top cup supports provided in the projector housing. These cup supports act as both vertical and horizontal retaining means for the rotary tray.

3,627,410

**REPRODUCTION APPRATUS WITH LIQUID DEVELOPER**

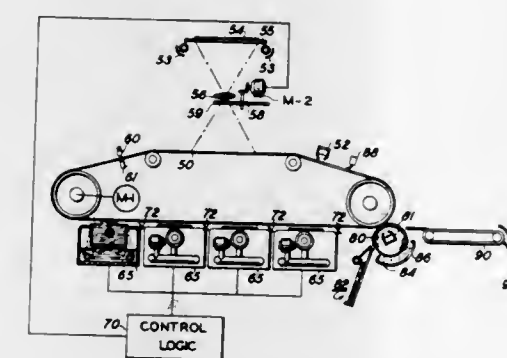
Don B. Jugle, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Feb. 8, 1968, Ser. No. 703,985

Int. Cl. G03g 15/00

U.S. Cl. 355—4

5 Claims



Apparatus for developing latent electrostatic images with a liquid developer by forming a wave to contact the image with sufficient turbulence, such that developer particles are suspended uniformly, but gentle enough so as not to destroy the electrical characteristics of the image thereby rendering a high quality print. The wave is formed by pumping liquid developer from a sump pit into a header pipe which is immersed below the surface of a development tray filled with liquid developer. Pressurized gas is introduced into the sump means to maintain uniform suspension of the particles in the developer liquid. In a preferred embodiment, an array of liquid development units of different colors are positioned at a development station to produce multicolor prints by selectively controlling the formation of different waves to contact latent images formed sequentially on a photoreceptor member advanced past the developing units. The liquid developed images are then transferred onto a support sheet in superposed relationship.

3,627,411

**PHOTOGRAPHIC PRINTING APPARATUS**

Erich Nagel, Anzing, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

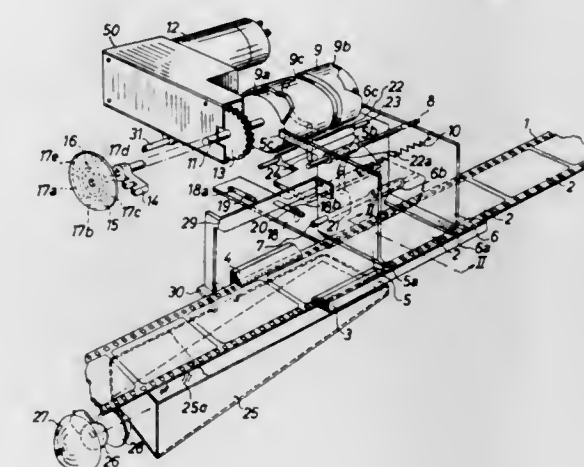
Filed Jan. 23, 1969, Ser. No. 793,459

Claims priority, application Germany, Jan. 31, 1968, P 16 22 168.4

Int. Cl. G03b 27/62

U.S. Cl. 355—45

15 Claims



A photographic printing apparatus wherein the light-transmitting window at the printing station is defined by several masks which are movable with reference to each other to adjust the size of the window in dependency on the format of frames in the roll film which is being copied. The movements of masks are synchronized and one of the masks adjusts the reflector of a previewing device which permits visual inspection of one or more frames immediately ahead of the printing station.

3,627,412

**APPARATUS FOR DECORATING PRESSED TINS**

Lucien Jean, Meylan, France, assignor to Cebal GP, Paris, France

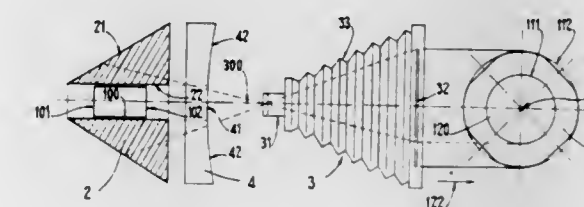
Filed July 7, 1969, Ser. No. 839,384

Claims priority, application France, July 12, 1968, 158928

Int. Cl. G03b 27/68

U.S. Cl. 355—47

3 Claims



Apparatus for decorating pressed tins by printing a distorted image on a blank which is to be pressed, the apparatus comprising an anamorphic device and a photographic apparatus in which the anamorphic device comprises a truncated cone of transparent material having a perforation along an internal wall in the form of a cylinder, the cross section of which is geometrically similar to the cross section of the tin which is to be formed, and the external wall of which is in the form of a truncated cone, the two bases of which are similar to the section of the internal cylinder and a correcting lens the contour of the correcting lens is geometrically similar to the cross section of the finished tin and provides distortions which are determined graphically from an experimental tin.



3,627,413

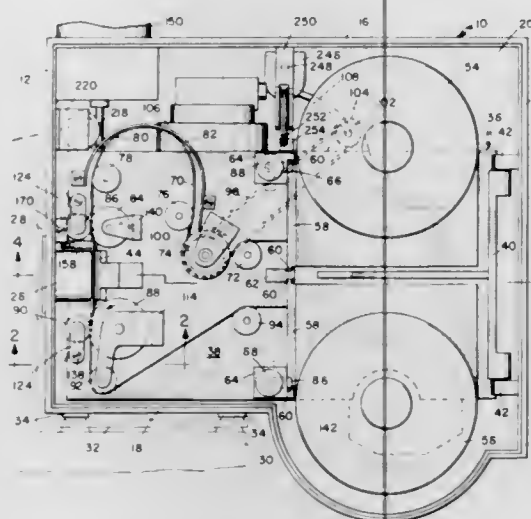
## MICROFICHE FILM TRANSPORT UNIT

George E. Bushey, and Willard D. Isbell, both of San Diego, Calif., assignors to Cubic Corporation, San Diego, Calif.  
Filed Oct. 14, 1970, Ser. No. 80,551

Int. Cl. G03b 27/46

U.S. Cl. 355-53

17 Claims



A microfiche film transport unit for use with a sequential recording camera having stationary optics. Supply and takeup magazines are mounted on a carriage or platform, which also carries film advance mechanism for moving film linearly over a platen at the lens position. The carriage is hinged and is itself moved to pass the film laterally across the lens position. A precision stepping motor drives the carriage to move the film in precise frame increments in a column across the width of the film and a fast return mechanism returns the film to the beginning of the column. Another stepping motor advances the film at the completion of each column. The drive mechanism is readily adaptable to variable format and frame programming control from a conventional microfiche camera, and the unit will handle the two most common widths of microfiche film with minor adjustments in the mechanism.

3,627,414

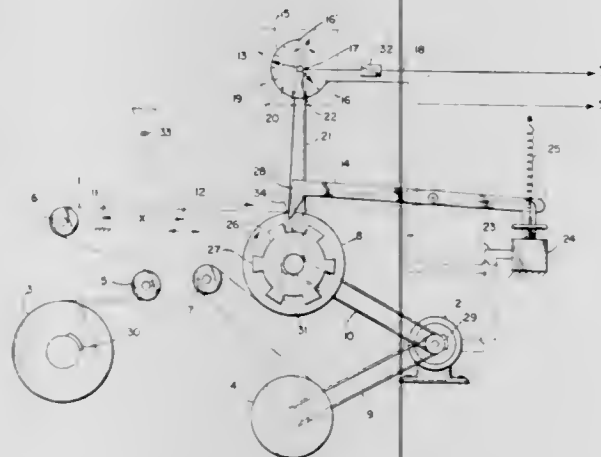
## PHOTOCOPY METER

Stanley F. Staples, 4110 Wheeler Ave., Alexandria, Va.  
Filed June 4, 1969, Ser. No. 830,303

Int. Cl. G03b 1/14, 1/32, 1/40

U.S. Cl. 355-64

3 Claims



A system to meter strip advances in photocopying apparatus is described in which the strip and a metering roll travelling together precisely are stopped intermittently by cogs fixed to the roll coming to abut a stop element at intervals proportioned to predetermined advances of the strip.

3,627,415

COPYBOARD HAVING AUTOMATIC LATCH  
RELEASING MEANS

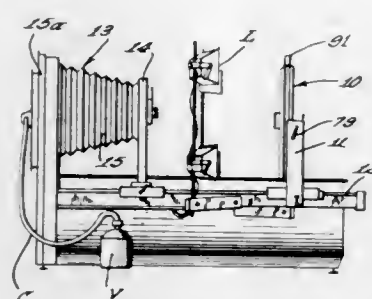
Gerhard A. Nothmann, Wilmette, Ill., assignor to Robertson Photo-Mechanix, Inc., Des Plaines, Ill.

Filed Dec. 5, 1969, Ser. No. 882,460

Int. Cl. G03b 27/62

U.S. Cl. 355-75

12 Claims



In graphic arts camera apparatus, a copyboard mounted on a frame for tiltable movement and having a cover section hinged to a base section and releasable latch for fastening the sections together is characterized by a latch actuator for automatically releasing the latch to permit separation of the hinged sections whenever the copyboard tilts from a vertical exposing position to a horizontal loading and unloading position. A catch mechanism prevents inadvertent release of the latch when the copyboard is vertically disposed, and the latch is biased toward a latched position to facilitate fastening the sections subsequent to loading the copyboard.

3,627,416

## TWIN-EXPOSING MACHINE

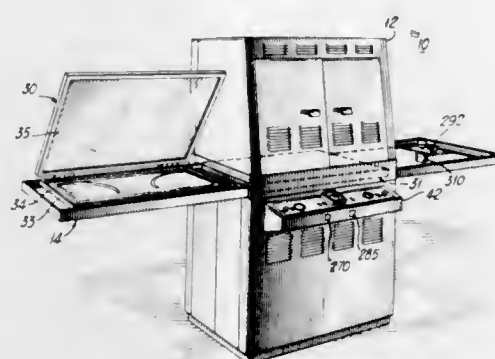
Harold R. Benson, Lombard, Ill., assignor to The Nurac Company, Chicago, Ill.

Filed Oct. 2, 1969, Ser. No. 864,293

Int. Cl. G03b 27/04

U.S. Cl. 355-89

7 Claims



A twin-exposure machine for use in chemical milling, printed circuit work, photographic plates and the like. The twin-exposing machine includes a cabinet containing one or more light sources. A generally horizontally extending track extends through opposite ends of the cabinet and a pair of printing frames is each mounted for travel on the track between a first exposing position within the cabinet and a second position out of the cabinet. Thus one frame may be loaded while the other is being exposed. The frame that is ready for exposure is pushed in manually and a circuit is closed which readies the exposure lights. Upon completion of the exposure, the frame is retracted automatically from the exposure position.

3,627,417

## REPRODUCTION APPARATUS

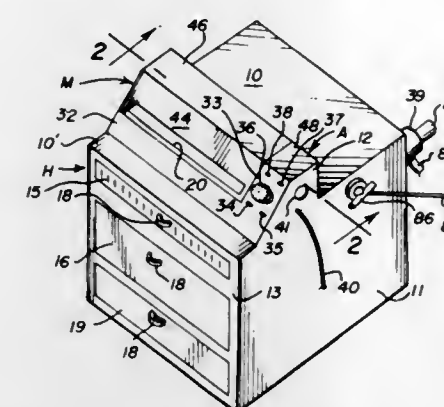
Ira L. Watson, 1330 North Franklin St., Colorado Springs, Colo., and Dennis Martinez, 6040 East 74th Pl., Commerce City, Colo.

Filed July 24, 1969, Ser. No. 844,522

Int. Cl. G03b 27/30

U.S. Cl. 355-100

6 Claims



The apparatus is particularly adapted to reproduce, on a relatively large and stiff illustration board, the lines of a drawing or the like which is to be illustrated by an artist to produce a so-called "wash" drawing or an airbrush or pencil or ink rendering. One side of the board is coated with a layer of heat and/or light-sensitive material, without bending the board, by passage through a pair of rollers, the lower of which is immersed in a coating solution and the upper of which is spring-pressed downwardly. The coating device is installed in an auxiliary housing atop a main housing, in the latter of which is a chamber containing heat lamps and an additional chamber to which a developer gas, such as ammonia, is supplied. A blower removed ammonia vapors from the developing chamber. The board is placed on a pad in a tray mounted on slides and provided with a glass cover, for moving the board into the heat chamber. Controls are placed on the auxiliary housing.

3,627,418

## CASSETTE TAPE SYSTEM WITH STROBOSCOPIC TEST MEANS

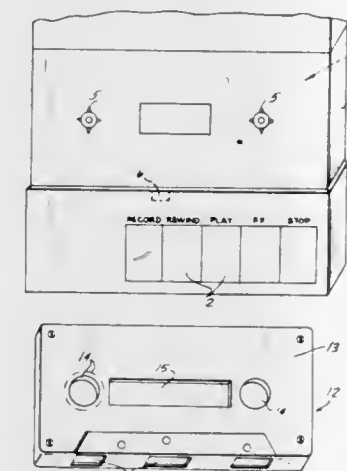
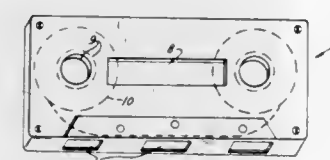
Stephen Prigozy, and Herman Post, both of Great Neck, N.Y., assignors to Robins Industries Corp., Flushing, N.Y.

Filed Mar. 10, 1970, Ser. No. 18,193

Int. Cl. G01b 3/40; G11b 5/00

U.S. Cl. 356-23

9 Claims



A cassette tape recorder and reproducer is adapted for use with tape cassettes with predetermined dimensions and configurations and has a rotatable tape transport shaft for transporting tape at a predetermined rate. Stroboscopic test means is provided for testing for deviations from the predetermined rate and has a cassette-casing means corresponding to the predetermined dimensions and configuration, a rotatable hub in the casing means engageable with the tape transport shaft, an observation window in the casing for observing at least a portion of the interior thereof, a stroboscopic tape trained in a close loop about the hub for advancement lengthwise of itself in response to rotation of the hub, guide means guiding the tape in a predetermined path past the window, and a light source means illuminating the tape with a periodicity requisite for making the tape appear to be at a standstill when the shaft transports the tape at a predetermined rate.

figurations and has a rotatable tape transport shaft for transporting tape at a predetermined rate. Stroboscopic test means is provided for testing for deviations from the predetermined rate and has a cassette-casing means corresponding to the predetermined dimensions and configuration, a rotatable hub in the casing means engageable with the tape transport shaft, an observation window in the casing for observing at least a portion of the interior thereof, a stroboscopic tape trained in a close loop about the hub for advancement lengthwise of itself in response to rotation of the hub, guide means guiding the tape in a predetermined path past the window, and a light source means illuminating the tape with a periodicity requisite for making the tape appear to be at a standstill when the shaft transports the tape at a predetermined rate.

3,627,419

## METHOD OF DETECTION, DOSAGE AND THE LIKE, OF A HYDROCARBON IN A FLUID AND APPARATUS FOR WORKING SUCH METHOD

Victor Carlomom Thevenier, Jemappes, Belgium, assignor to Societe-Intercommunale Belge de Gaz et d'Electricite, en abreg Intercom, Brussels, Belgium

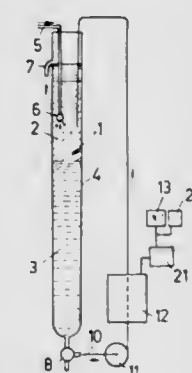
Filed June 14, 1968, Ser. No. 737,193

Claims priority, application Belgium, June 19, 1967, 700,158

Int. Cl. G01n 1/00, 21/00; G01j 3/46

U.S. Cl. 356-36

6 Claims



A method for detecting a hydrocarbon in a carrier liquid wherein a sample of the carrier liquid is diffused in a solvent for the hydrocarbon, and changes in the color of the solvent due to amounts of hydrocarbon dissolved therein are optically measured as an indication of the hydrocarbon on the carrier liquid.

3,627,420

## METHOD OF DETECTING HALIDES BY FLAME CHEMILUMINESCENCE

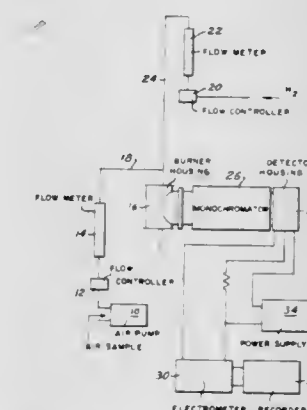
Walter Leslie Crider, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of Department of Health, Education and Welfare

Filed Feb. 26, 1970, Ser. No. 14,274

Int. Cl. G01j 3/30; G01n 21/58

U.S. Cl. 356-87

8 Claims



A method for detecting the presence of halides in gases is described whereby a halide-containing gas sample is con-



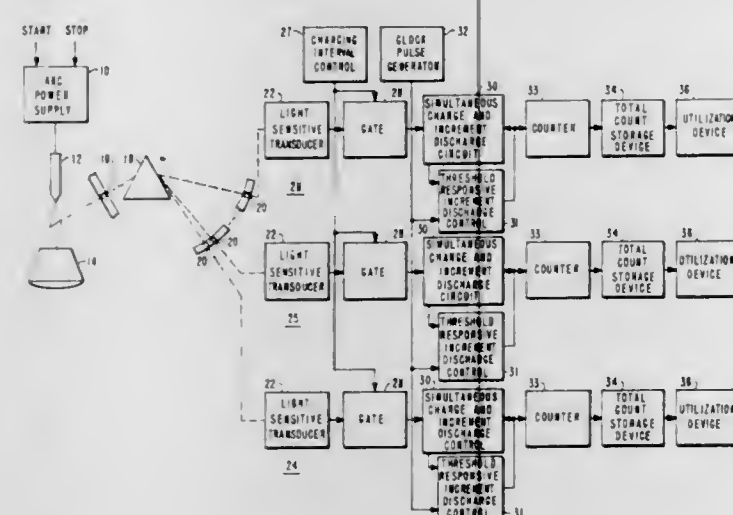
tacted with a hydrogen-oxygen flame and the spectral emission produced by the flame chemiluminescence of the halide is analyzed.

3,627,421

**READOUT SYSTEM FOR ANALYTICAL EQUIPMENT**  
John Harley, 355 Brooklyn Road, and Johannes C. Deventer, 278 The Hillside, both of Pretoria, Republic of South Africa  
Filed May 5, 1969, Ser. No. 821,740  
Int. Cl. G01j 3/30, 3/28

U.S. Cl. 356-98

16 Claims



A direct reading emission spectrometer is disclosed in which the current generated by a light-sensitive transducer in each of a plurality of channels corresponding to the different wavelengths of light from a sample to be quantitatively analyzed is applied to charge a capacitor during a charging interval. The capacitor voltage is compared with a threshold value at the start of each of a succession of sampling intervals within the charging interval, and an increment of charge is removed from the capacitor simultaneously with the charging thereof by the generated current during each of those sampling intervals at the start of which the capacitor voltage is determined to be at least equal to the threshold value. Each charge removal is digitally recorded to provide a continuous indication of the integral of current flowing into the capacitor.

3,627,422

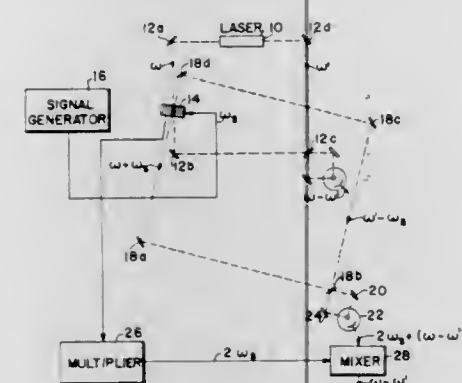
**MEANS FOR AVOIDING LOCKING IN RING LASERS**  
Marvin Chodorow, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed June 21, 1965, Ser. No. 465,685

Int. Cl. G01b 9/02; H01s 3/10

U.S. Cl. 356-106

12 Claims



Means are disclosed for frequency modulating opposing modes in a ring laser assembly whereby locking is minimized or eliminated. The use of three types of modulators compris-

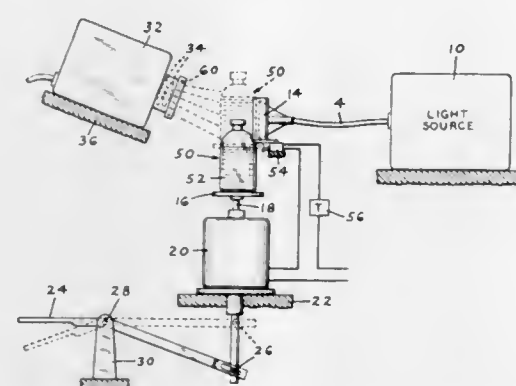
ing an acoustic generator, a light shutter and an electro-optic crystal are described. In each case, the modulators are driven in accordance with a time-varying signal provided by a signal generator.

3,627,423

**METHOD AND APPARATUS FOR DETECTING PARTICULAR MATTER IN SEALED LIQUIDS**  
Julius Z. Knapp, Somerset; Daniel J. Verin, Bloomfield, and Emanuel B. Hershberg, West Orange, all of N.J., assignors to Schering Corporation, Bloomfield, N.J.  
Filed Feb. 17, 1970, Ser. No. 12,342  
Int. Cl. G01n 21/24

U.S. Cl. 356-103

10 Claims



A method and apparatus for detecting particulate contaminants in a liquid; the method comprising the steps of positioning the container containing the liquid to be inspected in light paths angularly disposed to a viewing axis and forming an illuminated area with a shadow zone at the viewing axis, rotating the container and the liquid therein in the illuminated area and viewing the liquid from the shadow zone; the apparatus comprising a platform for supporting a container to be inspected, means for rotating and stopping the platform, light sources for directing light at the container at an angle relative to a viewing axis to form an illuminated area through the container with a shadow zone at the viewing axis, a camera having an electrooptical transducer, said camera being mounted at said viewing axis, and means connected to the camera for optically viewing the transduced image.

3,627,424

**BACTERIA COUNTER**

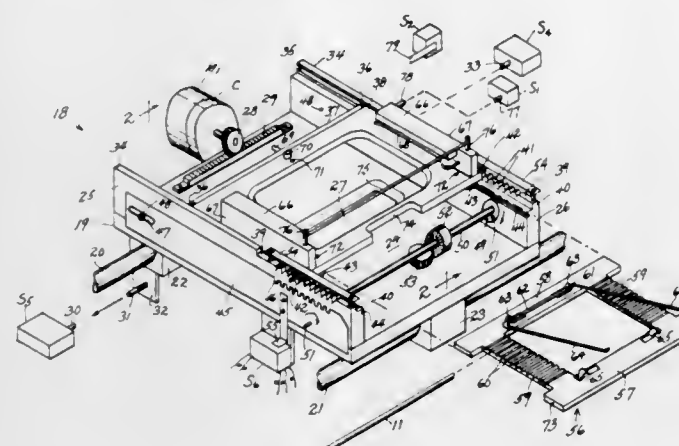
Horton E. Dorman; Charles Soodak, both of Silver Spring; Herbert M. Cullis, College Park; C. David Miller, Greenbelt; Rodolfo Ramiro Rodriguez, and Eric W. Youngquist, both of Silver Spring, all of Md., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Oct. 30, 1968, Ser. No. 771,911

Int. Cl. G01n 21/00; G01b 11/00

U.S. Cl. 356-103

21 Claims



An automated device for detecting measuring and counting growing microcolonies of bacteria by their light-scatter-

ing property. The growing bacteria are contained in glass capillary tubes filled with nutrient agar and are counted by passing the capillary tubes through a narrow beam of light. The tubes are mounted in a holder which is, in turn, detachably secured on a carriage. The carriage is translated in a direction lengthwise of the tubes and then sequentially moved transversely in a step equal to the distance between adjacent tubes. Transverse stepping takes place at the end of the longitudinal travel of each tube. A fixed light source and associated stationary optical means projects a narrow light beam which intersects the tubes as they translate. The presence of growing bacterial microcolonies causes light scattering which is detected in the form of pulses of light by a photomultiplier tube located opposite the path of translation of the tubes relative to the light source. The corresponding signal pulses produced by the photomultiplier tube are counted by an electronic counting circuit which provides a fast count of the particles scanned.

3,627,425

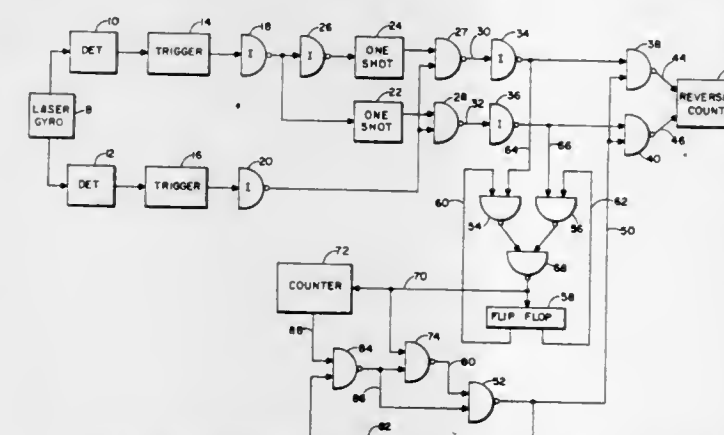
**LASER GYROSCOPE BIASING APPARATUS**  
Barrett Doyle, New Brighton, and Helmut M. Volk, St. Paul, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 14, 1969, Ser. No. 824,549

Int. Cl. G01b 9/02, 9/10

U.S. Cl. 356-106

5 Claims



Electronic apparatus processes the output of a laser gyroscope which is operated with a large amplitude oscillatory bias, to obtain the output after an integer number of bias cycles.

3,627,426

**HOLOGRAM INTERFEROMETER WITH TWO REFERENCE BEAMS**

Tadao Tsuruta; Norio Shiotake, and Yoshinobu Ito, all of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

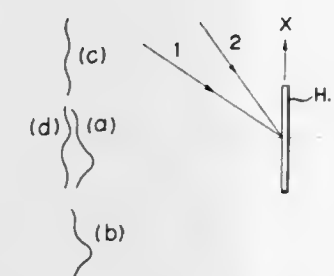
Filed Mar. 11, 1969, Ser. No. 806,236

Claims priority, application Japan, Mar. 14, 1968, 43/16219

Int. Cl. G01b 9/02,

U.S. Cl. 356-109

8 Claims



A method and apparatus are provided for obtaining interference fringes in a double exposure hologram interferometer

using two collimated reference beams capable of restoring clear interference fringes on an object which undergoes lateral translation between the exposures, by a slight rotation of one of the image-reconstructing beams on the reconstruction process to one of the images exactly over the other. Polarization beam-splitting elements such as a Savart plate can be adopted to tilt the images and to give rise to fringe patterns favorable for the analysis of the changes in height of the object between the exposures. Retardation between the images is also provided by translation of the hologram.

3,627,427

**METHOD AND APPARATUS FOR CONTOUR MEASUREMENT**

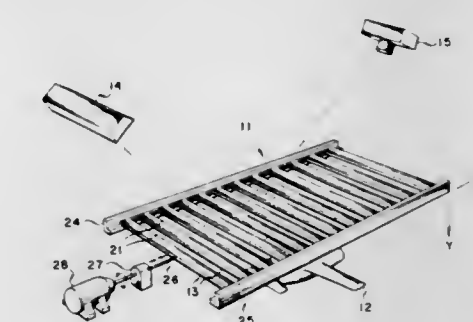
Winston O. Johnson, Atlanta, and Donald M. Meadows, Marietta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 11, 1970, Ser. No. 10,520

Int. Cl. G01b 11/24, 11/30

U.S. Cl. 356-120

17 Claims



A technique for measuring the contour of a surface by generating a pattern of optical interference between a periodic shadow pattern cast onto the surface and a periodic reference pattern. Translating the shadow pattern and the reference pattern at least one complete cycle of spatial frequency causes the average intensity of the shadow pattern, the reference grid pattern, and various extraneous optical noise images to be minimized or cancelled, so that only contour lines accurately describing the contour of the surface remain on the surface to be viewed or photographed.

3,627,428

**OPTICAL QUADRATURE**

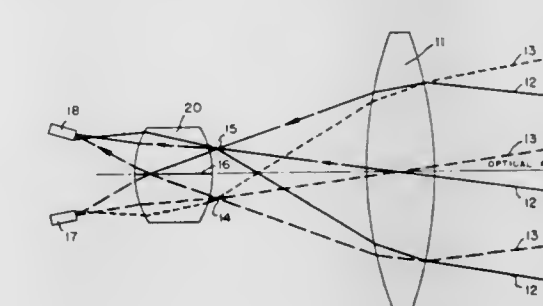
Truman G. Bergman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 29, 1970, Ser. No. 50,515

Int. Cl. G01b 11/26

U.S. Cl. 356-141

6 Claims



A lens assembly and associated detectors for providing directional information concerning the location of a source of light with respect to the system optical axis comprising a lens system for separating light rays entering therein into quadrants, a focusing lens for focusing light rays on the lens system and detectors positioned with respect to the lens



system such that the separated light rays impinge on the detectors and the outputs of the detectors provide directional information with respect to the system optical axis.

3,627,429

# LASER OPTICAL SURVEYING INSTRUMENT AND METHOD

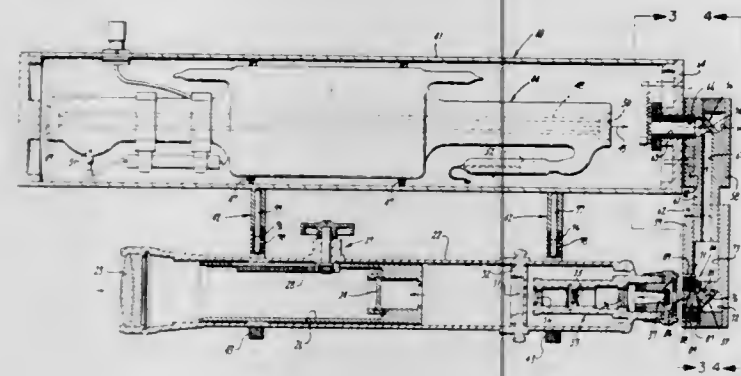
Richard A. Jaenicke, San Francisco, and Raymond A. Evanson, El Cerrito, both of Calif., assignors to Spectra-Physics, Inc.

Filed Aug. 14, 1968, Ser. No. 752,700

Int. Cl. G01b 11/27

U.S. Cl. 356—153

9 Claims



A laser surveying instrument including a telescope and a laser head coupled together with movable optics for directing the output beam from the laser head into the eyepiece and through the telescope after routine sighting.

3,627,430

# OPTICAL MEASURING DEVICE

Walter Miller, Traunstein, Germany, assignor to Dr. Johannes Heidenhain, Traunreut nr. Traunstein, Germany

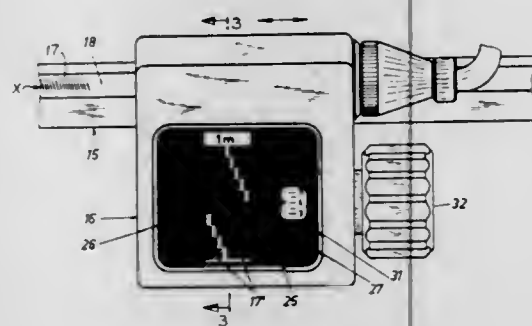
Filed June 2, 1969, Ser. No. 829,182

Claims priority, application Germany, May 30, 1968, P 17 73 529.4

Int. Cl. G01b 11/04; G02b 27/02

U.S. Cl. 356—170

5 Claims



An optical measurement device including a scale and a reading device for measuring and setting of lengths or angles, which comprise means for projecting a section of a scale enlarged into a reading field of a reading device. The scale is formed in its total range to be read in the manner of a transverse measuring field including FIGS. The FIGS. have straight-lined limiting margins and are dark at least at their edges, and are set off relative to each other. Each of the FIGS. of the transverse measuring field provided on the scale is numbered, for a numerical indication of the measuring values. A fork is disposed in the reading field of the device for the symmetry equalization and has limit edges disposed

parallel to the straight-lined FIGS. of the transverse measuring field, and passes through within the range of the figure images disposed in or crosswise to the direction of displacement of said fork. A numbered figure image of the transverse measuring field is caught by the fork, and means are provided for measurably displacing the fork for division of the intervals of the transverse measuring field.

3,627,431

# DENSITOMETER

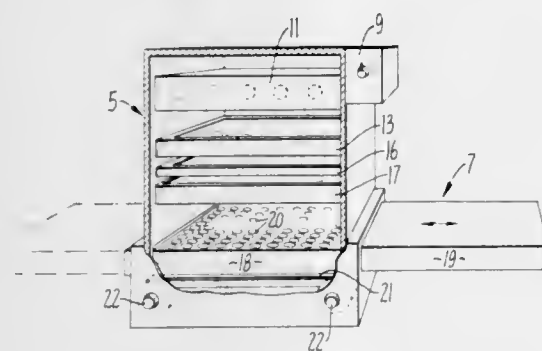
John Victor Komarniski, 2167 Burr Ct., Santa Cruz, Calif.

Filed Dec. 22, 1969, Ser. No. 887,122

Int. Cl. G01j 3/46, 3/50

U.S. Cl. 356—180

1 Claim



A colorimeter or densitometer wherein a number of samples can be read simultaneously. Preferably the instrument incorporates a filter so that the optical density of all samples can be compared on a gray scale. The reading is taken on a photosensitive surface which can be an ordinary photographic paper or a photoelectric cell.

3,627,432

# REACTION VESSEL FOR USE IN PHOTOMETRIC MEASUREMENTS

Wilhelm Bergmann, Hamburg, Germany, assignor to Eppendorf Geraetebau Netheler & Hinz GmbH, Hamburg, Germany

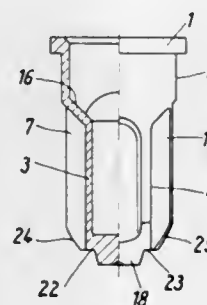
Filed Apr. 29, 1969, Ser. No. 820,231

Claims priority, application Germany, May 2, 1968, P 17 73 333.4

Int. Cl. G01n 1/10

U.S. Cl. 356—246

12 Claims



A small vessel having generally cylindrical form is described. This vessel has a flange at the upper rim and the lower portion is provided with parallel planar surfaces particularly suitable for photometric measurement of the contents of the vessel.

3,627,433

# STYLUS WITH PRESSURIZED RECORDING MEDIUM SUPPLY MEANS AND MEANS FOR CONTROLLING THE DISPENSING OF RECORDING MEDIUM

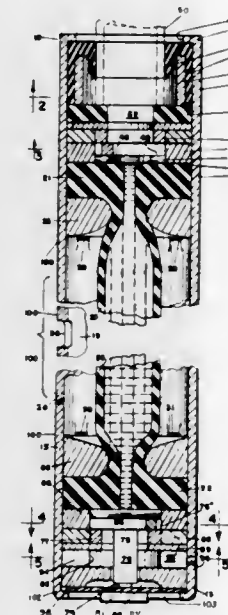
Otto John Munz, Suite 602, Bldg. 1, Crystal Plaza, 2001 Jefferson Davis Hwy., Arlington, Va.

Continuation-in-part of application Ser. No. 562,134, Jan. 30, 1956, now Patent No. 3,405,213, dated Oct. 8, 1968. This application Sept. 24, 1968, Ser. No. 762,114

Int. Cl. B43k 27/10

U.S. Cl. 401—47

6 Claims



A recording medium dispensing device which may be used as a three-dimensional glyph producing stylus or a two-dimensional record producing stylus or pen (either nib type or stylographic type) having one or more pressurized recording medium containers and control means for individually controlling the dispensing of recording medium from the containers, and having separately controllable withdrawing means for withdrawing previously dispensed recording medium from the recording volume or surface.

3,627,434

# MECHANICAL PENCIL FOR FINE LEADS

Yukio Horie, Tokyo, Japan, assignor to Dainihon Bungu, Kabushiki Kaisha, Tokyo, Japan

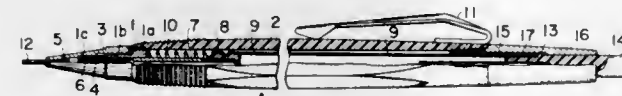
Filed Oct. 10, 1969, Ser. No. 865,254

Claims priority, application Japan, May 14, 1969, 44/44484

Int. Cl. B43k 21/16

U.S. Cl. 401—65

3 Claims



A mechanical pencil for fine leads with a pushbutton-type lead advancing mechanism, a conical ferrule at the writing end of the barrel and a plug connecting the ferrule to the barrel. The plug is so arranged that it reaches deep into the ferrule, thereby rendering the writing end of the barrel more rigid and shortening the distance between the pencil tip and the clutch head which advances the lead.

3,627,435

# NOZZLE FOR SUPPLYING FILLER MATERIAL BETWEEN ADJACENT SURFACES

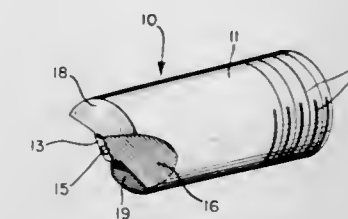
Raymond J. Hendershot, Pennsburg, Pa., assignor to American Olean Tile Company, Lansdale, Pa.

Filed Apr. 23, 1970, Ser. No. 31,094

Int. Cl. E04f 21/12

U.S. Cl. 401—265

4 Claims



A nozzle for supplying filler material to a void formed between adjacent surfaces is described which comprises a cylindrical barrel having connecting means at one end and an applicator tip at the other end. A bore extends through the barrel and has a constant diameter portion near the tip end thereof. The tip end is formed by the geometric intersection of essentially four beveled surfaces, i.e. a pair of opposed angular cheeks controlling side-to-side movement, vertical depth of the nozzle aperture in the void, and formation of a seal in the void between adjacent contiguous surfaces; a leading surface permitting the nozzle to follow the line of application and also depressing any previously filled voids of this same material which intersect at an angle; and a trailing surface adapted to permit the tip to strike the exposed surface of the filler material clean as the nozzle progresses.

3,627,436

# TOOL FEEDING APPARATUS

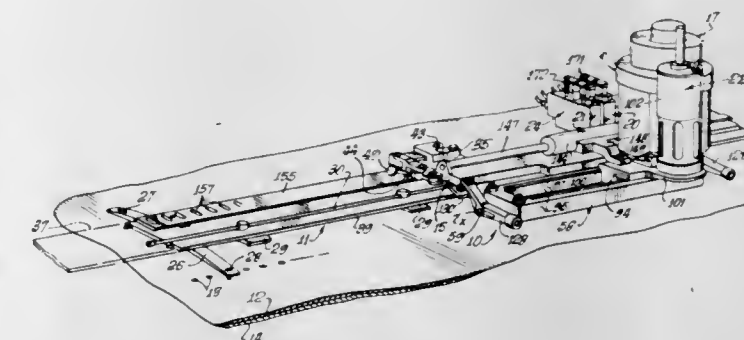
Ralph D. Adams, Glendora, and Rudolf Richard Schindler, Los Angeles, both of Calif., assignors to Omark-Winslow Aerospace Tool Co.

Filed Mar. 24, 1970, Ser. No. 24,045

Int. Cl. B23b 41/00, 45/14, 39/26

U.S. Cl. 408—13

39 Claims



A drilling apparatus mounted on and traveling step by step along a track mounted on a work panel and drilling a row of spaced holes in the panel in accordance with the spacing of positioning slots in a template on the track. A collet-type clamp unit trails the drill unit and clamps the drill unit against the panel prior to each drilling operation, the drill unit being adjustable in two perpendicular planes so as to be normal to the surface to be drilled. Two latching mechanisms are fixed respectively to the drill unit and the clamp unit to locate these units along the track, and a reciprocating actuator steps first the drill unit and then the clamp unit to successive positions along the template.



3,627,437

## TOOLHOLDER DETECTION SYSTEM

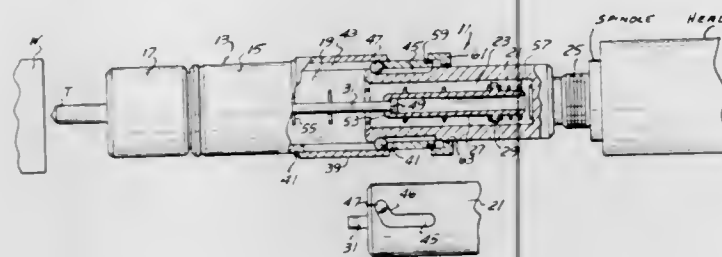
Theodore M. Smith, 14750 Puritan Ave., Detroit, Mich.

Filed Sept. 15, 1969, Ser. No. 858,012

Int. Cl. B23b 49/00

U.S. Cl. 408—16

4 Claims



A "no tool," "broken tool" or "improperly set tool" detection device for use with taps, drills, reamers, boring tools, counter bores and milling cutters which include a toolholder having assembled first and second parts normally biased outwardly of each other with a radioactive element on one part and a shield upon the other part normally spaced from the radioactive element and in conjunction with a radiation detection system whereby upon relative longitudinal movement of the toolholder first and second parts, said shield will protectively enclose said radioactive element, said relative movement being prevented when there is "no tool," "broken tool" or an "improperly set tool," the means for assuring said relative longitudinal movement which includes first longitudinal slots on the tool first part and corresponding laterally displaced second slots on the tool second part with angular extensions of said second slots and with balls interposed respectively between said first slots and the extensions of said second slots, whereby rotative drive delivered to said second part effects a cam action between said balls and angular extension to effect a relative longitudinal movement between said first and second parts.

3,627,438

## MACHINE TOOL GUARDS

Vernon Muslin, 16 Roxburgh Croft, New Cubington, Leamington Spa, and Derrick Crossland, Western Road, Stratford-on-Avon, both of England

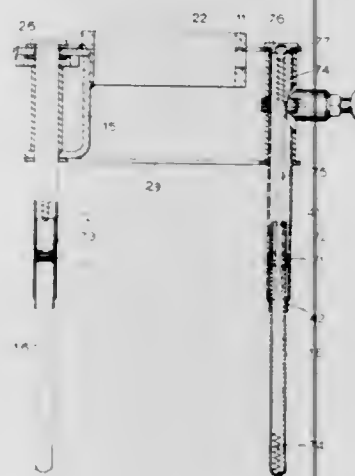
Filed Aug. 29, 1969, Ser. No. 854,077

Claims priority, application Great Britain, Aug. 29, 1968, 41,195/68

Int. Cl. B23b 47/00

U.S. Cl. 408—72

9 Claims



A machine tool guard to guard an operative or other persons from injury by moving parts of the machine tool includes a support arrangement adapted to be mounted on a

part of a machine tool which is reciprocable with advance of the tool towards a workpiece, thereby providing a compact guard closely surrounding the tool. The guard incorporates a plurality of elongated guard members each extending from said support arrangement in the direction of advance of the machine tool to form a guard therefor, the elongated guard members each being mounted for independent reciprocation with respect to said support arrangement such that in operation they are at least partially retractable into and extensible from said support arrangement. As a result the individual guard members can be made sufficiently long to effectively guard the tool while at the same time they can be retracted to permit a desired extent of advance of the tool towards or into the workpiece.

3,627,439

## DRILL JIG SLEEVE FOR EQUIPMENT

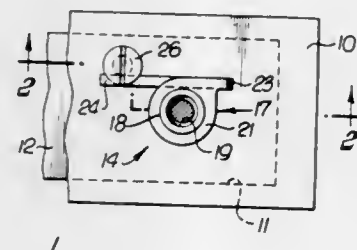
Peter Gnath, Aldingen, Germany, assignor to American Drill Bushing Company, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 722,396, Apr. 18, 1968, now Patent No. 3,535,956. This application Apr. 4, 1969, Ser. No. 813,674

Int. Cl. B23b 49/02

U.S. Cl. 408—241

9 Claims



A guide sleeve for a twist drill, the guide sleeve being held in a drill block against rotation and also against movement axially of the sleeve. The sleeve has a cylindrical exterior. A stamping of relatively flat stock has a hole in one end encircling and fastened to the sleeve at the entrance end, as for example by welding, soldering or metal glue. Additionally, a portion of the stamping engages the surface of the drill block to space the entrance end from the drill block and a threaded stud in the drill block has a position spaced a short distance from the sleeve and engages a radially extending end of the stamping to prevent rotation of the sleeve when the drill is injected into it.

3,627,440

## CENTRIFUGAL FAN

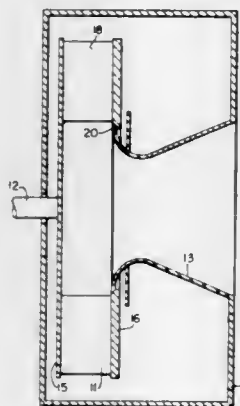
Carl O. Wood, Needham Heights, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 7, 1970, Ser. No. 26,234

Int. Cl. F04d 17/08, 29/40

U.S. Cl. 415—53

2 Claims



An axial inlet for a centrifugal fan is provided with an inlet cone-shaped to converge at a distance in front of the inlet

opening of the wheel sideplate to a diameter less than the diameter of the wheel inlet opening and then reversely curved to terminate adjacent the edge of the wheel sideplate opening. A seal plate may extend from around the exterior of the reversely curved portion of the inlet cone in a manner to overlap the front of the wheel sideplate and an inside edge of the sideplate opening wall may be chamfered towards the interior of the wheel in the direction of the periphery of the wheel.

3,627,441

## FLUID-OPERATED ESCAPEMENT MECHANISM

Colin John Kirk, Crowthorne, England, assignor to Martonair Limited, Twickenham, Middlesex, England

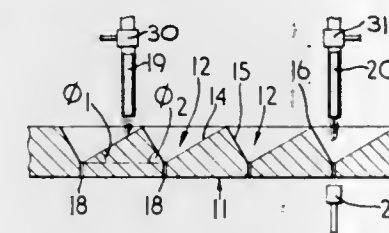
Filed Jan. 22, 1970, Ser. No. 4,893

Claims priority, application Great Britain, Feb. 19, 1969, 8,884/69

Int. Cl. F04d 23/00

U.S. Cl. 415—148

10 Claims



A fluid-operated escapement mechanism, which can be used as a counting device, has a member which is moved in predetermined increments by means of jet nozzles. The jets impinge on groups of reaction surfaces, each group having two oppositely inclined reaction surfaces which are arranged so that the member normally moves in one direction in an intermittent manner. The mechanism can provide signals when the member reaches predetermined positions in its travel.

3,627,442

## BLOWER HOUSING

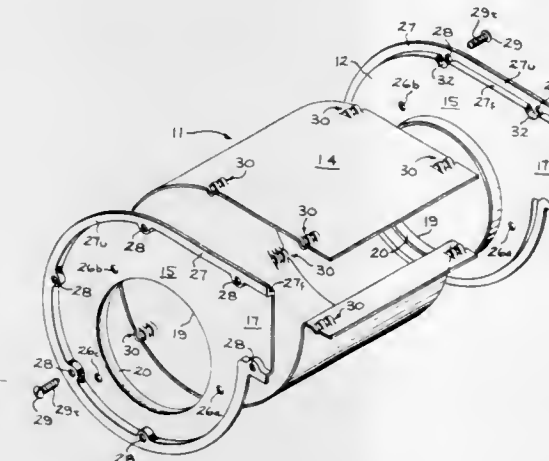
Theodore C. Brandt, Whitehouse, Tex., assignor to General Electric Company

Filed May 14, 1970, Ser. No. 37,226

Int. Cl. F04d 29/40, 25/06, 17/08

U.S. Cl. 415—219

14 Claims



Improved means is provided for housing a blower, fan, or the like. Basically, the improved housing means comprises end wall means, scroll means having a first dimension extensible along a first line transverse to the end wall means and a second dimension extensible along a second line generally parallel to the end wall means, and readily removable fastener means for quickly connecting and disconnecting the end wall and scroll means to and from one another. With this arrangement, a fluid inlet opening for the blower can be provided in the end wall means which is smaller than the portion

of the blower contained within the housing means, but the blower portion can be easily extracted from within the housing means by removing the fastener means.

3,627,443

## TURBINE BLADE

Ludwig Pirzer, Vorst Bezirk/Dusseldorf, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 3, 1969, Ser. No. 854,987

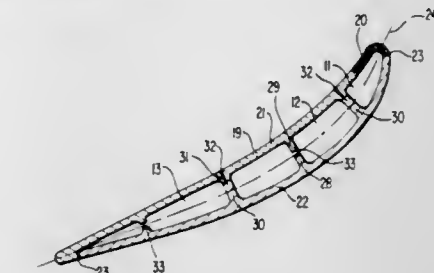
Claims priority, application Germany, Sept. 4, 1968, P 17 76

015.5

Int. Cl. F01d 5/18

U.S. Cl. 416—90

10 Claims



A turbine blade with convection-cooling or screen-cooling which is capable of manufacture in small sizes and consists of two hollow blade halves provided with axial internal ribs, of which at least one rib of one hollow blade half extends beyond the profile center plane into the other hollow blade half and is connected therewith a corresponding rib extension.

3,627,444

## WICK LINED VANES AND THEIR MANUFACTURE

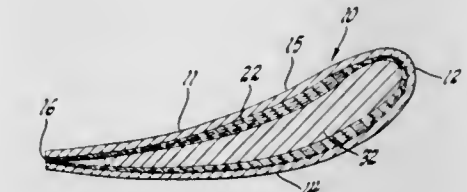
Jerome V. Lentz, Plainfield, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1969, Ser. No. 879,109

Int. Cl. F01d 5/08

U.S. Cl. 416—96

11 Claims



A vane to be cooled by circulation of a coolant through a metal felt lining in the vane, and its manufacture. The interior of the sheet metal vane wall is provided with bosses which are distributed over the surface and which extend through the metal felt so as to provide a suitable reaction point for dies which are used to form the vane wall and metal felt lining into airfoil form.

3,627,445

## VENTILATING DEVICE FOR COOLING A HEAT ENGINE

Francois Andriussi, and Pierre Rouques, both of Grenoble, France, assignors to S.E.R.M.A.G. Societe d'Etudes et de Recherches Magnetiques, St. Martin d'Heres, France

Filed Apr. 14, 1969, Ser. No. 815,975

Claims priority, application France, Apr. 17, 1968, 148308

Int. Cl. F04d 25/14; H02k 49/00

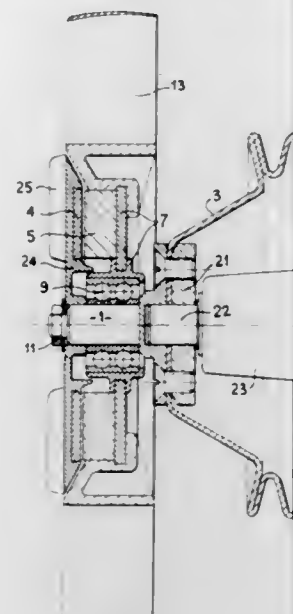
U.S. Cl. 416—170

3 Claims

Ventilating device for a heat engine comprising a fan and a driving shaft connected to the fan by a coupling constituting a hysteresis drive coupling designed to slip beyond a given



maximum transmissible torque. The part of the device which constitutes the armature and must dissipate the heat is



located at the end of the device adjacent the fan, so as to face the stream of air created by the fan, whereby this part is cooled by this stream of air.

3,627,446

## POND WATER AGITATOR

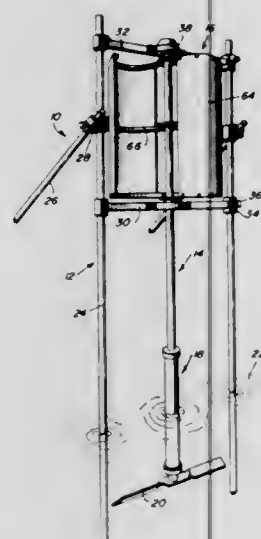
Jerry D. Wade, and Phillip H. Geisler, both of Galena, Kans., assignors to Wadler Manufacturing Company, Inc.

Filed May 1, 1970, Ser. No. 33,588

Int. Cl. B01f 7/24

U.S. Cl. 416-171

10 Claims



A wind-operated agitator, circulates water in ponds to prevent surface freezing during winter months. Upward flow of warmer water from the bottom of the pond is induced by rotation of an impeller connected to the lower end of a vertical shaft to which a wind vane assembly is secured above the water. A protective tubular housing encases the lower section of the shaft submerged in the water.

3,627,447

## RADIAL TURBINES

Ulo Okapu, St. Lambert, Quebec, Canada, assignor to United Aircraft of Canada Limited, Longueuil, Quebec, Canada

Filed Mar. 17, 1969, Ser. No. 807,599

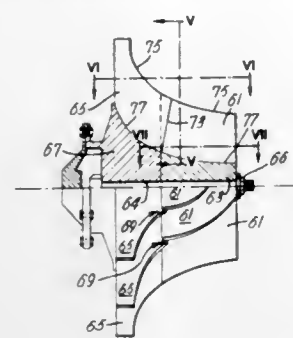
Int. Cl. F04d 29/26; F01d 1/00

U.S. Cl. 416-227

7 Claims

A rotor for a centripetal turbine having a rotatable hub, star blades extending radially from the hub and exducer blades extending substantially radially from the hub but curved away from the direction of rotation of the hub. A gap or channel is provided between the trailing edge of each star blade and the leading edge of each corresponding exducer

blade to direct a jet of fluid over the convex surface of the



exducer blade to reenergize the boundary layer formed thereon during operation of the rotor.

3,627,448

## LOCKING ARRANGEMENT FOR SIDE-ENTRY BLADES

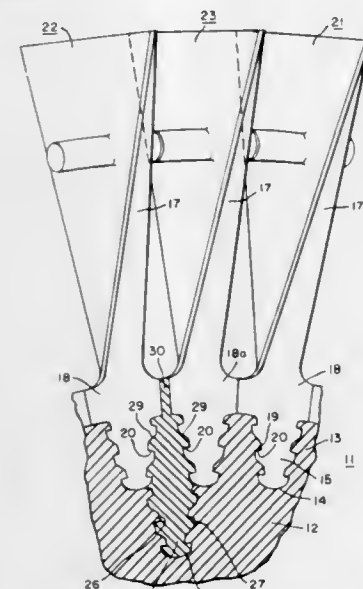
Donald R. Rupp, Media, and James A. Pratt, Springfield, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 31, 1969, Ser. No. 889,599

Int. Cl. F01d 5/32

U.S. Cl. 416-220

4 Claims



An arrangement is provided for installing and subsequent locking of side-entry blades in a turbine rotor disc. Heretofore, the placement of the last blade in a circular row of turbine blades has required twisting, bending and distorting of the last and adjacent blade at assembly because of interference between adjacent blades. This jeopardized their reliability in service. The present arrangement permits radial entry of the last blade into the rotor or disc without distortion of any of the blades.

3,627,449

## COMBUSTION PUMP-GAS TURBINE SYSTEM

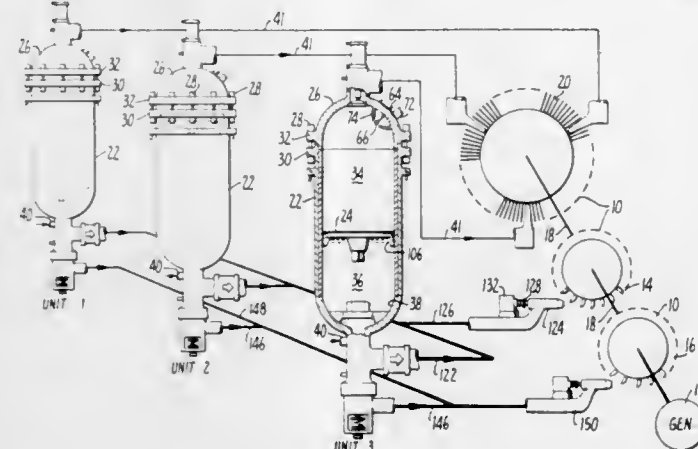
Eric A. Salo, 15898 Via Pinale, San Lorenzo, Calif.

Filed June 24, 1970, Ser. No. 49,283

Int. Cl. F04f 1/16; F04b 17/00

U.S. Cl. 417-73

2 Claims



A combustion pump system for the high pressure pumping of liquids comprising a plurality of casings, a free piston

slidably disposed within each of said casings for reciprocal movement between an upper combustion chamber and a lower hydraulic chamber defined therein, a liquid input line connected to the hydraulic chamber of each casing, each free piston being adapted to be raised from its related hydraulic chamber toward its related combustion chamber by admission of liquid into said hydraulic chamber through the input line connected thereto, a liquid output line connected to each hydraulic chamber, means for each casing to introduce a fuel-air mixture into the combustion chamber of the casing and for igniting the same therein to drive the free piston downwardly and forcibly discharge liquid therebeneath from the hydraulic chamber through said output line, said liquid output lines being interconnected to form a single liquid discharge line, and control means adapted to sequentially integrate the reciprocal movement cycles of said free pistons to provide a substantially continuous liquid output from said discharge line;

turbine rotor means comprising a drive nozzle, said discharge line being in communication with said nozzle to thereby drive said turbine rotor means; and

an exhaust line interconnecting each combustion chamber with a gas turbine and adapted to convey the products of combustion from each such combustion chamber to a gas discharge nozzle at said gas turbine during the course of upward movement of the free piston associated with said combustion chamber.

3,627,450

## FUEL CONTROL VALVE

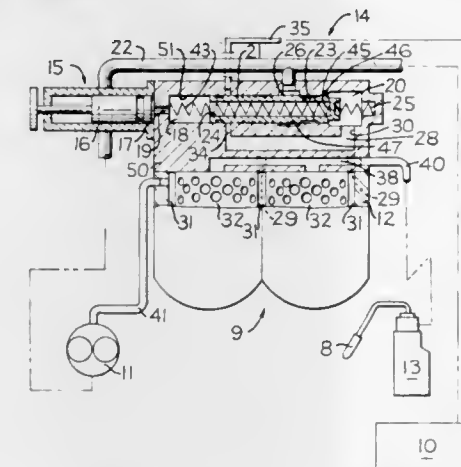
Harold L. Ward, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 18, 1970, Ser. No. 73,480

Int. Cl. F04b 23/08, 49/00

U.S. Cl. 417-205

8 Claims



A single, multipurpose valve is located between a transfer pump and a fuel injection pump in an engine fuel system for performing multiple functions. The valve includes a valve body having a cylindrical internal bore and a valve sleeve reciprocable within the bore between four different positions. Lands, grooves, a port and an inner wall of the valve sleeve are positioned with respect to openings in the valve body to permit the valve to be operated as a priming mechanism to permit bleeding of the system when filling, to function as a bypass in controlling system pressure during operation and to provide a continuously controlled air bleed during engine operation. The multipurpose valve reduces the number of separate valves required for proper functioning of the fuel system and simplifies checkout in the event of malfunctions in the fuel system.

3,627,451

## HYDRAULIC TRANSFORMER

Herbert H. Kouns, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,709

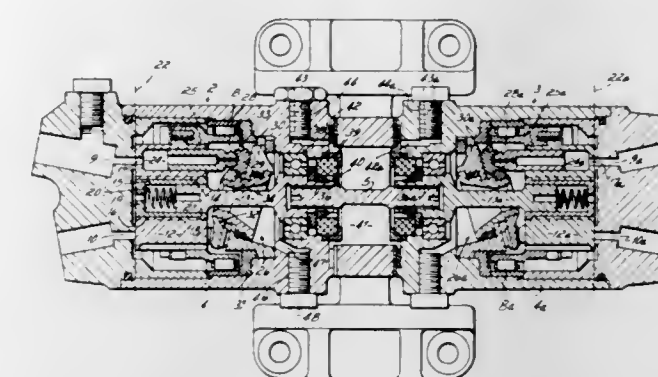
Int. Cl. F04b 1/00

U.S. Cl. 417-271

14 Claims

A bidirectional hydraulic transformer for transferring power to or from either one of two separate and isolated

hydraulic control circuits without the transfer of any hydraulic fluid between the circuits. The transformer comprises two axial piston pump/motor devices, the rotors of which are in-



3,627,452

## FLEXIBLE BAND FLUID DEVICE

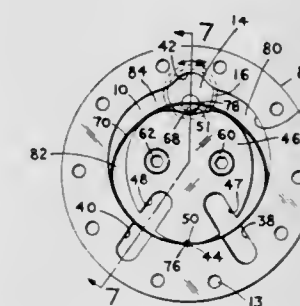
Friedrich O. Bellmer, Stanhope, N.J., assignor to Worthington Corporation, Harrison, N.J.

Filed Dec. 13, 1968, Ser. No. 783,686

Int. Cl. F04c 5/00

U.S. Cl. 418-45

45 Claims



A fluid machine is provided which is operable as a pump, compressor, or fluid motor, or as a combined fluid motor and pump or compressor, and comprises a working member taking the form of a flexible band which divides a working chamber into inner and outer working chambers and is flexibly movable through a cycle of operation therewithin to alternately expand and contract respective portions of said inner and outer working chambers. Inlet and outlet passages are provided in fluid flow communication with each of said inner and outer working chambers and are operable to enable the pumping or compression of fluid therethrough when the fluid machine is utilized as a pump or compressor, and/or to admit fluid under pressure thereto and exhaust the same therefrom when the fluid machine is utilized as a fluid motor or a combined fluid motor and pump or compressor.

3,627,453

## PUMPS AND MOTORS HAVING ECCENTRIC SHAFT SEALING MEANS

Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind.

Filed July 10, 1970, Ser. No. 53,852

Int. Cl. F01c 1/10, 5/00; F03c 3/00

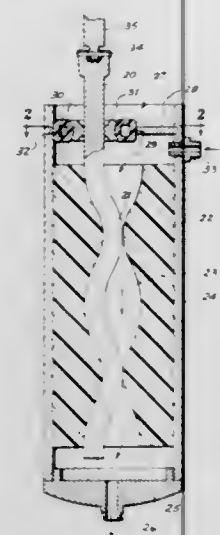
U.S. Cl. 418-48

12 Claims

A pump or motor of the type having a pair of helical gears fitted one within the other to define a rotor and a stator, the gear members being received in a cylindrical casing from which at least one end of the inner gear member projects, the



casing being sealed by a multiple part sealing member comprising a circular sealing ring engaging the inner surface of the casing and rotatable relative thereto, the sealing ring having an eccentrically disposed circular opening therein through which the inner gear member freely passes, the inner gear member mounting a tire which makes sealing contact



with the periphery of the circular opening in the sealing ring, the tire also contacting the inner surface of the casing at one side thereof, the tire and sealing ring being movable relative to each other and to the casing, the sealing member acting to close and seal the casing irrespective of relative rotational and gyrating movement between the inner and outer gear members.

3,627,454

## HYDRAULIC DEVICE

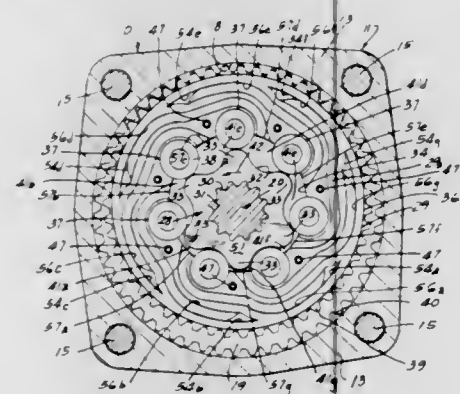
Raymon L. Goff, and Fredrick D. Venable, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio

Filed July 14, 1969, Ser. No. 841,405

Int. Cl. F01c 1/02, 1/42

U.S. Cl. 418-61

11 Claims



A hydraulic motor-pump assembly including a housing, a chamber formed in the housing, a shaft journaled in the housing and extending into the chamber and a gear set in the chamber including an externally toothed rotor mounted fast on the shaft and an internally toothed stator assembly surrounding the shaft in meshing relation. The stator assembly is geared to the housing so as to cause, in response to relative rotation of the rotor, orbital movement of the stator assembly about the axis of the rotor and rotational movement of the stator assembly about its own axis at a speed less than the speed of rotation of the rotor. Certain passages, ports and the like are provided in the housing and in the stator assembly for directing high- and low-pressure fluid to and from the expanding and contracting fluid pockets formed between the teeth of the stator assembly in a manner providing high

operating efficiency. The motor-pump assembly has wide application including use in a vehicular hydraulic motor drive arrangement.

3,627,455

## MULTICYCLE SELF-BALANCING GEAR PUMP

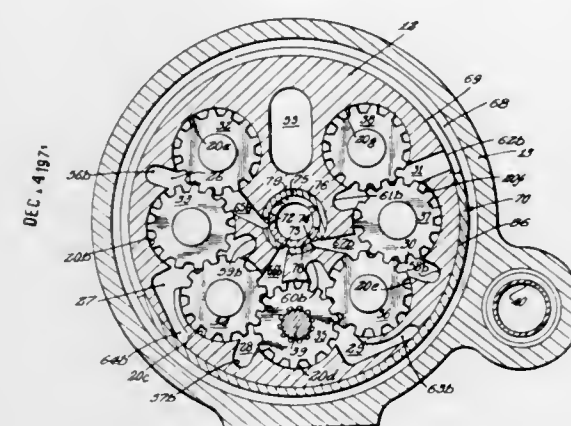
Pius J. Nasvytis, East Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Feb. 5, 1970, Ser. No. 8,861

Int. Cl. F01c 1/24

U.S. Cl. 418-196

12 Claims



A multicycle self-balancing gear pump incorporates a variable staging valve for changing the amount of discharge flow of the pump. The pump employs seven gears with six gear meshes at pumping states and the variable staging valve controls both discharge and bypass porting of the pump. In one embodiment the staging valve is a rotary valve having a pair of valving members for controlling the discharge portion and a pair of valve members for controlling bypass porting. Another construction employs a linearly operated staging valve for controlling porting of the liquid flow.

3,627,456

## VANES FOR FLUID POWER CONVERTER

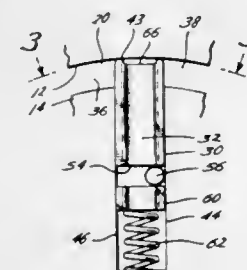
Charles R. Gerlach, San Antonio, Tex., assignor to Diversified Products Corporation, Corpus Christi, Tex.

Filed Mar. 25, 1970, Ser. No. 22,537

Int. Cl. F01c 1/00; F03c 3/00; F04c 27/00

U.S. Cl. 418-267

9 Claims



A self-pressurizing reversible vane for use in a fluid pump or motor in which the width of the vane is sufficient to provide a close tolerance fit against both sides of the slot to eliminate slap, but having grooves down each side of the vane to allow high-pressure oil to get under the vane and provide self-loading and allowing the converter to be reversible. Movable vane groove-sealing means positioned at the bottom ends of the grooves and sized to seal only the groove means on the low-pressure side of the vane and being movable to the low-pressure side in response to pressure on the high-pressure side. A recess in the outer face of the vane admitting high-pressure fluid for providing pressure compensation for reducing mechanical losses.

## ERRATUM

For Class 425-307 see:  
Patent No. 3,626,589

3,627,457

## PROCESS AND DEVICE FOR IGNITING OXYACETYLENE CUTTING TORCHES

Georg Roder, Frankfurt am Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed Feb. 24, 1969, Ser. No. 801,695

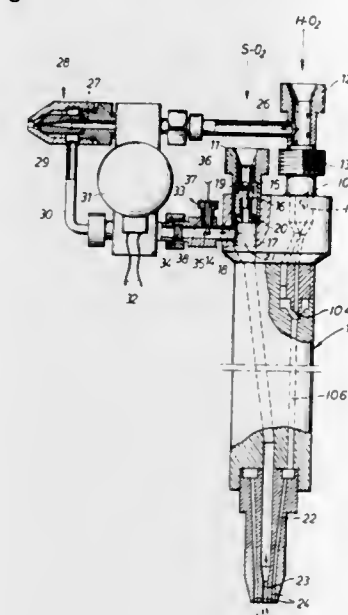
Claims priority, application Germany, Feb. 24, 1968, P 17 29

894.1

Int. Cl. F23q 9/08

U.S. Cl. 431-6

11 Claims



A process and device for igniting autogenous cutting torches, particularly in multitorch cutting machines, includes conducting the fuel gas mixture into the cutting oxygen canal or into an auxiliary canal connected with the cutting oxygen canal where the ignition takes place. A portion of the heating oxygen is utilized to produce a suction effect within the cutting oxygen canal.

3,627,458

## FLAME DETECTION SYSTEM

Kenneth R. Wade, Burscough, nr. Ormskirk, England, assignor to United Gas Industries Limited, London, England

Filed Aug. 19, 1969, Ser. No. 851,390

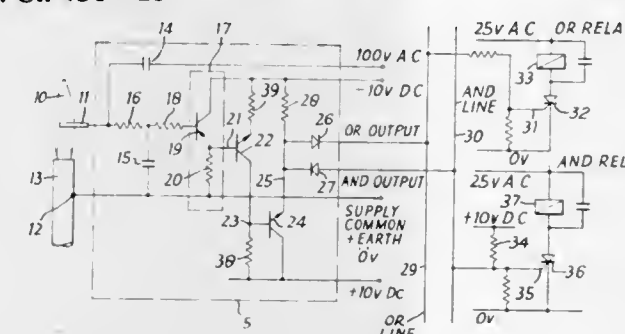
Claims priority, application Great Britain, Aug. 27, 1968,

40,958/68

Int. Cl. F23n

U.S. Cl. 431-25

8 Claims



A flame detector, particularly for use in effecting automatic control of the fuel supply to burners, has a capacitor connected to an electrode which is disposed in the flame, when present at one of the burners or at a pilot burner, so that the capacitor charges up through the rectifying action of

a said flame when an alternating current is supplied to the electrode.

3,627,459

## FLASHBULB

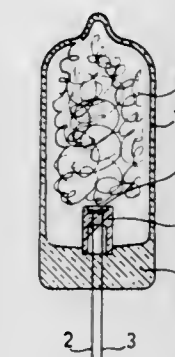
Johannes Cornelis Van Der Tas, and Charles Cornelis Eduard Meulemans, both of Emmasingel Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,779

Claims priority, application Netherlands, Feb. 21, 1969, 6902808

Int. Cl. F21k 5/02

9 Claims



A flashbulb of the combustible type for ignition by means of a voltage increasing to a maximum value within a short period, the ignition mass being provided in a cavity in a body of electrically insulating material which encompasses and shields the current conductors within the envelope.

The invention relates to a flashbulb including an envelope of light-transmitting material within which an actinically combustible material, a gas maintaining the combustion and a stem are provided; the stem comprises two current conductors sealed in the lamp base and fixed relatively to each other within the envelope by means of a body of electrically insulating material. On the insulating material there is provided an ignition mass which connects the ends of the current conductors and is ignited by electric breakdown and subsequently burns explosively when a voltage is set up across the ends. Due to the explosively burning paste, the reaction between the actinically combustible material and the gas maintaining the combustion is initiated.

3,627,460

## GAS LANTERN

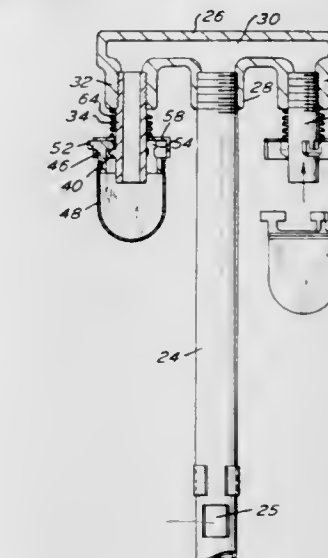
Lester Gilman, Southampton, Pa., assignor to Progress Division, Walter Kidde & Co., Inc., Belleville, N.J.

Filed June 1, 1970, Ser. No. 42,416

Int. Cl. F21h 1/04

U.S. Cl. 431-111

6 Claims



A gas lantern is provided with a spring-biased reflector or cover seated on the mantle so as to promote more complete combustion so that the lantern will burn brighter and cleaner.



3,627,461

**FUEL CONTAINER FOR A GAS LIGHTER**

Therese Christiane Hocq, Boulogne-Billancourt, France, assignor to Interflamme, Paris, France

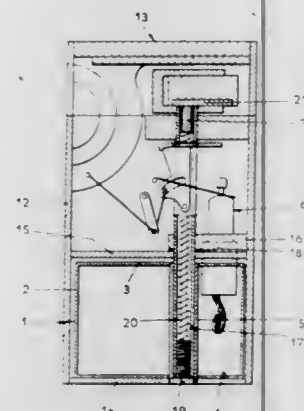
Filed Dec. 23, 1969, Ser. No. 887,497

Claims priority, application France, Dec. 30, 1968, 182051

Int. Cl. F23q 2/16; F23d 13/04

U.S. Cl. 431-273

6 Claims



A fuel container, for a gas lighter, which has extending through it a supporting tube carrying a flint. The supporting tube is arranged, when the fuel container is inserted in the lighter, to receive a flint tube on the lighter and in which the flint is automatically positioned. The flint is retained in the supporting tube by means of a thin ribbon surrounding the fuel container and closing the ends of the supporting tube. The ribbon is broken when the fuel container is inserted into the lighter.

3,627,462

**TOP GAS BURNER FOR A STOVE**

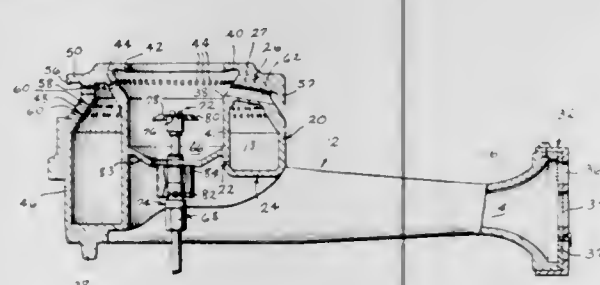
William Lotter, South Bend, Ind., assignor to South Bend Range Corporation, South Bend, Ind.

Filed June 30, 1969, Ser. No. 837,611

Int. Cl. F23q 9/00

U.S. Cl. 431-284

6 Claims



A top gas burner for a stove in which the burner housing thereof has a gas inlet port and an annularly disposed

chamber communicating with said inlet port and defined in part by spaced inner and outer sidewalls. The upper margin of the inner sidewall of the burner housing has a first ring of gas outlet ports disposed therein in communication with said chamber and includes a flange which projects outwardly of the inner sidewall and which is positioned above said first ring of gas outlet ports. The upper margin of the outer sidewall of the burner housing has a second ring of gas outlet ports disposed therein in communication with said chamber and includes a flange which projects outwardly of the outer sidewall and which is positioned above said second ring of outlet ports. The burner housing has a bore extending from the upper margin of its inner wall to the upper margin of its outer wall adjacent a respective gas outlet port in each wall.

3,627,463

**APPARATUS FOR BURNING SPIRIT AND SIMILAR LIQUID FUELS**

Karl Oskar Arne Boij, Verkstadsgatan, 573 00 Tranas, Sweden

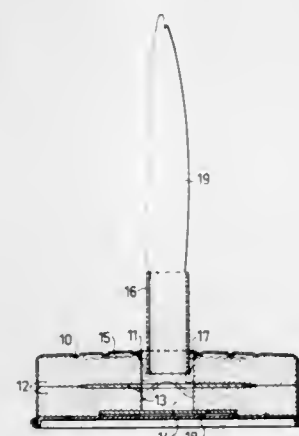
Filed Jan. 5, 1970, Ser. No. 549

Claims priority, application Sweden, Jan. 14, 1969, 426/69

Int. Cl. F23d 3/40

U.S. Cl. 431-326

3 Claims



The present invention relates to an apparatus for burning liquid fuel in which a fuel container is filled with a fuel absorptive mass in which is provided a vertical burner channel in which burning of fuel evaporated from an exposed surface of the absorptive mass defining the channel takes place with supplied air.

**CHEMICAL****ERRATUM**For Class 23-232 see:  
Patent No. 3,626,742

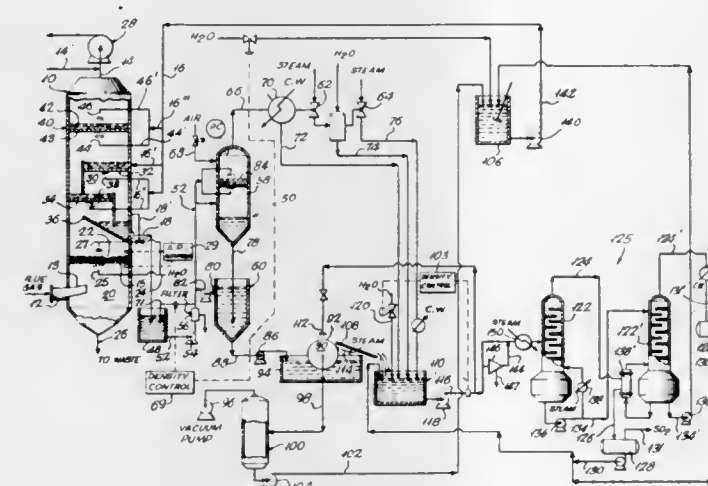
3,627,464

**PROCESS FOR RECOVERING SO<sub>2</sub> FROM WASTE GASES**Jack D. Terrana, Tampa, and Leo A. Miller, Lakeland, Fla., assignors to Wellman-Lord, Inc., Lakeland, Fla.  
Continuation-in-part of applications Ser. No. 594,431, Nov. 15, 1966, and Ser. No. 616,682, Feb. 16, 1967.  
This application Nov. 9, 1967, Ser. No. 681,773

Int. Cl. C01b 17/56

U.S. Cl. 23-178

25 Claims



Process and apparatus for the recovery of sulfur dioxide from SO<sub>2</sub>-containing gases in a system involving contacting the gas with an aqueous sulfite solution to produce a solution of the corresponding bisulfite which is a precursor of SO<sub>2</sub> and subsequently separating the bisulfite and SO<sub>2</sub>-partial pressure lowering materials to obtain purer bisulfite which is then decomposed to regenerate sulfur dioxide. Examples of sulfites include potassium, cesium, and rubidium sulfites. In the process separation of the bisulfite is accomplished by vaporization of water from the bisulfite-containing solution, e.g. in a flash chamber to supersaturate the solution and precipitate the bisulfite, e.g. in an amount equivalent to the amount of the sulfur dioxide removed from the waste gases. Conditions are chosen to precipitate crystals having a size suitable for vacuum drum filtering. The crystals are advantageously redissolved prior to heating to regenerate the sulfur dioxide and a portion of this solution is used to wash the crystals on the drum filter and improve the purity thereof.

3,627,465

**TREATMENT OF A WATER STREAM CONTAINING AN AMMONIUM SULFIDE SALT FOR THE PRODUCTION OF AMMONIA AND SULFUR**

Robert J. J. Hamblin, Deerfield, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 4, 1968, Ser. No. 773,211

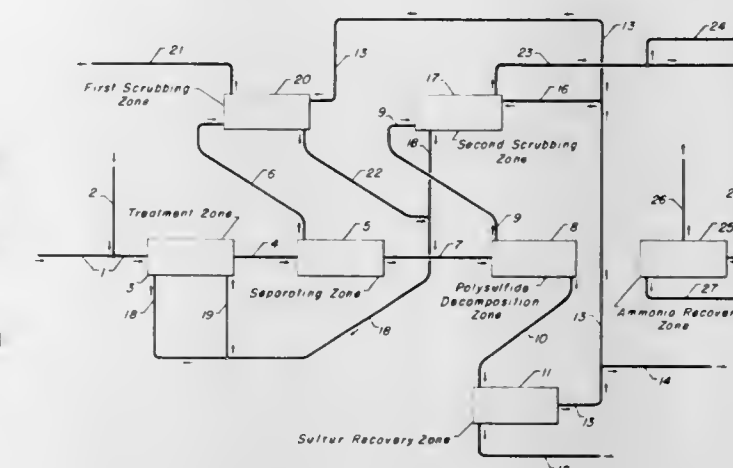
Int. Cl. C01c 1/00; C01b 17/00, 21/00

U.S. Cl. 23-193

7 Claims

In the production of elemental sulfur and ammonia by the oxidation of waste water containing an ammonium sulfide salt in the presence of an oxidation catalyst, such as solid phthalocyanine catalyst, followed by decomposition of the resultant ammonium polysulfide, thereby form-

ing aqueous ammonium thiosulfate, the continuous recycle to the oxidation step of an aqueous stream con-



taining (NH<sub>4</sub>)<sub>2</sub>S<sub>2</sub>O<sub>3</sub> in order to suppress side reactions leading to this product in the oxidation step.

3,627,466

**HEAT TREATMENT OF GRAPHITE FIBERS**

Samuel Steingiser, Richard J. Phillips, and Robert A. Cass, Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed May 28, 1970, Ser. No. 41,482

Int. Cl. C01b 31/07; C09c 1/46

U.S. Cl. 23-209.1

5 Claims

A process for improving the shear strength of a graphite fiber-resin matrix composite wherein the fibers are heat-treated in a controlled atmosphere containing ammonia at above 1000° C. prior to incorporation in the composite; such composites being useful as structural materials.

3,627,467

**CONTINUOUS DETECTION METHOD AND APPARATUS**

William Antony Wiseman, The Mill House, Bray, Berkshire, England

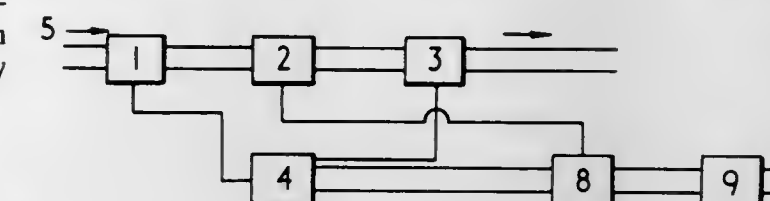
Filed Jan. 31, 1969, Ser. No. 796,318

Claims priority, application Great Britain, Feb. 2, 1968, 5,526/68

Int. Cl. G01m 27/26

U.S. Cl. 23-230

13 Claims



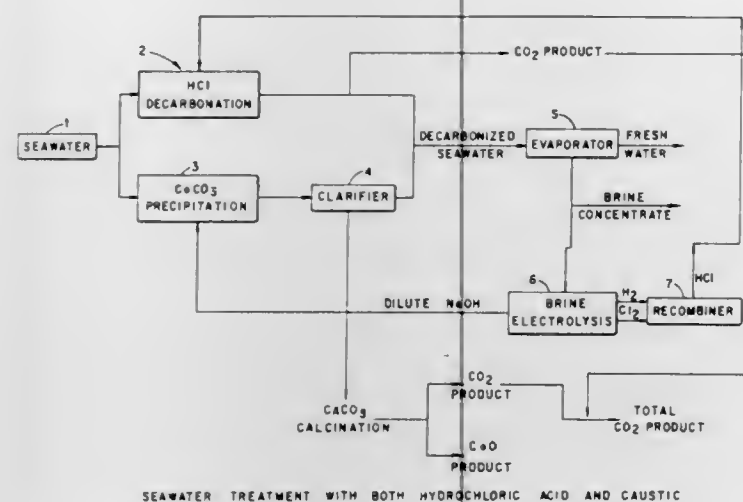
A method of measuring a component in a gas stream which involves adding a reactive gas to the stream to react with said component, detecting the level of reactive gas after reaction and generating further compensatory, reactive gas in an electrolytic cell for addition to the gas stream whereby the current flowing in the cell is an accurate measure of gas consumption and hence of the component to be measured is improved by operating the reaction intermittently and averaging e.g. integrating the current during periods of reaction and non-reaction.







feed stream of sea water, removing precipitated metal carbonates from the resulting alkaline stream, adding an acid to a second feed stream of sea water, removing  $\text{CO}_2$



from the resulting acidulated stream, combining said first and second streams and introducing the combined streams into an evaporator.

3,627,480

## PRECIPITATED CALCIUM CARBONATE

James Derek Birchall, Northwich, England, assignor to Imperial Chemical Industries Limited, London, England  
No Drawing. Filed July 24, 1969, Ser. No. 844,629  
Claims priority, application Great Britain, Aug. 15, 1968, 39,025/68

Int. Cl. C01f 11/18; C01d 3/04

U.S. Cl. 23—66

4 Claims

Calcium carbonate in the aragonite phase and in the form of needle-shaped crystals having major axes of up to 100 microns and minor axes of 0.10 to 3.0 microns is made by adding a source of carbonate ions to an aqueous solution of a calcium salt at temperatures above 70° C. whilst maintaining the calcium carbonate supersaturation below a given maximum value.

3,627,481

## PROCESS FOR THE PURIFICATION OF TITANIUM TETRACHLORIDE

Giuseppe Sironi, Renzo Sacerdote, and Francesco Ferrero, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

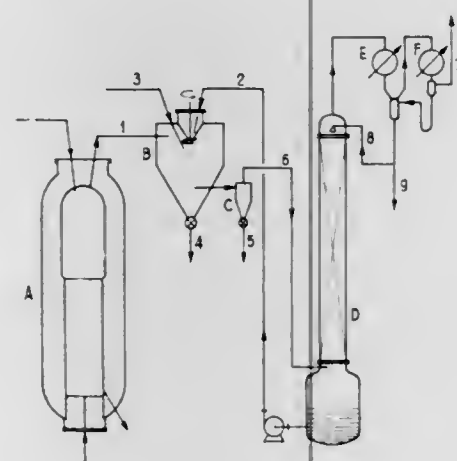
Filed May 6, 1969, Ser. No. 822,110

Claims priority, application Italy, May 10, 1968, 16,324/68

Int. Cl. C01g 23/02

U.S. Cl. 23—87 TP

6 Claims



A process is disclosed for the purification of titanium tetrachloride from vanadium compounds by treatment

with  $\text{H}_2\text{S}$ , wherein the hot gases coming from the chlorination step of the titaniferous material, containing  $\text{TiCl}_4$  with impurities, are cooled down to 130–180° C. by injection and vaporization of liquid  $\text{TiCl}_4$  and at the same time are treated with  $\text{H}_2\text{S}$ , thereby obtaining a vanadium-free gaseous phase containing  $\text{TiCl}_4$  and a  $\text{TiCl}_4$ -free solid phase containing vanadium.

3,627,482

## MERCURY ORE LEACHING PROCESS

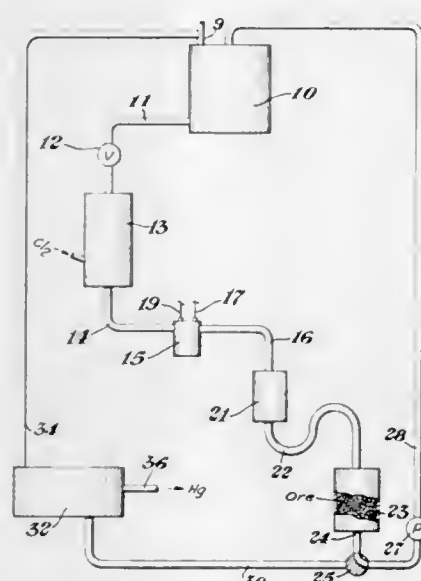
Robert S. Olson, Lafayette, and Elmer C. Tveter, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1969, Ser. No. 821,222

Int. Cl. C01g 13/04; C22b 3/00

U.S. Cl. 23—87 R

14 Claims



Disclosed herein is a process for leaching mercury values from their respective ores. The leaching solution comprises both an oxidizing agent such as dissolved chlorine or hypochlorite, and an inorganic salt, e.g. sodium chloride. The presence of the salt enhances the rate of mercury solubilization.

3,627,483

## METHOD OF PURIFYING ALUMINUM CHLORIDE

Colin F. Cole and David John Spencer, Stockton-on-Tees, England, assignors to British Titan Products Company Limited, Durham, England

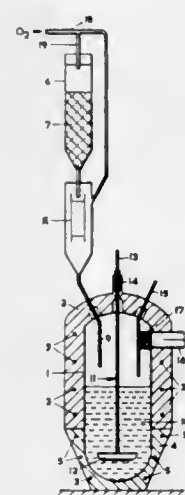
Filed Feb. 25, 1970, Ser. No. 14,238

Claims priority, application Great Britain, Mar. 29, 1969, 16,602/69

Int. Cl. C01f 7/58, 7/62

U.S. Cl. 23—93

12 Claims



A method of purifying aluminum chloride containing other metallic chlorides as impurities in which the aluminum chloride is fed into a molten mixture of an alkali

metal salt and aluminum chloride having dispersed there-through a metal more electropositive than iron but not more than aluminum to effect a reaction with the impurity metal chlorides. Preferably the metal is aluminum metal in the powdered form.

3,627,484

## PROCESS FOR PRODUCING TELLURIUM DIOXIDE OF LOW IRON CONTENT

Stephen E. French and Thomas K. Preston, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,565

Int. Cl. C01b 19/00

U.S. Cl. 23—139

8 Claims

Powdered tellurium metal is added to hot concentrated nitric acid, with agitation. The reaction mixture is then heated at 110–110° C. until evolution of nitrogen dioxide stops and the direct formation of tellurium dioxide is complete. Then the reaction mixture is cooled to room temperature, the excess nitric acid is removed by siphoning and filtration, and the filter cake is washed with nitric acid and with water, after which the damp cake is heated at 90–150° C. to dry it without decomposition.

3,627,485

## METHOD OF PRODUCING CALCIUM SULFATE DIHYDRATE

Shoichiro Hori, Tokyo, and Keiichi Murakami and Hirobumi Tanaka, Miyagi-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Nov. 5, 1968, Ser. No. 773,643

Int. Cl. C01b 25/22; C01f 11/46

U.S. Cl. 23—122

6 Claims

Phosphoric acid-free and strontium-free calcium sulfate dihydrate is obtained from phosphate rock by decomposing phosphate rock with sulfuric acid and/or phosphoric acid of such temperature and concentration that a slurry of calcium sulfate dihydrate will be obtained. The temperature of the slurry is then raised to the conversion temperature of the calcium sulfate dihydrate into calcium sulfate semihydrate so that the calcium sulfate dihydrate will be converted into calcium sulfate semihydrate. Thereafter, the temperature is reduced to below the conversion temperature of the calcium sulfate semihydrate into calcium sulfate dihydrate whereby the calcium sulfate semihydrate will be converted into calcium sulfate dihydrate of high purity which may then be recovered in conventional manner, for instance by filtration. Preferably during the conversion of the semihydrate into the dihydrate, seed crystals consisting of twin crystals of calcium sulfate dihydrate are introduced.

3,627,486

## PROCESS FOR REMOVING SELENIUM VALUES

Umeo Nakano, Montreal, Quebec, Canada, assignor to Canadian Copper Refiners Limited, Toronto, Ontario, Canada

Filed Apr. 1, 1969, Ser. No. 811,907

Int. Cl. C01b 19/00

U.S. Cl. 23—139

5 Claims

In an operation wherein selenium values are recovered from pelletized selenium-containing materials involving heating pelletized selenium-containing materials in the presence of air so as to volatilize the selenium from said pelletized selenium-containing materials in the form of selenium dioxide, improved results are obtained by employing an apparatus wherein a mass of pelletized selenium-containing material is maintained static within a roasting zone and preheated air employed to heat the

mass of pelletized selenium-containing materials is passed downwardly through said mass of pelletized selenium-containing materials maintained at a temperature of about 1350° F. for a period of time in the range about 1–6 hours sufficient to volatilize substantially all of the selenium from said pelletized selenium-containing materials and thereupon discharging the resulting substantially deselenized pelletized material from said roasting zone.

3,627,487

## PROCESS FOR ENRICHING CARBON-13

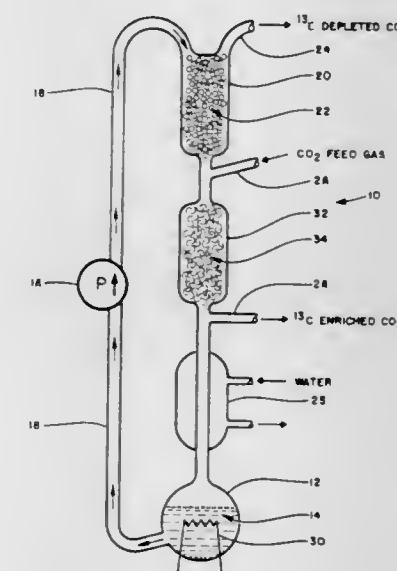
Bernhart E. Jepson, Dayton, Ohio, assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 22, 1969, Ser. No. 868,494

Int. Cl. C01b 31/00, 31/20; C09k 3/00

U.S. Cl. 23—150

5 Claims



A process for enriching carbon-13 isotope in carbon dioxide in which carbon dioxide feed gas is reacted with an isobutylamine and isopropanol solution to form a carbamate solution therewith and then the carbamate is decomposed from the solution to form carbon-13 enriched carbon dioxide.

3,627,488

## CORROSION- AND EROSION-RESISTANT MATERIAL

Kenneth W. Dudley, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed July 7, 1969, Ser. No. 839,352

Int. Cl. B32b 15/20

U.S. Cl. 29—199

3 Claims

A metallic material, such as copper, having a diffused surface which is highly resistant to corrosion and erosion, and method of making same.

3,627,489

## FLAME COLORANTS

Henry E. Alquist, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,108

Int. Cl. C101 1/12

U.S. Cl. 44—1 R

7 Claims

A combustible mixture comprising a fuel and a phosphorous trifluoride substituted metal carbonyl, and a method for forming the mixture are disclosed, the addition of the carbonyl to the fuel being made to impart color to the flame upon combustion of the fuel.



3,627,490

**GRINDING MACHINE WITH AUTOMATIC WHEEL EXCHANGE DEVICE**

Hiroaki Asano, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

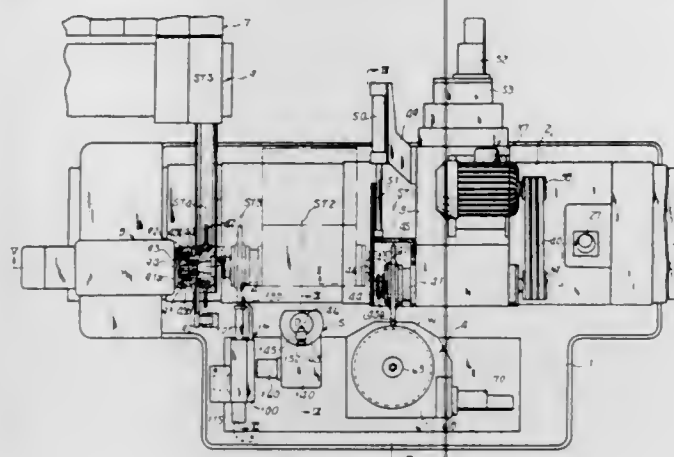
Filed May 21, 1970, Ser. No. 39,243

Claims priority, application Japan, May 29, 1969, 44/41,933

Int. Cl. B24b 51/00

U.S. Cl. 51—165.87

15 Claims



A grinding machine with an automatic grinding wheel exchange device which is operative for performing a programmed grinding operation without being affected by changes occurring in the grinding wheel diameter. The lateral distance between the periphery of an exchanged wheel and a dressing device which is in a predetermined position with respect to the workpiece support is measured by a measuring device for thereafter bringing the periphery of the wheel into proper contact with the dressing device and positioning the side face of the wheel in a predetermined relationship with respect to the dressing device. The dressing device dresses the wheel into a predetermined shape according to a predetermined program and the dressed grinding wheel then effects the desired grinding operation by using the dressing device as a reference position for controlling movement of the grinding wheel support with respect to the workpiece support device according to the predetermined program.

3,627,491

**DIFFUSION METHODS FOR IMPROVING THE PROPERTIES OF GLASS, VITROCRYSTALLINE AND STONE MATERIALS**

Maurice Boffe, Fleurus, and François Toussaint, Lodelinsart, Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

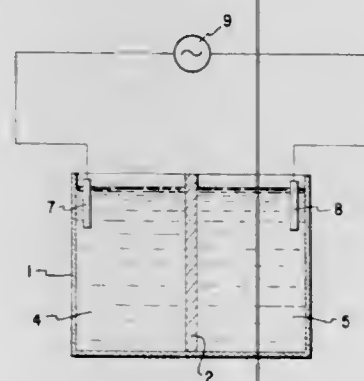
Filed Apr. 18, 1968, Ser. No. 722,380

Claims priority, application Luxembourg, Apr. 24, 1967, 53,499/67; Great Britain, Dec. 22, 1967, 58,384/67

Int. Cl. C03c 21/00

U.S. Cl. 65—30

9 Claims



In processes wherein at least one property of a glass, vitrocrySTALLINE or stone material is improved by the diffusion of a substance into the material from a medium communicating with the material, a method for substantially

improving the diffusion process by including in the medium at least one material which has the effect of weakening the diffusion barrier at the interface between the material and the medium with respect to the substance to be diffused into the material, examples of such material being an element of Group IIb of Mendeleev's Periodic Table in metal form.

3,627,492

**PROCESS FOR THE PRODUCTION OF FLOAT GLASS WITH EVEN EDGES**

Georges Prislán, Boussois, France, assignor to Boussois Souchon Neuvesel, Paris, France

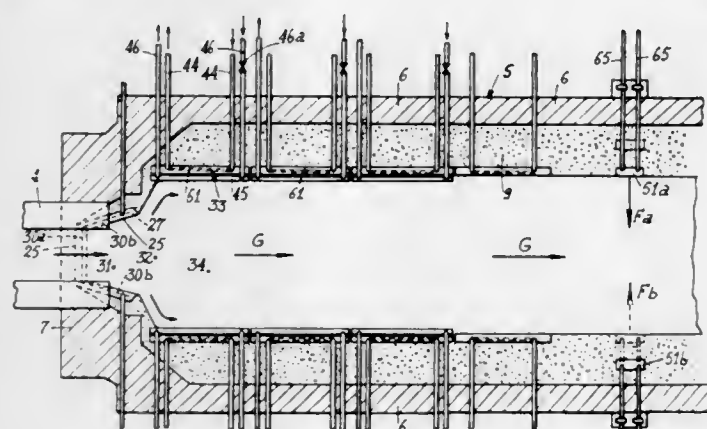
Filed Dec. 30, 1968, Ser. No. 787,975

Claims priority, application France, Jan. 11, 1968, 135,611

Int. Cl. C03b 18/02

U.S. Cl. 65—91

1 Claim



A process for the manufacture of a ribbon of flat glass by pouring a ribbon of molten glass onto a bath consisting of a liquid which has a higher specific density such as molten tin, said process consisting in causing the forward motion of the glass ribbon by drawing it out of the bath and in containing said ribbon at the sides by means of confining walls which are not wetted by the glass. At least one of the edges of the glass ribbon being formed is subjected downstream of the confining wall to a transverse deflection which tends to thicken said edge.

3,627,493

**CONTROLLED TEMPERATURE CORROSION TESTING PROBE**

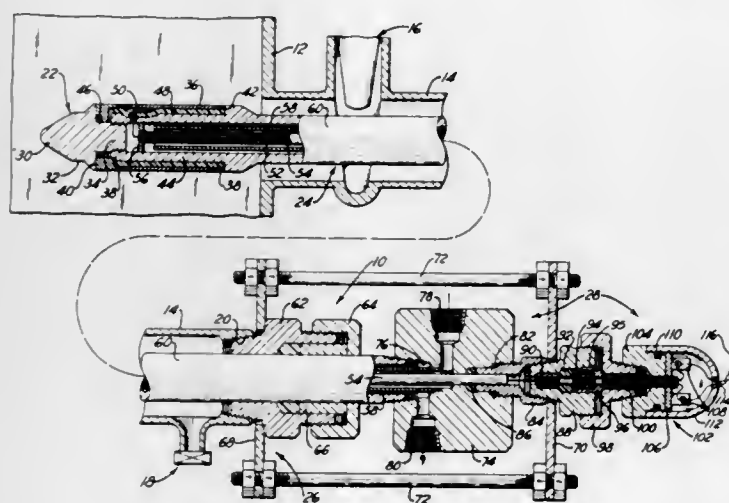
Robert E. Manley, Lower Burrell, Pa., assignor to Gulf Research &amp; Development Company, Pittsburgh, Pa.

Filed Mar. 12, 1970, Ser. No. 18,964

Int. Cl. G01n 17/00

U.S. Cl. 23—253 C

11 Claims



A probe for testing the corrosion resistance of a specimen of a material to a stream of corrosive fluid comprising means to electrically isolate the specimen from the

probe and means to control the temperature of the specimen. Temperature control is accomplished by flowing heat conditioning fluids, such as steam or cold water, through the probe, while isolating the specimen from the heat conditioning fluid.

3,627,494

**AUTOMATIC ANALYZER**

Vladimir Fährnich, Prague, Czechoslovakia, assignor to CKD Dukla, Narodni Podnik, Prague, Czechoslovakia

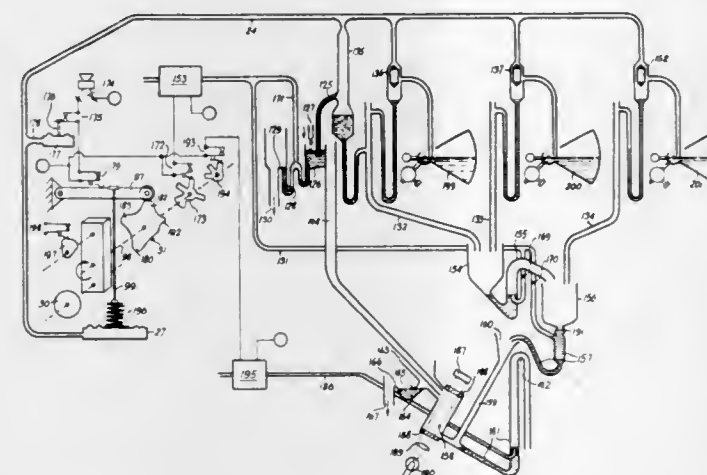
Filed Dec. 19, 1968, Ser. No. 785,276

Claims priority, application Czechoslovakia, Dec. 20, 1967, 9,015/67; May 4, 1968, 3,276/68; May 17, 1968, 3,611/68; May 31, 1968, 4,011/68; Aug. 20, 1968, 6,018/68

Int. Cl. G01n 1/14, 21/00

U.S. Cl. 23—259

16 Claims



All arrangement for the automatic manipulation of reagent solutions through the application of pneumatic signals. The arrangement is equipped with photometric apparatus, dosing apparatus, fluid lifting devices, and pneumatic overflow pipettes. A pneumatic signalling arrangement applies pneumatic techniques for carrying out the analyzing of fluids through measurements, transfer procedures, mixing and flow-off steps. These analytical processes are carried out without the application of valves or closure elements, and the operational handling of the fluids in the form of sample fluid and reagent solutions are automatically carried out for photometric analysis.

3,627,495

**DECANTATION FITTING**

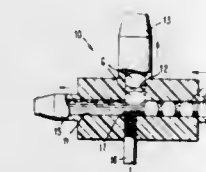
Stanford L. Adler, Jr., Monsey, and John C. A. Peoples, Nanuet, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed May 25, 1970, Ser. No. 40,063

Int. Cl. G01n 33/16

U.S. Cl. 23—253 R

5 Claims



A decantation fitting for fluid analysis having a body with an elongated relatively horizontal passageway portion with one end positively inletted at a predetermined volumetric rate for a gas-segmented sample-reagent stream and positively outletted at the other end at a predetermined volumetric rate for a supernatant portion of the stream. Intermediate the ends of the passageway portion and in communication therewith, is an upwardly extending passageway portion positively outletted at a predetermined volumetric rate for the gas in the stream and a

small part of the supernatant portion. Below the last-mentioned passageway portion and extending a distance into the first-mentioned passageway portion is a downwardly extending decantation tube for the stream remainder including precipitate or settled-out material therein.

3,627,496

**IMPINGEMENT PLATE FOR CRYSTALLIZER**

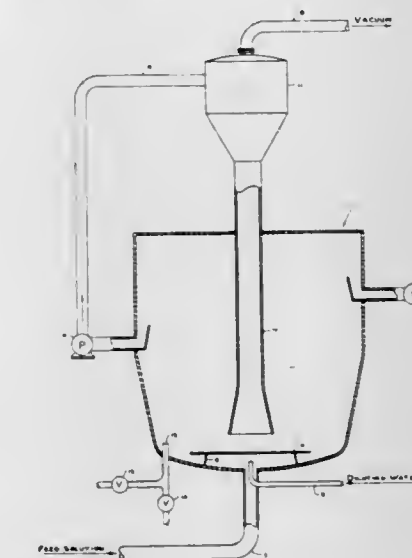
John A. Hermann, Carlsbad, N. Mex., assignor to Kerr-McGee Corporation

Filed July 29, 1968, Ser. No. 748,448

Int. Cl. B01d 9/02

U.S. Cl. 23—273 R

4 Claims



Crystallizing apparatus having a recirculation circuit including an evaporator and a downcomer conduit leading from the evaporator to the body of the crystallizing vessel. An impingement plate is provided between the outlet end of the downcomer conduit and the bottom wall of the crystallizing vessel, and the temperature of the impingement plate is maintained slightly higher than that of the solution coming from the downcomer conduit to prevent crystal formation and buildup.

3,627,497

**APPARATUS FOR CATALYTIC AMMONIA OXIDATION**

Louis A. Klein, Flushing, and Daniel J. Newman, Jackson Heights, N.Y., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,036

Int. Cl. B01j 9/04; B01d 46/00; C22b 11/00

U.S. Cl. 23—288

8 Claims

An improved apparatus is provided for catalytic ammonia oxidation and recovery of particles of platinum group metal entrained in the hot process gas mixture formed by the catalytic reaction, which takes place in contact with a vertically oriented cylindrical platinum group metal catalyst gauze which is combined with a vertically oriented cylindrical filter principally composed of a porous refractory filter medium such as ceramic fiber.

3,627,498

**GROWTH OF CRYSTALLINE CHALCOGENIDE SPINELS**

Larry K. Shick, Plainfield, and Allyn R. Von Nelda, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 30, 1968, Ser. No. 763,627

Int. Cl. B01j 17/32

U.S. Cl. 23—294

6 Claims

Crystalline chalcogenide spinels of the stoichiometry  $ACr_2Se_4$ , where A is zinc or cadmium, and  $A'Cr_2S_4$ , where

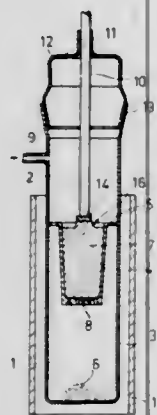


A' is zinc, cadmium, cobalt, manganese, iron, copper or nickel, are grown within a sealed container at temperatures above those expected to result in decomposition of the product. Crystalline growth appears within a body of liquid produced by vapor condensation.

### 3,627,499 METHOD OF MANUFACTURING A CRYSTALLINE COMPOUND

Jean-Marc Le Duc and Emile Deyris, Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.  
Filed Jan. 21, 1969, Ser. No. 792,528  
Claims priority, application France, Jan. 18, 1968, 136,487

Int. Cl. B01j 17/22, 17/18  
U.S. Cl. 23—301 SP 9 Claims

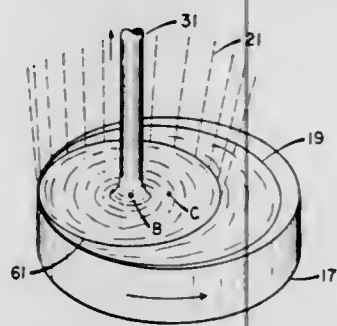


Crystals of a compound can be prepared, for example, by the continuous drawing from the solution of a compound in one of its components. During drawing the solution depletes in one of the other components. This component may be supplied to the solution in vapour form but this must not be done through the surface from which it is drawn, but through another surface solution vapour which is separated spatially from the surface from which it is drawn.

### 3,627,500 METHOD OF GROWING SEMICONDUCTOR RODS FROM A PEDESTAL

Theodore F. Cizek, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.  
Filed Apr. 3, 1969, Ser. No. 813,267

Int. Cl. B01j 17/18  
U.S. Cl. 23—301 SP 10 Claims



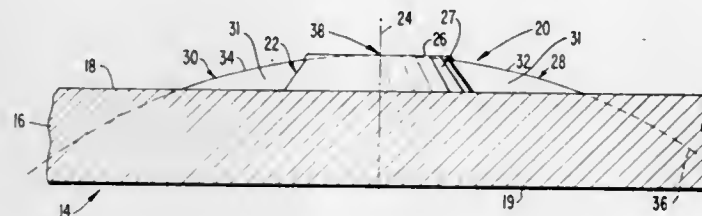
A method for growing semiconductor rods from a self-supporting block of material wherein the formation of a rim around the perimeter of the block of material is prevented by bombarding the upper surface of the block of material with an annulus of electrons whose center is offset from the center of the upper surface of the material, thereby causing every portion of the upper surface to periodically be heated by said beam of electrons. The rod is drawn from a pool of melted material on the upper surface of the block of material and approximately at the center of the annulus of electrons.

### 3,627,501 PROCESS FOR THE DISPROPORTIONATION OF CHLOROSILANES AND ORGANOSILANES

Manfred Kruger, Offenbach, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany  
No Drawing. Filed June 24, 1969, Ser. No. 836,175  
Claims priority, application Germany, June 29, 1968, P 17 67 905.9  
Int. Cl. C07f 7/12, 7/18  
U.S. Cl. 23—366 16 Claims

### 3,627,502 TREAD PLATE AND MANUFACTURE

William H. Rees, Dearborn, and Norman Solomon, Oak Park, Mich., assignors to National Steel Corporation  
Filed Oct. 1, 1968, Ser. No. 764,161  
Int. Cl. B22f 5/00  
U.S. Cl. 29—183 8 Claims



Tread plate has antiskid protuberances comprising flat-topped circular protrusions, and elongated convex projections radiating from the circular protrusions. The tread plate has improved walking comfort and antiskid properties, and its construction facilitates machining of the rolls which produce the tread plate. In roll machining antiskid protuberance-forming recesses are machined in the rolls by cutting a groove having a concave bottom surface, then aligning a drill over the groove and drilling a flat-bottomed hole, the bottom of which is contiguous to the deepest portion of the groove.

### 3,627,503 SACRIFICIAL CORROSION-RESISTANT DIFFUSION COATINGS

Harry Brill-Edwards, San Antonio, Tex., assignor to Chromalloy American Corporation, West Nyack, N.Y.  
No Drawing. Filed May 31, 1968, Ser. No. 733,286  
Int. Cl. B32b 15/00  
U.S. Cl. 29—197 2 Claims

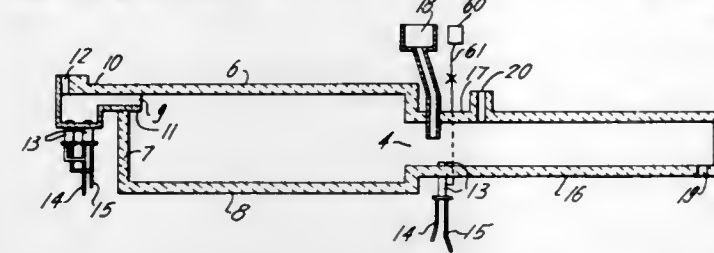
Methods and compositions are provided herewith for the production of sacrificial aluminum-containing diffusion coatings for the cathodic protection of ferrous metal articles against corrosion, particularly in highly saline atmospheres, in which coating an additional metal (such as manganese) is included to combine with the aluminum therein to form an intermetallic compound which is sufficiently anodic with respect to the substrate and/or intermetallic aluminum compounds therein to provide the desired sacrificial or cathodic protection.

### ERRATA

For Classes 44—1, 51—165, 65—30 and 65—91 see: Patent Nos. 3,627,490 thru 3,627,492

### 3,627,504 METHOD OF ADDING COLORANT TO MOLTEN GLASS

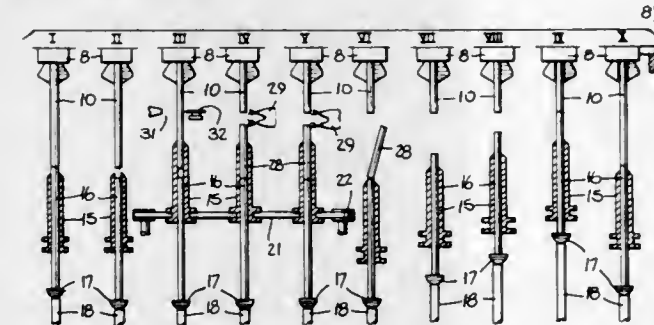
Andrew L. Johnson, New Castle, and Leon F. Robertson, Brockway, Pa., assignors to Glass Container Industry Research Corporation, State College, Pa.  
Filed Dec. 29, 1969, Ser. No. 888,324  
Int. Cl. C03b 5/04  
U.S. Cl. 65—135 3 Claims



Molten glass batch is colored by utilizing the hot products of combustion of a submerged burner unit to promote homogenous mixing of glass colorant added to the batch.

### 3,627,505 GLASS TUBE CUTTING MACHINE WITH END POLISHER

William T. Engel, Union, N.J., assignor to Kahle Engineering Company, Union City, N.J.  
Filed Feb. 24, 1969, Ser. No. 801,354  
Int. Cl. C03b 33/06  
U.S. Cl. 65—174 1 Claim



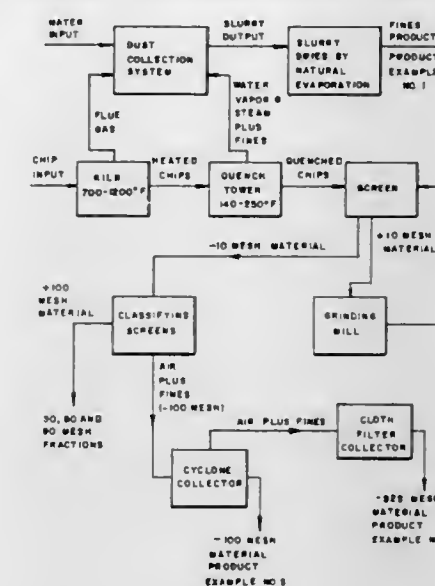
An automatic machine for cutting short lengths of glass tubing from longer lengths of tubing stock. The lengths of tubing stock to be cut are mounted in a vertical position in support chucks at the edge of a rotating turret. The support chucks are periodically opened to lower the glass tubing a distance equal to the length of the short tubing being cut on the machine. After each tube is lowered, a cutting flame and wheel cut or crack the tube to sever the shortened piece. The short piece which has been cut from the tube drops a slight distance so that its upper edge is spaced from the lower edge of the remaining tube. After this spacing has been provided, a polishing flame is directed simultaneously against both of the spaced edges so that they are smoothly fire-polished. This polishing operation, therefore, completes a polishing of both ends of the cut tube since the lower end of the cut tube was polished during the previous cutting and polishing cycle. The completed short length of tubing with both ends polished is now removed from the machine in finished form, and no additional fire polishing is required.

### 3,627,506 METHOD OF TREATING PLANTS WITH FINELY DIVIDED FERRUGINOUS MATERIAL

George J. Tazelaar, Rocky River, Vernon S. Andrews, South Euclid, and Ronald H. MacDonald, Jr., Novelty, Ohio, assignors to Martin Marietta Corporation  
Filed May 1, 1970, Ser. No. 33,552  
Int. Cl. C05 9/02  
U.S. Cl. 71—1 15 Claims

A method of treating plants or the soil bearing the plants by means of the addition of a ferruginous material to prevent or overcome an iron deficiency in the soil. The method comprises adding to the soil a finely divided

material from cast iron chips which chips are pre-treated by heating to a temperature on the order of at least 700° F. to 1200° F. and are then quenched in water. This addi-



tion results in a very significant beneficiation of the soil and plants therein substantially obviating the existence of iron deficiency in the plants growing therein.

### 3,627,507 PLANT GROWTH REGULATOR CARBAMOYLPHOSPHONATES

William P. Langsdorf, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed May 24, 1968, Ser. No. 731,732  
Int. Cl. A01n 5/00  
U.S. Cl. 71—76 23 Claims

This disclosure teaches a method for employing novel carbamoylphosphonates such as ammonium ethyl carbamoylphosphonate and ammonium allyl carbamoylphosphonate to regulate the growth rate of plants.

### 3,627,508 PROCESS OF BENEFICIATION

William Hughes, Norton, and Frank Ronald Williams, Norton, Stockton-on-Tees, England, assignors to British Titan Products Limited, Billingham, England  
No Drawing. Filed July 22, 1969, Ser. No. 843,833  
Claims priority, application Great Britain, Aug. 14, 1968, 38,811/68  
Int. Cl. C01g 23/04; C22b 1/08  
U.S. Cl. 75—1 14 Claims

Beneficiation of a titaniferous ore in which the iron oxide present in the ore is reduced to a form such that it can be removed by leaching, for example, with a dilute acid and after leaching, chlorinating the ore under such conditions that any remaining iron and other chlorinatable impurities are converted to volatile chlorides without chlorinating to any substantial extent the titanium dioxide in the ore. The volatile chlorides are removed from the treated ore to produce an enriched ore having the characteristics of naturally occurring mineral rutile.

### 3,627,509 METHOD OF PREPARING A MAGNETICALLY STABLE METAL POWDER CONSISTING MAINLY OF IRON AND MEANT FOR MAGNETIC RECORDING

Aart Antonie van der Giessen, and Cornelis Johannes Klomp, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.  
No Drawing. Filed Apr. 1, 1970, Ser. No. 24,822  
Claims priority, application Netherlands, Apr. 8, 1969, 6905417  
Int. Cl. B22f 9/00  
U.S. Cl. 75—5 AA 3 Claims

The invention relates to a method of preparing metal powders mainly consisting of iron and meant for mag-



netic recording by reduction of an iron oxide or an iron oxide hydrate and is characterized in that a measured quantity of silver is previously deposited on the material to be reduced. As a result of this the reduction speed is also considerably increased so that the reduction occurs at speeds which can be used in practice also at temperatures lower than those at which sintering of the formed metal particles which is disturbing for the application in view takes place.

3,627,510

# PROCESS FOR GASEOUS REDUCTION OF OXYGEN CONTAINING COPPER

John Vogt and Paul Schmidt, Noranda, Quebec, and Leonard Mills, Murdochville, Quebec, Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

Filed Jan. 9, 1968, Ser. No. 696,526

Claims priority, application Canada, Nov. 20, 1967, 5,563

Int. Cl. C22b 9/08, 15/14

U.S. Cl. 75—76

18 Claims

In order to reduce the oxygen content of molten copper in a furnace, a reductant comprising unreformed natural gas, a gaseous hydrocarbon, or mixtures thereof is injected below the surface of the molten copper. The reductant may be used alone or in combination with steam. So as to achieve satisfactory reduction of the oxygen-containing copper, the reductant is preferably injected at a high pressure, pressures above 30 p.s.i.g. and as great as 100 p.s.i.g. being utilized, or optionally the reductant is preheated (prior to injection) to a temperature close to that of the molten copper. The injection of the reductant into the furnace is continued until the oxygen content of the molten copper is reduced to a desired level.

3,627,511

# HIGH CHROMIUM ALLOYS OF IMPROVED WORKABILITY

Brian Taylor, Birmingham, and Philip James Parry, Solihull, England, assignors to The International Nickel Company, Inc., New York, N.Y.

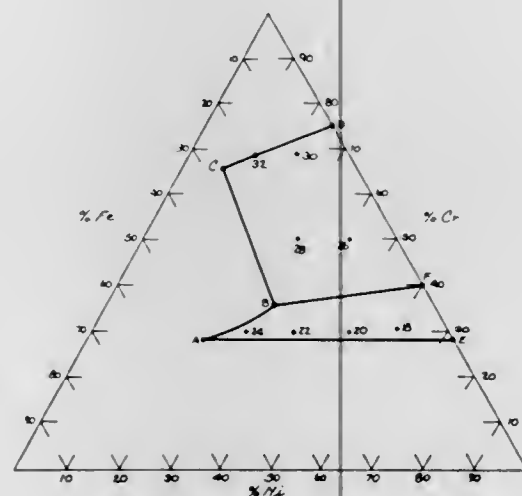
Filed Feb. 7, 1969, Ser. No. 797,515

Claims priority, application Great Britain, Feb. 8, 1968, 6,290/68

Int. Cl. C22c 39/20, 39/54

U.S. Cl. 75—122

11 Claims



Workability and torsion ductility of high chromium-nickel (e.g., 50% chromium) and chromium-nickel-iron

alloys improved when the alloys contain an effective amount of an eutectic forming element from the group zirconium, hafnium, yttrium and cerium.

3,627,512

# PREPARATION OF CRACKED GASES

Axel Klaus Commichau, Hamburg-Rissen, Germany, assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed Jan. 22, 1970, Ser. No. 5,113

Int. Cl. C01b 1/16, 2/14

U.S. Cl. 48—211

14 Claims

A process is provided for the preparation of cracked gases in which a charge-stock, selected from the group consisting of oligomers of lower olefins, hydrogenation products of lower olefin-oligomers, copolymers of lower olefins and their hydrogenation products and mixtures thereof, is subjected to vapor phase cracking in the presence of a reforming catalyst.

3,627,513

# HYDROCHLORIC ACID RESISTANT FERROUS ALLOY CONTAINING NICKEL, COPPER AND TUNGSTEN

Lawrence R. Scharfstein, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

No Drawing. Continuation of application Ser. No. 517,432, Dec. 29, 1965. This application July 7, 1969, Ser. No. 839,685

Int. Cl. C22c 39/54

U.S. Cl. 75—125

3 Claims

A corrosion resistant iron-nickel base alloy having good corrosion resistance in hydrochloric acid, containing about 25% to 50% nickel, 0.5% to 11% copper, 0.1% to 16% tungsten, and with a minimum amount, no more than about 1%, of strong surface oxide-forming elements such as chromium.

3,627,514

# HIGH-SPEED STEEL CONTAINING CHROMIUM, TUNGSTEN, MOLYBDENUM, VANADIUM AND COBALT

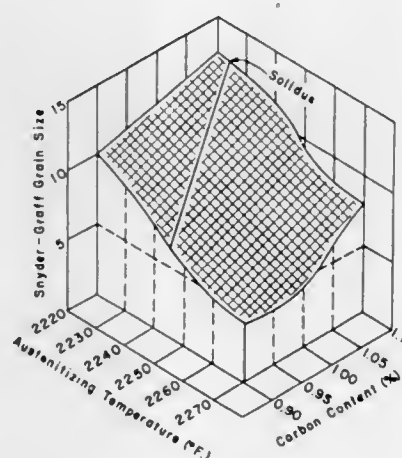
Gary Steven, Mount Lebanon, Pa., assignor to Crucible Inc., Pittsburgh, Pa.

Filed May 7, 1969, Ser. No. 822,672

Int. Cl. C22c 39/14

U.S. Cl. 75—126 C

1 Claim



This invention relates to a tool steel consisting essentially of, in weight percent, carbon 1 to 1.4, chromium

3,627,518

# MODIFICATION OF Si and Mg<sub>2</sub>Si SECOND PHASE IN AL ALLOYS

Garth D. Lawrence and George S. Foerster, Midland, Mich., assignors to the Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,459

Int. Cl. C22c 21/00, 21/04

U.S. Cl. 75—147

4 Claims

A method of changing the morphology of Si and Mg<sub>2</sub>Si second phase in Al alloys by adding Li and As to the Al alloy melt.

3,627,519

# MANUFACTURE OF SHEETS OF SINTERED MATERIAL

John Baker, Bessacarr, near Doncaster, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England

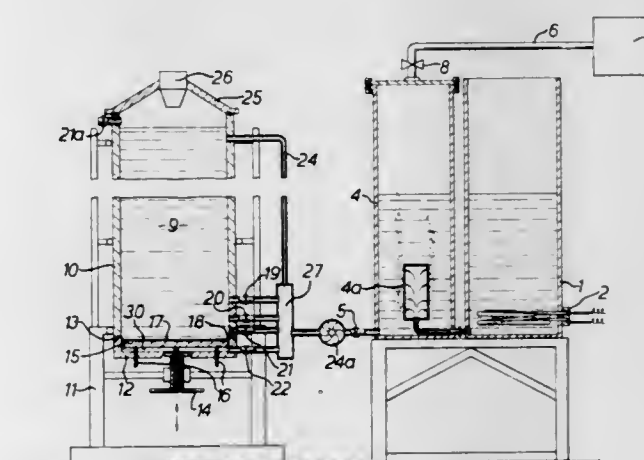
Filed Apr. 14, 1969, Ser. No. 815,888

Claims priority, application Great Britain, Apr. 16, 1968, 17,992/68

Int. Cl. B22f 3/16, 3/18

U.S. Cl. 75—211

9 Claims



A method of and apparatus for manufacturing sheets of sintered material, which method includes the steps of forming a suspension of particles of sinterable material in a fluid, allowing particles to be deposited from the suspension to form a layer on a support, and sintering the particles in the layer to form a coherent sheet.

3,627,520

# METHOD OF PRODUCING POROUS SINTERED TANTALUM

Donald G. Rogers, Pownal, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jan. 29, 1970, Ser. No. 6,872

Int. Cl. B22f 7/00

U.S. Cl. 75—222

4 Claims

Porous sintered anodes suitable for use in electrolytic capacitors of the wet or solid type are produced by mixing a high percentage of an inorganic filler with a conventional tantalum powder and then heating the mixture so as to evaporate the inorganic filler and cause a sintering of the tantalum particles.

4 to 6, vanadium 1 to 1.5, tungsten 7.5 to 13, molybdenum 3.5 to 7, cobalt 9 to 15, nitrogen at least about .03 and preferably .03 to .08, and the balance iron. The invention also relates to a tool steel compact of this steel produced by a powder-metallurgy technique also in accordance with this invention. The tool steel article is characterized by a combination of good cutting performance and machinability.

3,627,515

# ENGINE COMPONENT STEEL CONTAINING SMALL AMOUNTS OF CHROMIUM AND NICKEL

Kenneth E. Kueny, North Muskegon, Mich., assignor to Johnson Products Inc., Muskegon, Mich.

No Drawing. Filed May 7, 1970, Ser. No. 37,015

Int. Cl. C22c 39/20

U.S. Cl. 75—128

5 Claims

An internal combustion engine component having at least the bearing surface of a hardenable ferrous alloy containing both titanium and tungsten in controlled ranges giving synergistic results in wearability.

3,627,516

# STAINLESS IRON-BASE ALLOY AND ITS VARIOUS APPLICATIONS

Jean Bellot, Pompey, and Michel Hugo, Custines, France, assignors to Societe des Acieries de Pompey, Pompey, France

No Drawing. Filed July 22, 1968, Ser. No. 746,285

Claims priority, application France, July 24, 1967, 115,444

Int. Cl. C22c 39/20

U.S. Cl. 75—128 G

2 Claims

Iron-base alloy for making high-temperature working slugs, containing carbon, nickel, chromium, manganese, silicon and the usual impurities and having a niobium content comprised between 0.3 and 2.0% by weight, said alloy having preferably the following composition:

Carbon—from about 0.05% to 0.70% by weight  
Chromium—from about 20% to 30% by weight  
Nickel—from about 30% to 40% by weight  
Niobium—from about 0.20% to 3% by weight  
Silicon—from about 0.50% to 2.50% by weight  
Manganese—from about 0.50% to 2.50% by weight  
Nitrogen—from about 0.02% to 0.20% by weight  
Phosphorus and sulphur—less than 0.05% by weight  
the rest being iron.

3,627,517

# TERNARY FUSIBLE ALLOY

Rolf A. Ibscher, Scarborough, Ontario, Canada, assignor to Canadian General Electric Company Limited, Toronto, Ontario, Canada

No Drawing. Filed Dec. 13, 1968, Ser. No. 783,764

Claims priority, application Canada, Dec. 16, 1967, 7,770

Int. Cl. C22c 31/00

U.S. Cl. 75—134 T

4 Claims

A low temperature melting ternary alloy suitable for thermal fuses in ballasts containing eutectic of indium, tin, and the balance silver or copper.

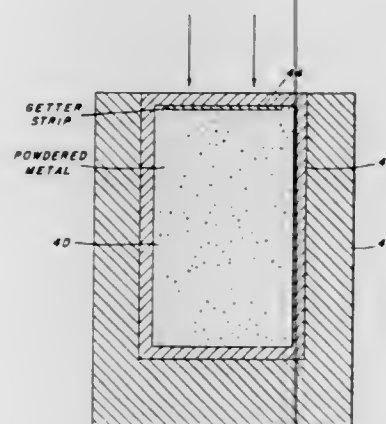


3,627,521

**METHOD OF FORMING A POWDERED-METAL COMPACT EMPLOYING A BETA-TITANIUM ALLOY AS A GETTER FOR GASEOUS IMPURITIES**  
Milton B. Vordahl, Henderson, Nev., assignor to Crucible Inc.

Application Mar. 16, 1967, Ser. No. 638,164, now Patent No. 3,466,734, dated Sept. 16, 1969, which is a continuation-in-part of application Ser. No. 582,640, Sept. 28, 1966. Divided and this application Feb. 28, 1969, Ser. No. 823,221

Int. Cl. B22f 3/00  
U.S. Cl. 75—226



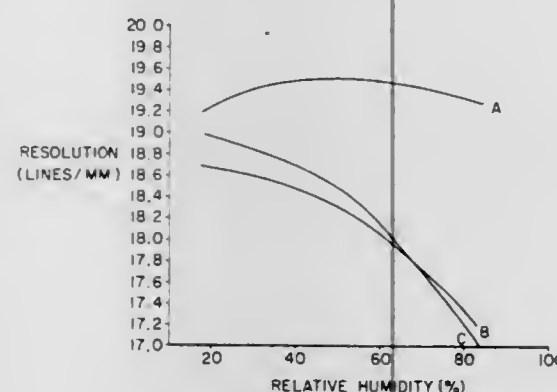
This application pertains to new and improved metal composite assemblies for pack rolling into composite articles and new and improved powdered-metal compacted articles and to methods for producing articles of these types, and, more particularly to new and improved methods for producing and maintaining clean metal surfaces and improving bonding during manufacture of the articles.

3,627,522

# **DEVELOPER COMPOSITION AND METHOD OF USE**

Burton B. Jacknow and Joseph H. Moriconi, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y. Original application Aug. 10, 1966, Ser. No. 571,509, now Patent No. 3,526,533. Divided and this application Dec. 30, 1969, Ser. No. 889,105

Int. Cl. G03g 9/02  
U.S. Cl. 96—1



An electrostatic developer composition comprising finely divided toner particles electrostatically clinging to the surface of larger carrier particles wherein the carrier particles comprise a core surrounded by a thin outer layer comprising a solid polymeric addition reaction product of (1) at least one polymerizable unsaturated silicon free organic composition and (2) a polymerizable organo-silicon composition selected from the group consisting

of silanes, silanols and siloxanes having from 1 to 3 hydrolyzable groups and an organic group attached directly to a silicon atom containing an unsaturated carbon to carbon linkage. Processes of using the developer composition to develop an electrostatic latent image are also disclosed.

3,627,523

# **MULTIPLE POWDER TRANSFER IN PHOTO-ELECTROSTATIC DUPLICATOR**

Loren E. Shelfo, Palatine, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Mar. 14, 1968, Ser. No. 713,111  
Int. Cl. G03g 13/00, 13/14

U.S. Cl. 96—1.4

A process for duplicating on plain paper utilizing electrostatic techniques to repeatedly produce a transferable powder image on a photoelectrostatic member coated with a layer of photoconductive material and successively transferring the powder image to the plain paper. Transfer of the powder image from the photoconductive layer is accomplished under strictly controlled conditions of pressure maintained in the range of 2 to 8 pounds per square inch while optionally imposing an electrical field between the receiving sheet and the photoelectrostatic member in the range of 0-3000 volts.

3,627,524

# **CHLORINE SUBSTITUTED 9-VINYLCARBAZOLE PHOTOCONDUCTOR**

Kikuo Kinjo, Tokyo, Teruo Yamanouchi, Fujisawa, and Eiichi Kondo, Hiroshi Matsuno, and Katsuhiko Nishide, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 13, 1970, Ser. No. 54,561  
Claims priority application Japan, July 18, 1969, 44/56,806; Feb. 4, 1970, 45/9,837

Int. Cl. H01l 13/00; C08f 5/00; G03g 5/00

U.S. Cl. 96—1.5

An electrophotographic photosensitive material comprises a polymer (homopolymer or copolymer) containing a chlorine substituted 9-vinylcarbazole repeating unit.

3,627,525

# **BIS(DIALKYLAMINOARYL) ALKANOL ORGANIC PHOTOCONDUCTORS**

Jerome J. Looker and Charles J. Fox, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,443  
Int. Cl. G03g 5/06

U.S. Cl. 96—1.5

Bis(dialkylaminoaryl) alkanol compounds are useful as organic photoconductors in electrophotographic systems.

3,627,526

# **ELECTROPHOTOGRAPHIC RECORDING ELEMENTS WITH HALF-TONE SCREEN COATINGS THEREON**

Philip Joseph Donald, Woodbury, N.J., assignor to RCA Corporation

Filed Dec. 29, 1969, Ser. No. 888,248  
Int. Cl. G03g 5/04

U.S. Cl. 96—1.5

An electrophotographic recording element comprises a photoconductive layer on a relatively conductive substrate, and a coating of a partially light-transmitting material on the photoconductive layer. The coating of the light-transmitting material is in a pattern of a half-tone screen, covering only a portion of the photoconductive layer, so that the recording element provides half-tone type prints in an electrophotographic process.

3,627,527

# **ORGANIC PHOTOCONDUCTORS SENSITIZED BY DYES WHICH EXHIBIT SPECTRAL ABSORPTION SHIFTS ON HEATING**

Paul B. Gilman, Rochester, and Ronald G. Raleigh, Brockport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,472  
Int. Cl. G03g 5/06

U.S. Cl. 96—1.6

Electrophotographic elements are prepared from photoconductive compositions which are spectrally sensitized with dyes which are sensitive to heat. When these elements are developed and heated, the dye undergoes a shift in the radiation absorption. Such a shift generally decreases the optical opacity of the elements, thereby permitting the image-bearing elements to be used as masters from which further reproductions can be made.

3,627,528

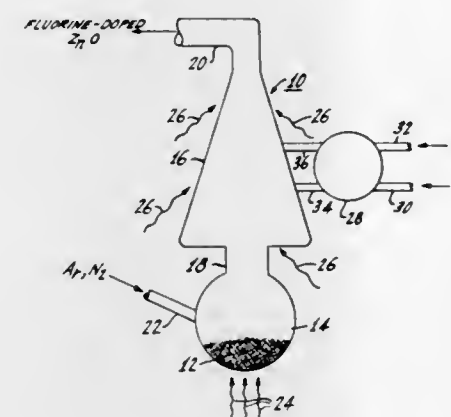
# **ELECTROPHOTOGRAPHIC RECORDING ELEMENT HAVING PHOTOCONDUCTOR WITH QUENCHED LUMINESCENCE DURING CHARGING AND METHOD OF MAKING THE PHOTOCONDUCTOR**

Edward Charles Gialimo, Jr., and Simon Larach, Princeton, N.J., assignors to RCA Corporation

Filed May 12, 1969, Ser. No. 823,906  
Int. Cl. G03g 5/00, 7/00

U.S. Cl. 96—1.8

2 Claims



An electrophotographic recording element has a photoconductive layer that comprises a novel photoconductor with quenched luminescence during the electrostatic charging thereof. The photoconductive layer may also comprise a light-sensitizing dye that has a light-absorption band within the range of the luminescence emission of the photoconductor. A novel method of making the photoconductor comprises doping substantially pure zinc oxide with a fluoride.

3,627,529

# **PROCESS FOR PREPARING A LITHOGRAPHIC PRINTING PLATE**

Victor S. Frank, Silver Spring, Md., and Leon Yeshin, Bedford, England, assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,966  
Int. Cl. G03f 7/02

U.S. Cl. 96—33

Lithographic printing plates are obtained from a laminated element containing a photocurable composition. Said element includes a photocurable layer laminated between a support layer, and a top cover. A dry process is disclosed for preparing positive and negative images in a single-image exposure. The process, for example, includes placing a photocurable layer between two sheets, at least one of which is transparent, imagewise exposing the laminate to actinic or U.V. radiation, and separating the sheets. The imagewise exposure is through a halftone or

line positive or negative transparency, or a stencil. Depending upon the system, a positive image attaches to the sheet proximate, the light source, and the negative image to the other sheet, or vice versa. The two sheets have different adhesive forces for photocured and uncured photo-adhesive compositions which accounts for the adhesion of the photocured and uncured compositions to different sheets. The sheet containing the photocured composition is, in effect, a lithographic printing plate in that the support surface or the surface of the photocured composition is relatively oleophilic. The photocurable polymer contains at least a polyene, a polythiol, and a photocuring rate accelerator.

3,627,530

# **PHOTOGRAPHIC DEVELOPER SOLUTIONS OF HIGH SULFITE CONTENT AND pH**

Jacob Quentin Umberger, Holmdel, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 18, 1969, Ser. No. 843,190  
Int. Cl. G03c 7/00

U.S. Cl. 96—55

Silver salt images are rapidly developed in the presence of a color former capable of forming a quinoneimine or azomethine dye, and an aromatic primary amine color developing agent at a pH of 12.5-15.0, and an alkali metal sulfite concentration of 0.15 M to 0.75 M. The process and developer solutions are useful in forming multicolor images in color films and in forming colored radiographic images.

3,627,531

# **STABILIZING DEVELOPED SILVER HALIDE EMULSIONS WITH HETEROCYCLIC THIOL COMPOUNDS**

Fumihiko Nishio, Mitsunori Sugiyama, and Kintaro Nasu, Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

No Drawing. Continuation-in-part of application 557,352, June 14, 1966, which is a continuation-in-part of application Ser. No. 218,167, Aug. 20, 1962. This application Aug. 19, 1968, Ser. No. 753,699

Claims priority, application Japan, Dec. 25, 1961, 36/47,119

Int. Cl. G03c 5/38

U.S. Cl. 96—61

By processing a silver halide photographic emulsion layer having developed images in a stabilizing solution containing a silver complex forming agent or a subsequent after-treating solution, which contains a specific thiol compound, such as 2-mercaptoimidazole, the decrease in its density and the discoloration during preservation, caused by the silver complex forming agent remaining in the layer, can be prevented.

3,627,532

# **PHOTOGRAPHIC ELEMENT INCLUDING A PYRAZOLINE LIGHT SCREENING COLLOID COMPOSITION**

Henri Depoorter, Mortsel, Guy Alfred Rillaers, Kontich, Felix Jan Moelants, Wilrijk, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Oct. 9, 1969, Ser. No. 864,977

Claims priority, application Great Britain, Nov. 7, 1963, 52,876/68

Int. Cl. G03c 1/84; F21v 9/00

U.S. Cl. 96—84

Colloid compositions comprising a hydrophilic colloid and a 4-[(2- or 3-pyrrolyl)-methylene]-2-pyrazoline-5-one dye carrying at least one member of the group consisting of carboxyl group and sulfo group in acid or salt form are described. These colloid compositions are useful in light-sensitive photographic elements.







suitable non-toxic tanning agent, such as aluminum salts, ferric salts, non-toxic dialdehydes, etc. The tanned casing is washed and finally plasticized using an aqueous solution of glycerin, or equivalent plasticizer, containing a small amount of a monoglyceride or an acetylated monoglyceride. The casing is then dried and reeled and eventually shirred on a commercial shirring machine for delivery to the meat packer in shirred form. The final treatment of the casing, prior to drying, with the solution containing a monoglyceride or an acetylated monoglyceride is effective to improve the elasticity and feel of the casing and eliminates tackiness, difficulty in linking, and excessive splitting during cooking.

3,627,543

# **PAN DRIED GLUCOSE FREE EGG WHITE ALBUMEN CONTAINING MEANS FOR INHIBITING DISCOLORATION WHEN HEAT TREATED AND THE PROCESS OF PREPARING THE SAME**

Jacob J. Epstein, 335 Alden Drive, Addison, Ill. 60101

No Drawing. Continuation-in-part of abandoned application Ser. No. 617,053, Feb. 20, 1967. This application Feb. 18, 1969, Ser. No. 800,257

Int. Cl. A23b 5/00, 5/02

U.S. Cl. 99—210

7 Claims

A pan dried glucose-free egg white albumen containing between 0.035 percent and 0.75 percent aluminum ion by weight on a dry solid basis to preserve the original color of the albumen and inhibit discoloration thereof upon the dried product being subjected to heat treatment to eliminate or substantially reduce the pathogenic organisms therein, such as salmonella and staphylococci, and/or prolonged storage is provided by a process in which glucose is removed from a liquid egg white at an adjusted pH of less than 5.9 and aluminum salt is added to the glucose-free liquid albumen in a concentration sufficient to produce a pan-dried albumen glucose-free egg white containing between 0.035 and 0.75 percent aluminum ion.

3,627,544

# **PROCESS AND APPARATUS FOR THE ACCELERATED CONTINUOUS FERMENTATION AND RIPENING OF BEER WORTS**

Gerhard Bosewitz, Falkensee, near Berlin, Rudolf Dickscheit, Berlin-Karolinenhof, and Helmut Ehles and Peter Lietz, Berlin, Germany, assignors to Forschungs-institut für die Garungsindustrie, Enzymologie und technische Mikrobiologie, Berlin, Germany

Filed June 18, 1969, Ser. No. 834,447

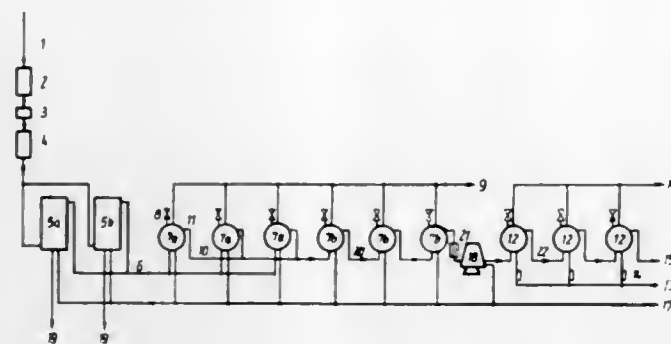
Int. Cl. C12b 1/02

U.S. Cl. 99—276

2 Claims

Beer worts are subjected to a process for their accelerated continuous fermentation and ripening which includes the following series of steps. Beer worts are initially purified in the best possible manner and cooled. They can be also freed from germs. Then they are saturated with oxygen and are enriched with a predetermined number of yeast cells by a propagation process carried out without pressure or only with small amounts of pressure in containers provided with wort-stirring devices. Then the worts are subjected to a continuous fermentation in a flow system consisting of several steps while being moved under pressure. At the end of the fermentation phase, the fermented and already substantially ripened beer is cooled, for example, in a young beer separator where yeast is removed. It is then possible to continue the further ripening process in a one-

step flow line under pressure and a specific gas application so as to separate quickly the exchange substances of yeast cells produced during fermentation until they are all deposited and removed. The once started propa-



gation can be carried out at will either continuously to keep constant the number of yeast cells, or can be discontinuous by returning the yeast only from the young beer separator or from specific containers.

3,627,545

# **BATH AND PROCESS FOR CHEMICAL METAL PLATING**

Glenn O. Mallory, Jr., Inglewood, and Donald W. Baudrand, Temple City, Calif., assignors to Allied Research Products, Inc., Baltimore, Md.

No Drawing. Continuation of abandoned application Ser. No. 833,163, June 13, 1969, which is a continuation-in-part of application Ser. No. 804,369, Feb. 26, 1969, which is a continuation-in-part of abandoned application Ser. No. 661,218, Aug. 17, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 468,921, July 1, 1965. This application June 5, 1970, Ser. No. 41,784.

Int. Cl. C23c 3/02

U.S. Cl. 106—1

5 Claims

A bath for plating a material with a transition metal selected from the class consisting of nickel, cobalt, iron and chromium by chemical deposition which comprises an aqueous solution of a coordination compound of the transition metal with a saturated short chain carboxylic acid having 1-6 carbon atoms and the hydroxy derivatives of the acid, a ligand complexing agent selected from the group of pyrophosphoric acid, ascorbic acid, erythorbic acid, the water-soluble salts thereof and their mixtures, and a transition metal reducing agent. The bath has a pH ranging from 1-14 and contains less than about 3400 p.p.m. of chloride and/or sulfate anions. When the material being plated is bismuth, cadmium, tin, lead or zinc, the bath contains less than 1000 p.p.m. of these anions.

3,627,546

# **MARKING COMPOSITION**

Leonard T. Coppeta, North Andover, Mass., assignor to The Carter's Ink Company, Cambridge, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 395,570, Sept. 10, 1964. This application Oct. 23, 1968, Ser. No. 770,111

Int. Cl. C09d 11/00, 13/00

U.S. Cl. 106—19

1 Claim

A disappearing solid marking composition, useful for crayons or the like or for transfer coatings, may be

formed from an acid base indicator which is colored in the basic state, sodium metasilical nonahydrate, and a hydrophilic wax carrier. The composition is stable to atmospheric exposure, and forms a mark which disappears irreversibly.

3,627,547

# **HIGH ALUMINA BODIES COMPRISING ANORTHITE, GEHELENITE AND SPINEL**

Joseph T. Bailey, Hixson, Tenn., assignor to American Lava Corporation, Chattanooga, Tenn.

Continuation-in-part of application Ser. No. 831,911, June 10, 1969. This application June 19, 1969, Ser. No. 834,803

Int. Cl. C04b 33/00

U.S. Cl. 106—39 R

5 Claims

Frits containing 80-97%  $Al_2O_3$  which mature to useful ceramics at about 1350° to 1500° C. are provided. Pre-reaction of finely divided reactive  $Al_2O_3$  with  $SiO_2$  and CaO in ratios of about 5:1 to 3:5 (optionally up to a total of 1/3 of the oxides other than  $Al_2O_3$  being MgO) provides the unique family of frits MgO and CaO and may be employed as carbonates.

3,627,548

# **DARK AMBER GLASSES AND PROCESS**

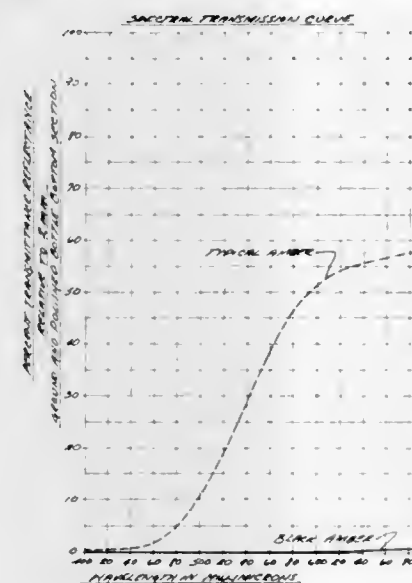
Friedrich W. Hammer and John Jasinski, Toledo, Ohio, assignors to Owens-Illinois, Inc.

Continuation-in-part of application Ser. No. 485,605, Sept. 7, 1965. This application Jan. 11, 1968, Ser. No. 697,169

Int. Cl. C03c 3/34, 5/02, 15/00

U.S. Cl. 106—52

27 Claims



New dark or "black" amber glass compositions prepared from reduced amber base glasses to which is added copper oxide. The new glasses are characterized by extremely low brightness levels, for example, on the order of 5% or less in a 2 mm. thickness, whereby glass articles made therefrom visually appear black, hence the name "black amber" glasses. The copper oxide may be added to a melt of a base amber glass under appropriate conditions.

3,627,549

# **BARIUM SILICATE GLASS FOR TELEVISION DISPLAY CATHODE-RAY TUBES**

Coenraad Maria La Grouw, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,804 Claims priority, application Netherlands, Sept. 14, 1968, 6813195

Int. Cl. C03c 3/04

U.S. Cl. 106—52

2 Claims

Glass for envelopes of cathode-ray tubes for television display, particularly screen glass or colour television,

which transmits at most 0.5 mr./h. of X-ray radiation at an acceleration voltage of 35 kv., and which has the following composition in percent by weight:

$SiO_2$	54-61	
$Na_2O$	6-10	Combined 13-17.
$K_2O$	4-10	
$Al_2O_3$	3-7	
$MgO$	0-1.5	Combined 1-3.5.
$CaO$	0.5-2.5	
$BaO$	17-21	
$CeO_2$	0.05-0.3	
$As_2O_3 + Sb_2O_3$	0.3-0.7	

3,627,550

# **REDUCIBLE VITREOUS MATERIAL**

Marc Monneraye, Sait Maur, France, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Dec. 12, 1969, Ser. No. 884,691 Claims priority, application France, Dec. 30, 1968, 182,085

Int. Cl. C03c 3/04, 3/10, 5/02

U.S. Cl. 106—53

1 Claim

A reducible vitreous material comprising lead oxide, bismuth oxide,  $SiO_2$  and  $Al_2O_3$ , which after adjustment of the surface conductivity between  $10^{11}$  and  $10^{13}$  ohms per square by heating in a reducing atmosphere, is particularly suitable for use in a dynode.

3,627,551

# **FORMS OF GRAPHITE**

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Mar. 22, 1965, Ser. No. 441,905, now Patent No. 3,492,197, dated Jan. 27, 1970. Divided and this application Nov. 12, 1968, Ser. No. 775,096

Int. Cl. C09d 1/46; H01b 1/06

U.S. Cl. 106—56

4 Claims

This invention relates to new glass-bonded compressed graphite compositions and to a method for preparing such compositions. Glass-bonded compressed graphite compositions are prepared by admixing vermicular expanded graphite with about 2 to about 35 weight percent of an inorganic vitreous glass-forming composition, as a bonding agent, compressing the admixture under pressure of from about 5 to about 50,000 pounds per square inch in predetermined directions to produce a cohered graphite structure and heating or otherwise treating the cohered structure to convert the glass-forming bonding agent to fused glass.

3,627,552

# **PIGMENTS COMPRISING NICKEL SALTS OF IMINOHETEROCYCLICAMIDES**

Albert S. Matlack, Hackensin, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Original application Nov. 2, 1967, Ser. No. 680,037, now Patent No. 3,576,012. Divided and this application Feb. 18, 1970, Ser. No. 14,859

Int. Cl. C08h 17/14

U.S. Cl. 106—288 Q

4 Claims

Highly colored nickel salts or chelates of iminoheterocyclic carboxamides or carbothiamides suitable as pigments are described. The nickel salts are prepared by reacting a nickel salt of a weak acid with the desired iminoheterocyclic carboxamide or carbothiamide, as for example, with 2-iminocoumarin-3 carboxamide, which in turn can be preformed or formed in situ by condensing the appropriate aldehyde with a cyanoacetamide or cyanothioacetamide. Pigmentary mixed chelates are also formed in the same manner by reacting the nickel salt with a mixture of the desired iminoheterocyclic carboxamide or carbothiamide and at least one other chelating agent such as, for example, dimethylglyoxime, 1-nitroso-2-naphthol, etc.



3,627,553

## PIGMENTS

David William Harold Clark, Leigh-on-Sea, Essex, and Terence Leslie Threlfall, London, England, assignors to May & Baker Limited, Dagenham, Essex, England

Filed Sept. 6, 1968, Ser. No. 758,056

Claims priority, application Great Britain, Sept. 8, 1967, 41,182/67

Int. Cl. C09c 1/36

U.S. Cl. 106—300

26 Claims

The invention provides novel pigments comprising a plurality of high refractive index layers of titanium or zirconium dioxide or of an alkaline earth metal titanate separated by one or more layers of lower refractive index of an organic film-forming substance or of an inorganic oxide or hydroxide. These pigments are made by successively depositing the various layers on a support, stripping the product from the support and comminuting it.

3,627,554

## READILY DISPERSIBLE INORGANIC PIGMENTS

August Bockmann and Klaus Prater, Krefeld, Hans Rudolph, Krefeld-Bockum, and Wolfgang Wiegrefe, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 9, 1969, Ser. No. 840,473

Claims priority, application Germany, July 20, 1968, P 17 92 086.4

Int. Cl. C09c 1/36, 3/02

U.S. Cl. 106—300

10 Claims

The dispersibility of inorganic pigments in, for example, resins, e.g. polyvinyl chloride, is improved by coating the pigment particles with an ether of a polyol with a least 3 OH-groups and a monofunctional alcohol.

3,627,555

## FEEDING OF POWDERS

Richard E. Driscoll, Monroe, La., assignor to Columbian Carbon Company, New York, N.Y.

Filed Sept. 10, 1968, Ser. No. 758,880

Int. Cl. C09c 1/48

U.S. Cl. 106—307

5 Claims

Constant mass-rate feeding of powders is improved by supplying the powder to a feeder in fluid form, and at a uniform bulk density, from a bed of the powder. The depth of the powder bed is maintained essentially constant, thus providing a more constant head of pressure upon the powder being supplied to the feeder.

3,627,556

## DURABLE PRESS FINISH FOR WOOL/CELLULOSIC FABRICS (MELAMINE/DIHYDROXY-IMIDAZOLIDINONE RESINS)

Phillip B. Roth, Bridgewater Township, Somerset County, N.J., and Herbert Jack Leavitt, Millbrae, Calif.; said Roth assignor to Koratron Company, Incorporated, San Francisco, Calif.

No Drawing. Filed July 29, 1968, Ser. No. 748,174

Int. Cl. D06m 15/54, 15/70

U.S. Cl. 117—10

20 Claims

A method for imparting durable press properties to textile fabrics containing a protein fiber such as

wool and cellulose fibers comprising impregnating said fabric with a single bath comprising a resin forming material which may comprise a combination of materials, i.e., a polymethylol melamine and 1,3-dialkylol-4,5-dihydroxy-2-imidazolidinone and a delayed action catalyst, drying and subsequently curing said methylol melamine and 1,3-dialkylol-4,5-dihydroxy-2-imidazolidinone on said fabric, the composition for the method and the treated fabric.

3,627,557

## LIQUID DEVELOPMENT BY REDUCING THE VISCOSITY OF THE DEVELOPER ON A ROLLER APPLICATOR PRIOR TO DEVELOPMENT

Masamichi Sato and Selji Matsumoto, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

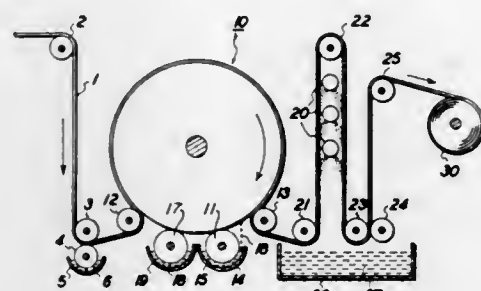
Filed Aug. 21, 1970, Ser. No. 65,915

Claims priority, application Japan, Aug. 27, 1969, 44/67,749

Int. Cl. G03g 13/10, 15/10

U.S. Cl. 117—37 LE

10 Claims



An electrostatographic imaging system of the liquid development type wherein a liquid developer of elevated viscosity is initially supplied to the surface of an electroconductive developer applicator device followed by the application of a liquid capable of lowering the viscosity of the developer. The applicator device is then maintained in moving contact with an imaging member bearing an electrostatic charge pattern to provide a reproduction of improved solid area coverage.

3,627,558

## SENSITIZATION PROCESS FOR ELECTROLESS PLATING

Lenard Lee Roger, Camberley, Russell Swale Vincent, Aldbourne, and Harry Wilson, Sandhurst, England, assignors to Technograph Printed Circuits Limited

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,590

Int. Cl. B44d 1/18; C23c 3/00

U.S. Cl. 117—47 R

12 Claims

Method of, and compositions for, sensitising surfaces prior to electroless plating of a metal thereon. The compositions are stabilised by a water-soluble hydroxyl group-containing compound.

3,627,559

## MULTI-PURPOSE ADHESIVE TAPE

James Ling Chen, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed June 17, 1969, Ser. No. 833,946

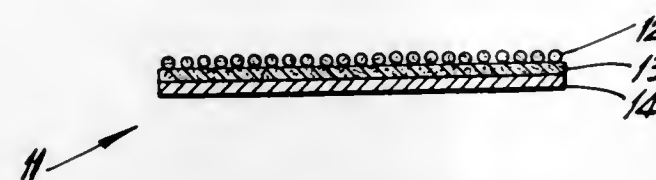
Int. Cl. B44d 1/10, 1/12, 1/14

U.S. Cl. 117—45

6 Claims

A multi-purpose adhesive tape is formed by a backing, a layer of a water soluble gum, and a discontinuous layer

of a pressure-sensitive adhesive on the gum. When applied to a dry substrate, the tape becomes peelable or releasable



on being moistened. When applied to a wet substrate, the tape is resistant to peeling or releasing on being moistened.

3,627,560

## SELF-CLEANING COOKING APPARATUS

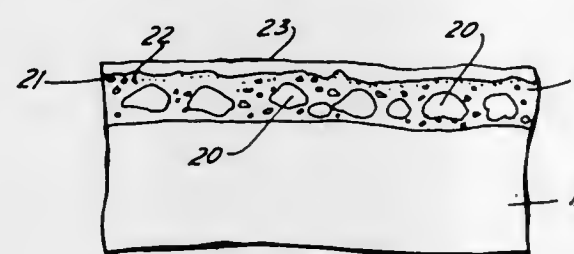
Curtis L. Morgan, Sigel, Ill., assignor to Fedders Corporation, Edison, N.J.

Original application Jan. 13, 1969, Ser. No. 790,772, now Patent No. 3,545,423, dated Dec. 8, 1970. Divided and this application Apr. 27, 1970, Ser. No. 43,266

Int. Cl. A21b 1/00

U.S. Cl. 117—70 B

6 Claims



A self-cleaning surface for a cooking apparatus comprising a two-layer coating on a metal surface, the first coating being a mixture of a ceramic and a catalytically active material with a second coating of catalytically active material. A method for forming a self-cleaning surface for a cooking apparatus including the application of the catalyst in a slurry having a material convertible to a high temperature binding material.

3,627,561

## PROCESS FOR BONDING PLATINUM ONTO A BASE METAL

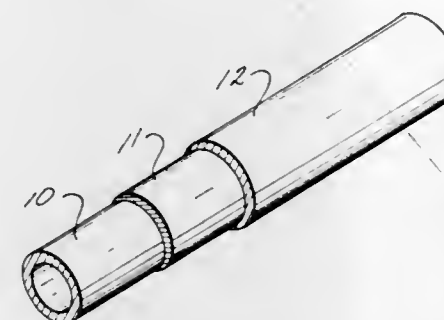
Raymond S. Richards, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original application July 16, 1965, Ser. No. 472,417, now Patent No. 3,432,278, dated Mar. 11, 1969. Divided and this application Oct. 16, 1968, Ser. No. 767,946

Int. Cl. B44d 1/08, 1/14, 1/16; C23c 7/00

U.S. Cl. 117—71 M

9 Claims



There is disclosed a process of metallurgically bonding a platinum coating to a base metal by applying to the base

metal an easily reduced metal which will not oxidize and thereafter applying molten platinum in droplet form onto the reduced metal. The contemplated base metals include iron or nickel base alloys such as Inconel, Nichrome, and the like. The contemplated reduced metal is gold, silver, or copper. The application of the molten platinum in droplet form may be by a flame-spray or plasma-jet spray technique.

3,627,562

## METHOD OF TREATING CONTINUOUS SURFACES

Paul Hammelmann, 17 Zum Sundern, 474 Oelde, Westphalia, Germany

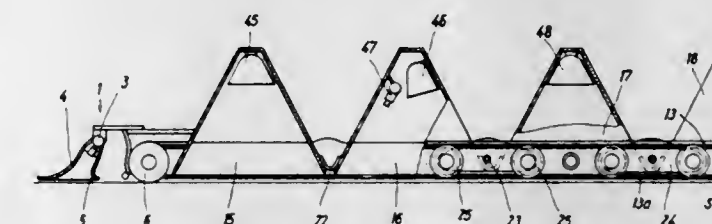
Filed May 19, 1969, Ser. No. 828,428

Claims priority, application Germany, May 20, 1968, P 17 56 431.7

Int. Cl. B44d 1/02, 1/12, 1/50

U.S. Cl. 117—61

5 Claims



A continuous surface is treated by advancing over it an apparatus provided at its leading end with a cleaning device and downstream of the cleaning device with one or more containers which are evacuated and each have an open side facing the just-cleaned surface portion in sealing engagement therewith and carrying in its interior a drying and/or applicator device for applying a protective layer to the just-cleaned surface portion.

3,627,563

## FLEXIBLE TRANSLUCENT COATING FILMS FOR DRAFTING PURPOSES

Romain Henri Bollen, Hove, and Willy Karel van Landeghem, Sint-Gillis-Waas, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Mar. 28, 1969, Ser. No. 813,401

Claims priority, application Great Britain, Feb. 11, 1967, 7,391/69

Int. Cl. B44d 5/02, 5/04

U.S. Cl. 117—62

21 Claims

A dimensionally stable drafting film which has good pencil and ink receptivity and is easily erasable without leaving erasure marks comprising (1) a dimensionally stable polyester film substrate and (2) a mat layer containing pigment particles uniformly coated over said support is described. The mat layer consists essentially of the moiety of a binder combination including a soluble, partially cured formaldehyde resin; a diisocyanate modified polyester or polyesteramide, finely divided hard pigment particles, and a hydrophilic component. The moiety is formed by heating an admixture of said binder combination in the presence of an acid cross-linking catalyst for the formaldehyde resin and diisocyanate modified polyester or polyesteramide at an elevated temperature for a time sufficient to polymerize the resin combination. The mat layer is to have a thickness substantially equal to the average diameter of the pigment particles with the particles being present in the layer in an amount sufficient to constitute from about 30 to 50 percent by weight of the total weight of the dried mat layer.



3,627,564

**METHOD FOR COATING A CONTINUOUS WEB**

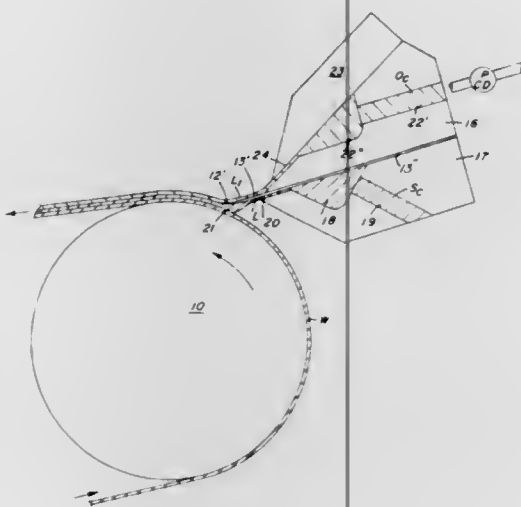
Joseph A. Mercier, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 16, 1970, Ser. No. 55,323

Int. Cl. B44d 1/14, 1/02

U.S. Cl. 117-69

2 Claims



Two or more low-coverage coatings are applied substantially simultaneously to a web travelling at high speed by first trowelling a very thin subcoat onto the web with a trailing blade coater to prepare the web surface for an overcoating of the same or compatible coating material, and then flowing the overcoat down the top side of the trailing blade and off the trowelling end thereof directly onto the subcoat. Two or more layers of fluid coating composition can be flowed down the top of the trailing blade and onto the trowelled subcoat in distinct layer relationship with each other and the subcoat.

3,627,565

**MIXTURES OF ZIRCONYL SALTS AND TRIALKOXSILYLPROPYLAMINES AS COUPLING AGENTS**

Edwin P. Plueddemann, c/o Dow Corning Corp., Midland, Mich.

Filed Aug. 8, 1969, Ser. No. 848,731

Int. Cl. C03c 25/02; B32b 17/04

U.S. Cl. 117-72

7 Claims

The bond strength between solid inorganic materials, such as glass, and certain organic resins, such as epoxies, is strengthened by treatment of the solid with a mixture of a water soluble zirconyl salt and a gamma-trialkoxysilylpropylamine prior to the formation of the bond.

3,627,566

**FLOOR COVERING WITH SKID-PROOF UNDERCOATING**

Gunter Stichter, Frankensteiner Strasse 119, 61 Darmstadt-Eberstadt; Josef Sulo, Obermainstrasse 21, 6 Frankfurt am Main, and Manfred Schweizer, Friedrich-Ebert-Strasse 32, 6101 Gross-Bieberau, all of Germany

Filed Nov. 16, 1967, Ser. No. 683,453

Claims priority, application Germany, Nov. 17, 1966, C 40718

Int. Cl. B32b 27/20, 27/32

U.S. Cl. 117-76 A

8 Claims

A floor covering with a skid-proof underside consisting of a mixture of atactic polypropylene and filler.

3,627,567

**LEATHERLIKE MATERIAL AND PROCESS OF MAKING SAME**

Tomio Tensho, Osaka, Japan, assignor to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed July 23, 1969, Ser. No. 843,990

Claims priority, application Japan, July 23, 1968, 43/52824

Int. Cl. B44c 3/02; B44d 1/14; D06n 3/04

U.S. Cl. 117-76 T

27 Claims



This invention is directed to a tenacious and moisture permeable leatherlike sheet material having breatheability and water absorbability and which is comparable to natural leathers in durability and wearing comfort. It comprises: a base fabric having a large content of its void spaces; a microporous and aqueous insoluble polyvinyl acetal resin, adhering to and entirely covering the structural fibers of said fabric, in the form of a unitary three dimensional network; and a layer of a different resin covering said polyvinyl acetal resin. The sheet material may have a grain side layer on at least one surface side thereof. A process for manufacturing such a sheet material comprises steps of: impregnating a base fabric with an aqueous solution of polyvinyl acetal; heating the impregnated fabric at 50°-130° C.; further impregnating said fabric with liquid comprising different resin; and curing. The resultant article is particularly useful for inner parts of shoe, such as insole, sole pad, inner lining and the like.

3,627,568

**THERMOPLASTIC COATING FOR MOLDABLE NYLON CARPETS, AND METHOD OF MANUFACTURE**

John W. Padgett, Bernardville, and Sherman T. Van Esselstyn, Upper Montclair, both of N.J., assignors to Moore &amp; Munger, New York, N.Y.

Filed July 17, 1967, Ser. No. 653,625

Int. Cl. B44d 1/094; B32b 27/08

U.S. Cl. 117-21

15 Claims

A normally granular free-flowing thermoplastic composition for coating moldable nylon carpets which comprises a major proportion of a relatively high-viscosity polyolefin, such as polyethylene, and a minor proportion of a mixture of relatively polar and relatively nonpolar lower viscosity polymers or saturated hydrocarbons, such as, respectively, ethylene vinyl acetate and Fischer-Tropsch wax, the polyolefin having a density of between about 0.900 and .940 and a melt index of 70 or less, and the mixture of polar and relatively nonpolar hydrocarbons having, when taken together, a melting point of not less than 190° F. and a viscosity at 125° C. not exceeding 1000 centipoises.

Also, nylon carpeting which has been at least partially coated or impregnated, as by fluxing, with such a composition.

Also, a process for preparing such a composition which includes melt-blending, solidifying and powdering the polar and relatively nonpolar components, and thereafter dry-mixing these with the polyolefin.

3,627,569

**DEPOSITION OF THIN FILMS WITH CONTROLLED THICKNESS AND PLANAR AREA PROFILE**

David Beecham, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1968, Ser. No. 787,497

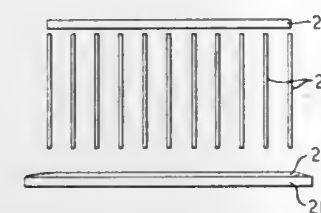
Int. Cl. C23c 1/100

U.S. Cl. 117-106 R

8 Claims

The specification describes a method and apparatus for vapor deposition of thin films in which the thickness profile

and planar area of the film is highly controlled through the use of a collimating device. The collimating device consists of a plurality of elongated open-ended passages for "channeling" the evaporant between the source and the substrate. This produces an even distribution of vapor and high



directivity as the depositing material reaches the substrate. The invention is especially suitable for the production of large area films applicable, for instance, to large piezoelectric transducers. The invention is also applicable to the production of films to any given thickness profile.

3,627,570

**HEAT TREATMENT OF GRAPHITE FIBERS**

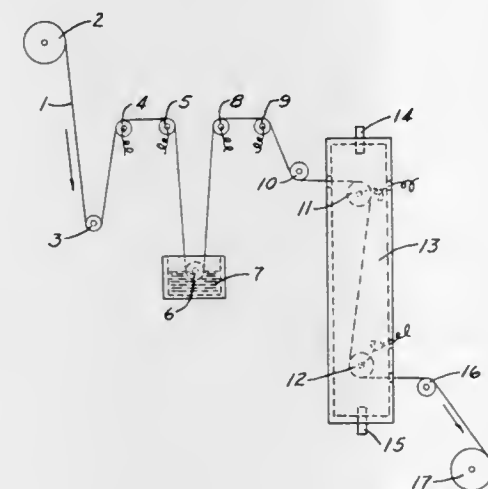
Robert A. Cass, and Samuel Steingiser, both of Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed May 28, 1970, Ser. No. 41,412

Int. Cl. B44d 5/12, 5/00

U.S. Cl. 117-118

6 Claims



A process for improving the shear strength of a graphite fiber-resin matrix wherein the fibers are coated with a soluble coating compound consisting of a metal hydroxide, peroxide, halide, nitrate, nitrite, permanganate, dichromate or sulfide, and heated in a controlled atmosphere at above 400° C. prior to incorporation in the composite; such composites being useful as structural materials.

3,627,571

**HEAT TREATMENT OF GRAPHITE FIBERS**

Robert A. Cass, and Samuel Steingiser, both of Dayton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

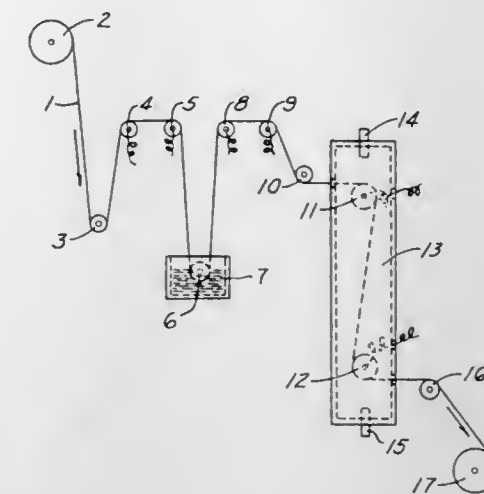
Filed May 28, 1970, Ser. No. 41,481

Int. Cl. B44d 5/12

U.S. Cl. 117-118

3 Claims

A process for improving the shear strength of a graphite fiber-resin matrix composite wherein the fibers are coated



atmosphere at a temperature above 300° C.; such composites being useful as structural materials.

3,627,572

**FORMING FILAMENTARY BAND**

Nigel John Barnett, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 6, 1969, Ser. No. 864,188

Claims priority, application Great Britain, Oct. 16, 1968, 49,098/68

Int. Cl. B32b 5/12, 31/12

U.S. Cl. 117-126

6 Claims

Band structures comprising a core of parallel filaments and an extruded exterior sheath of thermoplastic organic material and process for their production including the step of compaction of the core by means of a reduced atmospheric pressure.

3,627,573

**COMPOSITION AND METHOD**

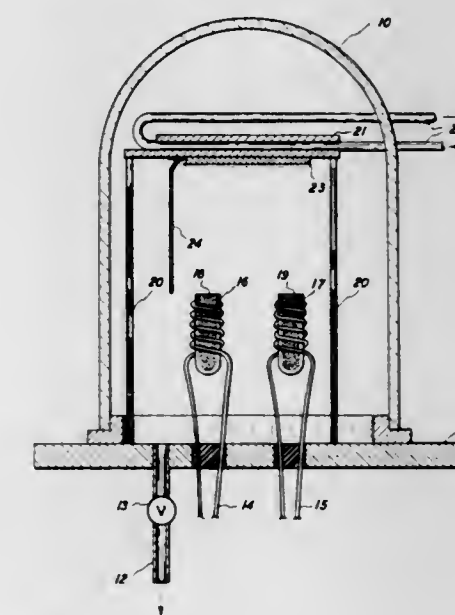
John C. Schottmiller, 38 Alberta Drive, Penfield, N.Y.; Francis W. Ryan, 77 Pembroke St., Rochester, N.Y., and Charles Wood, 1034 DeKalb Ave., Sycamore, Ill.

Continuation-in-part of application Ser. No. 550,215, May 16, 1966, now abandoned. This application Oct. 10, 1967, Ser. No. 674,267

Int. Cl. H01I 7/36

U.S. Cl. 117-201

11 Claims



This invention relates to a vitreous semiconductor comprising at least one metal and at least one nonmetal which is solid at room temperature, the semiconductor having at least



0.5 atomic percent metal and a greater than stoichiometric percentage of nonmetal. The invention also relates to a method for producing such semiconductors by coevaporating the metal and nonmetal and simultaneously quenching said metal and said nonmetal onto a substrate held at a temperature below the condensation point of either component.

3,627,574

## COVERED LOW HYDROGEN ARC WELDING ELECTRODE

William T. Delong, West Manchester Township, and Edwin R. Szumachowski, Springettsbury Township, both of Pa., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed Aug. 15, 1969, Ser. No. 850,631

Int. Cl. B23k 35/24, 35/34

U.S. Cl. 117—205

18 Claims

A covered ferrous low hydrogen arc welding electrode of the class wherein a current conductive core is covered with a lime-fluoride coating, the electrode containing by weight about 45 percent to about 80 percent core and about 20 percent to about 55 percent coating, the coating containing by weight of the electrode 0 to about 30 percent alloying metal powder, about 2 percent to about 7 percent deoxidizer metal powder, about 4 percent to about 15 percent metal fluoride, about 5 percent to about 15 percent alkaline earth carbonate, 0 to about 10 percent slag builder and modifier and about 0.5 percent to about 8 percent inorganic binder material, the electrode producing a nonaustenitic steel weld metal deposit characterized by superior toughness in the Charpy V-notch impact test, the electrode containing base components selected from metallic and oxide forms of basic metals of the group consisting of lithium, sodium, potassium, cesium, magnesium, calcium, strontium and barium and acid components selected from metallic and oxide forms of acid metals of the group consisting of aluminum and silicon, said base components and acid components being so proportioned that when all components are melted together under the influence of an electric welding arc the electrode produces a welding slag with a basicity or mole ratio of oxide of basic metal to oxide of acid metal of at least 2.2, the electrode being restricted in sources of metallic and oxide forms of titanium so that when all components are melted together under the influence of an electric welding arc the electrode produces a weld metal deposit containing less than 0.07 percent titanium.

3,627,575

## PROCESS FOR FORMING PHOTOEMISSIVE SURFACES

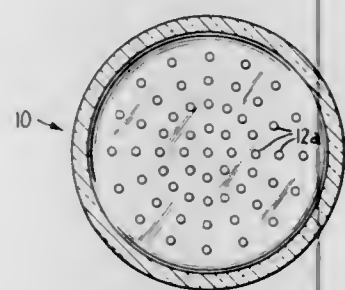
Robert J. Doyle, Norwalk, and Patrick F. Grosso, Stamford, both of Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Nov. 13, 1968, Ser. No. 775,418

Int. Cl. B44d 1/18

U.S. Cl. 117—212

11 Claims



Photoemitters are formed on selected areas of a substrate or on a normally inaccessible substrate by coating the selected areas or substrate with a layer of a nucleating material having a higher heat of sublimation than the photoemitter base layer (e.g., nichrome if the latter base layer is antimony). The substrate with the selected nucleated

areas thereon is sealed into an evacuated envelope and is baked out to remove foreign gases. Antimony is then evaporated inside or caused to diffuse into the envelope at an elevated temperature such that it is deposited only on the nucleated surfaces. An alkali metal (e.g., caesium) is then evaporated within the envelope and it adheres only to the areas where the antimony has previously been deposited, forming photoemitters on the selected area or areas on the substrate.

3,627,576

## PROCESS FOR ADHERENT METALLIZING OF SYNTHETIC RESINS

Helmut Knorre, Hainstadt/Main, and Gunter Reiff, Kleinostheim, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt/Main, Germany

Filed Aug. 19, 1968, Ser. No. 753,780

Claims priority, application Germany, Aug. 18, 1967, P 16 21 232.1

Int. Cl. B44d 1/40; C23b 5/62

U.S. Cl. 117—213

10 Claims

Synthetic resins having adherent electrically conductive metal coatings on their surfaces are produced by preparing the synthetic resin A to be metallized by incorporating therein (1) a polymeric material having a relatively low softening temperature range and which is capable of being attacked oxidatively by the usual conditioning baths, such as, chromosulfuric acid, and (2) a finely divided filler which is capable of binding the catalyst required through functional groups and effecting chemical metallization of the thus prepared combination.

3,627,577

## THIN FILM RESISTORS

Charles A. Steidel, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 22, 1968, Ser. No. 731,183

Int. Cl. C23c 15/00

U.S. Cl. 117—227

3 Claims

Thin film resistors may be obtained by depositing tantalum-aluminum films containing from 25–60 atom percent aluminum upon an insulating substrate member by conventional condensation techniques.

3,627,578

## METHOD OF MAKING A PHOTOELECTROLYTIC IMAGING DEVICE

Harvey A. Hodes, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 5, 1969, Ser. No. 874,388

Int. Cl. G03g 5/10

U.S. Cl. 117—230

1 Claim

In the manufacture of a photoelectrolytic imaging device, an aqueous suspension is formed of all the ingredients making up the image forming layer. The aqueous suspension is then spread evenly over an electrically conductive support for the image forming layer and a photoconductive layer then placed in contact with the aqueous suspension layer.

3,627,579

## UNIDIRECTIONALLY ORIENTED FILM STRUCTURE OF POLYETHYLENE TEREPHTHALATE

Carl John Heffelfinger, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 707,907, Jan. 9, 1968, now abandoned, Continuation-in-part of application Ser. No. 470,992, July 12, 1965, now abandoned. This

application Nov. 18, 1969, Ser. No. 877,755

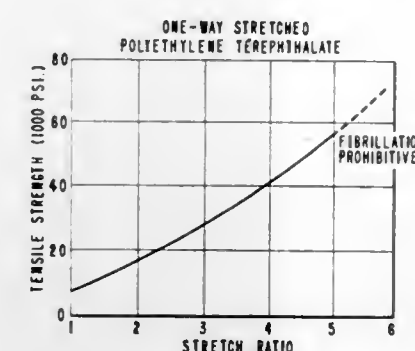
Int. Cl. H01f 10/00; C09j 7/02; C08g 17/04

U.S. Cl. 117—236

7 Claims

A tear-resistant, nonfibrillating and dimensionally stabilized film structure of polyethylene terephthalate, which is

useful as a backing for metallic, magnetic, and adhesive coatings, having an intrinsic viscosity of at least 0.65 and



which is stretch oriented unidirectionally and a process of preparation thereof.

3,627,580

## MANUFACTURE OF MAGNETICALLY SENSITIZED WEBS

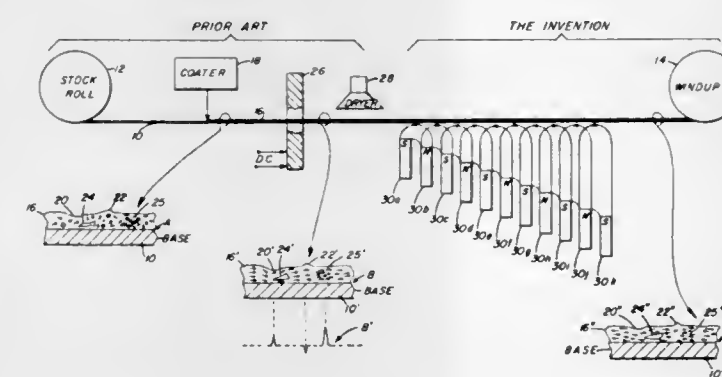
Harry J. Krall, San Jose, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,409

Int. Cl. H01f 7/00

U.S. Cl. 117—238

8 Claims



The requirement for time-consuming, costly bulk-erasing of the magnetic sound track on motion picture film is eliminated in the disclosed process. As indicated, film is coated with a magnetically sensitized stripe. Prior to the time when the stripe dries, the film is exposed to a strong particle-orienting magnetic field, thereby to improve the recordability of the stripe. Such particle orientation causes the particles to become unidirectionally magnetized, which in combination with coating irregularities increases measurable noise level. To remove such noise, the invention provides that the film be exposed to alternating magnetic fields of gradually decreasing strength, such fields being disposed after the coating dries and before the film is wound. The invention may be practiced in the manufacture of other magnetically sensitized recording webs.

3,627,581

## PRESSURE-SENSITIVE RECORD MATERIAL

Paul S. Phillips, Jr., Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 19, 1970, Ser. No. 82,198

Int. Cl. B41m 5/16

U.S. Cl. 117—36.2

14 Claims

Record material comprising paper sheet material coated with liquid-containing microcapsules wherein the liquid contents comprise isopropylbiphenyl and no halogenated hydrocarbon liquid. Said liquid is associated on the record material with at least two color-producing reactants, at least one of which is soluble in said liquid. The encapsulated liquid is associated with the reactants by either being in close proximity to both reactants or by having one of the reactants dis-

solved therein and being in close proximity to the other. Of the color-producing reactants, one is a chromogenic dye-precursor and one is a coreactant material capable of developing the color of the chromogenic dye-precursor when the two reactants are brought into reaction contact by rupture of the capsule walls that contain said liquid.

3,627,582

## CONTINUOUS CRYSTALLIZING APPARATUS FOR SUGAR-BEARING LIQUOR

Francis Dambrine, Marcq en Baroeul; Jean C. Giorgi, Hellemmes; Jacques De Cremoux, Lille, and Georges Windal, Roubaix, all of France, assignors to Fives Lille-Cail, Paris, France

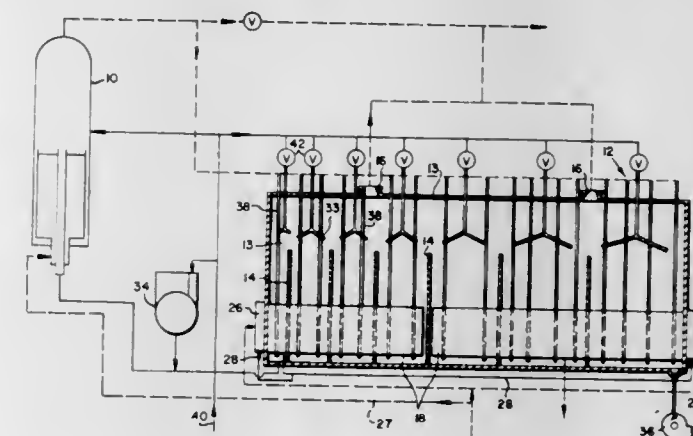
Filed June 19, 1969, Ser. No. 834,629

Claims priority, application France, July 17, 1968, 159451

Int. Cl. C13f 1/02; C13g 1/00, 1/04

U.S. Cl. 127—16

10 Claims



A crystallizer for sugar has a shell which is approximately cylindrical about a horizontal axis, and symmetrical relative to a vertical plane through the axis. A group of plate-shaped heating elements in the shell define a horizontal plane which upwardly bounds the group and divides the interior of the shell into a top portion and a bottom portion. The numerical value of the combined surface area in square meters of the heating elements which are upright and parallel to the axis is 13 to 20 times the numerical value of the capacity of the bottom portion in cubic meters, and the capacity of the bottom portion is 0.2 to 0.35 times the total capacity of the shell. The bottom portion is axially divided into compartments by partitions transverse to the axis.

3,627,583

## DIRECT COMPRESSION VEHICLES

John P. Troy, Hicksville; Anthony Monti, Irvington; Frank J. Lynch, Staten Island, all of N.Y., and Charles B. Broeg, Short Hills, N.J., assignors to SuCrest Corporation, New York, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,285

Int. Cl. C13f 3/00

U.S. Cl. 127—29

10 Claims

Tablets are formed directly without granulation or slugging from a mixture of an active material, such as a therapeutic material, and as a direct compression vehicle, a dry, free-flowing, granular sugar composition comprising generally spherical, porous, firm agglomerates of 100 parts of solid sugar in from about 0.1 to about 30 parts of a cementum or matrix. The sugar agglomerates are obtained by:

1. Spraying a particulate solid sugar with an aqueous solution of binder;
2. Providing the resulting mixture with sufficient high intensity agitation to uniformly intermingle the sugar and binder and to build up agglomerates of a desired size;
3. "Snowballing" the agglomerates to impart a general spherical shape thereto and to firm or densify the agglomerate;



4. Drying; and if necessary,  
5. Separating over- and undersized agglomerates. The mixture may also contain additives such as colors, flavorants and the like.

3,627,584

# METHOD FOR PNEUMATICALLY CLEANING OPEN-END SPINNING MACHINES

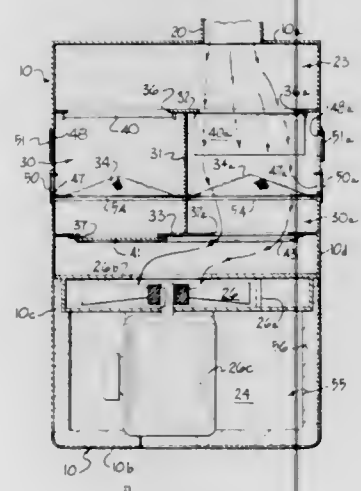
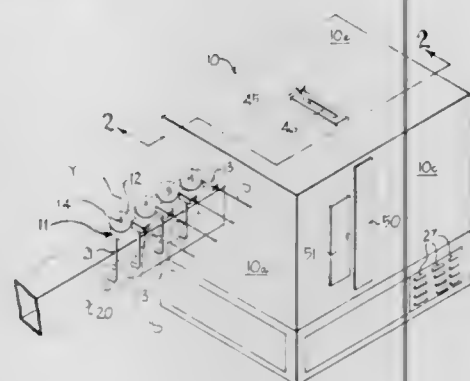
Richard Gordon Stewart, Heaton Mersey, Manchester, England, assignor to Parks-Cramer (Great Britain), Ltd., Oldham, England

Filed June 10, 1969, Ser. No. 831,915

Int. Cl. B08b 5/04

U.S. Cl. 134—21

5 Claims



This invention is directed to the cleaning of the spinning heads or units of open-end spinning machines, and the apparatus for carrying out the instant method includes means for maintaining a substantially constant high-pressure suction airstream at a plurality of open-end spinning units while alternately filtering the airstream through a pair of generally parallel filter-containing airflow chambers in advance of a high-pressure suction fan whereby fiber waste may be removed from each chamber and its filter while the airstream flows through the other chamber without reducing the efficiency of the airflow at the spinning units as effected by the fan.

3,627,585

# SOLAR CELL ARRAYS

Alan Albert Dollery, Windlesham, Surrey; Neville Stanley Reed, Farnham, Surrey, and Frederick Christopher Treble, Farnborough, all of England, assignors to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 3, 1969, Ser. No. 813,123

Claims priority, application Great Britain, Oct. 14, 1968, 48,483/68

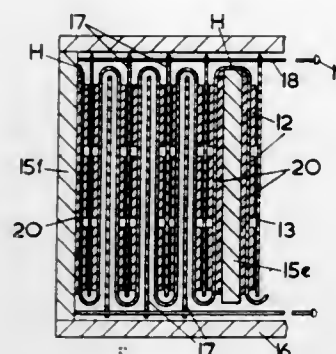
Int. Cl. H011

U.S. Cl. 136—89

6 Claims

According to the present invention a stowable solar cell array includes solar cells mounted on a thin flexible substrate

which is supported on an erectable frame, the frame and substrate being arranged so that in the stowed condition with the frame collapsed the substrate is held in flat concertinalike folds, and frame erection means whereby the frame is capable of being erected to unfold the substrate and support it in a fully deployed condition.



The erectable frame may include a telescopic tube having several sections slidably arranged one inside the other, and the frame erection means conveniently may be means for releasing a compressed gas into the interior of the telescopic tube to extend it and deploy the sections of the tube.

3,627,586

# SEALED CYLINDRICAL ELECTROCHEMICAL CELL

Jean Firmin Jammet, Poitiers, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

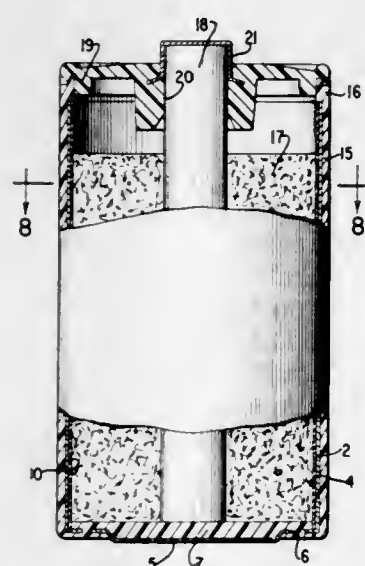
Filed Dec. 11, 1969, Ser. No. 884,208

Claims priority, application France, Dec. 12, 1968, 178012

Int. Cl. H01m 21/06

U.S. Cl. 136—107

16 Claims



Sealed electrochemical cells, preferably of cylindrical shape comprising a rodlike positive electrode surrounded by a depolarizing mix and separator enclosed within an overall cylindrically shaped cuplike negative electrode formed from sheet metal which is mechanically folded and bowed to provide a bottom and cylindrically shaped side walls having at least one longitudinal slot. A synthetic plastic casing is molded in situ about the negative electrode. After assembly of the positive electrode, depolarizer mix and separator and other required cell components with this negative electrode bearing said synthetic casing, an insulative closure member is mounted on the assembly to seal the contents of the casing surrounded negative electrode. The positive electrode projects through this cover and optionally a metal cap covers the protruding end of the positive electrode. The bottom of the negative electrode is either directly left uncovered by the casing to constitute the negative terminal of the generator. In

the alternative, a metallic cup in electrical contact with said bottom is left partially uncovered by the casing to constitute the negative terminal. This cup may be ribbed, if desired.

3,627,587

# STORAGE BATTERY AND METHOD OF MAKING THE SAME

Hans-Georg Lindenberg, Hannover, and Ulrich Hintz, Frielingen, both of Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

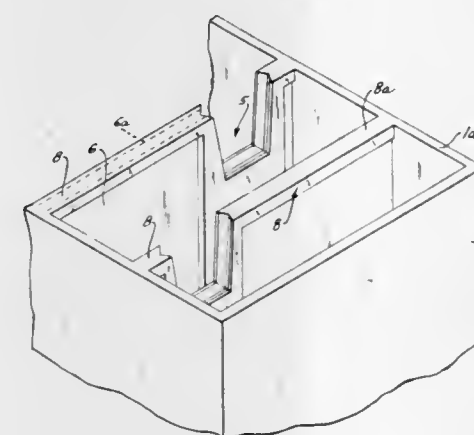
Filed May 27, 1970, Ser. No. 40,813

Claims priority, application Germany, June 3, 1969, P 19 28 288.3

Int. Cl. H01m 1/02

U.S. Cl. 136—166

15 Claims



A storage battery has a casing composed of a bottom portion and a cover therefor. Both are hollow and have normally juxtaposed open sides with edge faces of the peripheral walls bounding the respective open sides. Both the cover and the bottom portion of the casing are subdivided by at least one partition wall a free edge of which is located in the plane of the respective edge face. One or both of these free edges is provided with a reinforcing bead wider than the respective partition wall and extending along parts or the entire free edge. The free edge of the partition wall in the bottom case portion is provided with a downwardly extending cutout in which a conductive bridge member is received with clearance which extends into the respective chambers to connect electrode assemblies located therein. This clearance is completely filled with a hardenable synthetic plastic material and at the same time the reinforcing bead is formed of the same material on the respective upper free edge, in accordance with the present method.

3,627,588

# THERMOELECTRIC GENERATING ASSEMBLY

Martin A. Rubinstein, Morrisville, Pa., and Charles Teleki, West Orange, N.J., assignors to Isotopes, Incorporated, Westwood, N.J.

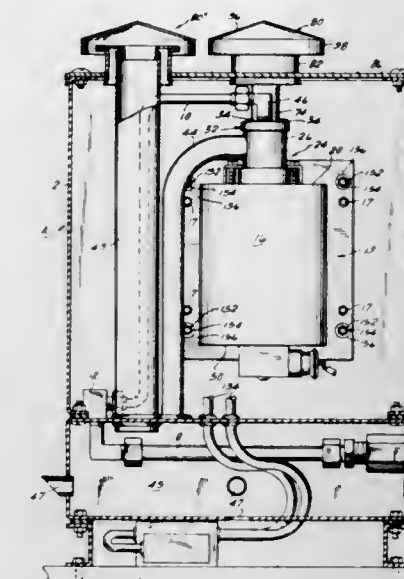
Filed Sept. 20, 1965, Ser. No. 488,483

Int. Cl. H01v 1/00, 1/02, 1/30

U.S. Cl. 136—205

6 Claims

A thermoelectric generating assembly in which heat is produced by mixing air and fuel and causing the mixture to pass over a combustion member, the degree of heat being controlled by varying the amount of air and means being provided to equalize the air pressures at the air inlet to and the exhaust from the combustion chamber. The combustion



ated space between walls having flexible portions, those walls including relatively thick portions of good heat-conductivity.

3,627,589

# METHOD OF STABILIZING SEMICONDUCTOR DEVICES

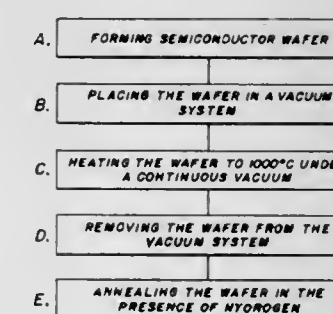
James W. Sprague, Clay, N.Y., assignor to General Electric Company

Filed Apr. 1, 1970, Ser. No. 24,626

Int. Cl. H011 7/34

U.S. Cl. 148—1.5

3 Claims



This invention relates to a method of minimizing the effects of mobile impurity ions in an insulating layer formed on a semiconductor body of silicon material. Initially the semiconductor body is placed under a reduced ambient pressure of less than  $10^{-3}$  torr. While under this reduced pressure ambient the insulating layer is heated to a temperature in the range of  $950^{\circ}$  to  $1150^{\circ}$  C. for a time sufficient to minimize the deleterious effects of mobile impurity ions present in the insulating layer. The body is then heated in the presence of hydrogen at a temperature in the range between  $250^{\circ}$  to  $550^{\circ}$  C. for a time sufficient to minimize the effects of fast interface defects at the insulating layer-silicon interface.

3,627,590

# METHOD FOR HEAT TREATMENT OF WORKPIECES

Walter Kester Mammel, Yardley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 2, 1968, Ser. No. 780,481

Int. Cl. H011 7/34

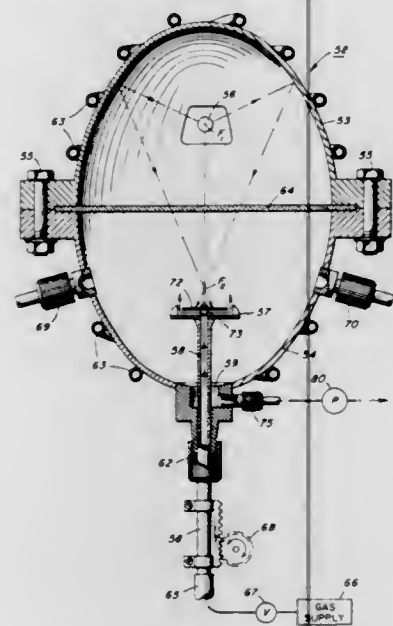
U.S. Cl. 148—1.5

33 Claims

A workpiece, for example a semiconductor slice, is floated on a layer of gas and heated by infrared radiation. The layer of gas thermally insulates the workpiece from adjacent, thermally-conductive bodies so that the temperature of the workpiece is rapidly increased. Upon the subsequent removal of



the radiation, the workpiece rapidly cools to the ambient temperature. In addition to supporting the workpiece, the layer of gas prevents physical contact between the workpiece and the flotation apparatus, thus ensuring even heating of the workpiece. The gas used to float the workpiece may be inert or it may include chemicals to react with the workpiece to modify the electrical or physical characteristics thereof. In applications where thermal insulation of the workpiece is less significant, the workpiece is placed upon a flat susceptor



positioned a predetermined distance from one focus of an ellipsoidal furnace. The direct heating of the upper surface of the workpiece by the infrared source is supplemented by indirect heating of the bottom surface of the slice by conduction from the susceptor which is itself heated by the reflected infrared radiation which strikes the rear surface of the susceptor. The combined effect of the direct and indirect heating of the workpiece results in a very even heating thereof.

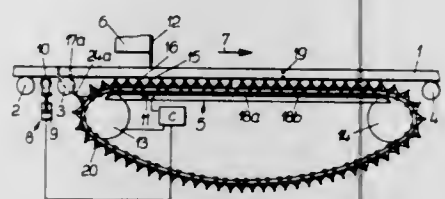
3,627,591

**PROCESS FOR SUPPORTING CONTINUOUSLY CAST WORKPIECES DURING THE CUTTING OPERATION**  
Alfred Pfeuffer, Neu-Isenburg, and Gerhard Komma, Duisburg, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany  
Original application Apr. 15, 1968, Ser. No. 721,319, now Patent No. 3,516,650, dated June 9, 1970. Divided and this application Nov. 17, 1969, Ser. No. 871,300

Int. Cl. B26f 3/06

U.S. Cl. 148—9

2 Claims



A cutting arrangement for continuous casting equipment wherein the workpiece rides on support points moving at same speed as the cutting tool is characterized by a plurality of support points slidable relative to each other which are linked together to be delayed or accelerated in their movement prior to the start of the separation cut so that the cutting will take place between adjacent support points.

**METHOD OF PRODUCING WELDING FLUX**  
Paul Schmidt, Frankfurt am Main, and Klaus Hennemann, Hofheim, Taunus, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany  
Filed Mar. 2, 1970, Ser. No. 15,881  
Claims priority, application Germany, Mar. 13, 1969, P 19 12 649.9

Int. Cl. B23k 35/36

U.S. Cl. 148—26

4 Claims

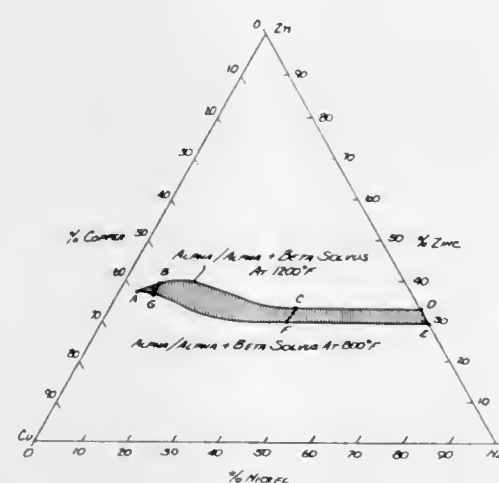
A method for the preparation of an agglomerated welding flux, especially for use in submerged arc welding and electroslag welding processes, wherein the components of the welding flux are mixed with a binding agent, while adding water thereto, to form a doughy mass; the doughy mass is then dried and calcined at a temperature at which the hydroxides are converted to their respective oxides. The binding agent is aluminum hydroxide, magnesium hydroxide or combinations thereof.

**TWO PHASE NICKEL-ZINC ALLOY**  
Frank J. Ansuini, Suffern, N.Y.; Jacob Schramm, Spartanburg, S.C., and Frank A. Badia, Ringwood, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.  
Original application Oct. 14, 1969, Ser. No. 13,913. Divided and this application Oct. 30, 1969, Ser. No. 872,514

Int. Cl. C22f 1/08, 1/10, 1/16

U.S. Cl. 148—32

9 Claims



Process of heat treating and mechanically working nickel-zinc alloys or copper-nickel-zinc alloys produces products having special alpha-beta microstructure characterized by high strength at room temperature and high deformability at elevated temperatures.

**METHOD OF FORMING ELECTRIC INSULATING FILMS ON ORIENTED SILICON STEEL**  
Takaaki Yamamoto, Kaneo Akanuma, and Osamu Tanaka, all of Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1968, Ser. No. 781,963

Claims priority, application Japan, Dec. 12, 1967, 42/79243

Int. Cl. H01f 1/04

U.S. Cl. 148—113

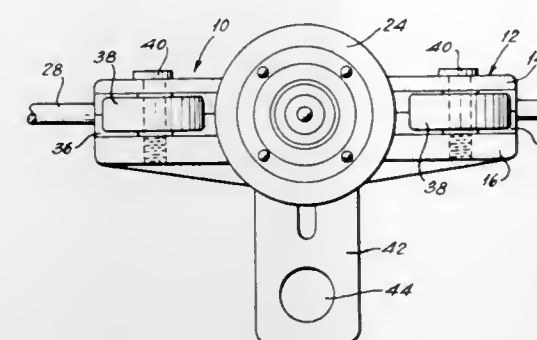
7 Claims

A method for producing a glassy film having an excellent insulating property on an oriented cold-rolled steel sheet by coating the surface of said silicon steel sheet with a mixture of a Ti compound and an Mg compound and possibly with the addition of an Mn compound thereto and then subjecting the coated silicon steel sheet to a heat-treatment.

**ENCLOSED TRACK OVERHEAD CABLE CONVEYORS**  
John M. Leach, P.O. Box 341, Port Jefferson, N.Y.  
Filed Mar. 9, 1970, Ser. No. 17,428  
Int. Cl. B65g 17/20

U.S. Cl. 198—177 R

9 Claims



The present invention relates to an overhead trolley conveyor of the enclosed track type and in which the trolleys are interconnected by a continuous cable which requires that the cable must pass through each trolley instead of around the trolleys because there is insufficient space within the enclosed track for the cable to bypass any trolley.

**SOLID PROPELLANT EMPLOYING A POLYMER CONTAINING A CARBORANYL GROUP**  
Joseph Green, Dover, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Apr. 12, 1967, Ser. No. 634,021

Int. Cl. C06d 5/06

U.S. Cl. 149—19

8 Claims

This application discloses a solid rocket propellant composition containing as its principal ingredients a major amount of finely divided oxidizer and a minor amount of a fuel binder. The fuel binder is essentially a cured condensation polymer of a dicarboxylic acid and a diol containing a carboranyl group. To facilitate curing the polymer may be provided with isocyanate terminals. Additives such as metal powders, e.g., aluminum powder; plasticizers, e.g., isopropyl carborane; burning rate modifiers, catalysts, etc., may be incorporated in the composition.

**ENGRAVING**  
Nathan A. Tiner, 1017 Skyline Drive, Laguna Beach, Calif.  
Filed Jan. 5, 1970, Ser. No. 834  
Int. Cl. C23f 1/00; B23p 1/00

U.S. Cl. 156—13

9 Claims

The method of engraving in which a metal surface is coated with a film of an etchant resistant material that will adhere to the metal and which is decomposed upon irradiation by subatomic particles such for example as a fluorocarboxylic acid such as perfluorooctanoic acid. Thereafter the resistant material is irradiated over those areas of the metal that are to be etched. The decomposed, irradiated film is rinsed away and the exposed metal is engraved with an etchant.

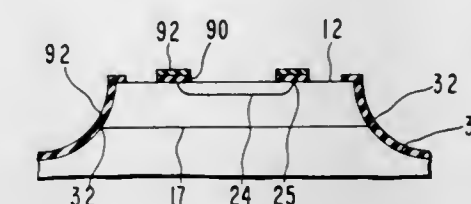
**NITRIDE PASSIVATION OF MESA TRANSISTORS BY PHOSPHOVAPOX LIFTING**  
Bruce A. McDonald, Menlo Park, and Michael B. Dragmire, San Jose, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Sunnyvale, N.Y.  
Filed Feb. 5, 1970, Ser. No. 008,903  
Int. Cl. H01f 7/00, 7/50

U.S. Cl. 156—13

7 Claims

A method of forming a barrier layer impermeable to mobile ions over both the curved and upper plane portions of

the principal surface of a mesa-structured semiconductor device. The barrier layer is caused to crack when placed over a special liftant but not when placed over the remainder of



the device surface. An etching solution via the cracks then removes the liftant and desired portions of the barrier layer so that electrical contact can be made subsequently to active regions of the device.

**METHOD OF APPLYING AN N,N'DIALLYLMELAMINE RESIST TO A SURFACE**  
Joel Edward Goldmacher, Cranbury, and Orville Elton Dow, Princeton, both of N.J., assignors to RCA Corporation  
Filed Apr. 25, 1969, Ser. No. 819,492  
Int. Cl. G03c 1/70; C23c 13/04

U.S. Cl. 156—13

4 Claims

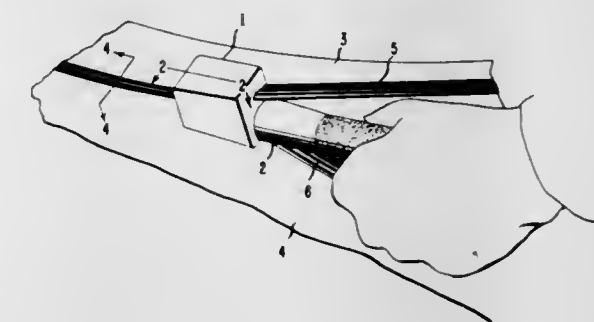
A novel negative resist comprises N,N'diallylmelamine. A film of the N,N'diallylmelamine resist is applied to a surface of a body from the vapor state in an evacuated environment. The deposited film, being soluble in hot water, is converted to a form that is insoluble in boiling water by exposing it to a beam of electrons or of ultraviolet light. The water-insoluble film can be removed, when no longer needed, by dissolving it in boiling dimethylformamide.

By the term "negative resist," as used herein, is meant a material that is hardened, or rendered insoluble in certain solvents, by exposing it to the radiation of a beam of electrons or of electromagnetic waves.

**PROCESS OF FASTENING PLASTIC OR ELASTIC SHEETS**  
Donald Peter Reiter, Akron, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Apr. 21, 1969, Ser. No. 817,835  
Int. Cl. A44b 19/02

U.S. Cl. 156—66

6 Claims



Flexible plastic or elastic sheets having marginal interlocking portions of longitudinally extending projections and channels are fastened together by progressively mating the sheets with a slide fastener so that the projections of one sheet fit into the channels of another while concurrently extruding a cement into the portion being mated.



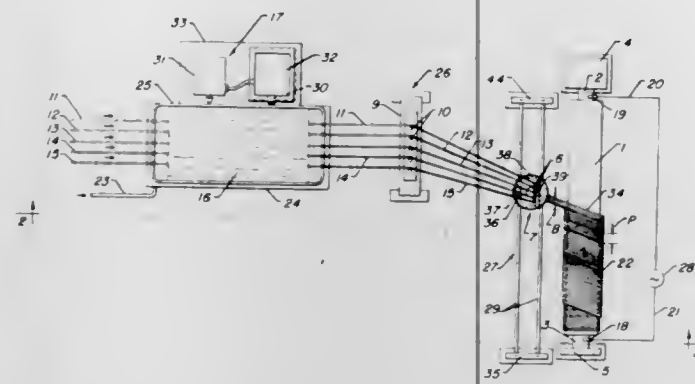
3,627,601

**METHOD OF FORMING A FILAMENT WOUND TUBE WITH AN INNER WALL HAVING HIGH-WEAR RESISTANCE**

Charles M. Hayes, Hoffman Estates; Edwin J. Latos, Chicago, and Allen K. Sparks, Des Plaines, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.  
Filed July 29, 1969, Ser. No. 845,685  
Int. Cl. B29c 27/08

U.S. Cl. 156-73

4 Claims



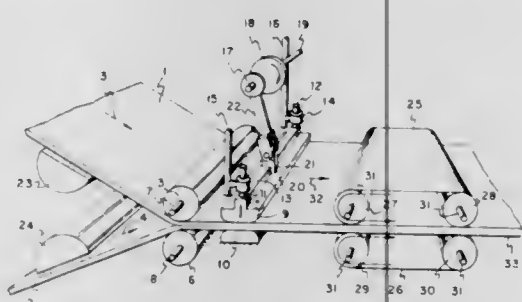
A method of forming a tube with an inner wall having a high-wear resistance and a low coefficient of friction comprising: deaerating an uncured thermosetting resin, coating glass filaments with the resin, and winding the glass filaments about a rotating mandrel in a band at a pitch no greater than the bandwidth. A first layer of wound glass filaments is formed in a single axial pass along the mandrel, and this first layer is helically overwound with subsequent layers. The resin coating the wound glass filaments is thereafter cured and the resulting tube is removed from the mandrel.

3,627,602

**METHOD FOR LAMINATING SHEETS**

Jan C. Van Dijk, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.  
Filed Apr. 7, 1969, Ser. No. 814,051  
Claims priority, application Great Britain, May 6, 1968, 21,342/68  
Int. Cl. B29c 27/08; B32b 31/20  
U.S. Cl. 156-73

7 Claims



A method and apparatus for laminating sheets in a continuous manner is disclosed. The method comprises locally compressing the sheets in overlapping sections between the loading planes of two loading elements, at least one of which oscillates at a frequency between 0.1 and 1,000 cycles per second. The apparatus comprises loading means comprising two loading elements for compressing the sheets, driving means for transporting the sheets between the loading elements and activating means for oscillating at least one of the two loading elements in the loading direction at a frequency between 0.1 and 1,000 cycles per second (c/s).

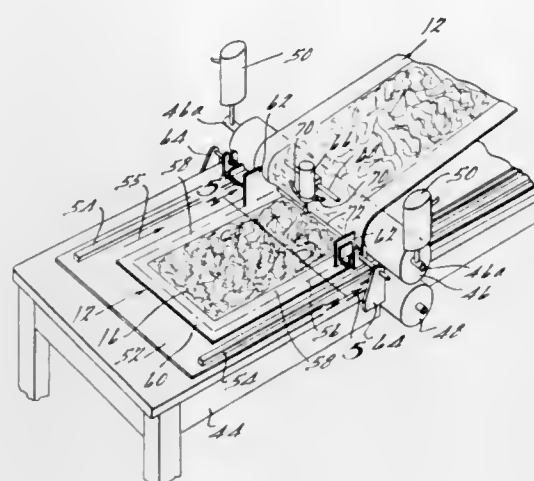
3,627,603

**METHOD OF MAKING REINFORCED FOAM PLASTIC PRODUCTS**

James W. Greig, Grosse Pointe Park, Mich., assignor to Woodall Industries Inc.  
Filed Feb. 24, 1969, Ser. No. 801,563  
Int. Cl. B32b 5/20

U.S. Cl. 156-79

7 Claims



A laminated structural panel consisting of two plastic saturated sheets on opposite sides of a rigid foam plastic core. The core is foamed and cured between the sheets, each of which has previously been united with a fiber matting. The matting disperses throughout the core as it is foamed to reinforce the core and mechanically hold it to the sheets.

3,627,604

**FORMATION OF STAPLE FIBER YARN FROM NONWOVEN WEBS OF CONTINUOUS FILAMENTS**

Stanley Davies; Barrie Linton Davies, and Anil Chandrakant Parikh, all of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England  
Filed Apr. 15, 1969, Ser. No. 816,397  
Claims priority, application Great Britain, Apr. 16, 1968, 17,890/68  
Int. Cl. D02g 1/00

U.S. Cl. 156-148

9 Claims

A staple fiber yarn is formed by laying a nonwoven web of continuous filaments, slitting the web to form strips containing fibers of various lengths, and twisting the fibers together to form the yarn.

3,627,605

**METHOD FOR MAKING BONDED FABRIC**

James L. Taylor, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.  
Filed Nov. 24, 1969, Ser. No. 879,588  
Int. Cl. D03c 19/00

U.S. Cl. 156-148

3 Claims

Woven polyethylene/polypropylene fabrics made by weaving a bicomponent polyethylene/polypropylene/polyethylene laminated tape yarn, the fabric being bonded at the points where ends and picks of the tape yarn cross by heat and pressure. The tape yarn is prepared by cutting into strips a laminate comprising outer layers of polyethylene, bonded to an inner layer of polypropylene. The laminate may be made in conventional fashion by extruding or casting films of the indicated composition. The strips are preferably oriented either before or after cutting.

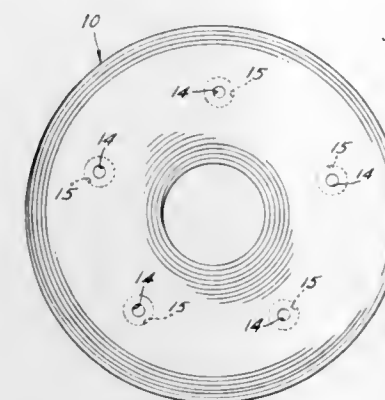
3,627,606

**CLUTCH FACING**

Lloyd Oscar Bentz, Lancaster, and Harold Clifford Hilton, Manheim, both of Pa., assignors to Raybestos-Manhattan, Inc., Manheim, Pa.  
Filed Nov. 17, 1969, Ser. No. 877,365  
Int. Cl. B65h 81/02

U.S. Cl. 156-184

7 Claims



A clutch facing formed of a compressed spiral coil of fabric of V-shaped cross section with the projecting portions of the fabric nesting within recessed portions of adjacent convolutions, the fabric being impregnated with a heat-hardening cement containing an elastomer, the clutch facing being reinforced by a spiral coil of an assembly of substantially parallel continuous glass filaments in which the individual convolutions lie between adjacent convolutions of the fabric at the apex of the recessed portions thereof, the glass fibers having a surface capable of forming a strong bond with an elastomer, and the assembly of glass fibers being impregnated with an elastomer which is vulcanizably compatible with the elastomer in the fabric cement.

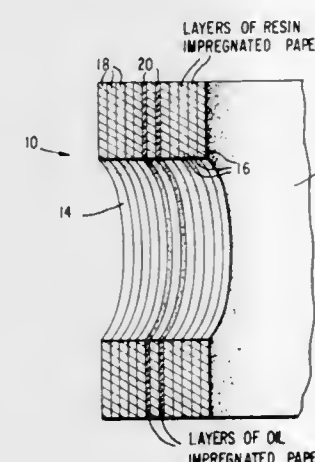
3,627,607

**METHOD OF MANUFACTURING BEARING CAGE**

James R. Benzinger, Orchard Park, N.Y., assignor to Spaulding Fibre Company, Inc., Tonawanda, N.Y.  
Filed Apr. 29, 1968, Ser. No. 725,080  
Int. Cl. B29d 31/02

U.S. Cl. 156-192

8 Claims



A laminated bearing cage in which a sheet of resin impregnated material is wound upon itself about a mandrel with there being a strip of oil receptive material intercalated within the coils of the wound, resin impregnated sheet. The resin is partially cured prior to winding so as to minimize migration of resin to the oil receptive strip and final curing is effected subsequent to winding. The wound article is then

immersed in lubricating oil to impregnate the oil receptive strip for metered distribution of oil therefrom.

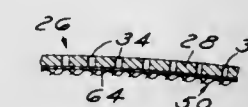
3,627,608

**METHOD OF FORMING A PANEL HAVING A COMPOUND CURVATURE**

Francis J. Steiner, Grosse Pointe Woods, and Robert M. Paulsen, St. Clair Shores, both of Mich., assignors to Woodall Industries Inc., Detroit, Mich.  
Filed June 16, 1969, Ser. No. 833,480  
Int. Cl. G29c 3/00; B29c 17/08

U.S. Cl. 156-211

22 Claims



A method of forming a flexible, self-supporting sheetlike structure having a compound curvature, including the steps of perforating a sheet of woodlike fibrous material, such as fiberboard, wetting the sheet, applying steam, and forming the compound curvature in a press. The method of forming an integral single piece automotive headliner includes forming the sheet into a flexible dish-shaped structure and finishing the inner concave surface by painting, or applying a fabric cushioning material.

3,627,609

**ADHESIVE PROCESSES**

Robert A. Bragole, Peabody, Mass., assignor to USM Corporation, Flemington, N.J.  
Filed Feb. 24, 1969, Ser. No. 801,833  
Int. Cl. B01j 1/10

U.S. Cl. 156-272

9 Claims

Surfaces of substrates which are difficult to bond strongly, e.g. polyethylene, are subjected to ultraviolet radiation in the presence of a photosensitizer and bonded with an adhesive comprising an elastomer and a reactive aldehyde resin to form a structurally strong joint.

3,627,610

**CONTINUOUS CURING OF ELONGATED ELASTOMERIC ARTICLES**

Bruce M. Guelich, Pittsburgh, Pa., and Charles Porter, Andrews, Ind., assignors to H. K. Porter Company, Inc., Pittsburgh, Pa.

Filed Feb. 26, 1969, Ser. No. 802,442

Int. Cl. B32b 31/12

U.S. Cl. 156-278

4 Claims

This invention contemplates curing an elongated elastomeric article of indefinite length such as reinforced hose, elastomer insulated wire or the like by passing the article longitudinally under pressure through a heated complementary tube with a film of lubricant separating the article from the tube wall and at the exit end of the tube the article is additionally compressed to compact and bond together its components in a "wiper die" on passing therethrough for removal of the lubricant from its surface.

3,627,611

**METHOD AND APPARATUS FOR THE MANUFACTURE OF SURGICAL POUCHES**

Joseph P. Bonk, Des Plaines, Ill., assignor to Rollprint Packaging Products, Inc., Chicago, Ill.  
Filed June 25, 1969, Ser. No. 836,332  
Int. Cl. C09j 5/00

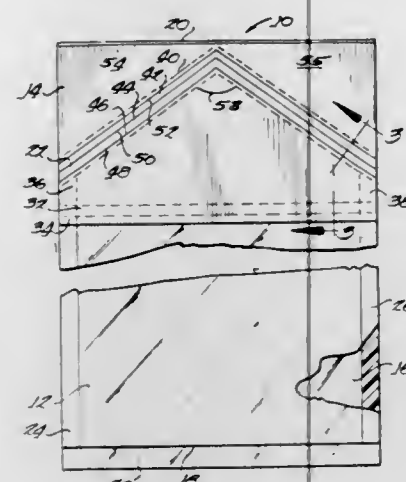
U.S. Cl. 156-306

3 Claims

A disposable surgical pouch having a corrugated, chevron,



rip open seal is disclosed comprising polyethylene front and backer pieces and a paper header, such pouches being made



in a continuous strip from rolls of sheet polyethylene and paper.

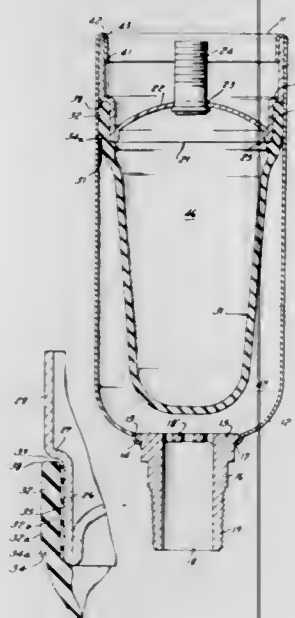
3,627,612

# METHOD OF FORMING A BLADDER ASSEMBLY

Edward M. Greer, Beverly Hills, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.  
Original application Nov. 17, 1966, Ser. No. 595,164, now Patent No. 3,494,378, dated Feb. 10, 1970. Divided and this application May 29, 1969, Ser. No. 829,017  
Int. Cl. C09j 5/00

U.S. Cl. 156—309

9 Claims



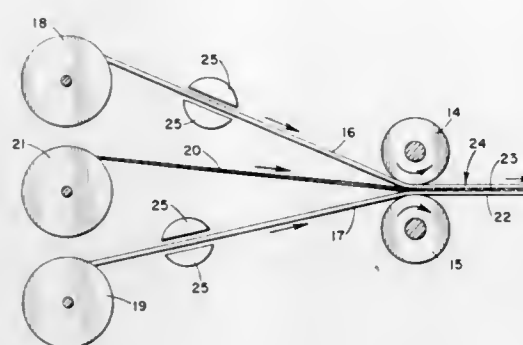
This invention relates to the art of pressure vessels, more particularly of the type using a deformable bladder having a cylindrical mouth of relatively large diameter compared to the diameter of the bladder and which snugly encompasses an annular metal retaining member, being secured thereto by curing a layer of rubber interposed between said annular retaining member and the adjacent portion of said bladder mouth.

# 3,627,613 CONTINUOUS PROCESS FOR PREPARING COMPOSITES IN SHEET FORM

Thomas J. Stolki, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.  
Filed May 23, 1969, Ser. No. 827,274  
Int. Cl. C09j 5/00

U.S. Cl. 156—309

4 Claims



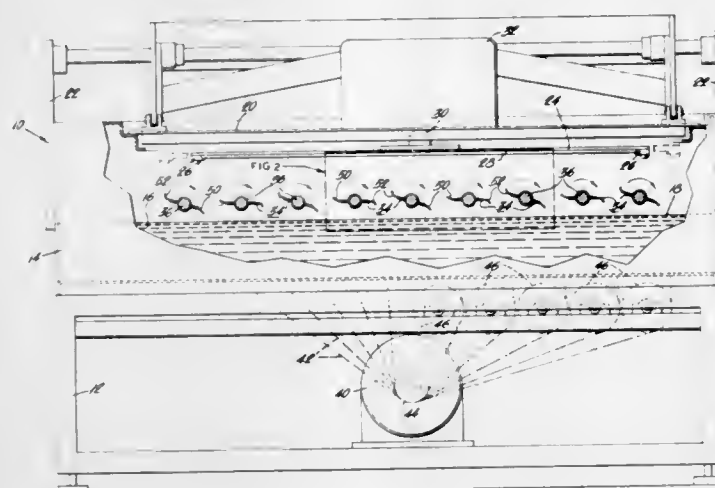
A continuous process for preparing composites in sheet form by laminating together through a metallic interlayer two sheets each of a rubber-modified interpolymer system of monovinyl aromatic compound. A product composite can have more than one interlayer in a matrix, depending on the number of sheets and interlayer members employed in practicing the process.

# 3,627,614 PADDLE ARRANGEMENTS FOR POWDERLESS ETCHING MACHINES

Louis E. Zeller, Warminster, and Robert J. Patsko, Merion, both of Pa., assignors to Master Etching Machine Co., Inc., Ambler, Pa.  
Filed Sept. 19, 1969, Ser. No. 859,389  
Int. Cl. C23g 3/00

U.S. Cl. 156—345

7 Claims



An improved paddle arrangement for powderless etching machines for directing the etchant against the surface of a photoengraving plate. A plurality of paddle assemblies are located between the etching bath and the plate and are rotatable about parallel horizontal axes of a selectively variable speed. Each assembly includes a plurality of paddles having variously angled outer end portions. The relation of the paddle edge angles of each assembly in cooperation with those of the adjacent assemblies provides a uniform distribution and the equivalent effect of a substantially perpendicular direction of the etchant against the plate surface during rotation of the paddle assemblies at any speed within the normal

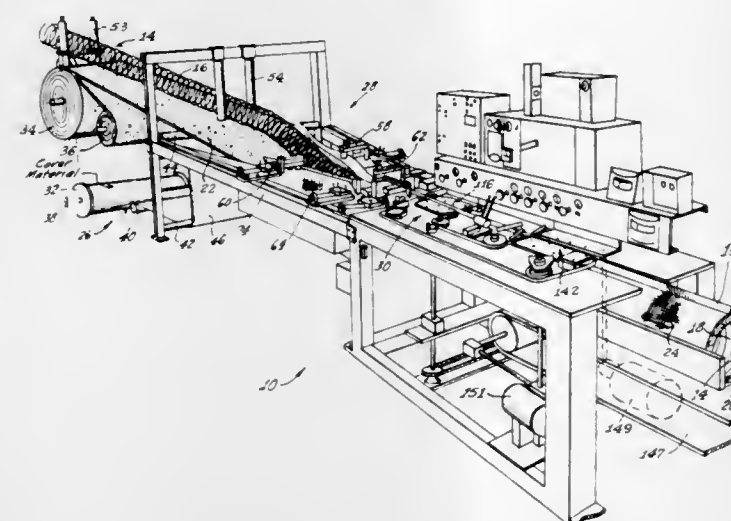
operating range, thereby eliminating the need for the conventional baffles between the paddle assemblies.

# 3,627,615 MACHINE FOR MANUFACTURING DUCTING

Wesley L. Gilles, Guilford, and Marcus A. Hall, Branford, both of Conn., assignors to Automation Industries, Inc., Los Angeles, Calif.  
Filed Feb. 11, 1970, Ser. No. 10,514  
Int. Cl. B29d 23/10

U.S. Cl. 156—466

16 Claims

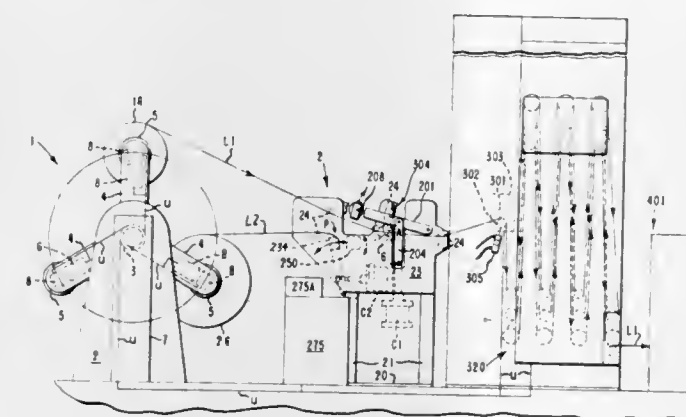


A machine and method are disclosed for substantially automatically and continuously manufacturing insulated air-conditioning duct in virtually unlimited lengths. The machine is effective to simultaneously feed a central reinforcing spring core, a blanket of insulating material and an outer wrapper or vapor barrier axially therethrough and secure them all together to form a continuous insulated flexible duct.

# 3,627,616 APPARATUS AND METHOD FOR AUTOMATICALLY TRIMMING AND JOINING LENGTHS OF UNIFORM THICKNESS PLASTIC SHEETING AND WEBS TO FORM A JOINED SHEET OF UNIFORM THICKNESS

Douglas Steward Davis, Parkersburg, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Oct. 20, 1969, Ser. No. 867,534  
Int. Cl. B31f 5/00; B65n 19/18; G03d 15/04  
U.S. Cl. 156—502

11 Claims



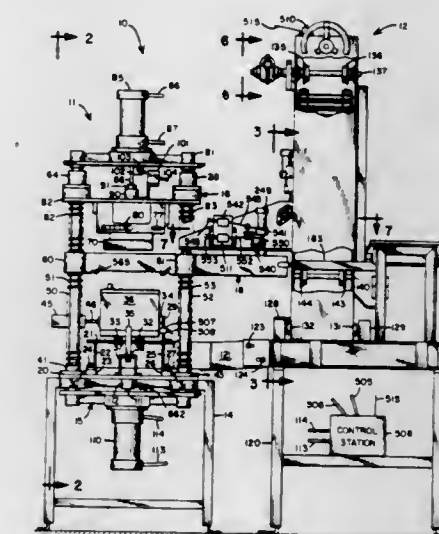
An apparatus and method having an automatically initiated and programmed sequence of operations especially well adapted for severing a first length of relatively thick and easily deformable sheeting of thermoplastic material being fed to

a sheeting processing unit, and joining to its severed outgoing end portion the incoming end portion of a second length of similar sheeting in a butt-welded seam of uniform thickness equal to the thickness of the sheeting being joined, the apparatus comprising basically three cooperating interrelated moving units for gripping, conveying, cutting, and bonding lengths of sheeting in rapidly accomplishing its primary function with a minimum number of mechanical movements and operations.

# 3,627,617 BATTERY CONTAINER ASSEMBLY STATION

Edward G. Schaumburg, Oakdale Village; Donald T. Nordvik, Brooklyn Park, and Peter A. Recht, Bloomington, all of Minn., assignors to Gould-National Batteries, Inc., St. Paul, Minn.  
Filed Feb. 19, 1969, Ser. No. 800,492  
Int. Cl. B65h 1/14; B30b 15/34; H01m 35/18  
U.S. Cl. 156—566

20 Claims



A battery container assembly station having an automated battery cover dispensing mechanism for supplying battery covers to a heat sealing mechanism for forming an acid proof heat seal between the battery cover and the container.

# 3,627,618 APPARATUS FOR COMPRESSION OF A COMPOSITE LOG POLYGONAL OUTLINE

Ruben De Mello, Rua Jeronimo de Veiga 255, Sao Paulo, Brazil  
Filed Mar. 17, 1969, Ser. No. 807,566  
Int. Cl. B32b 31/00

U.S. Cl. 156—580

4 Claims

An apparatus for compression of a composite log of wood and polygonal outline which comprises a plurality of annular compression units used to apply simultaneous pressure to the external surface of an array of matched individual faceted elements of adhesive-coated wood so as to bond them together to form a composite log which can be laminated.

# 3,627,619 METHOD AND PRODUCT FOR IMPEDING DUPLICATION OF MICROFILM IMAGES

Harold J. Fromm, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
Filed Mar. 26, 1968, Ser. No. 716,109  
Int. Cl. B44f 1/02; G03c 1/78

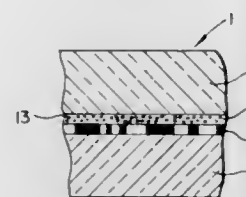
U.S. Cl. 161—3.5

6 Claims

Transparent spacer element or elements, and a light-dispersing medium are affixed to an image-bearing microfilm in a manner such that a contact copy film placed on either side of the film composite will necessarily be spaced from the



image layer of the microfilm and the light-dispersing medium. The transparent spacer element or elements are of sufficient thickness that contact copies made with diffuse light are not suitable for normal uses. The size, concentration and



location of the light-scattering centers in the light-dispersing medium are such that "no-light" areas or shadows, of size sufficient to substantially degrade the legibility of projection viewing, will be formed on any film contact copied therefrom with specular light.

3,627,620

## REINFORCED PLASTIC SHEETING

Glen P. Gasaway, Buford, Ga., assignor to Johnson & Johnson

Original application Feb. 28, 1967, Ser. No. 619,309, now Patent No. 3,535,180, dated Oct. 20, 1970. Divided and this application Feb. 20, 1970, Ser. No. 12,983

Int. Cl. B32b 5/02, 3/10

U.S. Cl. 161-57

6 Claims



Plastic sheet material comprising a textile lattice of coated intersecting yarns which are coating-fused at their intersections and are engulfed by layers of plastic materials on both sides to provide an essentially moisture-impervious reinforced laminated structure.

3,627,621

## CROSS THREAD REINFORCED NONWOVEN MATERIAL

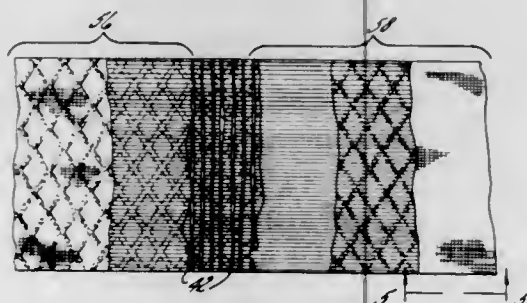
William L. Mowers, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 14, 1969, Ser. No. 876,864

Int. Cl. B32b 3/28; B32b 5/12

U.S. Cl. 161-59

3 Claims



A cross thread reinforced nonwoven material having highly oriented fibers therein and the method of making same are disclosed. A highly oriented web or film and a spaced-pattern layer of adhesive are introduced to a cross-layer apparatus where reinforcing threads are deposited on the web with the

threads disposed in spaced-apart parallel relation extending across the highly oriented web or film and partially embedded in and held in such relation by the adhesive of the spaced-pattern layer at locations where the adhesive extends between the web and the threads. The material may also include layers of cellulose wadding on one or both faces of the cross thread reinforced fiber web.

3,627,622

## PARTIAL RESIN COATED FOAMED RESINOUS ARTICLES

Guadalupe Vega, Midland, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 29, 1967, Ser. No. 671,790

Int. Cl. B32b 3/26

U.S. Cl. 161-159

3 Claims

An open-celled foam body is prepared, having at least one rigid surface, by impregnating one surface of an open-celled foam with a hardenable resinous material, hardening the resin to provide a foam structure having a rigid portion and a flexible portion.

3,627,623

## CELLULAR WALL STRUCTURE AND METHOD OF MAKING SAME

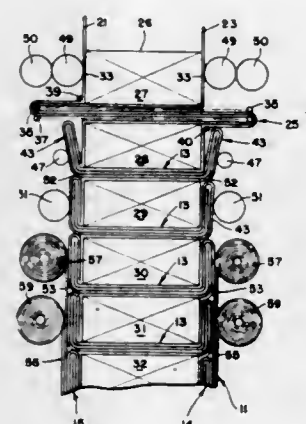
Martin L. Downs, Appleton, Wis., assignor to Hammermill Paper Company

Filed Feb. 26, 1969, Ser. No. 802,412

Int. Cl. B32b 3/04, 3/20, 5/18

U.S. Cl. 161-69

10 Claims



Cored cellular members are made from sheets or webs of paper, paperboard, corrugated board, etc. with cross walls which include portions integrally attached to spaced, opposed facing walls. The integral attachment of the cross walls to the facing walls results in a high-strength connection preventing separation of the cores from the facing walls. The cellular structures may be formed by methods which convert the sheets at high speeds and in a continuous manner.

3,627,624

## LAMINAR STRUCTURES OF POLYIMIDES AND METHOD OF MANUFACTURE

John Anthony Kreuz, Williamsville, N.Y., and Eugene Henry Zytus, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 16, 1969, Ser. No. 858,494

Int. Cl. B32b 25/16, 27/16

U.S. Cl. 161-165

28 Claims

A laminar article is provided of a layer of a polyimide and a layer of a fluorocarbon polymer which has been subjected to an electrical discharge treatment in an atmosphere containing acetone, which structure is heat-sealable and suitable for electrical insulation uses.

3,627,625

## BIAXIALLY ORIENTED SHEET

Kenneth Barry Jarrett, Hitchin, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of application Ser. No. 641,473, May 26, 1967, now abandoned. This application May 27, 1970, Ser. No. 41,713

Int. Cl. B29d 7/24; B32b 27/36

U.S. Cl. 161-165

6 Claims

Uniformly biaxially oriented sheet of polyethylene terephthalate containing from 1 percent to 15 percent by weight of a finely divided inert filler and of a finely divided inert filler and of a thickness of from 0.014 to 0.035 inch. The sheet is prepared by extruding an amorphous polyethylene terephthalate sheet containing from 1 percent to 15 percent of a finely divided inert filler and then drawing it at a temperature of from 80° to 130° C. in the machine direction and in the transverse direction, the draw ratio in either direction being sufficiently great to allow uniform drawing of the sheet but less than 3.25. The filler has a particle size of 0.1 microns to 5.0 microns and may be, for example, titanium dioxide.

3,627,626

## MAGNETIC LEDGER CARDS AND A METHOD FOR FORMING THE SAME

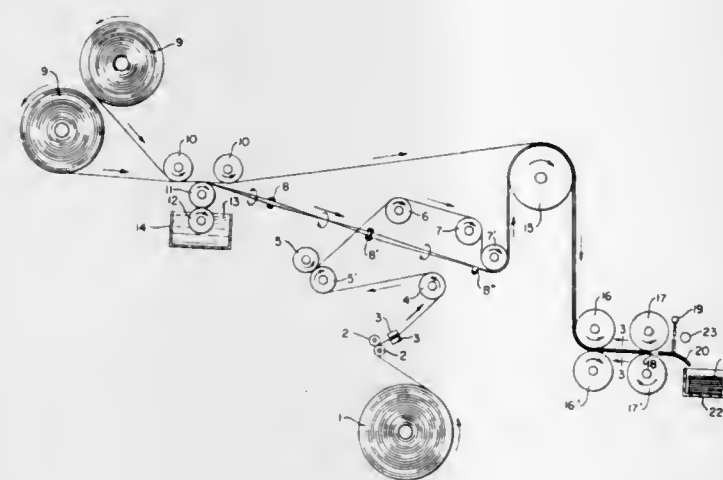
William P. Chao, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Sept. 15, 1969, Ser. No. 857,935

Int. Cl. B32b 27/38; G11b 5/00

U.S. Cl. 161-184

17 Claims



The present disclosure is directed to methods of laminating and laminates wherein magnetic ledger cards are prepared by an "in-line" procedure involving interposing between paper or other ledger card base stock and the plastic surface of magnetic tape a solvent-based, temporarily pressure-sensitive adhesive composition comprised of about 10 to about 30 weight percent solids and correspondingly about 70 to about 90 weight percent liquid organic solvent wherein the solids are comprised of from about 15 to about 35 weight percent of nitrile rubber and from about 65 to about 85 weight percent of epoxy resin. The liquid (organic solvents) portion can be, and preferably is, comprised of a mixture of organic solvents, including ketones, liquid hydrocarbons and mixtures thereof. The viscosity of the aforementioned adhesive solution at the time of application to the magnetic tape during lamination ranges from about 55 to 95 c.p.s.

3,627,627

## NOVEL ADHESIVE COMPOSITIONS

Albert Nobell, and Thomas S. Armstrong, both of Coloma, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of application Ser. No. 646,165, June 15, 1967, now abandoned. This application Feb. 27, 1970, Ser. No. 14,780

Int. Cl. C08g 51/24

U.S. Cl. 161-209

10 Claims

Novel adhesive compositions are obtained by the addition of adsorbent clay and a lower organic dicarboxylic acid to aqueous lower methylol phenol solutions. The resulting mixtures are especially adapted for making boil-resistant exterior grade hot-pressed plywood.

3,627,628

## COLD PUNCHABLE LAMINATES

Ronald H. Dahms, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed June 21, 1968, Ser. No. 738,793

Int. Cl. B32b 27/10, 27/30; C09j

U.S. Cl. 161-251

2 Claims

Industrial cellulosic laminates which can be cold punched without appreciably cracking or shattering. The laminates are prepared from papers impregnated with a mixture of a carboxylated alkadiene interpolymers and a low molecular weight phenol-formaldehyde resin.

3,627,629

## REFINING SYSTEM AND PROCESS

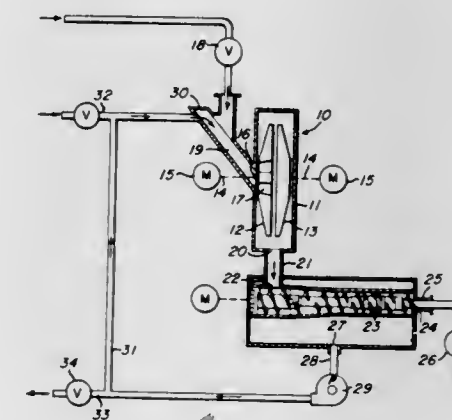
Sofus Miller, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio

Continuation-in-part of application Ser. No. 600,113, Dec. 8, 1966, now abandoned. This application May 6, 1970, Ser. No. 34,984

Int. Cl. D21c 3/26, 7/00

U.S. Cl. 162-17

12 Claims



A method and apparatus for the continuous pulping of fibrous materials utilizing powered fiberizing means embodied in a closed system wherein applied power is optimally converted to thermal energy. The resultant heat is continuously reapplied to chemicals in the system at prevailing pressure conditions which inhibit the formation of steam. This limits the need for added chemicals and reduces power requirements for optimal pulping.



3,627,630

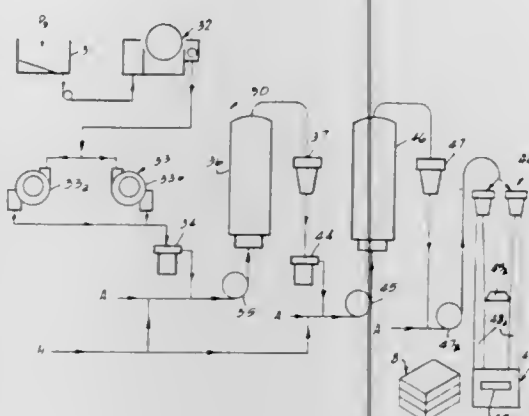
**METHOD OF FLASH DRYING PULP**

Lawrence F. Gagnon, Pittsfield, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 4, 1969, Ser. No. 882,064  
Int. Cl. D21d 3/00

U.S. Cl. 162—100

6 Claims



A method of producing pulp bales suitable for storage and repluping comprising fluffing dewatered paper stock, intermixing the stock with a heated gas to partially dry the stock, reffluffing the partially dried stock, intermixing the fluffed stock with a heated gas to finish drying the stock and converting the dried stock into a pulp bale.

3,627,631

**A METHOD OF WATERPROOFING PAPER USING AN N'-ALKYL, N1-N1'ALKYLENE-N,N1-BIS-UREA**

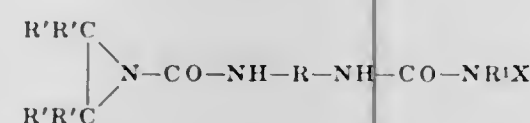
Gerhard Ewald Sprenger, Carlstadt, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,285  
Int. Cl. D21h 3/02

U.S. Cl. 162—158

3 Claims

Aqueous paper sizing compositions are prepared by combining an N'-alkyl, N-substituted urea containing an isocyanate group with an alpha, beta-alkylenimine to form an (N'-alkyl), (N1:N1'alkylene)-N,N1-bis-urea of the formula



which is in situ, or subsequently; with the aid of an emulsifying agent dispersed in water. In the formula each R' is a group such as hydrogen, methyl or ethyl, which are independently selected and which contain from zero to not more than two carbon atoms. R is generally a divalent organic radical, namely an arylene, alkylarylene, arylalkylene, cycloalkylene, or alkylene radical, which may or may not contain ethylenic double bonds. R1 is alkyl, alkenyl, aralkyl, alkylaryl, cycloalkyl or cycloalkenyl and X is independently selected from the same groups or is aryl or hydrogen. The carbon atoms of R, R1 and X combined should total at least eight and preferably not more than 52 carbon atoms.

3,627,632

**HYDRAULIC DRIVE FOR EMERGENCY SHUTDOWN OF NUCLEAR REACTORS**

Heinz Acher, Friedberg, Hessin, and Eberhard Obenauf, Offenbach am Main, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

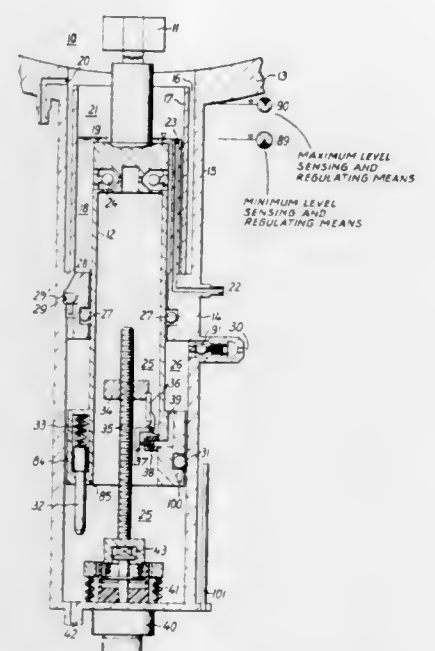
Filed Nov. 25, 1968, Ser. No. 778,457

Claims priority, application Germany, Nov. 24, 1967, P 16 14 098.0

Int. Cl. G21c 7/16

U.S. Cl. 176—36

15 Claims



Hydraulic drive system for effecting the emergency shutdown by control rods of a nuclear reactor in which a guide housing is connected to the pressure vessel of the reactor. A control rod drive piston is movably mounted in a guide housing connected to the reactor. Such drive piston and guide housing together forming a drive chamber on one side of the drive piston and a counterpressure chamber on the other side thereof. The drive chamber is connected to a pressure medium chamber in the pressure vessel and to the counterpressure chamber such that, when the counterpressure chamber is opened to atmosphere, pressure medium flows from the pressure medium chamber into the drive chamber to move the drive piston; hence, the control rod connected thereto, rapidly into the emergency shutdown position.

3,627,633

**UNIQUE METAL HYDRIDE CONTROLLED REACTORS**

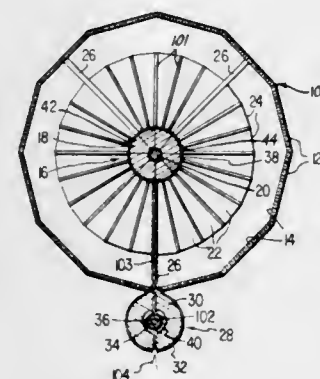
Robert E. Magladry, Baltimore, Md., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Nov. 6, 1967, Ser. No. 680,659

Int. Cl. G21c 7/02

U.S. Cl. 176—42

7 Claims



Metal hydride controlled nuclear reactors involving thermally isolated, first and second sealed containers carrying

metal hydride, one including nuclear fuel material and the other acting as a hydrogen reservoir. Means are provided to facilitate reactor startup. In different embodiments, they take the form of electrical heaters for the core and reservoir elements, chemical heaters for these elements and an additional source of hydrogen for these elements. Hydrogen disassociation is utilized to perform a cooling function during atmospheric reentry of reactors in spatial applications.

3,627,634

**NUCLEAR REACTOR CORE CLAMPING SYSTEM**

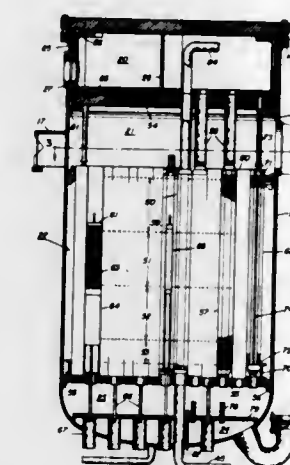
Ralph W. Guenther, and Ned P. Hansen, both of San Jose, Calif., assignors to General Electric Company

Filed Nov. 26, 1968, Ser. No. 779,000

Int. Cl. G21c 19/00

U.S. Cl. 176—58

5 Claims



A system for tightly clamping together the core components of a nuclear reactor is disclosed. A typical core is made up of a plurality of subassemblies each contained in an elongated shroud having a hexagonal cross section. Each of the outer ring of subassemblies includes ram means adapted to be pushed outwardly against a fixed ring which surrounds the core. This causes this outer ring, or edge plate of subassemblies to press inwardly on the core, tightly clamping the overall assembly together, preventing shifting during reactor operation and the resulting undesirable reactivity changes.

3,627,635

**NUCLEAR FUEL RETAINER**

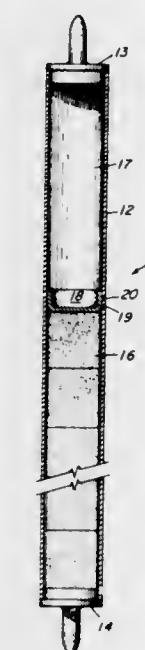
Bart Allan Smith, and James L. Lass, both of San Jose, Calif., assignors to General Electric Company

Filed Sept. 23, 1968, Ser. No. 761,777

Int. Cl. G21c 3/18

U.S. Cl. 176—68

13 Claims



A resilient cup-shaped retainer for preventing displacement

ment of the fuel into the fission gas plenum of a nuclear reactor fuel element.

3,627,636

**MANUFACTURE OF XYLITOL**

Gerald Myer Jaffe; William Szkrybalo, both of Verona, and Peter Hans Weinert, Wayne, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 2, 1969, Ser. No. 863,333

Int. Cl. C12b 1/00

U.S. Cl. 195—11

20 Claims

A process for producing xylitol from lignin-free hemicellulose materials wherein the polysaccharides have been converted to monosaccharides, subjecting said materials to fermentation with a hexose fermenting yeast and thereafter hydrogenating said aqueous medium.

3,627,637

**PRODUCTION OF ORGANIC NITROGENOUS MATERIALS**

Urbahn A. Phillips, Gretna, La., assignor to Commercial Solvents Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 425,918, Jan. 15, 1965, now abandoned. This application May 22, 1968, Ser. No. 731,298

Int. Cl. C12d 13/06

U.S. Cl. 195—28 R

5 Claims

A process for the production of L-glutamic acid and proteinaceous material by cultivating *Mycobacterium phlei*, NRRL B-3423, in an aqueous fermentation medium containing an aliphatic hydrocarbon as an energy source, thereby producing L-glutamic acid and protein rich cells of *M. phlei*.

3,627,638

**AMYLASE CHEMICALLY COUPLED TO CELLULOSE ETHERS**

Sidney Alan Barker; Peter John Somers, both of Birmingham, and Roger Epton, Wolverhampton, all of England, assignors to Ranks Horis McDougall Limited, London, England

Filed Oct. 16, 1969, Ser. No. 867,098

Claims priority, application Great Britain, Oct. 23, 1968, 50,351/68

Int. Cl. C07g 7/02

U.S. Cl. 195—63

18 Claims

A water insoluble amylase comprising  $\alpha$ - or  $\gamma$ -amylase chemically coupled to p-diazophenoxy hydroxypropyl cellulose or  $\alpha$ - or  $\beta$ -amylase chemically coupled to p-isothiocyanatophenoxy hydroxypropyl cellulose. These are prepared by dissolving  $\alpha$ - or  $\beta$ - or  $\gamma$ -amylase in a buffer within a pH range of 6.3–7.7 and reacting at 0°–5° C. with the p-diazophenoxy hydroxypropyl ether of cellulose or by dissolving  $\alpha$ - or  $\beta$ -amylase in a buffer at a pH of approximately 8.6 with a p-isothiocyanato phenoxy hydroxypropyl ether of cellulose.

3,627,639

**PROCESS FOR PRODUCING L-ASPARAGINASE**

Masao Tanaka, Machida-shi; Yoshinobu Miyamura, Sunto-gun, and Fumio Kato, Sunto-gun, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Chiyoda-ku, Tokyo, Japan

Filed May 27, 1969, Ser. No. 828,332

Claims priority, application Japan, June 5, 1968, 43/38002

Int. Cl. C12d 13/10

U.S. Cl. 195—66 A

12 Claims

Improved yields of L-asparaginase are produced by culturing a micro-organism belonging to the genus *Serratia* under aerobic conditions in an aqueous nutrient medium in which the amount of ammonia nitrogen is controlled to a level of 10 mg./ml. or less, while using fairly large amounts of carbon source (about 1–15 percent by weight) in the medium. *Serratia marcescens* is the preferred micro-organism. The



resultant purified L-asparaginase preparations have a specific activity of at least 1,500 units per mg. of protein and have shown favorable action against leukemia in the mouse.

3,627,640

**ENZYME PURIFICATION AND DECOLORIZATION**  
Shmaryahu Blumberg, Rishonleion; Ephraim Katchalski, Rehovot; Leon Goldstein, Rehovot; and Yehuda Levin, Tel-Aviv, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovoth, Israel

Filed Sept. 27, 1968, Ser. No. 763,338

Int. Cl. C07g 7/02

U.S. Cl. 195—68

9 Claims

Method of purifying and decoloring a relatively crude enzyme material, e.g., enzyme or enzyme derivative, by forming a polymer-enzyme product.

3,627,641

**ANTIBIOTIC PRODUCTION UTILIZING STREPTOMYCES VENEZUELAE VAR. FULVOFURVESCENS**

Denise Mancy, Val-de-Marne; Leon Ninet, and Jean Preud'Homme, both of Paris, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed June 28, 1968, Ser. No. 741,216

Claims priority, application France, June 30, 1967, 112713

Int. Cl. C12d 9/00

U.S. Cl. 195—80

13 Claims

The invention provides a new process for producing the antibiotic 11837 by fermentation using two newly discovered strains of the micro-organism *Streptomyces venezuelae*, of which they constitute a variety which has been designated var. *fulvofurvescens*.

3,627,642

**LYSOZYME SALTS**

Tadakazu Suyama, Hirakata-shi; Ken-ichi Izaka, Kadeom-shi, and Hiroshi Shirakawa, Yamatotakada-shi, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Dec. 30, 1968, Ser. No. 788,048

Claims priority, application Japan, July 16, 1968, 43/50121

Int. Cl. C12k 1/00; C07g 7/02

U.S. Cl. 195—63

6 Claims

Lysozyme glutamate or aspartate having anti-inflammatory and antimicroorganism action, and having much more stability to heat than lysozyme itself and having long shelf life, which is prepared from human placenta by extracting lysozyme fraction from frozen human placenta with NaCl treating the fraction with a cation exchange resin, eluting, controlling pH in two steps, i.e., 2.0–4.0 and then 6.0–9.0, centrifuging, desalting, adding glutamic or aspartic acid to the supernatant solution, heating at 60° C. for 10 hours and adding sulfated polymer to recover the desired lysozyme salts.

3,627,643

**HIGH-STRENGTH DEXTRANASE AND PROCESS OF PREPARATION**

Tibor Sipos, Murray Hill, N.J., and Frederick William Viebrock, Staten Island, N.Y., assignors to Baxter Laboratories Inc., Morton Grove, Ill.

Filed Mar. 4, 1970, Ser. No. 16,553

Int. Cl. C07g 7/028

U.S. Cl. 195—66

14 Claims

A novel high-strength dextranase preparation is formed by combining an impure liquid dextranase-containing mixture with clay to adsorb dextranase, separating the clay from the liquid mixture, removing the dextranase from the clay in a wash solution, combining the wash solution with an insoluble carbohydrate anionic exchange material having tertiary amine or quaternary ammonium active groups to reabsorb

the dextranase, separating the anionic exchange material from the wash solution, and eluting dextranase from said material.

3,627,644

**PROCESS FOR THE CULTIVATION OF HEMOLYTIC STREPTOCOCCI**

Hajime Okamoto; Susumu Shoin, and Saburo Koshimura, all of Kanazawa-shi, Japan, assignors to Hajime Okamoto, Kanazawa-shi, Japan

Filed Feb. 18, 1969, Ser. No. 800,248

Claims priority, application Japan, Mar. 1, 1968, 43/13043

Int. Cl. A61k 21/00; C12d 1/20

U.S. Cl. 195—96

5 Claims

A process for the cultivation of hemolytic streptococci by cultivating hemolytic streptococci (e.g., *Streptococcus hemolyticus* ATCC 21060) in a meat infusion broth or the medium containing an extract containing water-soluble components in a yeast autolysate as a major component of pH 7.0–7.5 containing oxaloacetic acid or salts thereof and, if desired, ribonucleic acid or ribonuclease core at about 37° C. for 14–20 hours, in order to obtain hemolytic streptococci having high streptolysin S producing ability as well as antitumor activity. An amount of the oxaloacetic acid or salts thereof is at least 0.2 percent by weight by volume of the medium when the yeast extract medium is used, and is 0.1 percent by weight by volume together with 0.5 percent by weight of ribonucleic acid when the meat infusion broth is used.

3,627,645

**METHOD AND REAGENTS FOR THE DETERMINATION OF NICOTINE ADENINE DINUCLEOTIDE PHOSPHATE AND OF GLUTATHIONE**

Davide R. Grasseti, Berkeley, and John F. Murray, Jr., San Lorenzo, both of Calif., assignors to Arequipa Foundation, San Francisco, Calif.

Continuation-in-part of application Ser. No. 779,937, Nov. 29, 1968, now abandoned. This application July 31, 1969,

Ser. No. 850,688

Int. Cl. G01n 31/14

U.S. Cl. 195—103.5 R

8 Claims

The level of nicotine adenine dinucleotide phosphate (NADP) or of glutathione in a given sample is determined spectrophotometrically to extremely low levels, the method employed in testing for either chemical being to add an excess of the other together with a dithiobis-heterocyclic reagent chemical as represented, for example, by 2,2'-dithiodipyridine, 6,6'-dithiodinicotinic acid, 6,6'-dithiobis(isonicotinic acid) or 2,2'-dithiodipyrimidine. Enzyme catalysts to induce cycling of the glutathione and optionally of the NADP are also employed. In analyzing for either chemical the glutathione is converted from the reduced to the oxidized state by the reagent chemical as the latter is irreversibly converted to a product compound which normally possesses a characteristic ultraviolet spectrum. The rate at which said product compound is formed, or at which the reagent compound disappears, is observed spectrophotometrically and is a function of the concentration of the chemical under test. The oxidized glutathione is continuously converted to the reduced form by reaction with reduced NADP in the presence of glutathione reductase. When testing for NADP (and optionally when testing for glutathione as well) the oxidized NADP formed on reacting with glutathione is continuously converted to the reduced form in the presence of added substrate and dehydrogenase.

## ERRATUM

For Class 202—229 see:  
Patent No. 3,627,668

3,627,646

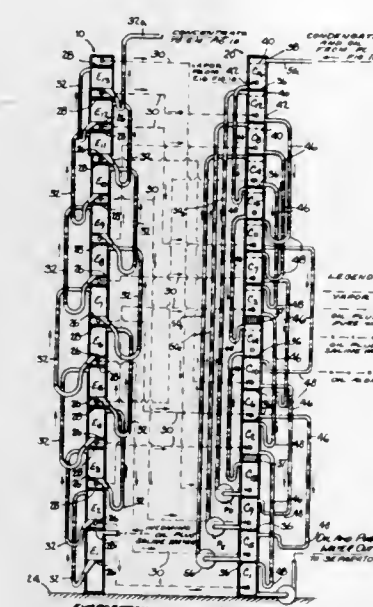
**MULTISTAGE COLUMNAR FLASH EVAPORATORS AND CONDENSERS WITH INTERSPERSED STAGING**  
Asriel Osdor, Tel Aviv, Israel, assignor to Hydro Chemical & Mineral Corp., New York, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,103

Int. Cl. B01d 3/00, 3/02, 1/28, 1/26

U.S. Cl. 202—173

28 Claims



Multiple stage condensation of vapors at different pressures and temperatures by direct contact with a condensing liquid flowing down by gravity against increasing vapor pressure of successive condenser stages arranged in groups of successive stages each containing several elevationally displaced condenser stages where the condenser stages in at least two of such groups are interspersed so that the condenser stages of one of the groups are located elevationally between the condenser stages of the other group and pumping means arranged to pump the condensing liquid from group to group, and novel dual liquid flash evaporation arrangements wherein streams of a first liquid to be evaporated are sprayed at and collide with a free surface of another, hotter, liquid to achieve partial vaporization of the first liquid, and the first liquid thereafter forms droplets in and sinks down through the other liquid and coalesces under the other liquid to achieve further vaporization.

3,627,647

**FABRICATION METHOD FOR SEMICONDUCTOR DEVICES**

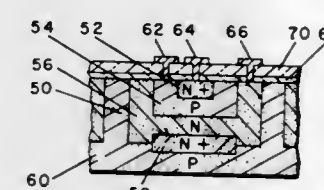
James L. Reuter, East Fishkill, and Jagtar S. Sandhu, Fishkill, both of N.Y., assignors to Cogar Corporation, Utica, N.Y.

Filed May 19, 1969, Ser. No. 825,863

Int. Cl. C23b 5/48, 5/46, 5/32

U.S. Cl. 204—15

9 Claims



This disclosure relates to the formation of stable semiconductor devices by using a noble metal-silicon-oxygen alloy as a passivation type layer on a silicon dioxide layer located on one surface of a silicon substrate or device. The noble metal-

silicon-oxygen alloy is deposited onto the semiconductor substrate surface during an anodization process preferably using a hydrogen peroxide solution containing from about 30 percent to about 0.1 percent hydrogen peroxide by volume in water. The anodization process serves to remove positive ion impurities from the silicon-silicon dioxide surface area which adversely affects the stability of the device. In one example, the noble metal-silicon-oxygen alloy is deposited primarily as a conductive layer while in another example, the noble metal-silicon-oxygen alloy is deposited as an insulating layer. For either example, the noble metal-silicon-oxygen alloy serves as a barrier to prevent impurities such as positive sodium ions from reaching the area of the silicon-silicon dioxide interface. This noble metal-silicon-oxygen layer is useful in various types of semiconductor devices including bipolar and unipolar devices.

3,627,648

**ELECTROPLATING METHOD**

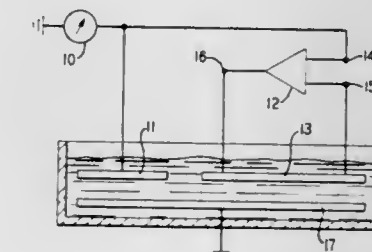
Herbert A. Waggener, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hills, Berkeley Heights, N.J.

Filed Apr. 9, 1969, Ser. No. 814,647

Int. Cl. C23b 5/28, 5/48

U.S. Cl. 204—27

9 Claims



The amount and quality of an electroplated deposit on articles having various areas to be plated are controlled by controlling the current density to one article, and applying a voltage to the remaining articles to be plated for the same time, the voltage applied being determined by the voltage developed at the surface of the first article, and thereby resulting in a controllable current density to the remaining articles.

3,627,649

**PRODUCTION OF ELECTROPLATABLE POLYMERS**  
John P. Hogan, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 11, 1969, Ser. No. 832,451

Int. Cl. C23b 5/62

U.S. Cl. 204—30

7 Claims

A method of producing an improved electroplatable polymer by incorporating a support material in the polymer upon its formation within specific concentrations, this being accomplished by regulating the productivity of the supported catalyst employed.

3,627,650

**METHOD FOR PRODUCING A CHROMIUM-TUNGSTEN COATING ON TUNGSTEN FOR PROTECTION AGAINST OXIDATION AT ELEVATED TEMPERATURES**

Arthur J. Seuffert, Caldwell, N.J., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed July 15, 1969, Ser. No. 841,958

Int. Cl. C23b 5/52

U.S. Cl. 204—37 R

8 Claims

Method for retarding air oxidation of tungsten by chromium electroplating and high temperature sintering to form an







in fabrication. The thin film transistor is fabricated within a single system by utilizing reactive sputtering for the formation of the semiconducting and insulating layers. The sputtering takes place in a pure oxygen atmosphere in the absence of inert gases with the result that the characteristics of the deposited nickel oxide films can be varied by controlling the deposition rate during sputtering.

3,627,663

# METHOD AND APPARATUS FOR COATING A SUBSTRATE BY UTILIZING THE HOLLOW CATHODE EFFECT WITH RF SPUTTERING

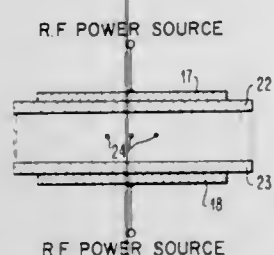
Pieter D. Davidse, Poughkeepsie, and Howard L. Whitaker, Kingston, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1968, Ser. No. 715,804

Int. Cl. C23c 15/00

U.S. Cl. 204—192

19 Claims



A substrate to be coated by RF sputtering is partially or completely surrounded by a target, which has a similarly shaped cathode surrounding and supporting the target. The target and the cathode may be formed of a pair of parallel plates or a hollow member. By controlling the pressure of the gas within the partially evacuated chamber in which at least the target is disposed and/or the spacing of the cathode plates or the size and geometrical configuration of the hollow member, a single common negative glow can be produced by either having the negative glow from the two parallel cathode plates overlap or touch each other or having a single negative glow within the hollow member.

3,627,664

# APPARATUS FOR ELECTROCHEMICALLY TREATING AND TESTING SURFACE AREAS

Rinaldo Grimaldi, Genoa, and Nereo Vantini, Rome, both of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

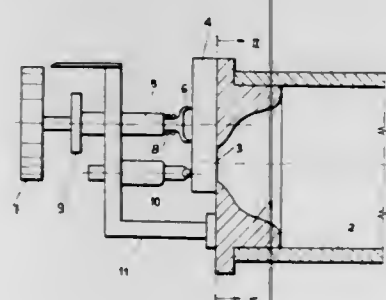
Filed Aug. 29, 1968, Ser. No. 756,203

Claims priority, application Italy, Sept. 6, 1967, 7276 A/67

Int. Cl. G01n 27/46

U.S. Cl. 204—195

5 Claims



Electrochemical measures and treatments and diffraction analysis of given areas of a same surface of a metal test strip are allowed by a device by which it is possible to obtain several tests in a relatively short period of time as

compared to the time needed by conventional methods, being further sure that such different tests concern a single surface of a same test strip. Therefore, the material on which the treatments are performed not only is of the same composition, but also offers to the various successive tests a surface which was subject to the same cleaning process. The relevant metal test strip must thus assume a particular shape in order to be used with the device.

3,627,665

# APPARATUS FOR THE PRODUCTION OF FLAT METAL SHEETS, PARTICULARLY TIN PLATE SHEETS

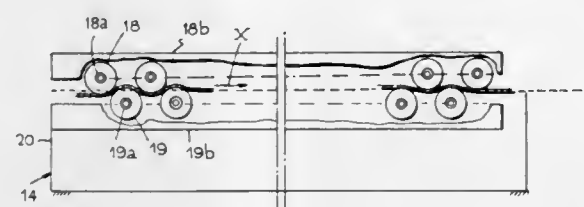
Willy Charles de Laminne, Liege, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdor en abregé "Cockerill", Seraing-liez-Liege, Belgium

Filed Mar. 3, 1967, Ser. No. 620,528

Int. Cl. B01r 3/00; C23g 5/68

U.S. Cl. 204—209

1 Claim



An apparatus for the continuous production of tin plate sheet metal including a spool of sheet metal, an unrolling device carrying the spool, a strip of sheet from the spool, a driving device advancing the strip, a welding device, an accumulator for the strip, a tensioning device composed of a braking means and a traction means for maintaining the strip taut during its passage in the apparatus, a degreasing device, a pickling device, rinsing vats, an electric tinning device, for applying a tin coating on the strip, a drying device, a rollers smoothing device into which the strip of metal sheet passes, a re-fusing device of the tin coating, a hole detector and a guillotine for cutting the strip.

3,627,666

# APPARATUS FOR AUTOMATICALLY REGULATING THE ANODE GAP IN ELECTROLYSIS CELLS

Rene L. Bonfils, Saint-Jean de Maurienne, France, assignor to Compagnie Pechiney, Paris, France

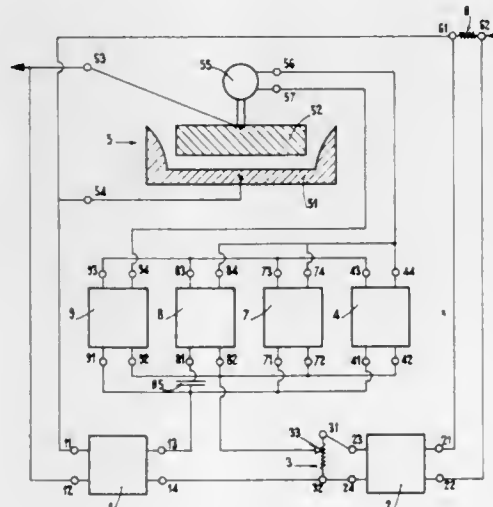
Filed Oct. 30, 1968, Ser. No. 771,834

Claims priority, application France, Nov. 6, 1967, 127,012

Int. Cl. B01k 3/00; C22d 3/12

U.S. Cl. 204—225

7 Claims



An apparatus for automatically regulating the gap between anode and cathode in electrolytic cells in response to the amount and sign of voltage differential between  $U-R/I$  and  $e$

in which  $U$  is the voltage at the terminals of the cell,  $I$  the intensity of the current passing through the cell,  $R$  is a predetermined value of internal resistance of a cell used as a reference while  $e$  is the counter electromotive force of the electrolysis.

3,627,667

# ELECTROMECHANICAL MACHINING SHORT CIRCUIT ELECTRODE DETECTOR

Erwin J. Plofsky, Deerfield, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 23, 1968, Ser. No. 746,985

Int. Cl. B23p 1/02; C23b 5/76

U.S. Cl. 204—224

5 Claims

A method and apparatus for detecting a short circuit between the cutting electrode tool and workpiece in electrochemical machining. This detector takes advantage of the battery formed by the dissimilar electrode and workpiece metals saturated with an electrolyte by measuring the difference in the electromotive force when there is proper gap spacing and when there is metal-to-metal contact and preventing the power supply from being turned on when there is metal-to-metal contact, thus protecting the electrode tool from damage.

3,627,668

# COKE BREEZE RECLAIMING SYSTEM

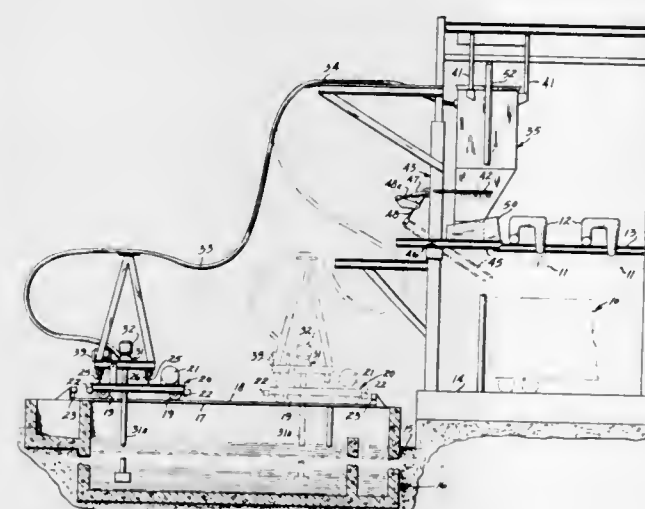
Frans Wethly, Manhasset, N.Y., assignor to Wilputte Corporation

Filed July 8, 1969, Ser. No. 839,825

Int. Cl. C10b 39/08

U.S. Cl. 202—229

9 Claims



This invention is directed to process and apparatus for reclaiming small particles of coke, commonly known as coke breeze. Water containing coke breeze which is drained from the quenching car flows into a sump. A slurry pump is mounted for travel lengthwise and crosswise of said sump and pumps the water containing coke breeze into an elevated settling tank. Water drains from the settling tank back into the sump leaving coke breeze in the tank. At predetermined intervals, for example every third quench, a hydraulic gate on the bottom of the settling tank is opened and the coke breeze is allowed to fall onto the coke in the quenching car. Subsequently, the coke with coke breeze is dumped on a coke wharf and the coke breeze is recovered in a coke-screening station.

3,627,669

# ELECTRODES FOR ELECTROCHEMICAL CELLS

John Hubert Entwistle, and Anthony Scrutton, both of Run-corn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 21, 1969, Ser. No. 878,885

Claims priority, application Great Britain, Dec. 13, 1968, 59,450/68

Int. Cl. B01r 3/04

6 Claims

An electrode for use in electrochemical processes comprising a film-forming metal support member carrying a semiconducting coating consisting of tin dioxide, oxides of antimony and optionally a chlorine-discharge catalyst selected from the difluorides of manganese, iron, cobalt, nickel and mixtures thereof.

3,627,670

# ANODE ROD TIGHTENING APPARATUS FOR ALUMINA ELECTROLYSIS CELLS

Daniel Duclaux, 135 bis rue du fourbourg de Roubaix, Lille Nord, France

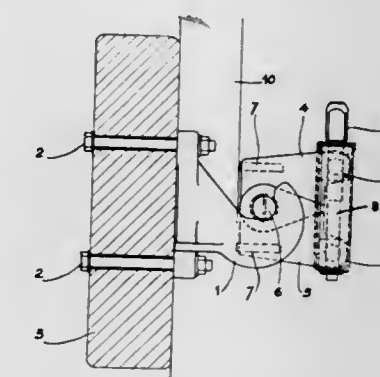
Filed Apr. 13, 1970, Ser. No. 27,777

Claims priority, application France, Apr. 14, 1969, 6910161

Int. Cl. C23b 5/70; C22d 3/02

U.S. Cl. 204—297 R

8 Claims



An anode rod tightening apparatus for alumina electrolysis cells having main bus bars comprising the combination of a clamping device and a driving mechanism in which the clamping device is formed of a horizontally disposed shaft with a pair of levers articulated on the shaft and a nut member on each of the levers adapted to engage opposite screw-threaded sections on a screw member for displacement of the levers in the direction toward and away from each other responsive to turning movement of the screw and a jaw member on each lever adapted to engage the anode rod when the levers are apart and in which the driving mechanism comprises a double clamp for engaging laterally spaced apart portions of the shaft and a wrench mounted for vertical movement into and out of engagement with the screw to effect turning movement of the screw when in operative engagement therewith and a guide means along the rod for guiding the driving mechanism.

3,627,671

# COMBINATION PROCESS OF CATALYTIC REFORMING AND EXTRACTION

Robert H. Kozlowski, Berkeley, and Robert P. Sieg, Piedmont, both of Calif.

Filed Oct. 9, 1969, Ser. No. 865,011

Int. Cl. C10g 35/08

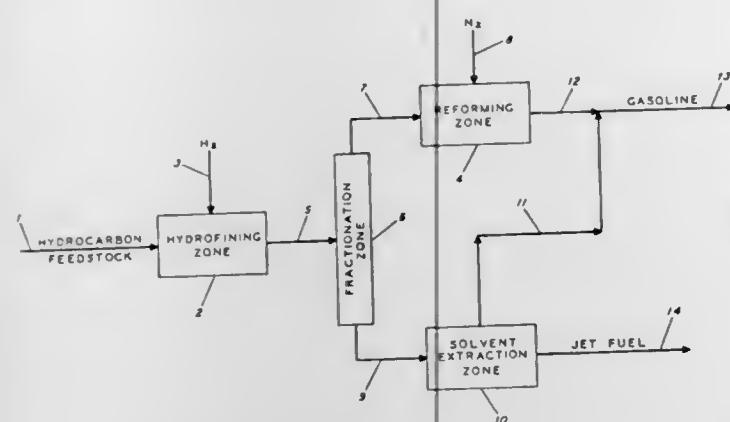
U.S. Cl. 208—93

4 Claims

Increased yields of gasoline and jet fuel can be obtained from a feed boiling from 150° to 550° F by fractionating the feed into two streams, reforming the lower-boiling stream at low pressure to produce a gasoline product, solvent



extracting the higher-boiling stream to produce a raffinate and an extract, blending the extract with the gasoline product



from the reforming zone, and using the raffinate for jet fuel.

3,627,672

### CATALYTIC HYDROGENATION WITH METAL PHOSPHATE-CONTAINING CATALYSTS

James R. Kittrell, El Cerrito, and Richard C. Robinson, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sept. 29, 1969, Ser. No. 862,036

Int. Cl. C07c 5/10; C10g 23/02

U.S. Cl. 208—143

3 Claims

Aromatics hydrogenation process using a catalyst having a particle density greater than 1.4 g./cc., comprising alumina, a component selected from nickel and compounds thereof and cobalt and compounds thereof, a component selected from molybdenum and compounds thereof, and a component selected from titanium phosphate and zirconium phosphate.

3,627,673

### PROCESS FOR PRODUCING LOW-POUR POINT TRANSFORMER OILS FROM WAXY CRUDES

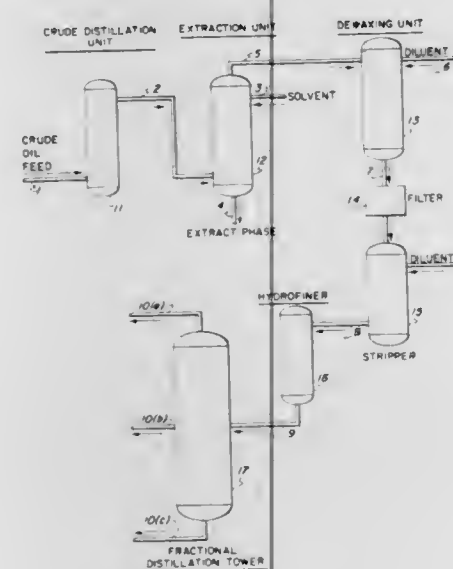
Lorne W. Sproule, and Donald W. Murray, both of Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

Filed Jan. 28, 1969, Ser. No. 794,688

Int. Cl. C10g 23/00, 31/14, 21/00

U.S. Cl. 208—211

11 Claims



A high-stability, low-pour point insulating oil is prepared by a process wherein a broad waxy vacuum gas oil fraction is first dewaxed and then fractionated to yield the desired insulating oil fraction. The broad vacuum gas oil fraction may be

treated to remove aromatics and polar components. Likewise, the dewaxed oil may be hydrofined before fractionation to improve color, stability and sulfur content. The insulating oil fraction is obtained from the dewaxed oil as a heart cut. The bottoms fraction may be used as a lubricating oil, and the pour point of this fraction can be improved with further fractionation. The high-boiling waxy contaminants picked up during processing are removed as bottoms, thus yielding a product having an improved pour point when compared with an oil prepared by fractionation prior to dewaxing.

3,627,674

### CATALYST COMPOSITION AND HYDRODESULFURIZATION WITH AN EXTRUDED COMPOSITE CONTAINING ALUMINA, GROUP VI-B METAL AND ZINC COMPONENT

Gary J. Nagl, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 6, 1969, Ser. No. 874,696

Int. Cl. C10g 23/02; B01j 11/40

U.S. Cl. 208—216

8 Claims

A hydrotreating (desulfurization) catalyst of a coextruded composite of an alumina-containing porous carrier material, a Group VI-B metal component and a zinc component. The Group VI-B metal component constitutes from about 4.0 percent to about 30.0 percent by weight and the zinc component is present in an amount of 1.0 percent to about 10.0 percent by weight, calculated as the elemental metals.

3,627,675

### SOLVENT DEASPHALTING WITH TWO LIGHT HYDROCARBON SOLVENTS

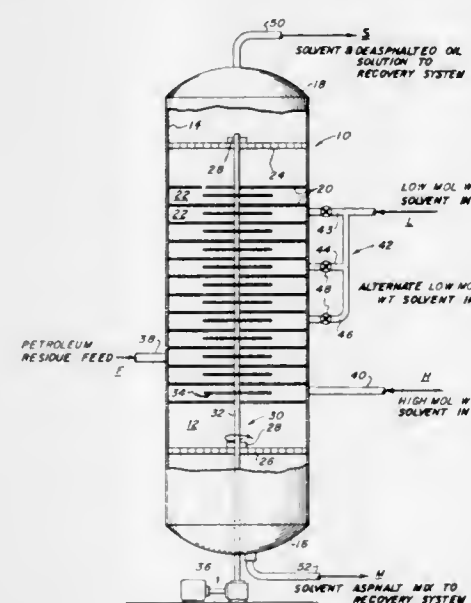
John G. Ditman, Newark, and Joseph C. Dunmyer, Jr., Livingston, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Oct. 16, 1969, Ser. No. 866,853

Int. Cl. C10g 21/02

U.S. Cl. 208—309

3 Claims



The invention deals with a method and apparatus for treating asphaltic feed stock in which high-molecular-weight hydrocarbon solvent is introduced into a compartmentalized contacting tower below the feed stock, and a low-molecular-weight hydrocarbon solvent is introduced above the feed stock. The high-molecular-weight solvent is an alkane or alkene hydrocarbon containing from three through seven carbon atoms inclusive and the low-molecular-weight solvent consists of an alkane or alkene hydrocarbon containing from two through six carbon atoms, with the low-molecular-weight solvent having at least one less carbon atom than the high-molecular-weight solvent.

### 3,627,676 METHOD FOR OXIDIZING THE THIOSULFATE IONS IN A THIOSULFATE

Edwin J. Eccles, Jr., Mount Holly, N.C., assignor to Martin Marietta Corporation

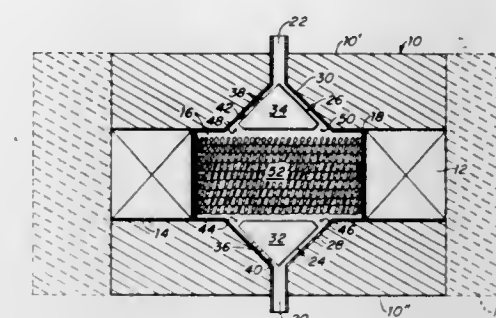
Filed Feb. 25, 1971, Ser. No. 119,000

Int. Cl. C02c 5/04

U.S. Cl. 210—11

2 Claims

Method for oxidizing the thiosulfate ions in a thiosulfate waste comprising establishing a liquid aqueous oxidative zone; introducing dilute aqueous  $\text{Na}_2\text{S}_2\text{O}_3$ , aqueous  $\text{NH}_4\text{OH}$ , and aqueous  $\text{H}_3\text{PO}_4$  into the zone; aerating and agitating the result at pH 1.4-1.6 until the  $\text{Na}_2\text{S}_2\text{O}_3$  is oxidized to the hydrolysis products of sodium sulfate and sulfuric acid; and withdrawing aqueous liquid from the zone.



first portion adjacent one side of the coil and covering the area enclosed by the coil and a second portion adjacent the

3,627,677

### PROCESS OF REMOVING OIL FROM MIXTURES OF OIL AND AQUEOUS MEDIA

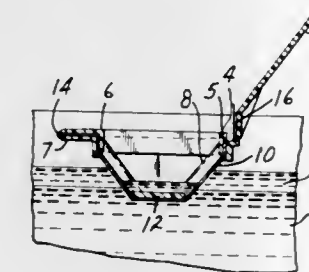
James F. Dyrud, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 14, 1969, Ser. No. 866,188

Int. Cl. B01d 17/02

U.S. Cl. 210—23

8 Claims



A device for separating water-immiscible oils from a mixture of said oils and an aqueous medium and a process for utilization of the device is described. The device comprises a flexible web and a frame used to support the web. The frame has retaining means attached to hold at least a portion of the edge of the web allowing the remaining portion of the web to form a receptacle for containing the separated oil.

The process provides for the separation and removal of water-immiscible oil from a mixture of oil and an aqueous medium. The process is comprised of first, forming a receptacle with a fibrous web, and then placing the web in contact with an oil and water mixture. The web and the oil and water mixture define a separation system in which the work of adhesion for the system as a whole is greater than one-half to one times the value of the work of cohesion for the oil-water portion of said system and the contact angle formed by the oil in an oil-water mixture with a smooth surface of a fiber-forming polymer is less than 90°. The oil is preferentially absorbed into the web until the web is substantially saturated. The receptacle formed by the web then becomes filled with oil as a result of the hydrostatic pressure imparted to the substantially saturated web.

3,627,678

### MAGNETIC SEPARATOR AND MAGNETIC SEPARATION METHOD

Peter Grant Marston, Gloucester, Mass.; John Joseph Nolan, Randolph, Mass., and Laszlo Miklos Lontai, South Bend, Ind., assignors to Magnetic Engineering Associates, Inc., Cambridge, Mass.

Filed Sept. 3, 1969, Ser. No. 854,895

Int. Cl. B01d 35/06

U.S. Cl. 210—42

29 Claims

A magnetic separation method and magnetic separator is disclosed including an enclosure within an electromagnetic coil surrounded by a ferromagnetic return frame including a

### 3,627,679 EFFLUENT TREATMENT PROCESSES

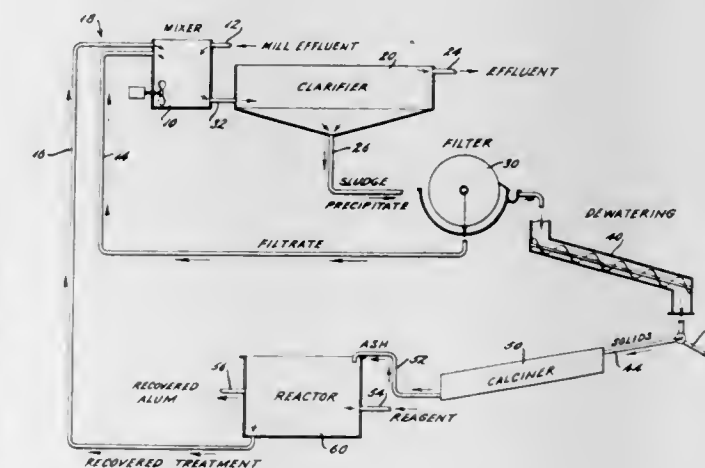
Robert R. Fuller, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.

Filed May 25, 1967, Ser. No. 641,304

Int. Cl. C02c 5/02

U.S. Cl. 210—45

8 Claims



A waste effluent treatment which involves contacting a waste effluent, e.g. pulp and paper mill effluent, with a metal salt reagent, preferably alum mud. Treatment decolorizes the effluent and precipitates a substantial portion of the organic content. The precipitate and sludge is dewatered, then calcined, and the reagent regenerated from the ash for use again in a cyclic process.

3,627,680

### METHOD OF CLARIFYING WATER

Gilbert Desbos, Paris, France, assignor to Compagnie des Eaux et de L'Ozone, Paris, France

Continuation of application Ser. No. 804,257, Mar. 4, 1969, now abandoned. This application Sept. 28, 1970, Ser. No. 76,331

Int. Cl. C02b 1/20

U.S. Cl. 210—52

1 Claim

Water is clarified by flocculation using as a flocculation additive, a dispersion of 1 g./l. of cellulose-free sodium alginate in demineralized water titrating at less than 10° hydrotimetric. The dispersion is added to the water to be treated in an amount corresponding to 0.2-0.5 p.p.m. to alginate.



3,627,681

## LUBRICANT COMPOSITIONS

William H. Chandler, Wood River, Ill., assignor to Shell Oil Company, New York, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,426  
Int. Cl. C10m 1/48

U.S. Cl. 252—32.7 E 6 Claims

The corrosivity toward copper of lubricating oils containing a polyvalent metal salt of a diester of dithiophosphoric acid is substantially reduced by incorporating therewith a zinc dialkyl naphthalene sulfonate and a basic alkaline earth metal petroleum sulfonate.

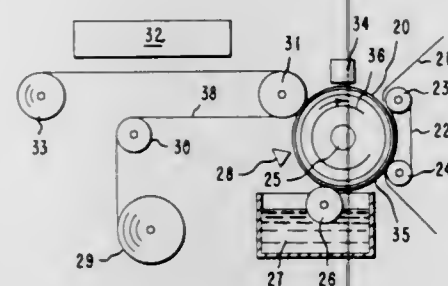
3,627,682

## ENCAPSULATED PARTICULATE BINARY MAGNETIC TONERS FOR DEVELOPING IMAGES

Joseph P. Hall, Jr., Shavertown, and George J. Young, Dallas, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1968, Ser. No. 767,977  
Int. Cl. G03g 9/02

U.S. Cl. 252—62.54 21 Claims



Described and claimed are flowable, particulate, binary toners for developing magnetic images comprising a particulate hard magnetic material, e.g.,  $\text{Fe}_3\text{O}_4$  or  $\text{CrO}_2$ , and a particulate soft magnetic material, e.g., Fe, each type of material being present in substantially each toner particle.

3,627,683

## DETERGENT COMPOSITION

Wolfgang Ernst Adam, Wommel, Belgium; Alain Hardy, Paris, France; Arvid Sverre Roald, Springfield Township, Hamilton County, Ohio, and Wahib Nassif Zaki, Brussels, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 7, 1969, Ser. No. 874,945

Claims priority, application Netherlands, Nov. 19, 1968, 6816505

Int. Cl. C11d 7/42

U.S. Cl. 252—89 7 Claims

Detergent compositions which contain compounds bearing one or more sulphydryl radicals as activators for enzymes which themselves do not contain sulphydryl groups or disulfide bonds.

3,627,684

## PROCESS FOR THE PRODUCTION OF WASHING, BLEACHING AND PURIFICATION AGENTS

Horst Pistor, Rheinfelden (Baden), Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Jan. 22, 1969, Ser. No. 793,161

Claims priority, application Germany, Jan. 24, 1968, P 16 92 008.4

Int. Cl. C11d 7/56

U.S. Cl. 252—99 10 Claims

A washing, bleaching and cleansing agent containing an active oxygen-containing compound of a salt of boric acid is prepared by adding the active oxygen carrier to a slurry of the active washing substances, washing aids and additives shortly before introduction into a spray drier.

3,627,685

## LITHOGRAPHIC PLATE FINISHERS AND CLEANERS

Frank Man-Kam Lam, East Brunswick, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1969, Ser. No. 853,965

Int. Cl. C11d 7/54

U.S. Cl. 252—100 2 Claims

This invention relates to the treatment and maintenance of lithographic printing plates. More specifically, it is concerned with finishing, cleaning, and dampening lithographic plates with aqueous solutions containing an alkali metal-polyphosphate and an inorganic oxidant to render the same more efficient.

3,627,686

## MACHINE DISHWASHING COMPOSITIONS CONTAINING SODIUM POLYACRYLATE AND NTA

Philip M. Sabatelli, Cincinnati, Ohio; Charles A. Brungs, Ft. Wright, Ky.; Edwin R. Loder, Cincinnati, Ohio, and Carmen R. Sarge, Ft. Thomas, Ky., assignors to Chemed Corporation

Filed Sept. 30, 1968, Ser. No. 763,917

Int. Cl. C11d 7/16, 7/26, 7/32

U.S. Cl. 252—137 3 Claims

A machine dishwashing composition is disclosed which includes the combination of a chelating agent and a water-soluble polymer as detergent builders and specifically the combination of a water-soluble organic alkaline salt of nitrilotriacetic acid, and a water-soluble polyacrylate. Cooking and eating utensils may be cleaned by a low-foaming aqueous solution of the present machine dishwashing composition with less spotting and greater clarity. The present composition is particularly useful for sequestering hard water salts and for extending the normal water-softening capacity of machine dishwashing compositions.

3,627,687

## CLEANING OF FERROUS METAL SURFACES

Fred Norman Teumac, Charlotte, N.C., and James Scott Scruggs, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 9, 1968, Ser. No. 704,265

Int. Cl. C11d 7/32

U.S. Cl. 252—152 2 Claims

The invention is based on the discovery that upon adding a polyamine having intralinear amino groups to an aqueous alkaline solution of an ammoniated or aminated polycarboxylic acid chelating agent, a new and improved metal-cleaning solution is provided. Upon bringing such cleaning solution into contact with a ferrous metal surface having hardness and/or iron oxide scale, and copper, thereon and the solution being maintained at a temperature above about 155° C. for a time sufficient to dissolve all the hardness and iron oxides, the copper is dissolved and neither precipitates from solution nor deposits on the ferrous metal surface.

3,627,688

## STABILIZED AQUEOUS ENZYME CONTAINING COMPOSITIONS

Charles B. McCarty, Cincinnati, and Jim S. Berry, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 23, 1968, Ser. No. 786,431

Claims priority, application Philippines, Nov. 12, 1968, 9724 Int. Cl. C11d 1/72, 1/74

U.S. Cl. 252—153 11 Claims

Stabilized aqueous enzyme compositions containing a protease and/or an  $\alpha$ -amylase and a stabilizing agent selected from the group consisting of dialkyl glycol ethers; heterocyclic oxyethers; and dialkyl ketones are described. These compositions, which can also contain a nonionic or zwitterionic detergent, are useful cleaning compositions particularly in the removal of soils and stains from textile materials.

3,627,689

## ISOCYANURATE AND HALOGEN-CONTAINING POLYISOCYANATES

Perry A. Argabright, and Brian L. Phillips, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed June 4, 1969, Ser. No. 830,410

Int. Cl. C09k 3/00; C08d 13/08

U.S. Cl. 252—182 11 Claims

New halogenated polyisocyanates containing isocyanurate rings are prepared in a single step by reacting chlorinated organic compounds, especially chloromethylated aromatics with metal iodide or bromide and metal cyanate in the presence of a dipolar aprotic solvent where the mole ratio of cyanate in the metal cyanate to chlorine in the chlorine containing organic compound is from about 0.25 to less than about 0.8. The polyisocyanate compositions are useful as starting materials in the production of urethane polymers as coatings, films, foams, adhesives, etc. The compositions are especially flame retardant, and have inherent thermal stability provided by the high concentration of isocyanurate rings in the molecule and from the presence of halide groups.

3,627,690

## PHOTOCHROMIC NAPHTHOPYRAN COMPOSITIONS

Joseph Casella, Framingham, and Samuel H. Stein, Lexington, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Oct. 1, 1969, Ser. No. 862,965

Int. Cl. G02b 5/24; F91v 9/00

U.S. Cl. 252—300 15 Claims

Photochromic naphthopyran compositions containing minor amounts of either a base or a weak-to-moderate acid are disclosed. Addition of the acid or base increases the fading rate of the colored naphthopyran compositions making them useful in eye protection applications such as sunglasses.

3,627,691

## METHOD OF PREPARING A CALIFORNIUM-252 NEUTRON

Alexander R. Boulogne, and Jean P. Faraci, both of Aiken, S.C., assignors to The United States of America as represented by the United States Atomic Energy Commission

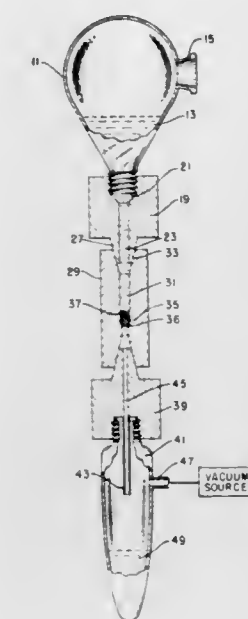
Filed Jan. 8, 1970, Ser. No. 1,484

Int. Cl. C09k 3/00; G21h 5/00

U.S. Cl. 252—301.1 R 4 Claims

A method of encapsulating a radioisotope wherein an open ended tube is used first to support a porous member for filtering a radioisotope precipitate from a solution and next for containing the precipitate on the porous member while heating to convert the radioisotope to a thermally stable form.

The tube is then sealed at both ends providing a leaktight capsule to prevent loss of the radioisotope. This method is



particularly applicable to the encapsulation of californium-252 for use as a point source of neutrons.

3,627,692

## FLUOROAPATITE LASER MATERIAL DOPED WITH HOLMIUM OR THULIUM AND CHROMIUM

Robert C. Ohlmann, Palo Alto, Calif., and Robert Mazelsky, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 28, 1968, Ser. No. 732,593

Int. Cl. C09k 1/04; H01s 3/16

U.S. Cl. 252—301.4 P 13 Claims

A crystalline material suitable for use as a laser rod in association with pump radiation is made from a calcium or strontium fluorophosphate host which is doubly doped with holmium and chromium or thulium and chromium and which can contain charge-compensating constituent ions such as  $\text{Na}^+$ ,  $\text{O}^-$  and  $(\text{SiO}_4)^{4-}$  trionutrality of the crystal.

3,627,693

## LAYERED CAPSULE WALLS AND A METHOD FOR MANUFACTURING THEM

Joseph A. Scarpelli, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 28, 1970, Ser. No. 6,583

Int. Cl. B01j 13/02; B44d 1/16

U.S. Cl. 252—316 7 Claims

A process is disclosed for performing encapsulation, en masse, in an aqueous liquid vehicle, wherein two kinds of hydrophilic polymeric material are sequentially deposited from solution onto particles of intended capsule core entities. The two kinds of hydrophilic polymeric wall materials, while individually and sequentially deposited from solution by liquid-liquid phase separation, also yield a middle-zone wherein the two kinds of material are present in a mixed combination. A preferred capsule product of this disclosed process comprises: substantially water insoluble capsule core material; polyvinyl alcohol inner capsule wall material; polyvinyl alcohol-gelatin middle-zone wall; and gelatin outer capsule wall material.



3,627,694

# PRODUCTION OF AQUEOUS SUSPENSION OF MANGANESE DIOXIDE

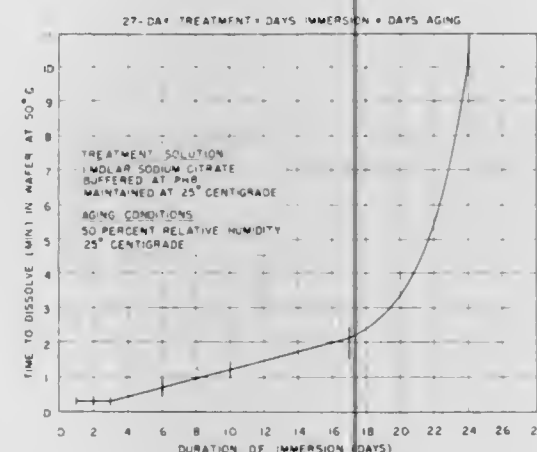
E. Scudder Mackey, Binghamton, N.Y., assignor to General Aniline & Film Corporation, New York, N.Y.  
Continuation of application Ser. No. 633,373, Apr. 25, 1967, now abandoned, which is a division of application Ser. No. 311,954, Sept. 27, 1963, now Patent No. 3,332,792. This application June 8, 1970, Ser. No. 48,801  
Int. Cl. B01j 13/00; C01g 45/02; G03c 1/84  
U.S. Cl. 252—316 7 Claims

Production of an aqueous suspension of manganese dioxide by reaction of potassium permanganate in aqueous acid solution with a starch ether of a hydroxyalkyl-tertiary amine or a corresponding quaternary ammonium salt.

3,627,695

# INSOLUBILIZATION OF GELATIN-CONTAINING FILM BY CITRATE TREATMENT

Joseph A. Scarpelli, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio  
Filed May 5, 1969, Ser. No. 821,733  
Int. Cl. B01j 13/00; B44d 1/44; C09h 7/00  
U.S. Cl. 252—316 12 Claims



A treatment process is disclosed for gelatin-containing or proteinaceous capsule wall materials and films wherein the capsules and films which include the proteinaceous materials therein are soaked or steeped in aqueous citrate solutions for extended periods of time. The citrate treatment of this invention serves to harden the capsule wall or film material in such a way as to render it water insoluble. In various embodiments of the treatment, a final capsule or film process step is included, said step differing as to the desired or required intended use of the citrate-treated films or capsule wall material. The treated films or capsule walls can be used without drying, by drying only or by drying only and then subjecting the films or capsule walls to an aging process. The treated films or capsule walls can also be finished by drying and then subjecting them to a desiccation step similar to the aging step but under different conditions.

3,627,696

# POLYPHENYL ETHER SOLDERING FLUID

Joseph J. Heithaus, Florissant; Oscar M. Muskopf, St. Louis, both of Mo.; Gedeminas J. Reinis, Rochester, N.Y., and Clarence L. Mahoney, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.  
Original application Dec. 27, 1965, Ser. No. 526,318, now abandoned. Divided and this application July 9, 1969, Ser. No. 855,438  
Int. Cl. C07c 41/12

U.S. Cl. 252—404 5 Claims  
Polyphenyl ether-based fluids having improved stability and oxide solubilizing properties consisting essentially of

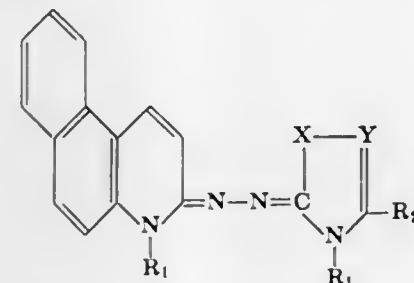
polyphenyl ethers and a minor amount of a mixture of carboxylic acid derivatives of polyphenyl ethers.

3,627,697

# HYDROPEROXIDE DIAGNOSTIC AGENTS CONTAINING A CHROMOGEN INDICATOR

Hans-Georg Rey; Hans Wielinger, and Peter Rieckmann, all of Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Postfach, Germany  
Filed Mar. 20, 1970, Ser. No. 21,493  
Claims priority, application Germany, Apr. 9, 1969, P 19 17 997.6  
Int. Cl. G01n 31/14, 31/22

U.S. Cl. 252—408 18 Claims  
Diagnostic agents suitable for use in carrying out rapid analytical determinations of the presence and/or concentration of hydroperoxides, substances which react with the liberation of hydrogen peroxide or hydroperoxide, peroxidase or peroxidatively-active substances, comprising an indicator, i.e., chromogen, which is oxidized by hydrogen peroxide or hydroperoxide in the presence of peroxidase or peroxidatively-active substance to form a dyestuff, the color intensity of which is dependent on the quantity of peroxide, peroxidase or peroxidatively-active substance present in the test sample, wherein the chromogen is a compound having the formula:



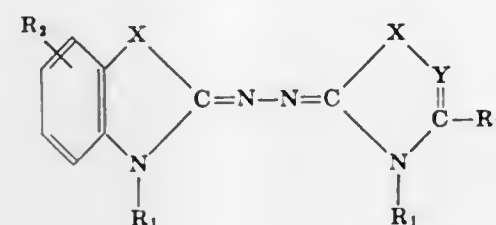
wherein R<sub>1</sub> is lower alkyl; R<sub>2</sub> is hydrogen or alkyl, preferably lower alkyl, or, together with Y, represents a fused benzene or naphthalene nucleus; X is sulfur or oxygen or an alkylated imino group, preferably carrying lower alkyl groups, or a vinylene radical; and Y is a methine radical which, together with R<sub>2</sub>, can also form a benzene or naphthalene nucleus.

3,627,698

# HYDROPEROXIDE DIAGNOSTIC AGENTS CONTAINING A CHROMOGEN INDICATOR

Hans-Georg Rey; Hans Wielinger, and Peter Rieckmann, all of Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany  
Continuation-in-part of application Ser. No. 762,965, Sept. 26, 1968. This application Mar. 20, 1970, Ser. No. 21,494  
Int. Cl. G01n 31/14, 31/22

U.S. Cl. 252—408 18 Claims  
Diagnostic agents suitable for use in carrying out rapid analytical determinations of the presence and/or concentration of hydroperoxides, substances which react with the liberation of hydrogen peroxide or hydroperoxide, peroxidase or peroxidatively active substances, comprising an indicator, i.e., chromogen, which is oxidized by hydrogen peroxide or hydroperoxide in the presence of peroxidase or peroxidatively-active substance to form a dyestuff, the color intensity of which is dependent on the quantity of peroxide, peroxidase or peroxidatively-active substance present in the test sample, wherein the chromogen is a compound having the formula:



3,627,702

# PROCESS FOR THE PRODUCTION OF POLYETHERS OF HIGH MOLECULAR WEIGHT

Robert Gehm, Limburgerhof, Germany; Ernst-Guenther Kastning, deceased, late of Assenheim, Germany (by Marie-Louise Hermine Kastning, heiress-at-law and legal representative of minor heirs), and Kurt Schneider, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany  
Filed Aug. 12, 1969, Ser. No. 849,530  
Claims priority, application Austria, Aug. 12, 1968, 7876/68  
Int. Cl. C08g 23/14

U.S. Cl. 260—2 A 7 Claims  
A process for the production of high-molecular-weight polymers of 1,2-alkylene oxides using a catalyst prepared by reacting 1 mole of an alkaline earth metal hexaammoniate and/or an alkaline earth metal amide in liquid ammonia with 0.1 to 1 mole of a 1,2-alkylene oxide and 0.1 to 2 moles of cyanamide and/or dicyandiamide.

3,627,703

# POLYPROPYLENE RESIN COMPOSITES AND PRODUCTION THEREOF

Katsuyoshi Kojima, Tokyo-to, and Yujiro Nakayama, Yokkaichi-shi, both of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan  
Filed Oct. 21, 1969, Ser. No. 868,228  
Claims priority, application Japan, Oct. 31, 1968, 43/79423  
Int. Cl. C08f 29/12

U.S. Cl. 260—2.1 E 13 Claims  
A polypropylene resin composite which comprises a polypropylene resin matrix that is both microscopically foamed and molecularly oriented in three dimensions and an ion-exchanging material dispersed therein, which composite is produced by a process which comprises subjecting a precursor composite comprising a solid polypropylene matrix and an ion-exchange material of greater swellability to a chemical treatment comprising an acid treatment and an alkali treatment.

3,627,704

# CURABLE COMPOSITIONS OF EPOXY RESINS AND 4,6-BIS(SUBSTITUTED CARBAMYL)ISOPHTHALIC ACID

Raymond Michael Moran, Jr., Brick Town, and Robert Paul Kretow, Lakewood, both of N.J., assignors to Ciba Corporation, Summit, N.J.  
Filed Oct. 23, 1969, Ser. No. 868,924  
Int. Cl. C08q 30/14

U.S. Cl. 260—2 N 3 Claims  
4,6-Bis (substituted carbamyl) isophthalic acid compounds are used as latent hardeners for epoxy resins materials the cured resins therefrom are employed in high-temperature adhesives and coating applications. The hardener effect is achieved by curing at elevated temperatures.

3,627,705

# COUNTERCURRENT ION EXCHANGE REGENERATION WITH SULFURIC ACID

Albert William Kingsbury, Moorestown, N.J., assignor to Sybron Corporation, Rochester, N.Y.  
Filed Jan. 16, 1970, Ser. No. 3,427  
Int. Cl. B01d 15/06; C02b 1/76

U.S. Cl. 260—2.2 R 5 Claims  
A method and apparatus for regenerating cation exchange resin which is partially in the calcium form wherein dilution water is injected to prevent the precipitation of calcium sulfate in the column when sulfuric acid is used as the regenerant.

wherein R<sub>1</sub> is lower alkyl; R<sub>2</sub> is hydrogen, a sulfonic acid group or an alkali metal sulfonate group; R<sub>3</sub> is hydrogen, halogen, e.g. chlorine, or lower alkyl; X is sulfur, oxygen, a carbon atom substituted with two lower alkyl groups, substituted or unsubstituted vinylene or imino, wherein said substituent is lower alkyl or aryl; and Y is nitrogen or methine which, when taken together with R<sub>3</sub>, can form a benzene ring substituted by R<sub>2</sub>.

3,627,699

# LIQUID CRYSTAL CHOLESTERIC MATERIAL AND SENSITIZING AGENT COMPOSITION AND METHOD FOR DETECTING ELECTROMAGNETIC RADIATION

Newton N. Goldberg, Pittsburgh, Pa., and James L. Ferguson, Kent, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Apr. 30, 1969, Ser. No. 820,661  
Int. Cl. G01n 21/02; G01t 1/08

U.S. Cl. 252—408 16 Claims  
Electromagnetic radiation in the frequency range of 10<sup>12.5</sup> to 10<sup>17</sup> cycles per second is detected, using a cholesteric liquid-crystal material to which there has been added, in the case of radiation of lower frequency, a suitable oil or oil-soluble dye, and in the case of radiation of higher frequency, a phototropic material such as beta-carotene or cholesteryl p-phenylazophenyl carbonate, a novel compound.

3,627,700

# DIMERIZATION OF OLEFINS WITH CHROMIUM HALIDE COMPLEX CATALYST SYSTEMS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company  
Continuation-in-part of application Ser. No. 635,649, May 3, 1967, now abandoned, Continuation-in-part of application Ser. No. 635,700, May 3, 1967, now abandoned. This application Nov. 22, 1968, Ser. No. 778,307  
Int. Cl. C07c 3/10

U.S. Cl. 252—429 B 11 Claims  
Olefins are dimerized by contacting the olefin with a homogeneous catalyst comprising a chromium halide complex in combination with an ethylaluminum dichloride adjuvant. Additionally, a heterogeneous catalyst is prepared by depositing upon a suitable support the homogeneous combination mentioned above and contacting the olefin to produce dimers thereof.

3,627,701

# OXIDATION OF ISOBUTYLENE TO METHACRYLALDEHYDE OVER COMPLEX TUNGSTEN OXIDE CATALYSTS

Donald M. Coyne, Prairie Village, and Roger P. Cahoy, Merriam, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.  
Original application Apr. 12, 1966, Ser. No. 541,955, now Patent No. 3,444,240, dated May 13, 1969, which is a continuation-in-part of application Ser. No. 208,637, July 9, 1962, now abandoned, which is a continuation-in-part of application Ser. No. 247,267, Dec. 26, 1962, now abandoned, which is a continuation-in-part of application Ser. No. 247,307, Dec. 26, 1962, now abandoned. Divided and this application Sept. 16, 1968, Ser. No. 793,210. The portion of the term of the patent subsequent to Oct. 3, 1984, has been disclaimed.  
Int. Cl. B01j 11/74

U.S. Cl. 252—439 1 Claim  
Isobutylene, either pure or in crude mixtures with other hydrocarbons is oxidized in vapor phase over catalysts containing the mixed oxides of copper, tellurium and tungsten, preferably within a temperature range of about 430° to 480°







such higher alcohols having oxyalkylation products with 1-10 ethylene oxide or propylene oxide units, wherein the total weight percent of components (b) and (c) combined is not over three percent and all indicated percentages by weight refer to the total mixture.

3,627,719

# COMPOSITIONS CONTAINING POLYURETHANE RESIN TREATING AGENTS DERIVED FROM MANNICH BASE CONDENSATES

Lucien Sellet, Saddle River, N.J., assignor to Diamond Shamrock Corporation, Cleveland, Ohio  
Filed Dec. 31, 1968, Ser. No. 788,340. The portion of the term of the patent subsequent to Aug. 19, 1986, has been disclaimed.

Int. Cl. C08g 37/24, 41/00

U.S. Cl. 260—29.2 TN

31 Claims

Compositions containing polyurethane resin treating agents derived from Mannich Base condensates are used to improve properties of fiber, textile, paper, leather and other substrates. The treating agents are alkylolated polyurethane resins obtained by alkylolation of the reaction product of a Mannich Base condensate and a urethane prepolymer. Mannich Base condensates are prepared by reaction of alkanolamines, aldehydes, and amino resin bases.

3,627,720

# EPOXIDE-CONTAINING COMPOSITIONS

Ian Geoffrey Hinton, Whittlesford, and Bernard Peter Stark, Stapleford, both of England, assignors to CIBA Limited, Basel, Switzerland

Filed Feb. 2, 1968, Ser. No. 702,532

Claims priority, application Great Britain, Feb. 13, 1967, 6,762/67

Int. Cl. C08g 51/24; C23b 13/00

U.S. Cl. 260—29.3

16 Claims

Curable compositions comprising:  
a. a material formed by heating a liquid mixture of a polycarboxylic acid anhydride with an epoxide alcohol free from carboxyl groups, so that at least 40 percent of the alcoholic hydroxyl group content of the epoxide alcohol is esterified by the polycarboxylic acid anhydride but not more than 25 percent of the 1,2-epoxide group content of the epoxide alcohol has reacted with the polycarboxylic acid anhydride,  
b. a base in quantity sufficient to neutralize at least some of component (a), and, if required,  
c. a curing agent for component (a).

3,627,721

# METHOD FOR THE PREPARATION OF (CIS-1,2-EPOXYPROPYL)PHOSPHONIC DIHALIDE

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 2, 1969, Ser. No. 789,071

Int. Cl. C07d 9/42

U.S. Cl. 260—348 R

3 Claims

A method for the preparation of (cis-1,2-epoxypropyl)phosphonic dihalide which comprises treating propylene oxide with phosphorus trihalide in the presence of a suitable oxidizing agent. The dihalide product thus obtained has utility as an intermediate inasmuch as it may be subjected to hydrolysis to afford the corresponding (cis-1,2-epoxypropyl)phosphonic acid or the salts thereof. The said (cis-1,2-epoxypropyl)phosphonic acid product and its salts are antibiotics which have utility in inhibiting the growth of gram-negative and gram-positive pathogenic bacteria.

3,627,722

# POLYURETHANE SEALANT CONTAINING TRIALKYLOXYSILANE END GROUPS

George M. Seiter, Golden Valley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 746,305, now abandoned. This application May 28, 1970, Ser. No. 41,597  
Int. Cl. C08g 22/08

U.S. Cl. 260—37 N

17 Claims

A polyurethane sealant composition containing terminal—NCO groups, at least 5 percent of the —NCO groups being end-blocked with —Si(OR)<sub>3</sub> groups, where R is a lower alkyl. The terminal silane groups provide adhesion retention of the sealant to substrates such as metal or glass even after prolonged water immersion.

3,627,723

# FILLER LOADED ELASTOMERIC COMPOSITIONS HAVING IMPROVED EXTRUDABILITY AND PHYSICAL PROPERTIES

Thomas Joseph Kealy, and William John Keller, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 26, 1968, Ser. No. 787,250

Int. Cl. C08c 11/14, 11/18

U.S. Cl. 260—41.5 R

12 Claims

An elastomeric composition containing (a) an  $\alpha$ -olefin/nonconjugated diene copolymer, (b) a clay or carbon black filler and (c) a surfactant. The surfactant improves both the extrudability and vulcanizate properties of the copolymer.

3,627,724

# RUBBER COMPOSITIONS

Donald H. Lambert, Marlboro, Mass., assignor to Cabot Corporation, Boston, Mass.

Filed Dec. 3, 1969, Ser. No. 881,889

Int. Cl. C08d 9/00

U.S. Cl. 260—41.5 A

6 Claims

This disclosure relates to the use of certain disilazane treated colloidal silicas as processing aids for rubbery copolymers of styrene and butadiene.

3,627,725

# BIS (3,5-DIALKYL-4-HYDROXYBENZYL) MALONIC ESTERS FOR STABILIZING POLYMERS

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Original application Sept. 8, 1966, Ser. No. 577,847. Divided and this application Dec. 23, 1968, Ser. No. 804,035

Int. Cl. C08d 11/04; C08f 45/58

U.S. Cl. 260—45.85

8 Claims

Olefin polymers are effectively stabilized against oxidative degradation by the incorporation therein of small amounts of bis(3,5-dialkyl-4-hydroxybenzyl)malonic esters. Polyethylene and polypropylene stability is markedly improved by the addition of a stabilizing amount of diethyl- $\alpha$ , $\alpha$ -(3,5-di-t-butyl-4-hydroxybenzyl)malonate.

3,627,726

# POLYURETHANE COATINGS HAVING INTUMESCENT PROPERTIES

Arthur J. Krawczyk, Cheektowaga, N.Y., assignor to Textron Inc.

Filed Jan. 14, 1969, Ser. No. 791,136

Int. Cl. C08g 22/20; C09k 3/28

U.S. Cl. 260—45.7 P

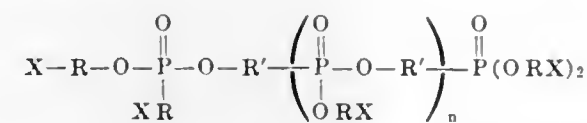
15 Claims

There is disclosed compositions having intumescent properties and containing a material of the formula

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wherein R and R' are alkylene of 1 to 3 carbon atoms. X is chlorine or bromine, and n is 1 to 4, and a polyurethane made by reaction of bis(2-isocyanatoethyl) fumarate and one or more polyhydroxy materials having a molecular weight of up to about 500 on a total carbon, hydrogen and oxygen basis.

3,627,727

# SUBSTITUTED DICARBOXYLIC ACID DIHYDRAZIDES AND POLYOLEFIN COMPOSITIONS CONTAINING THEM

Clarence E. Tholstrup, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

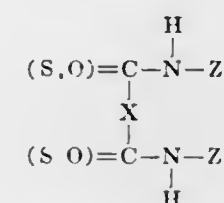
Filed Dec. 18, 1968, Ser. No. 784,921

Int. Cl. C08f 45/60

U.S. Cl. 260—45.8 N

11 Claims

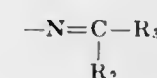
A new class of substituted dicarboxylic acid dihydrazides is disclosed having utility in polymeric materials to inhibit the pro-oxidant effects of certain metals. They are particularly effective in polyolefins which come into contact with copper. The substituted dicarboxylic acid dihydrazides are represented by the formula



wherein X is divalent organic radical, and

Z is —NHR, —N(R)<sub>2</sub>,

or



3,627,728

# DIARYL-P-PHENYLENEDIAMINE STABILIZERS FOR PEROXIDE-CURED POLYETHYLENE

Antonio H. Fernandes, Newark, and Charles E. McCormack, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 4, 1968, Ser. No. 781,262

Int. Cl. C08f 27/00, 27/22, 45/60

U.S. Cl. 260—45.9 R

1 Claim

In a process for producing cross-linked polyethylene by (1) mixing polyethylene with 1 to 10 parts of a tertiary organic peroxide and (2) heating the mixture to effect cross-linking, the improvement of adding to the mixture before the cross-linking step about from 0.25 to 2 parts of a stabilizer which is an N,N'-diaryl-p-phenylenediamine, all parts being by weight per 100 parts of polyethylene. A preferred diamine stabilizer weightper is that prepared by condensing 1 mole of hydroquinone with at least 2 moles of an amine mixture consisting of 75 to 90 percent by weight of o-toluidine and 25 to 10 percent by weight of technical mixed xylenes.

3,627,729

# CATALYZED SILICONE RESIN MOLDING COMPOSITION

Brian Robert Trego, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, Berkshire, England

Filed July 27, 1970, Ser. No. 58,703

Claims priority, application Great Britain, July 30, 1969, 38,157/69

Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 R

12 Claims

A mixture of organosiloxane resin and certain catalysts has been found to be particularly useful in transfer-molding and

3,627,730

# CURABLE EPOXY RESIN COMPOSITIONS CONTAINING PHTHALAMIC ACID-TYPE CURING AGENTS

Raymond Michael Moran, Jr., Brick Town, and Robert Paul Kretow, Lakewood, both of N.J., assignors to Ciba Corporation, Summit, N.J.

Filed Nov. 28, 1969, Ser. No. 880,960

Int. Cl. C08g 30/12

U.S. Cl. 260—47 CA

7 Claims

Certain phthalamic acid compounds are used as latent hardeners for epoxy resin materials. The hardener effect is achieved by curing at elevated temperatures. The compositions are useful as adhesives and in coating applications.

3,627,731

# REACTION OF POLYMETHYLBENZENES AND CARBON TETRACHLORIDE

Diana M. Curcio, Blawnox, Pa., and John M. Jarvie, Wilbraham, Mass., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 13, 1969, Ser. No. 824,309

Int. Cl. C07c 25/14

U.S. Cl. 260—651 R

2 Claims

This disclosure concerns the process of reacting carbon tetrachloride with polymethylbenzenes at a temperature above about 270° C.  $\alpha$ -chloroparaxylene is prepared from paraxylene.

3,627,732

# LIGHT-SENSITIVE POLYESTERS

John A. Ford, Jr., Robert C. McConkey, and Thomas M. Laakso, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 1, 1969, Ser. No. 846,952

Int. Cl. C08g 17/10

U.S. Cl. 260—75 UA

10 Claims

There is described a novel class of light-sensitive polyesters containing a 1-arylmethylidene-3-indenecarboxylate group or a 5-arylmethylidene-3-furanonecarboxylate group as an integral part of the polymer backbone. The polymers are insolubilized upon exposure to actinic radiation and are useful in the preparation of photomechanical images.

3,627,733

# METHOD FOR PARTICULARIZING THERMOPLASTIC POLYESTERS

Akira Ioka, Kawasaki-shi; Tsuneyuki Kato, Tokyo, and Yutaka Toyoda, Kawasaki-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Original application June 10, 1964, Ser. No. 374,173, now Patent No. 3,377,323. Divided and this application Dec. 5, 1967, Ser. No. 687,974

Int. Cl. C08g 53/03; C08f 43/03

U.S. Cl. 260—75 T

6 Claims

A method for particulating a thermoplastic polyester which has a solubility parameter in water of at least 10, and which is insoluble in water at the boiling point of water at normal pressure, such as polyethylene terephthalate, said method comprising heating a mass of the polyester in an autoclave solely in the presence of water up to the temperature that is lower than the melting point of the polyester to dissolve said thermoplastic polyester in the water and cooling or spraying through a nozzle the contents of the autoclave to produce a powder of the polyester.



3,627,734

**POLYESTER FIBER IMPROVED IN DYEABILITY, AND PROCESS FOR THE PREPARATION THEREOF**  
Shigehiro Ohuchi; Chikara Sano, both of Mishima-shi, Shizuoka-ken, and Eiichi Hayashi, Ehime-ken, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Oct. 8, 1969, Ser. No. 864,904

Claims priority, application Japan, Oct. 15, 1968, 43/74677

Oct. 15, 1968, 43/74678

Int. Cl. C08g 17/14, 39/04

U.S. Cl. 260—75 N

5 Claims

Polyester fibers containing acid dyes are rendered light fast by incorporating into the polyester melamine, or isomelamine, or various alkyl, aralkyl, cycloalkyl amino, substituted amino and other addition products thereof. The present invention relates to a polyester fiber which is dyeable with an acid dyestuff, and to a process for the preparation thereof.

3,627,735

**POLYURETHANE ELASTOMERIC-SHAPED ARTICLES CONTAINING REACTIVE SITES**

Louis E. Trapasso, 214 Jefferson Ave., Westfield, N.Y.

Continuation-in-part of application Ser. No. 537,279, Mar. 25, 1966, now abandoned. This application Nov. 12, 1969,

Ser. No. 876,025

Int. Cl. C08g 22/16, 51/58

U.S. Cl. 260—77.5 AM

14 Claims

Polymeric elastomers are prepared by chain extension of urethane prepolymer with guanidine. The imino hydrogen in the elastomeric chain is reactive toward isocyanate groups, thereby enabling cross linking and the direct chemical attachment of additives such as dye sites, antioxidants and the like directly to the polymer backbone either prior to or after article forming.

3,627,736

**POLYAMIDES FROM ISOPHORONE DIAMINE, HEXAMETHYLENE DIAMINE, ISOPHTHALIC ACID AND TEREPHTHALIC ACID**

Alaric Louis Jeffrey Raum, and Prem Sagar Thukral, both of 2 Castle Precinct, Llandough, Cowbridge, Glamorgan, Wales

Continuation-in-part of application Ser. No. 725,126,

Apr. 29, 1968, now abandoned. This application

May 28, 1970, Ser. No. 41,556

Int. Cl. C08g 20/20

U.S. Cl. 260—78 R

4 Claims

A tough transparent amorphous polyamide based on isophthalic acid, terephthalic acid, hexamethylene diamine to isophorone diamine wherein 5 to 50 moles percent of the diamines are based on isophorone diamine and at least 50 moles percent of the diamines are based on hexamethylene diamine. The polyamide has good impact strength, resistance to boiling water and little tendency to absorb water.

3,627,737

**FILAMENTS WET-SPUN FROM VISCOSITY-STABILIZED AROMATIC POLYAMIDES**

Ralph W. Smith, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.

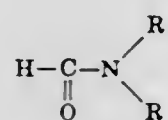
Filed Dec. 19, 1968, Ser. No. 785,370

Int. Cl. C08g 20/38

U.S. Cl. 260—78 R

3 Claims

Aromatic polyamides are advantageously viscosity-stabilized by the presence during polymerization of a stabilizing amount of a compound of the formula



wherein R is hydrogen, a lower alkyl radical or an aryl radical. The inherent viscosity of the polyamide is in the range of 0.8 and 2.4. Filaments wet-spun from such polyamide show improved tensile strength and resistance to abrasion.

3,627,738

**3-CYCLOALKYLTHIO-3-AZABICYCLO[3.2.2]NONANES AS INHIBITORS**

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

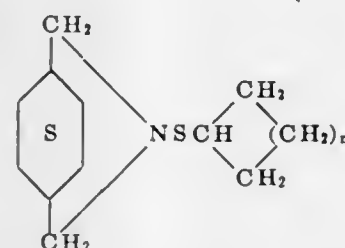
Filed Mar. 9, 1970, Ser. No. 17,970

Int. Cl. C08f 27/06; C07d

U.S. Cl. 260—79.5 B

21 Claims

Compounds of the formula



wherein *n* is two to nine which are stabilizers of organic compounds and inhibitors of premature vulcanization.

3,627,739

**POLYCYCLOLEFIN POLYMERIZATION PROCESS AND PRODUCTS**

Paul A. Devlin, Lafayette; Eugene F. Lutz, Walnut Creek, and Robert J. Patten, Pleasant Hill, all of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,661

Int. Cl. C08f 15/04, 7/02

U.S. Cl. 260—88.2 D

10 Claims

Heat curable polycycloolefin compositions comprising (1) a mixture of at least one polycycloolefin having a strained carbocyclic ring, and (2) at least one oxyhalide of molybdenum or tungsten containing at least three atoms of halogen per molecule, which compositions are curable to tough hard products.

3,627,740

**PROCESS FOR INCREASING THE MOLECULAR WEIGHT OF UNSATURATED POLYMERIC HYDROCARBONS**

Johannes Schafer; Frederico Engel, and Gerhard Berg, all of Marl, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany

Continuation of application Ser. No. 534,550, Oct. 14, 1965, now abandoned. This application Feb. 9, 1970, Ser. No.

9,106. Claims priority, application Germany, Oct. 14, 1964,

P 14 95 387.8

Int. Cl. C08f 1/56

U.S. Cl. 260—80.78

5 Claims

In the production of polydiolefins produced on the basis of Ziegler catalysts wherein the metallic compound of the Ziegler catalyst is from groups IV or V of Mendeleev's Periodic Table, a subsequent step is incorporated which comprises adding to the reaction solution after the desired conversion has been reached, a compound containing active hydrogen, such as an acid, in amounts of 0.002–2 mols per mol of the cocatalyst, e.g., triisobutyl aluminum, the degree of increase of the molecular weight corresponding to the amount of added compound containing active hydrogen.

3,627,741

**POLYMERIZATION PROCESS FOR PRODUCING UNIFORM ACRYLONITRILE POLYMERS USING CHLORATE/SULFOXY REDOX INITIATORS AND AMINO POLYACIDS OR SALTS THEREOF**

Luigi Patron, and Sergio Lo Monaco, both of Venezia, Italy, assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 22, 1967, Ser. No. 662,314

Int. Cl. C08f 3/76, 15/22

U.S. Cl. 260—85.5

7 Claims

The use of additive compounds such as ethylenediamine tetracetic acid, diethylenetriaminepentaacetic acid and nitrilotriacetic acid and their water-soluble salts has been found to enhance the uniformity of the polymerization of vinyl monomers when initiated by a redox catalyst system comprising chlorate ions and reducing sulfoxyl ions at pH below about 4.

3,627,742

**ALKANOLAMINES IN VINYL CHLORIDE SUSPENSION POLYMERIZATION**

Harry F. Kruse, Terre Haute, Ind., assignor to Commercial Solvents Corporation, New York, N.Y.

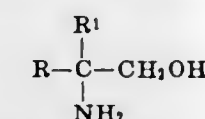
Filed Oct. 30, 1969, Ser. No. 872,763

Int. Cl. C08f 1/60, 1/80

U.S. Cl. 260—87.1

6 Claims

An improved process for the suspension polymerization of vinyl chloride or mixtures thereof with vinyl acetate by conducting the polymerization in the presence of from 0.2–2.0 phm of an alkanolamine corresponding to the formula



where R is hydrogen or an alkyl group of one to two carbon atoms and R<sup>1</sup> is hydrogen or a methyl radical thereby reducing fisheye formation, and improving thermal stability.

3,627,743

**PHOTORESIST POLYMER AND PROCESS FOR ITS PREPARATION**

Ram K. Agnihotri, Fishkill; Frank P. Hood, Poughkeepsie, and Lewis G. Lesoine, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,680

Int. Cl. C08f 27/00

U.S. Cl. 260—89.1

4 Claims

The resolution of cinnamate photoresist polymers is improved by dissolving the polymers in an inert solvent and treating the dissolved polymer with base such as an alkali metal hydroxide to increase the molecular weight and narrow the molecular weight distribution.

3,627,744

**METHOD FOR POLYMERIZING VINYL HALIDE POLYMERS**

Byrd Hopkins, Longmeadow, and Robert A. Bonsall, Wilbraham, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 12, 1968, Ser. No. 759,309

Int. Cl. C08f 1/11, 3/30, 15/00

U.S. Cl. 260—87.5

6 Claims

In a substantially isothermal process for the polymerization of vinyl halide monomer formulations in aqueous dispersion, the desired polymerization temperature is maintained by heat-exchange contact with the liquid phase, by condensation and return of vapors and by injection of a relatively low temperature inert liquid. Stable dispersion for the suspension/reflux polymerization temperature may be enhanced by use of a mixture of a cellulose ether, a partially hydrolyzed polyvinyl acetate and a sorbitan fatty acid ester.

3,627,745

**TERMINATION OF DIENE POLYMERIZATION**

Henry L. Hsieh, Bartlesville, Okla., and Francis X. Mueller, Jr., Louisville, Ky., assignors to Phillips Petroleum Company

Filed June 29, 1970, Ser. No. 50,956

Int. Cl. C08d 304, 308, 138

U.S. Cl. 260—94.7

4 Claims

A method of terminating the polymerization of monomers in which polymerization there is formed a metal-terminated polymer by introducing into the reaction mixture a lactone.

3,627,746

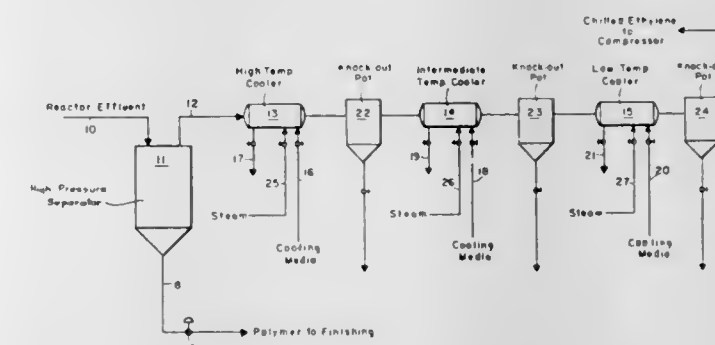
**LDPE RECYCLE SYSTEM DEFOULING METHOD**  
Charles D. Beals; George I. Fitzpatrick, and Kim L. O'Hara, all of Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed May 25, 1970, Ser. No. 41,242

Int. Cl. C08f 3/04

U.S. Cl. 260—94.9 P

5 Claims



A series of recycle coolers in a high-pressure polyethylene system are defouled by circulating ethylene feed using a compressor through the polyethylene system without addition of initiator and through the series of recycle coolers and maintaining during the sequential heating of each of said series of recycle coolers a temperature at the inlet of the compressor of the circulating feed less than the design temperature of the compressor which may be between about 150° to 225° F.

3,627,747

**MIXED CHROMIUM COMPLEXES OF A PHENYLAZONAPHTHYL DYESTUFF AND A PHENYLAZOPHENYL DYESTUFF**

Claude Marie Henri Emile Brouard, Sotteville les Rouen, France, assignor to Ugine Kuhlmann, Paris, France

Filed Jan. 22, 1969, Ser. No. 793,174

Claims priority, application France, Jan. 25, 1968, 137335

Int. Cl. C09b 45/06, 45/16; D06p 1/10

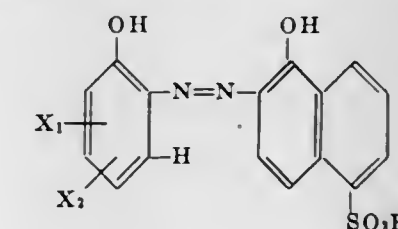
U.S. Cl. 260—145 A

2 Claims

Mixed chromium complexes are provided of the type:

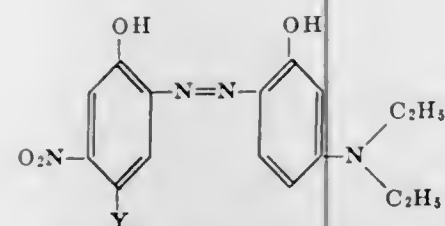
(I)—CR—(II)

wherein (I) represents the residue of a monoazo dyestuff of the formula:



in which X<sub>1</sub> and X<sub>2</sub> each represent a hydrogen or chlorine atom or an alkyl or nitro group, (II) represents the residue of a monoazo dyestuff of the formula:





in which Y represents a hydrogen or chlorine atom. These complexes are suitable for dyeing animal fibers, synthetic fibers or mixtures thereof and the color shades obtained have good fastness to rubbing and wet tests and also have an excellent fastness to light.

3,627,748

**MONODAZO PIGMENTS CONTAINING A BENZOXAZOLONE OR BENZTHIAZOLONE RADICAL**  
Armand Roueche, Neu-Allschwil; Willy Mueller, Riehen, and Rudolf Mory, Dornach, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

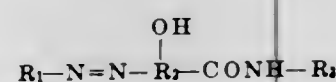
Filed Dec. 24, 1968, Ser. No. 786,727

Claims priority, application Switzerland, Jan. 3, 1968, 7/68 Jan. 12, 1968, 505/68, Nov. 13, 1968, 16920/68

Int. Cl. C09b 21/36

U.S. Cl. 260—152

Azo dyestuffs of the formula



in which R<sub>1</sub> represents an aryl residue, R<sub>2</sub> represents a naphthalene residue in which the azo, hydroxyl and carboxylic acid amide groups are in 1,2,3-position and R<sub>3</sub> represents a benzoxazolone or benzthiazolone radical bound to the —N—H— group in 5- of 6-position or R<sub>3</sub> represents an acridone radical are valuable pigments which are useful for coloring plastic masses in orange to red shades of high fastness to light and migration.

3,627,749

**MONO-AND DISAZO DYESTUFFS CONTAINING TRIAZINYLUREYLENE GROUPS**

Hans Ackermann; Herbert Seiler, and Hubert Meindl, all of Riehen, Switzerland, assignors to J. R. Gelgy A.G., Basel, Switzerland

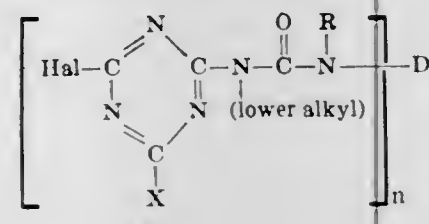
Continuation of application Ser. No. 517,998, Jan. 3, 1966, now abandoned, and a continuation-in-part of 380,677, July 7, 1964, now abandoned. This application Nov. 8, 1968, Ser. No. 800,300. Claims priority, application Switzerland,

July 10, 1963, 8591/63, Aug. 19, 1963, 10113/63, Jan. 8, 1965, 265/65

Int. Cl. C09b 62/04, 62/06, 62/08

U.S. Cl. 260—153

Reactive dyestuffs of the formula



wherein —N— is connected to a ring carbon of D;

R is a member selected from the group consisting of H and lower alkyl;  
D is an azo dyestuff chromophoric radical  
Hal is F, Cl, or Br;  
n is one of the integers 1 or 2; and  
X is a monovalent electron-donor substituent, selected from the group of lower alkoxy, phenoxy, halogen-substituted phenoxy, lower alkyl-substituted phenoxy, lower alkoxy-substituted phenoxy, lower alkylthio, phenylthio, halogen-substituted phenylthio, lower alkyl-substituted phen-

ylthio, lower alkoxy-substituted phenylthio, lower alkylamino, di(lower)alkylamino, phenylamino, N-lower alkyl-N-phenylamino, N-lower alkyl-N-halogen-phenylamino, N-lower alkyl-N-lower alkylphenylamino, N-lower alkyl-N-lower alkoxyphenylamino, piperidino or morpholino, halogen being chloro or bromo. These dyes are suitable for the dyeing of natural and synthetic polyamide fibers as well as for textile fibers containing hydroxyl groups, particularly for natural or regenerated cellulose fibers. The obtained dyeings and prints are distinguished by excellent wet fastness properties and good fastness to light.

3,627,750

**AZO PIGMENTS**

Karl Ronco, Riehen, Switzerland, assignor to Ciba Limited, Basel, Switzerland

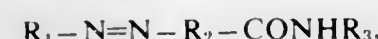
Filed Dec. 24, 1968, Ser. No. 786,751

Claims priority, application Switzerland, Jan. 10, 1968, 332/68

Int. Cl. C09b 29/26; D06p 1/08

U.S. Cl. 260—174

Azo dyestuffs of the formula



in which R<sub>1</sub> and R<sub>2</sub> each represents an aromatic radical and R<sub>3</sub> represents a hydroxynaphthalene radical in which the azo, hydroxyl and carboxylic acid amide groups are in the 1,2,3-position or R<sub>2</sub> represents the radical of an enolised or enolisable ketomethylene compound, and in which one of the radicals R<sub>1</sub> or R<sub>2</sub> possesses a group of formula —NHCOCONHR<sub>3</sub>, in which R<sub>3</sub> represents a hydrogen atom an alkyl or aryl radical or an azo dyestuff radical are valuable pigments which color rayon and viscose or cellulose ethers and esters in yellow to red shades of excellent fastness to migration.

3,627,751

**BASIC AZO DYESTUFFS CONTAINING ETHERIFIED HYDROXYLAMINE GROUPS**

Gert Hegar, Schoenenbuch, and Visvanathan Ramanathan, Basel, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Mar. 28, 1968, Ser. No. 717,011

Claims priority, application Switzerland, Apr. 4, 1967, 4743/67

Int. Cl. C09b 1/16, 29/08, 29/36

U.S. Cl. 260—205

Basic dyestuffs that are free from acidic groups imparting solubility in water which contain at least one etherified hydroxylamino residue which is linked through the nitrogen atom to a carbon atom of the dyestuff molecule, the corresponding quaternated dyestuffs and double salts thereof which dyestuffs are useful for dyeing synthetic fibers in strong level shades with good light fastness and good general fastness properties with good reserve to natural polyamide fibers.

3,627,752

**WATER-INSOLUBLE MONOAZO DYESTUFFS**

Dieter Cornelius, 47 Hebbelstrasse, 61 Darmstadt-Arheilgen; Hanswilli von Brachel, 11 Gutenbergstrasse, 605 Offenbach/Main, and Heinz Bender, Kirchgasse, 6 Bergen-Enkheim, all of Germany, assignors to Cossella Farbwerke Mainkur Aktiengesellschaft Frankfurt am Main, Germany

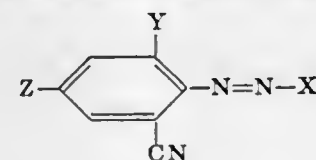
Filed Jan. 16, 1969, Ser. No. 791,773

Claims priority, application Germany, Jan. 19, 1968, P 17 19 066.8

Int. Cl. C07c 107/06, 107/08; C09b 29/06

U.S. Cl. 260—205

Water-insoluble monoazo dyestuffs of the formula:



wherein Y is alkylsulfonyl of one to two carbon atoms or nitro, Z is alkylsulfonyl of one to two carbon atoms or cyano, at least one of Y and Z being said alkylsulfonyl group, and X is the residue of a coupling component free from water-solubilizing groups, said dyestuffs being particularly useful for dyeing and printing synthetic fibers.

3,627,753

**ISO-ADENOSINE-3',5'-MONOPHOSPHORIC ACID AND ITS SALTS**

Theodore Posternak, Geneva, Switzerland; Georges (Dorde) Cehovic, Villejuif, France; Ilan Marcus, Geneva, Switzerland, and Sathyavathy Vengadabady, Vitry-sur-Seine, France, assignors to Agence Nationale de Valorisation de la Recherche, Hauts de Seine, France

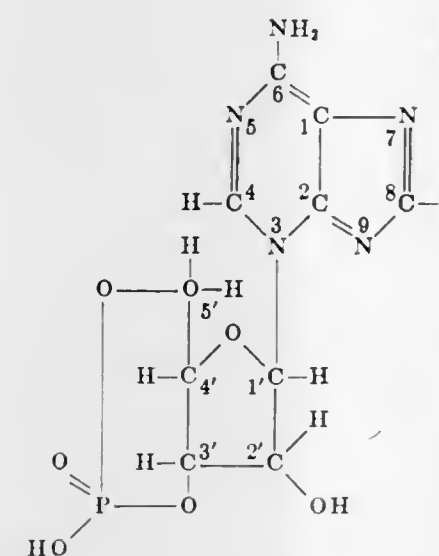
Filed Dec. 3, 1969, Ser. No. 881,857

Int. Cl. C07d 51/54

U.S. Cl. 260—211.5 R

4 Claims

The compound iso-adenosine-3',5'-monophosphoric acid is provided which has the formula



A method of preparing the compound is provided which comprises reacting adenosine 3',5'-monophosphoric acid with *p*-nitrophenol in the presence of dicyclohexyl carbodiimide and reacting the product with potassium *tert*-butoxide. Iso-adenosine-3',5'-monophosphoric acid may also be referred to as "cyclic iso-AMP". Similar to adenosine 3',5'-monophosphoric acid (cyclic AMP), known to act as second intracellular messenger with respect to a large number of hormones, cyclic iso-AMP generates the dispersion of melanophores in the skin of the frog *in vitro* and the dilatation of melanophores in the skin of the lizard *in vitro*, and it increases the liberation of the hormone thyrotrope (TSH) by hypophysis in rats *in vitro*, but has been discovered superior to cyclic AMP in these properties.

3,627,754

**PROCESS FOR PREPARING 7-LOWER ALKANOYL BENZODIAZEPINES UTILIZING CERIC SALTS**

Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 13, 1970, Ser. No. 37,021

Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 D

5 Claims

The present invention relates to processes for the preparation of 7-lower alkanoyl-1,4-benzodiazepin-2-ones utilizing ceric salts. The 7-lower alkanoyl benzodiazepin-2-ones are known to be useful as muscle relaxants, sedatives and anticonvulsants.

3,627,755

**(OPTIONALLY 17-ALKYLATED) 2α, 3α-EPOXY-ANDROSTANE-11β,17β-DIOLS, 19-NOR DERIVATIVES CORRESPONDING AND ESTERS THEREOF**

Paul D. Klimstra, Northbrook, and Charles S. Marks, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 29, 1968, Ser. No. 771,640

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55

10 Claims

11β,17β-Bisoxxygenated Δ<sup>2</sup>-steroids of the androstane and estrane families are contacted with a suitable epoxidizing agent to afford the corresponding 2α,3α-epoxides, which are useful pharmacological agents as evidenced by their antihormonal properties, e.g. antiestrogenic, antifertility, antidesoxycorticosterone acetate.

3,627,756

**N-DIALKYLAMINOALKYL-N-(2β,19-EPOXY-5α-ANDROSTAN-17β-YL)AMINES/FORMAMIDES AND 3α-HALO DERIVATIVES THEREOF**

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Apr. 23, 1970, Ser. No. 31,370

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55R

9 Claims

2β, 19-Epoxy-17-keto steroids are contacted with a dialkylaminoalkylamine to afford the corresponding 17-ylamines, which are reduced to the 17β-ylamines and the latter amines are converted to the corresponding formamides by reaction with a formylating agent. These novel compounds exhibit valuable pharmacological properties, e.g. antitumorogenic, antimicrobial and anti-inflammatory.

3,627,757

**6-ALKANOYLTHIO-4-EN-3-OXO STEROIDS AND PROCESS FOR PRODUCTION THEREOF**

Taichiro Komeno, Osaka-shi, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 610,825, Jan. 23, 1967, now abandoned, which is a division of application Ser. No. 335,662, Jan. 3, 1964, now Patent No. 3,300,485, which is a continuation-in-part of application Ser. No. 269,899, Apr. 2, 1963, now abandoned. This application Dec. 24, 1968, Ser. No. 786,728

Int. Cl. C07c 173/00, 169/20

U.S. Cl. 260—239.55D

15 Claims

Hormonal 6α-lower alkanoylthio-3-oxo-4-en-steroids are prepared from corresponding 6α-halo-3-oxo-Δ<sup>4</sup>-steroids and 6α-lower alkanoylthio-5-hydroxy-3-oxo-steroids. They are also useful as intermediates for synthesis of hormonal thieno-[4',3',2'-4,5,6]-steroids which have been disclosed in U.S. Pat. No. 3,300,485.

3,627,758

**STYRYL-NAPHTHALENE DERIVATIVES**

Kurt Weber, Basel; Peter Liechti, Binningen; Hans Rudolf Meyer, and Adolf Emil Siegrist, both of Basel, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Jan. 13, 1969, Ser. No. 790,864

Claims priority, application Switzerland, Jan. 15, 1968, 544/68

Int. Cl. C09b 23/14

U.S. Cl. 260—240 CA

10 Claims

The invention relates to new styryl-naphthalene derivatives which are useful as optical brighteners.

These new compounds are bis-styryl-naphthalenes containing in at least one of their ring systems at least one obligatory substituent of the group consisting of a possibly functionally modified sulfonic acid group, a sulfone group, a possibly functionally modified carboxylic acid group and a nitrile group.



3,627,759

## PHENTHAZINE DERIVATIVES

Jean-Claude Rene Georges Blondel, Savigny-sur-Orge, and  
 Jeans Clement Louis Fouche, Bourg-La-Reine, both of  
 France, assignors to Rhone-Poulenc S. A., Paris, France

Filed Nov. 21, 1968, Ser. No. 777,862

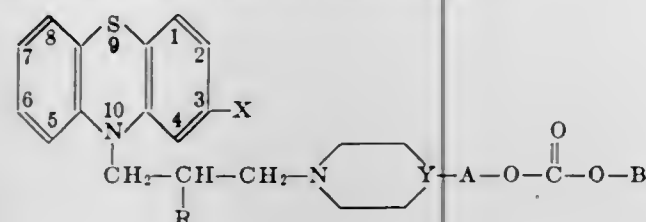
Claims priority, application France, Nov. 24, 1967, 129,636

Int. Cl. C07d 93/14

U.S. Cl. 260—243

8 Claims

Phenthiazine derivatives of the formula:



wherein X represents hydrogen, halogen, or alkyl, alkoxy, alkylthio, alkanoyl, dialkylsulphamoyl or alkanesulphonyl containing one through four carbon atoms, or cyano or trifluoromethyl, R represents hydrogen or methyl, Y represents a tertiary carbon atom or a nitrogen atom, A represents an alkylene group containing one through four carbon atoms or a radical  $-A_1-O-A_2-$  in which  $A_1$  and  $A_2$  represent alkylene group having at least one carbon atom, the total number of carbon atoms in the groups  $A_1$  and  $A_2$  not exceeding four carbon atoms, and B represents alkyl containing at least five carbon atoms, are very active as long-acting neuroleptics, anti-emetics and tranquilizers.

3,627,760

7-(HETEROCYCLYL MERCAPTOACETYLAMINO)-  
CEPHALOSPORAMIC ACIDS

Hans Bickel, Binningen; Rolf Bosshardt, Arlesheim; Bruno Fechtig, Reinach; Enrico Menard, Basel; Johannes Mueller, Arlesheim, and Heinrich Peter, Riehen, all of Switzerland, assignors to Ciba Corporation, Summit, N.J.

Filed Dec. 16, 1968, Ser. No. 784,213

Claims priority, application Switzerland, Sept. 13, 1968, 13750/68

Int. Cl. C07d 99/24

U.S. Cl. 260—243

9 Claims

7-(Heterocyclyl-mercaptoacetyl amino)-cephalosporanic acids.

Use: antibiotics.

3,627,761

PROCESS FOR THE PREPARATION OF  
CEPHALOSPORIN

Saul Lewis Neidleman, Lawrence Township; Jerold Alan Last, Princeton; Samuel Cheng Pan, Metuchen, and Joseph Edward Dollini, N. Brunswick, all of N.J., assignors to E.R. Squibb & Sons, Inc., New York, N.Y.

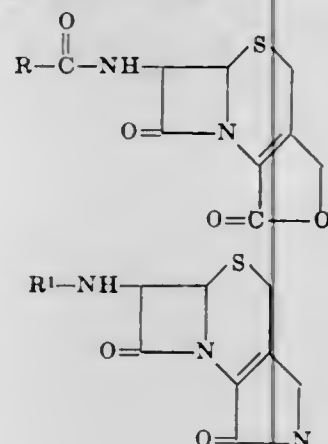
Filed Jan. 17, 1969, Ser. No. 792,164

Int. Cl. C07d 99/24

U.S. Cl. 260—243

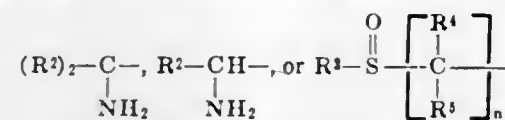
11 Claims

A process comprising the treatment of a compound selected from the group consisting of



and

where R represents alkyl having up to seven carbon atoms, phenyl, X-substituted phenyl, naphthyl, X-substituted naphthyl, pyridyl, pyrrol, furyl, thienyl, pyridyl-lower alkyl, pyrrol-lower alkyl, furyl-lower alkyl, thienyl-lower alkyl,



wherein  $R^2$  represents alkyl having up to seven carbon atoms, phenyl, X-substituted phenyl, naphthyl, cyclohexadienyl (e.g., 1,4-cyclohexadienyl, 1,3-cyclohexadienyl, and 2,4-cyclohexadienyl), X-substituted naphthyl, pyridyl, pyrrol, furyl, thienyl, pyridyl-lower alkyl, pyrrol-lower alkyl, furyl-lower alkyl, or thienyl-lower alkyl;  $R^3$  represents lower alkyl, monocyclic aryl, or monocyclic aryl-lower alkyl;  $R^4$  and  $R^5$  each represent hydrogen, lower alkyl, monocyclic aryl, or monocyclic aryl-lower alkyl;  $n$  is 1, 2, or 3; and X represents lower alkyl, lower alkoxy, or halo; and  $R^1$  represents triphenylmethyl, diphenylmethyl, or benzyl, said treatment comprising heating the above compounds to a temperature of about 25° C. to about 100° C. at a pH of about 6 to 11.5. Products prepared by means of the above reaction possess antibacterial activity against a large number of micro-organisms and are intermediates for the synthesis of related compounds (such as cephalothin, cephalixin, cephaloridine) which possess utility known to the art.

3,627,762

## 1,3-BENZOXAZINE-2-THIONES

Luigi Bernardi, Severina Coda; Gisbert Karl Suchowsky, and Lorenzo Pegrassi, all of Milan, Italy, assignors to Societa Farmaceutici Italia, Milan, Italy

Filed Apr. 30, 1968, Ser. No. 725,513

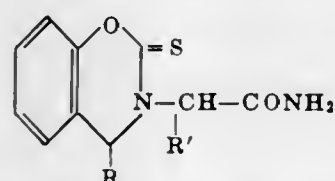
Claims priority, application Italy, July 25, 1967, 18753 A/67

Int. Cl. C07d 87/14

U.S. Cl. 260—244 R

4 Claims

Described are 1,3-benzoxazine-2-thiones of the formula



wherein R and R' are selected from the group consisting of hydrogen, methyl and ethyl. The following compounds come within the above formula: 3,4-dihydro-2-thioxo-2H-1,3-benzoxazine-3-acetamide; 3,4-dihydro- $\alpha$ -methyl-2-thioxo-2H-1,3-benzoxazine-3-acetamide; 3,4-dihydro-4-methyl-2-thioxo-2H-1,3-benzoxazines-3-acetamide. Also described is a process for preparing the compounds which display antidepressant properties.

3,627,763

## SUBSTITUTED 2-BENZYL-BENZOFURAN DERIVATIVES

Knut A. Jaeggi, Basel, and Ulrich Renner, Riehen, nr. Basel, both of Switzerland

Filed Sept. 2, 1969, Ser. No. 854,744

Int. Cl. C07d 5/40

U.S. Cl. 260—247.7 G

17 Claims

The compounds are of the class of substituted 2-[2-(p-alkoxybenzyl)-3-benzofuranyl]-ethylamines and pharmaceutically acceptable acid addition salts thereof and have analgesic, antitussive and spasmolytic properties; useful intermediates in the syntheses thereof are the correspondingly substituted 2-(p-alkoxybenzyl)-3-hydroxy-2,3-dihydro-3-benzofuranacetic acid alkyl esters, 2-(p-alkoxybenzyl)-3-benzofuranacetic acid alkyl esters and 2-(p-alkoxybenzyl)-3-benzofuran ethanols; also provided are pharmaceutical compositions comprising said benzofuranyl-ethylamines or pharmaceutical acceptable acid addition salts thereof and a pharmaceutical carrier as well as methods of producing analgesic and spasmolytic effects in a mammal comprising administering them.

3,627,764

## ADAMANTANOPYRIDAZINE COMPOUNDS

Stephen Slomo Szinai, Wokingham, and Jiban Kumar Chakrabarti, Frimley, both of England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 1, 1969, Ser. No. 821,078

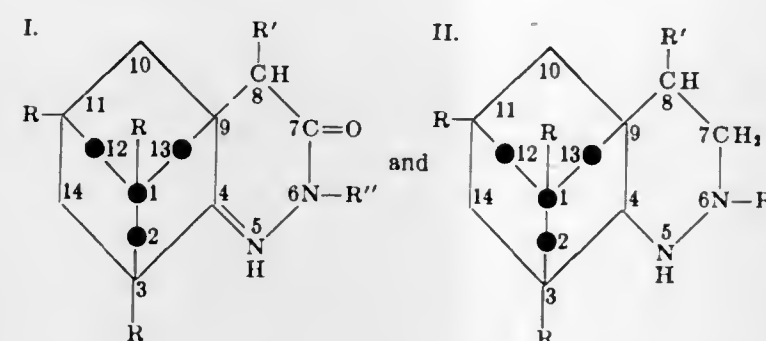
Claims priority, application Great Britain, May 21, 1968, 24,165/68

Int. Cl. C07d 51/04

U.S. Cl. 260—250

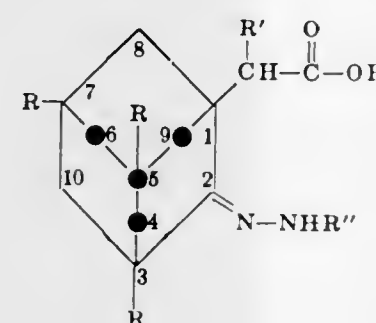
12 Claims

Adamantanopyridazine compounds of the formulas



and intermediates useful in the synthesis of these compounds, the intermediates being of the formula:

III.



The adamantanopyridazine compounds (formulas I and II) are useful as anti-inflammatory agents and as CNS depressants.

3,627,765

METHOD FOR THE PRODUCTION OF 2-SUBSTITUTED-  
4-AMINO-5-ACYLAMIDOMETHYLPYRIMIDINE

Masaaki Tsurushima, Kyoto, Japan, assignor to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed Sept. 19, 1969, Ser. No. 859,554

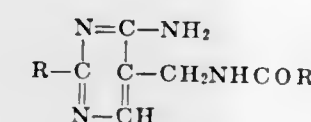
Claims priority, application Japan, Sept. 20, 1968, 43/68052

Int. Cl. C07d 51/46

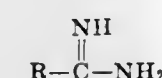
U.S. Cl. 260—256.4 N

7 Claims

Compounds of the formula



wherein R is lower alkyl or phenyl, such compounds being useful as intermediates in the preparation of vitamin B<sub>1</sub> or other pyrimidine derivatives, are synthesized by reacting 1,3-dihalogeno-2-cyanopropene with an amidine of the formula



wherein R has the same meaning as above, and subjecting the resultant product to hydrolysis.

3,627,766

5,6,7,8-TETRAHYDRO-PYRIDO[4',3':4,5]THIENO[2,3-  
D]PYRIMIDINES

Kurt Eichenberger; Paul Schmidt, both of Therwil, and Ernst Schweizer, Basel, all of Switzerland, assignors to Ciba Corporation, Summit, N.J.

Filed July 25, 1969, Ser. No. 845,054

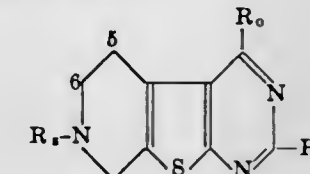
Claims priority, application Switzerland, Aug. 2, 1968, 11640/68 June 20, 1969, 9468/69

Int. Cl. C07d 99/06

U.S. Cl. 260—256.5 R

14 Claims

Compounds of the formula



in which  $R_0$  stands for an aminoalkylamino group,  $R_1$  and  $R_2$  for an optionally substituted hydrocarbon radical or hydrogen and which may be substituted in positions 5, 6 and/or 8 are useful as chemotherapeutic and prophylactic agents against malaria.

3,627,767

CERTAIN ALKYLENE UREA- OR THIOUREA-  
CONTAINING PHOSPHORUS COMPOUNDS

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Dec. 30, 1969, Ser. No. 889,310

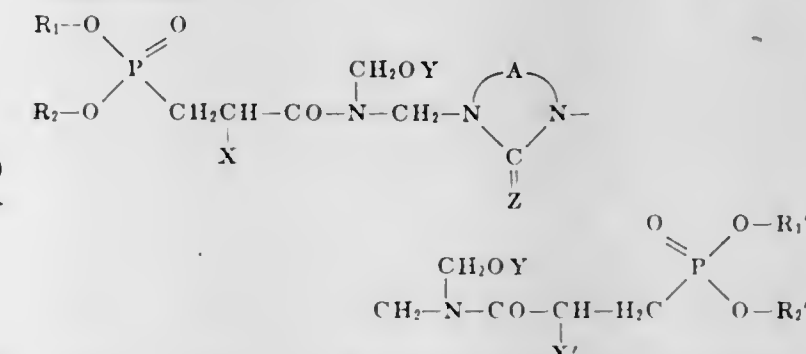
Claims priority, application Switzerland, Jan. 7, 1969, 123

Int. Cl. C07d 49/30, 51/18

U.S. Cl. 260—256.5 R

10 Claims

Phosphorus compounds are provided which correspond to the formula





wherein  $R_1$  and  $R_2$  are identical or different, and are hydrogen or alkyl, alkoxy, or alkylmercapto having one to four carbon atoms;  $R_3$  is alkyl or alkoxy which may also form a closed ring which may contain additional oxygen atoms and should contain one to eight carbon atoms;  $R_4$  is hydrogen or alkyl having one to four carbon atoms;  $X$  is oxygen, nitrogen, or sulfur;  $Y$  is alkylene having one to four carbon atoms; and  $n$  is an integer between zero and four, as well as the salts of such sulfonamides with physiologically tolerated bases, are provided as new blood sugar lowering compounds.

3,627,769

# 1-(4,5-DIHYDROTHIENO[2,3-B] [1] BENZOTHIOPIN-4-YL)-PIPERAZINES

Walter Schindler, Riehen, near Basel, and Armin Zust, Birsfelden, near Basel, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed June 10, 1969, Ser. No. 832,022

Claims priority, application Switzerland, June 20, 1968, 9210/68

Int. Cl. C07d 51/70

U.S. Cl. 260—268 TR

2 Claims

1-(4,5-Dihydrothieno[2,3-b] [1] benzothiepin-4-yl)-piperazine and the pharmaceutically acceptable acid addition salts thereof, exhibit central nervous system depressant effects, pharmaceutical compositions comprising said compound or a pharmaceutically acceptable acid addition salt thereof and a method for producing central nervous system depressant effects in a mammal comprising administering an effective amount of said compound or a pharmaceutically acceptable acid addition salt thereof.

3,627,770

# HETEROCYCLIC AMINO-OXAZOLINES

George Levitt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

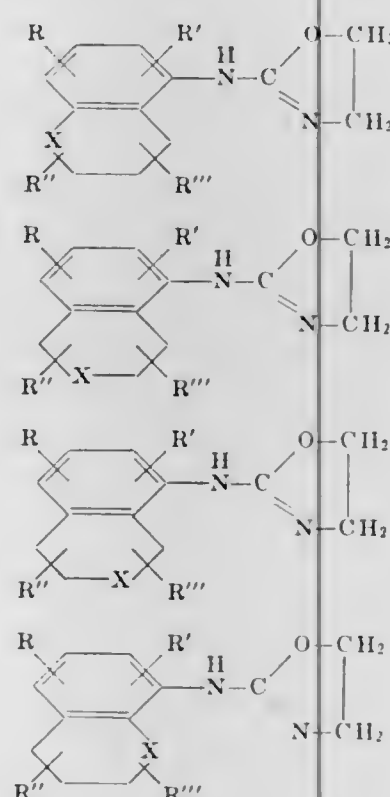
Original application June 12, 1967, Ser. No. 646,153, now Patent No. 3,511,851. Divided and this application Mar. 23, 1970, Ser. No. 022,028

Int. Cl. C07d 35/10, 33/10

U.S. Cl. 260—288

2 Claims

Amino-oxazolines useful as central nervous system depressants having the formula:



wherein

$X$  is oxygen, sulfur or methylamino;

$R$  is hydrogen or alkyl;

$R'$  is hydrogen, alkyl, alkoxy, alkylthio,

dimethylamino, fluorine, chlorine or bromine;

$R''$  is hydrogen or alkyl;

$R'''$  is hydrogen or alkyl.

Typical is 2-(8-thiochromanylamino)-2-oxazoline useful as a central nervous system depressant.

3,627,771

# RING CLOSURE WITH CYANOGEN BROMIDE

Russell Kwok, Concord, Calif., and Paul Franc, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 21, 1969, Ser. No. 818,091

Int. Cl. C07d 29/32

U.S. Cl. 260—293 E

2 Claims

A novel synthesis of 4-phenylpiperidines and related nitrogen heterocycles, using cyanogen bromide as the condensing agent.

3,627,772

# 1-LOWER ALKENYL-4-PHENYL-4-CARBONYL-PIPERIDINE DERIVATIVES AND SALTS

Kurt Freter, Beaconsfield, Quebec, Canada; Herbert Merz; Hans-Detlef Schroeder, and Karl Zeile, all of Ingelheim, Rhine, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

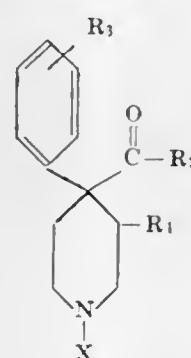
Continuation-in-part of application Ser. No. 859,519, July 28, 1969, now abandoned, which is a continuation of application Ser. No. 427,478, Jan. 22, 1965, now abandoned. This application Nov. 13, 1969, Ser. No. 876,570

Int. Cl. C07d 29/24

U.S. Cl. 260—294.3 E

7 Claims

Compounds of the formula



wherein

$R_1$  is hydrogen,  $\alpha$ -methyl or  $\beta$ -methyl,

$R_2$  is methyl, ethyl, n-propyl, methoxy, ethoxy or n-propoxy,

$R_3$  is methyl, hydroxyl, methoxy, acetoxy, fluorine, chlorine or bromine, and

$X$  is  $-\text{CH}_2-\text{CH}=\text{CHBr}$ ,  $-\text{CH}_2-\text{CH}=\text{CHCl}$ ,  $-\text{CH}_2-\text{CCl}=\text{CH}_2$ ,  $-\text{CH}_2-\text{CBr}=\text{CH}_2$ ,  $-\text{CH}_2-\text{CH}=\text{CCl}_2$ ,  $-\text{CH}_2-\text{CH}=\text{CBr}_2$ ,  $-\text{CH}_2-\text{CH}=\text{C}(\text{CH}_3)_2$ ,  $-\text{CH}_2-\text{C}(\text{CH}_3)=\text{CH}_2$ ,  $-\text{CH}(\text{CH}_3)-\text{CH}=\text{CH}_2$  or  $-\text{CH}_2-\text{CH}=\text{CH}(\text{CH}_3)$ ,

provided, however, that when  $X$  is  $-\text{CH}_2-\text{CH}=\text{CHCl}$ ,  $R_2$  is other than ethyl and  $R_3$  is other than 3-hydroxyl, and non-toxic, pharmacologically acceptable acid addition salts thereof, useful as morphine-antagonistic analgesics.

3,627,773

# 1,3,4,4A,5,9B-HEXAHYDRO-5-PHENYL-2H-INDENO[1,2-C]-PYRIDINES

Anton Ebnother, 2 Barenbrunnweg, 4144 Arlesheim; Jean-Michel Bastian, 5 Rheinparkstrasse, 4127 Birsfelden, and Fulvio Gadiant, 45 Baselerstrasse, 4127 Birsfelden, all of Switzerland assignor Sandoz Ltd. Basle, Switzerland

Filed Apr. 30, 1970, Ser. No. 33,499

Claims priority, application Switzerland, May 6, 1969, June 9, 1969, 8747/69, Dec. 11, 1969, 18423/69, Feb. 5, 1970, 1650/70, 6913/69

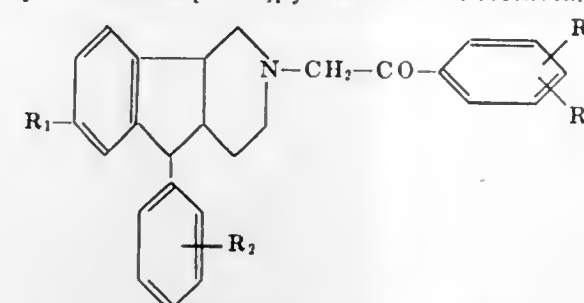
Int. Cl. C07d 39/00

U.S. Cl. 260—293.54

19 Claims

The invention concerns new (4aRS,5SR,9bSR)-, (4aRS,5SR,9bRS)- and (4aRS,5RS,9bRS)-1,3,4,4a,5,9b-hexahydro-

5-phenyl-2H-indeno[1,2-c]pyridines of the formula:



wherein  $R_1$  is hydrogen, lower alkyl, fluorine, bromine or chlorine, and each of  $R_2$ ,  $R_3$  and  $R_4$  are hydrogen, lower alkyl, fluorine, bromine, chlorine, lower alkoxy, lower alkylthio or trifluoromethyl. A process for the production thereof and intermediates therefor are also described. The compounds are serotonin-antagonists and furthermore inhibit hematoblast aggregation.

3,627,774

# PYRIDOXINE PYRIDOXAMINE AND PYRIDOXAL FLUFENAMATE SALTS

Raymond Francois Jacques Sarbach, Rue Philibert Collet, Chatillon-sur-Chalaronne (Ain); Dimitri Yavordios, Route de Thoissey, Chatillon-sur-Chalaronne (Ain); Le Hao Dong, 42 rue Pitot, Montpellier (Hérault); Jacques Mizoule, Chatillon-sur-Chalaronne (Ain), and Charles Ricci, 168 bis boulevard de le Croix-Rousse, Lyon (Rhône), all of France

Filed July 24, 1970, Ser. No. 58,147

Claims priority, application France, July 24, 1969, 6925288

Int. Cl. C07d 31/34

U.S. Cl. 260—295 S

1 Claim

The medicament contains pyridoxine flufenamate and an excipient to which may be added several compatible constituents such as vitamin B<sub>1</sub>.

3,627,775

# 1-ALKYL-1,2,5,6-TETRAHYDRO-3-PYRIDYLMETHYL CARBOXYLIC

Hans-Hugo Hubner; Gerhard Walther; Karl Zeile; Helmut Wick, and Klaus Stockhaus, all of Ingelheim, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim, Germany

Filed June 25, 1969, Ser. No. 836,658

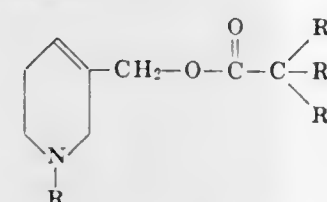
Claims priority, application Austria, June 25, 1968, A6098/68

Int. Cl. C07d 31/36

U.S. Cl. 260—295.5 R

8 Claims

1-alkyl-1,2,5,6-tetrahydro-3-pyridylmethyl carboxylic acid esters of the formula



wherein  $R$  is selected from the group consisting of alkyl of two to 10 carbon atoms optionally substituted with cyano or alkoxy of one to seven carbon atoms, branched alkyl of three to five carbon atoms, alkenyl of two to three carbon atoms optionally substituted with a halogen, alkynyl of two to three carbon atoms, cycloalkyl of three to six carbon atoms and phenyl alkyl of one to seven alkyl carbon atoms,  $R_1$  is selected from the group consisting of hydrogen, methyl,  $-\text{OH}$  and  $\text{Cl}$ ,  $R_2$  is selected from the group consisting of hydrogen, phenyl, cycloalkyl of five to six carbon rings and  $R_1$  and  $R_2$  together with the carbon to which they are attached form a five to six member cycloaliphatic ring,  $R_3$  is phenyl and when  $R_2$  and  $R_3$  are each phenyl they may optionally be linked together in the orthopositions by a direct bond or through an oxygen atom and their nontoxic, pharmaceutically acceptable acid addition salts and quaternary ammonium salts which compounds possess spasmolytic and

central sedative properties without undesirable side effects usually associated with spasmolytics.

3,627,776

# CERTAIN PHENOXY- AND PHENYLTHIO-1,2-BENZISOTHAZOLES AND THEIR PRODUCTION

Horst Bosmagen, Haan, and Manfred Plempel, Wuppertal-Elberfeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 17, 1969, Ser. No. 807,970

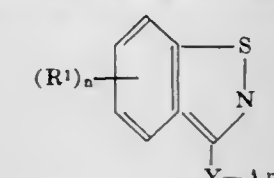
Claims priority, application Germany, Apr. 3, 1968, P 17 70 122.3

Int. Cl. C07d 91/12

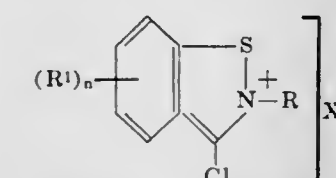
U.S. Cl. 260—304

12 Claims

1,2-benzisothiazole derivatives of formula



wherein  $Ar$  is phenyl, naphthyl, or phenyl or naphthyl substituted by one or more similar or different members selected from the group consisting of halogen, alkyl, alkoxy, alkylmercapto and nitro,  $Y$  is oxygen or sulfur  $R_1$  is hydrogen, halogen, alkyl, alkoxy, alkylmercapto or nitro and if there are two or three  $R_1$  moieties, they are the same or different and  $n$  is 1, 2 or 3, are useful as antimicrobials. The 1,2-benzisothiazole derivatives are produced by mixing a 3-chloro chloride of formula



wherein  $R$  is an aliphatic, araliphatic or aryl moiety,  $X$  is the anion of a strong inorganic acid and  $R$  and  $n$  are as above defined, with a phenol or thiophenol of the formula

$$Ar-Y-H$$

wherein  $Ar$  and  $Y$  are as above defined followed by heating to from about 150° to about 190° C.

3,627,777

# N-THIAZOLYL-OXODIAZACYCLOALKANES

Paul Schmidt, Therwil; Max Wilhelm, Allschwil, and Kurt Eichenberger, Therwil, all of Switzerland, assignors to CIBA Corporation, Summit, N.J.

Continuation-in-part of application Ser. No. 594,403, Nov. 15, 1966, now Patent No. 3,503,989, which is a continuation-in-part of application Ser. No. 564,536, July 12, 1966, now Patent No. 3,298,914, which is a continuation-in-part of

application Ser. No. 485,927, Sept. 8, 1965, now Patent No. 3,299,069, which is a continuation-in-part of application Ser. No. 447,868, Apr. 13, 1965, now abandoned, which is a

continuation-in-part of application Ser. No. 391,294, Aug. 21, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 282,589, May 23, 1963, now abandoned.

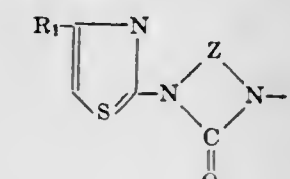
This application Nov. 3, 1969, Ser. No. 873,666

Int. Cl. C07d 91/34

U.S. Cl. 260—306.8 R

7 Claims

Compounds of the formula



in which  $R$  represents a hydrogen atom or an optionally substituted hydrocarbon radical,  $Z$  represents an optionally substituted alkylene radical and  $R$  stands for a hydrogen atom.



an acyl radical, an optionally substituted hydrocarbon radical or aliphatic character, are valuable intermediates for the preparation of the corresponding 5-nitrothiazolyl compounds which are valuable antiparasitic and antibacterial agents.

3,627,778

**N- AND N'-SUBSTITUTED N-BROMOACETYL UREAS**  
Ludwig Nusslein, and Ernst Albrecht Pieroh, both of Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

Filed July 18, 1968, Ser. No. 746,710

Claims priority, application Germany, Sept. 19, 1967, P 16 43 039.0

Int. Cl. C07d 49/34

U.S. Cl. 260—309.7

30 Claims

The specification discloses a group of N- and N'-substituted N-bromoacetyl ureas which have been found useful in the treatment of soil and seed, because they have a broad biocidal activity.

3,627,779

**SEALER OR PRIMER COMPOSITION OF AN ACRYLIC POLYMER HAVING ADHESION PROMOTING GROUPS AND AN EPOXY RESIN**

Richard A. Sandstedt, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1968, Ser. No. 783,399

Int. Cl. C08f 45/38

U.S. Cl. 260—31.8 M

3 Claims

A sealer composition or a primer composition that is used for the repair of a painted or an unpainted metal substrate having excellent adhesion to the substrate that has as the film-forming constituents

1. at least 50 percent by weight, based on the weight of the film-forming constituent, of an acrylic polymer of an acrylic ester that is an alkyl methacrylate or an alkyl acrylate in which the acrylic polymer has adhesion promoting groups attached to the polymer backbone;

2. at least 5 percent by weight of an epoxy resin; and

3. 0-40 percent by weight of an organic plasticizer.

3,627,780

**BIS-MALEAMIC COMPOUNDS**

Lucien Bonnard, and Pierre Grosjean, both of Lyon, France, assignors to Societe Rhodiaca, Paris, France

Filed Feb. 21, 1968, Ser. No. 707,283

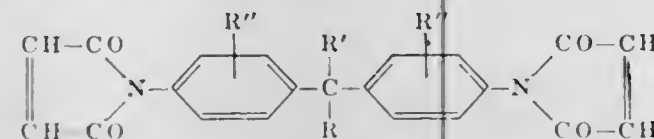
Claims priority, application France, Feb. 28, 1967, 96,872

Int. Cl. C07d 27/18

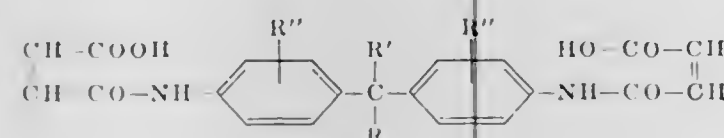
U.S. Cl. 260—326.3

7 Claims

New bis-imides of formula:



in which R is hydrogen, alkyl, cycloalkyl or aryl, R' is alkyl, cycloalkyl or aryl, or R and R' together form an alkylene group and R'' is hydrogen or lower alkyl, and made by dehydrating new acids of formula:



in which R, R' and R'' are as above.

The bis-imides can be formed into moulded cross-linked polymers by heating.

3,627,781

**DECARBAMOYLMITOSANES**

Keizo Uzu; Kinichi Nakano, and Toshinaka Takahashi, all of Tokyo-to, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 8, 1969, Ser. No. 814,278

Claims priority, application Japan, Apr. 11, 1968, 43/23704

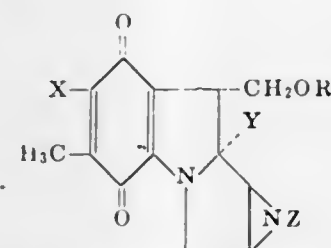
Apr. 11, 1968, 43/23706, May 2, 1968, 43/29122

Int. Cl. C07d 27/36

U.S. Cl. 260—326.3

18 Claims

Compounds of the formula



and processes for their preparation are provided wherein X is methoxy or amino, Y is methoxy, hydroxy or hydrogen when R1 is hydrogen and methoxy or hydroxy when R1 is R2CO, Z is hydrogen or methyl when R1 is hydrogen and methyl or R2CO when R1 is R2CO, R1 is hydrogen or R2CO and R2 is lower alkyl. These compounds are antibiotics.

3,627,782

**SYNTHESIS OF GRAMINE SALT OF NITROACETATE ESTERS**

Theodore Largman, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed June 12, 1969, Ser. No. 832,832

Int. Cl. C07d 27/56

U.S. Cl. 260—326.15

2 Claims

Tryptophan, an essential amino acid, is prepared from gramine and an ester of nitroacetic acid by combining gramine and the ester in an inert solvent maintained at about room temperature to form the corresponding salt, and then heating the salt in solution to convert it to the corresponding ester of  $\alpha$ -nitro- $\beta$ -(3-indole) propionic acid, which is reduced and hydrolyzed in accordance with conventional methods to afford tryptophan. The salt is a novel compound.

3,627,783

**1-AROYLINDOLE-3-ACETONITRILES**

George Gal, Watchung, and Meyer Slettinger, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Original application Feb. 16, 1967, Ser. No. 616,496, now Patent No. 3,470,203, Continuation-in-part of application Ser. No. 255,642, Feb. 1, 1964, now abandoned, Continuation-in-part of application Ser. No. 496,701, Oct. 15, 1965, now abandoned. Divided and this application Sept. 5, 1969, Ser. No. 870,814

Int. Cl. C07d 27/56

U.S. Cl. 260—326.16

3 Claims

1-Aroylindole-3-acetic acids are prepared via 1-aroyleindole-3-acetaldehydes and their acetals, or 1-aroyleindole-3-ethanols and their ethers and esters, or 1-aroyleindoxyls, or 1-aroyleindole-3-acetonitriles. The Fischer indole synthesis gives the acetals, ethers, esters or nitriles which are then aroylated in the 1-position. Hydrolysis to aldehydes and alcohols permits oxidation to the acids. The nitriles are hydrolyzed enzymatically to the acids. The 1-aroyleindoxyls, formed by ring closure of N-aroyleindole-3-carboxyphenyl alanines, are converted to the 1-aroyleindole-3-acetic acids via the malonic acid, Reformatsky, Grignard, or Wittig syntheses.

3,627,784

**HETEROCYCLIC PHOSPHORUS COMPOUNDS AND PROCESS FOR THEIR MANUFACTURE**

Hermann, Nachbur, Dornach; Joerg Kern, Oberwil/Basel-land, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Dec. 9, 1969, Ser. No. 883,627

Claims priority, application Switzerland, Dec. 18, 1968, 18918/68

Int. Cl. C07f 9/40

U.S. Cl. 260—338

8 Claims

Heterocyclic phosphorus compounds with a hetero-ring containing eight ring members, namely two carbon, two nitrogen and two oxygen atoms are provided. These compounds are manufactured by reacting 2 mols of at least one phosphonocarboxylic acid amide with at least 4 mols of anhydrous formaldehyde in the presence of an acid catalyst and in the absence of water. The phosphorous compounds are used for flameproofing and creaseproofing cellulose-containing textile material. They may be optionally used together with an aminoplast precondensate.

3,627,785

**BENZOFURAN-2-CARBOXYLIC ACIDS**

Janos Zergenyi, Riehen, and Ernst Habicht, Oberwil, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed July 7, 1969, Ser. No. 839,631

Claims priority, application Switzerland, July 22, 1968, 10967/68

Int. Cl. C07d 5/42

U.S. Cl. 260—346.2

4 Claims

Compounds of the class of 4-(2-methylene-alkoyl-2-carboxylic acids and the pharmaceutically acceptable salts thereof with bases have diuretic and saluretic effects in mammals; pharmaceutical compositions comprising said compounds and a pharmaceutical carrier, and methods of producing a diuretic and saluretic effect in mammals are provided; a typical embodiment is 6-methyl-4-(2-methylene-butyl)-benzofuran-2-carboxylic acid.

3,627,786

**CONTINUOUS PRODUCTION OF PARALDEHYDE**

Georges Gobron, and Marcel Repper, both of Melle, Deux-Sèvres, France

Filed July 2, 1969, Ser. No. 838,548

Claims priority, application France, Aug. 2, 1968, 491

Int. Cl. C07d 19/00

U.S. Cl. 260—340

10 Claims

This invention relates to a method of producing paraldehyde from acetaldehyde by passing a liquid feed stream of acetaldehyde through a reaction zone, the feed stream serving to maintain the solid catalyst in a highly dispersed and fluidized state.

3,627,787

**AMIDS- AND SULFONAMIDO-SUBSTITUTED FLUORANS**

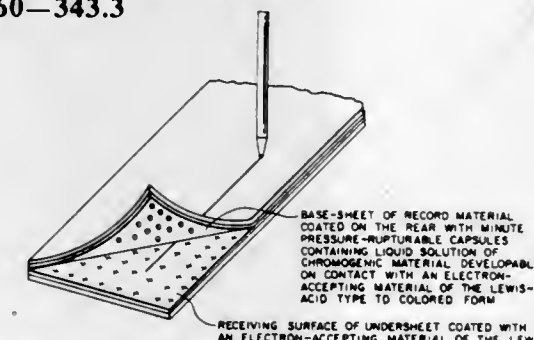
Chao-Han Lin, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 21, 1969, Ser. No. 792,435

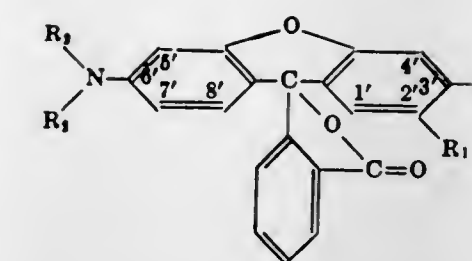
Int. Cl. C07d 21/00

U.S. Cl. 260—343.3

6 Claims



A chromogenic material of normally colorless form is disclosed, having a structural formula:



wherein R1 represents a radical having the structural formula —NH—CO—Y or a radical having the structural formula —NH—SO2b—Y wherein Y comprises phenyl, methoxyphenyl, naphthyl, quinolyl, benzyl, alkyl radicals having less than five carbon atoms, and amino-, nitro-, and alkyl-substituted phenyl radicals wherein the alkyl groups have less than five carbon atoms; R comprises hydrogen and alkyl radicals having less than five carbon atoms; and R2 comprises alkyl radicals having less than five carbon atoms. Examples include 2'-acetamido-6'-diethylaminofluoran; 6'-diethylamino-2'-(phenylacetamido)fluoran; 6'-diethylamino-2'-(p-toluenesulfonamido)fluoran; 2'-acetamido-6'-diethylamido-3'-methylfluoran; 6'-diethylamino-3'-methyl-2'-(p-toluenesulfonamido)fluoran; 6'-diethylamino-2'-(p-nitrobenzenesulfonamido)fluoran; 6'-diethylamino-3'-methyl-2'-(p-nitrobenzenesulfonamido)fluoran; 6'-diethylamino-2'-(2-naphthalenesulfonamido)fluoran; 6'-diethylamido-2'-(8-quinolinesulfonamido)fluoran; and 6'-diethylamino-2'-(4-methoxybenzenesulfonamido)fluoran.

3,627,788

**NAPHTHACENE DERIVATIVES**

Jean Bouchaudon, Morsang-Sur-Orge, and Georges Jolles, Sceaux, both of France, assignors to Rhone-Poulenc S. A., Paris, France

Filed Nov. 27, 1968, Ser. No. 779,632

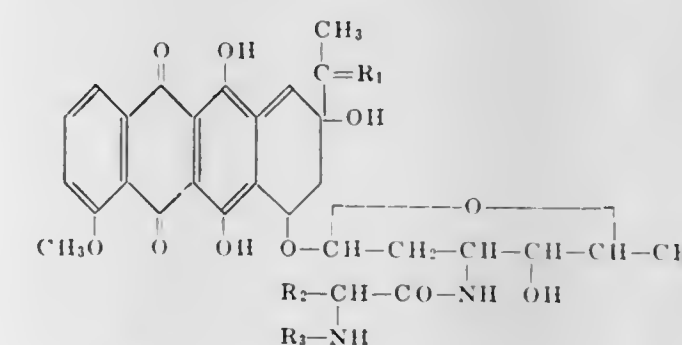
Claims priority, application France, Nov. 28, 1967, 130018

Int. Cl. C07d 7/04, 7/18

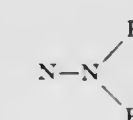
U.S. Cl. 260—345.7

7 Claims

Naphthalene derivatives of the formula:



wherein R1 represents an oxygen atom or a group of the formula



in which R4 represents hydrogen or an alkyl, alkanoyl, thioalkanoyl, aryl, aroyl, carbamoyl, thiocarbamoyl or amidino group, these groups being optionally substituted, and R5 represents hydrogen, or R4 and R5 together with the nitrogen atom to which they are attached represent piperazin-1-yl which carries on the second nitrogen atom an optionally substituted alkyl group, R2 represents hydrogen, or an alkyl group, an aminoalkyl radical which is optionally substituted on the amino group, or an aryl, aralkyl, heterocycl or heterocyclalkyl group and R3 represents hydrogen, or R2 and R3 together represent an alkylene group containing three to six carbon atoms, and salts thereof, possess antitumor properties.



3,627,789

## 3-OXO-STEROID-OXIMES

Georg Anner, Basel, and Peter Wieland, Oberwil/BL, both of Switzerland, assignors to CIBA Corporation, Summit, N.J.  
Filed Dec. 4, 1968, Ser. No. 781,273

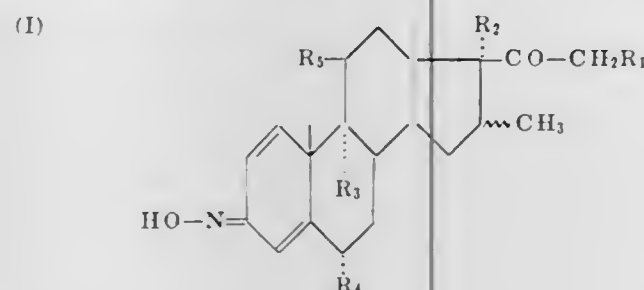
Claims priority, application Switzerland, Dec. 8, 1967,  
17253/67

Int. Cl. C07c 169/34

U.S. Cl. 260—397.45

3-Oxosteroid-oximes of the formula

7 Claims



in which  $R_1$  represents a free, esterified or etherified hydroxyl group,  $R_2$  a free or esterified hydroxyl group,  $R_3$  and  $R_4$  a hydrogen or fluorine atom each and  $R_5$  represents a hydroxyl or oxo group, and at least one of the substituents  $R_3$  or  $R_4$  must be fluorine and the 16-methyl group may be  $\alpha$ - or  $\beta$ -positioned, are compounds showing a good anti-inflammatory activity. They are prepared by oximation of corresponding 3-oxo compounds.

3,627,790

## ACTIVATED NICKEL CATALYSTS

Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 30, 1969, Ser. No. 846,236

Int. Cl. C07c 49/68

U.S. Cl. 260—369

12 Claims

Nickel-containing foraminous material is formed by leaching about 2–100 percent by weight of the aluminum from an alloy consisting essentially of about 25–47 percent by weight of nickel and about 53–75 percent by weight of aluminum, at least about 65 percent by weight of the nickel in the alloy being present as intermetallic  $NiAl_3$  compound. This foraminous material is useful as an activated catalyst for the hydrogenation of organic compounds and as an anode in fuel cells.

3,627,791

BIS(AMINOALKYLSULFAMOYL) ANTHRAQUINONES  
Johann Grisar, Arthur D. Sill, and Robert W. Fleming, all of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

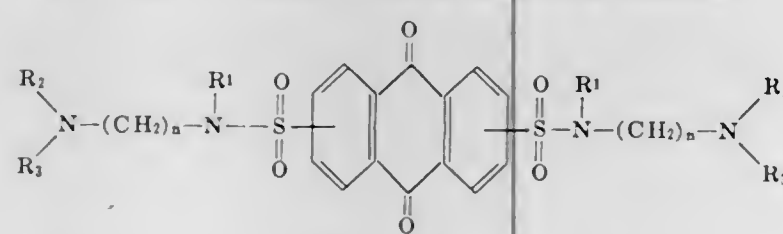
Filed Nov. 21, 1968, Ser. No. 777,885

Int. Cl. C07c 143/78

U.S. Cl. 260—371

7 Claims

A compound selected from a base of the formula



Formula I

wherein:

(A) each  $R^1$  is hydrogen or methyl;  
(B) each  $n$  is an integer of 2 to 4;

(C) each of  $R^2$  and  $R^3$  is alkyl of 3 to 5 carbon atoms or alkenyl of 3 to 5 carbon atoms; or a pharmaceutically acceptable acid addition salt of said base.

These compounds are useful as antiviral agents.

3,627,792

## PINK DYE FOR NYLON

Robert W. Eltonhead, Reading, Pa., assignor to Crompton & Knowles Corporation, Worcester, Mass.

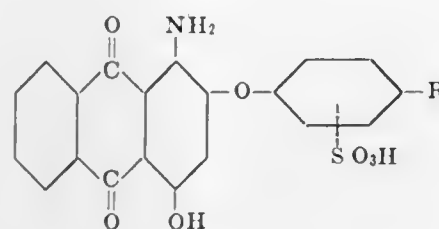
Filed May 3, 1965, Ser. No. 452,868

Int. Cl. C09b 1/54

U.S. Cl. 260—373

A compound of the formula

6 Claims



wherein  $R$  is H or an alkyl group of 4 to 9 carbon atoms, and the water-soluble sulfonic acid salts thereof.

3,627,793

## ANTHRAQUINONE DYES

Karl Maier, Ludwigshafen am Rhine, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Apr. 10, 1968, Ser. No. 720,353

Claims priority, application Germany, Apr. 14, 1967, P 16 44 468.1

Int. Cl. C09b 1/50

U.S. Cl. 260—376

2 Claims

1-amino-4-hydroxyanthraquinones containing in the 2-position a carboxyl group esterified by diols having four to 10 carbon atoms.

3,627,794

## SULFUR-CONTAINING COMPOUNDS

Robert A. Grimm, Savage, and Robert C. Slagel, both of Burnsville, Mich., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of application Ser. No. 544,401, Apr. 22, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 458,477, May 24, 1965, now abandoned.

This application Feb. 16, 1970, Ser. No. 10,095

Int. Cl. C071 7/22

U.S. Cl. 260—402.5

17 Claims

A class of bis organo sulfide and disulfide derivatives are provided by the reaction of an ethylenically unsaturated compound with either sulfur monochloride or sulfur dichloride to form the corresponding dichloride diadduct of which the chloro substituents are converted to a variety of other functional groups.

3,627,795

## CONTINUOUS PRODUCTION OF VITAMIN A PALMITATE

Horst Pommer, Ludwigshafen; Axel Nuerrenbach, Gruenstadt; Georg Klotmann, Ludwigshafen, and Hans Grassner, Heidelberg, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Mar. 16, 1970, Ser. No. 19,753

Claims priority, application Germany, Mar. 19, 1969, P 19 13 847.7

Int. Cl. C07c 175/00

U.S. Cl. 260—410

12 Claims

Vitamin A palmitate is prepared from vitamin A alcohol and palmitoyl chloride in the presence of a tertiary amine in a continuous process in which vitamin A palmitate is obtained in high purity and almost quantitative yields.

3,627,796

## CONTINUOUS PROCESS FOR PRODUCING FAT AND SOLIDS FROM WET BIOLOGICAL SUBSTANCE

Ezra Levin, Champaign, Ill., assignor to Viobin Corporation, Champaign, Ill.

Original application Nov. 2, 1964, Ser. No. 408,231, now Patent No. 3,538,973, dated Nov. 10, 1970. Divided and this application Apr. 9, 1969, Ser. No. 814,634

Int. Cl. C11b 1/10

U.S. Cl. 260—412.8

9 Claims

A continuous process for producing fat and defatted solids from biological substance having a high-moisture content. Particles of substance and a solvent capable of forming an azeotrope with water and removing fat from the substance are continuously introduced into a wet intake zone and heated together to distill off azeotrope. Fluent mixture with entrained particles is continuously bled from the wet intake zone to a dry outlet zone and further heated to further dry the entrained particles in isolation from the intake zone. Miscella with entrained particles is continuously bled from the outlet zone for filtering of the dried particles from the miscella and separation of the fat from the miscella. Course particles are preferably screened from the fluent mixture bled from the intake zone to the outlet zone. Large portions of the particles subjected to drying and defatting are removed to advantage from the intake zone and outlet zone respectively for further processing.

3,627,797

## TITANIUM HALIDE-MERCAPTAN AND PREPARATION THEREOF

Richard R. Durst, Stow, and Heinz Uelzmann, Cuyahoga Falls, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Original application Oct. 7, 1965, Ser. No. 493,868, now abandoned. Divided and this application May 14, 1969, Ser. No. 824,670

Int. Cl. C071 7/28

U.S. Cl. 260—429.5

4 Claims

Compositions of aluminum trihydrocarbyls (triisobutyl aluminum) and titanium (III) halide-amine hydrohalide complexes are useful in the polymerization of olefins and cyclic oxides such as ethylene, propylene, butadiene and propylene oxide. The complex has the formula  $YH^+(TiX_3)^-$  where  $Y$  is an amine having up to 20 carbon atoms and a pK value of not greater than 12,  $X$  is halogen and  $Ti$  has a valence of three and is prepared by reacting a mercaptan and an amine with a titanium tetrahalide. The resulting complex and disulfide can be separated from each other by virtue of their different solubilities. The process also affords a method of making a disulfide.

3,627,798

## PROCESS FOR PREPARING THE NICKEL DERIVATIVES OF METHYLENE BISPHENOL

Laird Gordon Lindsay Ward, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,905

Int. Cl. C071 15/04; C081 45/62

U.S. Cl. 260—439 R

11 Claims

A process for preparing nickel derivatives of methylene bisphenols in which a methylene bisphenol, a Group Ia metal alkoxide and a nickel salt are reacted in an essentially nonaqueous environment, and the nickel derivative is precipitated from solution. Novel nickel derivatives of methylene bisphenol, e.g., nickel hexachlorophene, are effective as light stabilizing additives in vinyl polymers.

3,627,799

## PROCESS FOR THE PREPARATION OF POLYHALOALKYL CHLOROFORMATES

David E. Young, Denville; Douglas E. Gould, Boonton; Lowell R. Anderson, Parsippany, and William B. Fox, Morris Township, Morris County, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 28, 1968, Ser. No. 771,369

Int. Cl. C07c 69/64; C01b 31/26; A01n 9/12

U.S. Cl. 260—463

11 Claims

Chloroformates of the formula:



wherein  $n$  is 1 or 2;  $R$  may be a radical selected from the group consisting of  $SF_3$  and an open chain YZ-perhaloalkyl group when  $n$  is 1.  $R$  may be an open-chain YZ-perhaloalkylene group containing at least three carbon atoms when  $n$  is 2, wherein  $Y$  and  $Z$  are substituents on the  $R$  moiety and are the same or different electronegative groups; may be prepared by reacting hypochlorites of the formula  $R-(OCl)_n$  wherein  $R$  and  $n$  are as defined above, with carbon monoxide. The novel chloroformates are useful as catalysts for the polymerization of unsaturated compounds, as agricultural fumigants and in the preparation of polycarbonates, polyesters and formaldehyde polymers.

3,627,800

## ORGANOSILICON COMPOUNDS

William J. Owen, Penarth, and Bryan E. Cooper, Bridgend, both of Wales, assignors to Midland Silicones Limited, Berkshire, England

Filed Apr. 9, 1970, Ser. No. 27,104

Claims priority, application Great Britain, Apr. 11, 1969, 18,780/69

Int. Cl. C071 7/02, 7/04

U.S. Cl. 260—448.2 N

4 Claims

Organosilicon compounds defined by the formula



are prepared by reacting  $R_3SiCH_2X$  with  $HR'NArNR'H$ , where  $R$  is an alkyl, alkenyl, alkoxy or aryl radical,  $R'$  is H, alkyl or  $R_3SiCH_2$ ,  $X$  is Cl, Br or I,  $R''$  is H or alkyl and  $Ar$  is phenylene or diphenylene. These compounds are useful as oxidation and ozone inhibitors in organic rubbers and polymeric materials and as oxidation detection additives.

3,627,801

## FLUOROAROMATIC-CONTAINING ORGANOSILICON COMPOUNDS

Ogden R. Pierce, and John R. Greenwald, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

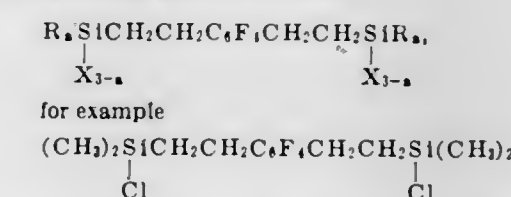
Filed Aug. 27, 1970, Ser. No. 67,617

Int. Cl. C071 7/08, 7/18

U.S. Cl. 260—448.2 D

16 Claims

Compounds of the general formula



can be hydrolyzed and condensed to produce polymeric fluids, elastomers and resins.

3,627,802

## MERCAPTOMETHYL ALKOXY SILANES

Kenneth M. Lee, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 4, 1969, Ser. No. 847,437

Int. Cl. C071 7/02, 7/04

U.S. Cl. 260—448.2 E

2 Claims

Compounds of the formula  $HSCH_2(R'_{3-x})Si(OR)_x$  are prepared by reacting the corresponding thioacetates having



the group  $\text{CH}_3(\text{C}=\text{O})\text{SCH}_2\text{Si}$  with an alcohol under basic conditions to give mercaptomethylsilanes and the acetate ester of the alcohol. For example, thioacetoxymethyl trimethoxysilane is reacted with methanol in the presence of sodium methoxide to give mercaptomethyl trimethoxysilane and methyl acetate. mercaptomethylsilanes are used to couple siliceous substances, such as clay, to diene polymers.

3,627,803

# **HIGH TEMPERATURE METHOD OF PREPARING ORGANOSILICON HYDRIDE COMPOUNDS**

Keith W. Michael, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 3, 1969, Ser. No. 873,519

Int. Cl. C071 7/02, 7/04

U.S. Cl. 260—448.2 E

6 Claims

Aluminum alkyls are reacted with halo and/or alkoxysilanes at 300° C. or above to give silanes containing SiH groups without alkylation of the silicon. For example, a mixture of triethyl aluminum and dimethyldichlorosilane was heated in a tube at 450° C. for less than one second to give dimethylchlorosilane and dimethylsilane without the formation of ethylsilicon bonds.

3,627,804

# **ORGANOSILICON COMPOUNDS**

Grish Chandra, and William J. Owen, both of Penarth, Wales, assignors to Midland Silicones Limited, Reading, Berkshire, England

Filed Nov. 24, 1969, Ser. No. 879,548

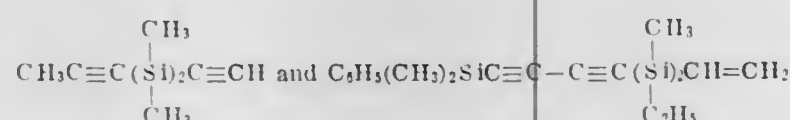
Claims priority, application Great Britain, Dec. 4, 1968, 57,632/68

Int. Cl. C071 7/08

U.S. Cl. 260—448.2 Q

2 Claims

Organosilicon compounds having acetylenic substituents in the molecule are defined by the formula  $\text{R}'(\text{C}\equiv\text{C})_n(\text{R}_2\text{Si})_m(\text{C}\equiv\text{C})_m\text{R}'$ , where R is a monovalent hydrocarbon or halogenohydrocarbon radical, preferably methyl or phenyl, R' is H, alkyl, alkenyl, phenyl or triorganosilyl and when n is 0, at least one R' is  $\text{R}(\text{R}_2\text{Si})_p$ —where p is 2, 3 or 4, m is 0, 1 or 2, n is 0, 2, 3 or 4, and when n is 0, m is 1. Examples of such compounds are



These compounds are useful as intermediates in preparing polymeric organosilicon compounds and as modifiers for organic polymers as well as for use as ultraviolet absorbers.

3,627,805

# **PREPARATION OF CYCLIC SILOXANES**

David Randall Thomas, and John Francis, both of Glamorgan, England, assignors to Midland Silicones Limited, Reading, Berkshire, England

Filed Nov. 25, 1969, Ser. No. 879,908

Claims priority, application Great Britain, Dec. 11, 1968, 58,846/68

Int. Cl. C071 7/02

U.S. Cl. 260—448.2 E

6 Claims

Hydrolyzable dimethylsilanes containing two hydrolyzable substituents per molecule are contacted with water at a temperature above 200° C. to produce high yields of low-molecular weight cyclic dimethylsiloxanes. The cyclic siloxanes are useful as fluids and as intermediates in preparing silicone rubber polymers.

3,627,806

# **CARBOXY-FUNCTIONAL HYDROLYZABLE SILANES**

Gary E. LeGrow, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 29, 1969, Ser. No. 888,939

Int. Cl. C071 7/18; C23c 11/06

U.S. Cl. 260—448.2 B

6 Claims

Silanes of the formula  $(\text{HOOC})_n\text{RSR}'\text{Si}(\text{R}''_n)\text{Y}_{3-n}$  are made by adding unsaturated acids to  $\text{HSR}'\text{Si}(\text{R}''_n)\text{Y}_{3-n}$  or by adding mercapto carboxylic acids to alkenyl-Si( $\text{R}''_n$ ) $\text{Y}_{3-n}$ . For example, thioglycolic acid is added to vinyltrimethoxysilane in the presence of a free radical generator to give  $\text{HOOCCH}_2\text{SCH}_2\text{CH}_2\text{Si}(\text{OMe})_3$ . The acids are used as adhesion promoters for silicon rubber.

3,627,807

# **METHOD OF PREPARING ORTHOSILICIC ACID TETRAALKYL ESTERS**

Otto Bleh, Berghelm Nachtigallenweg; Walter Rogler, Ranzel Gierslingerstr. 6, and Wilhelm Joch, Niederkassel Gartenweg 4, all of Germany

Filed Aug. 18, 1969, Ser. No. 851,108

Claims priority, application Germany, Aug. 17, 1968, P 17 93 222.8

Int. Cl. C071 7/18

U.S. Cl. 260—448.8 A

13 Claims

Process for the preparation of orthosilicic acid tetraalkyl esters by the reaction of at least one of silicon, iron silicide and ferrosilicon with the corresponding alcohol in the presence of the corresponding alkali alcoholate which comprises carrying out the reaction in the presence of 70 to 99 percent by weight referred to the total amount of liquid present and preferably in the presence of 80 to 90 percent by weight of the orthosilicic acid tetraalkyl ester and continuously introducing the alcohol during the reaction.

3,627,808

# **PRODUCTION OF TRIPHENYLALUMINUM**

Roland Streck, Marl, Germany, assignor to Chemische Werke Huels A.G., Marl, Germany

Filed Dec. 2, 1968, Ser. No. 780,575

Claims priority, application Germany, Dec. 8, 1967, P 16 43 839.4

Int. Cl. C071 5/06

U.S. Cl. 260—448 A

12 Claims

For the production of triphenylaluminum in high yields,  $(\text{C}_6\text{H}_5)_3\text{AlCl}_{3-n}$  is reacted with  $\text{AlR}_3$  wherein n is a member above 0 and less than 3 and R represents lower alkyl.

3,627,809

# **2-METHYLENE-3-BUTENYL ISOCYANATE AND PREPARATION THEREOF**

Robert J. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 24, 1969, Ser. No. 819,119

Int. Cl. C07c 119/04

U.S. Cl. 260—453 AL

4 Claims

2-Methylene-3-butenyl isocyanate is prepared by the reaction of a quaternary ammonium cyanate with 2-chloromethyl-1,3-butadiene or the reaction of phosgene with 2-aminomethyl-1,3-butadiene. As a butadiene it is copolymerizable with butadiene, acrylonitrile and other olefinic monomers to produce polymers having pendant NCO groups and useful as adhesives. As an isocyanate it is reactive with active hydrogen compounds to produce urethanes, ureas, etc.

3,627,810

# **PROCESS FOR MAKING ORGANIC CARBONATES**

Kuo Y. Chang, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 12, 1970, Ser. No. 2,365

Int. Cl. C07c 69/00

U.S. Cl. 260—463

5 Claims

Carbonate esters of higher alcohols are made by the reaction of lower chloroformates with a solution of an alkali metal salt of a higher alcohol in a higher alcohol. The esters thus produced are essentially halogen-free and hence are especially useful in hydraulic fluids, lubricants and plasticizers.

3,627,811

# **ISOCYANO-DIPHENYL ETHERS AND THIOETHERS**

Ingeborg Hammann, Cologne, Germany; Peter Hoffmann, Hollywood, Calif.; Helmut Kleimann, Leverkusen; Dieter Marquarding, Bonn; Klaus Offermann, Dormagen, all of Germany; Ivar Ugi, Santa Monica, Calif., and Gunter Unterstenhofer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 1, 1969, Ser. No. 812,361

Claims priority, application Germany, Apr. 4, 1968, P 17 68 130.0

Int. Cl. A01n 9/20; C07c 121/60

U.S. Cl. 260—465 F

10 Claims

Isocyano-diphenyl ethers and thioethers, i.e. isocyano-(optionally mono- and di- chloro, alkyl and alkoxy)-4'-alkyl-diphenyl ethers and thioethers, or 1-(4'-alkyl-phenoxy and -phenylmercapto)-(optionally 2,3,4,5 and/or 6-mono- and di-chloro, alkyl and alkoxy)-phenyl-isocyanides, which possess pesticidal, especially acaricidal, properties.

3,627,812

# **COTELOMERS OF VINYL ESTERS OF LOWER ALKANOIC ACIDS**

Joseph K. Hoffman, Oldwick, and James P. Russell, Berkeley Heights, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Original application July 31, 1964, Ser. No. 386,593. Divided and this application Dec. 22, 1969, Ser. No. 887,026

Int. Cl. C07c 67/00, 69/16, 121/16

U.S. Cl. 260—465.4

3 Claims

Cotelomers of vinyl esters of lower alkanolic acids, such as vinyl acetate, wherein the telogen is an alkanol containing up to eight carbon atoms, a lower alkyl ester of a lower alkanolic acid, acetonitrile, toluene, or a lower alkane glycol, and the cotaxogen is crotonic acid, a lower alkyl vinyl ether, an alpha-olefin, a lower alkyl maleate, acrylonitrile, vinyl cyclohexene, cyclododecene, vinylidene chloride, or acetylene, are produced by reacting the vinyl ester with the telogen at a temperature of 90° to 250° C. and at a pressure of 50 to 7,500 p.s.i. in the presence of a free-radical-forming catalyst or initiator effective for the polymerization of vinyl acetate, the vinyl ester and the telogen having a residence time in the reaction of 0.5 to 60 minutes, preferably 1 to 10 minutes.

3,627,813

# **PROCESS OF PREPARING CARBAMATES**

Franklin W. Abbate, North Haven, and William J. Farrissey, Jr., North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 3, 1969, Ser. No. 796,209

Int. Cl. C07c 125/06

U.S. Cl. 260—471 C

10 Claims

N,N'-dihydrocarbylureas are converted to the corresponding alkyl N-hydrocarbylcarbamates by heating at 60° C. to 200° C. with a dialkylcarbonate in the presence of a base catalyst (tertiary amine preferred). The process can be ap-

plied to simple ureas and to compounds containing a plurality of 3-hydrocarbyl-ureido groups in the molecule. The process can also be employed to modify polyurethanes containing one or more urea linkages in the polymer chain; the latter is cleaved at one or more of the urea linkages with the formation of the corresponding carbamate-terminated polymer.

3,627,814

# **ALKYL CARBAMATE DERIVATIVES OF $\alpha$ -HYDROXYACETOPHENONE OXIME**

Tomas L. Fridinger, Woodbury Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 16, 1970, Ser. No. 11,870

Int. Cl. C07c 131/00

U.S. Cl. 260—482 C

5 Claims

N-alkyl- and N,N-dialkylcarbamates of  $\alpha$ -hydroxyacetophenone oxime wherein both the oxime group and the hydroxy group are carbamoylated have insecticidal activity. The bis-(alkyl carbamates) may be prepared in one step by reaction of an excess of alkyl isocyanate with  $\alpha$ -hydroxyacetophenone oxime, while the unsymmetrical carbamates are prepared e.g. by a series of steps in which the latter compound is e.g. reacted first with slightly more than one equivalent of one isocyanate, and then with an excess of a different isocyanate.

3,627,815

# **1-CYANOBICYCLO 2.1.0 PENTANE, 1-CYANOBICYCLO 3.1.0 HEXANE, THEIR HOMOPOLYMERS AND THEIR PREPARATION**

Henry K. Hall, Jr., Tucson, Ariz., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 27, 1970, Ser. No. 15,213

Int. Cl. C07c 121/46

U.S. Cl. 260—464

3 Claims

Described are the two polymerizable strained-ring compounds 1-cyanobicyclo[2.1.0]pentane and 1-cyanobicyclo[3.1.0]hexane and their respective solid homopolymers.

3,627,816

# **N-CARBONIC ACID DERIVATIVES OF CYANO CONTAINING 1,2-DICARBONYLPHENYLHYDRAZONES**

Karl Heinz Buchel; Wilfried Draber, both of Wuppertal-Eilberfeld, and Ingeborg Hammann, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 19, 1968, Ser. No. 785,391

Claims priority, application Germany, Jan. 2, 1968, P 16 68 071.0

Int. Cl. C07c 121/52, 121/60

U.S. Cl. 260—465 D

8 Claims

N-carbonic acid derivatives of 1,2-dicarbonylphenylhydrazones, i.e. N-(alkoxy, phenoxy, alkylmercapto, cyclohexyloxy and dialkylamino-carbonyl and -thiono)-N-(alkyl- and/or electronegative substituent [e.g. halo, haloalkyl, nitro and/or alkyl sulfonyl]-substituted phenyl)-N'-( $\alpha$ -cyano- $\alpha$ -[alkanoyl and carboalkoxy]-carbonyl)-hydrazones, which possess arthropodocidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding alkali metal salt of a 1,2-dicarbonylphenylhydrazone, or such 1,2-dicarbonylphenylhydrazone in the presence of an acid-binding agent, with the corresponding carbonic acid chloride.



3,627,817

**PROCESS FOR PREPARING ALIPHATIC DINITRILES FROM CYCLOHEXANE OR CYCLOHEXENE**

Clive Barnett; John Dewing, and Anthony Howden Jubb, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 25, 1968, Ser. No. 770,825

Claims priority, application Great Britain, Nov. 6, 1967, 50,334/67

Int. Cl. C07c 121/02, 121/26

U.S. Cl. 260—465.3

5 Claims

A process for the preparation of aliphatic dinitriles, particularly adiponitrile, by reacting cyclohexane or cyclohexene with ammonia and oxygen at elevated temperature in the presence of an antimony oxide catalyst.

3,627,818

**BRANCHED DIESTERS**

Edward S. Blake, Kettering, Ohio, assignor to Monsanto Research Corporation, St. Louis, Mo.

Original application Mar. 30, 1967, Ser. No. 626,955, now abandoned, Continuation-in-part of application Ser. No. 333,190, Dec. 24, 1963, now abandoned. Divided and this application Jan. 31, 1969, Ser. No. 825,459

Int. Cl. C07c 69/16

U.S. Cl. 260—476 R

5 Claims

As new compounds, diesters of mono- and dicarboxylic acids, having terminal dimethyl(phenyl)methyl groups and having no hydrogen atoms on the beta carbon atoms of the alcohol or diol. They are useful as functional fluids and have high oxidative stability.

3,627,819

**ADDUCTS OF ALKENYL ISOCYANATES WITH POLYGLYCOLS**

Robert M. Nowak; James T. K. Woo, and Dietrich H. Heinert, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 16, 1969, Ser. No. 833,713

Int. Cl. C07c 125/06

U.S. Cl. 260—482 B

5 Claims

Vinyl isocyanate and isopropenyl isocyanate react with polyalkylene glycols such as polyethylene glycol and polypropylene glycol to form the corresponding bis(N-alkenylcarbamate) esters. These divinyl monomers are particularly useful as cross-linking agents for modifying the properties of polymers such as polyvinyl acetate.

3,627,820

**POLYMERIZATION PROCESS**

Kiyoshi Chujo, and Toru Ikuta, both of Iruma-gun, Saitama, Japan, assignors to Dalcel Ltd., Osaka, Japan

Filed Jan. 29, 1968, Ser. No. 701,096

Claims priority, application Japan, Jan. 25, 1967, 42/4575

Int. Cl. C07c 69/54

U.S. Cl. 260—486 R

6 Claims

A process for polymerizing a monomer or a mixture of monomers selected from the group consisting of acrylates, methacrylates, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, methylol acrylamide and ethers thereof, methylol methacrylamide and ethers thereof, acrylic acids, methacrylic acid and vinylidene chloride in the presence of a catalyst composition consisting of a complex compound of acetyl acetone with trivalent manganese and a mercaptan, whereby the polymerization may be carried out at room temperature.

3,627,821

**PROCESS FOR THE MANUFACTURE OF UNSATURATED ESTERS OF CARBOXYLIC ACIDS**

Kurt Sennwald; Wilhelm Vogt, both of Knapsack near Cologne; Heinz Erpenbach, Suert near Cologne; Hermann Glaser, Knapsack near Cologne, and Helmut Dyrschka, Koettingen, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed Dec. 18, 1968, Ser. No. 784,872

Claims priority, application Germany, Dec. 23, 1967, P 16 68 350.4

Int. Cl. C07c 69/14

U.S. Cl. 260—497 A

7 Claims

Production of unsaturated esters of carboxylic acids by reaction of an olefinic compound and an aliphatic or aromatic carboxylic acid, which each contain from two to 20 carbon atoms, with molecular oxygen or air, in the gas phase, at elevated temperature and in contact with a carrier catalyst, the reaction being carried out in contact with a carrier catalyst containing palladium acetate, alkali metal acetate and one or more uranium compounds as its active constituents.

3,627,822

**NOVEL COMPOUNDS WITH DETERGENCY AND FABRIC-SOFTENING ABILITY AND METHOD OF MAKING THE SAME**

Bjorn Sundby, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

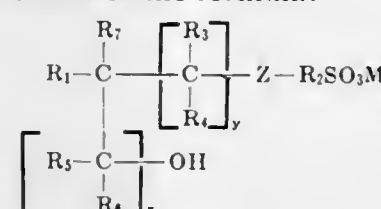
Filed Nov. 29, 1968, Ser. No. 780,276

Int. Cl. C07c 143/10

U.S. Cl. 260—513

15 Claims

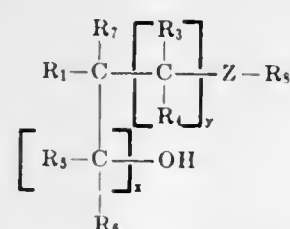
Novel compounds of the formula:



wherein:

- (1)  $R_1$  is a straight or branched higher alkyl group of  $C_6$  to  $C_{30}$ , and preferably  $C_{10}$  to  $C_{22}$ ;
- (2)  $R_2$  is a straight or branched alkyl of  $C_3$  to  $C_{12}$ , and preferably  $C_3$  to  $C_5$ ;
- (3)  $R_3$  to  $R_7$  are, independently, hydrogen or straight or branched alkyl of  $C_1$  to  $C_{10}$ , and preferably hydrogen or lower alkyl of  $C_1$  to  $C_4$ ;
- (4)  $Z$  is oxygen ( $-O-$ ) or sulfur ( $-S-$ );
- (5)  $x$  and  $y$  have the values 0 or 1 and  $x+y=1$ ; and
- (6)  $M$  is a cation such as hydrogen, alkali metal, ammonium, substituted ammonium or amine and preferably a water-solubilizing, salt-forming group.

Such novel compounds uniquely possess both foaming and detergency characteristics and fabric softening ability. The novel compounds may be prepared by several alternate routes, among which is the reaction of a long chain epoxide with an unsaturated alcohol or its equivalent with subsequent sulfonation of the intermediate reaction product. The novel intermediate reaction product with an unsaturated alcohol corresponds to the formula:



wherein  $R_1$ ,  $R_3$  to  $R_7$ ,  $x$  and  $y$  are as defined above and  $R_6$  is a straight or branched mono-unsaturated group, preferably an alkenyl radical, more preferably an  $\alpha$ -olefinic alkenyl radical of  $C_3$  to  $C_{12}$ , and most preferably of  $C_3$  to  $C_6$ .

3,627,823

**PROCESS FOR THE PREPARATION OF ACETIC ACID**  
Rudolf Brockhaus, and Willi Ziegenbein, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Oct. 29, 1968, Ser. No. 771,632

Claims priority, application Germany, Nov. 7, 1967, P 16 43 822.5

Int. Cl. C07c 53/08

U.S. Cl. 260—530 R

3 Claims

Acetic acid is produced by the gaseous phase oxidation of short-chain aliphatic compounds, with oxygen or an oxygen-supplying gas, in the presence of water vapor, at a temperature within the 200°-400° C. range, using a metal-vanadate catalyst.

3,627,824

**PROCESS FOR CRYSTALLIZING  $\gamma$ -ALKYLMERCAPTOLYSINE DIHYDROCHLORIDE**

Yasuo Fujimoto, and Shinsuke Koshimoto, both of Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd.

Filed June 18, 1969, Ser. No. 834,524

Claims priority, application Japan, June 25, 1968, 43/43628

Int. Cl. C07c 149/24

U.S. Cl. 260—534 S

14 Claims

A process for obtaining substantially pure crystals of  $\gamma$ -alkylmercaptolysine dihydrochloride which comprises mixing an aliphatic or alicyclic alcohol, an organic ether or a mixture thereof with a methanolic or an aqueous methanolic solution of a  $\gamma$ -alkylmercaptolysine dihydrochloride and preferably maintaining the mixture at a low temperature, thereby forming crystals of said compound. The product is useful as an antioxidant and as an accelerator for the cure of cuts, burns and the like.

3,627,825

**PURIFICATION OF 1,12-DODECANEDIOIC ACID USING PERCHLOROETHYLENE**

Darwin D. Davis, Victoria, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 29, 1969, Ser. No. 829,136

Int. Cl. C07c 51/48

U.S. Cl. 260—537 R

3 Claims

A process for the purification of 1,12-dodecanedioic acid by contacting molten 1,12-dodecanedioic acid with an organic solvent having the formula  $C_nX_mH_{2n+2-m}$  or  $C_pX_mH_{2p-m}$  wherein  $X$  is a halogen,  $n$  is an integer of from 1 to 3,  $p$  is 2 or 3, and  $m$  is an integer from 3 to  $2n+2$  or  $2p$ . After contacting the 1,12-dodecanedioic acid is crystallized by lowering the temperature followed by removal of the acid crystals from the halogenated hydrocarbon solvent and dissolved impurities by filtration.

3,627,826

**PROCESS FOR HALOGENATING CARBOXYLIC ACIDS**  
Charles M. Selwitz, Monroeville, Pa., assignor to Gulf Research Development Company, Pittsburgh, Pa.

Filed Nov. 25, 1970, Ser. No. 92,938

Int. Cl. C07c 53/16, 53/32

U.S. Cl. 260—539 A

12 Claims

A process for chlorinating or brominating a carboxylic acid which involves heating a carboxylic acid with chloride ions or bromide ions and molecular oxygen in the presence of nitrate ions, a carboxylic acid anhydride and a heavy metal cation. Acetic acid is converted to chloroacetic acid.

3,627,827

**REACTION OF ALLYLIC HALIDES WITH CARBON MONOXIDE AND ACETYLENE**

John A. Scheben, Erlanger, Ky., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 496,686, Oct. 15, 1965, now abandoned. This application Nov. 14, 1968, Ser. No. 775,961

Int. Cl. C07c 51/14

U.S. Cl. 260—544 A

9 Claims

A process is provided for preparing 2,5-dienyl halides, which comprises reacting a  $\beta,\gamma$ -unsaturated alkylene halide with carbon monoxide and acetylene at a temperature within the range from about 20° to about 250° C. at which reaction proceeds, below the decomposition temperature of the reactants and reaction products, under a pressure within the range from about 1 to about 300 atmospheres in the presence of a platinum-palladium triad catalyst.

3,627,828

**HYDROXY BENZOYL BENZOIC THIOLANHYDRIDE**

Stanley B. Mirviss, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

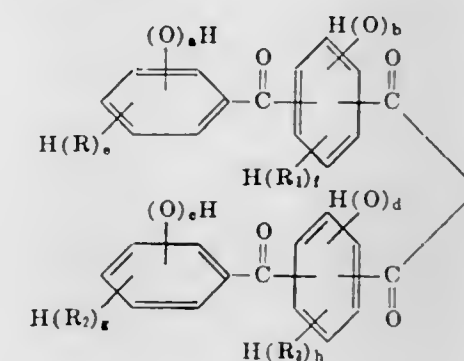
Filed Dec. 30, 1968, Ser. No. 789,973

Int. Cl. C07c 153/00

U.S. Cl. 260—545 R

2 Claims

Vinyl polymer compositions are stabilized against degradation and discolorization due to heat by adding to the polymer a stabilizing amount of a novel compound of the formula:



wherein  $R$ ,  $R_1$ ,  $R_2$  and  $R_3$  are divalent acyclic essentially hydrocarbon radicals containing from one to about six carbon atoms,  $a$  and  $c$  are integers having values of from 0 to 1 inclusive,  $b$  and  $d$  are integers having values of from 0 to 1 inclusive, and  $e$ ,  $f$ ,  $g$  and  $h$  are integers having values of 0 to 1.

3,627,829

**P-TOLUENESULFONYLSISOTHIOCYANATE**

Adnan A. R. Sayigh, North Haven, and Henri Ulrich, Northford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Original application Jan. 18, 1965, Ser. No. 426,414, now Patent No. 3,467,651. Divided and this application June 6, 1969, Ser. No. 831,248

Int. Cl. C07c 161/04

U.S. Cl. 260—545 R

3 Claims

Hydrocarbylsulfonylisothiocyanates are obtained by phosgenation of the appropriate 1-(hydrocarbylsulfonyl)-3-arylthiourea to form the corresponding 1-aryl-4-hydrocarbylsulfonylimino-1,3-thiazetidine-2-one and heating the latter at 150° C. to 200° C. Alternatively, the hydrocarbylsulfonylisothiocyanates are obtained directly by phosgenation of the appropriate 1-(hydrocarbylsulfonyl)-3-alkylthiourea. The hydrocarbylsulfonylisothiocyanates are intermediates to the corresponding antidiabetic sulfonylthioureas and to the corresponding 3-hydrocarbylsulfonyl-1,3-diazetidine-3-thiones.



3,627,830

**PRODUCTION OF PURE-N-DIMETHYLACYLAMIDES**

Horst Kerber, Lake Jackson, Tex.; Heinz Hohenschutz, Mannheim, and Konrad Rauch, Limburgerhof, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Feb. 3, 1969, Ser. No. 796,186

Int. Cl. C07c 103/00

U.S. Cl. 260—561 R

7 Claims

Production of pure N-dimethylacylamides having from two to four carbon atoms in the acyl radical by reaction of an excess of dimethylamine with an aliphatic carboxylic acid having two to four carbon atoms at elevated temperature and distillation of the N-dimethylacylamide formed, the distillation being carried out continuously in a column. Dimethylamine and the carboxylic acid in the molar ratio from 1.1:1 to 5:1 are introduced at from 80° to 220° C. and from 0.1 to 2 atmospheres in the absence of any catalyst into a mixture of N-dimethylacylamide and its carboxylic acid, the carboxylic acid content of the mixture corresponding at least to the amount of carboxylic acid present in the azeotropic mixture of the N-dimethylacylamide and its carboxylic acid. N-dimethylacylamides are used as solvents for polymers.

3,627,831

**CARBOXYLIC ACID AMIDES**

Helmut Huber-Emden, Basel; Paul Schaefer, Riehen, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Continuation-in-part of application Ser. No. 536,265, Mar. 22, 1966, now abandoned. This application Mar. 25, 1969, Ser. No. 810,365

Int. Cl. C07c 103/30

U.S. Cl. 260—562 P

8 Claims

Carboxylic acid arylmethanilamides useful as antioxidants, bactericides and monomers for the production of polymers, which by themselves are useful as stabilizers for natural rubber and polypropylene and as components in coating preparations.

3,627,832

**AMINO-LOWER-ALKOXY-DIBENZO[A,D]CYCLOHEPTENES AND 5-ALKYL AND -ARALKYL DERIVATIVES**

John W. Schulenberg, and Sydney Archer, both of Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Original application Oct. 16, 1964, Ser. No. 404,506, now Patent No. 3,350,405. Divided and this application Apr. 24, 1967, Ser. No. 632,948

Int. Cl. C07c 93/06

U.S. Cl. 260—570.7

4 Claims

Dibenzo[a,d]cyclohepten-5-ones and 10,11-dihydro derivatives thereof substituted on one of the benzene rings by an amino-lower-alkoxy group are prepared by reacting the corresponding hydroxydibenzo[a,d]cyclohepten-5-ones with an amino-lower-alkyl halide. The 5-carbonyl group is subsequently converted by reduction, Grignard and dehydration reactions to the groups CH<sub>2</sub>, CH(OH), C(lower-alkyl)(OH), C(phenyl-lower-alkyl)(OH), C (lower-alkylidene), C(phenyl-lower-alkylidene), CH(lower-alkyl) or CH(phenyl-lower-alkyl). The compounds are useful as antidepressant agents.

3,627,833

**PREPARATION OF DIHYDRORESORCINOL**

Michael A. Tobias, Edison, N.J., assignor to Mobil Oil Corporation

Filed July 5, 1968, Ser. No. 742,480

Int. Cl. C07c 49/27, 45/00

U.S. Cl. 260—586 R

1 Claim

2,3-Epoxy-cyclohexanone is rearranged thermally to

dihydroresorcinol. Dehydrogenation of dihydroresorcinol produces resorcinol.

3,627,834

**PROCESS AND STABILIZING COMPOSITIONS FOR CHLOROFLUOROALKANES**

Germano Patron, Venezia, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Jan. 14, 1969, Ser. No. 791,145

Claims priority, application Italy, Jan. 18, 1968, 11718A/68

Int. Cl. C07c 17/42

U.S. Cl. 260—652.5 R

4 Claims

This specification discloses the stabilization of chlorofluoroalkanes and mixtures thereof against hydrolysis in the presence of substances of a polar character, and in particular the stabilization of CC1<sub>3</sub>F, CC1<sub>2</sub>F<sub>2</sub>, CC1<sub>2</sub>F—CC1<sub>2</sub>F<sub>2</sub>, CC1F<sub>2</sub>—CC1F<sub>2</sub>, by incorporating either into the chlorofluoroalkane or into the mixture to be nebulized by it, as stabilizer, a composition comprising at least one alkylene epoxide associated with at least one substance chosen from the group consisting of linear and/or cyclic olefines and/or of simple and/or alkyl-substituted hydrazones of aliphatic and/or aromatic aldehydes.

3,627,835

**1,3,5-TRIS-(2'-HYDROXY-BENZOYL)-BENZENES**

Heimo Brunetti, Erlenstrasse 9, Reinach, Basel land; Hans-Jakob Peterli, Ob. Hofackerstr. 27, Fullinsdorf, Basel land; Helmut Muller, Schafmaltweg 78, Binningen, Basel land, and Hansjorg Heller, Dornliweg 1, Riehen/BS, all of Switzerland

Filed Nov. 21, 1969, Ser. No. 878,871

Int. Cl. C07c 49/80, 49/82

U.S. Cl. 260—591

9 Claims

1,3,5-tris-(2'-hydroxy-benzoyl)-benzenes are stabilizers for organic material. The compounds are obtained through dealkylating of the corresponding ethers.

3,627,836

**MODIFIED ORGANOPOLYSILOXANES WITH MONO AND POLYOLEFINIC CROSS-LINKED PARTICLES GENERATED IN SITU**

John Charles Getson, Tecumseh, Mich., assignor to Stauffer-Wacker Silicone Corporation

Filed Nov. 15, 1968, Ser. No. 776,863

Int. Cl. C08g 47/10

U.S. Cl. 260—825

10 Claims

Modified organopolysiloxanes containing cross-linked particles generated in situ are prepared by grafting monofunctional and polyfunctional olefinic monomers to organopolysiloxanes. These modified silicones are resistant to the solubilizing effect of solvents.

3,627,837

**GRAFTING OF PREFORMED POLYMER SIDE CHAINS ON METALATED BACKBONE POLYMER**

Frederick J. Webb, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 25, 1968, Ser. No. 778,776

Int. Cl. C08g 45/04; C08f 15/00

U.S. Cl. 260—836

15 Claims

The process disclosed herein comprises the grafting of preformed polymer chains onto a metalated backbone polymer which has metal atoms such as lithium attached at various points along the polymer chain and the grafting preformed polymer chains have a functional group, such as a nitrile, or a ketone or an aldehyde group, which is capable of reacting with and replacing the metal atom attached to the backbone polymer. In this way grafted copolymers are prepared having sidebranches disposed according to the number and positioning of the metal atoms originally at-

tached to the backbone polymer. In this way it is possible to make grafted copolymers of more uniform and more controllable side branching and therefore of improved properties.

3,627,838

**PROCESS FOR MANUFACTURING POTENT POUR DEPRESSANTS**

Stephan Illykij, Islington, Ontario; John L. Tiedje, Sarnia, Ontario, and Frank P. Gielzecki, Sarnia, Ontario, all of Canada, assignors to Esso Research and Engineering Company Continuation-in-part of Ser. No. 417,680, Dec. 11, 1964, abandoned.

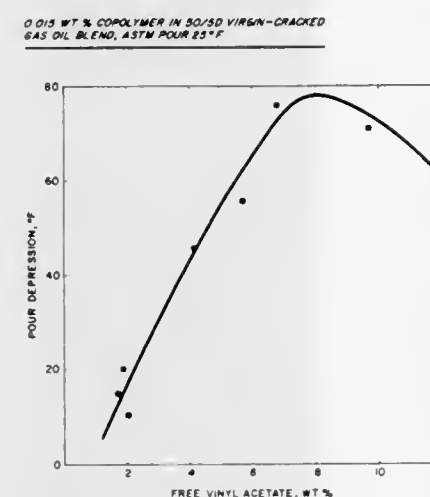
Filed Nov. 27, 1968, Ser. No. 779,555

Int. Cl. C08f 15/02, 25/00, 37/00

U.S. Cl. 260—87.3

2 Claims

EFFECT OF VINYL ACETATE CONVERSION ON POTENCY OF POUR DEPRESSANT



A method of producing copolymers of ethylene and 28 to 60 weight percent vinyl acetate of 2,000 to 6,000 mol weight for use as pour depressants by charging solvent, vinyl acetate and ethylene to a reactor until the concentration of vinyl acetate in said solvent is 6 to 10 weight percent and the pressure is 700 to 2,000 p.s.i., heating to 280° to 340° F. and then adding promoter to start the polymerization and thereafter adding additional promoter and vinyl acetate to maintain the concentration of vinyl acetate in the 6 to 10 weight percent range during the course of the reaction.

3,627,839

**GRAFT POLYMER OF ETHYLENICALLY UNSATURATED MONOMER ONTO A HALO-SUBSTITUTED BRANCHED POLYETHER POLYMER, AND PROCESS FOR MAKING IT**

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 26, 1968, Ser. No. 779,232

Int. Cl. C08f 29/12

U.S. Cl. 260—874

14 Claims

Disclosed is a branched polyether polymer modified by a graft to at least one branch, composed of at least one free radically polymerizable ethylenically unsaturated monomer unit and usually a polymer of free radically polymerizable ethylenically unsaturated monomer material. The graft polymer is made by effecting reaction of (1) a branched polyether polymer with at least one branch being reactive halo-substituted, and (2) free radically polymerizable ethylenically unsaturated monomer material by means of a catalyst comprising a transition metal-labile ligand complex with the transition metal portion of the complex being in a valence state less than its maximum valence state, preferably in the zero valence state.

3,627,840

**PROCESS FOR MAKING IMPACT RESISTANT BLENDS AND POLYMER BLENDS PRODUCED THEREBY**

Ludwig A. Beer, Agawam, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1968, Ser. No. 788,051

Int. Cl. C08f 19/18, 41/12, 19/10

U.S. Cl. 260—876 R

15 Claims

A novel graft copolymer blend is prepared having an ethylene interpolymers rubbery substrate and a graft superstrate of an interpolymers of a monovinylidene aromatic hydrocarbon, an alkyl (alk)acrylate, and/or an ethylenically unsaturated nitrile. The ethylene interpolymers contains vinyl chloride and/or vinylidene chloride. The superstrate may be of uniform polymeric composition or it may be formed by two or more different polymers having differing polarity. Blends of such graft copolymer blends with vinyl chloride polymers having a high degree of transparency are also disclosed.

3,627,841

**CYCLIC POLYMERIC CHLOROMETHYLPHENOXY PHOSPHONITRILES**

Ehrenfried H. Kober, Hamden; Henry F. Lederle, North Haven, and Gerhard F. Ottmann, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

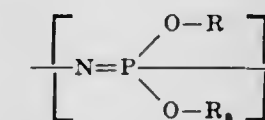
Original application Nov. 15, 1965, Ser. No. 507,660, now Patent No. 3,450,799. Divided and this application June 3, 1968, Ser. No. 777,927

Int. Cl. C07d 105/02; C07f 9/24; C09j 3/28

U.S. Cl. 260—927 N

2 Claims

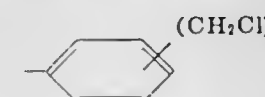
Cyclic polymeric chloromethylphenoxy phosphonitriles having the formula:



wherein x is an integer of from 3 to 7 and wherein the R and R<sub>x</sub> substituent of each polymeric unit of the above formula are independently selected from the group consisting of phenyl or



wherein m is an integer of from 1 to 3 inclusive and with the proviso that at least one of the R and R<sub>x</sub> substituents is



3,627,842

**PROCESS FOR THE PREPARATION OF MONOHALOGENATED METHYLENEDIPHOSPHONATE ESTERS, AND PHOSPHONOACETATE ESTERS**

Denzel Allan Nicholson, Springfield Township, Hamilton County, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 24, 1968, Ser. No. 786,760

Int. Cl. C07f 9/40

U.S. Cl. 260—986

18 Claims

A process for the preparation of tetrahydrocarbyl monohalomethylenediphosphonate esters, dihydrocarbyl monohalomalonate esters and trihydrocarbyl monohalophosphonoacetate esters, wherein the hydrocarbyl groups have one to 22 carbon atoms, comprising reacting the corresponding dihalomethylenediphosphonate esters, dihalomalonate esters and dihalophosphonoacetate esters



with a reducing agent, e.g., sulfite ion in base or sulfide ion in base. The monohalomethylenediphosphonate esters, monohalomalonate esters and monohalophosphonoacetate esters are useful as intermediates in the preparation of detergent builders for use in detergent compositions and as extreme pressure additives and antiwear additives in lubricant compositions.

3,627,843

## HYDROFORMYLATION OF PROPENE

Gianfranco Pregaglia, Milan; Alberto Andreetta, and Luigi Benzoni, both of Novara, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Mar. 13, 1968, Ser. No. 712,624

Int. Cl. C07c 45/08

U.S. Cl. 260—604 HF

2 Claims

Described is an improved process for preparing butyric aldehydes by hydroformylation of propene in the presence of cobalt-carbonyls complexed with phosphines. The process is characterized in that a reaction medium is used chosen from among N,N-dialkyl-amides, tetra-alkyl-ureas, aliphatic nitriles and dinitriles, containing from two to 12 carbon atoms. The operating temperatures are between 110° and 220° C. and the operating pressures of CO+H<sub>2</sub> are between 20 and 400 atmospheres.

3,627,844

## PREPARATION OF ALKENYL-THIOLS

Pierre Legendre, Pau, France, assignor to Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France

Filed Aug. 8, 1968, Ser. No. 751,034

Claims priority, application France, Aug. 9, 1967, 117339

Int. Cl. C07c 149/08

U.S. Cl. 260—609 R

18 Claims

There is provided a novel process for the preparation of certain alkenyl-thiols in particular the preparation of halo-alkenyl-thiols. Novel thiols are also disclosed.

3,627,845

## POLYOXY ALKYLENE SULFIDES

Richard A. Hickner, and Howard L. Young, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

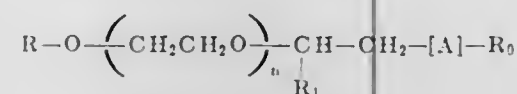
Continuation-in-part of application Ser. No. 573,500, Aug. 19, 1966, now abandoned. This application Aug. 9, 1968, Ser. No. 751,371

Int. Cl. C07c 149/14

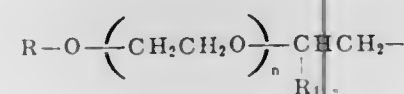
U.S. Cl. 260—609 A

9 Claims

Compounds of the formula



wherein R is an alkyl or aralkyl group; each n is an integer of from five to 50; A is a sulfide, sulfoxide or sulfone group; R<sub>1</sub> is hydrogen or a lower alkyl group; and R<sub>0</sub> is a halophenyl group, an alkyl or aralkyl group, halophenylethyl or halobenzyl group, or a group of the formula



wherein R, R<sub>1</sub> and n are defined above. These compositions have surfactant and/or biological utilities.

3,627,846

## PROCESS FOR OBTAINING PARTICULARLY PURE 2,2-BIS-(PHENYL)-PROPANE

Karl-Heinrich Meyer, Krefeld-Bockum, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 538,234, Mar. 29, 1966, now abandoned. This application Oct. 16, 1968, Ser. No. 768,968

Int. Cl. C07c 39/16; C08f 7/10

U.S. Cl. 260—619

4 Claims

Process for obtaining particularly pure bisphenol A from a crude mixture obtained by reacting acetone with excess phenol comprising degassing the crude mixture to remove acetone and HCl by subjecting the mixture to reduced pressure, separating the crystalline addition product of phenol and bisphenol A precipitating from the mixture, washing the precipitate with phenol and splitting it into bisphenol and phenol.

3,627,847

## 1,1-BIS (TRIALO-METHYL)-1,3-GLYCOLS

Carl M. Langkammerer, Wilmington, Del., assignor to E. I. de Nemours and Company, Wilmington, Del.

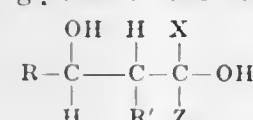
Original application May 17, 1966, Ser. No. 551,844. Divided and this application Nov. 16, 1967, Ser. No. 684,601

Int. Cl. C07c 31/18

U.S. Cl. 260—618 D

4 Claims

1,3-substituted glycols of the formula:



wherein

R is hydrogen, alkyl, alkenyl, naphthyl, thienyl, furyl, phenyl or substituted phenyl;  
R' is hydrogen or alkyl;  
R and R' can be joined;  
X and Z are separately trifluoromethyl or chlorodifluoromethyl.

Typical is α-[(2-hydroxy-1-methyl-3,3,3-trifluoro-2-trifluoromethyl)propyl] benzyl alcohol useful in riot control.

3,627,848

## 1-BROMO-3,4-DICHLOROBUTANE

Jay Lyman Bishop, Summit, N.J., assignor to CIBA Corporation, Summit, N.J.

Continuation-in-part of application Ser. No. 761,805, Sept. 23, 1968, Continuation-in-part of application Ser. No. 761,822, Sept. 23, 1968. This application Mar. 21, 1969, Ser. No. 809,374

Int. Cl. C07c 19/02

U.S. Cl. 260—652

1 Claim

Cyclopropylmethyl chloride or its homologs, which are valuable intermediates or drugs, are prepared by addition of hydrogen bromide to dichloro-n-butenes or their homologs and reaction of the resulting 1-bromo-3,4-dichlorobutanes with metals.

3,627,849

## PROCESS FOR THE MANUFACTURE OF ALLYL CHLORIDE OR METHALLYL CHLORIDE

Hans Fernholz, Fischbach/Taunus, and Heinz Wendt, Sulzbach/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Apr. 2, 1969, Ser. No. 812,906

Claims priority, application Germany, Apr. 19, 1968, P 17 68 242.7

Int. Cl. C07c 21/00

U.S. Cl. 260—654 R

8 Claims

A process for the manufacture of allyl chloride or methallyl chloride, which comprises reacting allyl acetate or methallyl

3,627,853

## CHLORINATION OF VINYL CHLORIDE BLOCK COPOLYMERS

Alexander Edward Bond, and Bruce Robert Owen Pointer, both of Welywyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 1, 1969, Ser. No. 846,913

Claims priority, application Great Britain, Aug. 22, 1968, 40,235/68

Int. Cl. C08f 15/00, 27/02

U.S. Cl. 260—878 B

15 Claims

Chlorination of heterogeneous copolymers made by polymerizing vinyl chloride and adding a small amount of comonomer after conversion has reached >40 percent and continuing polymerization at an elevated temperature.

3,627,850

## POLYOXYMETHYLENE POLYMERS HAVING REDUCED MELT INDICES

Karl-Heinz Hafner, Bad Orb, and Edgar Fischer, Frankfurt/am, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/am Main-Hoechst, Germany

Continuation-in-part of application Ser. No. 651,970, July 10, 1967, now Patent No. 3,494,893, Continuation-in-part of application Ser. No. 663,743, Aug. 28, 1967, now abandoned.

This application Feb. 9, 1970, Ser. No. 9,889

Int. Cl. C08g 37/04

U.S. Cl. 260—823

7 Claims

The melt indices of polyformaldehyde having stabilized terminal groups or copolymers of formaldehyde or trioxane with cyclic ethers are reduced by adding a copolymer of trioxane containing carboxylate groups. The carboxylate-containing polymers may be prepared by copolymerizing trioxane and optionally cyclic ethers with p-glycidyl benzoic acid esters and then saponifying the esters groups. The metal of the carboxylate group is selected from metals of the first two groups of the Periodic Table. By incorporating from 1 to 50 percent by weight of the carboxylate-containing polymers in conventional polyoxymethylene polymers, the melt indices thereof are substantially reduced.

3,627,851

## FLEXIBLE COATING COMPOSITION

Sam A. Brady, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Oct. 23, 1970, Ser. No. 83,620

Int. Cl. C08g 47/02, 47/04, 47/06

U.S. Cl. 260—825

5 Claims

A mixture of a polydiorganosiloxane gum having vinyl radicals and/or hydroxyl radicals, a benzene soluble copolymer having dimethylhydrogensiloxo units, trimethylsiloxo units and SiO<sub>2</sub> units and a platinum catalyst cured to a clear flexible coating.

3,627,852

## IMPACT RESISTANT POLYMER COMPOSITIONS

Itsuo Aishima, Tokyo; Hisaya Sakurai, Kawasaki-shi; Atsushi Kitaoka, and Yoshihiko Katayama, both of Nobeoka-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Filed Jan. 22, 1968, Ser. No. 699,313

Claims priority, application Japan, Feb. 2, 1967, 42/6295

Int. Cl. C08f 29/12, 15/04

U.S. Cl. 260—876 B

7 Claims

A polypropylene composition having an excellent impact resistance at low temperatures comprising 50-90 percent by weight of crystalline polypropylene, 5-30 percent by weight of polyethylene and 5-40 percent by weight of ethylene/propylene block copolymer having an average molecular weight of not less than 10,000, an ethylene content of 7-93 mol percent and an optional recurring cycle.

3,627,854

## HEAT STABILIZED POLY(VINYLFLUORIDE) WITH A POLY(VINYLPYRIDINE)

Lacey E. Scoggins, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 14, 1971, Ser. No. 862,476

Int. Cl. C08f 29/22

U.S. Cl. 260—884

5 Claims

Poly(vinylfluoride) is heat stabilized by addition thereto of a poly(vinylpyridine), e.g., poly(4-vinylpyridine) poly(2-methyl-5-vinylpyridine). From about 0.5 to 20 weight percent, now preferably 1 to 3 percent, approximately of the stabilizer is added to the poly(vinylfluoride) to protect it against thermal decomposition. Though poly(vinylfluoride) homopolymer decomposes rapidly in about 1 to 7 minutes at 260° C. and cannot be molded without use of a latent solvent, with the poly(vinylpyridine), decomposition does not occur at this temperature over a 30-minute period. This allows the polymer to be molded.

3,627,855

## PRODUCTION OF IMPACT-RESISTANT STYRENE COPOLYMERS

Otto Schott, Mannheim; Klaus Bronstert, Carlsberg Upper palatinate; Adolf Echte; Juergen Hofmann, and Dieter Stein, all of Ludwigshafen am Rhine, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Sept. 5, 1967, Ser. No. 665,237

Claims priority, application Germany, Sept. 10, 1966, P 15 95 343.2

Int. Cl. C08f 15/04, 1/04, 1/11

U.S. Cl. 260—880 R

2 Claims

Production of impact-resistant styrene copolymers by polymerizing styrene and acrylonitrile in the presence of butadiene polymers, the bulk of the acrylonitrile being added to the system after a disperse phase has formed from the homogeneous rubber monomers.

3,627,856

## RUBBER COMPOSITIONS CONTAINING A POLYHYDROXY DIENE POLYMER

Marc O. Thienot, Park Forest, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,444

Int. Cl. C08f 41/12; C08d 9/08

U.S. Cl. 260—889

13 Claims

Sheeted rubber compositions of ethylene-propylene polymers having improved tack and easier processing and faster dispersion of compounding ingredients are obtained by forming a blend of the ethylene-propylene polymer and from about 1 to 50 percent by weight of a polyhydroxy 1,3-diene polymer, particularly a polyhydroxy acrylonitrile-butadiene polymer, having primary, terminal allylic hydroxyl groups and the majority of its unsaturation in the main carbon chain. Further improvement in tack is obtained by pressure treatment of these rubber sheetings against a "Mylar" or "



Teflon" sheet. Sufficient tack is obtained so that the unsupported rubber sheetings will readily stick together during fabrication of rubber articles, such as tires. The compounded blend can be vulcanized to produce elastomers of good mechanical properties.

3,627,857

# HEATING CONTROLLING SYSTEM IN A MULTIZONE TYPE CONTINUOUSLY HEATING FURNACE

Hiroshi Matuno, and Toshiya Morisue, both of Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd., Tokyo, Japan

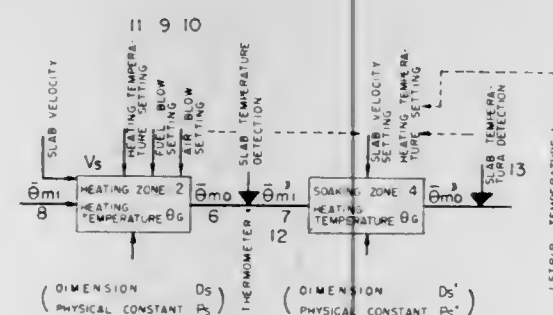
Filed Feb. 12, 1969, Ser. No. 798,729

Claims priority, application Japan, Feb. 15, 1968, 43/9540

Int. Cl. F27b 9/40

U.S. Cl. 263—52

1 Claim



A heating controlling system in a multizone-type continuously heating furnace having a preheating zone, heating zone and soaking zone in sequence for obtaining an object heated in the furnace which may be extracted from the soaking zone at any objected temperature by determining the temperature of the heated object at the inlet of the heated zone from the atmospheric temperature in the preheating zone and other factors, controlling quantity of fed heat in the heating zone from said temperature and then adjusting quantity of fed heat or moving velocity of the heated object in the soaking zone.

3,627,858

# METHOD FOR SELECTIVELY FOAMING THE SURFACE OF A THERMOPLASTIC ARTICLE BY USE OF A LASER

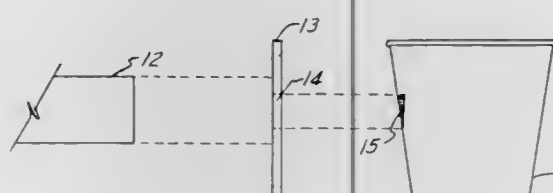
Leo P. Parts, Dayton, Ohio; Jules Pinsky, West Hartford, Conn., and Edgar E. Hardy, Kettering, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed Nov. 24, 1969, Ser. No. 879,485

Int. Cl. B29d 27/00; H05b 7/00; H01s 3/00

U.S. Cl. 264—25

3 Claims



A method for foaming a design on the surface of a thermoplastic article, using laser radiation to produce an embossed surface with sharp definition.

## 3,627,859 PROCESS FOR FORMING POROUS FLUOROCARBON POLYMER MATRICES

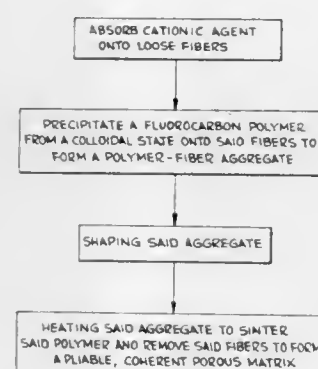
Edward C. Mesite, Jenkintown, Pa., and Solomon Rosenblatt, Montclair, N.J., assignors to Leeson Corporation, Warwick, R.I.

Continuation of application Ser. No. 543,786, Apr. 20, 1966, now abandoned, Continuation-in-part of application Ser. No. 491,864, Sept. 30, 1965, now abandoned. This application Aug. 12, 1969, Ser. No. 850,339

Int. Cl. B29d 27/08

U.S. Cl. 264—49

19 Claims



A method of preparing a porous hydrophobic polymeric matrix is described comprising precipitating a hydrophobic polymer onto loose fibers having a charge opposite to that of said polymer to form a polymer-fiber aggregate, shaping said aggregate, heating said shaped aggregate at an elevated temperature at which said precipitated polymer will sinter and said fibers consumed, and maintaining said aggregate at said elevated temperature for a time sufficient to sinter the polymer and consume the fibers, forming a pliable and coherent porous matrix.

3,627,860

# METHOD OF FORMING RECTANGULAR CROSS-SECTION FOAM POLYURETHANE BY DIRECTING UPWARD CURRENTS OF AIR ALONG THE SIDES OF THE FORMING TROUGH

Werner Hagen, Unterpfaffenhofen near Munich, Germany, assignor to Metzler AG, Munich, Germany

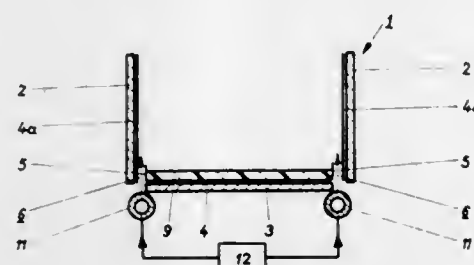
Filed Aug. 20, 1968, Ser. No. 754,078

Claims priority, application Germany, Aug. 21, 1967, P 17 04 846.3

Int. Cl. B29d 27/04

U.S. Cl. 264—51

8 Claims



A continuous slab of rectangular cross-sectional outline is formed by feeding free-rising polyurethane foam into a trough formed by travelling bottom and lateral liners of release paper so that such foam forms a continuous loaf which travels lengthwise through a foaming zone wherein it rises to form the slab. Friction between lateral liners and the sides of the loaf is reduced by currents of gas which are blown upwardly along the edges of the bottom liner.

## 3,627,861 METHOD OF FORMING INDENTED DECORATIVE PATTERNS ON CERAMIC TILE

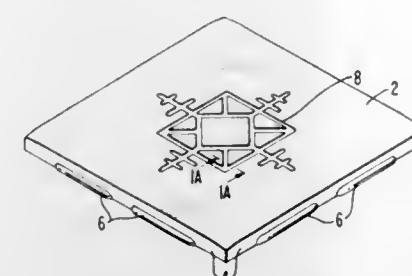
Robert F. Timke, Fruitland Park, Fla., assignor to Accentile, Inc.

Filed July 26, 1968, Ser. No. 754,137

Int. Cl. B28b 3/04, 7/06, 7/16

U.S. Cl. 264—56

6 Claims



Ceramic tile having indented decorative patterns on the exposed face are made in a conventional tile press. Prior to filling the mold with the ceramic mixture a thin elastomeric insert the same size as the bottom die and having raised portions of a desired pattern is placed in the mold with the raised portions facing upward. The mold is then filled with the mixture and the mixture is pressed against the elastomeric insert. The pressed tile-insert composite is then ejected in a conventional manner and in sliding the composite off of the bottom die the insert protects the pressed tile from any damage that could be caused by the sliding movement. The insert is removed from the pressed tile and the latter is trimmed, dried, glazed, and fired.

3,627,862

# TREATMENT OF METAL POWDER

De Witt Henry West, Port Eynon, Swansea; Alexander Bowen Simpson, Bryn Mill, Swansea; Ross Lowndes Simms, Swansea, and Reginald David Smith, Gorseinon, all of Wales, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed May 15, 1969, Ser. No. 825,054

Claims priority, application Great Britain, May 20, 1968, 23,927/68

Int. Cl. B22f 1/00

U.S. Cl. 264—71

7 Claims

Mixtures of at least two finely divided soft metal powders, e.g., nickel, cobalt, iron and copper powders, are agglomerated by ball milling the powders in a vibratory mill at temperatures between about 40° C. and 200° C. and in a nonoxidizing atmosphere.

3,627,863

# METHOD FOR CONTINUOUSLY EXTRUDING NETLIKE STRUCTURES

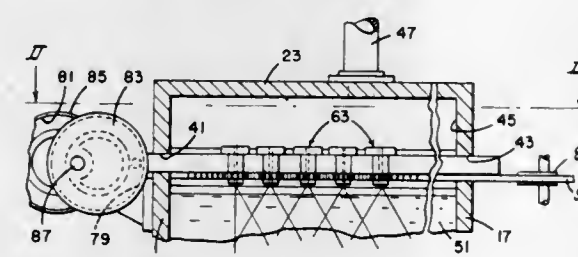
Theodore H. Fairbanks, West Chester, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 16, 1969, Ser. No. 825,210

Int. Cl. D04b 25/00; D01d 5/18

U.S. Cl. 264—103

7 Claims



Method of making a netlike structure of woven or braided construction wherein a series of streams, extruded along each

3,627,864

# METHOD OF MOLDING AN ARTICLE

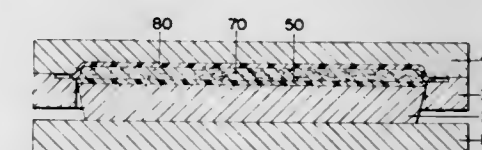
Jason G. Doubleday, Hampden, Mass., assignor to Melsur Corporation, Brattleboro, Vt.

Continuation-in-part of application Ser. No. 388,126, Aug. 7, 1964, now abandoned. This application Oct. 17, 1969, Ser. No. 867,185

Int. Cl. B29j 5/00

U.S. Cl. 264—112

1 Claim



A one-operation process for molding a homogeneous article in the form of a core completely covered by an outer protective sheeting which includes the steps of: positioning a first covering thermosetting resin film in the mold below a loading ring, charging a molding material of wood flour and resin into the loading ring and over the first covering film, positioning a second covering thermosetting resin film in the mold and over the charge with the edges thereof extending outwardly of the mold cavity, the first and second covering films unitarily and uniformly surrounding the charge of molding material as an outer protective skin married together at the common joint line adjacent the mold cavity in a core-encompassing manner and married to the core by the application of heat and pressure.

3,627,865

# METHOD AND APPARATUS FOR PRODUCING MINERAL AGGLOMERATES

Paul Wittwer, Paris; Henri F. Chabaglan, Maisons Laffitte, both of France, and Horst Ritzmann, Neubeckum, Germany, assignors to Polysius A.G., Neubeckum, Germany

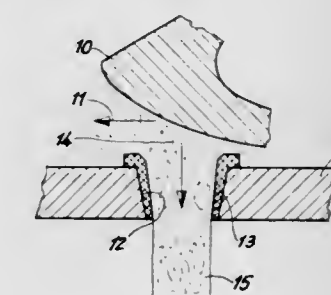
Filed Mar. 27, 1969, Ser. No. 811,104

Claims priority, application France, Apr. 1, 1968, 146695

Int. Cl. B01j 2/20

U.S. Cl. 264—118

2 Claims



The raw material for use in a metallurgical process is prepared in the form of agglomerates by mechanically pulverizing at least a part of a raw mineral to produce a powder having a specific surface between 2,000 and 5,000 square cm. per gram, the largest particles of which are smaller than 500 microns. The powder is mixed with a liquid to produce a paste, and the paste is extruded through perforations to produce rods having a diameter of 5 to 40 mm., the rods being separated into pellets having a length between 0.7 and 2.5 times their diameter. The pellets are rolled to round off their rough edges and then are preheated at a temperature between 500° and 850° C. to condition them for use in the metallurgical process.



3,627,866

**METHOD OF MAKING SHAPED ARTICLES**

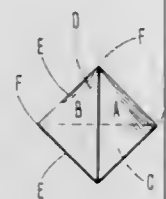
Awbrey Charles Laws, Cambridge, Mass., assignor to Synetics Development Corporation, Cambridge, Mass.

Filed June 9, 1969, Ser. No. 790,119

Int. Cl. B26d 3/00; B29c 17/14; B29d 27/06

U.S. Cl. 264—148

6 Claims



A method of making a tetrahedral-shaped article from an elongated solid member having equilateral triangular or square cross section in which the elongated polyhedral shape is positioned with two of its edges lying in a plane on one side of the third edge of the triangular cross section. The shape is cut in a plane normal to the first plane through each of the edges and at an angle of 45° to all of the edges. Thereafter the polyhedral shape is rotated so that one of the edges in the plane moves from the plane and the third edge moves into the plane and the cutting process is repeated.

3,627,867

**PROCESS OF MELT-SPINNING HIGH-MOLECULAR-WEIGHT ETHYLENE TEREPHTHALATE POLYMER**

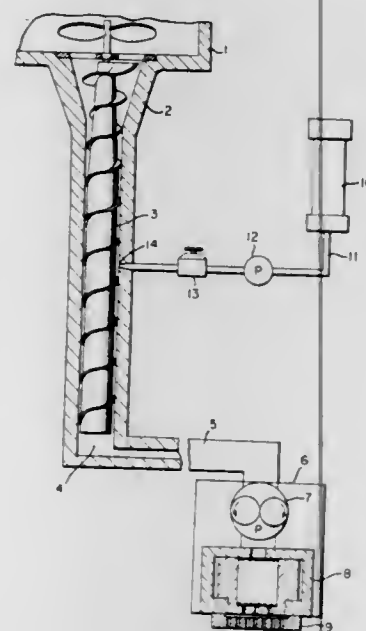
Eckhard Christian August Schwarz, Grifton, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 5, 1968, Ser. No. 757,680

Int. Cl. D01f 1/00; C08g 17/00

U.S. Cl. 264—211

5 Claims



A process and apparatus are disclosed for melt-spinning high-molecular-weight polyethylene terephthalate into high-performance fibers under conditions which reduce the normally high viscosity of such polyester. Ethylene oxide or other low-boiling oxirane compound is injected under pressure into molten polyester before it is fed to the metering pump of the melt-spinning machine. Illustrations show that injection of amounts as small as 0.3 percent provide a substantial reduction in filter pack pressure. The fibers are characterized by low free-carboxyl content and freedom from voids which might be expected from injection of the volatile material.

3,627,868

**METHOD OF PRODUCING NIBS FOR WRITING INSTRUMENTS**

Takaji Funahashi, No. 1, 2-chome, Kitakajo-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

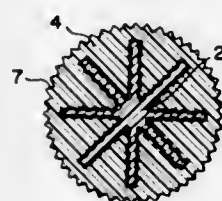
Filed May 21, 1969, Ser. No. 826,615

Claims priority, application Japan, May 24, 1968, 43/42795

Int. Cl. B29d 9/00

U.S. Cl. 264—250

8 Claims



This invention is to produce, on a mass-production scale and at low cost, the nibs or pen points for various types of writing pens which permit smooth writing performance with always constant size for a long period of use.

3,627,869

**METHOD OF PRODUCING A LAMINATED POLYETHYLENE-POLYPROPYLENE ARTICLE**

Roger J. Walton, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Oct. 6, 1967, Ser. No. 673,284

Int. Cl. B29c 5/04

U.S. Cl. 264—255

6 Claims

At least one of a homopolymer or copolymer of ethylene and another olefin such as propylene, butene-1 and higher up to about eight carbon atoms and a copolymer of propylene and ethylene are laminated together, for example, by rotational molding. The ethylene homopolymer and/or the ethylene copolymer is first laid down upon the mold surface whereupon the propylene-ethylene copolymer is laid as a second layer. When an ethylene copolymer is used, the comonomer is present in minor amount, for example, usually not over about 7 percent. The ethylene in the propylene copolymer usually will not exceed about 20 percent. Smaller than the percentages given are ordinarily quite satisfactory. Multiwalled articles produced with the laminates of invention exhibit good layer cohesiveness, high environmental stress cracking resistance and high impact resistance.

3,627,870

**METHOD OF FORMING SYNTHETIC RESIN DELUSTERED SURFACES**

Frank E. Carevic, West Chester; John A. Milhalik, Swathmore, and Alfred H. Stewart, Jr., Media, all of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 814,206, Apr. 7, 1969, now abandoned, which is a continuation of application Ser. No. 543,067, Apr. 18, 1966, now abandoned. This

application May 13, 1970, Ser. No. 037,036

Int. Cl. B29c 1/04

U.S. Cl. 264—316

4 Claims

A method of forming synthetic resin articles having a controlled degree of luster by setting the resin in contact with a nonfibrous cellulosic release sheet containing an anchoring agent and finely divided water-insoluble particles of  $\beta$ -1,4 glucan or a water-insoluble derivative thereof specific particle sizes.

3,627,871

**THERAPEUTIC COMPOSITIONS FOR TOPICAL APPLICATION**

Michael John Groves, and John Neville Hague, both of Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

Filed Apr. 22, 1968, Ser. No. 723,245

Claims priority, application Great Britain, Apr. 27, 1967, 19,480/67

Int. Cl. A61k 17/16

U.S. Cl. 424—78

2 Claims

Therapeutic film-forming compositions suitable for topical application which contain medicaments and which dry when applied to the skin to give a flexible, nontacky adherent, substantially water-vapor impermeable film capable of releasing said medicaments to the underlying skin. The preferred film-forming composition comprises an aqueous emulsion of a polyvinylidene chloride and a medicament such as an anti-inflammatory steroid.

3,627,872

**ORAL TREATMENT OF HYPER-CHOLESTEREMIA IN MAMMALS AND BIRDS WITH ETHER-TYPE ANION EXCHANGERS OF POLYSACCHARIDES**

Thomas M. Parkinson, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 451,978, Apr. 29, 1965, now abandoned. This application Apr. 8, 1968, Ser. No. 719,670

Int. Cl. A61k 27/00

U.S. Cl. 424—79

6 Claims

Processes of orally treating hypercholesteremia in mammals and birds. Ether-type anion exchangers based on polysaccharides and cross-linked polysaccharides are orally administered to hypercholesteremic mammals such as humans and animals, such as dogs; and birds, such as cockerels, in the amelioration and control of hypercholesteremic affections.

3,627,873

**INFLUENZA VACCINE WITH REDUCED PYROGENICITY**

Arden Wesley Moyer, 138 Fremont Ave., Park Ridge, N.J.

Filed June 9, 1967, Ser. No. 644,812

Int. Cl. A61k 27/00

U.S. Cl. 424—89

3 Claims

An inactivated influenza virus vaccine is produced by treating the virus before or after inactivation with formalin with a small amount of an organic solvent selected from the group consisting of dilower alkyl ethers and lower alkyl esters of lower fatty acids. The amount was usually less than 2 volumes of the solvent, for a short time, not significantly in excess of 4 hours and preferably from 15 minutes to 2 hours, the shorter times being used when the volume of solvent is in excess of 1. Preferred solvents are diethyl ether and methyl acetate.

In the case of the smaller amounts of solvent, such as for example one-eighth the volume of the aqueous virus concentrate, it is not necessary to decant the solvent phase; it may be removed by blowing nitrogen through the mixture. With larger amounts of solvent decantation is desirable, followed by removing the last traces with nitrogen bubbled through the liquid. If the solvent treatment is prior to inactivation with formalin, inactivation then follows, and the vaccine is preserved and stored in the usual manner, for example with a small amount of merthiolate. The vaccine has a titer not significantly less than untreated virus whether measured by either the chick cell agglutination (CCA) test, or the hemagglutinin (HA) test. The pyrogenicity is, however, reduced to a very low point. Rabbit tests show temperature rises of less than 0.4° C. as against temperature rises of 1° C. or somewhat more in untreated vaccines.

3,627,874

**VACCINE PREPARATION**

Philip P. Vella, Willingboro, N.J., and Roy A. Machlowitz, Glenside, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 16, 1969, Ser. No. 842,362

Int. Cl. A61k 27/00

U.S. Cl. 424—88

2 Claims

A nonanaphylactic PPLO vaccine is prepared by propagation of the organism at controlled pH in a medium containing fractionated calf serum. The fractionated calf serum is prepared by precipitation of proteinaceous fractions from whole calf serum containing anaphylactic and growth inhibiting factors by addition of salts or by heating.

3,627,875

**ANTIPYRETIC AND INFLAMMATION COMBATTING COMPOSITIONS**

Christiane Fellonneau, born Drouet, Paris, France, assignor to Industrial Nuclear Investigation Company Limited, Vaduz, Liechtenstein

Filed May 15, 1963, Ser. No. 255,117

Claims priority, application Switzerland, June 12, 1962, 6993/62

Int. Cl. A61k 27/00

U.S. Cl. 424—94

3 Claims

Compositions having antipyretic and inflammation-reducing activity which employ enzymes.

3,627,876

**METHOD OF RELIEVING PAIN UTILIZING RIBONUCLEASE**

Jean Paul Choay, Neuilly-sur-Seine, France, assignor to Laboratoire Choay, Paris, France

Filed Mar. 15, 1968, Ser. No. 713,322

Claims priority, application France, Mar. 16, 1967, 99032

Int. Cl. A61k 19/00

U.S. Cl. 424—94

17 Claims

Painful pathological conditions which are totally free of inflammation can be relieved by the application of an effective quantity of ribonuclease as analgetic agent.

3,627,877

**TREATMENT OF SCHISTOSOMIASIS IN MAMMALS**

Hendrik Ottens, Delft, Netherlands, assignor to Koninklijke Nederlandsche Gist-En Spiritusfabriek N.V.

Filed Apr. 2, 1968, Ser. No. 718,258

Claims priority, application Great Britain, Apr. 4, 1967, 15,345/67

Int. Cl. A61k 27/00

U.S. Cl. 424—93

17 Claims

Therapeutic compositions and method for treatment of schistosomiasis in mammals which comprises intravenously administering to mammals infected with schistosomiasis an effective amount of live Gram-negative bacteria suspended in a suitable liquid. The invention also relates to a process for the preparation of said therapeutic compositions.

3,627,878

**HERBIVORE REPELLENT AND METHOD**

Gerard F. Linsner, Chicago, Ill., assignor to Wilson Pharmaceutical & Chemical Corporation

Filed Nov. 6, 1967, Ser. No. 681,018

Int. Cl. A61k 17/00

U.S. Cl. 424—101

11 Claims

A repellent for animals such as deer and rabbits which is prepared by fermentation of animal blood. Blood fermented using both aerobic and anaerobic bacteria is used in liquid or powder forms in an area to be protected from the herbivores.







3,627,894

**PHARMACEUTICAL COMPOSITIONS COMPRISING 72-METHYL ESTRONE AND METHODS FOR USING SAME**  
 John C. Babcock, and J. Allan Campbell, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

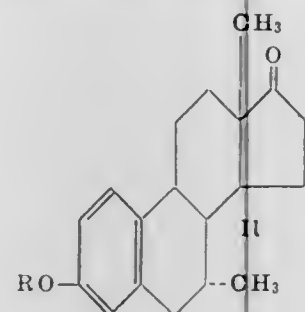
Continuation-in-part of application Ser. No. 114,621, June 5, 1961, now Patent No. 3,341,557, Continuation-in-part of application Ser. No. 69,557, Nov. 6, 1960, now abandoned. This application Sept. 8, 1967, Ser. No. 666,488

Int. Cl. C07c 169/20

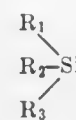
U.S. Cl. 424-243

4 Claims

This invention relates to novel steroid compounds and processes for their preparation; more particularly to those compounds embraced by the formula (11)



wherein R is selected from the group consisting of hydrogen, the acyl radical of a hydrocarbon carboxylic acid containing from one through twelve carbon atoms, an alkyl radical containing from one through eight carbon atoms, tetrahydrofuranyl, tetrahydropyranyl, 5-substituted tetrahydropyranyl, and a silyl radical of the formula



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are selected from the group consisting of alkyl of one through six carbon atoms and phenyl.

## ELECTRICAL

3,627,895

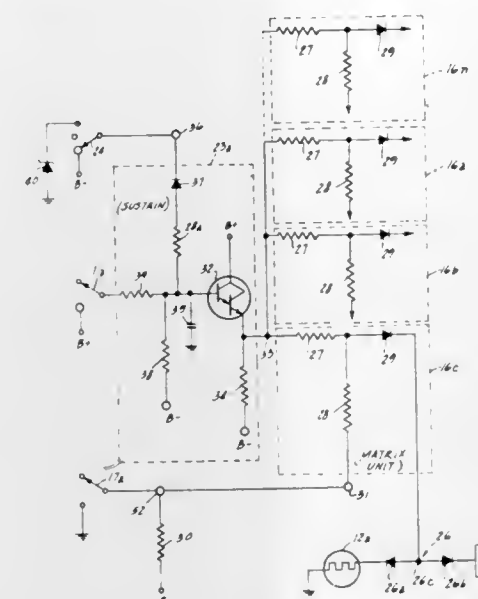
**MUSICAL ELECTRONIC INSTRUMENT KEYING WITH DIRECT CURRENT OF PLURAL MUSICAL EFFECTS**  
 Peter T. Savon, Glenview, Ill., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.

Filed June 25, 1970, Ser. No. 49,725

Int. Cl. G10h 1/02

U.S. Cl. 84-1.01

35 Claims



An electronic musical instrument is provided with a DC current switching circuit for controlling gates that are disposed between various sources of AC potential of audio signal frequency and conventional voicing circuits and signal-to-sound converting means. The switching circuit is under the control of key switches, voice tab switches, preset voice switches, percussion switches, and repeat switches respectively associated with appropriate circuitry to provide one composite DC keying circuit.

3,627,896

## SWITCH DEVICE

Saburo Uemura, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

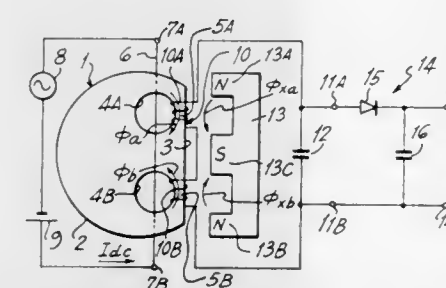
Filed Apr. 22, 1970, Ser. No. 30,775

Claims priority, application Japan, Apr. 24, 1969, 44/31671

Int. Cl. G01h 1/00; H02k 29/00

U.S. Cl. 84-1.01

9 Claims



A switch device has a saturable core, as in a parametron or dual-gap magnetic head, a first winding on the core receiving an AC exciting current and a DC bias current, a second winding on the core included in a resonant circuit in which a current is generated at a resonant frequency half that of the AC exciting current only when the total direct magnetic flux influencing the second winding is within predetermined limits, and a source of additional direct magnetic flux, such as a magnet, is actuable, as by movement relative to the core, to selectively apply direct magnetic flux to the second winding for coaction with the direct magnetic flux resulting from the DC bias current in determining the total direct magnetic flux influencing the second winding, whereby the generation

3,627,897

## CHIFF CIRCUIT

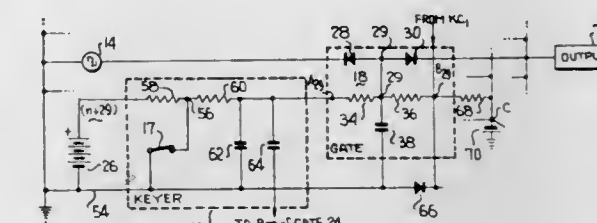
Michael R. Harris, Hayward, Calif., assignor to D. H. Baldwin, Cincinnati, Ohio

Filed Apr. 6, 1970, Ser. No. 25,884

Int. Cl. G01h 1/04

U.S. Cl. 84-1.24

32 Claims



An electronic organ provides chiff tone components at the onset of each steady tone by making use of the same signal gate for the chiff component of a relatively low-pitched tone as the steady component of a relatively high-pitched tone and, additionally, utilizes each gate to control more than one "footage." Actuation of a key applies a steady gating voltage to one signal gate and a chiff pulse of gating voltage to another signal gate. For multiple footage operation, an electronic switch is arranged to be selectively keyed by plural key switches representing different footages. A footage selector switch selectively permits and prevents different footage key switches from keying the electronic switch. The signal gates and isolation circuitry between signal gates are disclosed in a variety of alternative embodiments.

3,627,898

**SEALING CUP FOR ELECTROSTATIC PRECIPITATORS**  
 Werner Ibach, Knapsack near Cologne, and Leopold Slawick, Hermulheim near Cologne, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

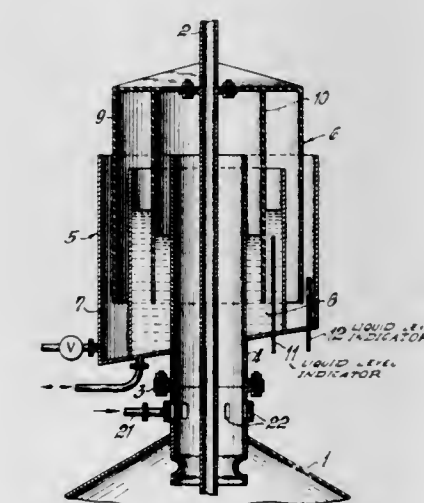
Filed Aug. 25, 1969, Ser. No. 852,663

Claims priority, application Germany, Sept. 26, 1968, P 17 82 639.0

Int. Cl. B03c 3/34; H01b 17/26

U.S. Cl. 174-11 BH

10 Claims



Sealing cup centrally traversed by a conductor for use as a safeguard against the formation of overpressure and subpressure in electrical precipitation apparatus. The sealing cup substantially comprises a trough partially filled with a sealing liquid and having a plurality of annular chambers and a bell-



shaped member arranged to dip thereinto having a plurality of bell-shaped cylinders arranged so as to concentrically project into each of the annular chambers in the trough.

3,627,899

# **ELECTRICAL BUSHING ASSEMBLY WITH EVAPORATIVE HEAT PUMP DISPOSED BETWEEN INSULATION AND ELECTRICAL LEAD**

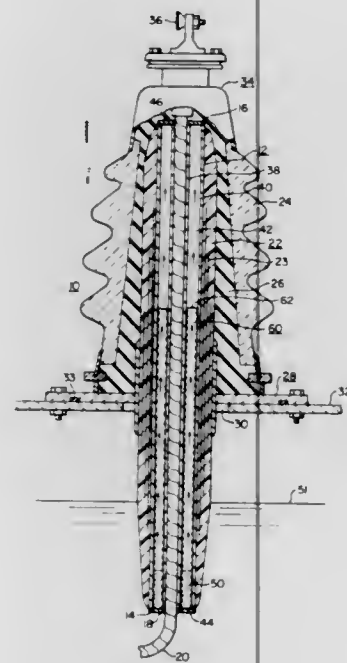
Curtis L. Moore, Sharon, Pa., assignor to Westinghouse Electric Company, Pittsburgh, Pa.

Filed May 12, 1970, Ser. No. 36,600

Int. Cl. H01b 17/26, 17/54

U.S. Cl. 174—15 BH

4 Claims



An electrical bushing assembly including a hollow electrically conductive member, an electrical lead disposed through the opening in the hollow electrically conductive member, and insulation surrounding the conductive member. The electrical conductive member defines a chamber having a volatile fluid disposed therein which is cycled between its liquid and gaseous phases by the natural temperature differential along the conductive member when the bushing is in service.

3,627,900

# **GROUND CLAMP**

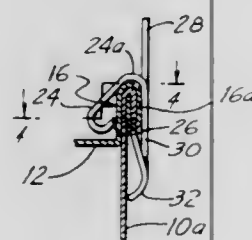
William M. Robinson, New Bedford, Mass., assignor to Cornell-Dubilier Electric Corporation, Newark, N.J.

Filed Dec. 8, 1969, Ser. No. 883,121

Int. Cl. H05k 5/02

U.S. Cl. 174—51

4 Claims



Connection is made to a metal container having a bead, by means of a resilient clamp that embraces the bead, and surface-penetrating tines, and a terminal part to which a wire connection may be made.

# **3,627,901 COMPOSITE ELECTRONIC DEVICE PACKAGE- CONNECTOR UNIT**

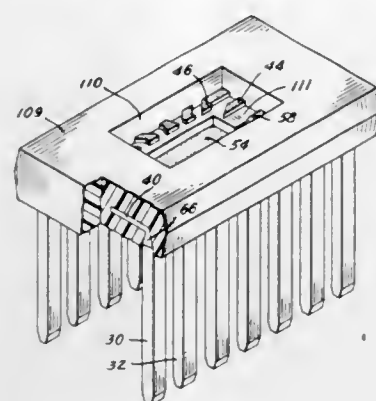
Marvin B. Happ, Hingham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1969, Ser. No. 886,614

Int. Cl. H05k 5/00

U.S. Cl. 174—52 PE

29 Claims



An integral combination package and connector unit for electronic devices including a plurality of spaced lead members having inner ends defining a plurality of terminal members, which are adapted for connection to the electronic device, and outer ends, terminating in aligned spaced relationship and joined with a plurality of male connector pins of a substantially greater thickness. The male connector pins depend from the outer ends of the lead members in aligned parallel relationship and are adapted to be connected in an electronic system. A nonconductive encapsulation material encapsulates the lead members and may encapsulate a portion of the male connector pins, although the ends thereof are exposed for connection to the electronic system. A cavity in the encapsulation material exposes the terminal members to permit connection of an electronic device to the terminal members, the cavity being adapted to receive a sealant plug to complete the unit.

3,627,902

# **INTERCONNECTIONS FOR MULTILAYER PRINTED CIRCUIT BOARDS**

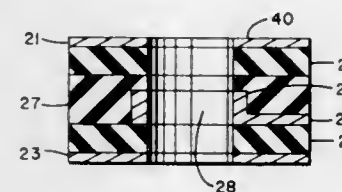
Steven C. Meyers, Burnsville, and Larry G. Bergman, Minneapolis, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Feb. 2, 1970, Ser. No. 7,656

Int. Cl. H05k 1/10

U.S. Cl. 174—68.5

6 Claims



A reliable mechanical and electrical connection between interior conductive layers and exterior conductive layers of a multilayer printed circuit board is provided. Shoulders are formed on the internal conductive layers at the location where connection is desired. A hole is then drilled through the assembly, passing through the shoulder. The wall of the hole is then electroformed with a conductive metal which makes connection at the formed shoulder. The added thickness of the shoulder combined with the pad area on the interior conductive layer provides a relatively large area and a more reliable interconnection.

# **3,627,903 WOVEN CABLE HARNESS ASSEMBLY AND METHOD OF MAKING SAME**

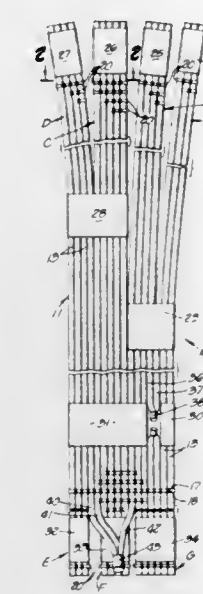
Walter A. Plummer, Sherman Oaks, Calif., assignor to Southern Weaving Company, Greenville, S.C.

Filed Sept. 28, 1970, Ser. No. 76,096

Int. Cl. H01b 7/08

U.S. Cl. 174—72 A

9 Claims



A wire harness assembly and method of making the same using one or more woven cables and groups of conductors along selected lengths thereof separated therefrom to provide branchout groups of conductors. A hot blade passed between a selective pair of conductors is effective to simultaneously sever the weft filaments of the woven cable and to bond the severed ends of the filaments together and/or to the plastic sheath of adjacent conductors. Cross connection between one or more conductors of different groups is accomplished by severing a selected conductor in each group at a point in the main trunk and interconnecting appropriate ones of the severed ends.

3,627,904

# **BUSHING FOR INCORPORATION IN ELECTRICAL CONNECTOR ASSEMBLY**

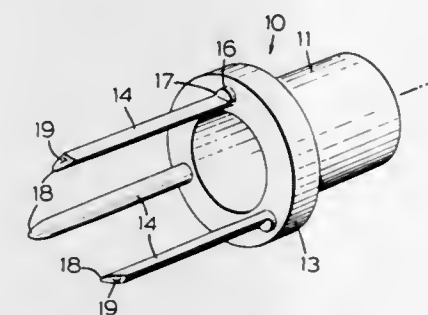
John D. Milne, c/o MM Plastics (Mfg) Company, 62 Shaft Road, Rexdale, Ontario, Canada

Filed Apr. 9, 1970, Ser. No. 26,928

Int. Cl. H02g 15/00

U.S. Cl. 174—83

7 Claims



An electrically insulating bushing presenting one or more prongs which so project that, with the bushing incorporated in an electrical connector assembly in which an end portion of an electric cable is connected to, for example, a junction box, the bushing being disposed within the connector with a cylindrical portion of the bushing disposed between the electrical conductors and the outer casing of the electric cable, the ends of the prongs project from the connector to be visible externally of the connector assembly, either with or without the removal of an element of the connector. Thus,

although removal of an element of the connector may be required in order to permit inspection of the connector assembly to ensure that a bushing has been installed therein, such inspection can be performed without requiring dismantling of the connector assembly. The projecting ends of the prongs present informational indicia concerning, for example, the size of the bushing, each prong being of segmental form in cross section with the arcuate face thereof facing towards, and the flat face thereof facing away from, the longitudinal axis of the bushing.

3,627,905

# **HIGH-VOLTAGE ELECTRICAL INSULATOR HAVING A PREDETERMINED SURFACE CONDUCTANCE**

Marcus William Astle-Fletcher; Leslie John Giles, and Joseph Kenneth Hill, all of London, England, assignors to British Railways Board, London, England

Filed Dec. 8, 1969, Ser. No. 883,249

Int. Cl. H01b 17/42, 17/64

U.S. Cl. 174—140 C

3 Claims

A high-voltage electrical insulator of synthetic plastics material having a predetermined electrical conductance to inhibit discharges of the order of 7 milliamperes and less but to permit larger current discharges. Preferably said conductance is provided by surface conductance and preferably it is discharges of 5 milliamperes and less which are inhibited.

3,627,906

# **ELECTRICAL CONDENSER BUSHING ASSEMBLY**

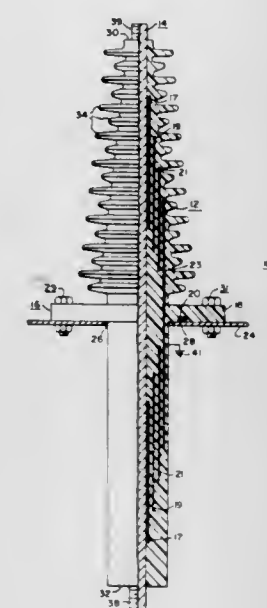
Robert A. Kurz, West Middlesex, and Jacob Chottiner, McKeesport, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 75,128

Int. Cl. H01b 17/28

U.S. Cl. 174—143

6 Claims



An electrical bushing assembly of the condenser type, including an insulating body member formed of cast solid insulation, an electrical conductor, and at least one tubular capacitor plate embedded in the cast solid insulation of the body member, in spaced relation about the electrical conductor. The tubular capacitor plate is formed of a plurality of turns of electrically conductive material, with the turns being axially spaced in a predetermined pattern to provide openings in the wall of the tubular capacitor plate, through which the solid insulation of the insulating body member extends.



3,627,907

**BINARY PULSE TRAIN TRANSMISSION SYSTEMS**  
Hans Diggelmann, Muri, and Rudolf Kuhne, Berne, both of Switzerland, assignors to Hasler AG, Berne, Switzerland  
Filed Oct. 10, 1969, Ser. No. 875,172

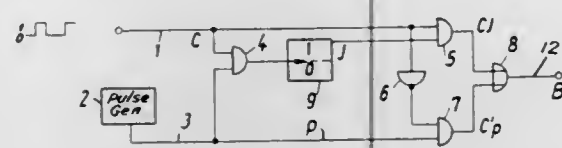
Claims priority, application Switzerland, Nov. 15, 1968,

16980/68

Int. Cl. H04I 17/00

U.S. Cl. 178—2 B

3 Claims



A system for the transmission by a transmitter of a first synchronous binary pulse train having means for converting said pulse train into a second synchronous pulse train and having means for transmitting said second pulse train to a receiver adapted to receive said second pulse train and to convert it into a pulse train corresponding to the first mentioned pulse train.

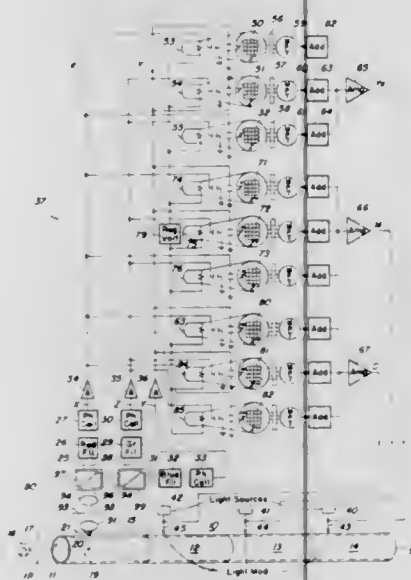
3,627,908

**HIGH-SPEED COLOR CORRECTING SCANNER FOR MAKING COLOR PRINTING PLATES**  
John L. Dailey, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.  
Filed Dec. 23, 1969, Ser. No. 887,636

Int. Cl. H04n 1/46

U.S. Cl. 178—5.2 A

7 Claims



A high-speed color correcting scanner, comprising a mirror and a multicolor pattern including red, green and blue colors mounted on a rotating mandrel for illuminating successively different spots of the pattern to reflect multicolor light therefrom; three discrete light filter and photocell means for translating the reflected red, green and blue light into three corresponding voltages varying in magnitude in response to the varying intensity of the respective latter light; a plurality of photosensitive printing plates mounted on the rotating mandrel; a plurality of sources of actinic light; a plurality of light modulators connected to the light sources; a transform analog computer embodying cathode ray tubes and light transparency encoded films activated by light from the latter tubes to generate other voltages for simultaneously actuating the light modulators to direct corresponding amounts of actinic light from the respective light sources onto the light-sensitive printing plates to image precisely the multicolor pattern thereon; and on optical device including two

light-beam splitters and interposed between the multicolor pattern and the filter means for splitting the reflected multicolor light into three discrete light beams for voltage translation by the filter and photocell means into the three corresponding voltages; the mirror, mandrel, light sources, modulators and optical device moving in synchronism.

3,627,909

**COHERENT COLOR GENERATOR FOR LIGHT VALVE PROJECTION SYSTEM**

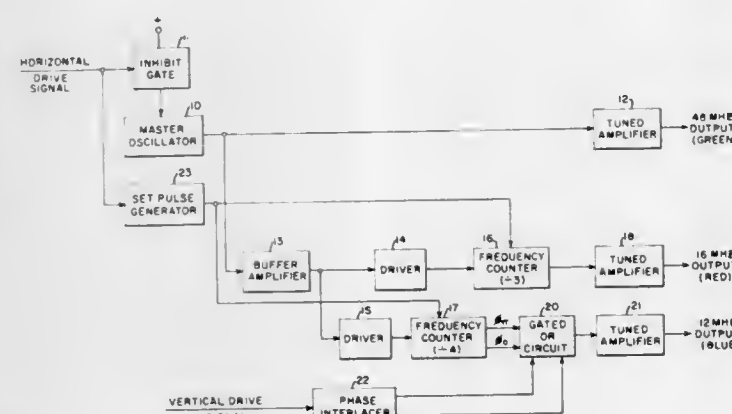
Thomas P. L. Liu, and Ho-Chol Lee, both of Liverpool, N.Y., assignors to General Electric Company

Filed Jan. 28, 1970, Ser. No. 6,446

Int. Cl. H04n 9/16

U.S. Cl. 178—5.4 B D

9 Claims



Radio frequency carrier signals to establish optical diffraction gratings of predetermined spatial frequency for each primary color respectively employed in a light valve are generated by a gated master oscillator and frequency divider apparatus. The carrier frequency ratios are constant, and all oscillations begin simultaneously from a zero crossing, with full amplitude oscillation occurring immediately at the outset. Phase alternation at vertical field rate is introduced in one of the carrier signals to alternately establish diffraction gratings oriented in the same direction and having identical spatial frequency but opposite spatial phase in order to minimize optical beat frequencies between the first and second diffraction gratings.

3,627,910

**IDENTIFICATION CIRCUIT FOR PAL COLOR TELEVISION RECEIVER**

Peter Johannes Hubertus Janssen, and Wouter Smeulders, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

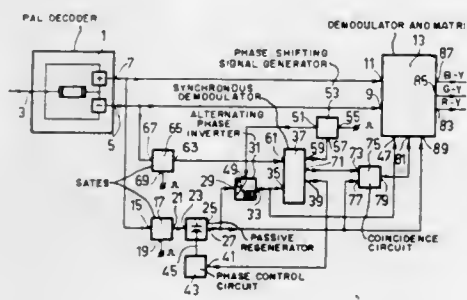
Filed Oct. 6, 1969, Ser. No. 863,803

Claims priority, application Netherlands, Oct. 5, 1968, 6814299

Int. Cl. H04n 9/46

U.S. Cl. 178—5.4 P

10 Claims



An identification circuit for a PAL television signal has a PAL decoder having an alternating phase output. A synchronous demodulator is coupled to the decoder output

and to a passive regenerator. A phase control circuit is coupled to the demodulator and to the regenerator. An alternating phase inverter is coupled to a demodulator input and is controlled by a phase shift generator coupled to the demodulator.

3,627,911

**WHITE BALANCE CONTROL SYSTEM**

Yasuharu Kubota, Kanagawa-ken, and Takashi Shiono, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

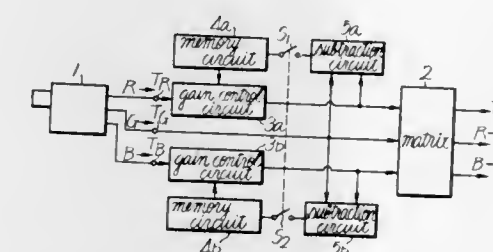
Filed Feb. 17, 1970, Ser. No. 12,070

Claims priority, application Japan, Jan. 17, 1970, 44/13409

Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 R

8 Claims



A white balance control system which has two amplifiers for red and blue video signals, two memory circuits for selecting the gains of the amplifiers in response to signals applied thereto, and two comparator circuits for comparing a green video signal with the red and blue video signals, respectively. The compared signals are respectively applied to the memory circuits selectively.

3,627,912

**VISUAL DISPLAY OF COMPLEX COLOR TELEVISION SOUND WAVE SIGNALS**

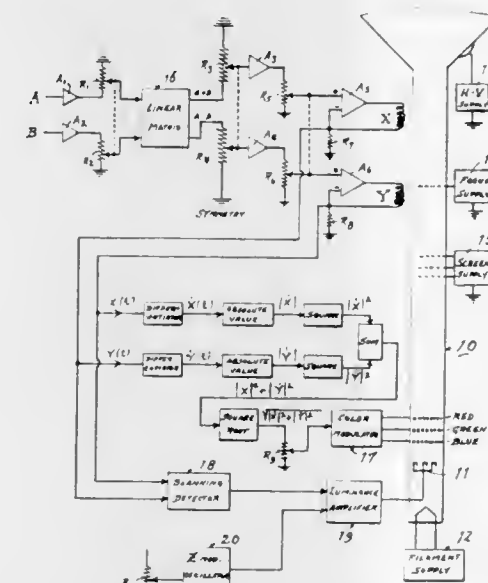
William E. Hearn, Atherton, Calif., assignor to Charles W. Kieser, San Francisco, Calif., a part interest

Filed Apr. 23, 1969, Ser. No. 818,666

Int. Cl. H04n 9/02

U.S. Cl. 178—5.4 R

7 Claims



This disclosure involves apparatus and modifying circuits for use in conjunction with a conventional color cathode-ray tube to provide fanciful wide-band vector representations of the video signals by a pair of audio channels such, for example, as would be produced with a stereophonic recorded-signal source. The stereophonic signal source may be generated through microphones, phonograph and magnetic

tape recordings, or from stereophonic broadcasts and is amplified and processed by wide-band linear circuitry whose effect is substantially independent of frequency and displayed in vector form on a color cathode-ray tube utilizing magnetic deflection. The effect of the apparatus is to produce highly detailed visual patterns of great regularity and beauty of form and color, revealing fine details inherent in the stereophonic representation of the complex, nonrecurrent wave forms produced by music or voice. No filters or frequency sensitive elements are used except as required to enhance the signal-to-noise ratio of the program material in which no timing signal, sweep signal, or raster representation is employed.

3,627,913

**TELEVISION VERTICAL BLANKING PULSE GENERATORS**

Richard John Godwin Ellis, Cambridge, England, assignor to Pye Limited

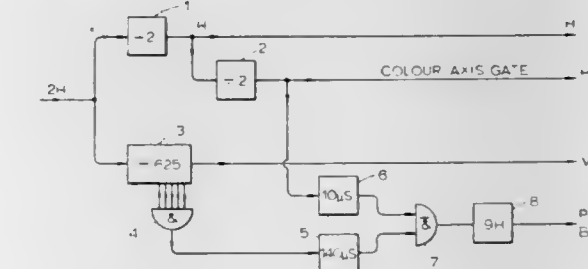
Filed Oct. 6, 1969, Ser. No. 864,033

Claims priority, application Great Britain, Oct. 10, 1968, 48,055/68

Int. Cl. H04n 9/44, 1/38

U.S. Cl. 178—5.4 SY

8 Claims



A vertical blanking pulse generator for a PAL television system features a frequency divider to produce a vertical synchronizing pulse from an input signal of twice the horizontal frequency. An AND gate decodes a pulse from the divider which leads the vertical sync pulse. A pair of frequency dividers produces a color axis gate pulse. Both of the above pulses are applied to pulse generators and then to a second AND gate. A third pulse generator produces the blanking pulse.

3,627,914

**AUTOMATIC TELEVISION PROGRAM CONTROL SYSTEM**

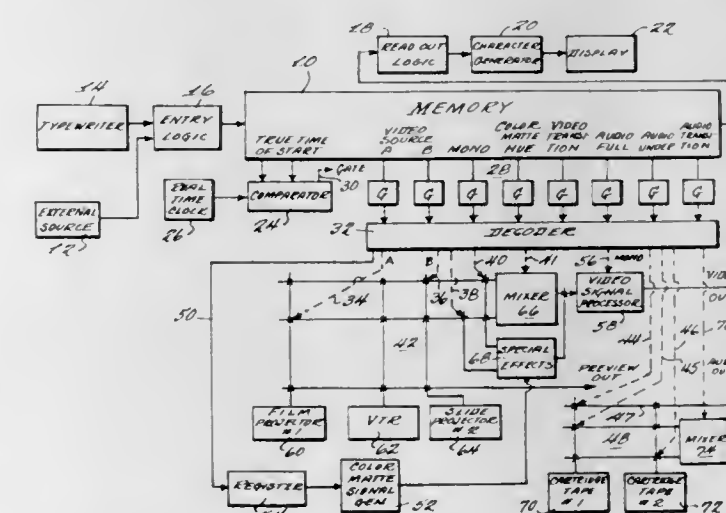
Kenneth P. Davies, Pointe Claire, Quebec, Canada, assignor to Central Dynamics, Ltd., Pointe Claire, Montreal, Quebec, Canada

Filed Sept. 4, 1969, Ser. No. 855,296

Int. Cl. H04n 7/00

U.S. Cl. 178—5.8

12 Claims



In an automatic television programming control system, circuitry for (1) effecting the insertion of a matte or the like



in a background picture, (2) providing for a transition (such as a dissolve or fade) from one audio source to another, and (3) effecting background audio such as music for a foreground audio signal.

3,627,915

### COLOR DEMODULATOR WITH SHUNT COUPLED CURRENT TAKEOVER COLOR KILLER CIRCUIT

Alphonsus Maria Henricus Schellekens, and Antonius Hendrikus Hubertus Jozef Nillesen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

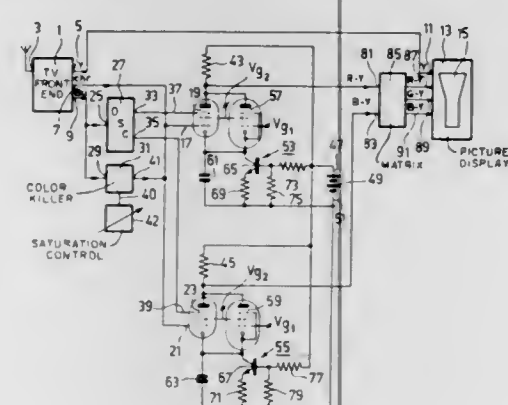
Filed May 20, 1969, Ser. No. 826,241

Claims priority, application Netherlands, May 22, 1968, 6807207

Int. Cl. H04n 9/50, 9/48

U.S. Cl. 178—5.4 SD

8 Claims



A color demodulator is in a series circuit having a constant current source and a supply voltage source. A current takeover circuit is parallel coupled to the demodulator. A color killer circuit cuts off the demodulator when no color burst is being received and therefore, the takeover circuit conducts all of the current from the current source to the load impedance. The direct current flowing through the load impedance then remains the same when either a monochrome or a color signal is being processed.

3,627,916

### APPARATUS FOR RECORDING AND REPRODUCING HOLOGRAMS OF MOVING SUBJECTS

Fritz Bestenreiner, Am Dullanger 5, Grunwald near Munich Heinrich Nassenstein, Hegelstrasse 6, and Gunther Langner, Carl-Rumpff-Strasse 28, both of Leverkusen, all of Germany

Division of Ser. No. 669,235, Sept. 20, 1967

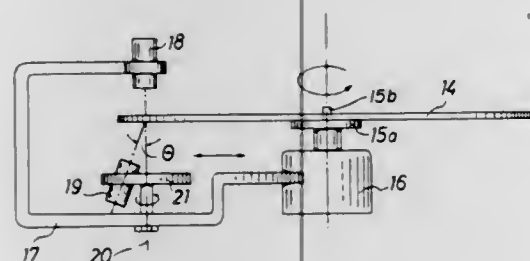
Filed Oct. 3, 1969, Ser. No. 863,476

Claims priority, application Germany, Sept. 21, 1966, A 53 567

Int. Cl. H04n 9/54, 9/60

U.S. Cl. 178—6.5

11 Claims



Holograms of moving subjects or of motion picture frames are recorded on a photosensitive carrier. When the carrier is moved with the holograms through coherent light, real images of the subject are formed which are reproduced for viewing.

### 3,627,917 MAGNETIC TAPE DUPLICATING APPARATUS WITH BULK TRANSFER AND SEPARATE DUPLICATION OF LONGITUDINAL TRACK

Hiroshi Sugaya, Suita-shi; Fukashi Kobayashi, Hirakata-shi; Mitsuaki Ono, and Kaoru Imanishi, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

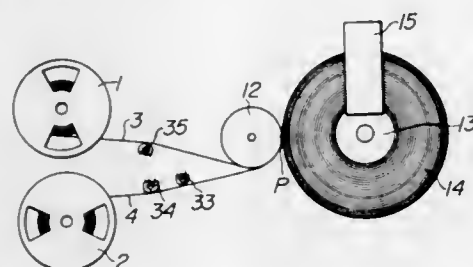
Filed Nov. 3, 1969, Ser. No. 873,267

Claims priority, application Japan, Jan. 18, 1969, 44/4297; Nov. 12, 1968, 43/100157; Nov. 13, 1968, 43/100087; Jan. 30, 1969, 44/8815; Jan. 30, 1969, 44/8816

Int. Cl. G11b 5/86, 21/00; H04n 5/78

U.S. Cl. 178—6.6 A

9 Claims



A magnetic tape duplicating apparatus, wherein a prerecorded master tape having a recording track containing a signal of a relatively short wavelength such as a video signal and a recording track containing a signal of a relatively long wavelength such as an audio signal, and a nonrecorded slave tape are wound onto a common reel with the magnetic surfaces thereof being disposed in close contact with each other. A transfer field is applied to the said two tapes to achieve duplication, and during the rewinding of the two tapes, duplication is again effected with respect to the recording track containing the said relatively long wavelength signal to thereby correct interlayer duplication of the said relatively long wavelength signal recording track occurring during the application of the said transfer field.

3,627,918

### MULTIPLE IMAGE REGISTRATION SYSTEM

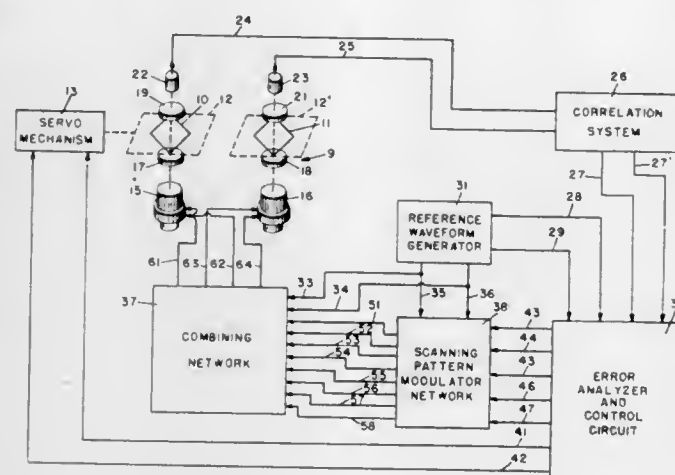
Donald Clark Redpath, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 30, 1969, Ser. No. 872,621

Int. Cl. H04n 3/28, 7/18; H01j 39/12

U.S. Cl. 178—6.8

31 Claims



An image registration system in which scanning patterns directed through a pair of images are used in a conventional manner to generate video signals that are in turn correlated and analyzed producing error signals. The error signals are then differentially modulated with reference signals producing modulated and complementary modulated error signals of opposite polarity. Selective combination of the reference and modulated error signals is accomplished with low noise and relatively simple circuitry and results in balanced pairs of deflection signals that induce equal but opposite transfor-

tions of the scanning patterns in senses tending to eliminate relative image distortion represented by the error signals.

3,627,919

### CODED RETICLE CATHODE-RAY TUBE CORRELATOR APPARATUS

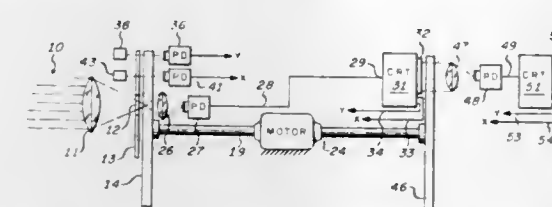
Irving Roth, Williston Park; Edward W. Stark, Garden City, and Solomon A. Zadoff, Jericho, all of N.Y., assignors to Sperry Rand Corporation

Filed Nov. 18, 1969, Ser. No. 877,719

Int. Cl. H04n 5/14

U.S. Cl. 178—6.8

11 Claims



An optical correlator object detecting and locating apparatus comprising a first rotatable reticle disposed in an optical receiver for uniquely encoding incident radiation in accordance with the location of the radiating object in the field of the receiver, the encoded signal being applied to a cathode-ray tube wherein it modulates the intensity of an electron beam which is swept vertically at a rate corresponding to the rotational rate of the reticle and horizontally at a rate determined by the reticle code pattern. A second reticle identically coded and synchronously rotated with the first reticle is positioned adjacent the cathode-ray tube screen whereupon spatial image correlation occurs at the instant the second reticle is aligned with the code pattern on the screen causing maximum light (the autocorrelation signal) to be transmitted through the second reticle. A visual presentation of the location of the radiating object in the field is obtained by means of an additional cathode-ray tube which is swept similarly to the first cathode-ray tube and intensity modulated by the correlation signal.

3,627,920

### RESTORATION OF DEGRADED PHOTOGRAPHIC IMAGES

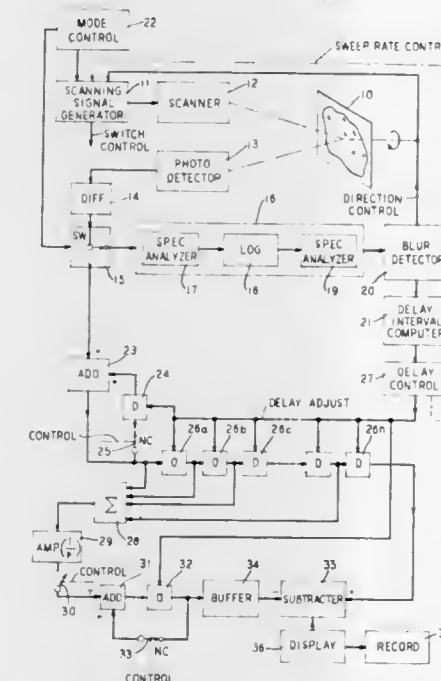
Manfred R. Schroeder, Mountaineer, and Man M. Sondhi, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 3, 1969, Ser. No. 813,236

Int. Cl. H04n 7/18

U.S. Cl. 178—6.8

11 Claims



Photographs which are blurred, for example, by uniform motion of a camera relative to an image during exposure, are

restored by identifying certain parameters of the blurring, e.g., direction and displacement, using the parameters to transform the distortion into an additive periodic component in the picture (blur), and by estimating (or identifying) and subtracting the periodic components from the picture. Two-dimensional spectral analysis, or the cepstrum technique, may be employed to identify the blur parameters, and a transversal filter arrangement, adjusted in accordance with parameter values is used to perform the estimation and subtraction.

3,627,921

### METHOD OF, AND APPARATUS FOR, TRANSMITTING INFORMATION IN REPRODUCTION SYSTEMS USING ADAPTIVE SCANNING

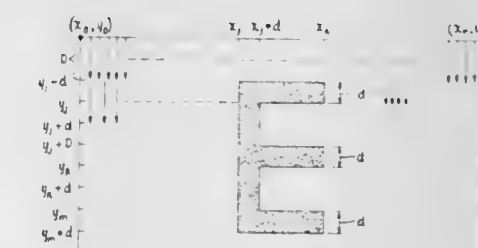
David R. Weller, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 14, 1969, Ser. No. 790,974

Int. Cl. G06k 9/12; H04n 3/34, 7/12

U.S. Cl. 178—6.8

21 Claims



A method of, and apparatus for, reproducing documents is disclosed. A document is scanned by a flying spot scanner whose beam is modulated vertically during each horizontal scan of the document along the X-axis. The magnitude of the vertical modulation varies as a function of the vertical magnitude of the information encountered during the horizontal scan. The scanned portion of the document is reproduced by unblanking a scope with detected X-data during a horizontal sweep while simultaneously modulating the scope beam vertically.

3,627,922

### VIDEO FILM CONTAINING INTERMIXED MOVIE AND STILL PICTURE INFORMATION AND REPRODUCING APPARATUS THEREFOR

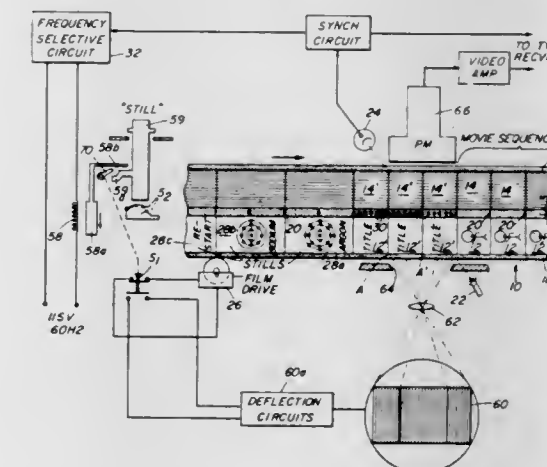
Peter C. Goldmark, and Abraham A. Goldberg, both of Stamford, Conn., assignors to Columbia Broadcasting System, Inc.

Filed Oct. 29, 1969, Ser. No. 872,163

Int. Cl. H04n 5/36

U.S. Cl. 178—7.2 R

9 Claims



System for reproducing information recorded on a film in a format comprising sections of motion picture sequences in-



termixed with sequences of still pictures, including means responsive to indicia recorded on the film at transitions from motion picture sequences to still picture sequences for automatically stopping the film at the first still picture of a still sequence. The motion and still sequences are recorded in monochrome as two adjacent successions of picture frames separated by an intermediate strip containing synchronizing indicia (one per frame in the motion sequences) to which optical sensing apparatus in the playback system is responsive. At the transitions, the intermediate strip contains a multiplicity of similar indicia in response to which the sensing apparatus generates a signal having a frequency determined by the spacing of the indicia and the rate of travel of the film during playback of motion sequences. A circuit responsive to this signal actuates a solenoid which, in turn, deenergizes the film drive to stop the film for viewing the still picture.

3,627,923

## TELEVISION CAMERA

Horst Bachmann, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

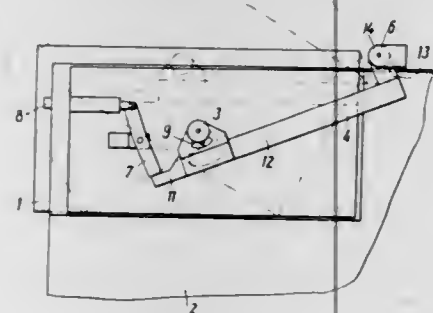
Filed Mar. 27, 1970, Ser. No. 023,304

Claims priority, application Germany, Apr. 5, 1969, P 19 17 671.7

Int. Cl. H04n 5/26, 7/02

U.S. Cl. 178—7.2

2 Claims



The television camera has a recess in its body for receiving a swiveling electronic viewfinder. The viewfinder is pivotally supported at its center of gravity between the limbs of a fork lever. The fork lever is hinged to the camera to swing about an axis that lies beyond the range of movement of the viewfinder. The fork is spring loaded and provided with a controllable locking device.

3,627,924

## FLAT SCREEN TELEVISION SYSTEM

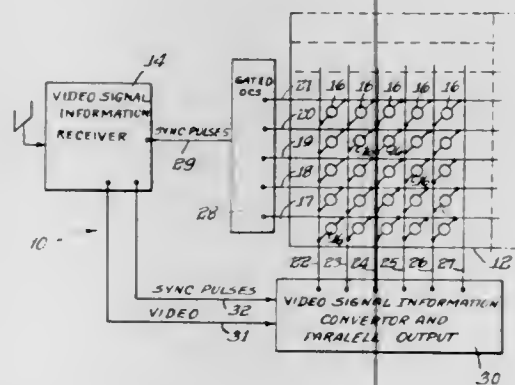
Gordon Ross Fleming, Sylvan Lake, and Kenneth E. Van Lanningham, Hazel Park, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed May 16, 1969, Ser. No. 825,274

Int. Cl. H04n 5/70

U.S. Cl. 178—7.3 D

17 Claims



An electroluminescent array and a method and circuit arrangement for energizing the discrete elemental points on the

electroluminescent array a row at a time and in a manner to energize each discrete elemental point on the selected row for different periods of time to establish a plurality of different light intensities to obtain a gradient of gray scales across the selected row visually to display a single scan line portion of a video display pattern. The electroluminescent array may include a predetermined number of row circuit lines and a predetermined number of column circuit lines arranged in a cross grid X-Y pattern to form a circuit juncture at each crossing of the column and row circuit lines, and a threshold-operated electroluminescent circuit is connected at each of the junctures. Each threshold-operated electroluminescent circuit, most advantageously, comprises a bidirectional threshold-switching device having time delay characteristics, and electroluminescent element, and a resistor. Means are provided to apply operating potential sequentially to each of the row circuit lines one after the other and, while any given row circuit line is energized each of the electroluminescent circuits connected along that row will remain in a stable off condition until a given start signal is applied to each of the column circuit lines at which time the electroluminescent circuit connected to the junctures of the selected row and the column circuit lines will be energized to emit light. The light intensity from each of the electroluminescent circuits connected across the selected row will depend on the point in time the electroluminescent circuit is rendered operative to emit light from the electroluminescent element thereof. Most advantageously, all of the electroluminescent circuits along the selected row circuit line are simultaneously deenergized by the removal of the operating potential from the row circuit line, and the next row circuit line receives operating potential to receive a subsequent scan of video information.

3,627,925

## BEAM VELOCITY CORRECTION FOR FLYING SPOT OPTICAL SCANNERS

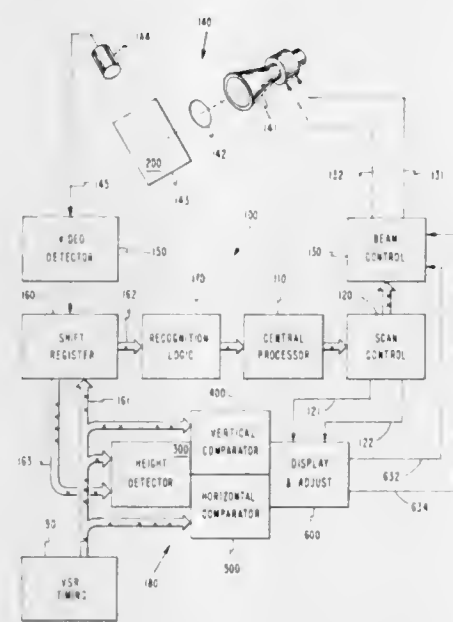
David C. Roberts, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,410

Int. Cl. H04n 3/22

U.S. Cl. 178—7.7

15 Claims



A document having accurately preprinted marks is scanned with a timed raster. For vertical speed correction, the time between two series of parallel marks is compared with a standard number. On a display CRT, a short line is intensified for each scan having a duration less than the standard number; a long line is intensified for each duration longer than the standard number; and an intermediate line is intensified when the duration equals the standard number.

Beam velocity is adjusted to bring the greatest number of lines to the intermediate length. For horizontal speed correction, the number of scans between two vertical marks is measured. The first vertical mark is delayed in a shift register for a standard number of scans and is then displayed on the CRT. The second vertical mark is displayed on the CRT at the time of its occurrence. The beam velocity is then adjusted to line up the two mark images.

3,627,926

## DESIGN GENERATION UTILIZING MOVING IMAGES

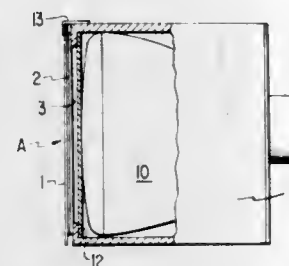
James William Nichols, 237 E. 72nd St., New York, N.Y.

Filed July 15, 1968, Ser. No. 744,905

Int. Cl. H01j 29/89

U.S. Cl. 178—7.86

2 Claims



A design generator comprising a stack of aligned sheets, one of which has an opaque background with a pattern of clear portions therein and the others are transparent and differently colored. When the assembled stack is placed in front of a screen upon which moving images are projected, the screen being that of a black and white or colored television set, or a black and white or color cinematic projection, components of the projected moving images pass through the patterns of clear portions in the opaque sheet, the black and white or color images being modified by the colored sheets. A viewer looking at the opaque sheet sees a continuously changing pattern of colored designs, as the projected moving images move relative to the design generator.

3,627,927

## MONOLITHIC KEYBOARD AND METHOD FOR MAKING SAME

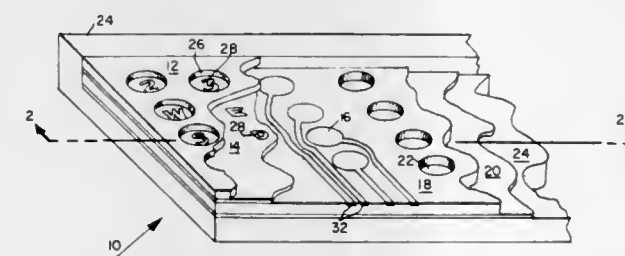
Herbert E. Schmitz, Amherst, and Robert A. Bleau, South Lyndeboro, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 24, 1969, Ser. No. 879,479

Int. Cl. H04l 15/16

U.S. Cl. 178—17 C

16 Claims



A monolithic keyboard constructed in layers with inexpensive materials and which has no conventional moving parts is disclosed. In one embodiment, the layers include a bottom or first layer of conductive material, a second layer of spongy material with holes cut therein, and a third layer of flexible printed circuit. This flexible printed circuit includes a sheet of insulating material with conductive pads placed thereunder in registration with the holes in the spongy material. Key symbols are etched on or printed over the conductive pads thereby indicating the placement of the keys. Depressing the key causes contact to be made between the

respective pad and the first layer of conductive material. The spongy material gives the operator the "touch" of a standard typewriter keyboard.

3,627,928

## TELEGRAPH PRIVACY SYSTEM

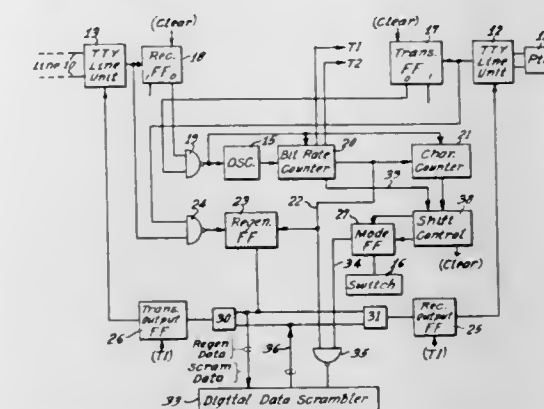
Donald F. Wolper, Stony Brook, and Bernard M. Rosenheck, Huntington, both of N.Y., assignors to Litton Systems, Inc.

Filed Feb. 4, 1969, Ser. No. 796,464

Int. Cl. H04l 9/04

U.S. Cl. 178—22

8 Claims



A telegraph privacy system employing standard teleprinter apparatus arranged for half-duplex operation. The data bits of the telegraph character signals from the keyboard of the teleprinter are combined with the output data of a digital data scrambler-descrambler unit to insure privacy in transmission of messages. The scrambler-descrambler unit is of the self-synchronizing type whereby transmission can be commenced from any telegraph station at any time without special code synchronization or manual operation of a send-receive switch or other control. The timing and control of the system's functions are effected by logic circuits and electronic gated switching devices.

3,627,929

## ELECTRICAL CONNECTOR HAVING NORMALLY ENGAGED CAMMABLY OPERATED CONTACTS

Hermanus Petrus Johannes Gilissen, Vlijmen, and Lucas Gerardus Christianus Teurlings, S-Hertogenbosch, both of Netherlands, assignors to AMP Incorporated, Harrisburg, Pa.

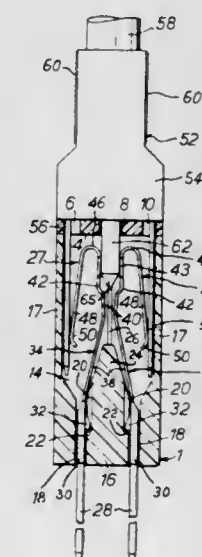
Filed Nov. 20, 1969, Ser. No. 878,468

Claims priority, application Netherlands, Nov. 22, 1968, 6816760

Int. Cl. H01r 17/00

U.S. Cl. 179—96

7 Claims



An electrical connector comprises an insulating housing containing pairs of contact springs, the springs of each pair normally engaging one another. The springs of the pairs can



be cammed apart by insulating plugs inserted through holes in the housing to isolate subscribers and to allow line testing by test tabs inserted through further holes in the housing to engage the contact springs.

3,627,930

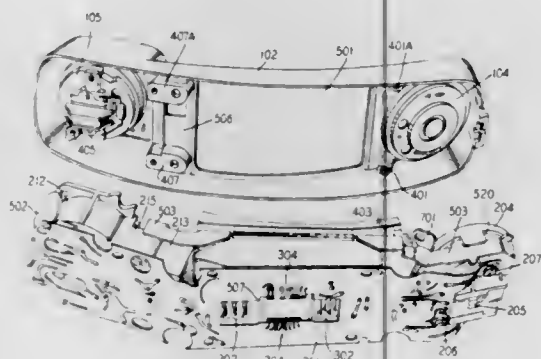
## DIAL-IN-HANDESET TELEPHONE ASSEMBLY

Warren R. Tolman, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Oct. 27, 1969, Ser. No. 869,777

Int. Cl. H04m 1/02

U.S. Cl. 179-100 R

2 Claims



In a dial-in-handsset telephone, manufacture and assembly are simplified and weight and costs are reduced by a number of structural features that serve to integrate the subassemblies of the set into a single integral unit. These features include combining the dial and network discrete components on a single double-sided flexible printed circuit board and the use of extended brackets mounted on the pushbutton dial assembly as a telephone set chassis.

3,627,931

## MOVING MAGNET TYPE STEREO PICKUP

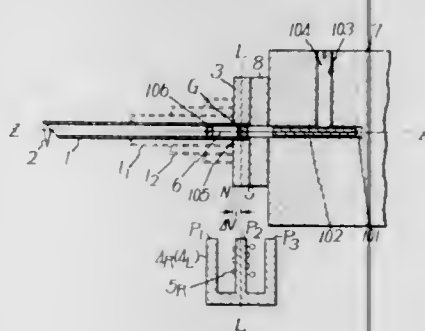
Hitoshi Matsuda, Tokyo, Japan, assignor to Nippon Columbia Kabushiki Kaisha (Nippon Columbia Co. Ltd.), Tokyo, Japan

Filed Jan. 23, 1968, Ser. No. 699,936

Int. Cl. H04r 1/12

U.S. Cl. 179-100.41K

11 Claims



A stereo pickup having an arm for carrying a stylus at one end and an armature comprising a flat magnet magnetized in the direction of its thickness attached to the other end of the arm and the pickup supported so that the armature has its center of gravity at substantially the center of vibration of the vibration system and a magnetic pickup coil supported relative to the armature so as to pick up the vibratory signals from the pickup.

3,627,932

## TEST MEANS FOR TELEPHONE SWITCHING SYSTEMS

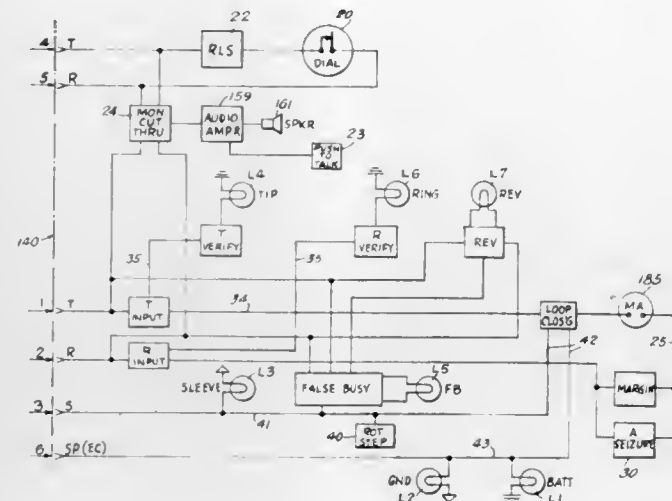
Jim C. Garrett, and Robert H. Johnson, both of 3300 E. Spring St., Long Beach, Calif.

Filed Feb. 17, 1969, Ser. No. 799,628

Int. Cl. H04m 1/24, 3/08

U.S. Cl. 179-175

5 Claims



A compact, lightweight and portable set for testing trunk wiring in telephone step-by-step switching systems, comprising means allowing rapid detection of circuit malfunctions, means to indicate the presence of "false busies" and means to perform such test functions without interfering with working circuits and providing, for the user, the means to communicate with anyone encountered during testing.

3,627,933

## DEVICE FOR TRACING A TELEPHONE SWITCH TRAIN

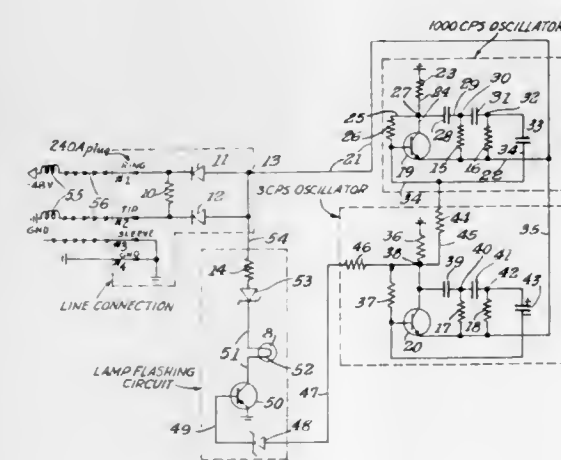
Jim C. Garrett, and Robert H. Johnson, both of 3300 East Spring St., Long Beach, Calif.

Filed Sept. 12, 1969, Ser. No. 857,392

Int. Cl. H04m 3/26

U.S. Cl. 179-175.2

3 Claims



A self-contained, solid-state device adapted for connection to a switch test jack of a telephone central office and requiring no external electrical power, comprising means to hold the switch train regardless of correct or reversed polarity of the trunk, a blinking light serving as a visual reminder that the device is in position to trace a call through the central office and that the switch train is being held up for tracing or testing purposes, using loop resistance to hold the switch train forward, a grounded sleeve contact to hold the train backward, and an audio range oscillator to place a clear and distinct interrupted trace tone on the train being held up.

3,627,934

## METHOD AND APPARATUS FOR VERIFYING MAGNETIC RECORDS

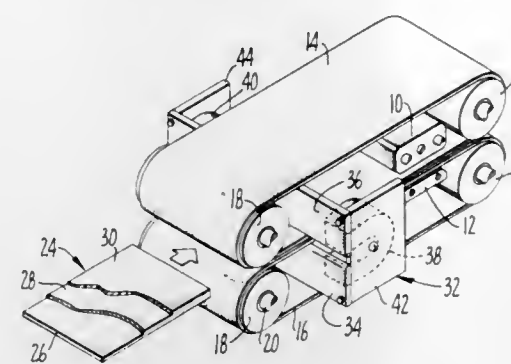
John B. Riddle, Los Altos Hills, Calif., assignor to Micro-Magnetic Industries, Inc., Palo Alto, Calif.

Filed Apr. 9, 1969, Ser. No. 814,718

Int. Cl. G11b 5/02; G06k 5/00

U.S. Cl. 179-100.2 B

3 Claims



A method and apparatus for verifying the validity of magnetic records such as credit cards carrying magnetic information in a layer of magnetically susceptible material by subjecting the records prior to the conclusion of playback to a high-intensity erasing field which has an intensity less than the coercivity of the magnetically susceptible material.

3,627,935

## MULTIPLE-SWITCH BANK AND KEYBOARD

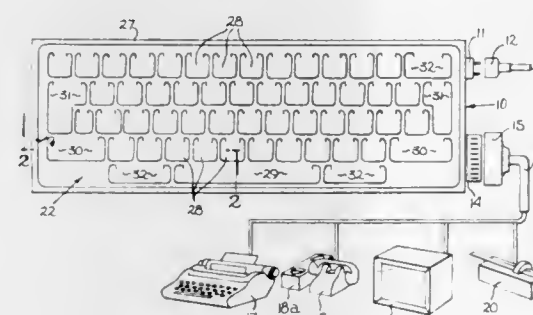
Louis A. Spievak, 2905 Mandeville Canyon, Los Angeles, Calif.

Filed Feb. 19, 1970, Ser. No. 12,735

Int. Cl. H01h 9/26, 3/02

U.S. Cl. 200-5 R

46 Claims



A multiple-switch bank is provided that generates a unique group of electrical pulses at each switch whereby each group of pulses represents a specific bit of intelligence or information to be coded and transmitted. Coding is accomplished by providing at each switch a plurality of contacts which can be brought into engagement with an equal number of code bars. Some bars are coated with a nonconductive layer whereby at the remaining bars there can be established a unique pattern of conductive electrical contacts. The switches are manually operated from a keyboard of novel design in which the keys may be arranged in the conventional pattern of a typewriter. The block with the code bars can be removed and replaced by another one in order to reprogram all the coded signals. The signals are particularly compatible with receiving equipment adapted to operate on binary codes.

3,627,936

## APPARATUS FOR CONVERTING KEYBOARD FORMATS

Robert E. Cullen, Foxborough, Mass., assignor to Eastman Kodak Company

Filed Apr. 27, 1970, Ser. No. 31,901

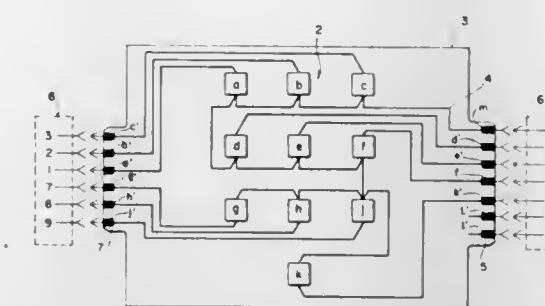
Int. Cl. H01h 9/26; H04m 1/26

U.S. Cl. 200-5 E

8 Claims

The electrical circuitry to the switches of a keyboard are changed between a business machine format and a telephone

format by the removal, inversion, and reconnection of a con-



nector. The keys are rearranged manually to reflect the changed electrical format.

3,627,937

## CAM SELECTOR SWITCH MECHANISM WITH LOST MOTION STRUCTURE FOR USE IN ELECTRO-MECHANICAL TIMERS

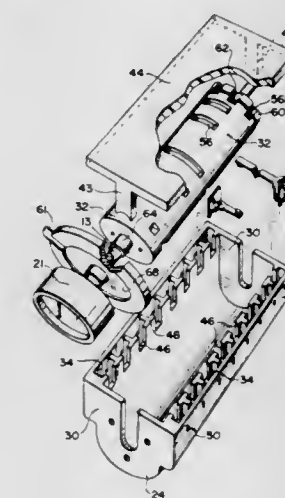
Roy L. Swanke, Newington, and William J. Conlon, New Britain, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,967

Int. Cl. H01h 7/08, 43/10

U.S. Cl. 200-38 B

22 Claims



An appliance motor speed control system with a simplified space saving rotatable permutation switching component for multiple field coil windings in which switches are permuted in patterns to change the effective impedance of the motor field and without energizing the motor during transition from one setting to another. The component includes sequential speed selection switching between light switches rated to break the electrical current. Single-pole double-throw switches further conserve space and parts while push-in wire connections reduce assembly time and production costs.

3,627,938

## PERMUTATION SWITCH

William J. Davidson, Scio, Oreg., assignor to Electronic Controls Corporation, Scio, Oreg.

Filed Apr. 17, 1970, Ser. No. 29,528

Int. Cl. H01h 27/10

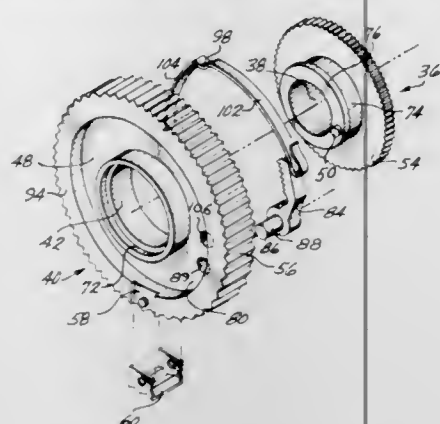
U.S. Cl. 200-43

11 Claims

A plurality of tumblers are rotated by means made operable by selective movements of a combination dial to place conductive or dielectric peripheral regions of the tumblers in circuit making or breaking contact with spring contact fingers. The tumblers comprise annular outer portions surrounding inner portions which are independently rotatably mounted on a shaft. Releasable lock levers normally connect the two tumbler portions together for conjoint rotation. A radial actuator arm is secured to the rear end portion of the shaft. The inner portion of the rear tumbler includes a rear abutment positioned to be moved by the arm. Front and/or



rear abutments on the inner portions of the remaining tumblers transmit rotary motion of the rear tumbler to the other tumblers. A pin is insertable from the rear of the switch through openings in the outer tumbler portions to both move



the lock levers into release positions and lock such out portions together. This permits use of the dial to change the azimuthal position of the peripheral segments relative to the dial indicia, and the combination of the switch.

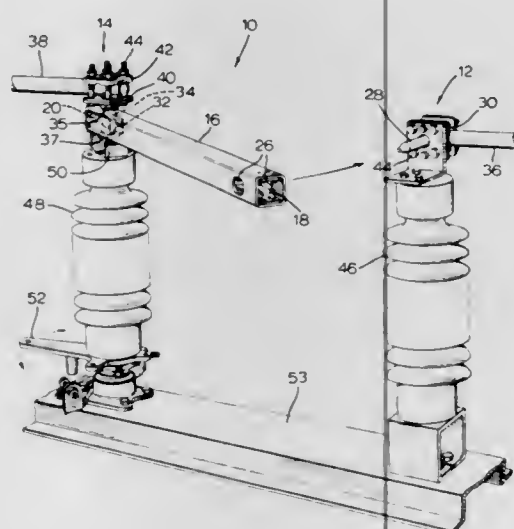
### 3,627,939 ELECTRIC SWITCH

John Howard Myers, Guelph, Ontario, Canada, assignor to Kearney-National (Canada) Limited, Guelph, Ontario, Canada

Filed June 19, 1970, Ser. No. 47,733  
Int. Cl. H01h 21/28

U.S. Cl. 200—48

14 Claims



An electrical switch includes a pivotable switch blade having finger contact means carried thereby and an elongated contact associated with at least one of the terminals to engage and deflect the finger in the switch-closed position.

In addition, the blade may be pivoted at one end and when so pivoted is provided with finger contact means which engage the pivot to provide electrical contact between the terminal and the pivot pin.

### 3,627,940 EARTHING SWITCHES

Rintje Boersma, Harmelen, and Gijsbert Waldemar Irik, Bilthoven, both of Netherlands, assignors to N.V. COQ Utrecht, Netherlands

Filed Aug. 28, 1970, Ser. No. 67,937  
Claims priority, application Netherlands, Nov. 4, 1969, 6916587

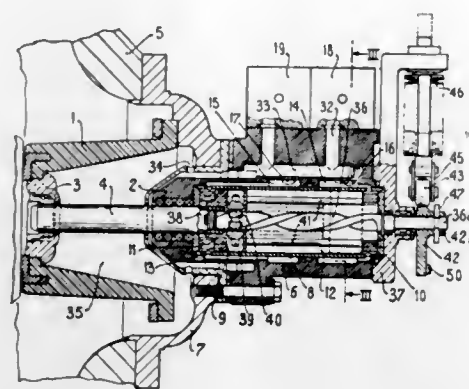
Int. Cl. H01h 31/00

U.S. Cl. 200—48

3 Claims

Earthing switch, of which the movable switching contact is normally driven by a piston and is also coupled with a non-

self-braking screwed rod, by means of which the switching contact can be driven by hand, said screwed rod forming at



the same time part of a locking mechanism to lock the switching contact in its end positions and of an indicator to indicate the position of the switching contact.

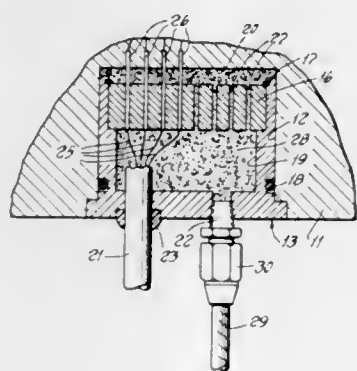
### 3,627,941 PNEUMATIC CABLE EJECTOR

Donald H. Wrathall, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 20, 1970, Ser. No. 39,675  
Int. Cl. H01r 33/30

U.S. Cl. 200—51 R

2 Claims



A system for removing a connecting cable from a torpedo at the time of applying an electrical firing pulse is provided. Compressed CO<sub>2</sub> is applied through a solenoid-operated gas valve to a plug connecting the cable to the torpedo, providing the force for ejecting the cable plug from the torpedo. A time delay circuit preferably is connected in series with the solenoid valve to insure that the torpedo receives the firing pulse before the plug is ejected.

### 3,627,942 TERMINAL BLOCK HAVING AN OPENING THEREIN WITH NORMALLY ENGAGED CONTACTS IN ALIGNMENT WITH THE OPENING AND A PLUG FOR ENGAGEMENT WITH THE CONTACTS

Clifford Frank Bobb, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

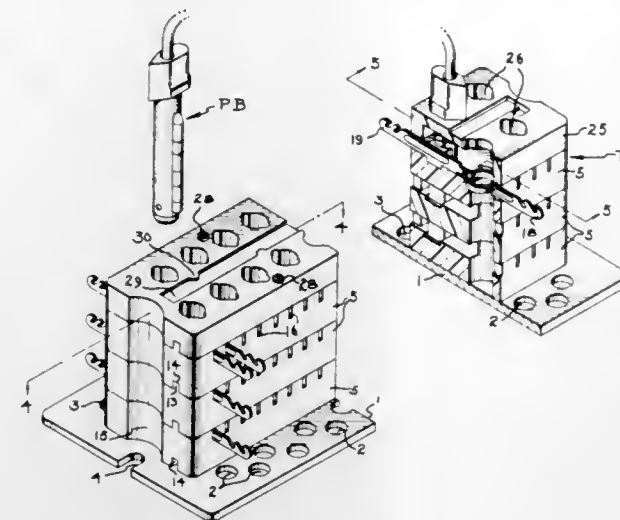
Filed Apr. 9, 1964, Ser. No. 358,548  
Int. Cl. H02r 33/30

U.S. Cl. 200—51.07

7 Claims

A terminal block and plug are disclosed, the block comprising a plurality of stacked block members having openings therein, each opening having normally engaged contact

means therein, the plug having means for engaging the contacts and being insertable into the openings. The plug is



rotatable in the openings to make and break the contact means disposed in the openings.

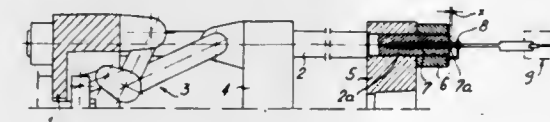
### 3,627,943 TOOLHOLDING ARRANGEMENT INCLUDING IMPROVED CONTROL SIGNAL PRODUCING MEANS

Armin Blumer, Schwanden, Switzerland, assignor to Maschinenfabrik und Glesserei Netstal AG, Netstal, Switzerland

Filed May 15, 1969, Ser. No. 824,968  
Int. Cl. H01h 35/00

U.S. Cl. 200—52

11 Claims



A toolholding arrangement employing tie rods, more particularly for machines for the injection moulding of plastics materials, of the kind having a first tool carrier movable by means of a holding mechanism on the tie rods supported on one end of the tie rod, and a second tool carrier supported on the other end of the tie rod. In accordance with the invention, means are arranged on each individual tie rod, which transform a tie rod load exceeding a predetermined size, into an operating parameter to which there responds a sensitivity device providing a control signal.

### 3,627,944 SENSING AND CONTROL APPARATUS FOR WEBS

Donald G. Field, Trenton, N.J., assignor to Holland-Rantos Company, Inc., Piscataway, N.J.

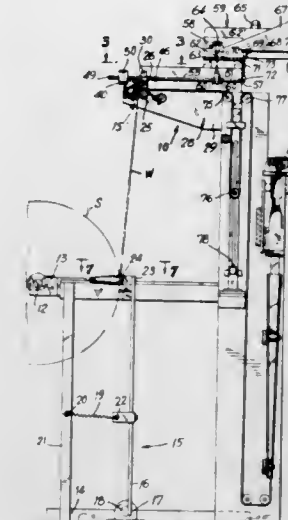
Filed Mar. 24, 1970, Ser. No. 22,275  
Int. Cl. B65h 25/14

U.S. Cl. 200—61.13

3 Claims

A sensing and control apparatus for detecting thickness irregularities or the like in webs, such as paper webs. The apparatus includes a reference roller rotatably mounted about a fixed horizontal axis, and a motion detector roller mounted for vertical shifting movement, the rollers being adapted to lie tangent to a web disposed therebetween. A cross-shaft is provided, the shaft being mounted for rotation about a horizontal axis parallel with the axis of rotation of the rollers. Follower means on the cross-shaft engage on seats provided on the detector roller, such that upward movement of either end of the roller caused by a flaw in the web will induce a rotation of the shaft. The connection between the follower

and roller is such as to permit pivotal movement about an axis essentially perpendicular to the pivot axis of the cross-



shaft. Motion magnifying means for operating a cutoff switch are connected to the cross-shaft.

### 3,627,945 TRANSMISSION OF ASYNCHRONOUS TELEGRAPHIC SIGNALS

Ernst Diggelmann, and Rudolf Kuhne, both of Berne, Switzerland, assignors to Hasler, AG, Berne, Switzerland

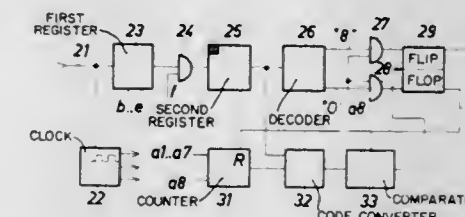
Filed Nov. 6, 1968, Ser. No. 773,800

Claims priority, application Switzerland, Nov. 16, 1967, 15931/67

Int. Cl. H04l 3/00

2 Claims

U.S. Cl. 178—50



In transmitting telegraphic signals, binary asynchronous signals are scanned at regular intervals and combined to form scanning groups, each of which is converted to a code word. The data contained in the code word is then transmitted via a telegraphy channel to the receiving end of the line where it is converted to a binary time-quantized output signal. The circuit for performing these operations has a transmitter part and a receiver part. The transmitter part has a master clock, for transmitting different pulse series for controlling the scanning and transmission, a channel unit for scanning the signal and a code converter for converting the scanning group into a code word. The receiver part has a master clock synchronized by the received signals, a counter for counting pulses corresponding to the scanning pulses and an output flip-flop.

### 3,627,946 METHOD AND APPARATUS FOR ENCODING ASYNCHRONOUS DIGITAL SIGNALS

Nobuo Inoue, and Yuichi Sato, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed July 8, 1969, Ser. No. 839,965  
Claims priority, application Japan, July 9, 1968, 43/47615  
Int. Cl. H04b 1/04, 1/16; H03k 13/00

U.S. Cl. 178—68

3 Claims

In transmitting a digital signal, e.g. a digital signal on a PCM transmission line which is asynchronous with a clock







to the availability of a trunk. When no trunk is available, the line scanner locks on the first bidding line it locates to provide pseudoqueuing by serving the bidding line first when a trunk becomes free.

3,627,954

### CALL-SIGNALING PROCESSOR IN A TELEPHONE-SWITCHING SYSTEM

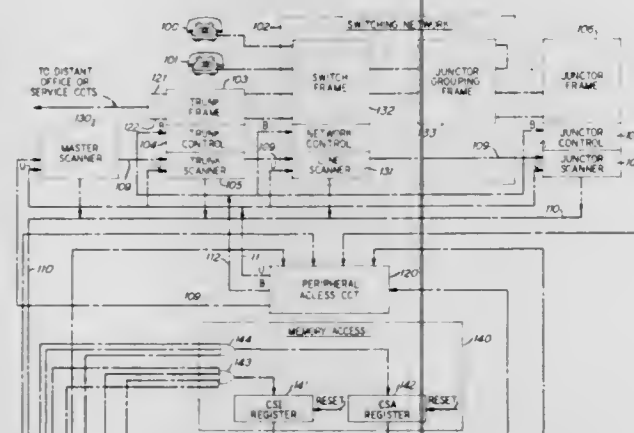
Thomas M Quinn, West Chicago, Ill., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 21, 1969, Ser. No. 686,024

Int. Cl. H04g 3/54

U.S. Cl. 179—18 ES

6 Claims



A program-controlled telephone switching system wherein dial pulse transmission to trunks is effected by a plurality of dial pulse sender circuits which are connected to terminals of the telephone-switching network. During outpulsing a connection is established through the network between a dial pulse sender circuit and a selected trunk circuit. Each such sender circuit is responsive to a start signal to transmit a sequence of dial pulses and is responsive to a stop signal to terminate the transmission of such dial pulses. A common source is provided for generating the dial pulses for all sender circuits. A record of the information to be outpulsed is maintained in a multiword-originating register in a bulk memory. A program-controlled processor generates the start and stop signals in accordance with information contained in the originating register. An autonomous wired logic processor repetitively alters a portion of the record in the originating memory at a rate which corresponds to the dial pulse rate and flags the program-controlled processor to generate the stop signal.

3,627,955

### COMBINED TELEPHONE AND PAGING SYSTEM WHEREIN A CALLING PARTY MAY BE CONNECTED TO A PAGED PARTY AND AN ATTENDANT

Richard C. Stone, Jr., Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.Y.

Filed Dec. 8, 1969, Ser. No. 882,860

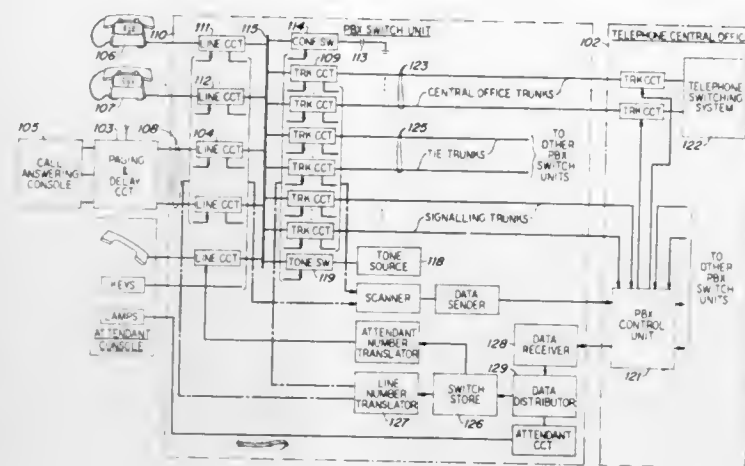
Int. Cl. H04m 3/42

U.S. Cl. 179—18 BF

9 Claims

In a combined telephone paging system, a paging call may be answered by the paged party from any station of the

system and by an attendant from a call answering console. If the paged party answers after the attendant has answered, a



three-way conference connection is established interconnecting the calling party, the attendant, and the paged party.

3,627,956

### SEMI-AUTOMATIC OPERATOR-CONTROLLED TELEPHONE SYSTEM

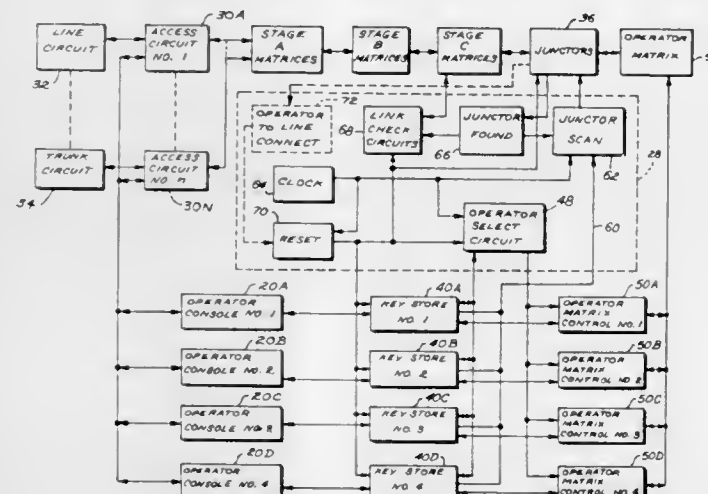
Klaus Gueldenpfennig, and Gerhard O. K. Schneider, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 19, 1969, Ser. No. 886,577

Int. Cl. H04m 3/60

U.S. Cl. 179—27 CA

19 Claims



A semiautomatic operator-controlled telephone system wherein any one of a plurality of operator consoles can be given access to the system control equipment for automatically setting up the connections between input circuits by merely sequentially actuating the switches designating the input circuits. Separate control circuits for each of the consoles are interconnected so that only one operator console can gain access to the control equipment at one time and the other operator consoles are inhibited. The control circuits are released after the connections between the operator and an input circuit are complete, or after a sufficient period of time to complete the connections.

### ERRATA

For Classes 200—5 and 200—61 see: Patent Nos. 3,627,935 and 3,627,944

### 3,627,957 DEVICE FOR DETECTING THE END OF ROLLED PHOTOSENSITIVE PAPER FOR AUTOMATIC COPYING MACHINES

Yugoro Kobayashi, and Tsutomu Yamakami, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

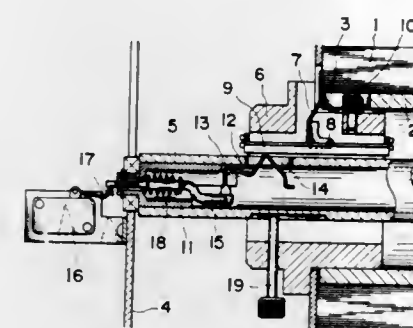
Filed Apr. 20, 1970, Ser. No. 30,078

Claims priority, application Japan, May 6, 1970, 44/34058

Int. Cl. B65h 25/14

U.S. Cl. 200—61.16

7 Claims



An automatic copying machine having therein a roll of photosensitive paper includes a device for detecting the end of rolled photosensitive paper. This device has a detection lever which contacts with one side surface of the roll of photosensitive paper and pivots when the roll has run out. This pivotal movement of the detection lever is used as a detecting signal.

3,627,958

### MAGNETIC HORN SWITCH

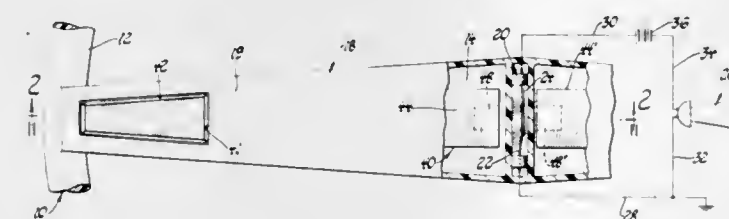
Douglas D. Liedel, Belleville, and Lars J. Hierta, Westland, both of Mich., assignors to Western Sales Corp., Southfield, Mich.

Filed Feb. 27, 1970, Ser. No. 15,126

Int. Cl. H01h 9/00

U.S. Cl. 200—61.54

11 Claims



In a steering wheel hub, rim and rib assembly, appliance-operating means including a switch in the hub, electrical circuitry connecting the switch to an appliance, magnetic flux generating means in the hub, and means for directing the magnetic flux to the switch to close same and operate the appliance.

3,627,959

### MAGNETIC LATCHING AND SWITCHING

Harry F. Chapell, Maynard, Mass., assignor to Sage Laboratories, Inc., Natick, Mass.

Filed Mar. 19, 1970, Ser. No. 21,111

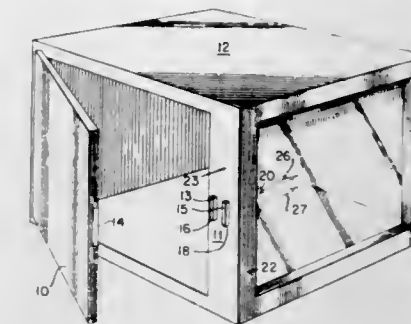
Int. Cl. H01h 3/16

U.S. Cl. 200—61.62

10 Claims

A door latch and magnetically actuatable switch includes an H-shaped permanent magnet and pole assembly for both latching and switching having a first pair of pole-ends that are shunted by a striker plate of low-reluctance ferromagnetic

material located in the door when the door is closed. Opening the door removes the shunt to actuate a magnetic switch



located near a second pair of pole ends of the permanent magnet.

3,627,960

### APPLIANCE LID INTERLOCK MECHANISM

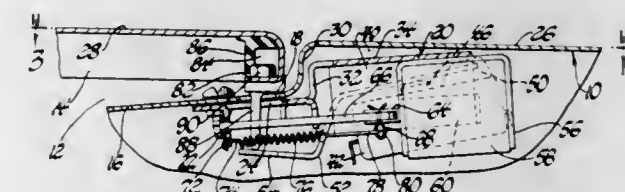
Frederick M. Grabek, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1970, Ser. No. 87,480

Int. Cl. H01h 27/10

U.S. Cl. 200—61.64

4 Claims



A lid interlock mechanism for an appliance cabinet of the type having an access opening closed by a pivotal lid. A keeper is secured to the lid and extends into the cabinet when the lid is closed. A switch assembly is mounted adjacent the access opening and has an actuating arm extending into the opening. A solenoid assembly is also mounted adjacent the access opening and has a latch member secured to the armature thereof. Closing movement of the lid engages the keeper with the switch-actuating arm closing the switch. The switch is connected in the appliance control circuitry to energize the solenoid and engage the latch member with the keeper maintaining the lid closed during specific portions of the appliance operating cycle.

3,627,961

### HIGH-VOLTAGE RELAY

Victor E. DeLucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.

Filed May 26, 1970, Ser. No. 40,531

Int. Cl. H01h 33/66

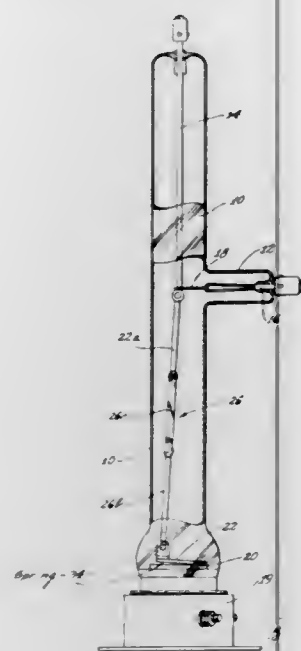
U.S. Cl. 200—144 B

2 Claims

A high-voltage relay is provided in which the operating components of the relay are enclosed in a sealed envelope which may be evacuated, for example, or filled with a pressurized dielectric gas. The relay is constructed to include an elongated envelope formed of glass, or other vitreous or electrically insulating material, and which has electrical terminals extending through the envelope at the side of the envelope



and at one end, so as to provide good insulation from the grounded electromagnetic actuating components at the other



end of the relay, in order that the relay may be operated at high voltages.

3,627,962

# GRAVITY-OPERATED MERCURY SWITCH WITH CONICALLY SHAPED RESERVOIR

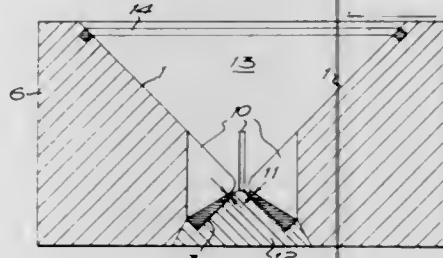
Leslie Chapman, Yorkshire, England, assignor to Lelio Development & Products Limited, Leeds, Yorkshire, England

Filed Dec. 29, 1969, Ser. No. 888,749

Int. Cl. H01h 29/00, 29/20, 29/22

U.S. Cl. 200—223

5 Claims



A gravity-operated mercury switch having a mercury reservoir with a cone-shaped base, the reservoir communicating by way of a throatlike aperture with the apex of a conical switching surface contained in the switch body. The throatlike aperture comprises a passage for the mercury and a plurality of vents dimensioned so as to allow free flow of gas along the vents but not to allow entry of mercury into the vents. The conical switching surface may be of irregular form having angles varying from 15° to 90°, may have more than one slope and may be stepped.

3,627,963

# VACUUM INTERRUPTER CONTACTS

Wesley N. Lindsay, 10710 Ridgeview Ave., San Jose, Calif.

Continuation of application Ser. No. 837,124, June 27, 1969, now abandoned. This application Mar. 18, 1971, Ser. No. 125,869

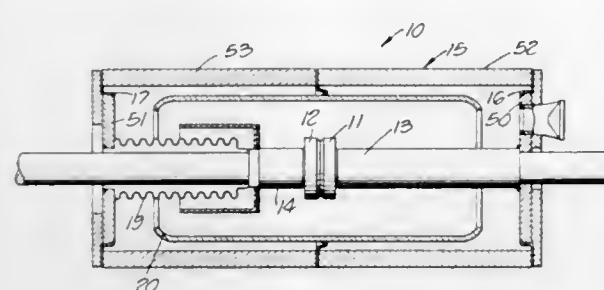
Int. Cl. H01h 1/02

U.S. Cl. 200—166 C

9 Claims

The contacts of the arrangement are employed in a vacuum interrupter and include discrete bodies of copper and titanium sintered or laminated together. It is old in the art to employ a copper and titanium alloy in such contacts.

However, it has been discovered that the use of a sintered or laminated structure increases the thermal and electrical conductivity of the contacts from about 17 to 90 percent of that of pure copper. The titanium still retains its desirable property of preventing contact welding. It also acts as an unusually good getter. The conductivity increase, however, affords substantial additional advantages. Switching efficiency is im-



proved by a higher electrical conductivity. Higher electrical conductivity also reduces heat generated by the passage of current through the contact resistance. Arc suppression is, thus, enhanced when the switch is turned off. A higher thermal conductivity also helps in arc suppression because the heat caused by the arc and current passing through the contact resistance is quickly conducted away.

3,627,964

# LAPPED WELDING OF METAL EDGE PORTIONS

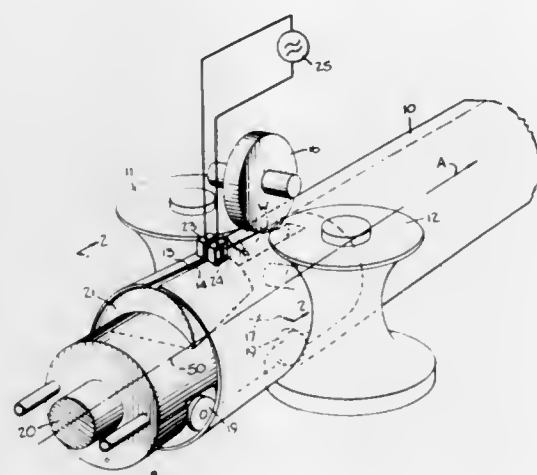
Jack Morris, Monsey, N.Y., assignor to AMF Incorporated

Filed July 26, 1963, Ser. No. 297,912

Int. Cl. B23k 1/16

U.S. Cl. 219—64

16 Claims



In the welding together of edge portions of metal strip with high-frequency electric current, the portions are advanced toward a weld point first in nonoverlapping relation, then in overlapping relation and finally in overlapping, contacting relation at the weld point where they are pressed together. The current is applied so as to flow on the edge portions both before and after the point where they are first brought into overlapping relation so as to restrict the heating of the edge portions to the edges and narrow facing bands adjacent thereto.

3,627,965

# IONIZING METHOD AND APPARATUS

Emanuel Zweig, 1102 North King Street, Santa Ana, Calif.

Continuation-in-part of application Ser. No. 66,106, Oct. 31, 1960. This application Jan. 21, 1966, Ser. No. 522,193

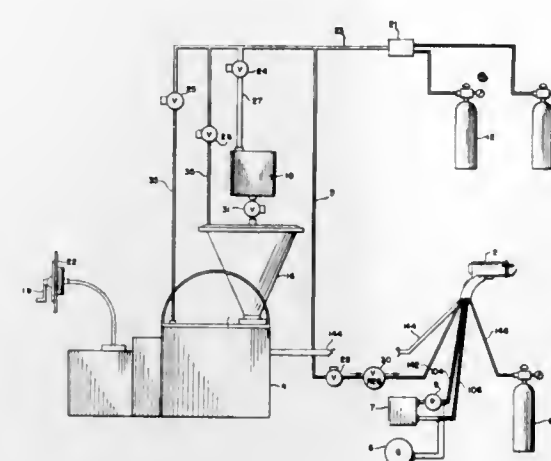
Int. Cl. B23k 9/04

U.S. Cl. 219—76

9 Claims

A plasma gun and powder feed system has purge means for removal of all atmospheric or other matter from the

powder feeder, the gun, and inner connecting conduits prior to gun operation. Accurate and automatic flow rate control means are included both for the ionizing gas and the powder



3,627,966

# DEVICE FOR REMOVING MATERIAL FROM A WORKPIECE BY MEANS OF SPARK EROSION

Cornelis van Osenbruggen; Gerrit Luimes, and Ate van Dijk, all of Emmasingel, Eindhoven, Netherlands, assignors to North American Philips Company Inc., New York, N.Y.

Continuation of application Ser. No. 587,326, Oct. 17, 1966.

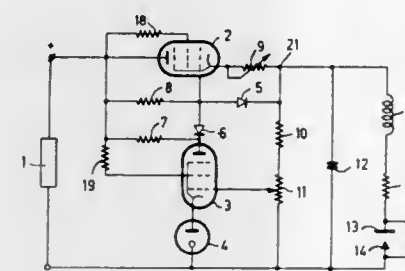
This application Mar. 27, 1970, Ser. No. 020,874

Claims priority, application Netherlands, Oct. 16, 1965, 6513424

Int. Cl. B23k 9/16

U.S. Cl. 219—69 C

15 Claims



A spark erosion device including a storage capacitor which is periodically discharged across the gap between the electrode and workpiece. The improvement concerns means for limiting the duration of the arc discharge phase of the operation comprising, a source of constant current for charging the capacitor, means for disconnecting the current source from the capacitor when the gap breakdown voltage is reached, and the addition of an inductor in the capacitor discharge circuit to provide a resonant effect to limit the arc time across the gap.

3,627,967

# POWER SWITCH SHORT CIRCUIT DETECTOR FOR EDM

Robert B. Bertolasi, and Eiichi Takarada, both of Rockford, Ill., assignors to Amsted Industries, Incorporated, Lone Park, Ill.

Filed June 15, 1970, Ser. No. 45,956

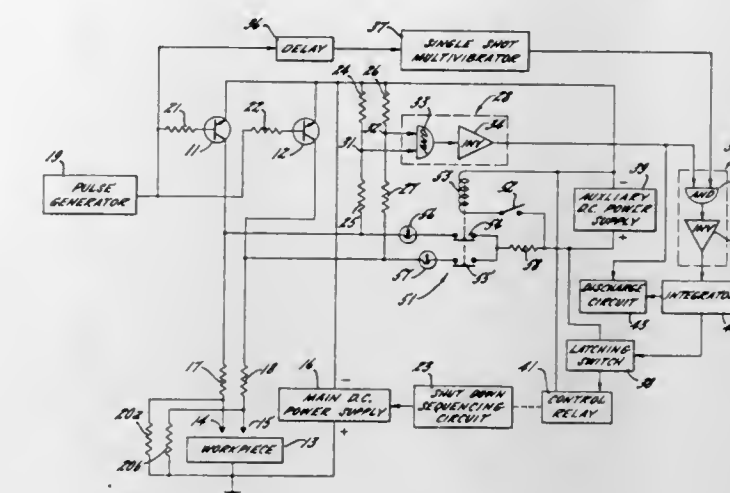
Int. Cl. B23k 9/16

U.S. Cl. 219—69 S

13 Claims

To detect short circuit failures of power switches in electrical discharge machining power supplies, the voltages developed across the power circuits of the power switches are sampled during the normal off periods of the power

switches and, if any one of the sampled voltages is below a predetermined threshold level, the power supply is shut



3,627,968

# GAP SHORT CIRCUIT PROTECTIVE SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

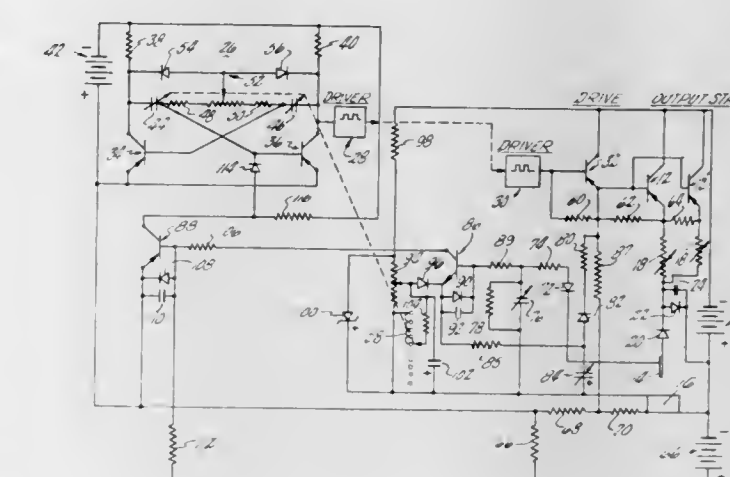
Kurt H. Sennowitz, Royal Oak, Mich., assignor to Elox Inc., Troy, Mich.

Continuation-in-part of application Ser. No. 723,726, Apr. 24, 1968, now abandoned. This application Aug. 21, 1969, Ser. No. 851,952

Int. Cl. B23b 1/08

U.S. Cl. 219—69 C

7 Claims



A circuit is provided to sense gap condition for impending or actual short circuit condition. Responsive to such condition, a portion of the drive voltage for the gap output switch is fed back, stored, amplified and applied to control the circuit pulser to narrow pulse on-time. Additionally, a means is provided for varying the cutoff reference voltage conjointly with change in frequency being made to the pulser.

3,627,969

# WELDING DEVICE FOR ELECTRIC CONTACT ELEMENTS

Heinz Finzer, Lindenmatte 16, Sackingen, Germany

Filed June 4, 1970, Ser. No. 043,362

Claims priority, application Germany, June 12, 1969, P 19 29

787.1

Int. Cl. B23k 9/12, 11/00

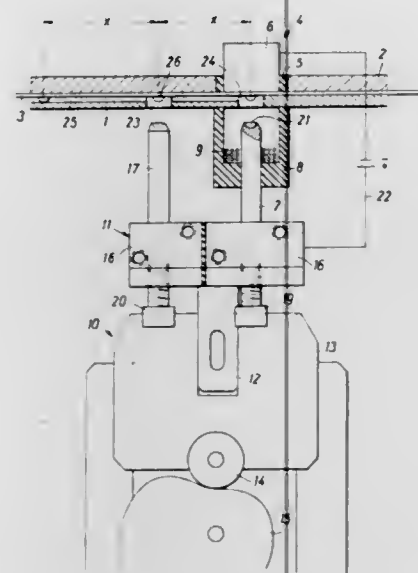
U.S. Cl. 219—79

7 Claims

A welding device for electric contact elements comprises a vertically slidable feed electrode having a pellet uptake



recession in the upper tip thereof. Positioned around the feed electrode is a pellet magazine containing welding pellets. At the lower limit of vertical travel of the feed electrode, the upper tip of the feed electrode is positioned relative to the pellet magazine to permit a welding pellet to fall into the pellet uptake recession. The welding pellet is then carried upwardly by the feed electrode until it reaches the upper limit



of travel of the feed electrode where the pellet is pressed against support material held in place by a counter electrode. The pellet is then welded onto the support material. After completion of the welding operation, the feed electrode is moved vertically downward to permit uptake of another pellet, and the feed material is moved a predetermined distance to expose a new unwelded surface.

3,627,970

#### METHOD FOR WELDING A CONDUCTOR THROUGH COLD FLOWABLE INSULATION

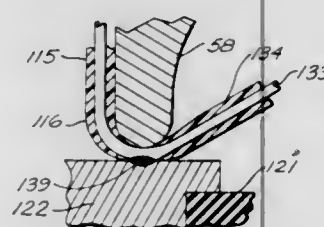
John F. Weatherman, Santa Ana; Gary J. Walker, La Crescenta, and Larry R. Conley, Simi, all of Calif., assignors to Micro-Technology, a division of Sterling Electronics Corporation, Westlake Village, Calif.

Filed July 28, 1969, Ser. No. 857,258

Int. Cl. B23k 9/28, 1/110

U.S. Cl. 219—91

19 Claims



A conductor, surrounded with cold flowable insulation, is welded to a terminal pin, e.g., by engaging the conductor and the pin between a pair of unheated welding electrodes. The electrodes are urged together with a force which reaches a value greater than a desired welding force value and is sufficient to cause the insulation to undergo cold flow out of a path between the electrodes via the conductor and the pin, thereby to render the path conductive. The force applied to the electrodes is then decreased to the desired welding force value and a pulse of welding current is passed along the conductive path when the desired force value is achieved. The current pulse is applied as the force applied to the electrodes decreases and is completed, and the molten metal formed by the current pulse is solidified, before such force is completely removed. The conductor is supplied through a passage formed in one of the electrodes.

#### 3,627,971 METHOD OF CONTINUOUS INSPECTION OF THE QUALITY OF A WELD OBTAINED BY THE ELECTRON BEAM PROCESS

Marc Boncoeur, Paris; Jean-yves Marhic, Fresnes, and Michel Rapin, Paris, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

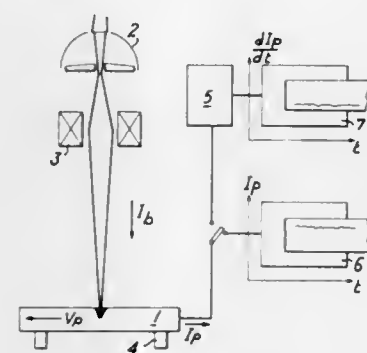
Filed Oct. 24, 1969, Ser. No. 869,198

Claims priority, application France, Oct. 25, 1968, 171,533; June 20, 1969, 6920832

Int. Cl. B23k 9/00

U.S. Cl. 219—121 EB

6 Claims



A method of continuous quality inspection of a weld formed by electron bombardment of the part to be welded or target by means of an incident electron current  $I_b$  which is subdivided into a current  $I_p$  which penetrates into the target and a reflected current  $I_R$ , wherein one of the two electron currents between which the incident current  $I_b$  is distributed is recorded graphically as a function of the time which has elapsed since the beginning of the welding operation after being subjected if necessary to derivation as a function of time, and wherein the anomalies observed in the recording curve make it possible to detect weld flaws.

3,627,972

#### WELD CONTROL

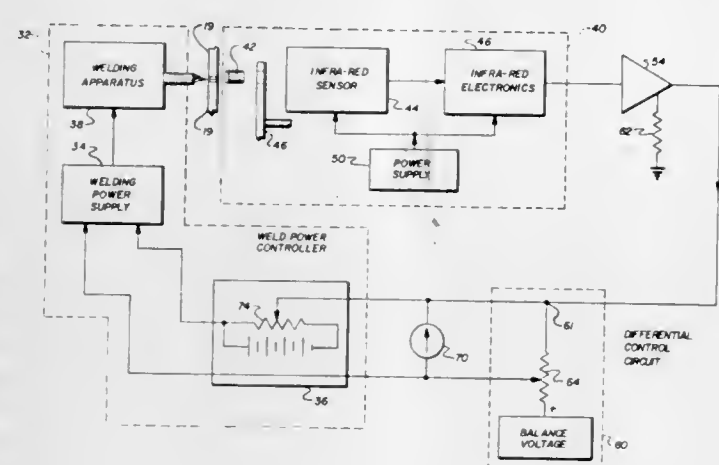
William F. Iceland, Los Alamitos, and Donald E. Reinhart, Los Angeles, both of Calif., assignors to North American Rockwell Corporation

Continuation of application Ser. No. 759,459, Sept. 12, 1968, now abandoned. This application Jan. 30, 1970, Ser. No. 007,392

Int. Cl. B23k 9/12

U.S. Cl. 219—124

4 Claims



This disclosure relates to welding, and provides improved welding control by monitoring the heat radiations emitted at the weld area; the amount of these radiations indicating the condition of the weld puddle and its penetration through the workpiece. A new approach integrates the heat flux from a relatively large viewing area, and provides welding control that is far superior to that obtained by prior art systems.

#### 3,627,973 SUCCESSIVE AUTOMATIC DEPOSITION OF CONTIGUOUS WELD BEADS UPON NONPLANAR SURFACES

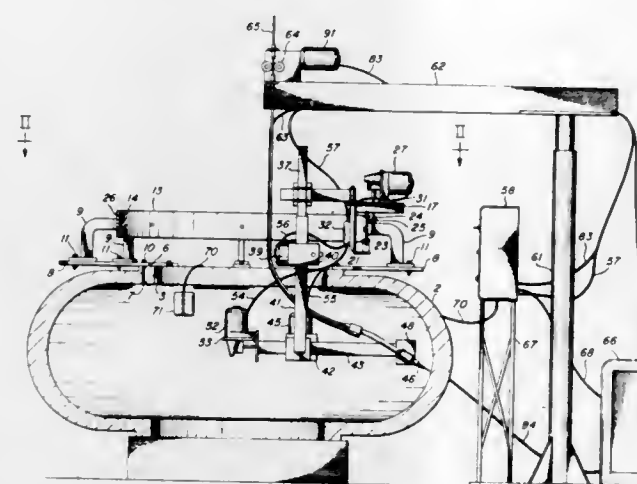
Edward E. Smith, Upper St. Clair Township, Allegheny County, Pa., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed June 24, 1970, Ser. No. 49,358

Int. Cl. B23k 9/12

U.S. Cl. 219—125 R

13 Claims



Method and apparatus for automatic control of welding means throughout the continuous application of a plurality of generally horizontal contiguous weld beads upon a nonplanar surface. The surface may be irregularly curved in the direction traversed generally horizontally by the welding means, as the worn inner surface of a dredge pump housing. The welding means may be supported and moved generally horizontally along the surface in successive welding passes between predetermined points. Provision is made for automatic reversal of the direction of welding when the welding means complete a weld pass at either of the predetermined points. At each weld direction reversal point the welding means are automatically repositioned with respect to the surface to a new effective welding position by motorized shifting of the welding means in predetermined direction and extent at least one of horizontally, vertically and angularly. Such motorized shifting is programmed to produce welding conformance of the welding means to the surface during the deposition of the plurality of generally horizontal contiguous weld beads without welding operator attention.

3,627,974

#### AVOIDANCE OF CURRENT INTERFERENCE IN CONSUMABLE CONTACT HOT WIRE ARC WELDING

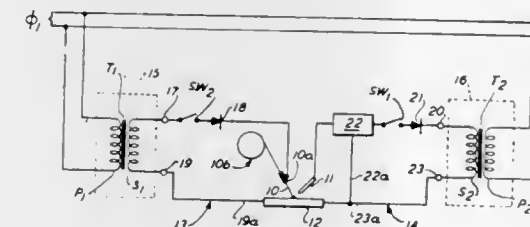
Neil J. Normando, Livingston, and Willis C. Pierce, Jr., Murray Hill, both of N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Filed May 9, 1969, Ser. No. 823,304

Int. Cl. B23k 9/10

U.S. Cl. 219—131 R

4 Claims



Arc-working apparatus with multiple current-carrying electrodes including in one embodiment a tungsten cathode-type arcing electrode, a workpiece, and a continuously fed hot wire electrode in electrical contact with the workpiece for depositing metal at the arc-heated area. Time-spaced current

pulses for melting the contacting tip of the hot wire electrode alternate with time-spaced pulses of the arcing current for avoiding interaction of the respective pulsing magnetic fields and arc interference; in other embodiments more than two arcing electrodes and a common workpiece arc connected to current time-sharing circuits for avoiding magnetic field interaction and arc interference.

3,627,975

#### ARC-WELDING APPARATUS

Hisao Goto, Osaka-fu, Japan, assignor to Osaka Transformer Co., Ltd., Osaka-fu, Japan

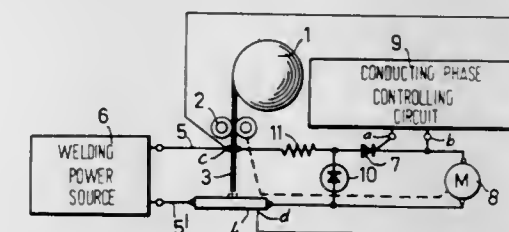
Filed June 3, 1969, Ser. No. 830,016

Claims priority, application Japan, June 3, 1968, 43/37505

Int. Cl. B23k 9/10

U.S. Cl. 219—131 F

4 Claims



In short circuit transfer arc welding, from among the arc voltages generated during each arcing period, those portions irregularly generated are eliminated and, subsequently, only those voltages corresponding to the arcing time are detected and, further depending upon the detected voltage, the motor for feeding the welding electrode is driven so as to feed the welding electrode that an adequate speed so as to enable the welding work to provide a uniform and acceptable final weld through the entire welding operation.

3,627,976

#### NONCONSUMABLE ELECTRODE WELDING METHOD AND POWER SUPPLY

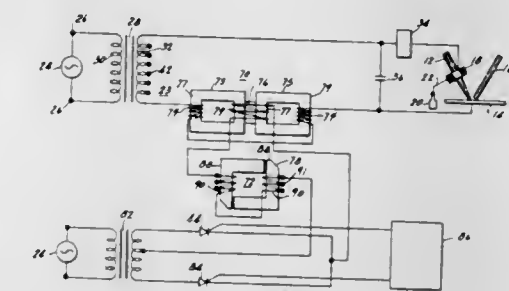
James B. Stearns, Elm Grove, Wis., assignor to Chemetron Corporation, Chicago, Ill.

Original application May 9, 1967, Ser. No. 637,169, now Patent No. 3,497,769. Divided and this application July 31, 1969, Ser. No. 846,502

Int. Cl. B23k 9/10

U.S. Cl. 219—131 R

14 Claims



A welding power supply suitable for nonconsumable electrode, alternating current welding at high currents, for example, welding currents exceeding 250 amperes. The power supply includes a means to unbalance the alternating current wave in a controlled manner so that the alternate half-cycles of one direction of current are greater in magnitude than the alternate half-cycles of the other direction of current. The power supply also includes a means for controlling the electric pinch effect on the arc to further facilitate high-current welding.

A method for nonconsumable electrode, alternating-current welding at high-welding currents. The method includes the step of controlling the unbalance of the current wave so



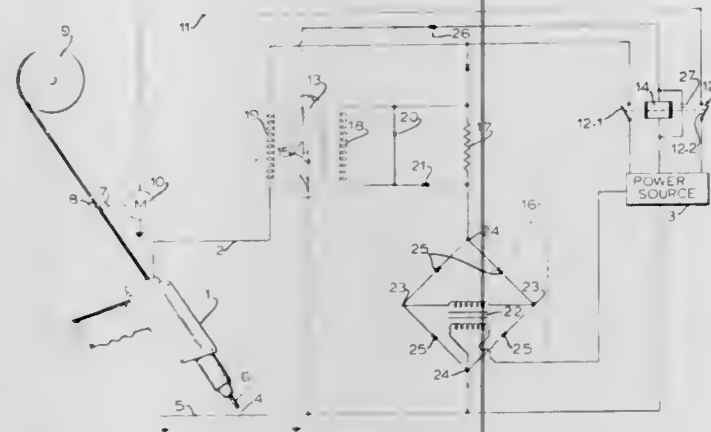
that the alternate half-cycles of one direction of current are greater in magnitude than the alternate half-cycles of the other direction of current, within prescribed limits, and the step of controlling the electric pinch effect on the arc.

### 3,627,977 ARC POWER SOURCE

Bernard J. Aldenhoff, Oconomowoc, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.  
Filed Nov. 13, 1969, Ser. No. 876,446  
Int. Cl. B23k 9/10

U.S. Cl. 219—131 F

7 Claims



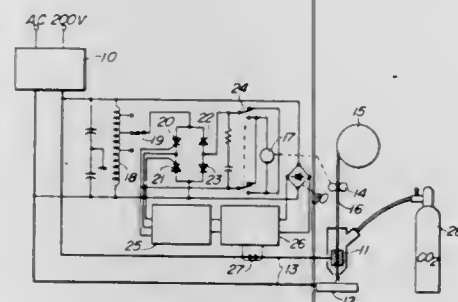
A touch start apparatus initiates and stops the welding arc in a consumable arc-welding process. The electrode touching the workpiece energizes a starting coil connected in series with a single-phase, full-wave rectifier and a diode in parallel with the welding supply and closes a reed switch to connect the power supply to the welding process. Welding current through a second coil normally maintains the switch closed and back-biases the diode to effectively open the starting circuitry. The starting coil has a capacitor in parallel with the coil and provides a holding current to the coil and holds the switch closed during the starting transition and after the opening of the starting circuitry.

### 3,627,978 AUTOMATIC ARC WELDING METHOD

Tadashi Endo; Mitsuhiro Sakagami, both of Funabashi-shi; Hiroshi Nomura; Masamichi Suzuki, and Takeshi Araya, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed Apr. 1, 1969, Ser. No. 811,825  
Int. Cl. B23k 9/00

U.S. Cl. 219—137

3 Claims



An automatic arc welding method characterized by using an AC power source having a slowly falling characteristic close to a constant voltage characteristic, selecting the arc voltage and welding current so that the mode of transfer of molten metal from an electrode wire to a base metal becomes pure spray-type one or spray-type one accompanied by periodic short circuit, and automatically feeding said electrode wire, thereby depositing the molten metal of said wire onto said base metal.

### 3,627,979 WELDING ELECTRODE

Joseph F. Quaas, Island Park, N.Y., assignor to Eutectic Corporation, Flushing, N.Y.

Filed Mar. 23, 1970, Ser. No. 22,008  
Int. Cl. B23k 35/22

U.S. Cl. 219—146  
This invention relates to a welding electrode for depositing a highly wear-resistant surface layer upon a base metal. The welding electrode has a core made up with a mild steel sheath filled with tungsten carbide, chromium, manganese, ferrosilicon, calcium and silicon. A reaction-type flux coating is disposed on the core.

6 Claims

### 3,627,980 WELDING METHOD AND DEVICE

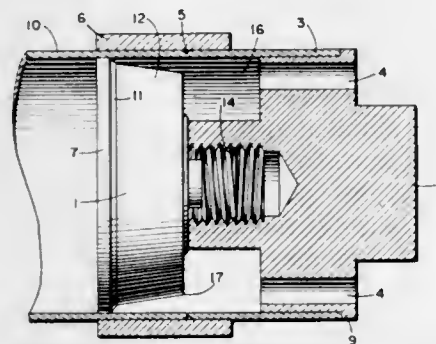
Michel Grin, Varese, and Francois Marchal, Cadrezzate, both of Italy, assignors to European Atomic Energy Community (Euratom), Luxembourg  
Filed Dec. 4, 1970, Ser. No. 95,317

Claims priority, application Luxembourg, Dec. 10, 1969, 59978

Int. Cl. B21j 5/08

U.S. Cl. 219—152

1 Claim



A centering device is detachably secured to the outside surface of the plug which is to be magnewelded in the end of a tube. The assembly comprising the plug and the centering device is then inserted in the tube until the outside surface of the plug reaches a position adjacent a circumferential notch on the tube. Current is then passed through a magnewelding coil surrounding the tube. The tube contracts radially, is welded onto the plug and snaps off along the notch. It is then only necessary to detach the centering member from the plug to complete the welding operation.

### 3,627,981 AREAL HEATING ELEMENT

Gerald Kuhn, Nurnberg, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft  
Filed Nov. 5, 1969, Ser. No. 874,201

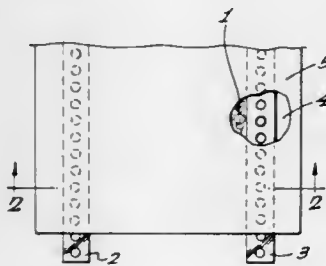
Claims priority, application Germany, Nov. 9, 1968, Jan. 25, 1969, Mar. 20, 1969; P 18 08 022.3, P 19 03 799.1, P 19 14

17.4

Int. Cl. H05b 1/00

U.S. Cl. 219—212

19 Claims



An areal heating element is disclosed in which the resistive portion is established by a polyester fleece contacting metal tapes as current lead-ins. The arrangement is lined with insulation layers, e.g., fiber fleeces or plastic sheets. The latter ar-

angement can be clad in a grounded metal foil. The insulating layers are bonded to the polyester fleece and to the tapes by adhesive or through heat sealing.

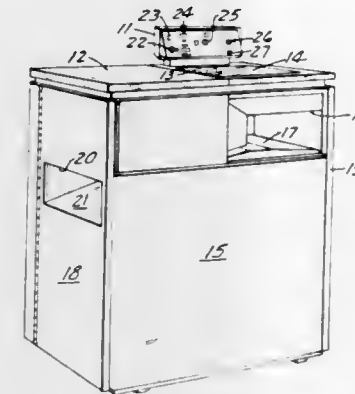
### 3,627,982 COPYING MACHINE AND METHOD

Burt K. Sagawa, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
Filed Apr. 9, 1969, Ser. No. 814,545

Int. Cl. G03g 15/06

U.S. Cl. 219—216

10 Claims



Efficient utilization of photosensitive intermediate and production of copies at a high rate of speed are accomplished in an automatic copying machine employing a delayed development copying method.

### 3,627,983 SELF-CLEANING HEATING ELEMENT FOR HEAT-SEALING APPARATUS

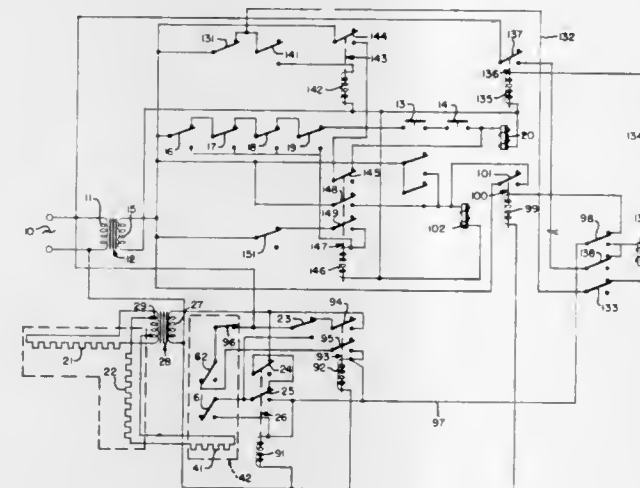
Lenox K. Pickering, Morristown, N.J., assignor to Charles Beseler Company, East Orange, N.J.

Filed Sept. 9, 1969, Ser. No. 856,418

Int. Cl. H05b 1/00

U.S. Cl. 219—243

8 Claims



Heat-sealing apparatus in which the sealing action is initiated by contact of the heating element with the article to be sealed and terminated by a temperature-sensitive switch which causes the heating element to be removed from the article to be sealed. Further heat is applied to the heating element after it is removed from the article to be sealed in order to "burn-off" any residue. This self-cleaning action is terminated by a second temperature-sensitive switch.

### 3,627,984 COMBINED SUPPORT AND GROUND CLIP FOR HEATER ELEMENTS

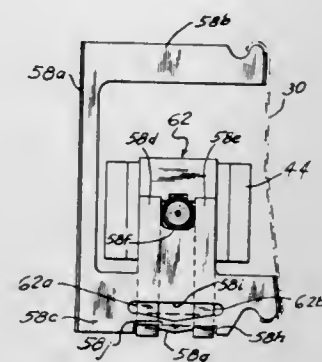
William A. Bollinger, Augusta, S.C., assignor to Federal Pacific Electric Company, Newark, N.J.

Filed Dec. 8, 1969, Ser. No. 883,106

Int. Cl. F24h 7/00

U.S. Cl. 219—365

12 Claims



A combined supporting and electrical grounding structure is incorporated in a baseboard electric heater. The tube of a fin-and-tube elongated heating element is supported on a bracket. The tube is anchored firmly to the bracket by an inverted-U locking plate that has a pair of legs with offset portions extending across an edge of the support bracket. Adjacent to that edge of the bracket there is a slot into which a screwdriver can be inserted and twisted for deforming the bracket, to tighten the locking plate firmly.

### 3,627,985 FORCED AIR ELECTRIC HEATER UNIT FOR POULTRY BROODER

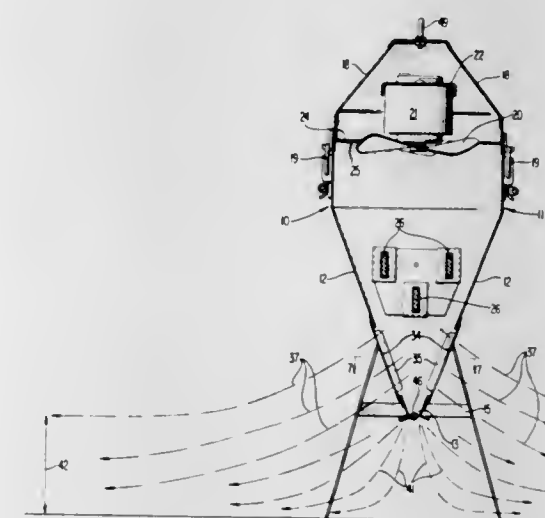
Freeman M. Hostetter, Rte. 1, Dundee, Ohio

Filed Mar. 10, 1970, Ser. No. 18,220

Int. Cl. A01k 31/18; F24h 3/04

U.S. Cl. 219—370

10 Claims



A compact, efficient and self-contained air heater unit for commercial poultry brooders provides an accurately controlled layer of moving warm air near floor level where the young birds habitate. The heater unit features an overhead down draft blower and heating elements which are readily removable in the region between the blower and the air-directing louvers in the bottom portion of the tapered heater housing. A plurality of the heater units will provide an even blanket of warm air over the entire floor area of a large brooder building.



3,627,986

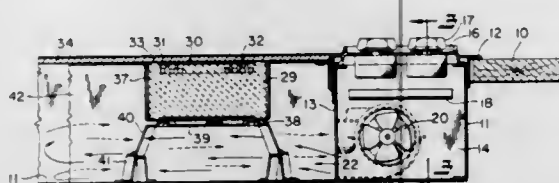
**ELECTRIC SMOOTH TOP RANGE**

Carl L. Anderson, Shiloh, Ohio, assignor to The Tappan Company, Mansfield, Ohio

Filed Oct. 6, 1969, Ser. No. 863,926  
Int. Cl. H05b 3/68, 3/06

U.S. Cl. 219-460

2 Claims



Each heating device, with several beneath a common glass-ceramic plate, includes a coiled resistance wire in a groove in an end face of a body of high-temperature insulation having a peripheral band at such end which projects above the groove area and sealingly engages the underside of the plate. The devices are in a rough-in box on elevated supports and a blower circulates ambient air over the same for cooling.

3,627,987

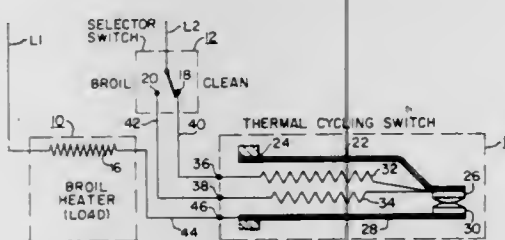
**CONTROL FOR COOKING APPARATUS**

Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1969, Ser. No. 819,193  
Int. Cl. H05b 1/02

U.S. Cl. 219-511

5 Claims



Control apparatus including a thermal cycling switch especially useful in connection with a self-cleaning oven of the pyrolytic type in which a broil heating element in the oven is used both for broiling purposes and for producing heat for heat-cleaning purposes, the thermal cycling switch being arranged to cycle at more than one rate in accordance with the setting of a selector switch corresponding to the operation to be carried out in the oven.

3,627,988

**ELECTRICAL HEATING ELEMENTS**

Charles Romaniec, Todmorden, Yorkshire, England, assignor to Electrotex Developments Limited, Brighouse, Yorkshire, England

Filed Feb. 16, 1970, Ser. No. 11,490  
Claims priority, application Great Britain, Apr. 1, 1969,  
June 6, 1969; 16,881/69; 28,775/69  
Int. Cl. H05b 3/36

U.S. Cl. 219-529

7 Claims



An electrical heating element, comprising an electrically conducting carded fibrous carbon web contacted by elec-

trodes, a supporting layer of loosely woven fabric overlying and united to one face of said web and a fitted fabric surface layer overlying, and united to the other face of said web, there being a finishing layer overlying the supporting layer.

3,627,989

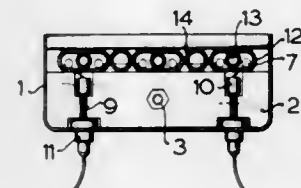
**INFRARED SURFACE HEATER**

Albert Heidler, Erbach, Rheingau, and Wolf Dieter Klaus, Finthen kreis Mainz, both of Germany, assignors to Thermal Quarr-Schmelze G.m.b.H., Wiesbaden-Biebrich, Germany

Filed Dec. 11, 1969, Ser. No. 884,267  
Int. Cl. H05b 3/18

U.S. Cl. 219-553

6 Claims



The infrared surface heater of the invention comprises a longitudinal housing serving also as a reflector and having mounted therein in a common plane a plurality of quartz tubes arranged parallel to each other and having dissimilar heating powers so as to radiate heat of different wavelengths.

3,627,990

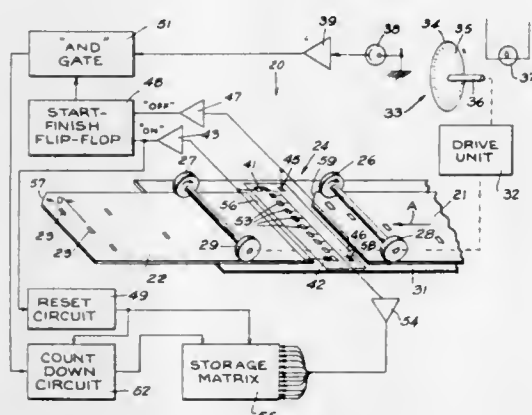
**SENSING MECHANISMS**

Max E. Sallach, Chesterland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Feb. 29, 1960, Ser. No. 11,613  
Int. Cl. G06k 7/10; G01n 21/30

U.S. Cl. 235-61.11 E

11 Claims



A card reader for perforated record cards and the like including a card transport for passing the cards individually through a sensing station, and a timing signal generator, driven synchronously with the card transport, for generating an initial timing signal of  $n$  pulses for a card movement equal to the spacing between adjacent data columns. The card reader further includes control means, comprising photocells or other sensors for sensing the leading and trailing edges of each card, that develops a control signal indicative of the presence of a card at the sensing station. The control signal actuates a gate to supply the initial timing signal to a count-down circuit, having a countdown factor of  $1/n$ , only when a card is in the sensing station. The countdown circuit develops a second timing signal comprising a series of pulses timed to coincide with movement of each data column on the card past a sensing position in the sensing station, timing the reading of data from the card. A reset circuit, actuated by the control signal, resets the countdown circuit each time a new card enters the sensing station.

3,627,991

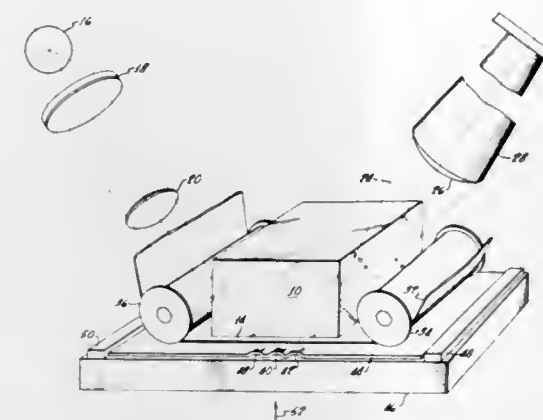
**PATTERN READER**

Horace A. Beall, Santa Ana, and Visvaldis A. Vitols, Orange, both of Calif., assignors to North American Rockwell Corporation

Filed Feb. 24, 1970, Ser. No. 13,554  
Int. Cl. G06k 7/14

U.S. Cl. 235-61.11 E

17 Claims



Embossed characters of a conventional credit card are read by an electrooptical arrangement that converts the characters into electrical signals. A transparent cylindrical disc is illuminated by a light beam that impinges upon a portion of its internal annular surface at an angle greater than the critical angle of the disc body to provide total internal reflection. A thin strip of flexible resilient film is positioned closely adjacent to but normally out of optical contact with the exterior of the annular disc surface. A card having at least a line of raised characters printed thereon is fed along a surface tangential to the disc so as to be pressed by a drive roller against the disc with the resilient film interposed between the disc and card. The raised pattern of characters on the card selectively presses the thin film into optical contact with the exterior annular surface of the disc thereby selectively frustrating the total internal reflection of light in a pattern determined by the raised pattern of card characters. The resilient film is fed to the periphery of the disc together with the feeding of the card to be read so that as the disc rotates and the card advances, successively different portions of the film are interposed between the card and the disc. Reflected light is received by an array of photocells that scan the reflected image of each character a number of times to provide an output electrical signal.

3,627,992

**READING ENCODED DEVICES**

Ronald C. Davies, Kearns; Franklin D. Wareham, Salt Lake City; Floyd L. Larson, Granger, and Stephen L. Stumph, Salt Lake City, all of Utah, assignors to Bio-Logics, Inc.

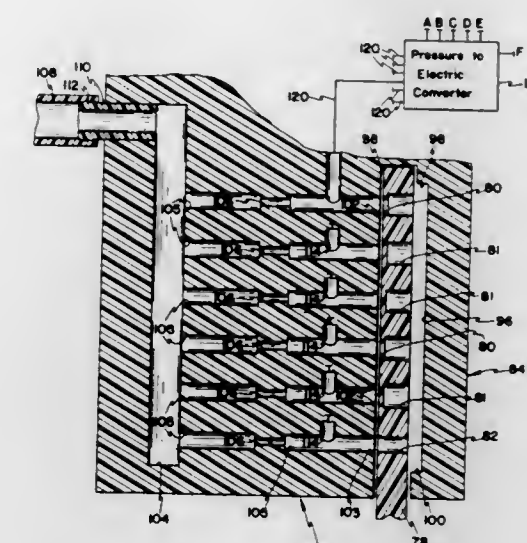
Filed Aug. 18, 1969, Ser. No. 854,353

Int. Cl. G01n 31/00; 11/00; G06m 1/12; G06k 7/02, 12/06  
U.S. Cl. 235-61.11 J

8 Claims

Apparatus and methods for reading a device presenting rows of encoded and unencoded sites, each row having a control site and coded information at the other sites, the apparatus including a reading head, with a plurality of fluidic sensors, and a device-receiving lift assembly for relatively displacing the reading head and the encoded device. The rows of sites are successively fluidically sensed, with a given row being sensed after the control site of the row is correctly positioned in the reading head and electrical signals, derived from the fluidic signals and representing the code of each row, are converted to Binary Coded Decimal (BCD) data format and stored in a circulating shift register in a row-by-row fashion so that the stored information can be sub-

sequently converted into human readable form, if desired. A fluidic circuit governs the timing and rate of relative dis-



placement of the reading head and the encoded device and sequences the fluid flow to the fluidic sensors.

3,627,993

**CONTROL SYSTEM**

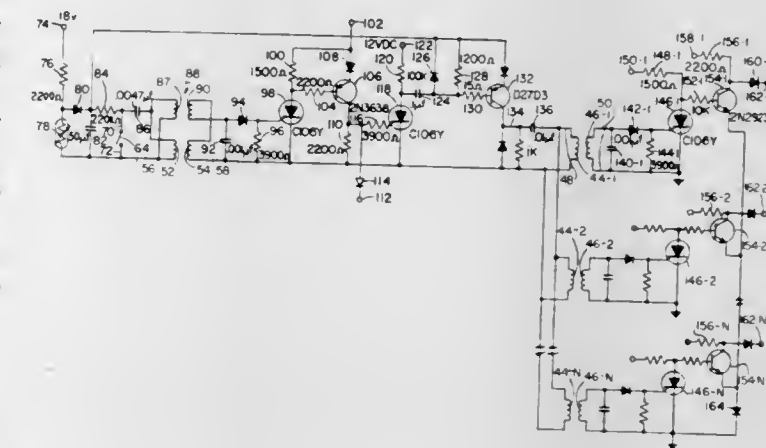
Irving B. Cooper, Jr., Marblehead, Mass., assignor to Notifier Company, Lincoln, Nebr.

Filed Nov. 20, 1969, Ser. No. 878,369

Int. Cl. G06k 7/08; H04q 1/30; G06k 7/00

U.S. Cl. 235-61.11 H

7 Claims



A card reader has a card sensing area; a switch adjacent the card sensing area responsive to the insertion of a card into the card sensing area; at least one control sensor and a plurality of data sensors in the sensing area; first circuitry responsive to the operation of the switch in response to the insertion of a card in the sensing area for applying a pulse to the control sensor, the control sensor producing an output signal in the presence of a copper disc on the card disposed adjacent the control sensor; second circuitry, including a solid-state switch, responsive to the output signal of the control sensor for interrogating the data sensors; and readout circuitry responsive to the output signals of the data sensors as a function of indicia on the card for generating data signals for application to an output device.



3,627,994

## CODE SENSING DEVICE FOR CIRCUIT CONTROL

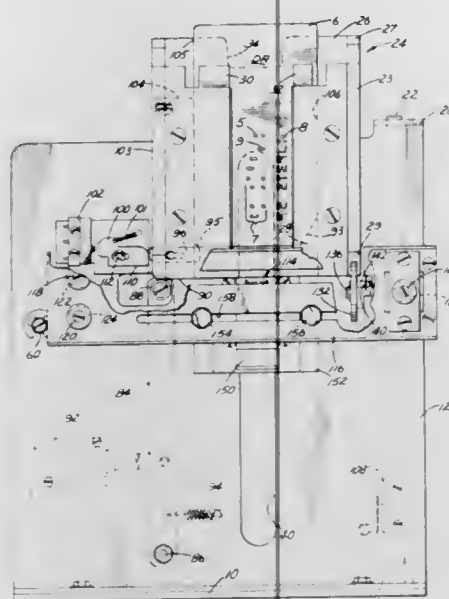
Max E. Sallach, Chesterland; Russell A. Hansen, Chardon; Donald N. Heisner; Bryce G. Thornton, both of Mentor, and Charles F. Weber, Euclid, all of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 8, 1969, Ser. No. 882,935

Int. Cl. G06k 7/04

U.S. Cl. 235—61.11 C

7 Claims



A device for sensing physical variations of a data card surface includes a carriage for retaining and transporting a data card through a sensing cycle. The carriage is movable in a path from a home position to an actuated position and back to the home position. Sensing means is provided adjacent the carriage path and is urged into contact with the data card surface in response to movement of the carriage from the actuated to the home position. The sensing means establishes a circuit control, as a function of detecting the surface variations on the data card, for directly controlling, for example, a remote station information center or the like.

3,627,995

## COMPUTER SYSTEM EVENT COUNTER

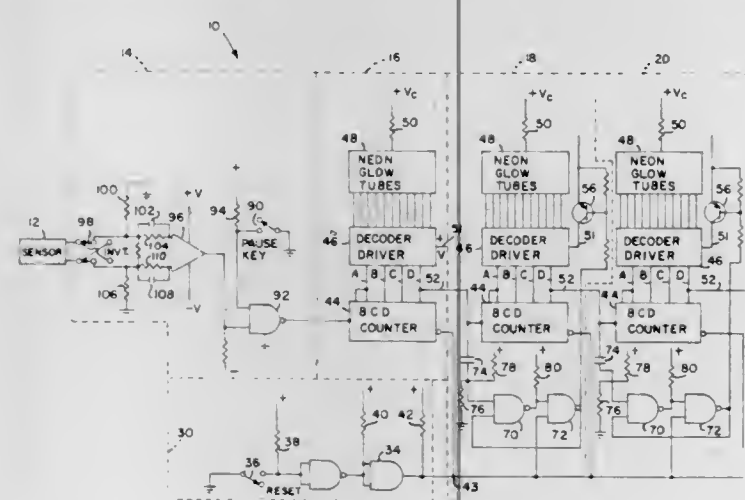
Charles D. Warner, Jr., and Richard A. Taylor, both of Los Gatos, Calif., assignors to Computer Synectics, Inc., Santa Clara, Calif.

Filed Jan. 19, 1970, Ser. No. 3,643

Int. Cl. H03k 21/16

U.S. Cl. 235—92 PL

5 Claims



An electronic systems event counter network for counting the number of times a computing system event occurs by monitoring a system signal line. The network is adapted to be attached to a line of a logic family in the computing system

and senses signals on the line while providing isolation from the system. Toward this end, the events counter network comprises a sensor for detecting the presence of electronic signals. A plurality of counter stages joined in tandem count the number of occurrences in the electronic signals and present the same in decimal form for display on a control panel. The sensor is attached to a line of a logic family within the host computing system with the selected line being determined according to the event to be sensed. The sensor provides isolation from the host system, thereby avoiding imposition of line loading or degrading system performance.

3,627,996

## BUFFER MEMORY FOR DIGITAL EQUIPMENT HAVING VARIABLE RATE INPUT

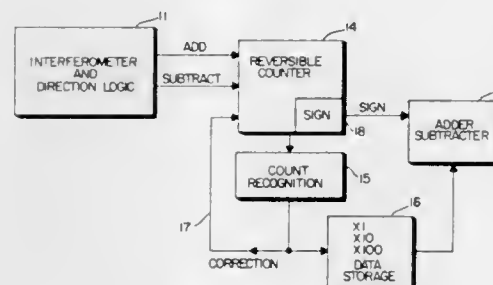
Hervy E. Vigour, Waynesboro, Va., assignor to General Electric Company

Filed Feb. 29, 1968, Ser. No. 709,368

Int. Cl. G06m 3/00

U.S. Cl. 235—92 GC

19 Claims



A digital buffer memory is described for accumulating the variable rate, reversible polarity, digital fringe count signal pulses of an interferometer position gauging device. The buffer memory comprises a digitally operable, reversible decade counter for accumulating a count indicative of the net sum of the input fringe count pulses supplied from an interferometer position gauging device. A count recognition circuit is coupled to the decade counter for classifying the account accumulated in the reversible counter within the scaling ranges of units, tens or hundreds. Readout circuits are responsive to the count recognition circuit for reading out the count accumulated in the decade counter in scales of units, tens or hundreds as determined by the setting of the counter recognition circuit, and count correction feedback circuits are provided which are responsive to the count recognition circuit and are coupled back to the reversible counter for correcting the count registered in the reversible counter so that the contents of the counter correctly represent only the remaining unprocessed input fringe count signal pulses.

3,627,997

## TURBINE VANE PREDICTION AND CLASSIFICATION GAGE AND GAGING METHOD

Ronald L. Samuels, Palos Verdes Peninsula; William Pennington, Jr., Los Angeles; Charles L. Mueller, Harrisburg, and Wallace M. Porter, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 13, 1969, Ser. No. 876,395

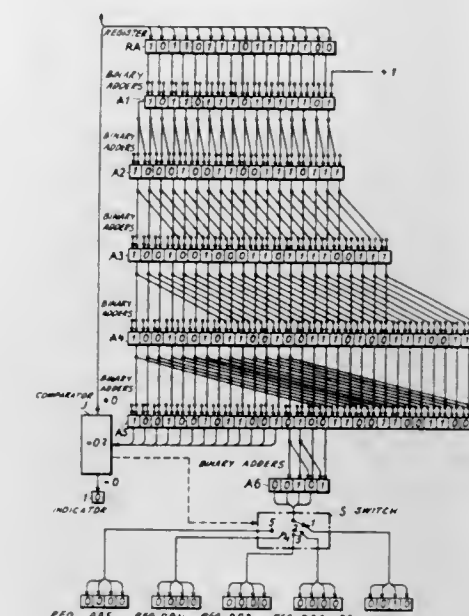
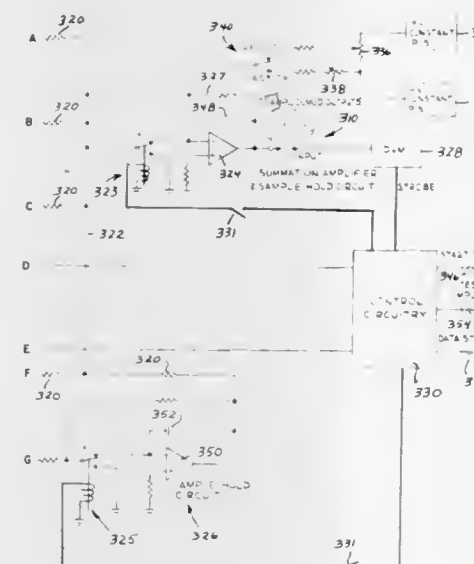
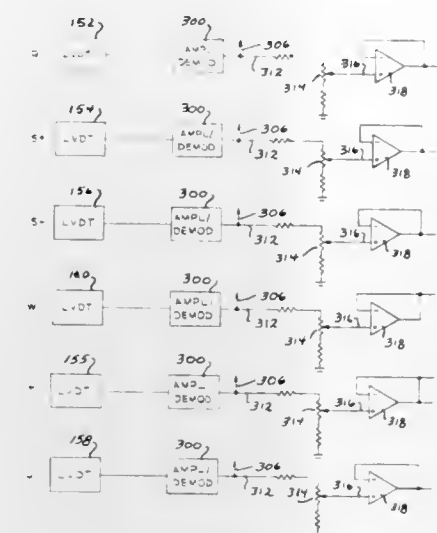
Int. Cl. G06f 15/46

U.S. Cl. 235—151.3

22 Claims

An instrument and method for prediction and classification gaging of production turbine vanes without distortion of the vanes. In its prediction-gaging mode, the instrument gages selected airfoil dimensions of a production turbine vane and master and provides a figure of merit readout representing the difference between the effective class values of the master and vane resulting from the difference, if any, in their corresponding airfoil dimensions. This figure of merit is converted to an angle at which the class surface of the vane must

be machined to provide the vane with a selected class value. In its classification-gaging mode, the instrument gages the selected airfoil dimensions and the class face angle of the



number and each subsequent adding means multiplying the result from the previous adding means by

$$(1+2^{n-1})$$

Further means return the result from the last adding means to the input of the first adding means until such result is zero. For each such iteration certain bit positions of the result are stored, such bit positions representing the succession decimal digits of the conversion.

3,627,999

## TWO'S COMPLEMENT NEGATIVE NUMBER MULTIPLYING CIRCUIT

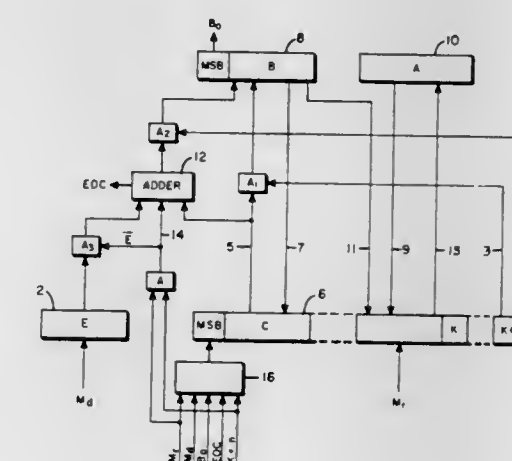
Gary J. Iverson, White Bear Lake, Minn., assignor to Comcet Incorporated, St. Paul, Minn.

Filed Nov. 28, 1969, Ser. No. 880,653

Int. Cl. G06f 7/38, 7/39

U.S. Cl. 235—164

3 Claims



machined vane and provides a readout representing the actual class value of the machined vane. The airfoil dimensions and class surface are gaged with electrical transducer in such a way that there is no distortion of the master or vane.

3,627,998

## ARRANGEMENT FOR CONVERTING A BINARY NUMBER INTO A DECIMAL NUMBER IN A COMPUTER

Goran Anders Henrik Hemdal, Tyreso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 24, 1969, Ser. No. 879,290

Claims priority, application Sweden, Dec. 20, 1968, 17,538/1968

Int. Cl. G06f 5/02; H03k 13/24

U.S. Cl. 235—155

1 Claim

A binary-to-decimal converter comprises a plurality of cascaded adding means having order numbers  $n=1,2,3,\dots$  wherein the binary number is initially received by the adding

A two's complement negative number multiplying circuit in which no complementing of the multiplier or multiplicand is required, no special cases need be detected, no complementing of the result is required and fewer transfer paths are needed.



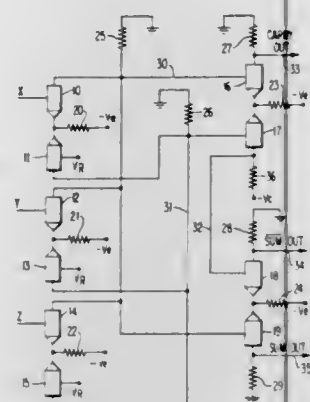
3,628,000

## DATA HANDLING DEVICES FOR RADIX "N+2" OPERATION

Leonard Weiss, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Apr. 18, 1968, Ser. No. 722,251  
Int. Cl. G06f 7/38, 7/50

U.S. Cl. 235—176

6 Claims



Data-handling devices for receiving input binary information, converting the input information into internal information in a number system having a radix greater than two, and performing Boolean logic operations on this internal information to generate a binary output representing a Boolean logic function of the input signals.

3,628,001

## LINEAR PROGRAMMING ANALOGUE COMPUTER WITH AUTOMATIC MEANS FOR OPTIMIZING

William J. Niblock, Eire, Ireland, assignor to Qelegg Limited, Dublin, Ireland

Filed Sept. 3, 1969, Ser. No. 854,997  
Claims priority, application Great Britain, Sept. 4, 1968, 42,125/68  
Int. Cl. G06g 7/34

U.S. Cl. 235—180

8 Claims



An analogue computer arranged for the solution of linear programming problems by the method of steepest ascents comprises a plurality of integrators, summing amplifiers and error-signal-defining amplifiers arranged in various interconnected signal-conducting paths and the signal-representative of the objective function is optimized automatically by deriving a correction signal from the signal-conducting paths and adding the correction signal to a signal of constant amplitude. The correction signal may be proportional to the maximum absolute value of error signal or the maximum positive or negative error signal appearing at the outputs of the error-signal-defining amplifiers.

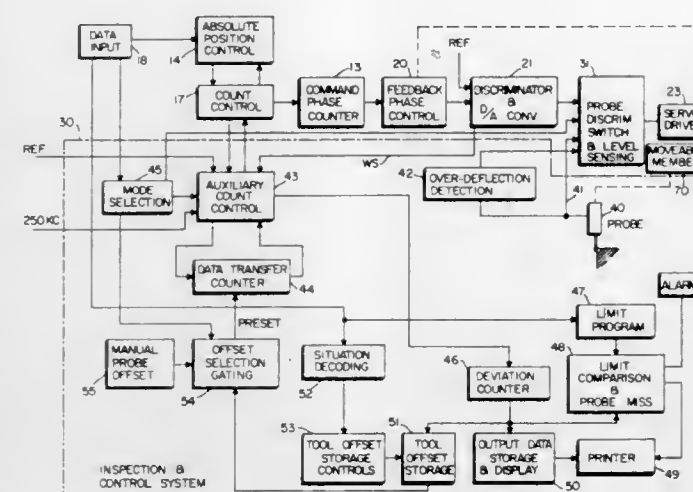
3,628,002

## ON-MACHINE INSPECTION SYSTEMS

Earl E. Meese, Waynesboro, and James C. Kenyon, Lyndhurst, both of Va., assignors to General Electric Company  
Filed Nov. 21, 1967, Ser. No. 684,776  
Int. Cl. G06f 15/46; B23q 15/04

U.S. Cl. 235—151.11

14 Claims



A system for inspecting work as part of the program of an automatically controlled machine tool wherein the deviation between the actual dimensions and the desired dimensions is stored and may be used to implement remachining operations.

3,628,003

## BASELINE PROJECTION APPARATUS FOR USE WITH BASELINE DRIFT CORRECTION CIRCUITS

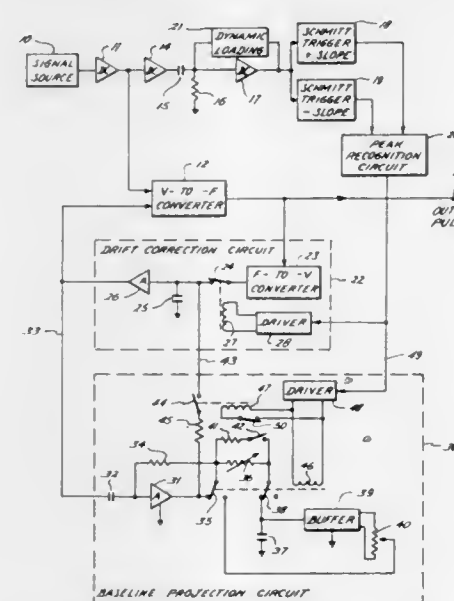
David W. Spence, Palo Alto, Calif., assignor to Capital National Bank, Trustee, Houston, Tex.

Filed Jan. 2, 1970, Ser. No. 18

Int. Cl. G06g 7/18

U.S. Cl. 235—183

13 Claims



An analytical measurement signal having recurrent data fluctuations which extend from a baseline value is supplied to a voltage-to-frequency converter which produces output pulses having a repetition rate proportional to the amplitude of the measurement signal. A drift correction circuit is responsive to these pulses for sensing baseline drift and supplying to the input of the voltage-to-frequency converter a correction signal for minimizing such baseline drift. During the occurrence of a data fluctuation, a portion of the drift correction circuit is disabled and a storage capacitor in such circuit supplies a constant correction signal to the voltage-to-frequency converter. A baseline projection circuit is coupled to the drift

correction circuit for modifying the constant correction signal used during the occurrence of a data fluctuation in accordance with the estimated baseline drift expected to occur during such time interval. Such baseline projection circuit includes differentiating circuit means for measuring the rate of change of the correction signal just prior to the occurrence of a data fluctuation and means for storing the measured rate of change value in a storage capacitor. This stored rate of change value is then used to vary the correction signal stored by the correction circuit capacitor in accordance therewith.

3,628,004

## COMPUTER OPTIMIZER

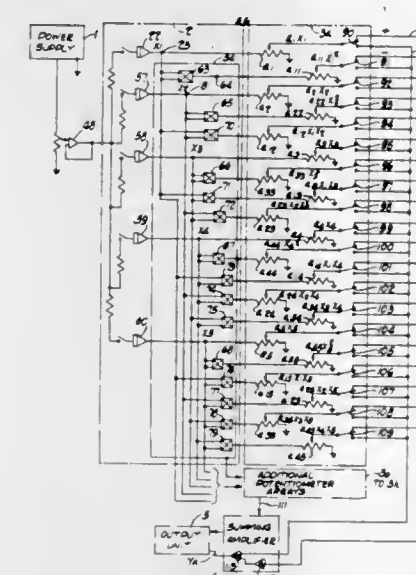
William E. Claxton, Mogadore, and Harold C. Holden, Manchester, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 10, 1969, Ser. No. 840,622

Int. Cl. G06g 7/16, 7/36, 7/48

U.S. Cl. 235—193

23 Claims



A special purpose analog computer designed for optimization of the ingredient levels of a chemical compound. The physical characteristics of a particular rubber blend may be closely approximated by a general empirical or mathematical model equation expressed in first and second order terms of the ingredients. By analysis of raw experimental data relating to the physical characteristics of interest, a different set of influence coefficients for the general equation terms may be determined for each physical characteristic, whereby a number of special model equations are obtained. In the preferred embodiment of the invention an eight-channel analog system is provided for simultaneously evaluating eight special model equations, expressed in terms of five ingredients. The set of influence coefficients for the terms of each special model equation are scaled to values less than unity and are dialed upon a separate bank of potentiometers of the analog computer. Five variable factor dials are provided to control the voltage level or desired value of the ingredients which may be altered to simulate various combinations of ingredients. The analog computer then instantly computes eight outputs which represent the response values of the eight physical characteristics for the selected blend of ingredients. A four-oscilloscope readout is provided utilizing the eight outputs and is programmed so that an ideal blend results in the convergence of the four oscilloscope beams toward the center of the readout array. The computer has an automatic search mode of operation to continuously vary the levels of the variable factors to automatically search through a range of factor levels to attempt to locate that combination of blend of ingredients which produces the best response. Also a combination search is provided wherein the variable factor levels are periodically changed only in the direction to achieve optimum results and thus the optimum blend of con-

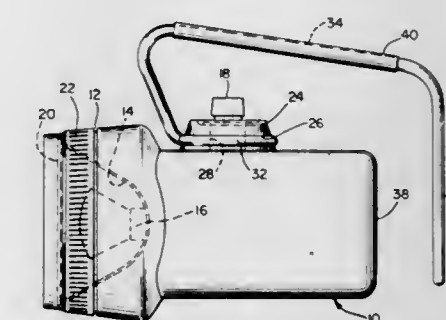
3,628,005

## LANTERN

Nolan K. Rhoades, Beloit, Wis., assignor to ESB Incorporated  
Filed Feb. 27, 1970, Ser. No. 15,130  
Int. Cl. F21H 7/00

U.S. Cl. 240—10.63

2 Claims



A lantern having a cantilevered handle swivelly mounted on the casing of the lantern is disclosed. The handle and casing are moveable relative to each other to any of a plurality of adjusted positions. A portion of the handle serves as a support for the lantern when used as such as well as a lens guard moved to a position in front of the lens of the lantern.

3,628,006

## SIGNAL LANTERN

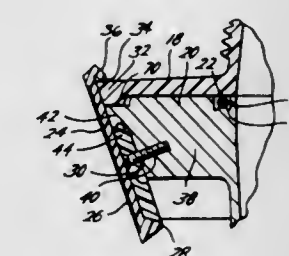
Samuel N. Sprunt; John E. Murphy; Harry J. Saenger, and Peter W. Higgins, all of Houston, Tex., assignors to Tideland Signal Corporation, Houston, Tex.

Filed Dec. 19, 1969, Ser. No. 886,477

Int. Cl. F21H 15/02

U.S. Cl. 240—22

6 Claims



A weatherproof signal lantern having a lens for directing light therefrom and including a flange on the bottom and a base molded of fiberglass reinforced polyester resin plastic having a flange for sealably coacting with the lens flange. A plurality of plastic draw catches for securing the lens to the base and including additional bosses on the lens and base flanges whereby the lens and base are interchangeable with conventional type lantern lens and bases. The lens flange including a drip rail integral therewith extending downwardly and round the lens perimeter for limiting water entry into the interface between the lens and the base with an O-ring seal having a groove offset from the seal for bonding the O-ring from the side to prevent undue stress forces in the lantern. A plastic snap-in hinge which allows quick installation of a lens on a base.



3,628,007

**CHECKERED GRID PREFERABLY FOR USE AS  
ANTIDAZZLE SCREEN AT FLUORESCENT TUBE  
FITTINGS**Rolf Gunnar Erland Rosenberg, 9 Lutzengatan, Stockholm,  
Sweden

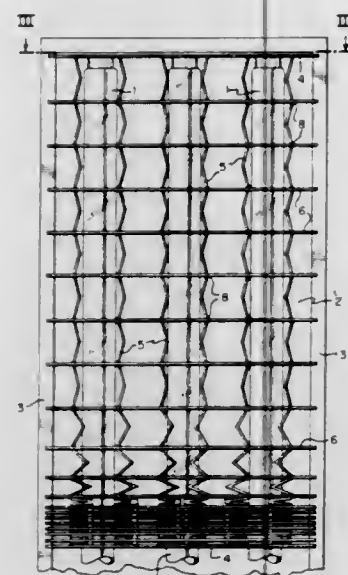
Filed Oct. 14, 1969, Ser. No. 866,305

Claims priority, application Sweden, Oct. 16, 1968, 13948/68

Int. Cl. F21v 11/04; F21s 1/06

U.S. Cl. 240—46.09

8 Claims



A collapsible antidazzle screen for use in connection with lighting fixtures includes a plurality of longitudinal strips foldable at spaced-apart points and a plurality of transverse strips connected to the longitudinal strips at fixed points, said transverse strips being placed upright in parallel and interconnecting with a plurality of longitudinal strips to form a bellowslike structure extendable in the longitudinal direction of the longitudinal strips.

3,628,008

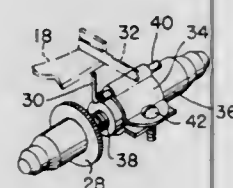
**BRAKE WEAR INDICATOR**Benjamin R. Lacey, 2743 North Ringgold St., Philadelphia,  
Pa.

Filed July 23, 1969, Ser. No. 843,980

Int. Cl. B60t 17/22

U.S. Cl. 340—52 A

4 Claims



A brake wear indicator for use in a self-adjuster brake assembly which includes the actuator associated with a brake shoe, with the actuator arm turning the adjusting screw from time to time to achieve the self-adjusting action. With the present invention there is provided a movable terminal that is moved from time to time by the actuator arm and a fixed terminal that is mounted on the brake shoe. As the brake linings wear away, the actuator screw is caused by the actuator arm to be rotated from time to time and with each advance of the actuator screw the movable terminal of the present invention is advanced toward the fixed terminal. At a predetermined amount of wear of the brake lining the movable terminal comes into contact with the fixed terminal to close a circuit that turns on a warning light that is preferably located on the dashboard of an automobile to warn the driver that the time has come to replace the brake lining of the automobile.

3,628,009

**SCANNING-TYPE SPUTTERING MASS SPECTROMETER**  
Hiroshi Doi, Ome; Hifumi Tamura, Hachioji, and Itiro Omura, Hino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

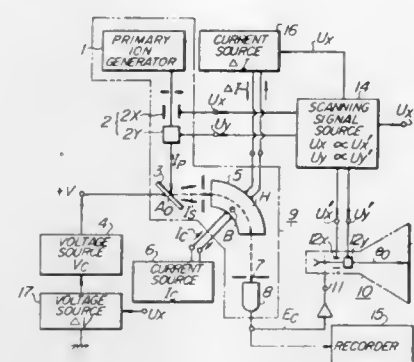
Filed July 9, 1970, Ser. No. 53,481

Claims priority, application Japan, July 11, 1969, 44/54506

Int. Cl. H01j 39/36

U.S. Cl. 250—41.9 ME

5 Claims



A scanning-type sputtering mass spectrometer comprising a primary ion-scanning unit including electrostatic-deflecting means and a secondary ion-analyzing unit including electrostatic-accelerating means, electromagnetic-deflecting means and an ion collector. The accelerating voltage or the deflecting magnetic flux density is controlled in magnitude in synchronism with the scanning of the primary ion beam so as to let only ions of a particular mass-to-charge ratio into the ion collector, irrespective of the displacement of the subject point of the secondary ion-analyzing unit.

3,628,010

**PHOTOCHEMICAL REACTOR WITH NOZZLE MEANS  
TO SPRAY A REACTION LIQUID ON THE WALLS OF  
THE REACTOR**Niklaus Tarkoey, Oberwil, and Cesare Campana, Birsfelden,  
both of Switzerland, assignors to Ciba-Geigy AG, Basel,  
Switzerland

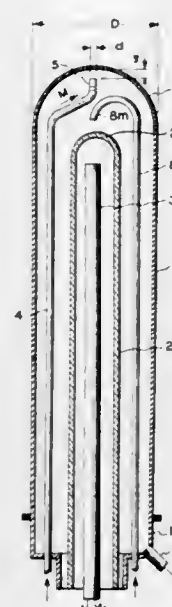
Filed July 1, 1969, Ser. No. 838,205

Claims priority, application Switzerland, July 4, 1968,  
9957/68

Int. Cl. H01j 37/00

U.S. Cl. 250—43

6 Claims



A photochemical reactor has an upstanding hollow cylindrical section closed at its upper end by a hemispherical dome the interior surface of which forms a continuation of the interior surface of the cylindrical section. One or more

nozzles sprays a reaction liquid onto the dome to form a film thereon which moves down the interior wall of the cylindrical section. A light source is coaxially disposed in the cylindrical section and spaced from it to effect the photochemical reaction of the film. The cylindrical section may be rotated and/or longitudinally corrugated to provide a longer effective film path. The light source has a tubular lamp in a translucent or transparent envelope and means are provided for washing the outer surface of the envelope to remove contamination.

3,628,011

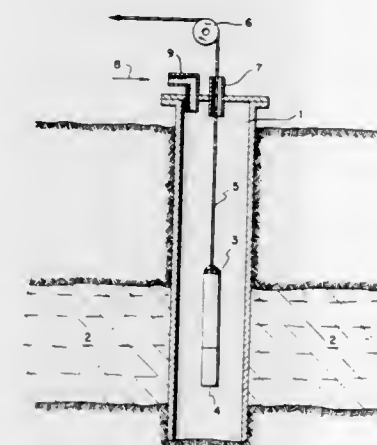
**DETERMINING FORMATION PERMEABILITY BY  
MEANS OF REPEATED FLUID INJECTIONS AT  
DIFFERENT PRESSURES AND AFTER EACH INJECTION  
PRODUCING A NEUTRON ACTIVATION LOG**Richard E. Wyman, Houston, Tex., assignor to Shell Oil Com-  
pany, Houston, Tex.

Filed Aug. 14, 1969, Ser. No. 850,126

Int. Cl. G01v 5/00

U.S. Cl. 250—43.5

3 Claims



A method for determining the permeability of a formation penetrated by a well using a neutron decay logging procedure. An aqueous liquid having a known neutron-capture cross section is first injected into the formation until the water saturation of the formation of interest is substantially 100 percent. Following the aqueous liquid, a viscous liquid having a known neutron-capture cross section which is different from the cross section of the aqueous liquid is injected at a low pressure. When equilibrium is reached, the concentration of the viscous liquid is measured using a neutron decay logging procedure. The injection of the viscous liquid is repeated using a higher pressure and the concentration of viscous liquid again measured. The injection pressure is increased in discrete steps and the concentration measured for each step until the fracturing pressure of the formation is approached. The concentration of viscous liquid versus injection pressure is plotted and used to determine the permeability of the formation.

3,628,012

**SCANNING ELECTRON MICROSCOPE FOR  
EXAMINING A REPETITIVELY VARYING  
PHENOMENON AT THE SURFACE  
OF A SPECIMEN**Graham Stuart Plows, 80 Brent Court, Hertfordshire,  
and William Charles Nixon, 2 Causewayside, San Causeway,  
Cambridge, both of England

Filed Apr. 3, 1969, Ser. No. 813,176

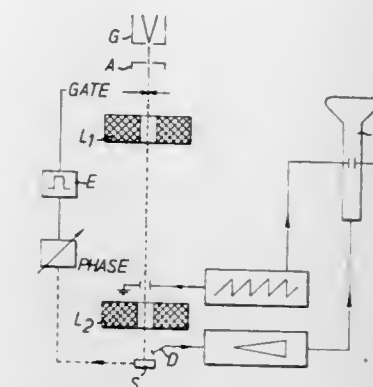
Int. Cl. H01j 37/28; H01j 37/22

U.S. Cl. 250—49.5 A

3 Claims

In time-sequential scanning electron microscopy in which an image is reconstructed for example on the screen of a cathode ray tube, rapidly varying phenomena having a

cycle period much shorter are examined stroboscopically by gating the signal train, preferably the incident electron



beam, in synchronism with the phenomenon and the image is built up from the resulting train of successive signals.

3,628,013

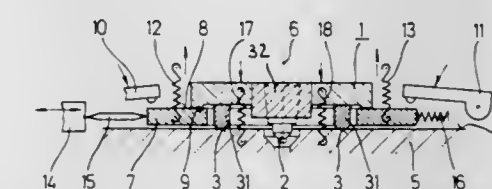
**ADJUSTING DEVICE FOR CORPUSCULAR-BEAM  
APPARATUS**Hans-Gunther Heide, Berlin, Germany, assignor to Max-  
Planck-Gesellschaft zur Förderung der Wissenschaften e.  
V., Göttingen, Germany

Filed Aug. 29, 1969, Ser. No. 854,089

Int. Cl. H01j 37/26

U.S. Cl. 250—49.5 B

12 Claims



A corpuscular-beam apparatus wherein a component, such as a diaphragm or specimen table, requires adjustment perpendicularly to the radiation axis of the apparatus. This component which requires such adjustment slidably engages a supporting surface which is normal to the radiation axis. An adjusting means, which can be actuated from the exterior of the evacuated apparatus, is provided for bringing about the required adjustment of the component. A clutch means is situated between this adjusting means and the component for transmitting movement from the adjusting means to the component only when the clutch means is in an engaged position. This clutch means can be displaced between its engaged position and a disengaged position where said clutch means prevents any transmission of movement from the adjusting means to the component.

3,628,014

**SCANNING ELECTRON MICROSCOPE WITH COLOR  
DISPLAY MEANS**Lee R. Grubic, Jr., Seattle, Wash., assignor to The Boeing  
Company, Seattle, Wash.

Filed Dec. 22, 1969, Ser. No. 887,693

Int. Cl. H01j 37/28, 37/22

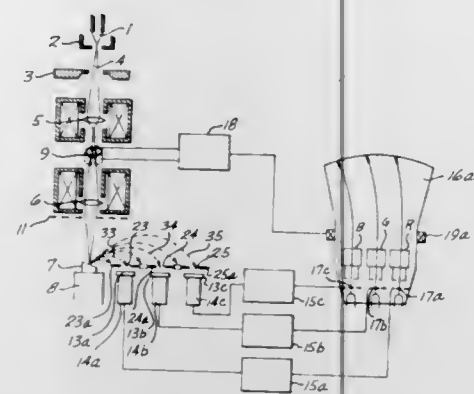
U.S. Cl. 250—49.5 A

3 Claims

A scanning electron microscope and system wherein small surface potential differences are rendered visible as color shifts on a color CRT (cathode-ray tube) display device. A plurality of different surface potentials are detected respectively by scintillation detectors which are coupled to photomultipliers and then amplifiers. The amplifier output signals representative of several different means surface potentials at scanned points of the specimen are coupled respectively to the three signal control grids of a color CRT in the case of a three scintillating detector-three channel



system and the color combinations of the primary colors displayed are indicative of surface potentials in between the



mean potentials thus making small differences of the specimen surface potential readily discernible to the eye as small color shifts.

3,628,015

### SCANNING MECHANISM FOR USE IN AN X-RAY SPECTROMETER

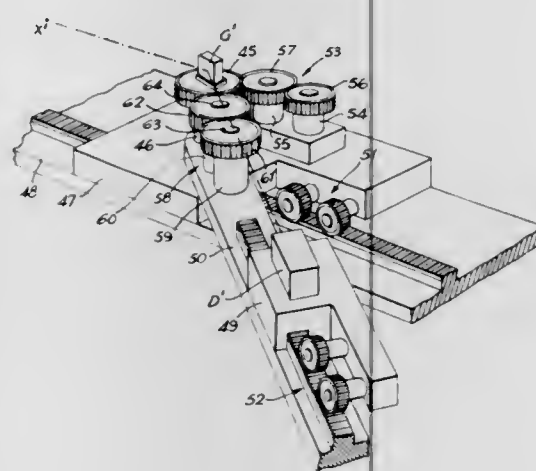
Albert Franks, London, England, assignor to National Research Development Corporation, London, England  
Filed Nov. 26, 1968, Ser. No. 779,142

Claims priority, application Great Britain, Nov. 29, 1967, 54,346/67

Int. Cl. G01n 23/22

U.S. Cl. 250—51.5

6 Claims



In a spectrometer incorporating a radiation detector which is movable so as to follow the focal curve of a dispersive element such as a curved grating or crystal, the movement of the detector is brought about by appropriately coordinating the operation of two mechanisms which respectively drive the detector radially and angularly relative to the dispersive element.

3,628,016

### PHOTOELECTRIC READER FOR FLUORESCENT INK IMPRINTED CODED DOCUMENT

Robert M. Berler, Westport, Conn., assignor to Pitney Bowes-Alpex, Inc., Danbury, Conn.

Continuation of application Ser. No. 809,614, Mar. 24, 1969, now abandoned. This application Nov. 27, 1970, Ser. No. 93,470

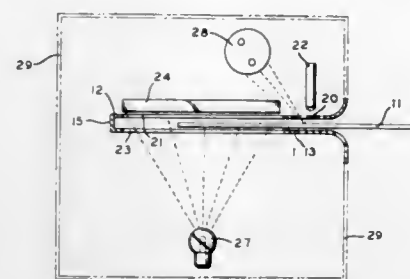
Int. Cl. G01n 21/22

U.S. Cl. 250—71 R

8 Claims

An apparatus for reading intelligence contained on a document in the form of information printed with fluorescent ink. To accommodate the document to be read, the reader includes a slot comprising a pair of flat plates between which the document is inserted. Formed in the plates are apertures

or windows over which the document is drawn; one window effects the readout; another verifies or approves the document. A fluorescent light source is directed through the readout window and an incandescent light source is directed



through the approval window. Aligned with the respective windows are light detector means comprising a plurality of photocells. A housing capable of substantially excluding light contains the document-receiving slot, the light source and photocell detector.

3,628,017

### ULTRAVIOLET LIGHT-SENSITIVE CELL USING A SUBSTANTIALLY CHEMICALLY UNCHANGED SEMICONDUCTOR ELECTRODE IN AN ELECTROLYTE

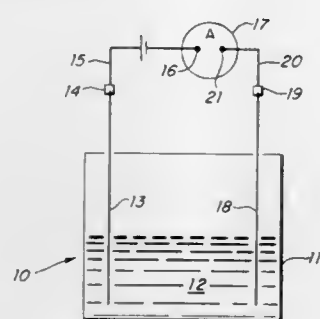
Harry Lerner, Lexington, Mass., assignor to Ittek Corporation, Lexington, Mass.

Continuation of application Ser. No. 735,832, June 10, 1968, now abandoned. This application June 18, 1970, Ser. No. 47,610

Int. Cl. G01j 1/42

U.S. Cl. 250—83 CD

12 Claims



This disclosure relates to an ultraviolet light-sensitive cell which is useful for detecting and measuring the intensity of ultraviolet light. The cell comprises an electrolyte, a metal-containing semiconductor electrode and a counter electrode.

3,628,018

### DEVICE FOR CONTROLLING THE ATTITUDE OF A SPACECRAFT BY MEANS OF AN ELECTRO-OPTIC MODULATOR

Francois Desvignes, Bourg La Reine, France, assignor to U. S. Philips Corporation, New York, N.Y.

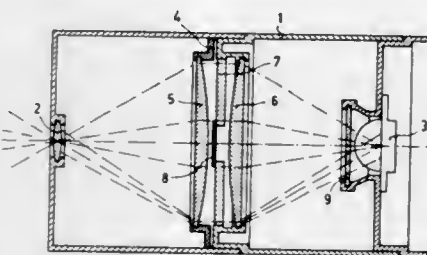
Filed Nov. 25, 1969, Ser. No. 879,723

Claims priority, application France, Nov. 27, 1968, 175,530

Int. Cl. G01d 5/34

U.S. Cl. 250—83.3 H

11 Claims



An attitude scanning device for a spacecraft which is in a circular orbit about the earth, which device can be used dur-

ing the coarse and the final determinations of this attitude. A bolometer receives the infrared radiation from the earth after this radiation has been modulated by an electro-optical modulator composed of sectors. The device enables the rolling and pitching errors to be simultaneously determined.

3,628,019

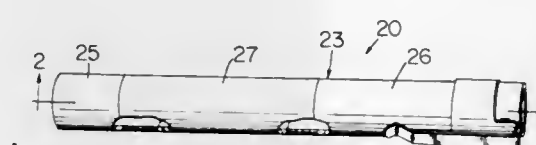
### LOW-ENERGY DOSIMETER AND METHOD OF MAKING SAME

Thomas P. Jackson, 721 Springfield St., P.O. Box 893, Dayton, Ohio

Filed Mar. 13, 1969, Ser. No. 806,925

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3



A reliable low-energy dosimeter, and method of making same, which is capable of precisely measuring radiation at low-energy levels of approximately 30 Kev. and less; yet, such dosimeter is easily manufactured using conventional equipment.

3,628,020

### THERMAL NEUTRON SOURCE

Alain Briand, Grenoble, France, assignor to Commissariat A'L'Energie Atomique, Paris, France

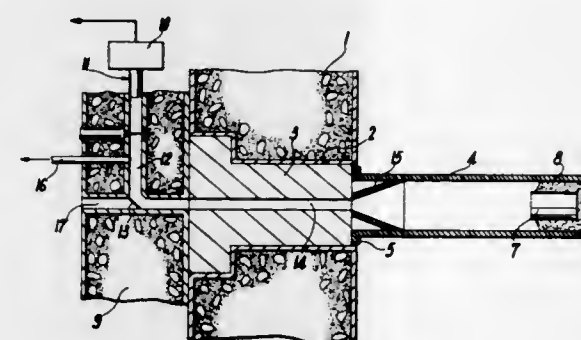
Filed May 1, 1969, Ser. No. 820,733

Claims priority, application France, May 21, 1968, 152 624

Int. Cl. G21c 3/00

U.S. Cl. 250—84.5

8 Claims



A temperature-controlled thermal neutron source for modifying the energy of neutrons supplied by a nuclear reactor core. A block of neutron-moderating material enclosed in a leaktight casing is placed within the reactor. The block casing forms an extension of a reactor shield plug which closes an access hole and is connected to an external vacuum pump via a passageway through the shield plug. The passageway serves as a guide for high-frequency waves which are transmitted from the exterior to the neutron-moderating block. The temperature of the block can thus be varied, thereby permitting a correlative variation in the energy of neutrons which traverse the block.

3,628,021

### X-RAY COLLIMATOR HAVING A FIBER OPTIC LIGHT SOURCE THEREIN FOR ALIGNMENT PURPOSES

Angus C. MacDonald, 10 Spear Lane, Denville, N.J.

Filed May 25, 1970, Ser. No. 40,174

Int. Cl. G03b 41/16

U.S. Cl. 250—105

6 Claims

X-ray collimator having a fiber optic light source attached

thereto, and method for accurately aiming a collimated X-ray



beam at a test sample using fiber optic light source.

3,628,022

### NONBLOCKING SELECTIVE SWITCHING SYSTEM FOR OPTICAL COMMUNICATION

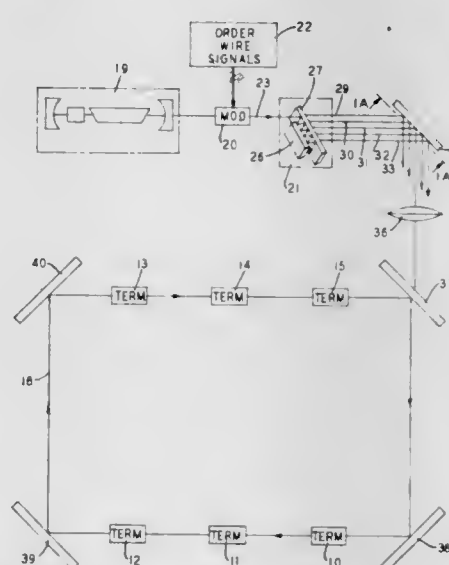
Harry J. Schulte, Jr., Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Oct. 8, 1969, Ser. No. 864,663

Int. Cl. H04b 9/00

U.S. Cl. 250—199

16 Claims



Carrier beams of coherent light are directed around a closed coupling loop having  $n$  terminals coupled thereto by selective light deflectors which divert a different beam from the loop at each terminal. The loop includes  $n \times n$  spatially dedicated beam paths. Each terminal modulates its carrier beam and directs the modulated beam by way of the terminal deflector to one of  $n-1$  different paths in the loop for one of the  $n-1$  other terminals. Likewise, the deflector at each terminal directs to its terminal the modulated carrier beams from the  $n-1$  other terminals.

3,628,023

### METHOD AND APPARATUS FOR PULSE POSITION MODULATING SPONTANEOUSLY PULSING SEMICONDUCTOR LASERS

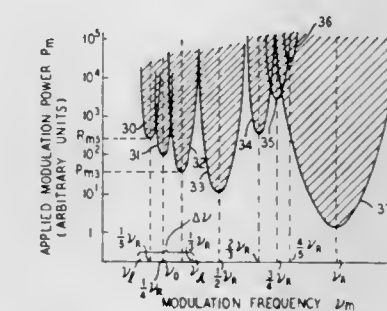
Thomas L. Paoli, Chatham, and Jose E. Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Dec. 1, 1969, Ser. No. 881,183

Int. Cl. H04b 9/00; H01s 3/18

U.S. Cl. 250—199

16 Claims



The output of a spontaneously pulsing semiconductor laser is pulse position modulated by amplitude modulating the in-



jection current while maintaining the frequency and power of the modulating signal so as to prevent phase-locking of the laser output to the modulating signal.

3,628,024

# PHOTO-OPTIC TRANSDUCER USING APERTURED SHADE AND MOVEABLE SHUTTER

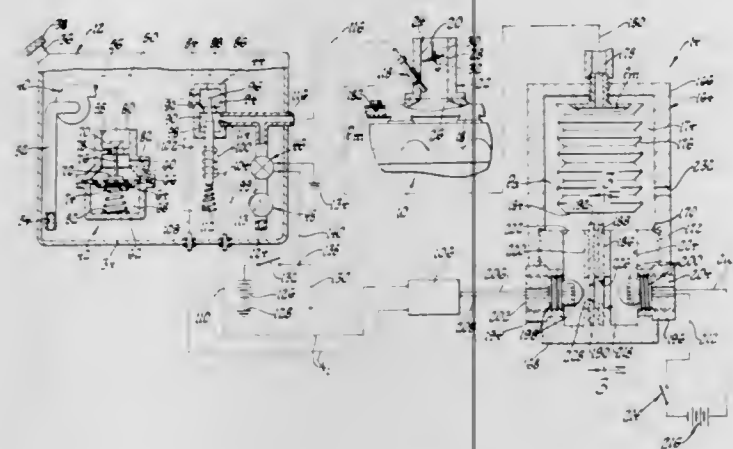
Michael F. Ciemochowski, Warren, Mich., assignor to Holley Carburetor Company, Warren, Mich.

Filed Apr. 13, 1970, Ser. No. 27,917

Int. Cl. F02m 7/00

U.S. Cl. 250-215

6 Claims



A photo-optic transducer employs a stationary shade member with a light-passing aperture formed therein and a moveable shutter member operatively connected to a pressure responsive bellows; a light source or lamp is positioned on one side of the shutter member and a photocell is positioned on the other side of the shade member so as to have the light-passing aperture substantially in line with the light source and photocell; variations in pressure sensed by the bellows causes movement of the shutter so as to in accordance therewith partially block the total area of said aperture in order to varyingly reduce the degree of passage of light from said source to the photocell thereby enabling the photocell to produce an output signal correlated to the pressure than sensed by the bellows.

3,628,025

# PHOTOELECTRIC CONTROL DEVICE

Franz Kieferle, Weil am Rhein, Germany, assignor to Lonza Ltd., Basel, Switzerland

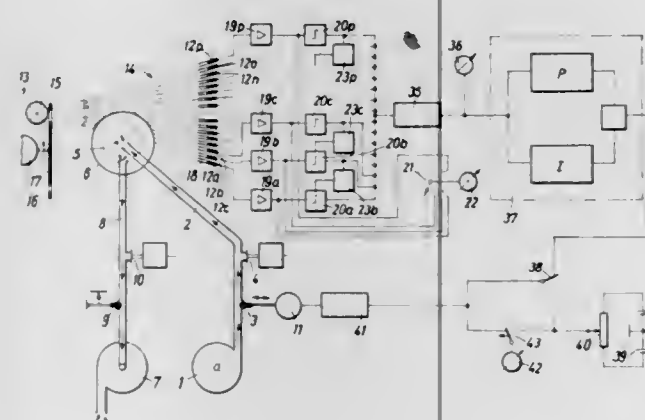
Filed Jan. 21, 1970, Ser. No. 4,583

Claims priority, application Switzerland, Jan. 24, 1969, 1041

Int. Cl. G01n 21/30

U.S. Cl. 250-219 LG

5 Claims



A photoelectric control device in a tube inflating device comprises a light source directed to a series of photoelectric elements each associated with a trigger. Each trigger, except that of the element at one end of the series has a blocking

device arranged in response to response of its trigger darkening of its photoelectric element, to operate the trigger of the next photoelectric element in the direction of said end.

3,628,026

# LINEAR ENCODER IMMUNE TO SCALE BENDING ERROR

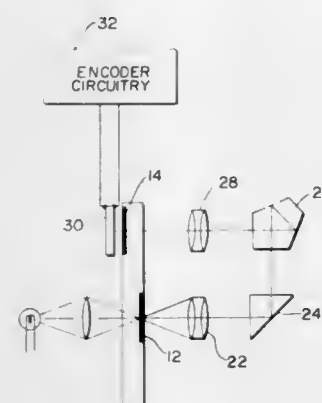
David V. Cronin, West Peabody, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.

Filed Sept. 5, 1969, Ser. No. 855,546

Int. Cl. G01d 5/34

U.S. Cl. 250-231 R

7 Claims



A linear encoder in which scale bending error does not materially affect encoder performance. An elongated generally rectangular encoder scale is provided having a plurality of alternately light responsive and opaque segments on one surface thereof and a plurality of similar segments on an opposite surface thereof, the segments on one surface experiencing equal and opposite deformation to the segments on the opposite surface in the presence of bending stress. An interference pattern sensed from both pluralities of segments is not materially affected by such bending stress, with the result of markedly improved encoder performance under bending error conditions.

3,628,027

# BEAM DEFLECTING AND FOCUSING MEANS FOR PHOTOELECTRIC MONITORING, COUNTING OR CONTROL APPARATUS

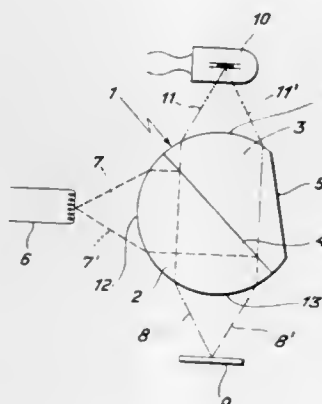
Gustav Brauss, Goldach, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Dec. 17, 1969, Ser. No. 885,805

Int. Cl. G02b 3/00, 17/00; H01j 39/12

U.S. Cl. 250-216

4 Claims



The beam deflecting and focusing system includes a lens member of approximately spherical shape formed of two transparent substantially hemispherical parts as well as a partly reflective partly transparent mirror located in the contact plane between the two hemispherical parts. The mirror is arranged to reflect light from a light source to a reflector out-

side the lens members and to transmit reflected light from the reflector onto the photocell.

3,628,028

# WINDOW CLEANING APPARATUS FOR PHOTOMETRIC INSTRUMENTS

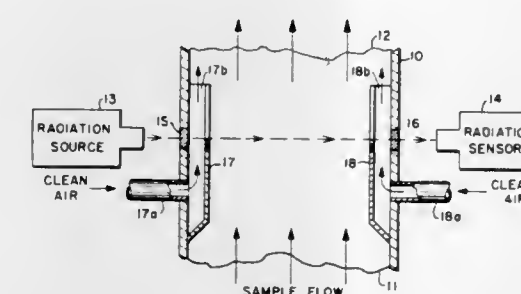
Joseph O. Thorsheim, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 1, 1968, Ser. No. 709,669

Int. Cl. G01n 21/26

U.S. Cl. 250-218

3 Claims



An apparatus for use in photometric instruments is described in which conditioning of the gaseous sample under study is unnecessary. No filters, condensers, sample heaters, vapor traps or detector heaters are used. A curtain of clean air over the radiation source and radiation detector windows protects them from condensate or particulate matter in the sample and provides a fixed radiation path length.

3,628,029

# APPARATUS FOR INSPECTING TUBULAR GOODS

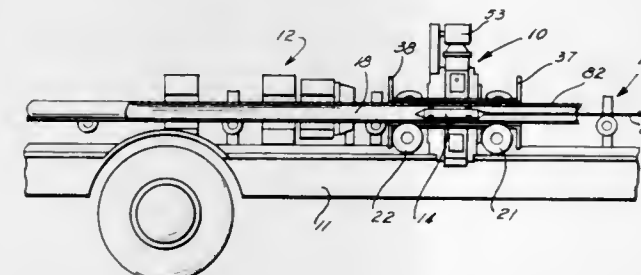
David R. Tompkins, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 587,138, Oct. 17, 1966, now abandoned. This application July 15, 1968, Ser. No. 744,861

Int. Cl. G01t 1/16

U.S. Cl. 250-83.3 D

7 Claims



In the representative embodiment of the invention disclosed herein for measuring the wall thickness of elongated tubular goods being axially translated along a selected inspection axis, a radiation detector coaxially positioned within a moving tubular member provides a characteristic signal in response to a sharply focused beam of radiation that is progressively swept around the tubular member and continuously intersects the detector. To obtain this clearly defined radiation pattern, a radioactive source that is rotated outside of the tubular member in a circular path around the inspection axis is disposed adjacent to the outer ends of two or more focusing slots that converge toward the inspection axis. As a result, this sharply defined radiation pattern is substantially smaller than the active portion of the detector so that random or erratic movements of the detector within the moving tubular member will not affect the measurements obtained.

3,628,030

# BROKEN END DETECTION SYSTEM FOR WARPERS UTILIZING NOVEL OPTICAL SYSTEM

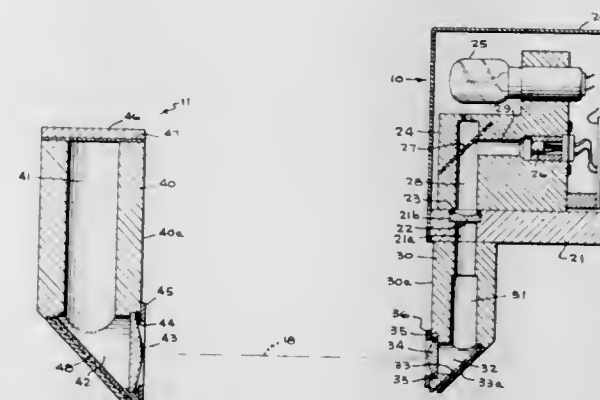
Raymond Baines Fertig; Lawrence Creigh Nickell, and Henry T. Sessions, all of Ronceverte, W. Va., assignors to Appalachian Electronics Instruments Inc., Ronceverte, W. Va.

Filed Oct. 15, 1970, Ser. No. 80,943

Int. Cl. G01n 21/30; G06m 7/00; H01j 39/12

U.S. Cl. 250-219 S

10 Claims



A broken end detector for a warper, wherein a detector head unit has a light source, a phototransistor and a beam splitter mirror and first and second lenses with a front surface mirror therebetween to intercept light traveling from the source through the first lens and redirect the light at right angles through the second lens as a monitoring beam spanning the width of the yarn sheet immediately below the warper measuring roll. A target unit having a lens, a 45° mirror, and a retroreflective surface at the other edge of the yarn sheet retroreflects light from the beam back along the beam axis to the detector head lenses and mirrors and the phototransistor.

3,628,031

# CLOSED LOOP CONTROL SYSTEM FOR AUTOMATIC SENSITIVITY CONTROL OF TRANSDUCER

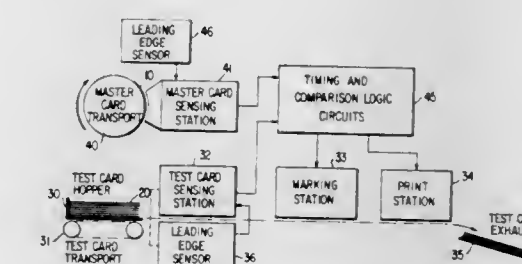
Leo L. Azure, Jr., Richland, Wash., assignor to Automata Corporation, Richland, Wash.

Filed Feb. 6, 1969, Ser. No. 797,160

Int. Cl. G01n 21/30

U.S. Cl. 250-219 DC

23 Claims



A sensitivity control circuit for a of device automatically and periodically establishes a reference level corresponding to the output of the device when sensing a reference level of illumination and maintains that reference level for referencing the output of the device during subsequent sensing operations. The reference level corrects for variations in the output of the device resultant from drift and other factors unrelated to information to be sensed. A particular application of the circuit is in a test scoring machining having optical scanning of information presented on cards wherein the reference level is established in response to sensing of card background in timed relationship to the scanning of the card.



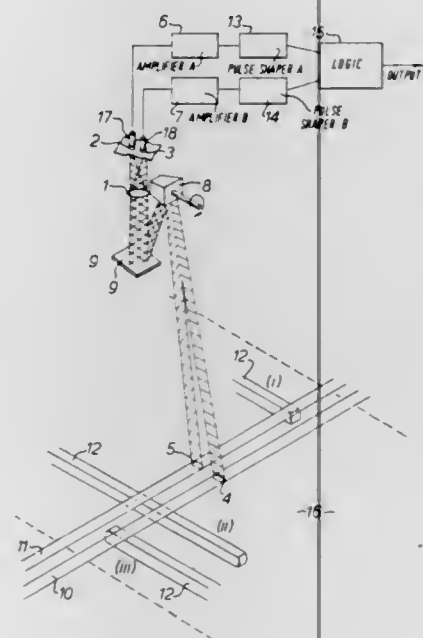
3,628,032

## APPARATUS FOR DETECTING OBJECTS

Robert A. Senior, Uppingham, Rutland, and Peter J. Trigg, Corby, Northamptonshire, both of England, assignors to Stewarts and Lloyds Limited, Glasgow, Scotland  
Filed July 1, 1969, Ser. No. 838,301  
Int. Cl. G01n 21/30

U.S. Cl. 250—219 LG

3 Claims



Apparatus for detecting an object which has a rotating mirror and photocells arranged to scan two parallel paths, amplifiers and pulse shapers for processing signals produced by the photocells in response to variations in radiation along the paths, and a logic circuit for comparing the signals.

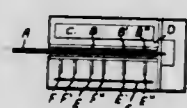
3,628,033

## PHOTOELECTRIC TIME DELAY LOCK

Jean-Francois Taillens, 65 Chemin Isabelle de Montolieu, 100 Lausanne, Switzerland  
Filed Aug. 19, 1969, Ser. No. 851,361  
Int. Cl. G01n 21/30

U.S. Cl. 250—219 D

2 Claims



The lock comprises an electric circuit including four interconnected circuit sections including a power supply, a photoelectric lock, a key identification logic circuit, and an electrically actuated door latch. These circuit sections are adapted to verify the predetermined position of a plurality of apertures contained in the forward body portion of an opaque key as well as the absence of apertures therein by means of light rays emanating from a light source located adjacent the key and traversing these apertures to one of two sets of selectively positioned photoconductive elements on the other side of the key when the key is inserted into the lock. Output signals are provided from both sets of photoconductive elements in response to the aperture configuration of the key which are coupled to the logic circuit where proper identification of the key is made to then operate the door latch if the proper code is presented by the key.

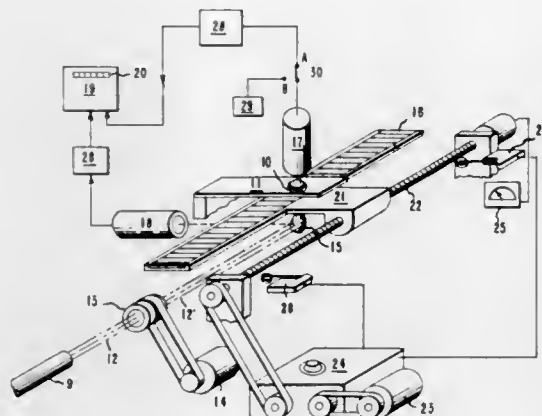
3,628,034

## DEVICE TO DETECT MOTION AND MEASURE SPEED FROM THE DELAYED FLUORESCENCE OF AROMATIC COMPOUNDS

Vladimiro Ern, and Richard E. Merrifield, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed June 26, 1970, Ser. No. 50,104  
Int. Cl. G02f 1/18

U.S. Cl. 250—225

10 Claims



Motion is detected or speed is measured by producing an image of the moving object or series of objects in a material which displays the phenomenon of delayed fluorescence and measuring the intensity of the delayed fluorescence, or modulating the intensity of the imaging light and measuring the phase shift of the resulting modulation of the delayed fluorescence. A device for the above comprises a crystalline material which displays the phenomenon of delayed fluorescence, a light source directed at this crystalline material, and a photomultiplier tube to measure the intensity of the delayed fluorescence, or a mechanical chopper to modulate the intensity of the imaging light and two photomultiplier tubes, a tracking filter and a digital phase meter to measure the phase shift of the resulting modulation of the delayed fluorescence.

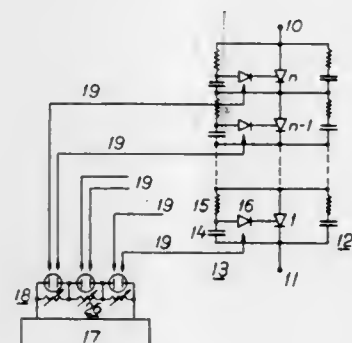
3,628,035

## THYRISTOR-RECTIFIER CONTROLLED BY LIGHT PULSES OF EQUAL INTENSITY AT THE END OF LIGHT-CONDUCTING RODS

Karl Erik Olsson; Keijo Hellgren, and George Lindblom, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden  
Filed Aug. 13, 1970, Ser. No. 63,504  
Claims priority, application Sweden, Sept. 1, 1969, 12046/69  
Int. Cl. G02b 5/14

U.S. Cl. 250—227

5 Claims



A thyristor rectifier for high voltage is formed of a number of series connected thyristors each having its own control circuit to which control pulses are supplied by a common control device. Glass fiberlike conductors are used for transmitting the control pulses in the form of light pulses. The light intensity of the light pulses to some of the thyristors is

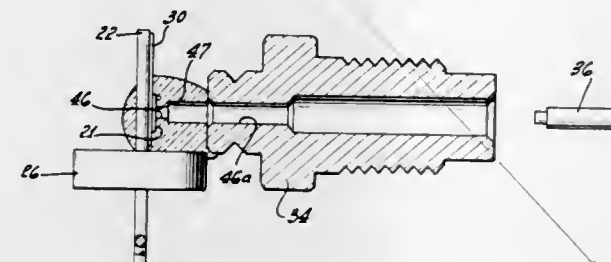
adjusted in relation to others so as to adjust the firing times in relation to each other.

3,628,036

## CONNECTOR MEANS FOR A LIGHT-CONDUCTIVE FILAMENT AND PHOTOSENSITIVE SURFACE

John H. Humphrey, Playa Del Rey, Calif., assignor to Data Source Corporation, El Segundo, Calif.  
Filed Dec. 22, 1969, Ser. No. 887,185  
Int. Cl. G02b 5/14

U.S. Cl. 250—227



A means and method for removably operably connecting a light conducting and directing filament means of small diameter (in the order of 0.005 to 0.020 inches) with a limited or minute light-sensitive area on a photoconductive element such as a phototransistor or photodiode in order to direct and register a maximum amount of radiant energy such as light on the light-sensitive area. The connecting means and method provides precise positioning and holding of an end face of a filament means in spaced relation to the light-sensitive area while permitting removal of the filament means.

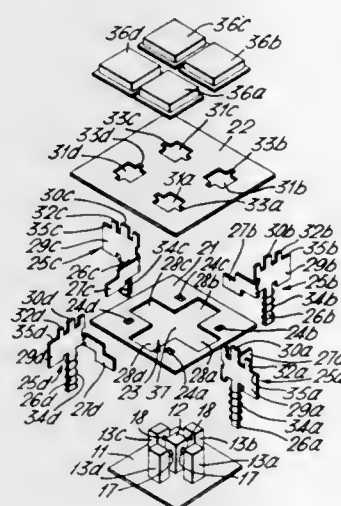
3,628,037

## PHOTOELECTRIC SWITCH UNIT

Mittitaka Yamamoto, and Kenichi Kitajima, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan  
Filed July 16, 1969, Ser. No. 842,235  
Claims priority, application Japan, July 26, 1968, 43/53273  
Int. Cl. G01d 5/34; H01j 1/56

U.S. Cl. 250—229

6 Claims



A photoelectric switch unit comprising a single source of light, a plurality of photoelectric elements each so arranged as to receive light from the light source and a plurality of shutters each interposed between the light source and one of the photoelectric elements to normally block the light, each of the shutters being so arranged as to be selectively movable individually and independently of the other shutters from the path of the light to permit the light to enter and actuate the corresponding one of the photoelectric elements. The single

source of light, each of the photoelectric elements and each of the shutters are associated to form one photoelectric switch, and there are a plurality of such switches included in the switch unit, the operation of each of which is performed individually and independently of the other switches in the unit.

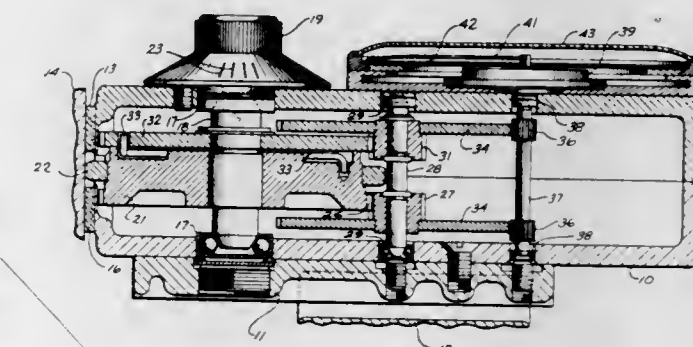
3,628,038

## PHOTOELECTRIC CHOPPER FOR DISTANCE MEASUREMENT

Irven H. Culver, Playa Del Rey, and Ronald C. Sheltra, West Los Angeles, both of Calif., assignors to Southwestern Industries, Inc., Los Angeles, Calif.  
Filed Oct. 22, 1969, Ser. No. 868,436  
Int. Cl. G01d 5/36

U.S. Cl. 250—233

16 Claims



A distance-measuring system is described in which a wheel is frictionally engaged with a surface along which measurements are made. The metering wheel is connected to a shaft which drives a portion of a photoelectric chopper which provides an indication of increments of metering-wheel travel. The chopper includes a disk on the shaft with a plurality of windows alternating with opaque areas in a circular path near the periphery of the disk. A mask having an arc of somewhat similar windows is adjacent and spaced a short distance away from the disk. A pair of lights and a pair of photosensors are located on opposite sides of the mask-disk set. Each photosensor detects light passing through a different plurality of windows in the mask and disk and, as the disk rotates, a substantially symmetrical variation in light intensity occurs. A minimum area noncollimated light source is provided and the mask is located nearer the light source than is the disk. A greater number of windows per unit length is provided on the mask than on the disk so that successful chopping of a non-collimated light beam is obtained when the mask and disk are spaced apart. The mask is mounted on a ring movably by an eccentric and constrained to move only angularly about its center and along a direction normal to a chord between the two photosensors. This permits the phase relation between the photosensor inputs to be adjusted readily and with high precision. Precise adjustment of phase relation and proper mask and disk construction permit the chopper to give usable signals at very high slue rates.

3,628,039

## ELECTROMAGNETIC RADIATION WAVE SIGNAL TRANSMISSION APPARATUS

Eugene V. Ochs, Mission Viejo, and Jeffrey L. Monroy, Santa Ana, both of Calif., assignors to Dana Laboratories, Inc.  
Filed Dec. 29, 1969, Ser. No. 888,605  
Int. Cl. H01l 15/00

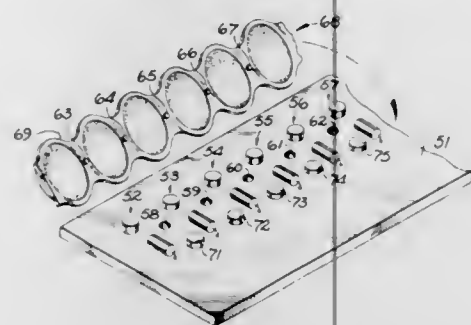
U.S. Cl. 250—239

10 Claims

One or more pairs of devices are aligned in a predetermined relationship upon a mounting member such as a printed circuit board. One of the devices is a light-emitting device, and the other is a light-responsive device. Each of the pairs of devices are covered by a surface which, at least over that area upon which the electromagnetic radiation from the emitting device impinges, is a segment of an ellipsoid.



Preferably the cover is a figure of revolution of an ellipse about the major axis which is then divided in half by a plane extending through the major axis. When a plurality of pairs of such devices are utilized, the cover constitutes a plurality of half-ellipsoids interconnected together and arranged in



such a manner that they include indexing means which mate with registration means on the printed circuit board so as to obtain proper alignment of the cover with each pair of devices. In any event, the alignment is such that each of the devices is positioned approximately at one focus of the half-ellipsoid, or segment thereof.

3,628,040

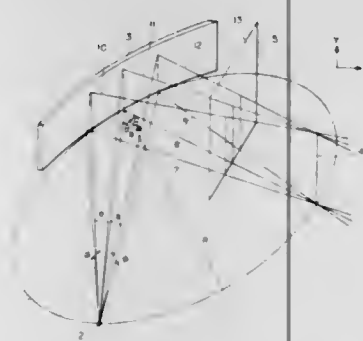
# HIGH-DISPERSION, HIGH-RESOLUTION X-RAY SPECTROMETER HAVING MEANS FOR DETECTING A TWO-DIMENSIONAL SPECTRAL PATTERN

Herbert W. Schnopper, and Kenneth Kalata, both of Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 19, 1969, Ser. No. 825,532  
Int. Cl. G01n 23/22

U.S. Cl. 250-51.5

14 Claims



Apparatus is disclosed for providing a two-dimensional spectral pattern of X-ray radiation. The radiation, which may be provided by a wide angle point source in the apparatus or may come from a cosmic X-ray source, is directed upon a bent crystal to provide spectral dispersion and focusing. The rays reflected from the crystal are then detected, as upon a film or the like, at an area positioned away from the focal region of the crystal to produce the two-dimensional pattern. In one embodiment of the apparatus provision is made to feed information from the detector to a computer to yield simultaneous analysis of the radiation both as to the frequencies present therein and the intensity of each.

3,628,041

# ELECTRIC CRANKING MOTOR AUTOMATIC DISCONNECT AND LOCKOUT CIRCUIT

Donald L. Cummins, Morris Esche, and Robert W. Campbell, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 91,682  
Int. Cl. F02n 11/00

U.S. Cl. 290-37

4 Claims

An electric cranking motor automatic disconnect and lockout circuit. The normally open contacts of a cranking

motor solenoid operated switch are connected in series with the electric cranking motor across a source of direct current supply potential. Upon the closure of an electric switch, the source of direct current supply potential, applied across the gate-cathode electrodes of a first silicon controlled rectifier, triggers this device conductive through the anode-cathode electrodes to establish a circuit for base-emitter current flow through a first transistor. The conductive first transistor establishes an energizing circuit for the operating coil of an electric relay which, in turn, establishes an energizing circuit for the operating coil of the solenoid operated switch. The output potential of an electrical generator driven by the cranking motor armature is applied across the gate-cathode electrodes of a second silicon controlled rectifier. When the



3,628,042

# CONTROL SYSTEM

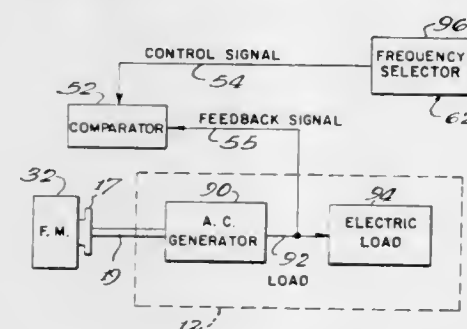
Charles J. Jacobus, c/o Charles Equipment Co. 17W601 North Ave., Villa Park, Ill.

Continuation-in-part of application Ser. No. 801,644, Feb. 24, 1969, now Patent No. 3,558,901. This application July 3, 1969, Ser. No. 839,037

Int. Cl. H02p 9/04

U.S. Cl. 290-40

2 Claims



A control system using a motive source and connected hydrostatic transmission to drive a load at a speed deter-

mined by the volume of fluid flowing in the transmission. A comparator and actuator change the volume of fluid flow in proportion to the deviation between a feedback signal and a control signal. The feedback signal is generated by a sensor responsive to the output of the transmission. The control signal has a value dependent upon the type of load connected to the transmission.

3,628,043

# CIRCUIT ARRANGEMENT FOR THE CONTINUOUS CURRENT SUPPLY OF CONSUMERS WITH ASYMMETRICAL LOAD

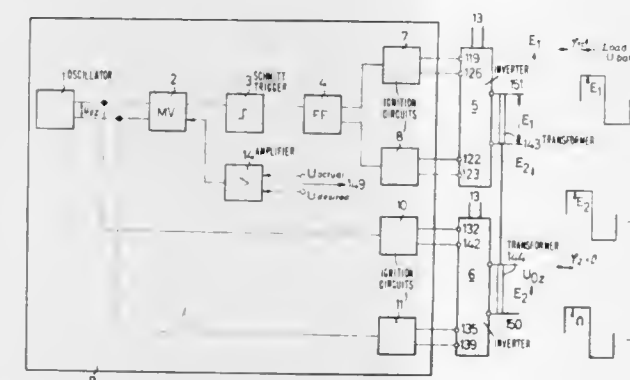
Werner Ullmann; Franco Donati, both of Locarno, and Gianfranco Tortelli, Ascona, all of Switzerland, assignors to A.G. fur Industrielle Elektronik Agie Losone B. Locarno, Losone-Locarno, Switzerland

Original application Sept. 18, 1967, Ser. No. 668,619, now Patent No. 3,562,619, dated Feb. 9, 1971. Divided and this application May 21, 1970, Ser. No. 39,383

Int. Cl. H02j 1/00

U.S. Cl. 307-87

7 Claims



Apparatus for influencing or controlling the vectors of output voltages from a direct current supply device feeding a multiconductor alternating current transmission system. The total voltage vector for each conductor is generated from two partial voltage vectors. Control of the magnitude of the total voltage vector is effected by phase-shifting the partial voltage vectors, each partial voltage vector being phase-shifted through the same angular magnitude but in opposite angular direction. In this manner, the total voltage vector for each conductor is maintained in a constant phase position even during automatic regulation and in the presence of an asymmetrical load.

3,628,044

# SECOND HARMONIC LASER

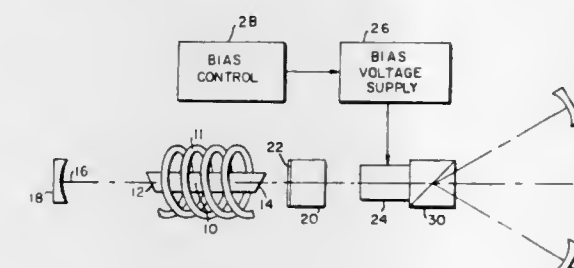
Donald S. Young, Windham, and John S. Hancock, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Apr. 14, 1969, Ser. No. 815,603

Int. Cl. H02m 5/00; H01s 3/10

U.S. Cl. 307-88.3

6 Claims



An improved second harmonic laser comprises a resonant cavity having disposed in axial alignment therein an active

3,628,045

# LASER HARMONIC GENERATOR

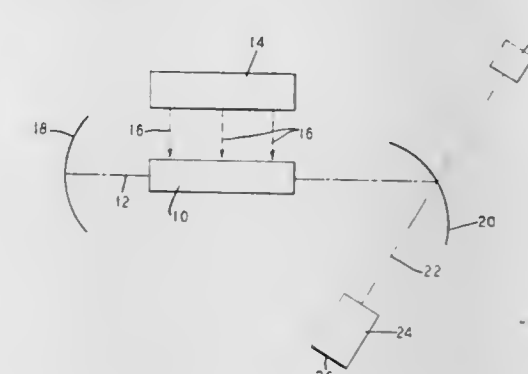
Ronald B. Chesler, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 24, 1969, Ser. No. 818,962

Int. Cl. H02m 5/00; H01s 3/10

U.S. Cl. 307-88.3

4 Claims



In a harmonic generator of the type that includes a laser gain element and a nonlinear optical element both positioned along a main axis of the generator, the laser element may be absorptive of a substantial portion of the harmonic signal generated within the nonlinear element. To prevent such absorption the nonlinear element is positioned in an off-axis path, and the harmonic signal generated therein is directed so as not to traverse the absorptive laser element.

3,628,046

# DOUBLE BALANCED GATE CIRCUIT

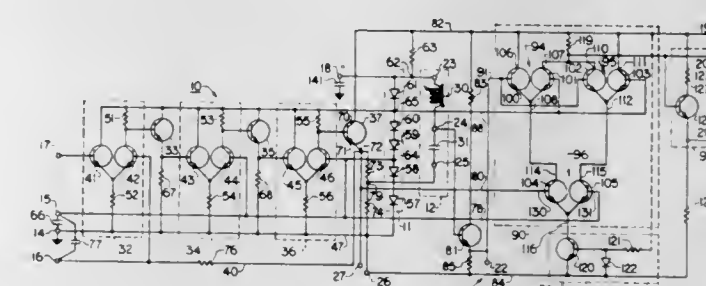
Alberto Bilotti, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Original application July 31, 1967, Ser. No. 657,410, now Patent No. 3,548,326. Divided and this application Nov. 3, 1969, Ser. No. 871,327

Int. Cl. H03k 17/60

U.S. Cl. 307-241

11 Claims



A multistage limiter having overall negative feedback is directly coupled in an integrated circuit to a discriminator which includes a double balanced gate circuit having a pair of differential switching means fed by a third differential switching means which is in series with a current source. A voltage divider provides the third switch with DC bias at a first level and provides the switch pair with DC bias at a second level. The third switch receives a signal directly from the limiter output while the switch pair receives a differentiated signal through the discriminator.



3,628,047

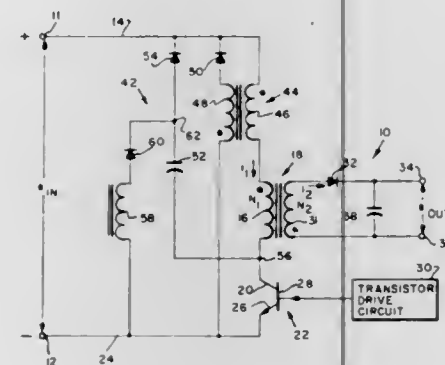
# NONDISSIPATIVE POWER LOSS SUPPRESSION CIRCUIT FOR TRANSISTOR CONTROLLED POWER CONVERTERS

Donald L. Cronin, Anaheim, and John J. Biess, Canoga Park,  
both of Calif., assignors to TRW Inc., Redondo Beach,  
Calif.

Filed Apr. 6, 1970, Ser. No. 25,641  
Int. Cl. H03k 17/00

U.S. Cl. 307-246

2 Claims



A nondissipative power loss suppression circuit for a transistor controlled DC power converter of the type having a pair of positive and negative input terminals for connection to a source of DC voltage, a power converter inductor having primary and secondary windings, one end of the primary windings being connected to the positive input terminal, a transistor having a base connected to a transistor drive circuit for control of the transistor with turn-on and turnoff pulses, a collector connected to the other end of the power converter inductor primary winding, and an emitter connected to the negative input terminal, and an output diode in series arrangement for providing a DC voltage output across the arrangement. The power loss suppression circuit consists of an energy absorbing circuit connected to the terminals and the power converter inductor for absorbing input voltage power during a turn-on pulse while said output diode recovers and for transferring excess absorbed power to the source when the diode recovers. Also provided is an energy storage circuit connected to the positive terminal and collector for storing power in the power converter inductor and the energy absorbing circuit during a turnoff pulse. An energy transfer circuit connected to the negative terminal and the energy storage circuit provides for the transfer of energy stored by the energy storage circuit to the source during a succeeding turn-on pulse.

3,628,048

# HIGH CURRENT PULSING ARRANGEMENT TO ENERGIZE COHERENT RADIATION SOURCE

James S. Lee, and John L. Engel, both of Santa Barbara,  
Calif., assignors to Santa Barbara Research Center, Goleta,  
Calif.

Continuation of application Ser. No. 627,901, Apr. 3, 1967.  
This application Jan. 2, 1970, Ser. No. 434

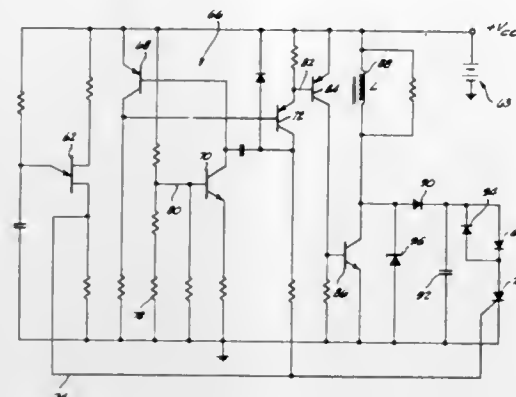
Int. Cl. H03k 17/00

U.S. Cl. 307-246

10 Claims

A low-impedance radiation-emitting diode is provided to emit pulses of coherent radiation in response to the application of high energy pulses. The circuit includes an oscillator which triggers a single shot multivibrator, the latter rendering a switching transistor conductive to provide a path through an inductor to ground. Current builds up linearly in the inductor and at termination of the pulse provided by the single shot, the switching transistor assumes a nonconductive state.

The inductor is subsequently discharged through a storage capacitor which is appropriately discharged through the



radiation-emitting diode thereby producing the emission of a pulse of coherent radiation.

3,628,049

# PROGRAMMABLE SELECTOR SWITCH

Andreas Jasper, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

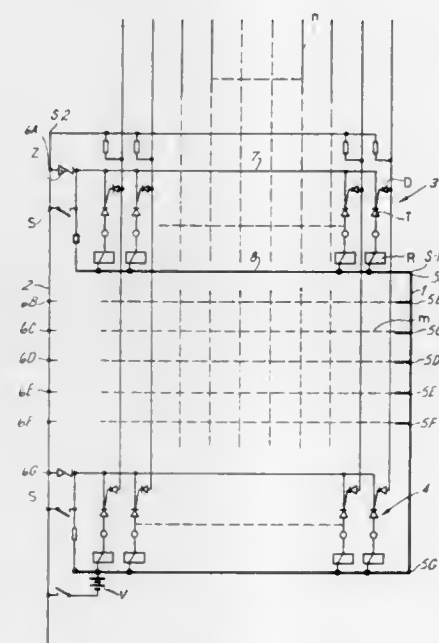
Filed Feb. 4, 1970, Ser. No. 8,669

Claims priority, application Germany, Feb. 7, 1969, P 19 06 154.2

Int. Cl. H03k 17/00

U.S. Cl. 307-252 J

7 Claims



Switching method and apparatus for activating a selected one or ones of the plurality of loads. A plurality of load groups are each connected through a Zener diode to a power source. Each load group comprises a plurality of loads connected through respective electronic switches and said Zener diode to said source, said Zener diode normally holding said loads unenergized regardless of the condition of the electronic switch. Said Zener diode is bypassed by a selectable switch which when closed places electric potential across the electronic switches and said loads. A plurality of selectively energizable control lines are provided and are selectively energizable for controlling said electronic switches. By energizing selected ones of said control lines and by closing selected ones of said selectable switches, any desired pattern of said loads may be energized.

3,628,050

# RECORDER CONTROL CIRCUIT

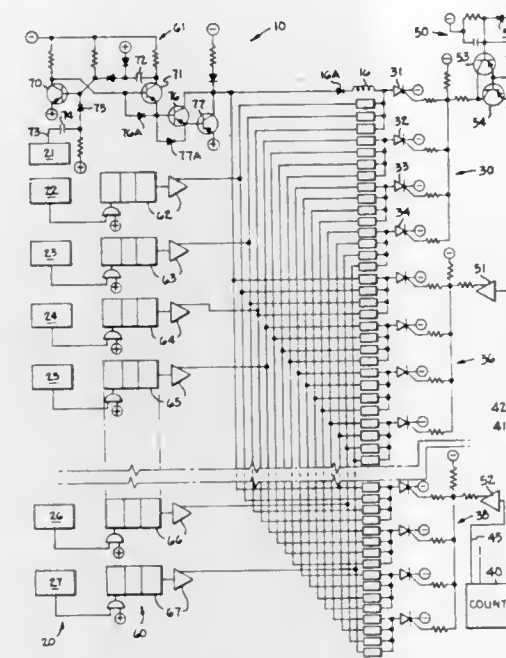
John Guzak, Jr., Arlington Heights, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Feb. 17, 1969, Ser. No. 799,740

Int. Cl. H03k 17/00, 17/56

U.S. Cl. 307-252 H

12 Claims



The disclosed recorder includes a rotating drum containing N lines of characters and N cooperating hammers and control windings. Incoming character representing signals are stored in a lesser number of reusable character register-comparators and compared with the drum position to establish hammer operating times. The windings are connected in a matrix with different groups of windings controlled by different silicon controlled rectifiers and with the register-comparator units coupled in multiple or parallel to windings in the different groups. The rectifiers are enabled in timed sequence, and the register-comparator units apply timed drive potentials to the common windings and rectifiers so that only the rectifiers in the enabled group conduct and energize the coupled windings.

3,628,051

# CONTACT BRUSH UNIT FOR AN ELECTRICAL MACHINE, PARTICULARLY FOR A SLIP-RING ELECTRICAL MACHINE

Alexandr Abramovich Chigirinsky, ulitsa Kuibysheva, 11, kv. 8; Evgeny Khaimovich Glider, prospekt Ordzhonikidze, 18, kv. 55; Oleg Borisovich Gradov, ulitsa Kosiora, 6, kv. 1; David Bentsionovich Kapnman, ulitsa Frantishka-Krala 49, kv. 54; Boris Leonidovich Konovalov, ulitsa 12 Aprelya, 10, kv. 16; Boris Bolkovich Spivak, ulitsa Kosiora, 56, kv. 55; Vasily Semenovich Kildishev, ulitsa Plekhanovskaya, 41/43, kv. 55; Ivan Eliseevich MaKogonenko, ulitsa Metalistov, 8, kv. 90, and Ivan Terentievich Filipenko, Saltovskoe shosse, 57, kv. 16, all of Kharkov, U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,727

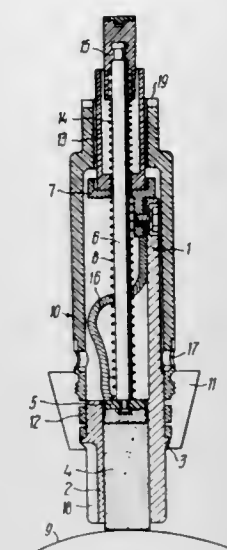
Int. Cl. H01r 39/42

U.S. Cl. 310-240

6 Claims

A contact brush unit comprises a device for replacement of a worn-out brush without stopping the operation of the machine. The device includes a sleeve, mounted around a brush holder and secured at one end to a current supply bar of the machine so that the portion of the brush holder, received inside the current supply bar, is pressed by the sleeve against this bar. The unit also includes a means for raising the brush selectively off the rotor contact member, e.g. a slip ring, such means being spring-mounted on the stem and freely passing through the other, opposite end of the sleeve, the last-mentioned end of the sleeve having an edge

portion adapted to retain thereon the brush-raising means in an abutted position, when the brush is to be replaced,



whereby the sleeve and the brush holder can be jointly removed from the current supply bar during operation of the machine.

3,628,052

# KEYBOARD CONTROLLED CIRCUITRY WITH ELECTRONIC INTERLOCK

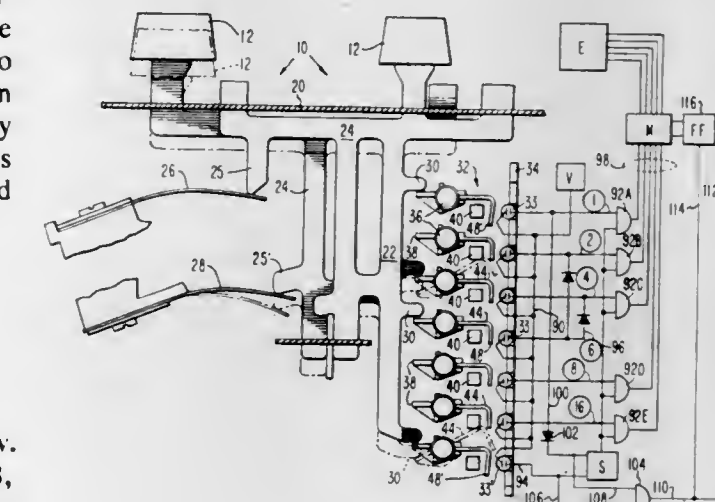
James A. Mitchell, Paris, France, assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 26, 1970, Ser. No. 5,586

Int. Cl. H01h 47/00

U.S. Cl. 307-115

6 Claims



Relates generally to the production of electrical signals from a keyboard, the keys of which are operatively associated with one or more individual switching devices whose activation to conducting or nonconducting operating conditions is controlled by the displacement of the keys. The invention is more particularly directed to a keyboard protective device characterized as an electronic interlock for causing signals from the keyboard to be ignored if two or more keys are simultaneously displaced by the operator. Means is provided for applying strobe pulses to the keyboard switches and for performing this operation in such a manner that adjacent keys are strobed on different channels. For the numerical input keys of the keyboard this is accomplished by separately strobing the odd and even valued keys because in the usual ten key keyboard the odd and even numbered keys are adjoining neighbors. The invention accomplishes the electronic interlock by detecting a concurrent strobe of the closed switches of the two adjoining depressed keys and utilizing such detection to warn the operator of a false entry



and to cause the resulting output of the keyboard to be ignored.

### 3,628,053 LOGIC SWITCH WITH VARIABLE THRESHOLD CIRCUIT

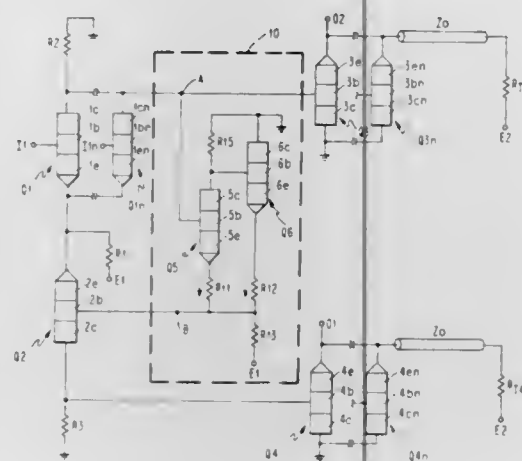
Leonard Weiss, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 886,928

Int. Cl. H03k 5/00, 19/12, 19/40

U.S. Cl. 307—203

10 Claims



Disclosed is an improved logic switching circuit in the class of switching circuits in which the output signal changes in response to an input signal traversing a reference potential. Disclosed also is an improved means for varying the reference potential resulting in an overall increase in speed and increased immunity to noise in the transient state. The means for varying the reference potential in its essence includes two transistors in a common emitter-type configuration in which a resistive imbalance is placed in the respective emitter current paths, thereby providing an inverted output from a common emitter-type configuration, and having an AC response which differs from the DC response.

### 3,628,054 FREQUENCY-DIVIDING CIRCUIT FOR SIGNALS OF SAWTOOTH WAVEFORM

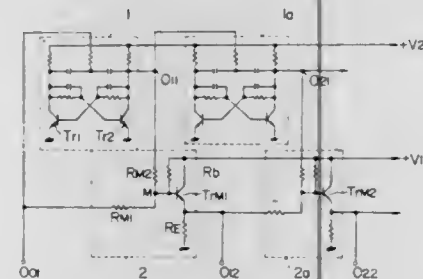
Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki, Kaisha, Hamanatsu-shi, Shizuoka-ken, Japan

Filed Feb. 10, 1970, Ser. No. 10,195

Claims priority, application Japan, Feb. 13, 1969, Feb. 13, 1969, Feb. 13, 1969; 44/10866, 44/10867, 44/10868 Int. Cl. H03K 21/00

U.S. Cl. 307—225

10 Claims



A frequency-dividing circuit for signals of sawtooth waveform, comprising: a buffer transistor to the base of which an input sawtooth wave and an output square wave of a square-wave frequency divider are applied in their states of equal peak amplitude through mixing resistors having equal value, and a mixing circuit for obtaining an output of a frequency-divided sawtooth wave from the emitter of said buffer transistor, a compensating DC voltage being super-

posed at any point of the circuit so that the lower ends of the mixed signal appearing at said base are offset from said emitter potential by a voltage value which is greater than the forward voltage drop between the base and the emitter of the transistor thereby to cause said buffer transistor to perform a perfect class "A" amplifying operation.

Furthermore, modifications of the circuits mentioned above are described.

### 3,628,055 STAIRCASE WAVEFORM GENERATOR

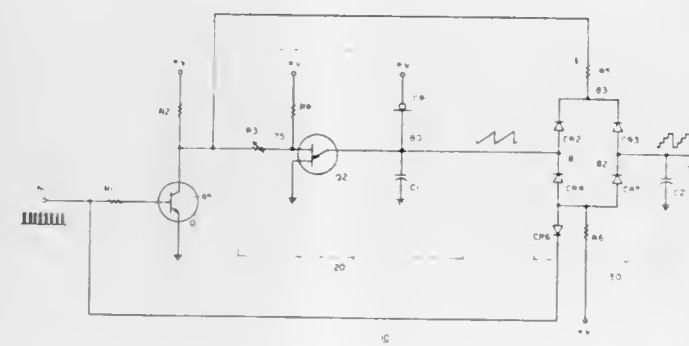
Jackson Lum, Bayside, N.Y., assignor to Sylvania Electric Products, Inc.

Filed Dec. 18, 1969, Ser. No. 886,163

Int. Cl. H03k 4/02

U.S. Cl. 307—227

8 Claims



An apparatus which receives a sequence of input pulses and generates a staircase waveform. The input pulses activate a sampler which samples the value of a periodic sawtooth voltage. The sampled values are maintained in the intervals between input pulses by holding capacitor. In a preferred embodiment the periodic sawtooth voltage is synchronized by the input pulses.

### 3,628,056 ANTITHEFT STARTING AND IGNITION SYSTEM

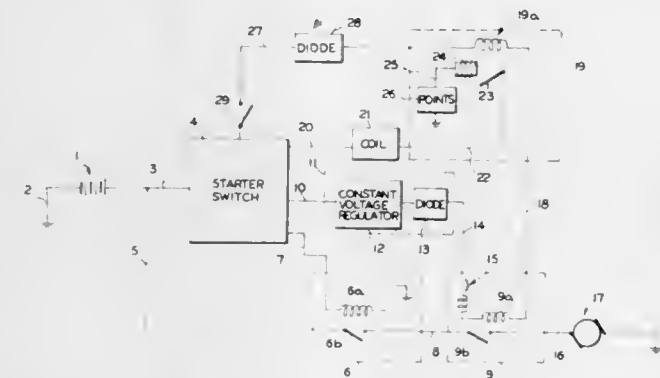
Eugene B. Buchanan, Beaverbrook Road, Box 449, RD. #4, Newburgh, N.Y.

Filed June 10, 1970, Ser. No. 45,122

Int. Cl. H02g 3/00

U.S. Cl. 307—10

9 Claims



An antitheft starting and ignition system includes an activating circuit for selectively operating a starting and ignition circuit. The activating circuit includes a second solenoid relay integrally attached to the starter. The primary of the second solenoid relay operates to start the starter when a predetermined voltage different from that of the starting and ignition circuit is present in such primary. This predetermined voltage is supplied to the primary of a distributor relay. This primary closes the secondary of the distributor relay to provide current to the distributor points only when the predetermined voltage is present in the primary. The primary of the distributor relay is grounded only when the starter switch is in the "START" position.

### 3,628,057 CORRECTIVE CIRCUIT FOR AN ACTIVE NARROW NOTCH FILTER

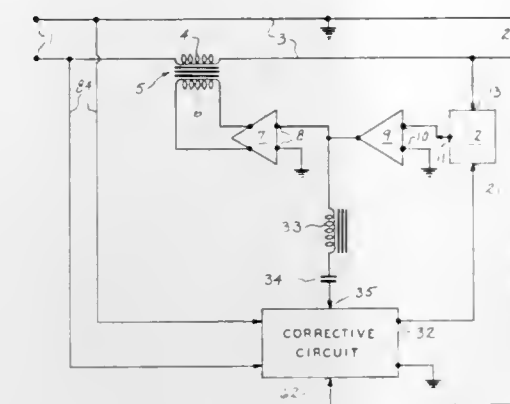
Hans Mueller, Houston, Tex., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed June 19, 1970, Ser. No. 47,854

Int. Cl. H02m 1/12

U.S. Cl. 307—105

10 Claims



An active narrow notch filter is adapted for connection between a power source and a load to filter out noise signals appearing on the power lines. A feedback loop having a stop-band notch filter is connected to the power lines and feeds interference signals to an amplifier which drives a correction transformer inserted in the power lines to cancel out interference signals from the power source. A corrective circuit is connected to form a feedback loop with the amplifier and notch filter to generate a feedback signal that is applied to eliminate any power line signal that passes through the notch filter. This corrective circuit has a first detector circuit producing an error signal which is fed through a first modulator to generate one component of the feedback signal that cancels out power line signals passing through the notch filter, and a second detector circuit and modulator that produces a second component of the desired feedback signal that is in quadrature with the first component.

### 3,628,058 INTEGRATED DUAL TIME CONSTANT SQUELCH CIRCUIT

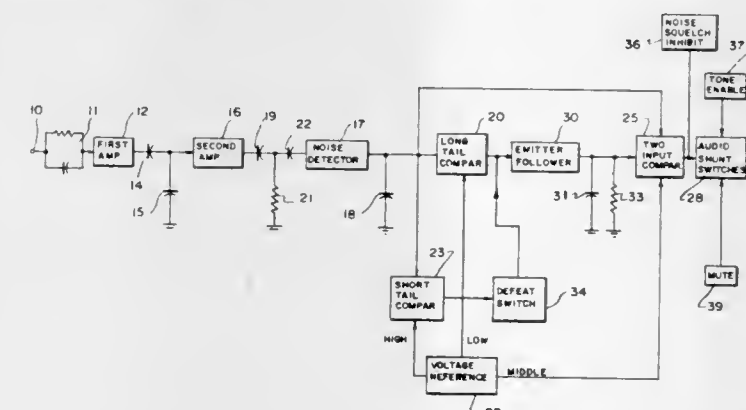
Roy H. Espe, Lombard, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 24, 1970, Ser. No. 13,390

Int. Cl. H03k 5/20; H04b 1/10

U.S. Cl. 307—235

16 Claims



An integrated circuit dual time constant squelch circuit for eliminating squelch tail includes a short time constant ripple filter which produces a filtered noise voltage which is applied to the inputs three differential switch circuits actuated at three different threshold levels. The differential switch with the lowest threshold level establishes the minimum detected noise voltage to which the circuit responds and, upon actuation, charges a long time constant storage capacitor to a

value exceeding a second threshold of a second of the differential switch circuits used as an output switch and having the capacitor connected to a second input thereof. The third differential switch circuit is actuated when a third, higher, threshold level is exceeded by the detected noise voltage and operates to disable the output of the second differential switch at strong signal levels, thereby switching control of the circuit solely to the short time constant ripple filter.

### 3,628,059 HIGH VOLTAGE FUNCTIONAL COMPARATOR

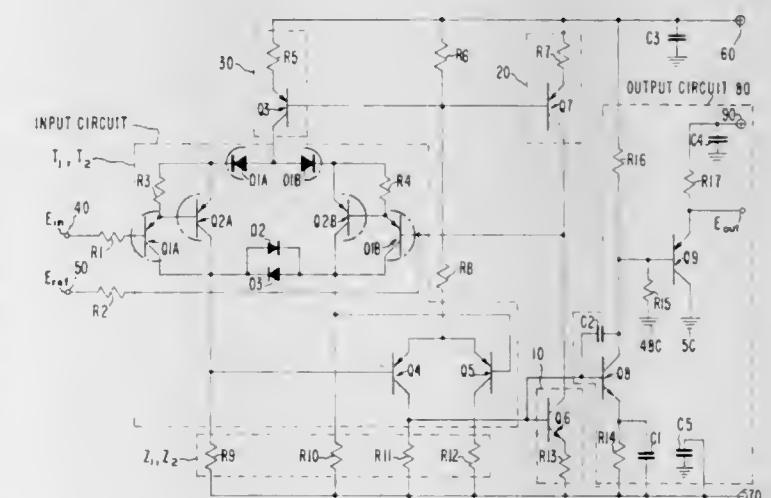
George G. Y. Niu, Sunnyvale, Calif., assignor to Fairchild Camera and Instruments Corporation, Mountain View, Calif.

Filed June 1, 1970, Ser. No. 41,963

Int. Cl. H03k 5/20

U.S. Cl. 307—235

8 Claims



A comparator circuit has an hysteresis relationship between its two-level output signal and the input signal. As a result, the level of the output signal is substantially independent of noise on the input signal. By changing the value of a resistor the amount of hysteresis in the circuit is changed.

### 3,628,060 SIGNAL PEAK DETECTION SYSTEM USING SENSITIZED THRESHOLD DETECTORS

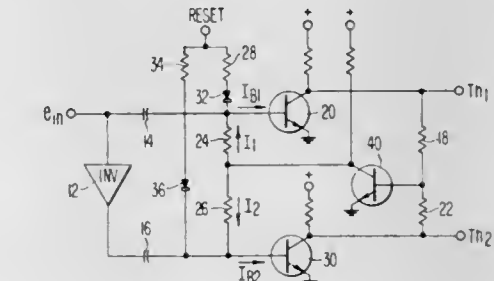
Richard L. Fussell, Chester Springs, Pa.

Filed Oct. 23, 1970, Ser. No. 83,321

Int. Cl. H03k 5/20

U.S. Cl. 307—235

9 Claims



A signal peak detection system is disclosed which in a preferred embodiment utilizes a pair of threshold detectors each having a normally conducting input stage. The initial actuation of one of the detector stages, that is, the cessation of conduction in its input stage, in response to an input analog signal provides threshold information to decision logic for initiating signal analysis processing. Circuit means are provided to remove the "turn-on" bias current from both detector stages coincidentally with the above-mentioned initial actuation. The latter operation "sensitizes" the other detector but the input stage thereof remains conducting due to the slope of the input signal applied thereto. Subsequently, as the



input signal passes over-the-peak, only a minimal dv/dt input is necessary to actuate this last detector. The concurrent actuation of both detectors causes a peak indication substantially close to the true signal peak to be presented to the decision logic. An output from the system is generated only when predetermined characteristics of the input signal have been validated by the decision logic.

3,628,061

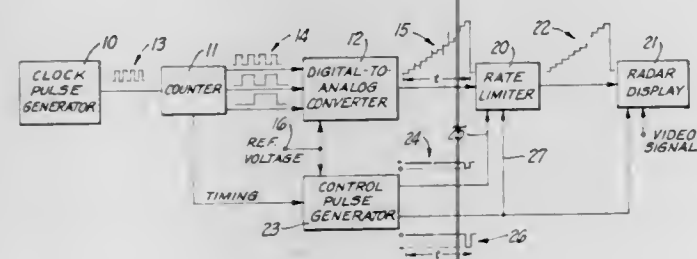
## NOISE REDUCTION SYSTEM

Robert W. Jackman, San Diego, Calif., assignor to Universal Signal Corporation  
Continuation-in-part of application Ser. No. 609,890, Jan. 17, 1967, now abandoned. This application Dec. 17, 1969, Ser. No. 886,005

Int. Cl. H03k 5/08

U.S. Cl. 307—237

17 Claims



A system for reducing noise in an electrical signal. Diodes provide for limiting the incremental magnitude of output voltage change relative to a previous output voltage level. With diode bias, the permitted change is controlled by feedback from the system output and by externally applied control voltages. A digital ramp voltage generator is presented incorporating such a system for eliminating noise spikes resulting from noncoincident operation of flip-flops.

3,628,062

## LIMIT CONTROL APPARATUS WITH MOMENTARY POWER FAILURE BRIDGE

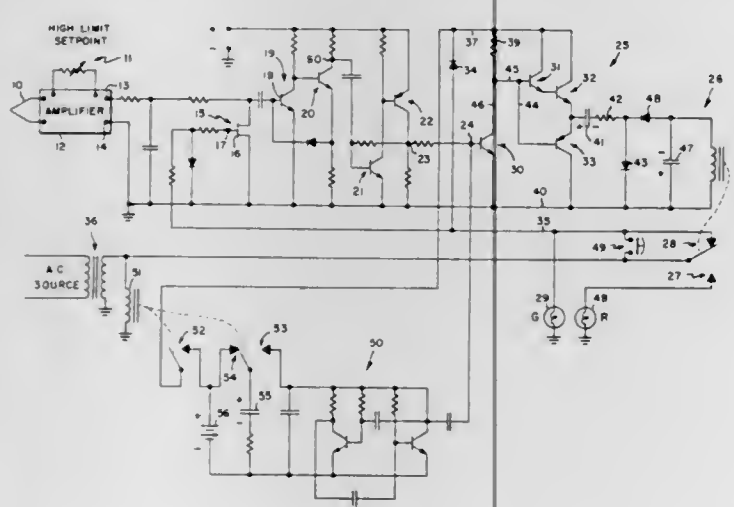
Yves de Bretagne, Amiens, France, assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 8, 1969, Ser. No. 882,996

Int. Cl. H03k 17/00

U.S. Cl. 307—255

12 Claims



A limit control having an alternating current signal whose phase reverses when a limit condition, such as a high limit, occurs. The limit control includes a phase detector which controls an output relay to deenergize the relay and signal the limit condition upon the occurrence of such a phase reversal, and a memory power failure bridge which operates for a short time period after a power failure to (1) modify the phase detector so that it no longer requires a specific phase

input to maintain the relay energized, and (2) to supply an alternating current signal to the input of the phase detector, whereupon, if power is not restored after the short time period, the relay becomes deenergized.

3,628,063

## RECEIVER FOR FREQUENCY SHIFT KEYED SIGNALS

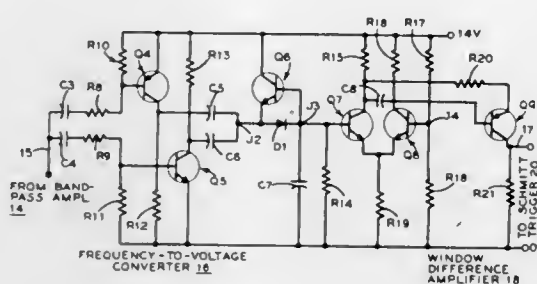
Mordechai I. Tamari, Babylon, N.Y., assignor to Computer Transceiver Systems, Inc., Upper Saddle, N.J.

Filed July 31, 1969, Ser. No. 846,499

Int. Cl. H03k 5/08

U.S. Cl. 307—251

13 Claims



A transceiver is connected to a line for transmitting tones to a remote point and receiving tones from the remote point. The receiver portion of the transceiver comprises a filter means, a band-pass limiter amplifier, a frequency-to-voltage converter, a difference amplifier, a Schmitt trigger and an output amplifier connected in series to a utilization device whereby the tones are converted to voltage pulses.

3,628,064

## VOLTAGE TO FREQUENCY CONVERTER WITH CONSTANT CURRENT SOURCES

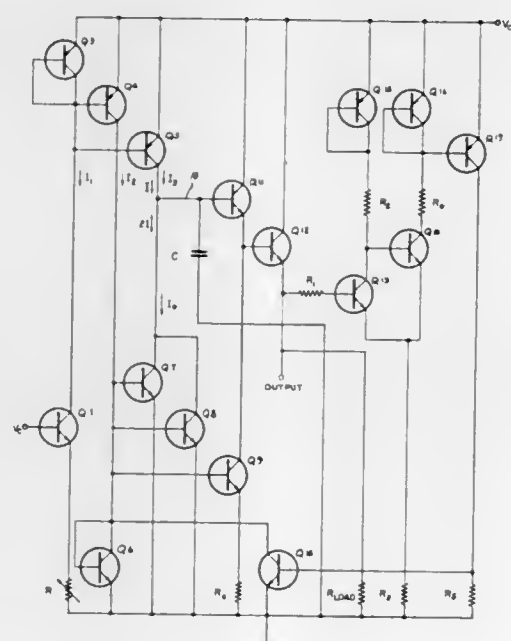
Hans R. Camenzind, Los Altos, and Alan B. Grebene, Sunnyvale, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Mar. 13, 1969, Ser. No. 806,855

Int. Cl. H03k 5/00, 1/10

U.S. Cl. 307—261

3 Claims



A voltage controlled multivibrator which is in integrated form includes an integrating capacitor which is charged by one current source of the value I and discharged by a second current source of a value 2I. The first current source is on continuously and the second current source is turned on and off by the switching of a Schmitt trigger which is responsive to the voltage across the capacitor reaching a maximum voltage at which time the current source is turned on and a

discharging of the capacitor to a minimum voltage at which time the current source is turned off. The integrated format of all of the transistors along with a high-impedance input of the Schmitt trigger provides an extremely small or zero temperature coefficient.

3,628,065

## CLOCK PULSE GENERATOR

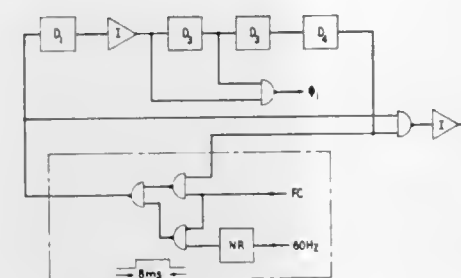
Donald Gifford Hill, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 27, 1970, Ser. No. 84,435

Int. Cl. H03k 5/00, 5/156

U.S. Cl. 307—269

9 Claims



A variable speed two-pulse clock circuit or pulse generator is formed by a group of time delay sections connected in cascade in combination with logic control circuitry. Each time delay section is formed from a combination of IGFETS and MOS capacitors and, hence, the system lends itself to production by integrated circuit fabrication techniques.

3,628,066

## ADJUSTABLE FREQUENCY BIPOLAR SQUARE WAVE GENERATING CIRCUIT

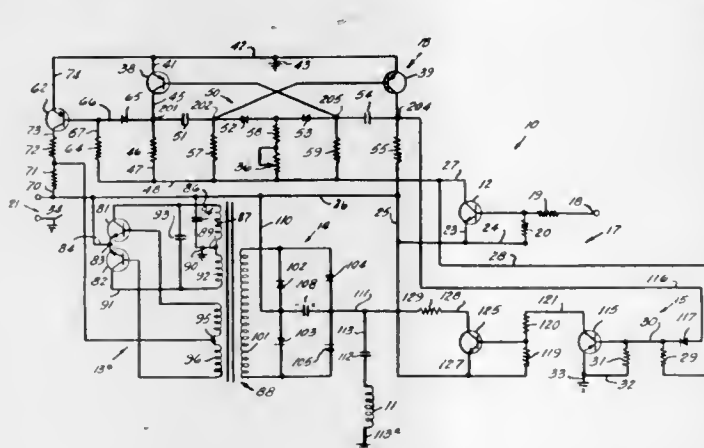
Ronald J. Surprenant, Anaheim, Calif., assignor to The Okonite Company, Ramsey, N.J.

Filed Nov. 10, 1969, Ser. No. 875,000

Int. Cl. H03k 3/286

U.S. Cl. 307—271

7 Claims



An inverter circuit for providing low-frequency pulses to a load device, such as the ringer winding of a telephone set, the circuit having a high-frequency oscillator, a capacitor charging circuit energized by the output of the high-frequency oscillator for providing positive going pulses across the output of the inverter circuit each time the high-frequency oscillator is rendered operative for a predetermined period of time, a pulse circuit for providing the load device with negative going pulses each time it is operative; and a low-frequency multivibrator for alternately, at a low-frequency rendering the high-frequency oscillator and the pulse circuit operative for predetermined periods of time, whereby said output of the inverter circuit is energized by alternately positive and negative going pulses, the frequency of oscillation of the multivibrator being variable. A multivibrator whose frequency of oscillation is variable over a wide range by a resistance type control.

3,628,067

## LOW POWER CURRENT PULSER FOR INDUCTIVE LOADS

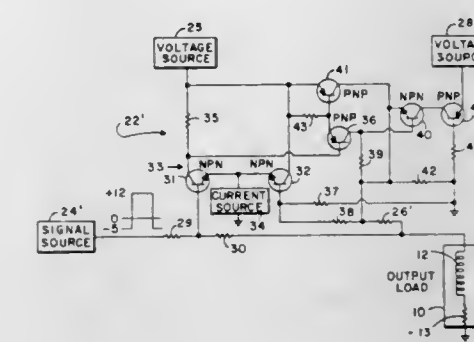
Charles P. Womack, Canoga Park, Calif., and Charles J. Ulrick, Marion, Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Oct. 31, 1969, Ser. No. 872,882

Int. Cl. H03k 7/00

U.S. Cl. 307—270

8 Claims



A core driving circuit, particularly useful for sub-microsecond computer memories, designed for minimum power loss with switching in the output stage from a relatively high-source voltage through the rise times to a much lower source voltage through the flat top portions of regulated output current pulses.

3,628,068

## SEQUENTIAL TIMING SYSTEM

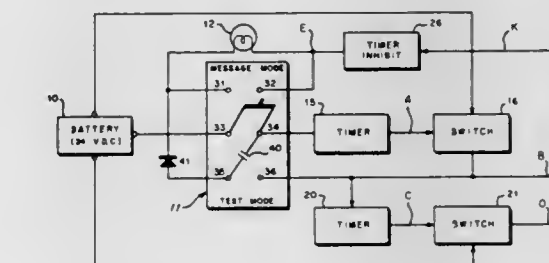
Thomas F. Long, Warminster; Elliott L. Ressler, Elkins Park, and Henry R. Beyer, Chalfont, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 25, 1970, Ser. No. 49,757

Int. Cl. H03k 17/28

U.S. Cl. 307—293

8 Claims



Battery power is sequentially applied in fixed time intervals to a plurality of loads requiring differing stabilizing periods. The network supplying the power comprises a plurality of timers and switches sequenced and operated so that upon receiving an actuating signal the battery power is removed. The system is also operable in an additional mode that sequentially transmits the power to the plurality of loads for a fixed period of time by inhibiting the actuating signal.

3,628,069

## MONOLITHIC INTEGRATED CIRCUIT HAVING INVERSELY OPERATED TRANSISTORS

Knut K. Najmann, and Hermann Frantz, both of Boblingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1969, Ser. No. 820,178

Claims priority, application Germany, Apr. 30, 1968, P 17 64 241.0

Int. Cl. H011 19/00

U.S. Cl. 307—303

3 Claims

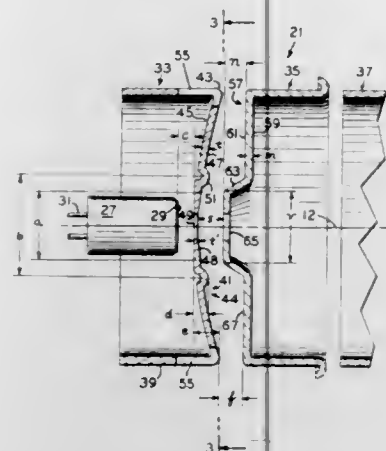
A planar monolithic circuit is made with a plurality of transistors in a single isolated region in a common emitter







oriented annular rib which is shaped to protrude within the concavity. The second grid electrode has a compatibly



shaped functional portion formed to functionally cooperate with the concave portion of the first grid electrode.

3,628,078

### VARIABLE-PITCH FOCUSING GRID FOR COLOR TELEVISION TUBES

Jean Pierre Galves, and Aldo Moro, both of Paris, France, assignors to Thomson-CSF

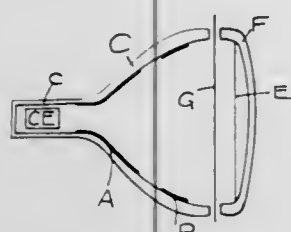
Filed May 9, 1969, Ser. No. 823,290

Claims priority, application France, May 31, 1968, 153503

Int. Cl. H01j 1/46, 31/20, 29/02

U.S. Cl. 313—86

1 Claim



A focusing grid for color television tubes, is formed by a flat sheet, parallel to the screen, of wires parallel to the phosphor strips of the screen, the pitch of which varies from the center towards the edges of the screen in accordance with a predetermined law.

3,628,079

### ARC PLASMA GENERATORS

David John Miller Dobbs; Derek Linder; Leslie John Giles, and Joseph Kenneth Hill, all of London, England, assignors to British Railways Board, London, England

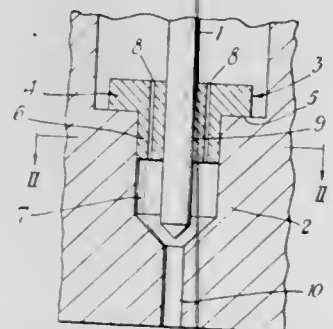
Filed Feb. 3, 1970, Ser. No. 8,249

Claims priority, application Great Britain, Feb. 20, 1969, 9359/69

Int. Cl. H01j 17/26

U.S. Cl. 313—231

3 Claims



A plasma generator comprises a torch in which a spacer made of a refractory material and having a central opening in

which the cathode is fitted and a concentric ring of peripheral openings which serve to feed the plasma gas into the arc chamber of the torch in uniformly distributed fashion is provided in the interior of the anode unit. Suitably the spacer is of disc-shape with a concentric ring of equally spaced openings extending axially through it.

3,628,080

### FIBER OPTIC OUTPUT FACEPLATE ASSEMBLY SYSTEM

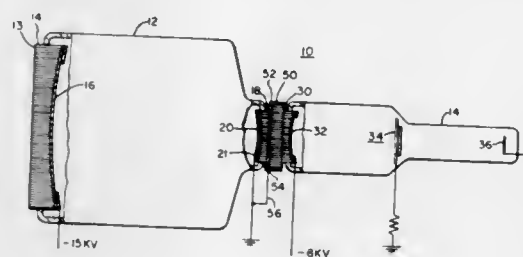
Per T. Lindeqvist, Elmira, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1969, Ser. No. 848,668

Int. Cl. H01j 29/46, 31/26

U.S. Cl. 315—9

7 Claims



A fiber optic faceplate for an electron tube in which an electron sensitive phosphor is provided on the inner surface of the faceplate and the light image from the phosphor is viewed or coupled through the fiber optic faceplate to an image intensifier. By providing an electrical conductive coating on the outer surface of the fiber optic faceplate, an improved fiber optic faceplate assembly is provided.

3,628,081

### PROGRESSIVELY ERASING AND UPDATING STORAGE TUBE FOR ECG DISPLAY

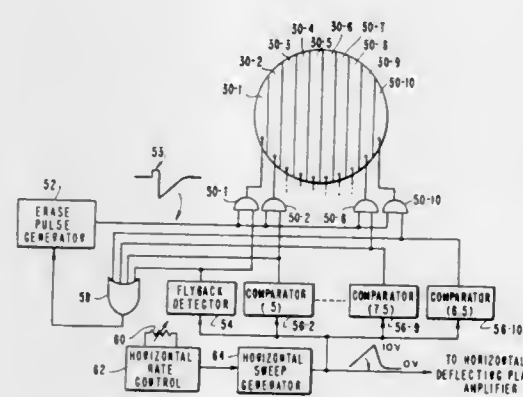
Barouh V. Berkovitz, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 29, 1969, Ser. No. 872,231

Int. Cl. H01j 29/41

U.S. Cl. 315—12

11 Claims



An ECG display on which the ECG signal appears on a storage cathode-ray tube. Instead of erasing the entire display at the end of each line trace, only a short segment at the left-most side of the trace is erased. As the new sweep begins, the old trace is progressively erased. In effect, an "erase" signal precedes the write beam as it moves from left to right across the screen. The arrangement permits display of each ECG waveform for the maximum time period.

3,628,082

### LINEARITY CORRECTION CIRCUIT UTILIZING A SATURABLE REACTOR

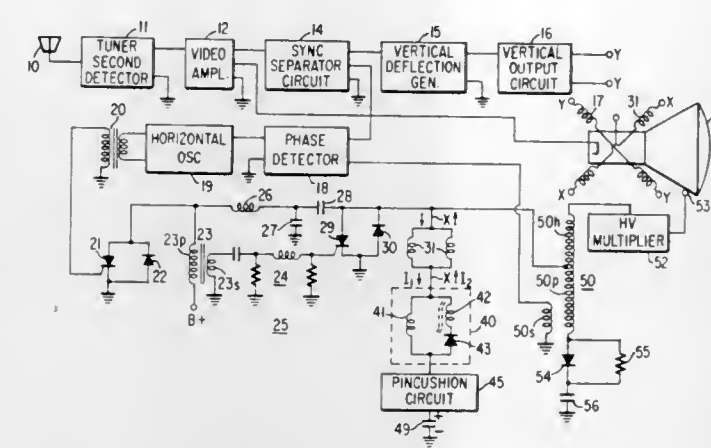
Wolfgang Friedrich W. Dietz, New Hope, Pa., assignor to RCA Corporation

Filed Jan. 27, 1970, Ser. No. 6,122

Int. Cl. H01j 29/70

U.S. Cl. 315—27 SR

12 Claims



A linearity correction circuit utilized in a horizontal deflection stage of a television receiver provides linearity correction by utilizing a nonlinear variable impedance comprising the parallel combination of a self-saturating saturable reactor and an inductor coupled in series with the horizontal yoke or deflection winding. A unidirectional conducting device is coupled in one of the parallel inductive circuit branches. As the yoke current changes polarity during each deflection cycle, the unidirectional conducting device switches the saturable reactor in and out of the circuit to provide the required linearity correction.

3,628,083

### MAGNETIC DEFLECTION AMPLIFIER UTILIZING BOTH POSITIVE AND NEGATIVE VOLTAGE SUPPLIES FOR HIGH-SPEED DEFLECTION

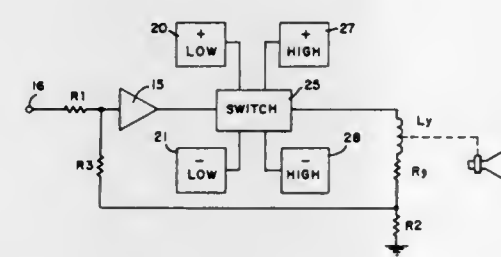
Richard E. Holmes, Bellbrook, and Joe A. Mays, Xenia, both of Ohio, assignors to Systems Research Laboratories, Inc., Montgomery County, Ohio

Filed Aug. 6, 1969, Ser. No. 847,875

Int. Cl. H01j 29/70

U.S. Cl. 315—27 TD

7 Claims



A magnetic deflection amplifier of the type employing a single deflection coil for controlling the movement of a cathode-ray tube beam along one coordinate axis includes both positive and negative low-voltage supplies connected to supply the energy to move the beam for a majority of the operating time, and positive and negative high-voltage supplies to move the beam rapidly and/or through large deflection distances when needed. One form of high-voltage supply includes an inductor having an inductance several times the inductance of the deflection coil to supply the energy necessary to change the current through the deflection coil rapidly in the desired direction.

3,628,084

### COUPLED CAVITY SLOW WAVE CIRCUIT AND TUBE USING SAME

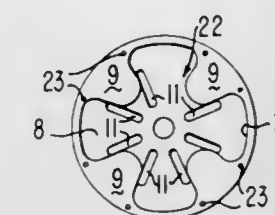
Robert J. Butwell, San Jose, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 8, 1970, Ser. No. 70,197

Int. Cl. H01j 25/34

U.S. Cl. 315—3.5

6 Claims



A coupled cavity slow wave circuit, such as a cloverleaf circuit, and a microwave tube using same are disclosed. The slow wave circuit includes an array of cavity resonators arranged successively along the beam path with adjacent ones of the cavities having a common end wall structure. A plurality of generally radially directed coupling slots angularly displaced around the beam path. Each axial array of slots is angularly displaced about the beam path from the adjacent array by  $360/N$  degrees where  $N$  is the number of axially aligned arrays of slots. Each axially aligned array of coupling slots includes a web portion of the common wall for blocking off a line-of-sight path parallel to the beam through at least a portion of each array of coupling slots to inhibit cumulative electromagnetic interaction between undesired beamlets in the arrays of slots and the fields of the slow wave circuit, whereby the efficiency and stability of the tube are increased.

3,628,085

### HEADLAMP CONTROL MEANS WITH TIME DELAY

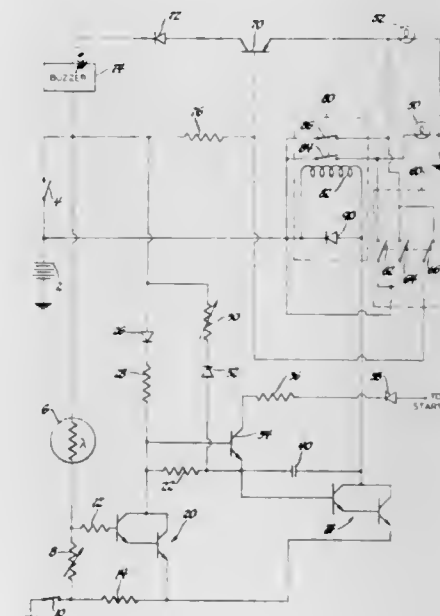
Eugene W. Brock, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 26, 1970, Ser. No. 50,250

Int. Cl. B60g 1/02; H05b 37/02

U.S. Cl. 315—82

4 Claims



A vehicle lamp control system which, with the ignition switch closed, automatically energizes the lamps after a first time delay in darkness and deenergizes the lamps after a second time delay in light and, in darkness, automatically deenergizes the lamps after a third time delay when the igni-



tion switch is opened and energizes the lamps after a fourth time delay when the ignition switch is closed. The time delay circuit consists of a capacitor and a plural number of resistors. The lamp switching circuit also controls the time delay circuit by connecting a different resistor with the capacitor in an RC timing circuit to produce each time delay.

3,628,086

## HIGH-FREQUENCY LAMP-OPERATING CIRCUIT

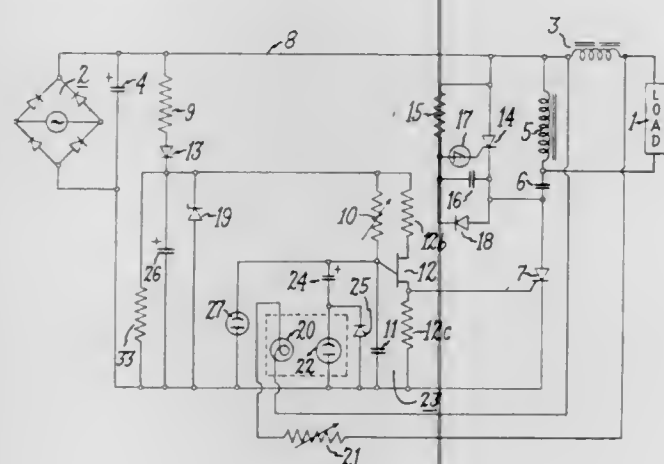
Joe A. Nuckolls, Hendersonville, N.C., assignor to General Electric Company

Filed Sept. 11, 1969, Ser. No. 857,010

Int. Cl. H05b 37/00

U.S. Cl. 315-100

19 Claims



High-frequency circuit for operating gaseous discharge lamps includes an inductor-capacitor resonant circuit having the lamp load connected across the inductor, and a pair of silicon-controlled rectifiers operated alternately by a unijunction oscillatoretriggering circuit to provide for controlled series resonance of the resonant circuit for producing high-frequency voltage across the inductor for energizing the lamp load.

3,628,087

## CIRCUIT ARRANGEMENT FOR ENERGIZING DISCHARGE DEVICES

John W. Wigert, Berea, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

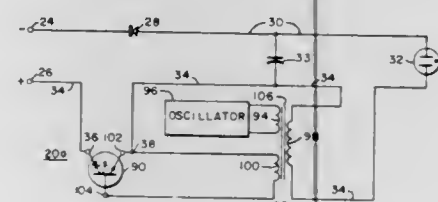
Continuation of application Ser. No. 158,359, Dec. 11, 1961.

This application Apr. 20, 1966, Ser. No. 544,035

Int. Cl. H01j 61/00

U.S. Cl. 315-151

18 Claims



15. Apparatus for supplying operating electrical energy from a source to a discharge lamp, said apparatus comprising: input terminals adapted to be connected to said source; an electrical energy storage means; electrical conductors connecting accumulated lamp and said storage means to said input terminals in an interruptible current path; when said current path is not interrupted, said lamp is operated from said source and electrical energy is stored in said storage means; when said current path is interrupted, said lamp and said storage means are connected in a closed loop to operate said lamp from electrical energy previously stored in said storage means; a sensing and control means responsive to the magnitude of current through said lamp to repetitively inter-

rupt and then restore the continuity of said current path; and said sensing and control means controlling the time said current path is interrupted to stabilize the operation of said lamp.

3,628,088

## HIGH-VOLTAGE INTERFACE ADDRESS CIRCUIT AND METHOD FOR GAS DISCHARGE PANEL

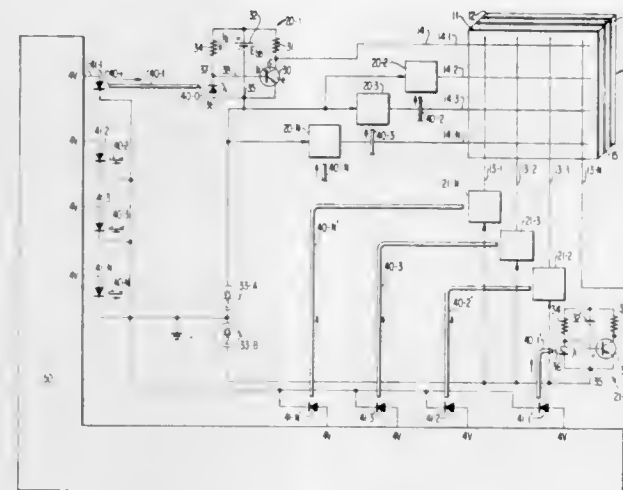
Larry J. Schmersal, 6220 Foxcroft, Toledo, Ohio

Filed July 18, 1969, Ser. No. 851,131

Int. Cl. H05b 41/23

U.S. Cl. 315-169 R

8 Claims



There is disclosed an interface circuit for converting low-voltage logic signal voltage pulses to high-voltage discharge manipulating voltage pulses for a gas discharge display/memory device. The interface circuit is connected such that the output thereof is referenced to the sustaining voltage for the panel. An optical couple is used to isolate the low-voltage logic source from the high-voltage operating circuit. Consult the specification for further details.

3,628,089

## PULSE-GENERATING APPARATUS

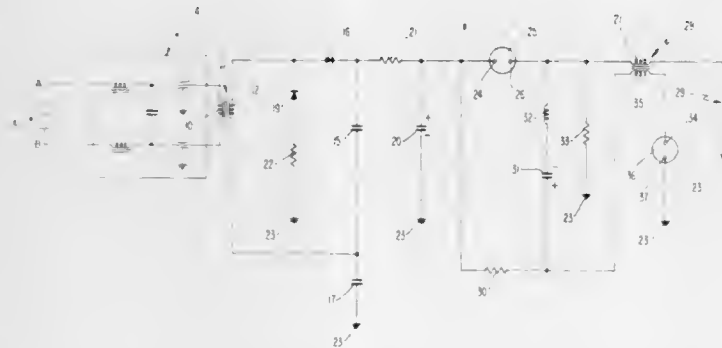
David C. Baker, Sidney, N.Y., assignor to The Bendix Corporation

Filed Sept. 25, 1969, Ser. No. 861,119

Int. Cl. H05b 37/00

U.S. Cl. 315-227

10 Claims



A condenser discharge-type electrical pulse-generating circuit, such as for a combustion engine ignition circuit, wherein two storage condensers are charged in parallel to discharge across a relatively low voltage trigger gap which connects the condensers in series to discharge across a higher voltage control gap and through the primary winding of a transformer, the secondary winding of which is connected in series with a still higher voltage ignition gap, the ignition gap being connected in series with the control gap and one of the condensers, whereby long trigger gap life and high output power are attained.

3,628,090

## STATIC DISCHARGE APPARATUS

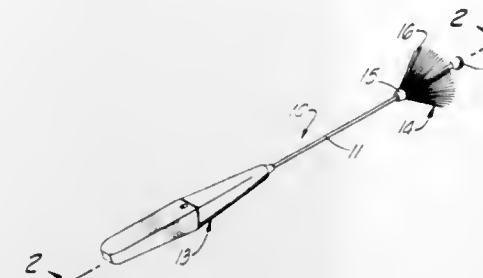
William K. McLain, Orange, Calif., assignor to Alice Richmond McLain, Orange County, Calif.

Filed Apr. 2, 1970, Ser. No. 25,155

Int. Cl. B64d 45/02

U.S. Cl. 317-2 E

4 Claims



Apparatus to discharge static electrical charges on the body of an aircraft, having an extended discharge range. Both a low-potential discharge path and a parallel high-potential discharge path are provided for discharge of accumulated static charge.

3,628,091

## RESONANCE SUPPRESSOR FOR ELECTRICAL SYSTEM INCLUDING CAPACITORS

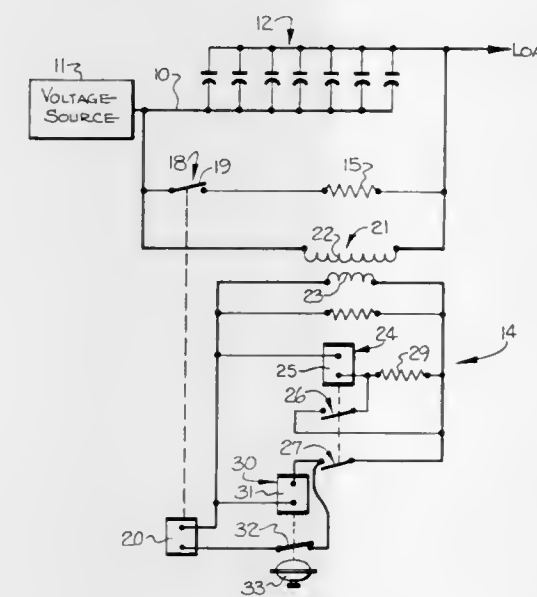
Herman B. Wolf, Charlotte, N.C., assignor to R. H. Bouligny, Inc., Charlotte, N.C.

Filed May 13, 1970, Ser. No. 36,893

Int. Cl. H02h 7/16

U.S. Cl. 317-12 A

5 Claims



Resonance effects otherwise possibly occurring in a main alternating current electrical circuit having a bank of capacitors connected therein are suppressed by a circuit arrangement which inserts a resonance suppressing resistance into parallel, shunting conductive relation with the bank of capacitors in response to sensing of the presence of a predetermined voltage across the bank of capacitors.

3,628,092

## ELECTRICAL INDUCTIVE APPARATUS WITH REMOVABLE PROTECTIVE FUSE

August I. Keto, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1970, Ser. No. 94,846

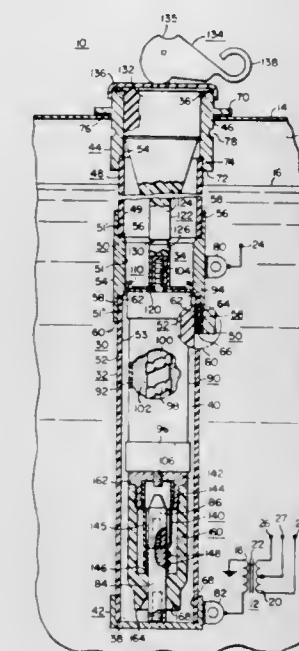
Int. Cl. H02h 7/04, 85/18; H01h 85/60

U.S. Cl. 317-15

10 Claims

Electrical inductive apparatus, such as a transformer, having a casing containing an electrical winding immersed in a

liquid dielectric, and a protective fuse assembly connected between a bushing mounted on the casing and the electrical winding. The protective fuse assembly includes a receptacle which extends into the casing and into the liquid dielectric, but it is sealed therefrom, and a removable fused portion accessible from outside the casing. The receptacle is formed of a plurality of metallic and insulating tubular members, with the ends of certain of the insulating tubular members extend-



ing into the ends of a metallic tubular member, to provide sealed, electrically shielded joints. The fused portion includes a current limiting fuse having electrodes connectable via associated contact members to stationary contacts within the receptacle. Arc extinguishing members carried by both the receptacle and fused portions cooperate to make the assembly and disassembly of the fused portion and receptacle load-make and load-break.

3,628,093

## THERMOSTAT OVERHEAT PROTECTION SYSTEM FOR AN ELECTRIC APPLIANCE SUCH AS A BLANKET

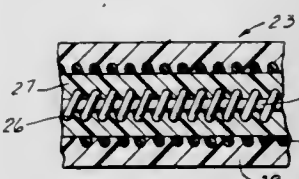
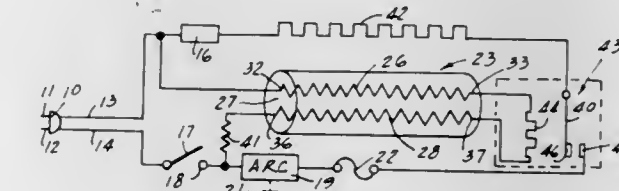
George C. Crowley, Winnetka, Ill., assignor to Northern Electric Company, Chicago, Ill.

Filed Apr. 13, 1970, Ser. No. 27,740

Int. Cl. H02h 1/02, 5/04; H01h 37/76

U.S. Cl. 317-18 A

10 Claims



Temperature responsive protection system for an appliance such as an electric blanket which utilizes a pair of conductors which form a part of the heating or sensing circuit and which are insulated under normal temperature operating conditions by temperature responsive material which melts to establish electrical contact between the conductors if an overheat condition exists.



3,628,094

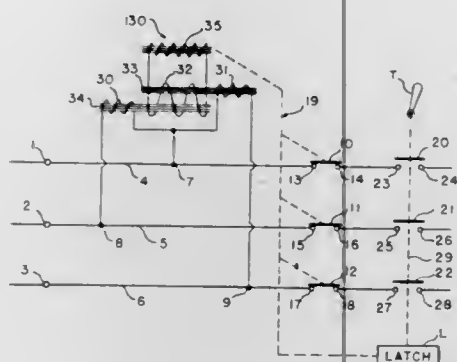
## APPARATUS OF MEDICAL AND OTHER TYPES

Arthur Gilbert Billin, Penfield, and John Joseph Saeli, Chili, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Sept. 23, 1970, Ser. No. 74,566  
Int. Cl. H02h 3/26

U.S. Cl. 317-27 R

11 Claims



Medical, dental or other apparatus contacting living beings are connected to their sources of electrical energy by safety devices which, upon connection to the sources, prevent energization of the apparatuses if, when the connections are made, faults such as transposed connections, and/or discontinuity in the connections, exist.

3,628,095

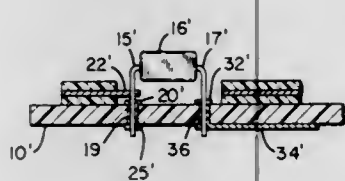
## POWER DISTRIBUTION BUS ARRANGEMENT FOR PRINTED CIRCUIT BOARD APPLICATIONS

Leon Schwartz, Philadelphia, and William F. Simon, Ambler, both of Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,516  
Int. Cl. H05k 1/04

U.S. Cl. 317-101 CC

5 Claims



There is disclosed herein an arrangement for connecting and holding a power distribution bus to a printed circuit board. The bus incorporates flat pads which extend from and are coplanar with it. An oversized hole in each respective pad is provided so that the respective bus may be oriented over an existing plated through hole in the printed circuit board. The leads of an integrated circuit package required to be connected to the voltage or ground potential elements of the power distribution bus are positioned both through the oversized hole of the pad and the plated through hole of the printed circuit board. The connection is made permanent by soldering.

3,628,096

## METER ASSEMBLY INCLUDING A COVER HAVING INTEGRAL BAYONETS AND GUARD EARS

Thomas C. Drew, Jr., and Norbert B. Watts, Jr., both of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

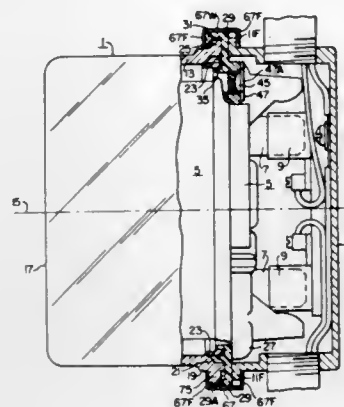
Filed Jan. 9, 1970, Ser. No. 1,589  
Int. Cl. H02b 9/00

U.S. Cl. 317-107

7 Claims

An enclosure for an electric meter has a cup-shaped glass cover unit. Adjacent its open end the cover unit has spaced

lugs or bayonets integral with the remainder of the cover units. A base unit is molded from a phenolic resin material for the purpose of releasably closing the open end of the cup-shaped cover unit. The base unit has a rim adjacent the open end of the cover unit and has clamps or flanges which cooperate with the lugs for the purpose of urging the cover



unit towards the base unit in response to relative rotation therebetween. The cover unit also has integral fins which extend into the spaces between the lugs and which project to the periphery of the base unit to assure retention of the cover unit by a conventional sealing ring or mounting cover. Contact blades may pass through the base unit for detachable reception in contact jaws of a conventional meter socket.

3,628,097

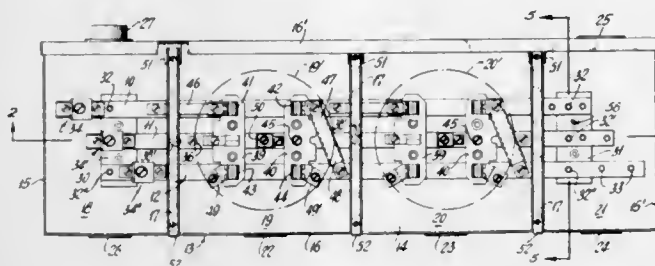
## MULTIPLE-POSITION METER SOCKET

Herman H. Kobryner, Forest Hills, N.Y., assignor to Murray Manufacturing Corporation, Jericho, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,156  
Int. Cl. H02b 9/00

U.S. Cl. 317-107

16 Claims



The invention contemplates employment of plural elongated bus bars in laterally spaced parallel relation extending to serve, in common, a plurality of horizontally adjacent meter-mounting zones, where different load circuits have branch connection, via their respective meters, to the bus bar lines. The bus bar assembly is unitarily mounted in an elongated meter box within which all meter-mounting zones are defined between opposed end or live supply wiring zones. The bus bar ends, where live line connections are made, are carried by insulating spacer blocks on the base or floor of the box. At each meter-mounting zone, insulating means straddles or overstands the bus bars and carries both the live jaws and the load jaws for the stab configuration of a standard plug-in meter. Various different employments of the box, in single-phase branching of single-phase and three-phase supply lines, with and without grounded neutral, will be described.

3,628,098

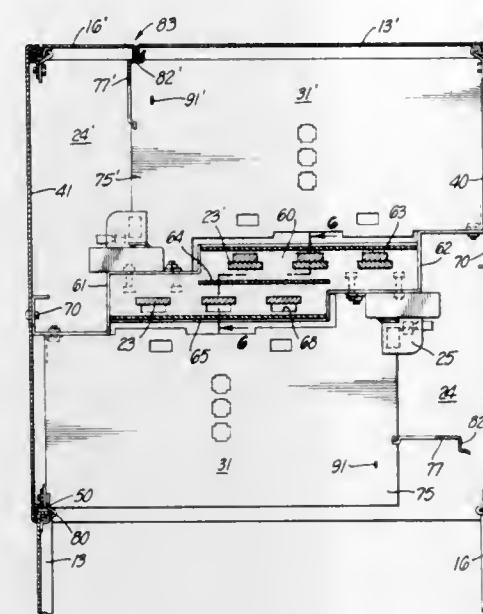
## CABINET FOR ELECTRICAL CONTROLS WITH ENCLOSED BUS BARS AND OPPOSED DOORS

Rex E. Sturdivan, Hacienda Heights, Calif., assignor to Zinsco Electrical Products, Los Angeles, Calif.

Filed Apr. 15, 1970, Ser. No. 28,691  
Int. Cl. H02b 1/06, 1/20

U.S. Cl. 317-120

10 Claims



A cabinet for electrical controls or the like, typically a motor control center, with a minimum of cabinet components. A cabinet formed solely of opposed sideplates, sills and headers, all of sheet metal. A bus bar assembly positioned between the sideplates providing insulators for bus bar support, an enclosure for the bus bars and a barrier for front and rear cabinet portions. Opposed doors for the cabinet openings with the doors meeting intermediate the sideplates at a swingaway stop for access to the cabinet interior.

3,628,099

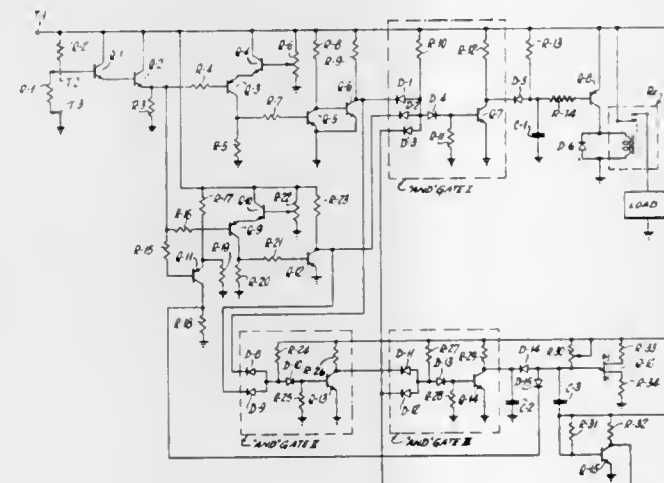
## RESISTANCE-RESPONSIVE CONTROL CIRCUIT

Carl E. Atkins, Montclair, N.J., and Arthur F. Cake, Smithtown, Long Island, N.Y., assignors to Wagner Electric Corporation

Filed June 17, 1970, Ser. No. 46,984  
Int. Cl. E05b 49/00

U.S. Cl. 317-134

10 Claims



A circuit for controlling energization and deenergization of a load only in response to a value of resistance falling within a narrow predetermined range of resistances. The circuit has the capability of preventing unlocking by the insertion of a variable resistor between the terminals provided for sensing

the keying resistance and hunting for the proper value of resistance.

3,628,100

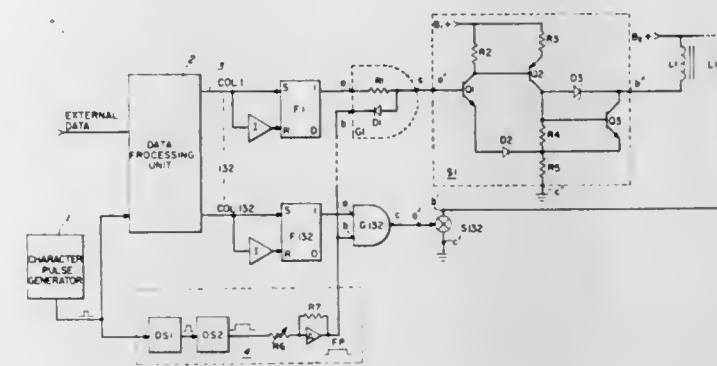
## HAMMER DRIVING CIRCUITS FOR HIGH-SPEED PRINTERS

John F. Zettler, Ashland, Mass., assignor to Data Printer Corporation, Cambridge, Mass.

Filed Sept. 8, 1970, Ser. No. 70,002  
Int. Cl. H01h 47/32

U.S. Cl. 317-137

15 Claims



Control circuits for high-speed printers having solenoid actuated hammers, in which for each hammer the solenoid is connected through a current-control switch to a source of current, for each switch there is an AND gate having two input terminals, one being a voltage tolerant terminal connected to a register for a logic signal indicating when the hammer is to be fired, and the other being a control terminal connected to a common terminal for all of the gates that is adapted to be connected to a control pulse generator of precise level and duration.

3,628,101

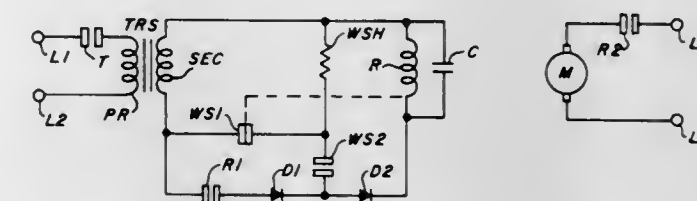
## DELAYED CYCLING CONTROL

Gerald E. Dietz, Milwaukee, Wis., assignor to Penn Controls, Inc., Oak Brook, Ill.

Filed June 19, 1970, Ser. No. 47,653  
Int. Cl. H01h 47/18

U.S. Cl. 317-141 R

6 Claims



An electromagnetic relay is energized by the sequence of first energizing a warp switch sufficiently for the warp switch to close a pair of contacts in an energizing circuit for the relay. Actuation of the relay closes self-holding contacts and cams open a pair of warp switch normally closed contacts in the initiating circuit. Both the relay and the warp switch heater are maintained energized at reduced power through the self-holding relay contacts. Upon any interruption of power the control recycles after a delay of from 3 1/2 to 5 1/2 minutes. This relatively long delay occurs, since the relay, upon releasing, opens its self-holding contacts necessitating that the warp switch heater cool sufficiently to place its contacts again closed for initiating starting. Starting is then initiated by again reheating the warp switch heater, thereby providing the sequence of warp switch "cooldown" and "reheat" time intervals between cycles. The initiating warp switch normally closed contacts, once opened, cannot reclose unless the camming relay first releases to remove a mechanical block to such opening. This insures a full cooldown and heating warp switch cycle for each operation. The



control provides foolproof operation in that a "make before break" is obtained between the relay self-holding contacts and the warp switch initiating circuit contacts, since the relay self-holding contacts must close before the warp switch contacts can be cammed open. This insures that the operating control is in "run" condition before the warp switch is placed on reduced power. Upon cooldown of the warp switch, a lost motion connection of its actuator insures that the warp switch initiating contacts reclose only after its self-holding contacts have opened to insure a full reheat cycle of the warp switch for restarting.

3,628,102

### EXCITER APPARATUS FOR IMPACT MEMBER SOLENOID

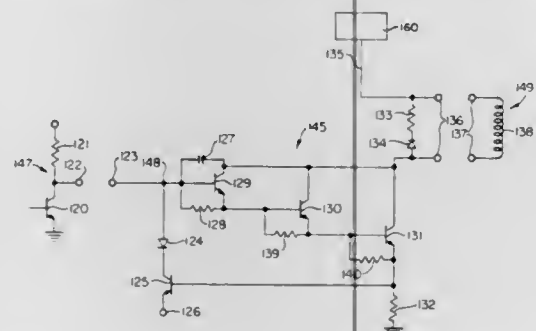
Kenneth E. Jauch, Chicago, Ill., and Charles W. Koeller, Yellow Springs, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 6, 1969, Ser. No. 863,824

Int. Cl. H01h 47/32

U.S. Cl. 317-148.5

13 Claims



A control for current interruption and performance regulation in an electrical solenoid is disclosed. In one embodiment of the invention, solenoid current magnitude is controlled independently of supply voltage and variation in electrical element characteristics, and current magnitude is determined in a manner enabling simultaneous adjustment of current level, and solenoid force, in a plurality of similar circuits. Means for control of solenoid excitation in response to any of a plurality of solenoid performance properties is also disclosed.

3,628,103

### CATHODE FOR WET ELECTROLYTE CAPACITORS

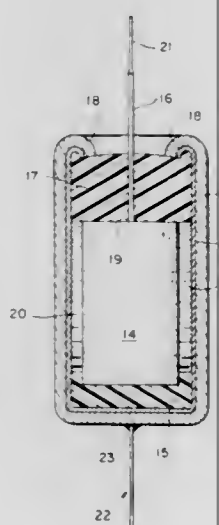
James M. Booe, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Apr. 28, 1969, Ser. No. 819,788

Int. Cl. H01g 9/04

U.S. Cl. 317-230

9 Claims



In an electrolytic capacitor, a layer of gold, platinum or gold-platinum alloy constitutes the cathode, thereby per-

mitting the capacitor to withstand reversals of polarity. Finely divided material such as carbon or platinum may be applied to the surface of the layer to increase the effective surface area of the cathode.

3,628,104

### HERMETICALLY SEALED ALUMINUM ELECTROLYTIC CAPACITOR

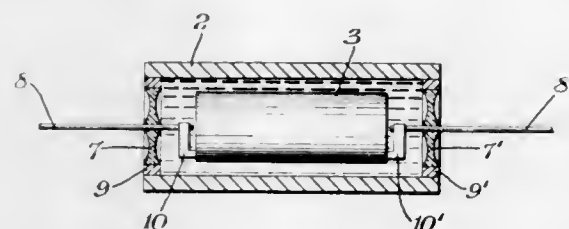
Mark Markarian, Williamstown, and Robert J. McDonough, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Dec. 8, 1969, Ser. No. 883,076

Int. Cl. H01g 1/02

U.S. Cl. 317-230

6 Claims



An aluminum foil electrolytic capacitor having tantalum to glass hermetic end seals.

3,628,105

### HIGH-FREQUENCY INTEGRATED CIRCUIT DEVICE PROVIDING IMPEDANCE MATCHING THROUGH ITS EXTERNAL LEADS

Kaname Sakai, Kodaira-shi, and Akira Masaki, Hatano-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

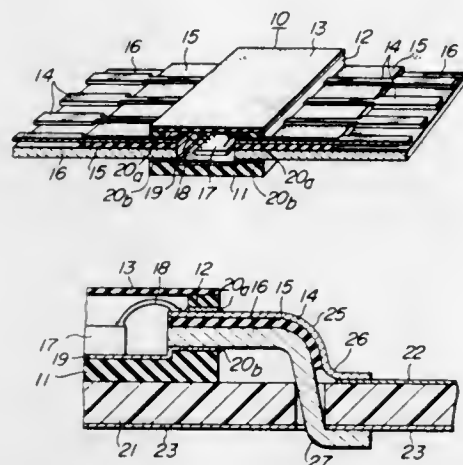
Filed Feb. 26, 1969, Ser. No. 802,390

Claims priority, application Japan, Mar. 4, 1968, 43/13625

Int. Cl. H01l 1/100, 15/00

U.S. Cl. 317-234 R

5 Claims



A semiconductor integrated circuit means comprising a semiconductor substrate having a plurality of circuit elements formed therein and a package enclosing said substrate, wherein the wires for leading out the electrodes of said circuit elements from said package are formed of strip lines and the grounded conductor for said strip lines is made of a common metal plate.

3,628,106

### PASSIVATED SEMICONDUCTOR DEVICE WITH PROTECTIVE PERIPHERAL JUNCTION PORTION

John N. Frank, Ballwin, Mo., and William M. Robinson, Skaneateles, N.Y., assignors to General Electric Company

Filed May 5, 1969, Ser. No. 821,688

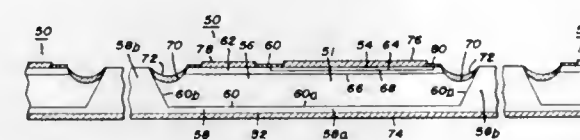
Int. Cl. H01l 9/12, 19/00

U.S. Cl. 317-234 R

4 Claims

A semiconductive crystal is provided with a first zone lying adjacent a first major surface having a central portion and a

peripheral portion extending toward a remaining major surface. A second zone lies adjacent the second major surface. A central zone of higher resistivity and greater thickness than either the first and second zones lies between the zones form-



ing junctures therewith. A passivant associated with the second major surface overlies the intersection of the junctures with the edge of the crystal. The passivant may be a glass layer contained in a groove spaced inwardly from the edge of the crystal.

3,628,107

### PASSIVATED SEMICONDUCTOR DEVICE WITH PERIPHERAL PROTECTIVE JUNCTION

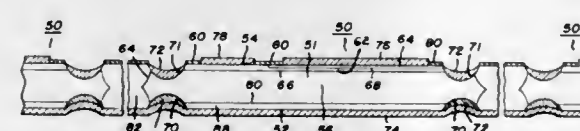
Richard W. Kennedy, Skaneateles, N.Y., assignor to General Electric Company

Filed May 5, 1969, Ser. No. 821,684

Int. Cl. H01l 1/110

U.S. Cl. 317-235 R

8 Claims



A semiconductive crystal having a central zone of relative high resistivity is provided with glassed grooves adjacent its opposite major surfaces spaced inwardly from its edge. A peripheral zone forms a junction with the central zone spacing it inwardly from the outer edge of the crystal. A rectifying junction lies inwardly of the grooves adjacent the central zone. Both the peripheral and rectifying junctions are passivated by edge intersection with the glassed grooves.

3,628,108

### CONVOLUTELY WOUND CAPACITOR

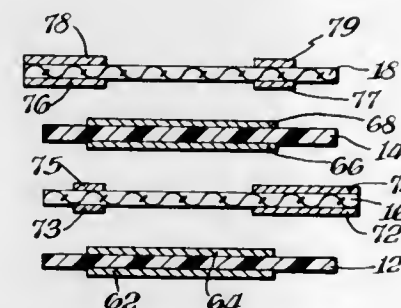
Herbert C. Craig, Stamford, Vt.; Andrew E. Dequasie, North Adams, Mass., and Raynor Linzey, Stamford, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Filed May 20, 1970, Ser. No. 39,673

Int. Cl. H01g 1/11

U.S. Cl. 317-258

6 Claims



Pairs of electrodes are convolutely wound in intimate contact with interposed dielectric spacers. The winding also includes interposed double metallized insulative strips having a margined edge. The metal coatings on each strip are interconnected such that the strip margin provides a lateral dielectric extension substantially centered in the electric field of the electrode edges.

3,628,109

### ELECTRIC DRIVING UNITS

Alan J. R. Plummer, London, England, assignor to Masson Scott Thrissell Engineering Limited, Masson Scott Works, Summerstown, London, England

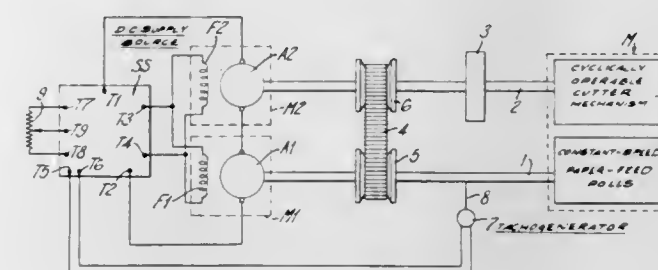
Filed Nov. 18, 1969, Ser. No. 877,797

Claims priority, application Great Britain, Nov. 28, 1968, 56499/68

Int. Cl. H02r 7/70

U.S. Cl. 318-11

5 Claims



An electric driving units for a machine such as a paper cutter comprises two commutator-type electric motors, one driving a first shaft for connection to those parts of the machine presenting substantially constant torque loading and the other driving a second shaft for connection to those parts presenting variable torque loading. A belt drive, preferably with presettable ratio, couples the two shafts and the armature windings of the two motors are connected in series to one common supply, the field windings being connected to another common supply.

3,628,110

### BRAKING CIRCUIT FOR BRUSHLESS DC MOTOR

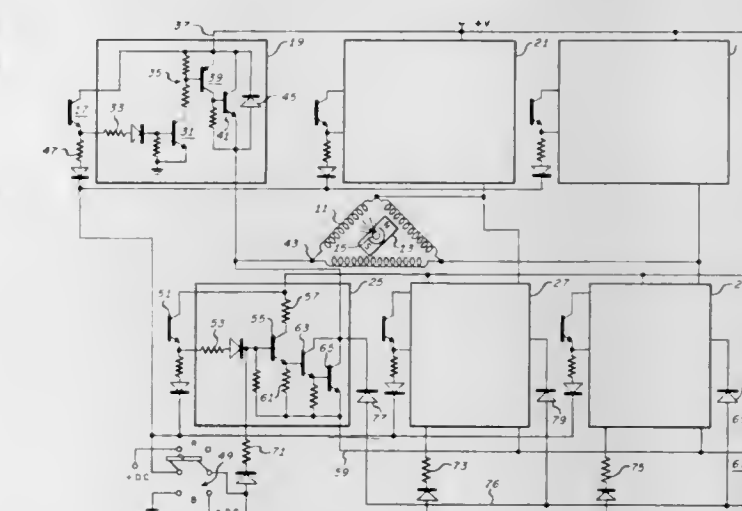
William M. Casaday, Charlottesville, Va., assignor to Sperry Rand Corporation

Filed Sept. 26, 1969, Ser. No. 861,390

Int. Cl. H02p 3/12

U.S. Cl. 318-138

5 Claims



A brushless DC motor (BDCM) of the type employing a permanent magnet rotor and a wound stator and in which each side of the power supply is connected to selected portions of the stator winding through a different group of commutating switches. Braking is accomplished by applying a braking signal which serves to close all of the switches in one group and open all of the switches in the other group of the commutating switches.



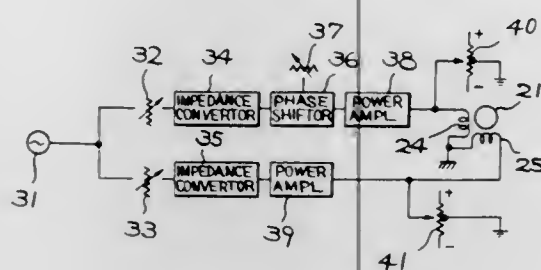
3,628,111

**SYSTEM FOR REMOVING IRREGULARITIES IN ROTATION FROM SYNCHRONOUS MOTOR**

Kunio Goto, Tokyo, Japan, assignor to Victor Company of Japan Limited, Yokohama, Japan  
Continuation-in-part of application Ser. No. 711,028, Mar. 6, 1968, now Patent No. 3,500,157. This application Dec. 3, 1969, Ser. No. 881,649  
Int. Cl. H02p 5/28

U.S. Cl. 318—179

4 Claims



An electronic control system removes any irregularities in the rotation of an electrical motor by introducing a controlled DC bias component in the armature or field windings of the motor. The DC bias level is selected to produce a magnetic field which adds to or subtracts from the magnetic field produced by alternating current used to drive the motor. This way, the motor may receive an uneven torque which exactly compensates for any irregularity in the motor and causes the motor to run smoothly and evenly.

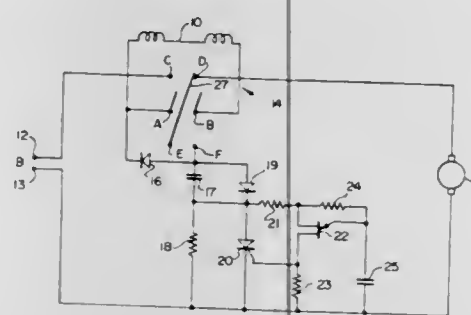
3,628,112

**DYNAMIC BRAKING OF ELECTRIC MOTORS WITH LOAD CHANGING DURING BRAKING**

Thomas A. O. Gross, Concord Road, Lincoln, Mass.  
Filed June 1, 1970, Ser. No. 41,946  
Int. Cl. H02p 3/14

U.S. Cl. 318—258

11 Claims



A motor system for energizing and deenergizing an electric motor and for dynamically braking the motor to a halt after deenergization. When the motor is turned off, a dynamic braking circuit is connected in series with the motor windings to assure generator action and to provide for dissipation of the kinetic energy of the motor in the form of heat. A current-limiting resistor in the braking circuit absorbs much of the energy immediately upon the initiation of braking. An electronic control circuit responds to the integral of the energy absorbed in the braking circuit. When the absorbed energy has reached a predetermined proportion of the total kinetic energy of the motor to be dissipated, the control circuit causes the current-limiting resistor to be short-circuited, thereby to permit larger currents to flow in the braking circuit, bringing the motor quickly to a halt.

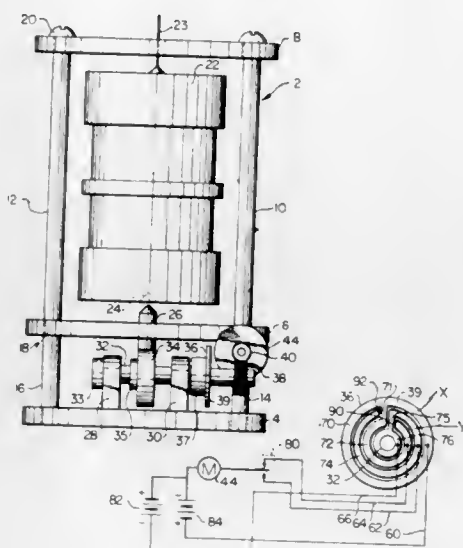
3,628,113

**CONTROLLED CAGING AND UNCAGING MECHANISM**

Robert M. Steudl, Glen Burnie, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration  
Filed May 28, 1970, Ser. No. 41,431  
Int. Cl. H02p 3/06

U.S. Cl. 318—267

2 Claims



A positioning mechanism intended for remote locking and releasing of instruments having a geared down motor driving a cam, the direction and duration of motor rotation being controlled by a circular printed circuit mounted for rotation on the cam shaft, the printed circuit cooperating with a plurality of wiper contacts to effect reversal of polarity in the motor to prevent overtravel thereof.

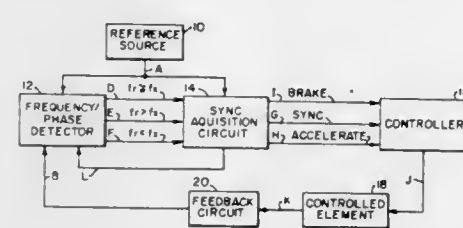
3,628,114

**SYNC ACQUISITION SYSTEM**

Tamas I. Pattantyus, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Nov. 3, 1969, Ser. No. 873,568  
Int. Cl. H02p 5/16

U.S. Cl. 318—314

6 Claims



A sync acquisition system for synchronizing a controlled element, such as a motor or a voltage-controlled oscillator, with a reference frequency wherein the feedback frequency derived from the controlled element is compared with the reference frequency for providing outputs for accelerating or braking the controlled element in response to the comparison and also providing an output indicative of the phase difference between the reference and feedback frequencies so that when the controlled element is near enough to the synchronous state it is locked to the reference in response to the absence of accelerate or brake output for a predetermined time.

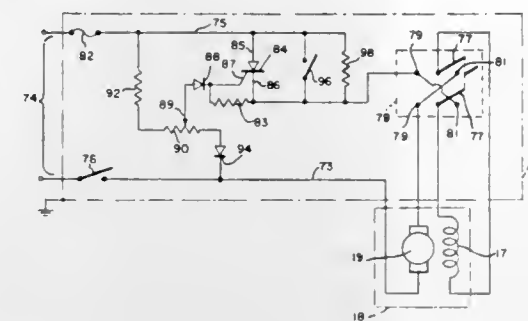
3,628,115

**VARIABLE-SPEED HOIST CONTROL**

Dana L. Pruitt, Martinsville, Ind., assignor to Uni-Light Hoist and Reel, Inc., Martinsville, Ind.  
Filed June 2, 1969, Ser. No. 829,503  
Int. Cl. H02p 7/28

U.S. Cl. 318—345

3 Claims



A hoist of light weight and high capacity with infinitely variable speed and holding characteristics. A sprocket engaged with a roller chain is driven through a multiple-stage spur gear reduction train by a high-speed universal reversible electric motor energized through a modified silicon control rectifier. The reduction gears are of high-tensile alloy steel, mounted on roller bearings to give an efficient drive, and the gear reduction is of such high ratio as to make the gear train irreversible under the rated load of the hoist, so that the SCR control of the high-speed motor gives positive variable-speed lifting, lowering, and holding control of the rated load. The motor control circuit includes a leakage resistor connected across the conducting electrodes of the SCR to inhibit any reversal of the motor.

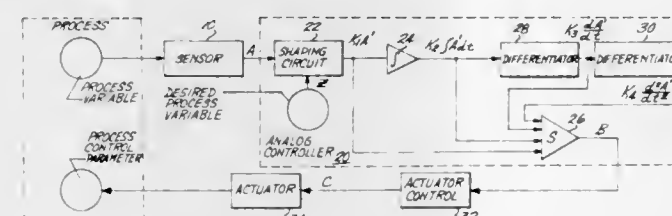
3,628,116

**INDUSTRIAL PROCESS CONTROL SYSTEM FOR OPERATIONS WITH LONG TIME CONSTANTS**

Fritz K. Preikschat, 16020 Lake Hill Blvd., Bellevue, Wash.  
Filed July 13, 1970, Ser. No. 54,534  
Int. Cl. G05b 1/118

U.S. Cl. 318—590

16 Claims



A system for providing continuous and proportional control of a process variable includes a sensor furnishing an output signal having an analog value proportional to the process variable. An analog controller includes a shaping circuit comparing that analog value with a reference to develop an error signal, and an integrator and two differentiators in series. The time constant of the integrator is chosen to filter out fast, unwanted fluctuations in the process variable and the time constants of the differentiators to approximate those involved in the process work function. The outputs of these elements of the analog controller are summed and supplied as a control signal to an actuator control circuit which varies the power supplied to an actuator so as to proportionally control a control parameter of the process. In turn, changes in the control parameter bring the process variable back to its desired value. An embodiment of the analog controller uses tantalum capacitors and high impedance operational

amplifiers. Embodiments of the actuator control circuits for use with AC synchronous stepping motors and DC motors include an integrator which eliminates any dead band in the actuator's response to the control signal.

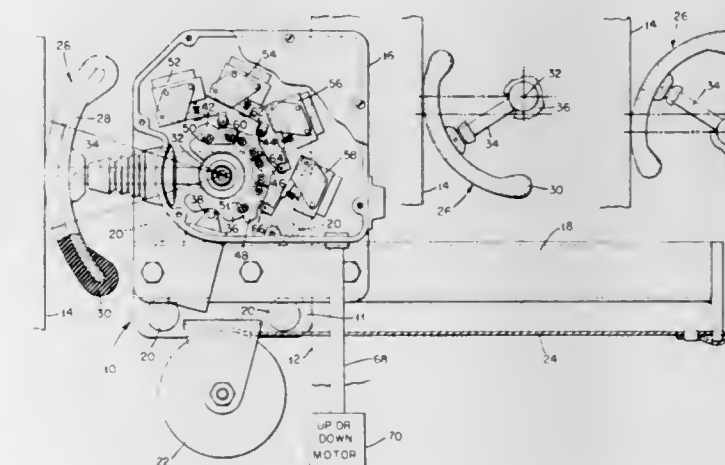
3,628,117

**AUTOMATIC LEVELLER SWITCHING SERVO MOTOR CONTROL CIRCUIT**

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services, Inc.  
Filed Mar. 2, 1970, Ser. No. 15,537  
Int. Cl. G05b 1/101

U.S. Cl. 318—675

4 Claims



An automatic levelling device is employed to maintain two movable bodies in the same relative positions with respect to each other. When the position of one body changes in a given plane, motor means are actuated to restore the bodies to their original relative positions.

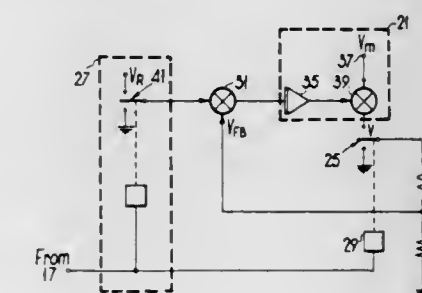
3,628,118

**ELECTRICAL CIRCUITRY FOR USE E.G. IN FORCE BALANCE SERVOSYSTEMS**

Peter Michael Knight, and Michael John Tooze, both of Kent, England, assignors to Elliott Brothers (London) Limited, London, England  
Filed Oct. 7, 1969, Ser. No. 864,411  
Claims priority, application Great Britain, Oct. 9, 1968, 47,813/68  
Int. Cl. G05b 1/101

U.S. Cl. 318—676

4 Claims



The invention is concerned with electrical circuitry for ensuring that the mean current through a load, e.g. a force balance winding for a pressure transducer, bears a substantially linear relationship to the mark/space ratio of pulse width modulated signals whose mark/space ratio varies e.g. with an error signal developed at a pickoff of the pressure transducer.

The circuitry comprises an integrator, a load, e.g. the aforementioned winding, a current-sensing resistor in series with the load, a switch which connects the load to the said circuit means or to circuit earth, a source of the aforemen-



tioned p.w.m. signals, means for operating the switch to connect the load to the said circuit means or to circuit earth accordingly as the p.w.m. signals are at one voltage level or the other, and a comparator which receives the p.w.m. signals and the voltage at the junction between the load and the current-sensing resistor and which supplies to the integrator a voltage which represents the difference between the p.w.m. signals and the junction voltage.

The time constant of the integrator is chosen in relation to the cycle time of the p.w.m. signals so as to ensure that variation in load current, arising, e.g. as a result of temperature variations, gives rise to a voltage change at the output of the integrator such change ensuring that the mean load current bears the aforesaid relationship to the mark/space ratio of the p.w.m. signals.

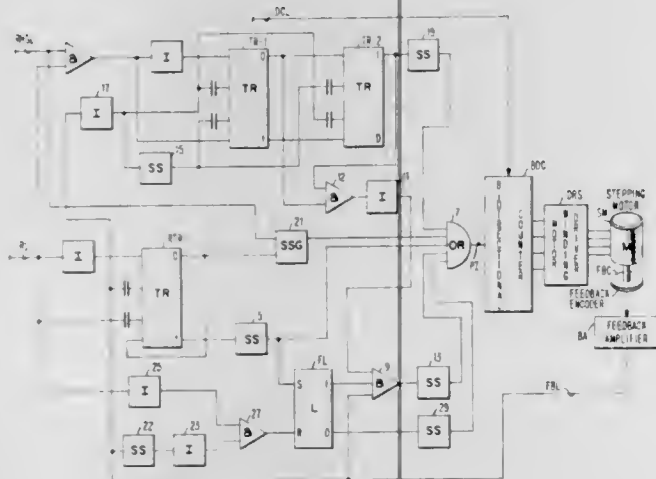
3,628,119

### TWO-SPEED BI-DIRECTIONAL, CLOSED LOOP STEPPER MOTOR CONTROL CIRCUIT

Dennis G. Abraham, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Apr. 22, 1970, Ser. No. 30,754  
Int. Cl. G05b 19/40

U.S. Cl. 318-685

5 Claims



Two-speed bidirectional, closed loop stepping motor control is obtained, utilizing only a single feedback encoding device. The feedback signals are combined logically with suitable input controls and suitable acceleration and deceleration pulse sources, to provide the type of operation required. The system operation comprises acceleration to low speed, acceleration to high speed, change from low speed to high speed, change from high speed to low speed, and a stopping sequence from any speed. The stop signal may occur at random with no loss of motor control.

3,628,120

### CLOSED LOOP STEPPER MOTOR CONTROL SYSTEM WITH SEEK REFERENCE CAPABILITY

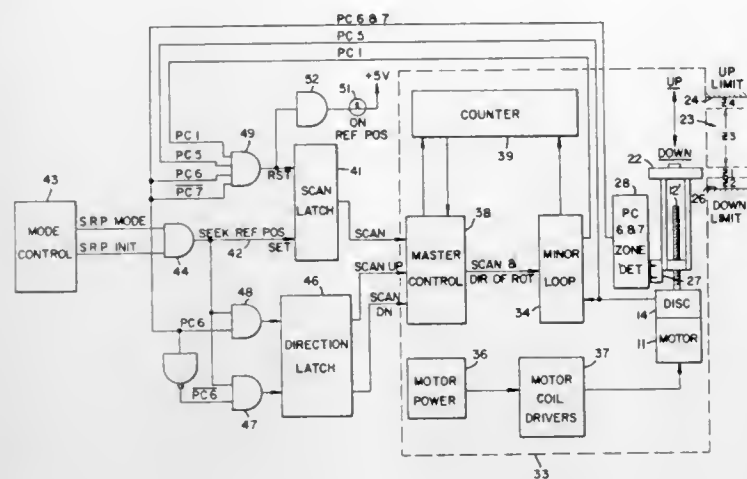
Thorbjørn Roland Fredriksen, Sunnyvale, Calif., assignor to Electroglas, Inc., Menlo Park, Calif.  
Filed Dec. 22, 1969, Ser. No. 886,866  
Int. Cl. G05b 19/40

U.S. Cl. 318-685

5 Claims

A closed loop stepping motor control system provides seek reference position capability. A disc discriminator on the output shaft of the stepping motor includes a single aperture to indicate a unique step in a single revolution. A unique single revolution is indicated by the use of a mechanical slider mounted on a linearly moving carriage in conjunction with

appropriate cutouts and photocells; alternatively a limit switch is used. Appropriate logic provides for stopping the



stepping motor when the reference position has been reached.

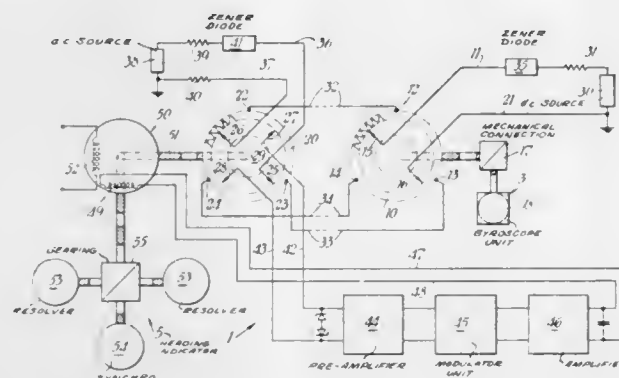
3,628,121

### POTENTIOMETER SELF-SYNCHRONOUS MOTOR CONTROL SYSTEM

Kenneth Victor Diprose, 3 Cliffe Drive, Limply Stoke, Bath, Somerset, England  
Filed Nov. 6, 1968, Ser. No. 773,763  
Claims priority, application Great Britain, Nov. 6, 1967, 50,423/67  
Int. Cl. G05b 11/12

U.S. Cl. 318-693

7 Claims



Apparatus for transmitting angular information with improved accuracy is disclosed as applied to transmitting the heading of a gyrocompass from the compass to a remote indicator. A transmitter potentiometer is connected at three spaced contact points to three similarly spaced points on a receiver potentiometer by three lines which can constitute the sole connection between the potentiometers. A first pair of rotatable brushes, oriented in accordance with the heading, feed a given potential to the transmitter potentiometer and a second pair of rotatable brushes feed on equal potential to the receiver potentiometer. A third pair of receiver brushes, orthogonal to the second pair, are connected to a servomechanism arranged to rotate the two pairs of receiver brushes until the third pair senses zero potential, when the first and second pairs of brushes are similarly oriented with respect to the three spaced contact points of the two potentiometers.

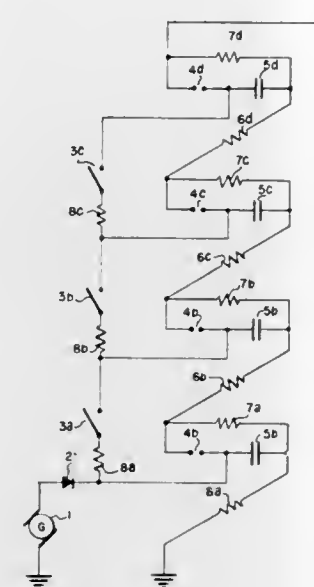
3,628,122

### MULTISTAGE MARX IMPULSE GENERATOR CIRCUIT COMPRISING CHARGING SWITCH AND PROTECTIVE RESISTORS

Arnold Rodewald, Riehen near Basel, Switzerland, assignor to Emil Haefely & Cie. AG, Basel, Switzerland  
Filed May 13, 1969, Ser. No. 824,124  
Claims priority, application Switzerland, May 16, 1968, 7239/68  
Int. Cl. H02m 7/32

U.S. Cl. 320-1

2 Claims



A multistage Marx impulse generator circuit to which protective resistors are connected in series or in parallel with charging switches. The ohmic value of the protective resistors are chosen so that in the case of premature flashover across a spark gap, the energy stored in the generator can be absorbed by the protective resistors.

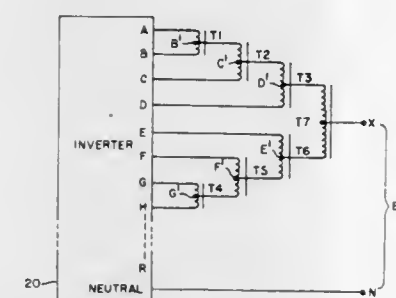
3,628,123

### APPARATUS FOR HARMONIC NEUTRALIZATION OF INVERTERS

John Rosa, Pittsburgh, and Theodore M. Heinrich, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Mar. 11, 1970, Ser. No. 18,549  
Int. Cl. H02m 1/12

U.S. Cl. 321-9 R

10 Claims



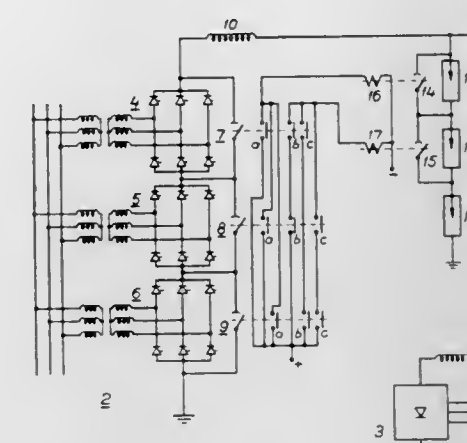
Apparatus for neutralizing harmonic components of DC to AC power inverter systems utilizing a pyramidal scheme of interconnection of interphase transformers operatively connected to a plurality of individual inverter stages comprising a power inverter system.

3,628,124

### VARIABLE OVERVOLTAGE PROTECTION MEANS FOR DC NETWORKS

Arne Johansson, Grangesberg, Sweden, assignor to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden  
Filed Oct. 9, 1970, Ser. No. 79,454  
Claims priority, application Sweden, Oct. 10, 1969, 13917/69  
Int. Cl. H02m 1/18; H02h 7/12  
U.S. Cl. 321-14

3 Claims



An overvoltage protection device for a DC transmission line connecting two stations, each station including several series-connected converters each provided with a bypass member, has a series of lightning arrester units connected between the transmission line and earth. At least all but one of the lightning arresters has a bypass device. Relays for closing the bypass devices to short circuit the lightning arresters are connected to the bypass members for the converters in such a way that the number of bypassed lightning arresters corresponds to the number of bypassed converters.

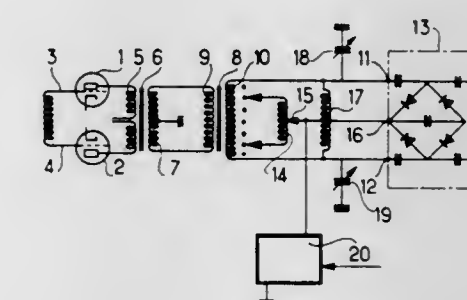
3,628,125

### DIRECT CURRENT HIGH-VOLTAGE GENERATOR

Paul Dedieu, Bourg-la-Reine, France, assignor to Societe Alsacienne de Constructions Atomiques, de Telecommunications et d'Electronique (Alcatel), Paris, France  
Filed Jan. 18, 1971, Ser. No. 107,181  
Claims priority, application France, Jan. 16, 1970, 7001609  
Int. Cl. H02m 7/00

U.S. Cl. 321-15

8 Claims



A direct current voltage generator which makes it possible to reduce the residual undulations originating from the alternating current source therein, including a first and a second transformer connected to a generator of the Cockcroft-Walton type, two variable capacitors, and a coil with a slide contact connected to the secondary circuit of the second transformer for reducing the residual undulations at the supply frequency and an inductance for tuning the parasitic capacitances of the secondary circuit.



3,628,126

**SUPPLEMENTARY CHARGE CIRCUIT FOR DC-TO-AC CONVERTER**

Chuji Kawakami; Ichiro Kouzuma, and Yoshisada Sugai, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

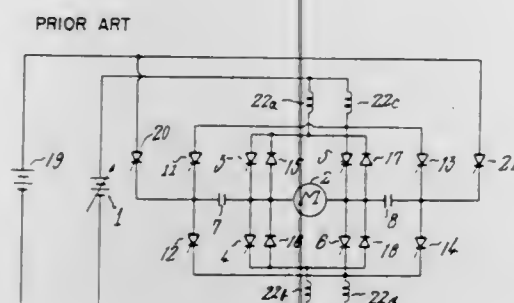
Filed Dec. 2, 1969, Ser. No. 881,518

Claims priority, application Japan, Dec. 6, 1968, 43/89448

Int. Cl. H02m 7/52

U.S. Cl. 321—45 C

1 Claim



An inverter circuit in which a constant voltage power source for effecting supplementary charging of commutation capacitors is provided separately from a variable voltage direct current power source so as to supply a supplementary charge voltage from said constant voltage power source to said commutation capacitors through supplementary charge thyristors at all times.

3,628,127

**VOLTAGE LEVEL SHIFTER CIRCUIT WITH CURRENT RATIO CONTROL OF TRANSDUCTIVE IMPEDANCE OF SEMICONDUCTOR**

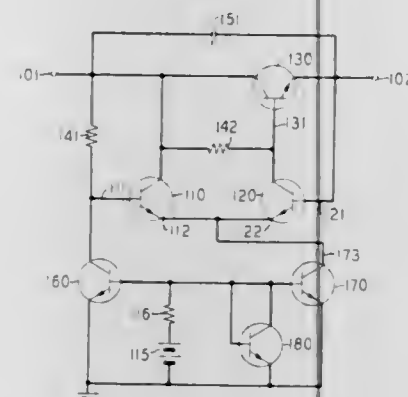
Frederick Donald Waldhauer, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1970, Ser. No. 32,050

Int. Cl. G05f 1/56

U.S. Cl. 323—9

8 Claims



A voltage level shifter introduces a fixed voltage shift into a transmitted signal by controlling the transductive impedance of a regulator transistor. The magnitude of the voltage shift is determined by a reference voltage drop established across an impedance energized by a constant-current source. A differentially coupled pair of transistors comprise a feedback network to compare the voltage level shift to the reference voltage and adjust the transductive impedance of the regulator transistor accordingly. The basic voltage level shifter may be connected symmetrically in a four-terminal circuit arrangement with a common reference voltage control to generate a balanced voltage level shift free of longitudinal drift signals.

3,628,128

**STEP-SWITCHING ARRANGEMENT**

Karl Buhler, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

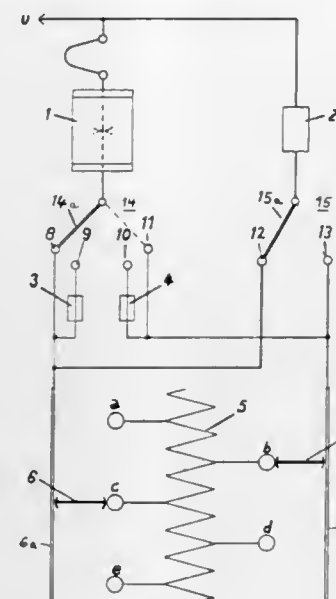
Filed Mar. 6, 1970, Ser. No. 17,071

Claims priority, application Switzerland, Mar. 11, 1969, 3622/69

Int. Cl. H02p 13/06; G05f 1/14

U.S. Cl. 323—43.5 R

1 Claim



A step-switching arrangement for changing the taps on a transformer winding without interrupting the flow of current from the winding to a loadline includes a first switch and a resistance connected in series therewith extending from the transformer tap-changing contacts to the loadline which is paralleled by a changeover switch and vacuum switch connected in series therewith also extending from the transformer tap changing contacts to the loadline. A circulating current through the switches and resistance and part of the transformer winding occurs during a change in taps and this circulating current is normally interrupted by opening the contacts of the vacuum switch.

Should the vacuum switch fail to open and interrupt the circulating current, then as the changeover switch is actuated from one main contact to the other, the circulating current will be caused to flow from an auxiliary contact on this switch through an auxiliary circuit which includes a fuse. Blowing of the fuse interrupts the circulating current and thus takes over the function of the failing vacuum switch.

3,628,129

**PROCESS CONTROLLER INCLUDING A RATE CIRCUIT RESPONSIVE SOLELY TO PROCESS VARIABLE SIGNAL CHANGES**

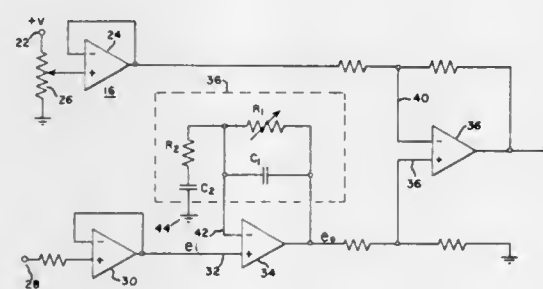
John E. Riley, Saugus, Mass., assignor to General Electric Company

Filed Oct. 1, 1970, Ser. No. 77,253

Int. Cl. H02p 13/16; H02m 3/04, 5/04

U.S. Cl. 323—100

5 Claims



An improved process controller wherein rate action occurs only during changes in the process variable signal. The

process variable signal is applied to one input terminal of a first differential amplifier having a rate circuit connected in a feedback loop between the output terminal and the second input terminal of the amplifier. The first differential amplifier provides one input to a second differential amplifier, a second input to which is provided by a setpoint signal source. Proportional and reset action may be applied to the output signal of the second differential amplifier.

3,628,130

**METHOD AND APPARATUS FOR MEASURING THE ALIGNMENT OF METASTABLE HE ATOMS BY DETECTION OF SCATTERED RESONANCE RADIATION**

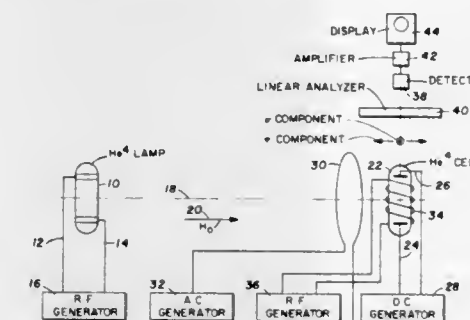
Laird D. Schearer, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed June 29, 1967, Ser. No. 649,882

Int. Cl. G01r 33/08

U.S. Cl. 324—0.5 R

4 Claims



A magnetometer having He<sup>4</sup> atoms excited to the metastable 2<sup>3</sup>S<sub>1</sub> state is radiated with unpolarized resonance radiation to align the atoms in the metastable state. The scattered resonance radiation issuing from the He<sup>4</sup> atoms in the metastable state is sensed to provide an indication of the alignment of the atoms. A differential function of two polarized components of the scattered resonance radiation may be generated to provide an output signal that is generally free from noise.

3,628,131

**APPARATUS FOR DETERMINING SALINITY VARIATIONS IN SHALES**

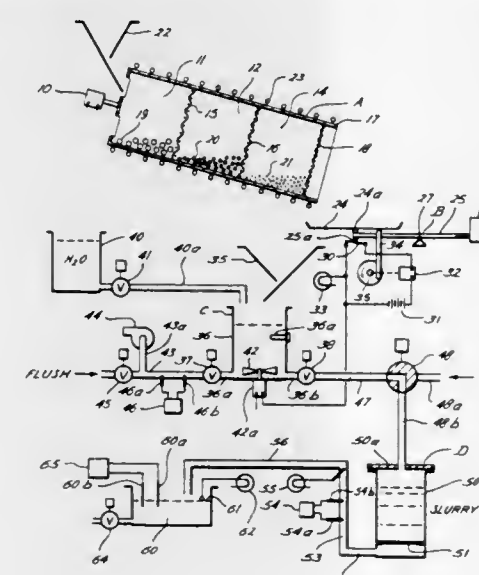
Harold L. Overton, 5418 Whispering Creek, Harris County, Tex.

Filed Mar. 2, 1970, Ser. No. 15,514

Int. Cl. G01n 27/00

U.S. Cl. 324—30 R

10 Claims



An apparatus for determining salinity variations in shales, automatically or semiautomatically, to substantially continu-

ously measure the variations of the salinity of water from different elevations in a well.

3,628,132

**THIN MAGNETIC FILM MAGNETOMETER WITH ZERO-FIELD REFERENCE**

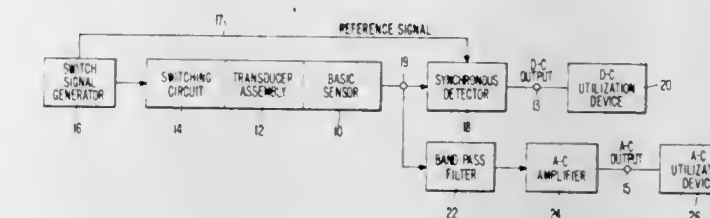
Richard L. Fussell, Chester Springs, and Clifford J. Bader, West Chester, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 31, 1969, Ser. No. 872,967

Int. Cl. G01r 33/02

U.S. Cl. 324—43 R

15 Claims



A circuit technique is described for use with a magnetometer employing a thin magnetic film sensor in an inductance-variation mode, to provide an accurate determination of the absolute value of an external applied field. The technique includes the use of switching means coupled to the thin magnetic film for periodically reversing the state or sense of the film. In the absence of an external field, that is, with zero applied field, the magnetometer output remains at a constant reference level. In the presence of an external field, the magnetometer output is an alternating current signal having an amplitude proportional to the field magnitude and a phase corresponding to the polarity or direction of the field.

3,628,133

**METHODS OF AND APPARATUS FOR DETECTING AND LOCATING OPENS IN CONDUCTORS INCLUDING A SIGNAL GENERATOR MOVABLE WITH THE CONDUCTORS**

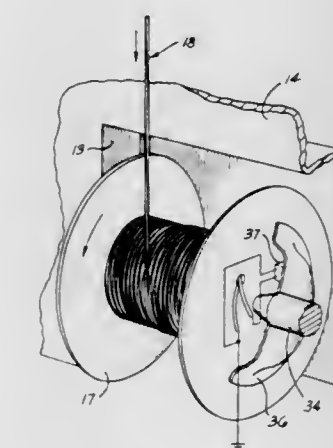
Georg C. E. Dornberger, Phoenix, Ariz., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,855

Int. Cl. G01r 31/08

U.S. Cl. 324—52

18 Claims



A length of a twisted pair of conductors, which has been wound onto a reel, is tested while the reel is stationary to determine whether either or both of the conductors is open. If any opens are detected, the reel is mounted in a driven, rewinding system to move successive portions of the twisted pair of conductors through a signal-detecting electrode. The pair of conductors is connected to an oscillator which is mounted within the rewinding system without the need of slip rings or the like. The electrode is connected to a detector circuit which controls a meter-relay device to turn off the re-



winding system when an open passes through the electrode. Facilities are provided for removing the open portion of the pair of conductors from the electrode for repair purposes and the return of the repaired conductors to the electrode to permit a continuation of the rewinding cycle to locate additional opens.

3,628,134

## FREQUENCY MODULATION ALIGNMENT SYSTEM

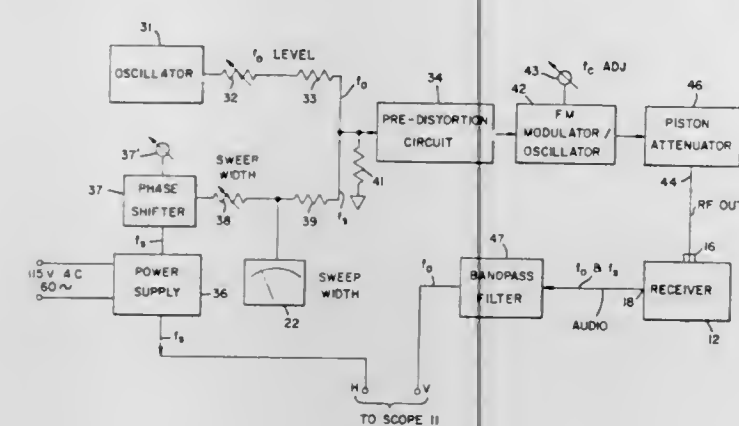
Robert A. Andersen, Palo Alto, Calif., assignor to Sound Technology, Cupertino, Calif.

Filed June 17, 1970, Ser. No. 46,982

Int. Cl. G01r 29/00; H03c 3/08

U.S. Cl. 324—57 R

7 Claims



A frequency modulation alignment system modulates a carrier signal, which is tuned to the same frequency as FM receiver to be tested, with dual frequencies, one of which is a relatively low-sweep frequency and the other of which is a higher audio frequency. The vertical input of an oscilloscope is coupled to the audio frequency which has been demodulated by the receiver. The horizontal input is driven by the sweep frequency to produce a pattern where distortion is indicated by the variation from a horizontal line of the peaks of the signal display. An effectively linear modulator is provided for the generation of the modulated carrier signal by a modulator which has its modulating signal predistorted to compensate for its own nonlinearities. A piston attenuator controls the RF output of the modulated carrier signal.

3,628,135

## CRANKED HOLLOW WAVEGUIDE FOR MEASURING MOISTURE CONTENT OF MOVING SHEET OR WEB MATERIAL

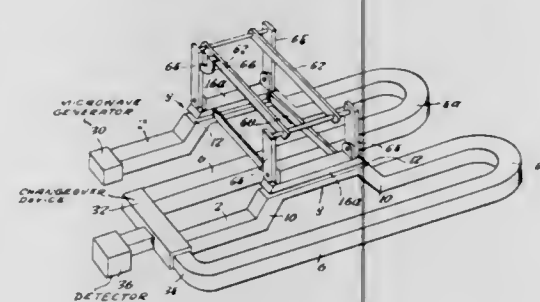
William Charles Reed, Whitley Bay, England, assignor to The Rank Organisation Limited, London, England

Continuation of application Ser. No. 633,901, Apr. 26, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 877,922

Int. Cl. G01n 27/04

U.S. Cl. 324—58.5 A

11 Claims



The invention is concerned with the measurement of moisture content by microwave transmission through a sheet or web of material and the specification discloses a split form of waveguide to embrace the sheet, the waveguide having a

cranked configuration portion at one or both ends allowing the edge regions of the sheet to be excluded from the measurement region. The split portions of the waveguide are displaceable away from each other to allow an obstruction to pass between them.

3,628,136

## MEANS FOR MEASURING CLEARANCES IN A GAS TURBINE INCLUDING A COAXIAL CABLE CAPACITOR

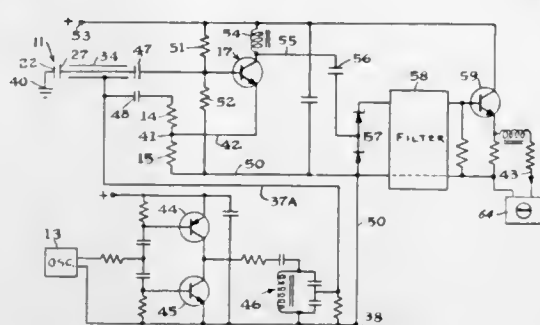
Robert P. Jonas, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sept. 5, 1969, Ser. No. 855,474

Int. Cl. G01r 27/26

U.S. Cl. 324—61

11 Claims



This apparatus for measuring rapidly changing clearances between relatively movable machine parts in high-temperature regions has a variable capacitor, formed by a stationary electrode and a certain part of the machine movable relative thereto, connected in a circuit having a relatively fixed capacitor provided by a coaxial cable the center conductor of which constitutes a lead to the electrode, a source of high-frequency excitation voltage, a voltage divider, a transistor, a load resistor, and suitable means for translating variations in capacitance of the variable capacitor due to relative movement of the machine parts into indications of measurement of the spacing between the machine parts.

3,628,137

## APPARATUS FOR AUTOMATICALLY DETERMINING SPREADING RESISTANCE, RESISTIVITY AND IMPURITY CONCENTRATION IN SEMICONDUCTOR BODIES

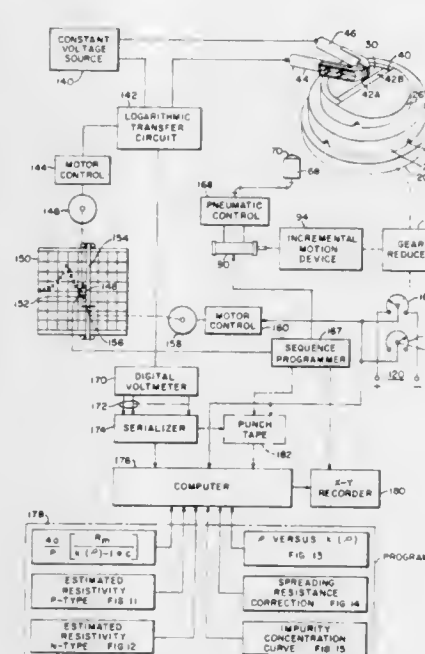
Robert G. Mazur, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1969, Ser. No. 879,342

Int. Cl. G01n 27/14

U.S. Cl. 324—64

12 Claims



Apparatus for and method of performing spreading resistance measurements on semiconductor wafers to quantita-

tively assess the electrical conductivity of the material of the wafer whether it be laterally on a surface to determine material homogeneity or traversely through the thickness of the wafer to obtain a profile of resistivity versus position. Means are provided in the apparatus for automatically computing the resistivity and/or the impurity concentration in the wafer from the resistance measurements obtained whereby plots of these latter parameters are made to show lateral variations in the material characteristics as well as showing the profile of resistivity and/or impurity concentration versus the distance from a reference plane of the sample.

3,628,138

## METHOD FOR IDENTIFYING CONDUCTORS IN A CABLE BY UTILIZING AN AMPLITUDE-MODULATED GAUSSIAN NOISE IDENTIFICATION SIGNAL

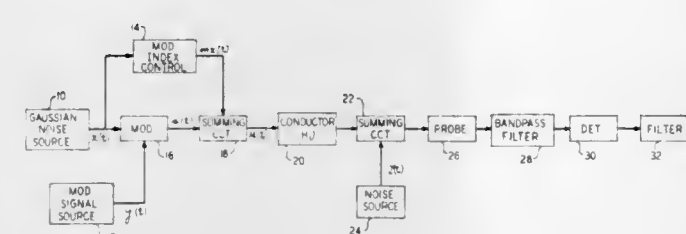
Garret Braden Collier, River Vale, and George Edward Harrington, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 2, 1970, Ser. No. 7,914

Int. Cl. G01r 31/02, 19/16

U.S. Cl. 324—66

1 Claim



A method of identifying conductors in a multiconductor cable without interference with service thereon utilizes Gaussian noise. The Gaussian noise is amplitude modulated by an audible tone to generate an inaudible test signal which is placed on a conductor at some location, such as a central office, where the identity of the conductor is known. At some other location where the identity of the conductor within the multiconductor cable is desired, for example at a splice point, the signal can be detected by an appropriate detection apparatus to thereby identify the specific conductor.

3,628,139

## METHOD AND APPARATUS FOR SENSING PARTICULATE MATTER

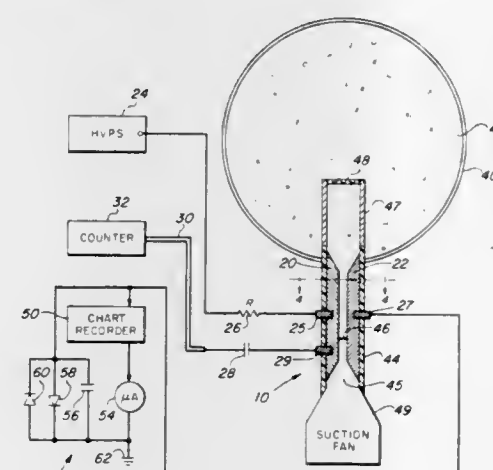
Henry J. Huber, Newton Highlands, Mass., assignor to Ikor, Incorporated, Burlington, Mass.

Filed June 11, 1970, Ser. No. 45,355

Int. Cl. G01n 27/00

U.S. Cl. 324—71 R

19 Claims



A method and apparatus for sensing particulate matter in a fluid by application of an electrical field of sufficient poten-

tial to a flowing fluid so that a particle contained in the fluid causes an avalanche breakdown of the fluid dielectric. The breakdown rate is determined by the rate of particle flow through the field.

3,628,140

## SCANNING ELEMENT AND APERTURE WAFER FOR ELECTRONIC PARTICLE COUNTING AND SIZING APPARATUS

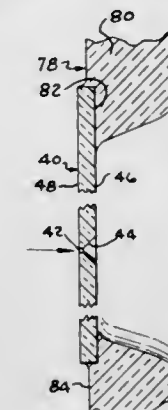
Walter R. Hogg, Miami Lakes, and Wallace H. Coulter, Miami Springs, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Nov. 6, 1969, Ser. No. 874,632

Int. Cl. G06m 11/00

U.S. Cl. 324—71 CP

9 Claims



An aperture wafer which is adapted to be mounted to an aperture tube scanning element for use with a Coulter-type electronic particle counting and sizing apparatus. The wafer is formed of the usual materials such as ruby, sapphire and the like. The aperture is located substantially in the center of the wafer and dimensioned as conventionally formed apertures in known wafers, but differs from the prior art by having the body of the wafer thickened as much as feasible contiguously to the aperture. The configuration of the resulting structure provides a conical chamber leading to the aperture, which consequently is located at the apex of the chamber. The chamber and aperture are symmetrical about the aperture axis. The aperture wafer provides decreased capacitive losses and also focuses the field of the aperture giving increased resolution without substantial loss in sensitivity. The scanning element has the wafer mounted thereto with the chamber opening to the inside of the aperture tube.

3,628,141

## SELF-CONTAINED PROBE FOR DELINEATING CHARACTERISTICS OF LOGIC CIRCUIT SIGNALS

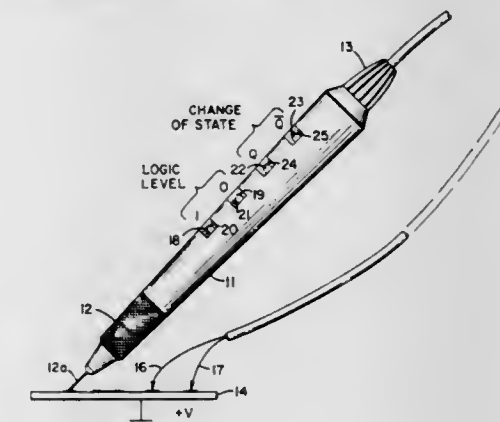
Russell B. Union, Mountain View, and Donald J. Nagy, San Jose, both of Calif., assignors to Advanced Digital Research Corporation, Los Altos, Calif.

Filed Nov. 17, 1969, Ser. No. 877,302

Int. Cl. G01r 31/02

U.S. Cl. 324—72.5

13 Claims



A self-contained probe for delineating the characteristics of logic circuit signals includes a "0" and "1" logic level cir-



cuit portion for indicating the absolute logic level of the monitored signal and a change of state portion which includes a JK flip-flop for alternately illuminating two light source indicators to indicate, for example, pulse repetition rate.

3,628,142

## SLIDING INTERVAL EVENT DETECTOR

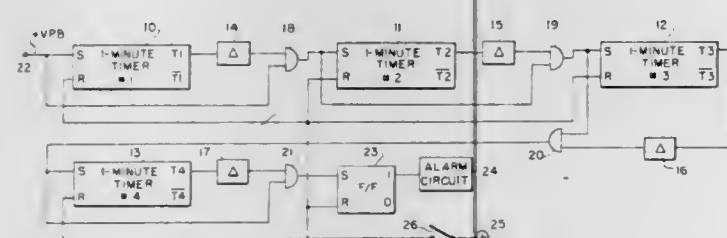
George J. Harris, Middlesex, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 18, 1969, Ser. No. 877,637

Int. Cl. G01r 23/02; G04f 9/00

U.S. Cl. 324—78 Q

5 Claims



A system for detecting the occurrence of a predetermined number of pulses in a predetermined "sliding" test time interval. A plurality of timers is provided each having a timing interval equal to the test time interval. Each input pulse sets one of the timers. To detect N pulses in the test time interval, N-1 timers are required; if a pulse is detected while all of the timers are energized then it is an indication that N pulses have occurred within the test time interval.

3,628,143

## REUSABLE MERCURY COULOMETER

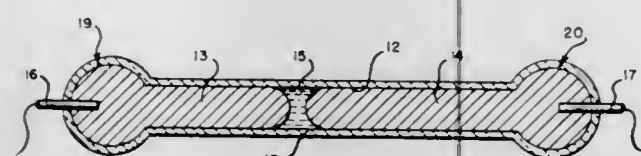
Richard G. Di Paola, Newtown, Conn., assignor to Curtis Instruments Inc., Mount Kisco, N.Y.

Filed June 22, 1970, Ser. No. 48,191

Int. Cl. G01r 11/44; G04f 11/08

U.S. Cl. 324—94

4 Claims



A mercury coulometer is provided with a bore having a capillary central portion and end portions which are sufficiently enlarged that the gravitational force acting on the mercury is sufficient to cause it to penetrate the coulometer electrolyte before the electrolyte reaches the electrical contacts. This feature prevents undesirable chemical reactions between the electrolyte and the contacts and, thus, permits the coulometer to be reused.

3,628,144

## ELECTRICAL CONTACT CLEANING DEVICE

Jesse Aronstein, Latham, and Richard J. Gunthert, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,219

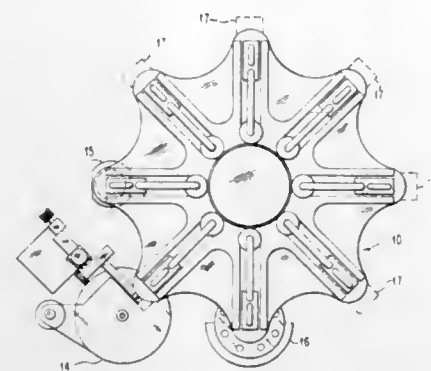
Int. Cl. G01r 31/00; B24b 19/00; H01h 9/00

U.S. Cl. 324—158 F

17 Claims

Electric contacts, which are utilized in testing semiconductor chips or the like, become contaminated by deposits left

on the contacts by the chips during testing. These contaminants are removed by cleaning means movable by the chip



handling equipment. After the contacts have been cleaned, the debris is removed by an air jet.

3,628,145

## INDUCTIVE APPARATUS FOR INDICATING MECHANICAL POSITIONS AND/OR MEASURING LINEAR POSITIONAL CHANGES

Gunnar Axel Kihlberg, Sollentuna, and Karl Erik Bystrom, Bromma, both of Sweden, assignors to Jungner Instrument Aktiebolag, Stockholm, Sweden

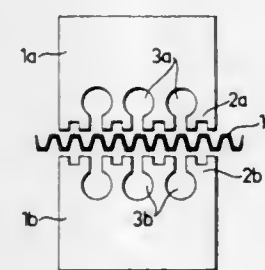
Filed Sept. 3, 1969, Ser. No. 854,928

Claims priority, application Sweden, Sept. 13, 1968, 12380/68

Int. Cl. G01r 33/00

U.S. Cl. 324—34 D

1 Claim



The invention relates to an improved inductive transmitter for indicating and measuring linear position changes comprising at least two iron cores each with primary and secondary windings cooperating with an armature of magnetic material, the cores or armature being movable in relation to the transmitter. Both the iron cores and the armature are provided with spaced teeth which are confronting each other so that the magnetic coupling between the windings of the cores will change when the relative position of the armature to the cores is changed. The essential feature of the invention is that the armature teeth cooperating with one core are displaced relative to the armature teeth cooperating with the other core. This provides an improved symmetrical function of the magnetic coupling in each transmitter and the invention also includes some specific embodiments of this arrangement. In one embodiment two iron cores are spaced with their toothed surfaces facing each other thereby forming an airgap in which an armature is disposed. The armature could be in the form of a corrugated strip so that the armature teeth cooperating with one iron core will form the slots cooperating with the other iron core which means that the teeth cooperating with the two iron cores will be exactly 180 degrees displaced in relation to each other.

3,628,146

## TOUCH-ACTUATED MODE CONTROL CIRCUIT

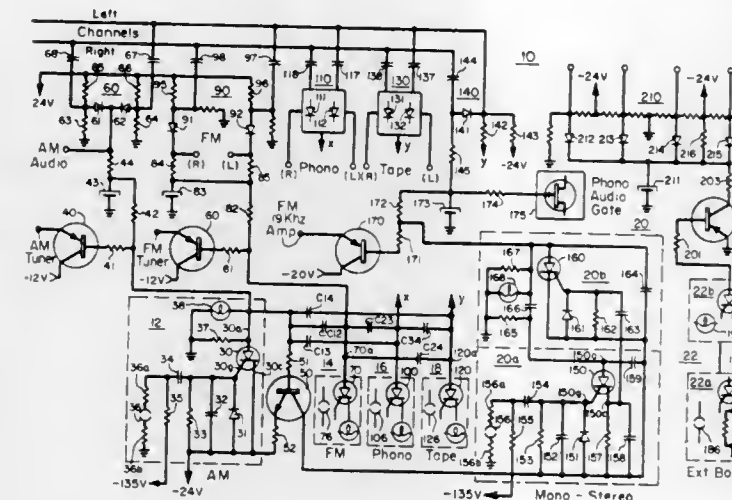
Orval E. Beckman, Wheaton, and Walter Klymkiw, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed May 22, 1970, Ser. No. 39,835

Int. Cl. H04b 1/16

U.S. Cl. 325—315

14 Claims



A touch-actuated, master control or function network for selecting respective operational modes for an AM/FM/phonograph/tape complex, including optional monostereo and extended bass modes. The control network includes a plurality of functionally interrelated, solid-state switching circuits having a silicon controlled rectifier (SCR) as the operative control element. When one of the basic operational modes (AM, FM, phono, tape) is selected, provision is made to automatically deactivate or cutoff any of the switching elements of the remaining modes if previously in an operative condition. Provision is also made to prevent selection of the optional stereo mode while the complex is in the basic AM operational mode. The individual SCR switching circuits are effectively controlled by voltage level changes produced upon contacting an associated touch-responsive element in conjunction with an included storage capacitor in the gating circuit of the particular SCR. Such arrangement provides immunity to false operation of the switching circuits due to extraneous noise pickup, transients and the like.

3,628,147

## TIME-DIVISION MULTIPLEX MOBILE COMMUNICATION SYSTEM

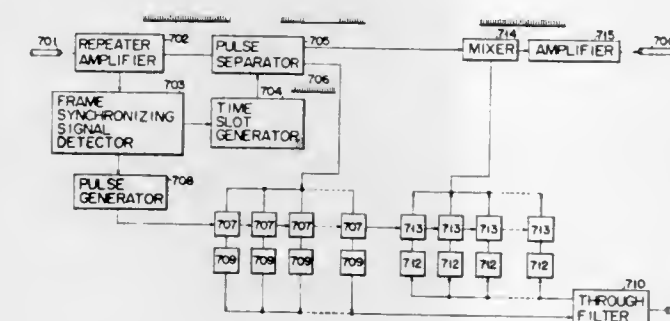
Kenichi Makino, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 9, 1969, Ser. No. 883,448

Int. Cl. H04b 7/14

U.S. Cl. 325—4

7 Claims



A time-division multiplex mobile communication system allowing communications to be made between a plurality of railroad trains travelling on a predetermined railroad line and a central base station through a plurality of repeater stations

set up at a substantially equal distance along the line, which comprises means for carrying out communications between the central base station and each repeater station by a series of high-speed time-division multiplex signals, means for allowing each repeater station to translate series of high-speed pulses included in the signals thus transmitted which is directed to the repeater station into a series of slow pulses and modulating by the translated slow pulses a carrier wave allotted to each train which has as high a frequency as possible and radiating the output signal to each corresponding train through a radiation transmission line, means for allowing the supplied signals to be demodulated at each corresponding train, means for allowing return signals consisting of a series of slow pulses prepared by each train separately from the demodulated signals to be transmitted in a reverse direction to the preceding case, namely, from the radiation transmission line to each repeater station, means for allowing the return signals to the central base station to be translated into a series of high-speed pulses at each corresponding repeater station and inserting the translated high-speed pulses into that of the time slots associated with the series of time-division multiplex pulses which is allotted to other repeater stations so as to be sent back to the central base station and means for bringing a repeater station to be prepared to have communication links between base station and trains existing in adjacent repeater sections and to complete uninterrupted communications at the moment the trains enter said repeater section.

3,628,148

## ADAPTIVE DELTA MODULATION SYSTEM

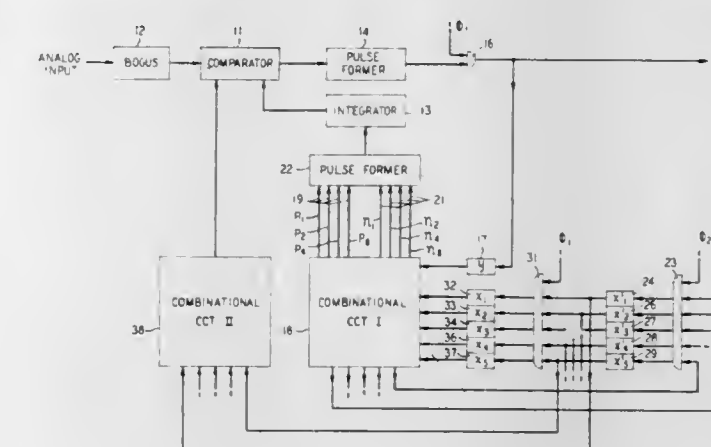
Stephen J. Brolin, Bronx, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1969, Ser. No. 887,657

Int. Cl. H03k 13/22

U.S. Cl. 325—38 B

6 Claims



An adaptive delta modulation system is characterized by an encoder algorithm having a plurality of unique states. A combinational circuit receives a feedback signal from the transmitted signal and a state signal on the basis of which a step of a size dependent upon the state and the transmission is applied to the integrator by the combinational circuit, which also generates a new state signal.

3,628,149

## DIVERSITY SWITCH FOR DIGITAL TRANSMISSION

George H. Swan, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 19, 1968, Ser. No. 785,274

Int. Cl. H04b 7/02

U.S. Cl. 325—42

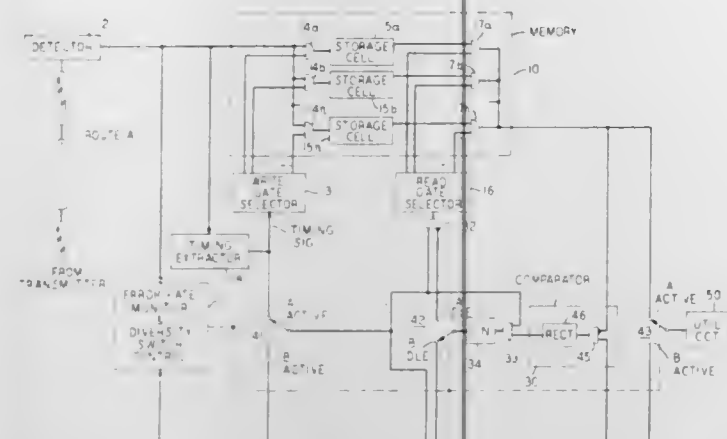
9 Claims

A jittering idle channel is tracked to a jittering active channel and diversity switching to the idle channel is provided without loss of a bit. The signal received in the idle channel is written into an elastic store bit-by-bit as it is received; the signal is read out in the order in which it was written at times



determined by a timing signal derived from the active signal and modified under control of an error signal indicating a

separated at the output of the receiver and provides a feedback signal to correct for all undesired receiver gain changes. The radiometer and gain control signals enjoy use of a com-



timing difference between the signals on the active and idle channels. There is no built-in preference for one channel, thus either channel may track the other.

3,628,150

## SELECTIVE PAGING SYSTEM

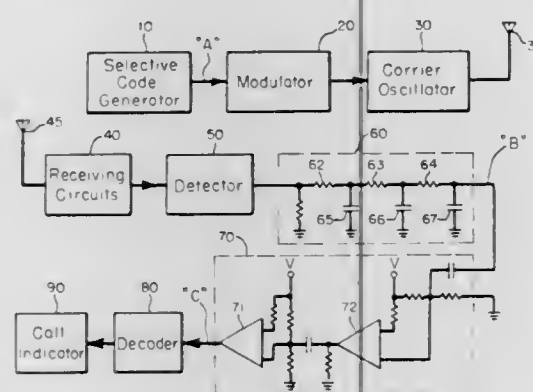
Alfred R. Dithardt, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 3, 1970, Ser. No. 60,472

Int. Cl. H04b 1/00

U.S. Cl. 325-55

8 Claims



A paging communication system for selectively signaling any of a plurality of individual paging receivers by transmitting a carrier-wave signal frequency modulated in accordance with a pulse-train signal coded to identify the receiver on call to cause such receiver to produce an alert signal. Each of the receivers has a low-pass filter with a cut-off frequency substantially equal to twice the repetition rate of the coded pulse-train modulating signal for converting the detected calling-code signal to a substantially noise-free continuous-wave signal having different amplitude levels reflecting the code represented by the detected signal. The repetition rate of the modulating signal is made substantially equal to 100 hertz.

3,628,151

## RADIOMETER GAIN CONTROL

Robert S. Roeder, Dunedin, Fla., assignor to Sperry Rand Corporation

Filed Jan. 8, 1970, Ser. No. 1,497

Int. Cl. H04b 1/06

U.S. Cl. 325-363

12 Claims

An improved microwave radiometer of the comparison type features elimination of loss of calibration due to long term gain changes through the addition of a quadrature modulation signal path in the comparison radiometer as a means of coupling a fixed gain control reference signal into the radiometer receiver. The reference signal is ultimately

mon path through a portion of the radiometer receiver and perform their individual functions in a noninterfering manner.

3,628,152

## TELEVISION TUNING CIRCUIT UTILIZING VOLTAGE VARIABLE CAPACITANCE

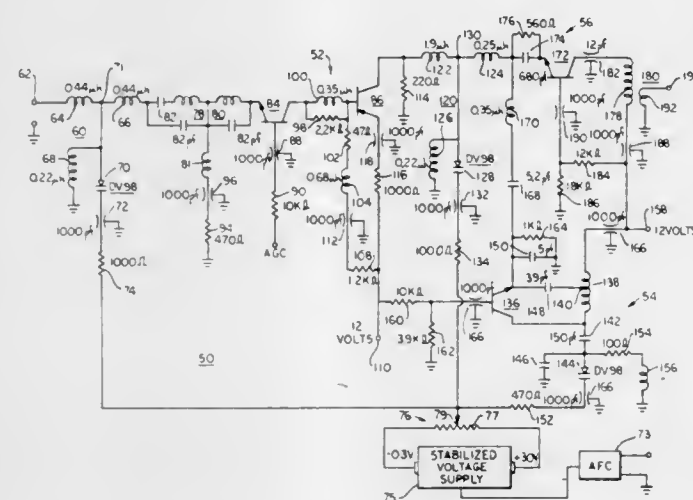
David J. Carlson, Indianapolis, Ind., assignor to RCA Corporation

Continuation of application Ser. No. 756,601, Aug. 30, 1968, now abandoned. This application Feb. 25, 1970, Ser. No. 14,762

Int. Cl. H04b 1/18

U.S. Cl. 325-383

9 Claims



A tunable resonant circuit includes a pair of inductors serially connected between input and output terminals. The parallel combination of a third inductor and a voltage-responsive capacitance device are coupled from the junction of the pair of inductors to a point of reference potential.

3,628,153

## RECEIVING DEVICE FOR CONTROL INFORMATION

Masayuki Fukata, 94, Shimorenjaku, Mitaka-shi, Tokyo, Japan

Filed Dec. 16, 1969, Ser. No. 885,401

Claims priority, application Japan, Dec. 19, 1968, 43/93381

Int. Cl. H04b 1/16

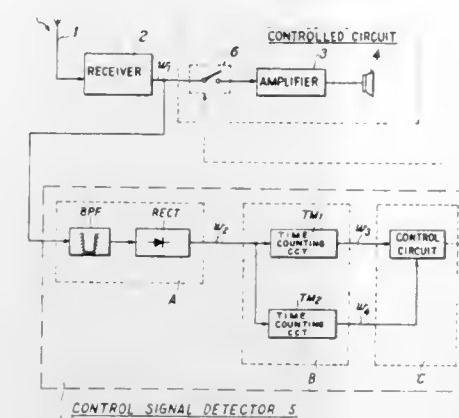
U.S. Cl. 325-395

3 Claims

A receiving device for control information formed by a first control signal and a second control signal transmitted after the first signal and having a duration less than the duration of the first signal, where the durations of received signals having the same frequency as the control signals are mea-

sured to generate a first output when the duration exceeds a predetermined time  $T_s$  and to generate a second output when the duration exceeds predetermined time  $T_c$  less than the time  $T_s$ . The duration of the first control signal is longer than

two resulting IF's are added to give an IF output with an improved signal-to-noise ratio over the RF wave. The inventive



the time  $T_s$ , and the duration of the second control signal is less than the time  $T_s$  and more than the time  $T_c$ . A controlled circuit is triggered to and self-held in the switching-in state in response to the first output and restored in response to the second output.

3,628,154

## LOW DISTORTION SIGNAL BAND SHIFTING WITH ON-OFF SWITCHES

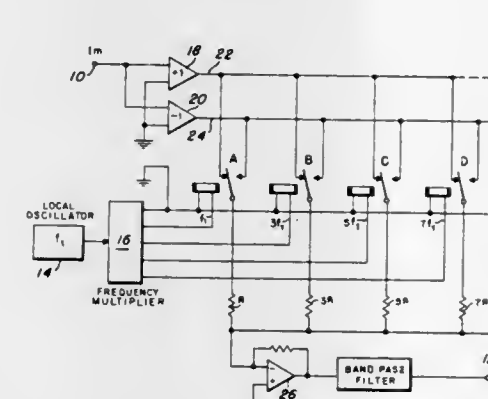
Lawrence R. Weill, 455 Point Loma Ave., San Diego, Calif.

Filed May 31, 1968, Ser. No. 733,463

Int. Cl. H04b 1/26; H03b 1/04

U.S. Cl. 325-435

7 Claims



Simple switches are used for shifting a signal band,  $f_0$ , to a new location,  $f_0 + f_1$ , without distortion. The band is split into two opposed phases, chopped with square waves of frequencies  $f_1$  and odd harmonics  $3f_1, 5f_1$ , etc., which are weighted in amplitude by the factors 1, one-third, one-fifth, etc., and are finally added. Unwanted components  $3f_1, 5f_1$ , etc., are found to be easily canceled, obviating a difficult filtering problem.

3,628,155

## AMPLITUDE MODULATION INTENSIFIER METHOD AND APPARATUS

Anthony G. Muzzi, 6703 Marsh Ave., Huntsville, Ala.

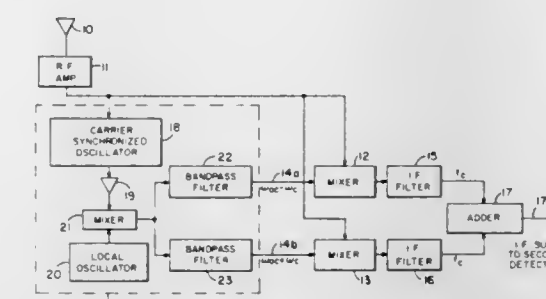
Filed Jan. 3, 1969, Ser. No. 788,821

Int. Cl. H04b 1/26

U.S. Cl. 325-438

7 Claims

An amplitude-modulated RF carrier wave is separately mixed with two phase-locked frequency waves, one lower than the carrier by an amount equal to a desired intermediate frequency, and the other higher by the same amount. The



apparatus includes the necessary means for generating the two waves, for mixing, etc.

3,628,156

## TIMING LOGIC

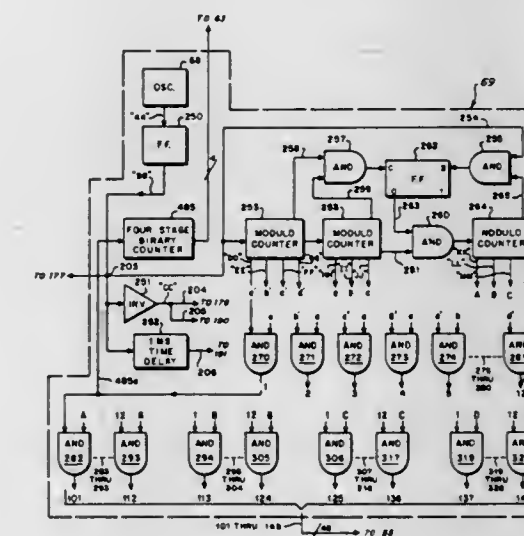
James R. Barger, Haddon Heights, N.J., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 3, 1969, Ser. No. 788,862

Int. Cl. H03k 23/00

U.S. Cl. 328-39

6 Claims



Timing logic providing sequential pulses from individual terminals. Modulo N-type counters are cascaded together and provide signals to AND gates so that the AND gates by receiving 12 sequential signals of varying length and sequence may combine the signals in a manner to provide 48 terminals signals in sequence of equal amplitude and duration. Synchronization is obtained to assure that this sequencing remains fixed regardless of turn on states of the equipment.

3,628,157

## TIME-POINT GENERATOR

Alfred B. Freeman, 20418 Seaboard Road, Malibu, Calif.

Original application Apr. 8, 1968, Ser. No. 719,474, now

Patent No. 3,548,065, dated Dec. 15, 1970. Divided and this application Feb. 2, 1970, Ser. No. 7,522

Int. Cl. H03k 1/00

U.S. Cl. 328-62

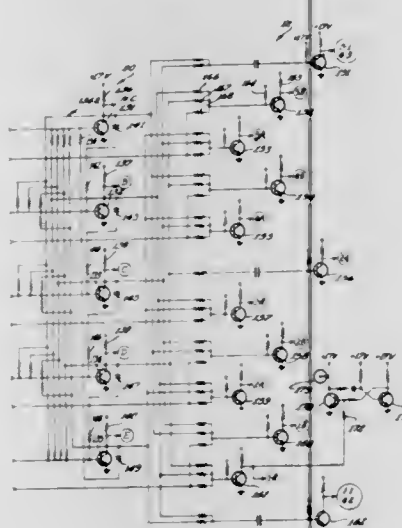
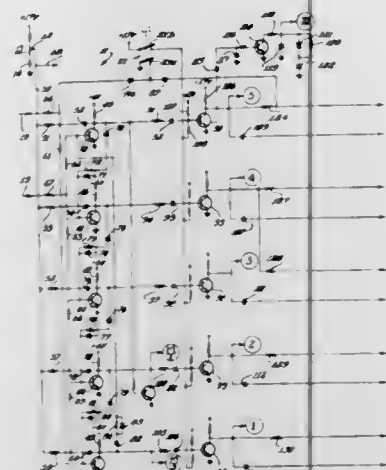
6 Claims

A time-point generator includes a polystage multivibrator for producing pulse signals of a predetermined frequency and spacing, a logic sequencer controlled by said multivibrator, means connected to the multivibrator for changing the spac-



ing of some of the pulses, and gating means controlled by the output of the multivibrator and by the output of the logic

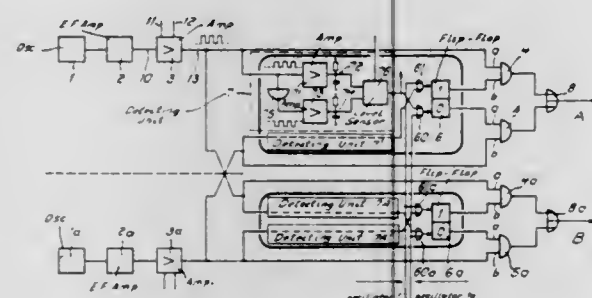
devices in such a way that when the frequency of an oscillator for some reason changes the associated flip-flop changes its state and connects the oscillator associated with an adjacent machine to the machine controlled by the defective oscillator.



sequencer, the time-point generator being disclosed as forming part of an automatic rhythm device.

### 3,628,158 ARRANGEMENT AT PARALLEL WORKING MACHINES

Erik Ivar Sjoquist, Farsta, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden  
Filed Oct. 27, 1969, Ser. No. 869,756  
Claims priority, application Sweden, Nov. 15, 1968, 15508/68  
Int. Cl. H03k 17/02  
U.S. Cl. 328-71 7 Claims

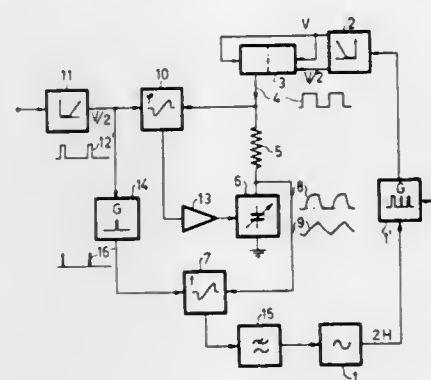


There is disclosed a fail-safe apparatus for supplying clock pulses to parallelly working machines, preferably computers. An oscillator is associated with each machine and is connectable to the respective machine as well as to the adjacent machines via logical circuits. These circuits are controlled by bistable flip-flops which are triggered from frequency sensing

A system which may have applied thereto a DC or an AC signal and the output of which is a DC signal which follows substantially a predetermined function. The output signal is caused to follow substantially the predetermined function by application to the input signal of a dither signal which, under some circumstances, may be frequency modulated. In a

### 3,628,159 LOCKING OF TELEVISION SYNCHRONISM GENERATORS

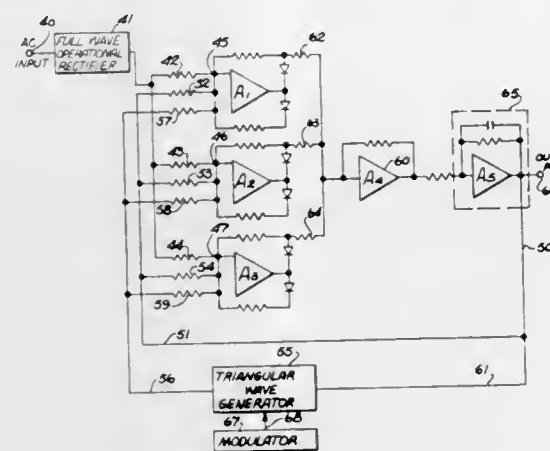
Richard John Godwin Ellis, Cambridge, England, assignor to Pye Limited  
Filed Oct. 8, 1969, Ser. No. 864,653  
Claims priority, application Great Britain, Oct. 10, 1968, 48,056/68  
Int. Cl. H03b 3/06; H04n 5/04  
U.S. Cl. 328-134 7 Claims



A circuit for synchronizing a local television synchronizing oscillator with a remote one has a second phase discriminator coupled to receive the local and remote synchronizing signals. It generates an output voltage that is applied to a varicap of an integrating circuit that receives the local sync signal so that the time constant varies with phase difference of the signals. A first phase discriminator receives the remote sync signal and the integrated local sync signal and applies a control voltage to the local oscillator for synchronizing it with the remote oscillator.

### 3,628,160 CONVERTER SYSTEM

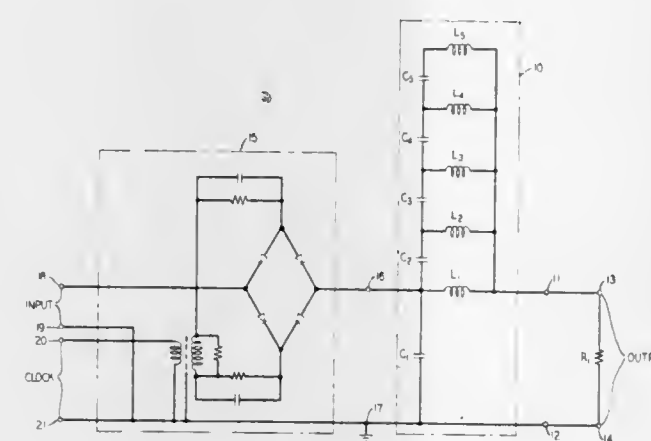
John R. Pickering, Hatch End, England, assignor to Dana Laboratories, Inc.  
Filed Dec. 22, 1969, Ser. No. 887,067  
Int. Cl. G06g 7/20  
U.S. Cl. 328-144 15 Claims



A system which may have applied thereto a DC or an AC signal and the output of which is a DC signal which follows substantially a predetermined function. The output signal is caused to follow substantially the predetermined function by application to the input signal of a dither signal which, under some circumstances, may be frequency modulated. In a

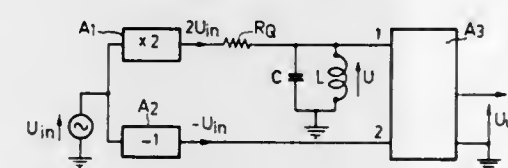
preferred embodiment, the system is an AC to DC RMS converter utilizing operational rectifiers the output of which is applied to a dither generator which produces an output signal having a substantially linear probability distribution function (a triangular wave), and which output is applied as an input signal to the operational rectifiers to vary the conduction level thereof so as to cause the system output signal to more closely follow the square-law curve. In an alternative embodiment, comparators are used instead of operational rectifiers.

3,628,161  
ELECTRONIC SAMPLING AND HOLD CIRCUIT  
Ronald Lee Earp, Burlington, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Mar. 12, 1970, Ser. No. 18,887  
Int. Cl. H03k 17/74  
U.S. Cl. 328-151 4 Claims



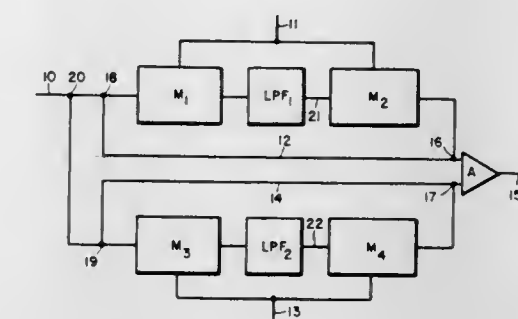
A sample and hold circuit is disclosed in which a gate is enabled to apply a wave sample to a delay line capacitor where the sample is momentarily stored. When the gate is disabled, the stored sample discharges with the line being effective to produce a relatively flat-topped output over a period of time following the disablement of the gate.

3,628,162  
ENVELOPE DELAY CORRECTION LINK  
Peter Lison Lunden, and Anders Gustaf Lyden, both of Jakobsberg, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.  
Filed July 1, 1969, Ser. No. 838,161  
Claims priority, application Sweden, July 2, 1968, 9115/68  
Int. Cl. H03b 3/04  
U.S. Cl. 328-155 14 Claims



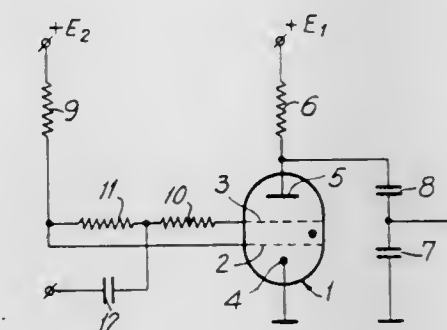
A circuit for correcting nonuniform transmission delay of a television signal has two parallel coupled channels coupled to receive said signal. The first contains a damped resonant circuit, the second a phase inverter. A MOSFET can be the variable damping, while voltage variable diodes can be in the tuned circuit. A rectifier supplies a control voltage from the input signal to the diodes.

3,628,163  
FILTER SYSTEM  
Anthony D. Heibel, Nunica, Mich., assignor to Ufad Corporation  
Filed Aug. 1, 1969, Ser. No. 846,849  
Int. Cl. H03b 1/04  
U.S. Cl. 328-167 2 Claims



The operation of this electronic filter is based on the interrelation of two similar sections operating upon a complex electric input signal, each section including a first signal multiplier, a low-pass filter, and a second multiplier. Multiplying the input signal by the reference signal in the first multiplier produces two frequency components for each frequency component of the input signal. All the signals that the low-pass filter does not eliminate, are multiplied by the reference signal in the second multiplier. Each signal multiplied in the second multiplier produces two sidebands equally spaced on either side of the reference signal. Another and similar section of the system operates with a reference signal of the same frequency and magnitude, but 9° out of phase with respect to the reference signal applied to the first section. The outputs of the two sections are added. The result is the cancellation of one sideband and the addition of the other sideband causing a regeneration of each frequency component of the input signal within the passband.

3,628,164  
FRAME TIME BASE FOR TELEVISION RECEIVERS  
Leonid Mikhailovich Tikhomirov, prospekt Yablochkova, 4, kv. 31; Vitaliy Ivanovich Loban, ulitsa Firsova, 8, kv. 33, and Valentina Alexandrovna Savina, ulitsa Novaya, 108, kv. 3, all of Ryazan, U.S.S.R.  
Filed Aug. 1, 1968, Ser. No. 749,391  
Int. Cl. H03k 4/12  
U.S. Cl. 328-181 5 Claims



A frame time base system for television receivers and the like. The system is built around a cold-cathode glow discharge tube having an anode, a grid, a trigger electrode and a cathode, a first source of positive potential connected to the anode through a first resistor, a capacitive network connected to the anode and the first resistor to form a sawtooth wave generator for the output of the discharge tube, a resistor network connected between the trigger electrode and the grid, a source of synchronizing pulses supplied through the first portion of the resistor network to the triggering electrode and through a second portion of the resistor network to



the grid, and a second source of positive potential connected through a second resistor to the resistor network.

3,628,165

**DIGITAL FREQUENCY DISCRIMINATOR**

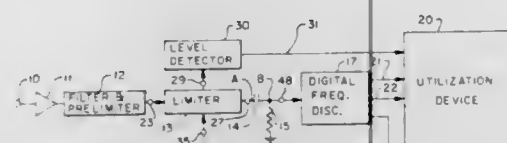
William O. Swan, Jr., Sunnyvale, Calif., assignor to Anderson Jacobson, Inc., Mountain View, Calif.

Filed Sept. 19, 1968, Ser. No. 760,943

Int. Cl. H04L 27/14

U.S. Cl. 329-104

18 Claims



A frequency discriminator with a signal limiter and level detector for digital communication systems using frequency modulation is provided by an arrangement for effectively measuring the period of a frequency modulated signal. A counter sets and resets a first flip-flop in accordance with the frequency shift of the signal within a given range, and sets a second flip-flop for one cycle of the input signal each time the period of the signal is determined to be for a frequency outside that range. The limiter at the input of the discriminator employs an integrating capacitor to set the maximum level of the input signal as a function of the input signal amplitude, and the level detector, set for a predetermined acceptable signal level, is connected to that capacitor. A second integrating capacitor connected in parallel with the first through a blocking diode is provided with a large RC time constant as compared with that of the first integrating capacitor for a long turn-on time, as compared with the turn-off time for the level detector. The second flip-flop set by the discriminator removes an insignificant fixed charge from the first integrating capacitor each time it is set. The charge removal becomes significant only when its average rate exceeds a predetermined level.

3,628,166

**WIDE-BAND AMPLIFIER**

Jack R. Harford, Three Bridges, N.J., assignor to RCA Corporation

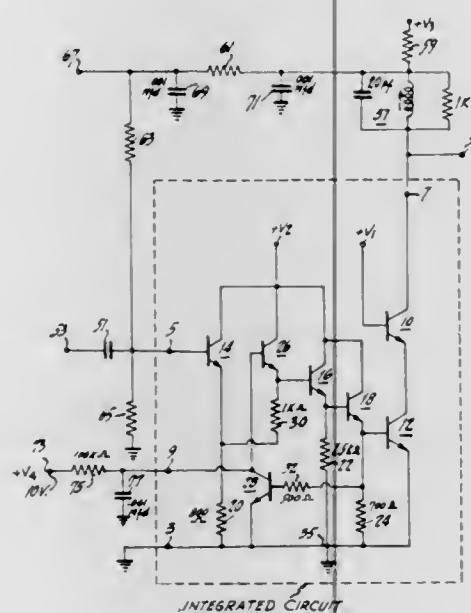
Continuation of application Ser. No. 766,905, Oct. 11, 1968.

This application June 3, 1970, Ser. No. 41,755

Int. Cl. H03g 3/30

U.S. Cl. 330-29

16 Claims



A wide-band amplifier including a pair of transistors is arranged in a cascode configuration. Input signals are control-

ably attenuated over a given range of amplitudes by a coupling network to stabilize at a predetermined amplitude those signals applied to the common-emitter transistor of the cascode pair for amplification. Such an arrangement enables the common-base transistor of the transistor pair to develop output signals having significantly less distortion than would be present where input signals of the order of 100 millivolts or so are applied without any attenuation to the common-emitter transistor; it also enables the common-base transistor to maintain an output signal-to-noise ratio substantially greater than would be the case if attenuation were employed throughout.

3,628,167

**TRAVELLING WAVE MULTIPLE ELEMENT AMPLIFIER**

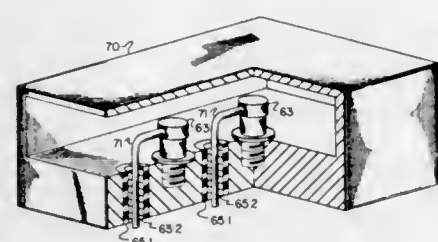
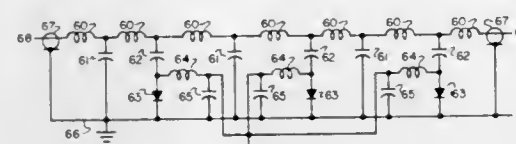
Marion E. Hines, Weston, Mass., assignor to Microwave Associates, Inc., Burlington, Mass.

Filed June 20, 1969, Ser. No. 835,144

Int. Cl. H03F 3/60

U.S. Cl. 330-53

6 Claims



Described are transmission line media and microwave structures for combining a multiplicity of elementary discharge devices (e.g., semiconductor diodes) biased for negative resistance at frequencies in a given band to obtain increased high-frequency power and high-frequency bandwidth of useful operation in that band, of microwave energy propagated in the transmission line media.

The basic principle involved is to prevent or suppress oscillations in undesired modes of resonance or propagation induced by the use of one or more diodes, by segregating these undesired modes into frequency bands outside the frequency range to be utilized.

Under this principle complex networks containing a large number of resonant loops and having as many resonant or normal modes as there are resonant loops are coupled into a primary transmission line so that the network may oscillate or amplify in the desired mode and each diode contributes an equal share of the total power of the network, but the negative conductance properties of the diodes are substantially ineffective at frequencies other than the desired modes.

3,628,168

**DIFFERENTIAL AMPLIFYING CIRCUIT**

Yoshio Kobayashi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1970, Ser. No. 9,487

Claims priority, application Japan, Feb. 15, 1969, 44/13827

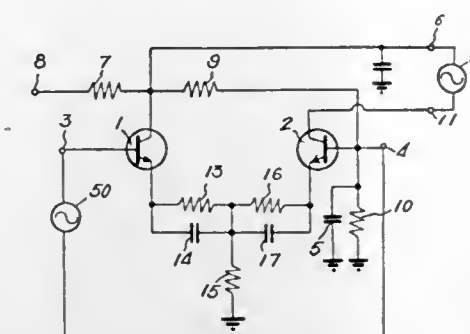
Int. Cl. H03F 21/00

U.S. Cl. 330-69

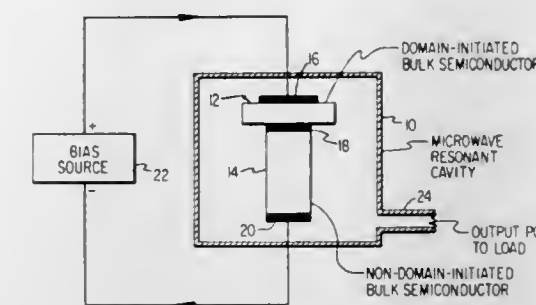
4 Claims

A differential amplifier having a DC path and an AC path for signal with a common grounding resistor. The DC path having high-resistance elements which compensate the characteristic difference between the amplifier elements. The AC path being connected in parallel with the DC path and having very low impedance value at the high-signal frequencies to

bypass the DC path. As a result, the differential amplifier is not affected by the difference of characteristics between the devices within the given resonant cavity, properly choosing their threshold currents with respect to each other, and ap-



plying a certain value of bias current serially through both devices.



3,628,169

**DIGITAL DATA DISCRIMINATOR SYSTEM**

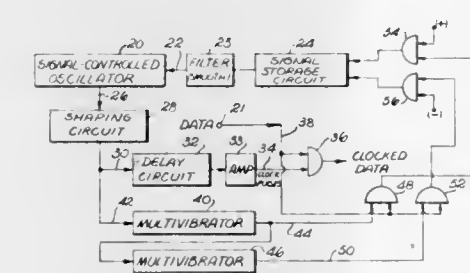
Sung Pal Chur, San Jose, Calif., assignor to Caelus Memories, Inc.

Filed Mar. 2, 1970, Ser. No. 15,402

Int. Cl. H03b 3/06

U.S. Cl. 331-1 A

4 Claims



A discriminator system is disclosed for qualifying (clocking) digital data signals of inconsistent frequency (phase) by controlling a clock pulse oscillator with the data signal. A signal-controlled oscillator provides clocking pulses and additionally controls the system to provide first and second interrelated test pulses defining test intervals. Phase variations (as resulting from a change in the data signal) are detected by a shift in the time relationship between the pulses of the data signal and the test pulses. The individual test pulses are tested in coincidence with the data signal to provide two distinct coincidence periods, the comparative durations of which indicates any requisite correction. Opposed-polarity signals are supplied to control the oscillator, during the separate coincidence periods thereby affording an integrated signal level for stabilizing the oscillator to generate the clock pulses in phase-locked synchronization with the data signal.

3,628,170

**LSA OR HYBRID MODE OSCILLATOR STARTED BY SERIES-CONNECTED GUNN OR QUENCHED MODE OSCILLATOR**

Martin Carl Steele, Princeton, N.J., assignor to RCA Corporation

Filed May 13, 1969, Ser. No. 824,222

Int. Cl. H03b 7/14

U.S. Cl. 331-52

6 Claims

Microwave oscillations at the tuned frequency of a given resonant cavity generated by a bulk semiconductor negative differential resistance device operating only in a nondomain initiated mode, such as the hybrid mode or LSA mode, is started by another bulk semiconductor negative differential resistance device operating at the given frequency in a domain initiated mode, such as the transit time mode or the quenched mode. This is accomplished by locating both

3,628,171

**MICROWAVE POWER COMBINING OSCILLATOR CIRCUITS**

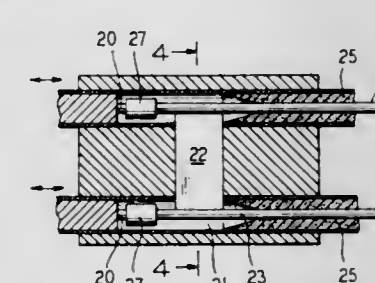
Kaneyuki Kurokawa, Murray Hill, and Frank Matthieu Magalhaes, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 7, 1970, Ser. No. 61,913

Int. Cl. H03b 7/14

U.S. Cl. 331-56

10 Claims



A microwave power combining oscillator circuit comprises a plurality of coaxial cables each having a negative resistance diode mounted at one end and a matching dissipative impedance connected across the other end. A midportion of each coaxial cable inner conductor extends along a side of a rectangular cavity resonator. With the inner conductors symmetrically spaced a half wavelength apart along opposite sides of the resonator, the oscillatory outputs of the diodes are combined at a single frequency and transmitted by an output waveguide.

3,628,172

**HIGH-POWER DISSIPATION LASER SEGMENT MOUNTING HOLDERS**

Edwin Matovich, Brea, and David E. O'Grady, Yorba Linda, both of Calif., assignors to North American Rockwell Corporation

Filed Mar. 19, 1970, Ser. No. 21,060

Int. Cl. H01s 3/00; G02h 7/02

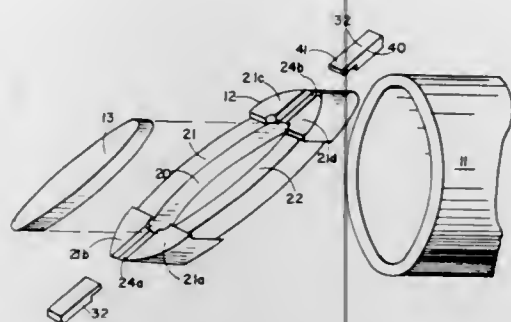
U.S. Cl. 331-94.5

6 Claims

The holders of the present invention are used to maintain the distance between segments of laser material so as to provide a fluid path for a cooling fluid across the surfaces of the laser material segments. The holders are formed in the shape of an elliptical ring having an elliptical opening defined through the center thereof with the ring being adapted to receive an elliptical disc of laser material. The ring is provided with a recessed portion on at least one surface to form a passageway for fluid across the face of the disc of laser material. Spacer means are positioned in recesses on the surface of the elliptical ring to hold each disc of laser material in place and to allow stacking of a plurality of the rings in axial



alignment while maintaining a uniform spacing between a plurality of elliptical discs. The invention described herein



was made in the performance of work under Air Force Contract No. AF33(615)68C-1104.

3,628,173

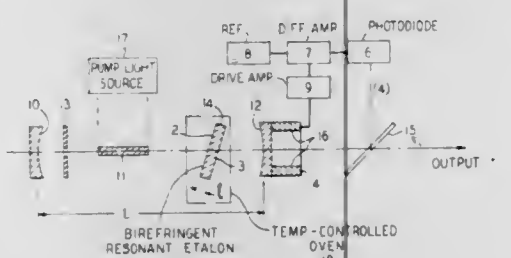
### LASER MODE SELECTION AND STABILIZATION APPARATUS EMPLOYING A BIREFRINGENT ETALON

Hans G. Danielmeyer, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Apr. 28, 1969, Ser. No. 819,887

Int. Cl. H01s 3/10

U.S. Cl. 331-94.5

5 Claims



There is disclosed a stabilized single-frequency arrangement for a broadband laser, such as a neodymium ion laser, in which a resonant etalon including birefringent material is disposed in the resonator in the path of the radiation and is tilted to select only one axial mode of oscillation in each of two orthogonal polarizations. In one specific embodiment, the resonator is tuned for maximum intensity of the mode of one polarization in response to a nearly linear intensity-frequency discriminant derived from the mode of the other polarization, which is provided with an operating point on a side of a transmission curve of the etalon.

3,628,174

### OPTICALLY PUMPED SUBMILLIMETER-WAVE AND MILLIMETER-WAVE GAS LASERS

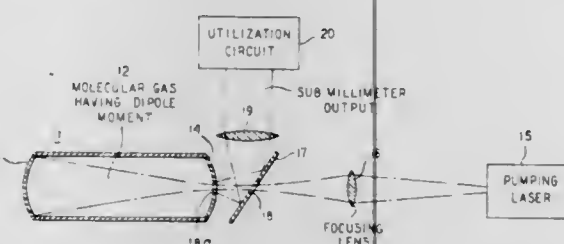
Thomas James Bridges, Holmdel, and Tao-Yuan Chang, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 1, 1970, Ser. No. 24,703

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

12 Claims



There is disclosed the first optically pumped submillimeter-wave laser. Oscillation is obtained on six pure rotational

transitions of wavelength longer than 400 micrometers in methyl fluoride pumped at 9.55 micrometers and on several other pure rotational transitions between 280 micrometers and 687 micrometers in methyl alcohol vapor pumped at wavelengths between 9.52 and 9.71 micrometers. Vinyl chloride gas has yielded oscillation similarly at 388 and 630 micrometers when optically pumped by continuous-wave radiation at 9.55 and 10.61 micrometers, respectively. Other active media include molecular gases having dipole moments.

3,628,175

### OPTICAL MASER HAVING CONCENTRIC RESERVOIRS AND CYLINDRICAL RESONATOR

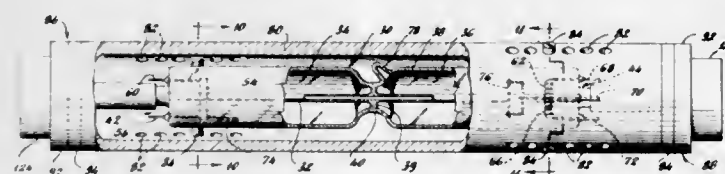
Jameson Dane Rigden, Westport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 29, 1963, Ser. No. 326,762

Int. Cl. H01s 3/02

U.S. Cl. 331-94.5

13 Claims



The disclosed optical maser comprises a capillary-size plasma tube communicating at each end with a pair of concentrically arranged gas reservoirs with electrodes therein for direct current operation. The reservoir end walls mount wedge-shaped Brewster angle windows relatively oriented at twice Brewster's angle. Adjustable mirror mounts beyond each window each include a mirror carried by a diaphragm; the mirrors, windows and plasma tube all being in physical alignment.

3,628,176

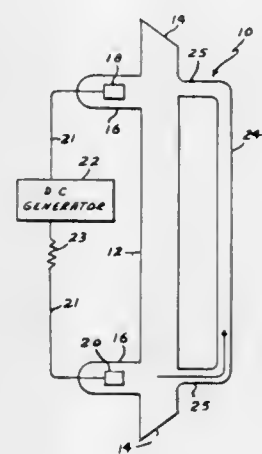
### DIRECT CURRENT GAS LASERS

Gustav K. Medicus, 7521 W. Hyland Ave., Dayton, Ohio  
Filed Aug. 28, 1964, Ser. No. 392,968

Int. Cl. H01s 3/02

U.S. Cl. 331-94.5

12 Claims



A direct current excited gas laser containing a mixture of two gases having a relatively large molecular mass ratio, and having backflow passage means for the return flow and neutralization of the heavier gas concentrating at the cathode end of the laser because of electrocataphoretic separation of the mixed gases within the laser tube during normal operation.

3,628,177

### OPTICAL MODULATION SYSTEM

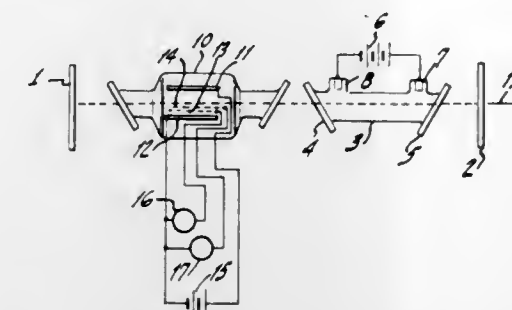
Jacob M. Hammer, Lawrence Township, Mercer County, N.J., assignor to RCA Corporation

Filed June 29, 1965, Ser. No. 468,078

Int. Cl. H01s 3/10

U.S. Cl. 331-94.5

8 Claims



Intensity, color and/or spatial modulation of a laser light beam is accomplished by providing within the resonant cavity of a gas laser, pump means for the gas which comprises at least in part an electron beam, in which the electron beam current, electron beam voltage and electron beam position are independently controllable by means of a first grid between a cathode and anode, a second grid between the first grid and the anode, and deflection plates, respectively.

3,628,178

### DIFFRACTIVE COUPLING LASER MIRROR

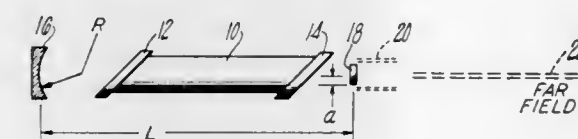
Edmond B. Treacy, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 14, 1968, Ser. No. 752,692

Int. Cl. H01s 3/08, 3/22

U.S. Cl. 331-94.5

1 Claim



A diffracting coupling mirror is designed to operate with an area less than the dimension of a dominant mode of a laser, thus providing an apodized beam of high resolution and eliminating the need for conventional output coupling; a cooled embodiment as well as circular, cylindrical and annular embodiments are disclosed.

3,628,179

### STACKED COMPOSITE PLATE LASER

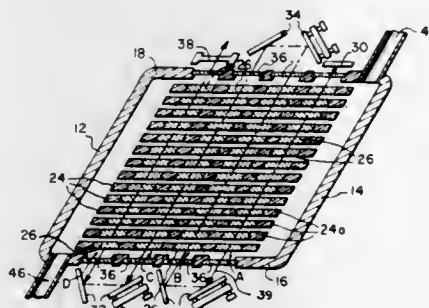
David W. Cuff, Chepachet, R.I., assignor to American Optical Corporation, Southbridge, Mass.

Filed Mar. 12, 1969, Ser. No. 806,511

Int. Cl. H01s 3/04, 3/05

U.S. Cl. 331-94.5

8 Claims



This specification discloses a laser system comprising a plurality of spaced, parallel plates carrying discs of laser glass

aligned to form a continuous cavity through a plurality of parallel rows. Means are provided to circulate coolant between the plates to cool the discs of laser glass.

3,628,180

### TWO-SLAB LASER SYSTEM WITH COMPENSATION FOR LENS POWER

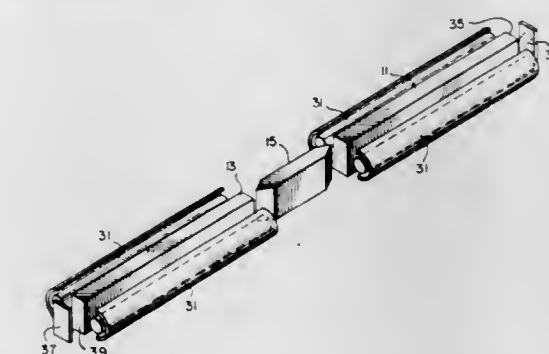
Joseph P. Segre, 45 Quabog Road, Acton, Mass.

Filed May 12, 1969, Ser. No. 823,919

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

9 Claims



A glass laser system comprises two slabs of laser glass in the laser cavity. The slab shape together with the thermal gradient induced by the flashlamps causes the slabs to act as cylindrical lenses. A prism is provided in the cavity between the slabs to laterally shift the laser rays to compensate for the cylindrical lens effect.

3,628,181

### GAS DISCHARGE LASERS

Arthur Maitland, St. Andrews, Fife, Scotland, assignor to National Research Development Corporation, London, England

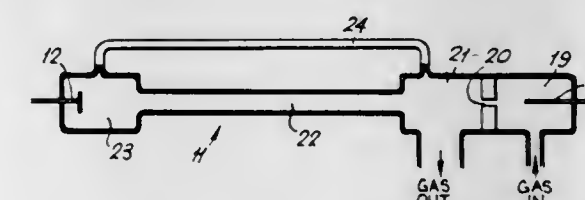
Filed Dec. 23, 1969, Ser. No. 887,492

Claims priority, application Great Britain, Jan. 1, 1969, 151/69

Int. Cl. H01s 3/09

U.S. Cl. 331-94.5

11 Claims



Laser apparatus comprises means for producing a laser discharge in a laser active gas, and reflecting means arranged to generate laser action in the gas pumped by the said discharge, the cathode of the said discharge being constituted in operation by a plasma jet. The plasma jet cathode may be provided by producing a subsidiary discharge, and effecting a flow of the laser active gas from the region of the subsidiary discharge towards the region of the laser discharge to form the said plasma jet.

3,628,182

### RING-TYPE PARAMETRIC OSCILLATOR

Arthur Ashkin, Rumson, and John E. Bjorkholm, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of application Ser. No. 736,690, June 13, 1968, now abandoned. This application Mar. 20, 1969, Ser. No. 808,768

Int. Cl. H03f 7/00

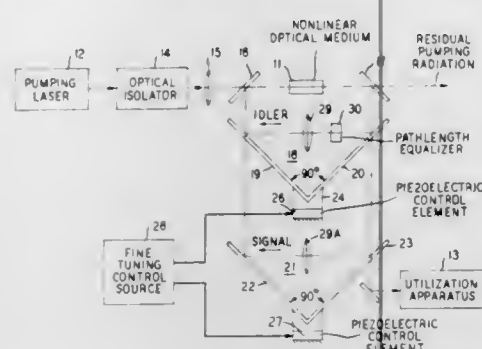
U.S. Cl. 331-96

11 Claims

In the parametric oscillators disclosed, first and second ring resonators are disposed to pass pumping radiation in one



direction only and are characterized by a common region in which the nonlinear optical medium is disposed. The first and



second ring resonators are separately tunable to resonate the signal and idler, respectively.

3,628,183

**LIMITER-STABILIZED OSCILLATOR**

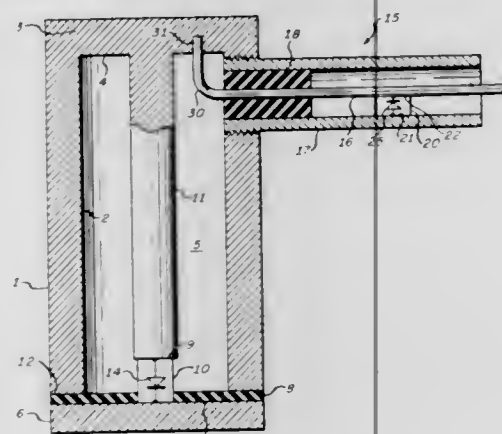
Harry F. Strenglein, and Frank M. Palka, both of Clearwater, Fla., assignors to Sperry Rand Corporation

Filed Apr. 7, 1970, Ser. No. 26,272

Int. Cl. H03b 3/02

U.S. Cl. 331-96

2 Claims



A high carrier-frequency semiconductor diode oscillator is frequency stabilized against variation in loading and amplitude modulation noise in its output is reduced by utilization of a limiter-diode of the PIN type in its output transmission line.

3,628,184

**SUPERCONDUCTING OSCILLATORS AND METHOD FOR MAKING THE SAME**

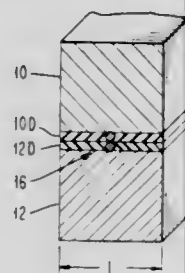
William A. Thompson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 15,788, Mar. 2, 1970, now abandoned. This application Mar. 23, 1970, Ser. No. 21,640

Int. Cl. H03b 15/00

U.S. Cl. 331-107 S

21 Claims



A superconducting oscillator for generating millimeter and infrared radiation and a method for fabricating these oscillators.

tors. A Josephson junction (weak link or tunneling junction) is located between electrodes which furnish DC current to the junction and also define a resonant cavity for electromagnetic radiation from the junction. Thus, an internal cavity is provided and increased power outputs over a wide frequency range are possible. The oscillator is produced by spark erosion between the electrodes at liquid helium temperatures, which forms a very small junction and cavity resonator.

3,628,185

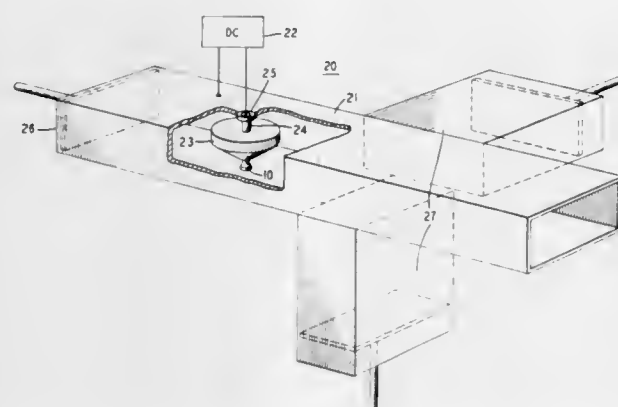
**SOLID-STATE HIGH-FREQUENCY SOURCE**

William Joshua Evans, Berkeley Heights; Ralph Lawrence Johnston, South Plainfield; Donald Lee Scharfetter, Morristown, and Thomas Edward Seidel, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 30, 1970, Ser. No. 23,850

U.S. Cl. 331-107 R

11 Claims



A P+PNN+ semiconductive diode is used as the active element in a solid-state microwave source in either an IMPATT, TRAPATT or combination mode of operation. Ion implantation is used in the fabrication of the diode to achieve close control of the doping profile required to realize the electric field distribution important for efficient operation.

3,628,186

**PARAMETRIC OSCILLATOR WITH NONRESONANT SIGNAL**

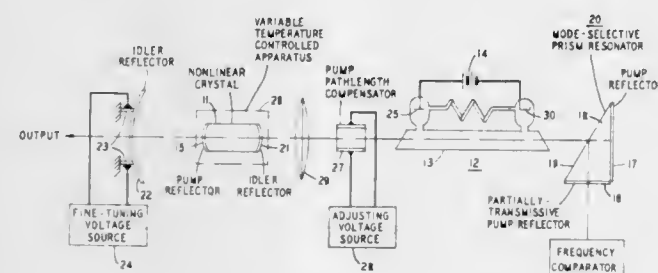
Arthur Ashkin, Rumson, and John E. Bjorkholm, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of application Ser. No. 728,667, May 13, 1968. This application Mar. 20, 1969, Ser. No. 808,767

Int. Cl. H03f 7/04

U.S. Cl. 331-107 R

7 Claims



Continuous-wave and pulsed optical parametric oscillators are disclosed in each of which the optical cavity is resonant for the idler and nonresonant for the signal. Two of the disclosed oscillators employ a nonlinear crystal placed within the pumping laser resonator; and at least one of the pump reflectors is highly transmitting for the signal radiation. One of the oscillators is designed so that oscillation may be achieved on a continuous-wave basis; the other is designed

for pulsed or continuous-wave mode-locked operation in which the output consists of a train of short pulses. The other disclosed oscillator employs a nonlinear crystal in a cavity resonant for idler radiation and external to the cavity of the pumping laser. Various arrangements to affect tuning of the oscillators are disclosed.

3,628,187

**NEGATIVE RESISTANCE AVALANCHE DIODES WITH SCHOTTKY BARRIER CONTACTS**

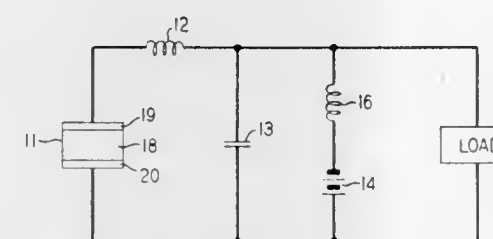
Bernard C. De Loach, Jr., Murray Hill, and Roger Edwards, Gillette, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 10, 1969, Ser. No. 883,898

Int. Cl. H03b 7/06

U.S. Cl. 331-107 R

4 Claims



A negative resistance avalanche diode comprises only a bulk semiconductor wafer contained between opposite Schottky barrier contacts.

3,628,188

**LC STABILIZED BLOCKING OSCILLATOR WITH INTERNAL TUNNEL DIODE TRIGGER CIRCUIT**

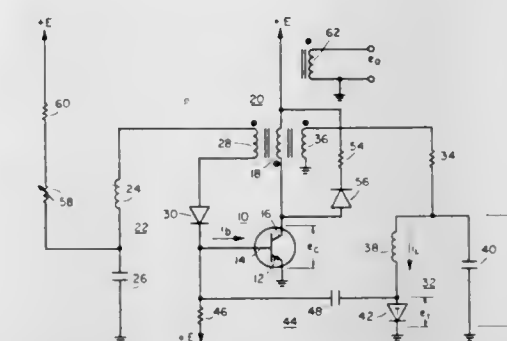
Martin Fischman, Wantagh, N.Y., assignor to GTE Laboratories Incorporated

Filed Jan. 2, 1970, Ser. No. 29

Int. Cl. H03k 3/30

U.S. Cl. 331-112

11 Claims



A transistorized pulse generator comprising a first resonant circuit for generating pulses having a precisely controlled width and a second resonant circuit, tunnel diode and differentiator network for precisely controlling the duration of the interpulse period. The first resonant circuit is connected in the base-emitter circuit of the transistor and the second resonant circuit tunnel diode and differentiator network coupled between the collector-emitter and base circuits of the transistor.

**ERRATUM**

For Class 240-259 see:  
Patent No. 3,626,956



# DESIGNS

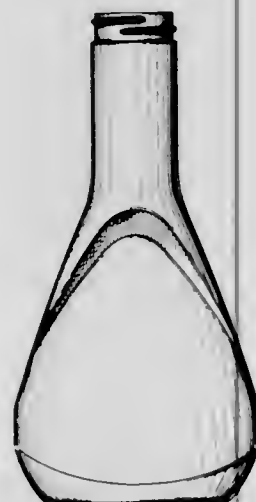
DECEMBER 14, 1971

222,712

## BOTTLE OR SIMILAR ARTICLE

Jim D. Barker, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.  
Filed Mar. 11, 1970, Ser. No. 21,856  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—148

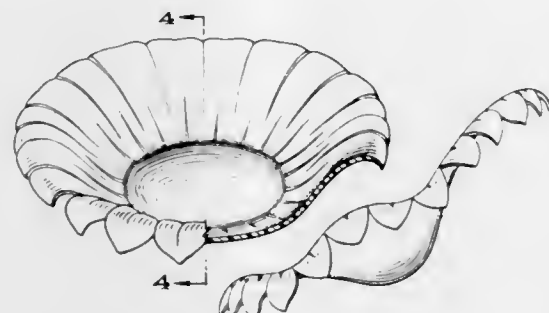


222,714

## CHAIR SHELL

Raymond W. Bates, 2121 18th St. NW., Washington, D.C. 20009  
Filed May 13, 1970, Ser. No. 22,960  
Term of patent 14 years  
Int. Cl. D6—02

U.S. Cl. D15—1

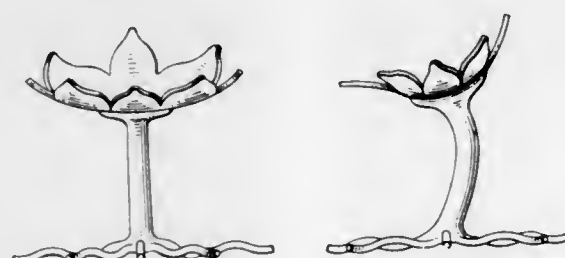


222,715

## CHAIR PEDESTAL OR SIMILAR ARTICLE

Raymond W. Bates, Washington, D.C.  
Filed May 13, 1970, Ser. No. 22,961  
Term of patent 14 years  
Int. Cl. D6—02

U.S. Cl. D15—1

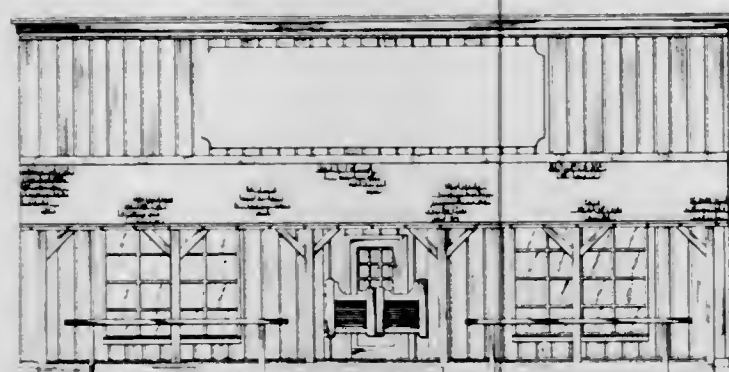


222,713

## WESTERN STORE BUILDING

Charles C. Hicks, Goodlettsville, Tenn., assignor to Lynn's Loretta Western Stores, Inc., Hermitage, Tenn.  
Filed Nov. 25, 1970, Ser. No. 26,162  
Term of patent 14 years  
Int. Cl. D25—03

U.S. Cl. D13—1



222,716

## AIR-CONDITIONING CABINET FRONT OR SIMILAR ARTICLE

Walter W. Hoyle, Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.  
Filed May 1, 1970, Ser. No. 22,748  
Term of patent 7 years  
Int. Cl. D23—04

U.S. Cl. D23—141



DECEMBER 14, 1971

U. S. PATENT OFFICE

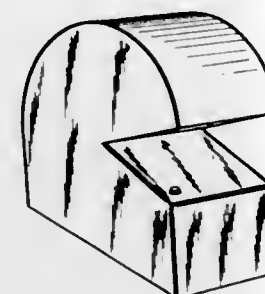
801

222,717

## CONSOLE FOR READING IDENTIFYING IMPRINTS ON DOCUMENTS

Robert B. Boyer, 39 Buckley Ave., West Warwick, R.I. 02893, and Samuel F. Marsocci, Jackpine Road, Coventry R. I. 02816  
Filed Apr. 8, 1970, Ser. No. 22,323  
Term of patent 14 years  
Int. Cl. D14—02

U.S. Cl. D26—5

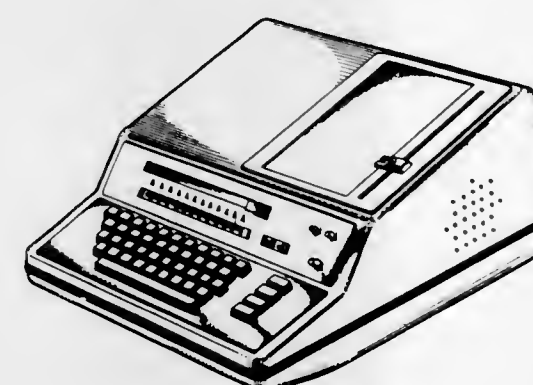


222,718

## DATA TERMINAL

Richard K. Singleton, Los Angeles, and Herbert D. Pace, Woodland Hills, Calif., assignors to Western Data Products, Inc., Los Angeles, Calif.  
Filed May 27, 1970, Ser. No. 23,172  
Term of patent 14 years  
Int. Cl. D14—02

U.S. Cl. D26—5

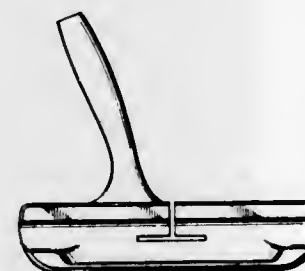


222,719

## GOLF PUTTER HEAD

Raymon W. Cook, 1026 Mount Eden, San Antonio, Tex. 78213  
Filed Feb. 3, 1970, Ser. No. 21,230  
Term of patent 14 years  
Int. Cl. D21—02

U.S. Cl. D34—5

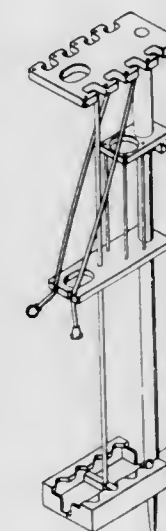


222,720

## GOLF CLUB CARRIER

Sidney D. Lapham and Willard Feldscher, Walnut Creek, Calif., assignors to Quintex Products Corporation, Walnut Creek, Calif.  
Filed July 23, 1970, Ser. No. 24,095  
Term of patent 14 years  
Int. Cl. D21—02

U.S. Cl. D34—5

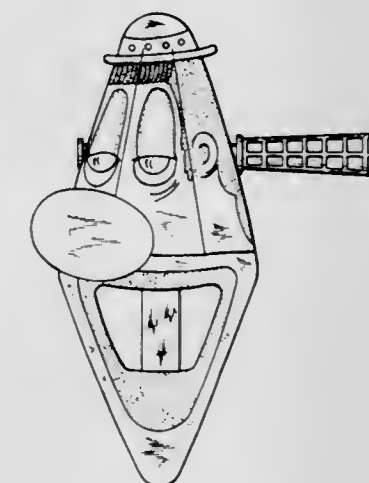


222,721

## BUBBLE PRODUCING TOY

Joseph Green, Hewlett, N.Y., assignor to GM Toy Company, New York, N.Y.  
Filed Aug. 12, 1970, Ser. No. 24,434  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—15





**222,722**  
**SPIRIT LEVEL**

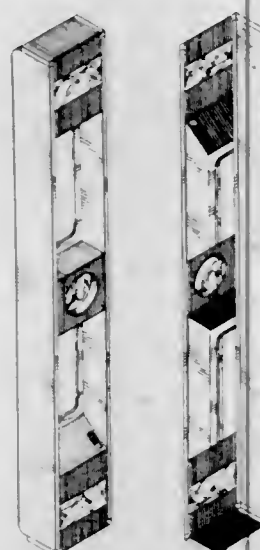
Seymour A. Ostrager, 1188 Grand Concourse,  
Bronx, N.Y. 10456

Filed Nov. 6, 1970, Ser. No. 25,851

Term of patent 14 years

Int. Cl. D10—05

U.S. Cl. D52—6



**222,723**  
**COMBINED SURFACE AND LINE LEVEL**

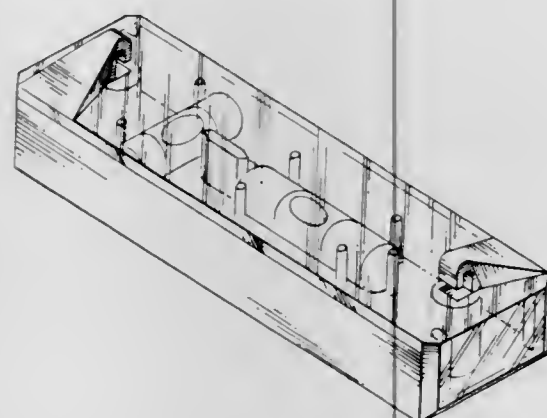
Seymour A. Ostrager, 1188 Grand Concourse,  
Bronx, N.Y. 10456

Filed Nov. 6, 1970, Ser. No. 25,855

Term of patent 14 years

Int. Cl. D10—05

U.S. Cl. D52—6



**222,724**  
**GRILLE**

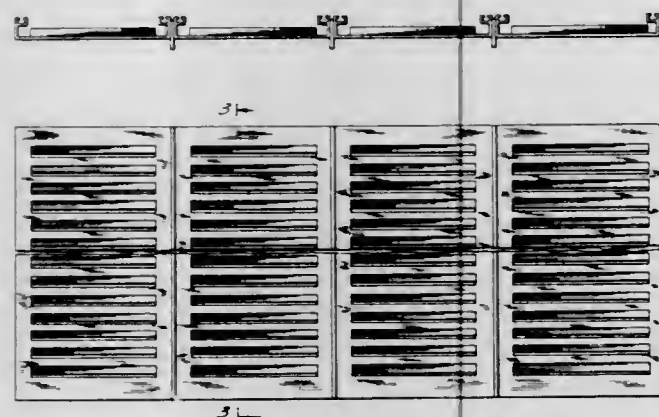
Patrick Zampetti and Robert Deuchler, Cranford, N.J.,  
assignors to Construction Specialties, Inc., Cranford,  
N.J.

Filed Mar. 5, 1970, Ser. No. 21,751

Term of patent 14 years

Int. Cl. D25—03; D23—04

U.S. Cl. D54—2



**222,725**  
**PHONOGRAPH CONSOLE**

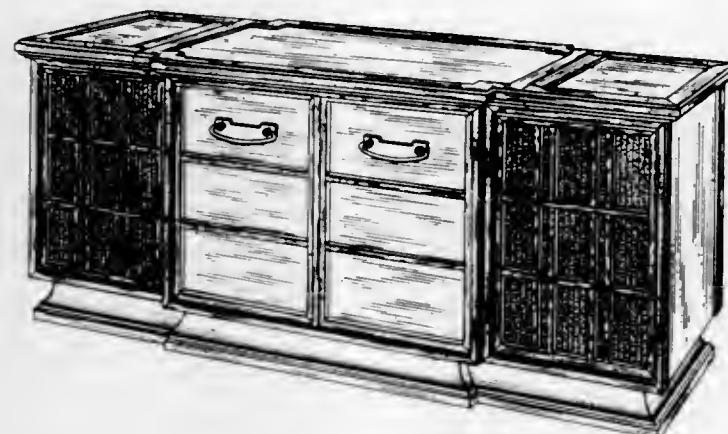
William B. Donnelly, Syracuse, N.Y., assignor to  
General Electric Company

Filed Nov. 10, 1970, Ser. No. 25,909

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D56—4



**222,726**  
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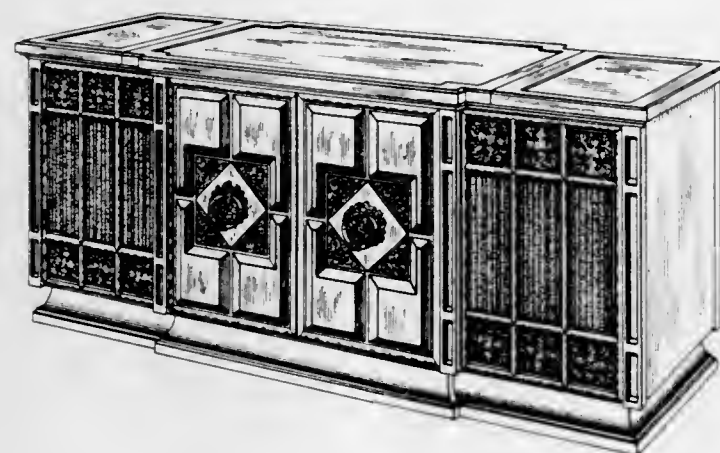
William B. Donnelly, Syracuse, N.Y., assignor to  
General Electric Company

Filed Nov. 10, 1970, Ser. No. 25,910

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D56—4



**222,727**  
**PHONOGRAPH CONSOLE**

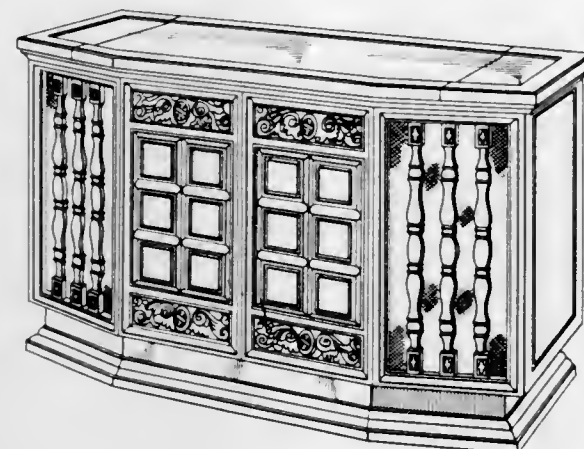
William B. Donnelly, Syracuse, N.Y., assignor to  
General Electric Company

Filed Nov. 12, 1970, Ser. No. 25,941

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D56—4



**222,728**  
**PHONOGRAPH CONSOLE**

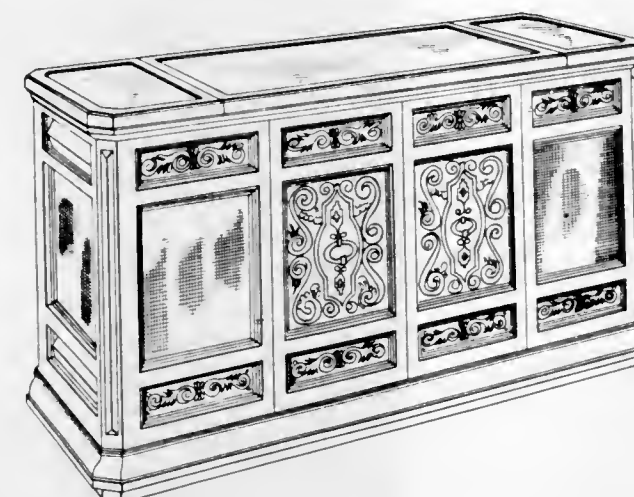
William B. Donnelly, Syracuse, N.Y., assignor to  
General Electric Company

Filed Nov. 12, 1970, Ser. No. 25,942

Term of patent 14 years

Int. Cl. D14—03

U.S. Cl. D56—4



**222,731**  
**CAGE FOR POPCORN POPPER**

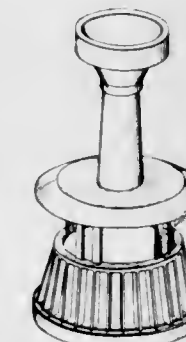
Robert Gottlieb, New York, N.Y., assignor to Argo-  
Industries Corporation, Jackson Heights, N.Y.

Filed Aug. 14, 1970, Ser. No. 24,493

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D44—1



**222,732**  
**CUP OR THE LIKE**

Robin Jared Stanley Howard, 190 Queen's Gate,  
London, SW. 7, England

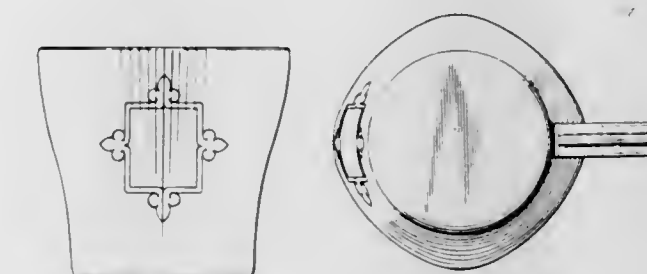
Filed June 22, 1970, Ser. No. 23,606

Claims priority, application Great Britain May 20, 1970

Term of patent 14 years

Int. Cl. D7—01

U.S. Cl. D44—9



**222,729**  
**PEN HOLDER**

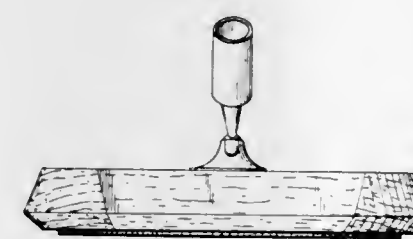
Richard K. Enseki, Glen Rock, and Michael P. Arnone,  
Fairview, N.J., assignors to Kreisher Manufacturing  
Corporation, North Bergen, N.J.

Filed Sept. 4, 1970, Ser. No. 24,852

Term of patent 14 years

Int. Cl. D19—02

U.S. Cl. D74—5



**222,730**  
**COMBINED FRYPAN AND LID THEREFOR**

Graham J. Aries, Stourbridge, England, assignor to Tower  
Housewares Limited, Wombourne, Wolverhampton,  
England

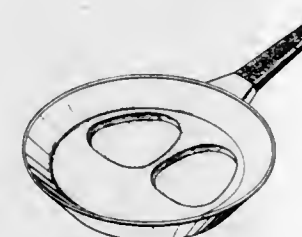
Filed June 3, 1970, Ser. No. 23,279

Claims priority, application Great Britain Dec. 3, 1969

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D44—1



**222,733**  
**DRINKING VESSEL**

Robin Jared Stanley Howard, 190 Queen's Gate,  
London, SW. 7, England

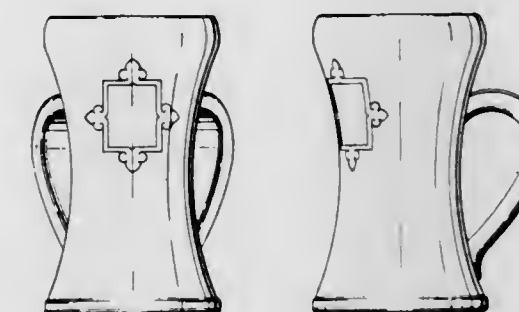
Filed June 23, 1970, Ser. No. 23,624

Claims priority, application Great Britain, May 19, 1970

Term of patent 14 years

Int. Cl. D7—01

U.S. Cl. D44—9

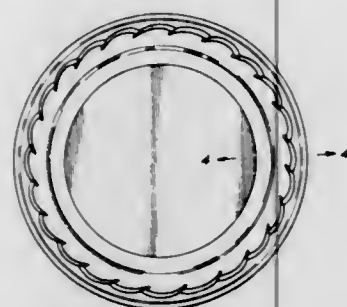




**222,734**  
**DISH**

Karl Wiedemann, Cherry Hill, N.J., assignor to  
Melitta, Inc., Cherry Hill, N.J.  
Filed Mar. 27, 1970, Ser. No. 22,078  
Term of patent 14 years  
Int. Cl. D7—01

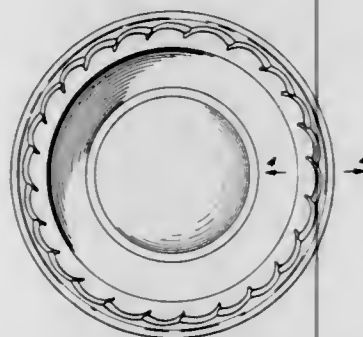
U.S. Cl. D44—15



**222,735**  
**BOWL**

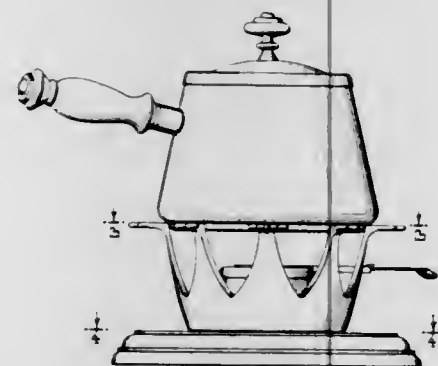
Karl Wiedemann, 519 Fireside Lane,  
Cherry Hill, N.J. 08034  
Filed May 25, 1970, Ser. No. 23,180  
Term of patent 14 years  
Int. Cl. D7—01

U.S. Cl. D44—15



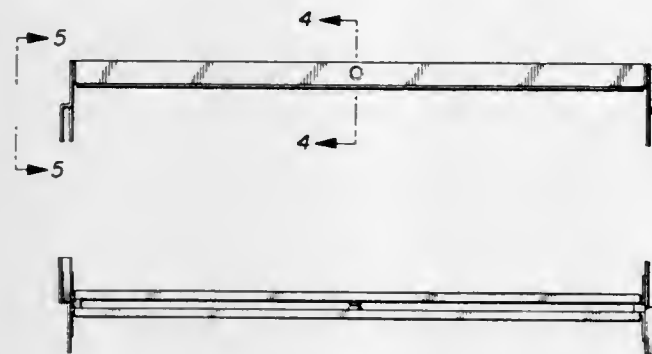
**222,736**  
**CHAFING DISH FOR FONDUE OR THE LIKE**  
Joseph B. Stier, Brooklyn, N.Y., assignor to  
Styson Inc., New York, N.Y.  
Filed May 14, 1970, Ser. No. 22,986  
Term of patent 14 years  
Int. Cl. D7—02

U.S. Cl. D44—15



**222,737**  
**FIXTURE HANGER FOR T-BAR CEILINGS**  
Gary C. Scully, 351 Scenic Drive,  
La Honda, Calif. 94020  
Filed July 27, 1970, Ser. No. 24,133  
Term of patent 14 years  
Int. Cl. D26—99

U.S. Cl. D48—4



**222,738**  
**WASTE CONTAINER**  
Clarke D. Weems, 2021 NW. 58th,  
Seattle, Wash. 98107  
Filed Aug. 26, 1970, Ser. No. 24,708  
Term of patent 14 years  
Int. Cl. D7—99

U.S. Cl. D49—35



## LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF DECEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A-T-O Inc.: See—  
Garrison, John B., 3,626,974.
- Abbate, Franklin W.; and Farrissey, William J., Jr., to Upjohn Company, The. Process of preparing carbamates. 3,627,813, Cl. 260-471.
- Abbott, Colin Edward; Barnes, Buy Anthony; and McEntee, John Francis Anthony, to Mining & Chemical Products Limited. Thermoelectric device. 3,626,583, Cl. 29-573.
- Abbott, Earl: See—  
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- Abbotts, William Edward, to Solartron Electronic Group Limited, The. Fluid density measuring apparatus. 3,626,749, Cl. 73-32.
- ABC Packaging Machine Corporation: See—  
Reichert, Donald G.; Petrik, Earl A.; Pasteris, John A., and Bludner, Arthur W., 3,626,661.
- Abell, Richard S., to Carrier Corporation. Fluid compression system control. 3,626,979, Cl. 137-608.
- Abernathy, William J.; Reed, William J.; Sealy, John R.; and Snoddy, Lowell G. Parallel lapping device. 3,626,642, Cl. 51-57.
- Abex Corporation: See—  
Kouns, Herbert H., 3,627,451.
- Abraham, Dennis G., to International Business Machines Corporation. Two-speed bi-directional, closed loop stepper motor control circuit. 3,628,119, Cl. 318-685.
- Accentile, Inc.: See—  
Timke, Robert F., 3,627,861.
- ACF Industries, Incorporated: See—  
Rollins, Dallas W.; and Dugge, Richard H., 3,627,384.
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- Ackermann, Hans; Seiler, Herbert; and Meindl, Hubert, to Geigy, J. R., A. G. Mono- and disazo dyestuffs containing triazinylureylene groups. 3,627,749, Cl. 260-153.
- Action Concepts Technology, Inc.: See—  
Grant, Lloyd R., 3,626,874.
- Adam, Wolfgang Ernst; Hardy, Alain; Roald, Arvid Sverre; and Zaki, Wahib Nassif, to Procter & Gamble Company, The. Detergent composition. 3,627,683, Cl. 252-89.
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- Addison, Eugene B.; and Pitcher, Earl R. Portable cooler and support for a pressurized keg. 3,627,399, Cl. 312-351.
- Addressograph-Multigraph Corporation: See—  
Gawron, Stanley A., 3,626,898.
- Koch, Robert M., 3,626,833.
- Sallach, Max E., 3,627,990.
- Sallach, Max E.; Hansen, Russell A.; Heisner, Donald N.; Thornton, Bryce G.; and Weber, Charles F., 3,627,994.
- Shelffo, Loren E., 3,627,523.
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- Adler, Stanford L., Jr.; and Peoples, John C. A., to Technicon Instruments Corporation. Decantation fitting. 3,627,495, Cl. 23-253.
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Janzen, Heinz Dieter, 3,626,847.
- Advanced Digital Research Corporation: See—  
Union, Russell B.; and Nagy, Donald J., 3,628,141.
- Aer Corporation: See—  
Villalobos, Joseph A., 3,627,040.
- Affupper, Hans. Method and apparatus for folding and packaging bands of material. 3,627,306, Cl. 270-79.
- A.G. fur Industrielle Elektronik Agie Losone B. Locarno: See—  
Ullmann, Werner; Donati, Franco; and Tortelli, Gianfranco, 3,628,043.
- Agasarian, Samvel Artushovich: See—  
Kuzin, Mikhail Ilich; Agasarian, Samvel Artushovich; Zhukovsky, Vladimir Davydovich; Volkov, Nikolai Alexeevich; Sachkov, Vladimir Iosifovich; Rukhovets, Isaak Zakharovich; Liventsev, Nikolai Mitrofanovich; and Panfilov, Boris Ivanovich, 3,626,926.
- Agence Nationale de Valorisation de la Recherche: See—  
Posternak, Theodore; Cehovic, Georges (Dorde); Marcus, Ilan; and Vengadabady, Sathyavathy, 3,627,753.
- Agfa-Gevaert Aktiengesellschaft: See—  
Nagel, Erich, 3,627,411.
- Putscher, Johann, 3,626,826.
- Air Gest International Corporation: See—  
Goodman, Gerald J., 3,627,135.
- Air Preheater Company, Inc., The: See—  
Stockman, Richard F.; and Anderson, William M., 3,626,873.
- Air Products and Chemicals, Inc.: See—  
Ebeling, Robert W., Jr., 3,626,671.
- Hoffman, Joseph K.; and Russell, James P., 3,627,812.
- Air Reduction Company, Incorporated: See—  
Normando, Neil J.; and Pierce, Willis C., Jr., 3,627,974.
- Airway Products Corporation: See—  
Schild, Edwin F., 3,626,870.
- Aishima, Itsuho; Sakurai, Hisaya; Kitaoka, Atsushi; and Katayama, Yoshihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Impact resistant polymer compositions. 3,627,852, Cl. 260-876.
- Akanuma, Kaneo: See—  
Yamamoto, Takaaki; Akanuma, Kaneo; and Tanaka, Osamu, 3,627,594.
- Akihiro, Akashi: See—  
Nishikawa, Hideo; Akihiro, Akashi; and Koichi, Iwaki, 3,627,014.
- Aktiebolaget Bofors: See—  
Jacobson, Gunnar; and Olsson, Olof Bertil, 3,627,233.
- Aktiengesellschaft Brown, Boveri & Cie: See—  
Buhler, Karl, 3,628,128.
- Albertini, Prosper; and De Ruymbecke, Gerard. Flying toy. 3,626,555, Cl. 46-74.
- Alberton Limited: See—  
Held, Peter Erich Julius, 3,626,989.
- Alden, Lloyd George, deceased (by Alden, Verna R.; executor). Combination flyback curtain and snubber for rip saw machines and the like. 3,627,000, Cl. 143-159.
- Alden, Verna R.: See—  
Alden, Lloyd George, 3,627,000.
- Aldenhoff, Bernard J., to Smith, A. O., Corporation. Arc power source. 3,627,977, Cl. 219-131.
- Alexander, Ronald Hugh, to National Research Development Corporation. Chopping machines. 3,627,009, Cl. 146-68.
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Fitzgerald, John R.; and Allen, Lloyd E., 3,627,126.
- Allen-Bradley Company: See—  
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- Allenspach, Walter: See—  
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- Allied Chemical Corporation: See—  
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- Young, David E.; Gould, Douglas E.; Anderson, Lowell R.; and Fox, William B., 3,627,799.
- Allied Research Products, Inc.: See—  
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- Allmanna Svenska Elektriska Aktiebolaget: See—  
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- Olsson, Karl Erik; Hellgren, Keiji; and Lindblom, George, 3,628,035.
- Alpeda Industries, Inc.: See—  
Prodzenski, Donald T., 3,627,105.
- Alquist, Henry E., to Phillips Petroleum Company. Flame colorants. 3,627,489, Cl. 44-1.
- Altherr, Russell G., to Amsted Industries, Incorporated. Coupler with means to support a mating pulled-out coupler. 3,627,145, Cl. 213-153.
- Alza Corporation: See—  
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- Amerel Company, Inc.: See—  
Brummett, Paul L.; and Isley, Sigmund G., 3,627,153.
- American Cyanamid Company: See—  
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- American Drill Bushing Company: See—  
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- American Lava Corporation: See—  
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- American Motors Corporation: See—  
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- American Olean Tile Company: See—  
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- American Optical Corporation: See—  
Berkovits, Barouh V., 3,628,081.
- Cuff, David W., 3,628,179.
- Harris, George J., 3,628,142.
- American Science and Engineering Inc.: See—  
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American Standard Inc.: *See—*  
Martin, Allan E., 3,627,203.  
AMF Incorporated: *See—*  
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Ammco Tools, Inc.: *See—*  
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Amori, Joseph A. Shaker bed system. 3,627,277, Cl. 259-59.  
AMP Incorporated: *See—*  
Bobbs, Clifford Frank, 3,627,942.  
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Costello, Richard C.; Jean, Albert J.; and Kucera, William J., 3,627,018.  
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Andax Proprietary Limited: *See—*  
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Andersen, Robert A.: *See—*  
Andersen, Robert A., 3,628,134.  
Andersen, Robert A., to Sound Technology, a partnership composed of Andersen, Robert A., and Maguire, Lawrence A. Frequency modulation alignment system. 3,628,134, Cl. 324-57.  
Anderson, Carl L., to Tappan Company, The. Electric smooth top range. 3,627,986, Cl. 219-460.  
Anderson, Edwin A. Directional drilling apparatus with retrievable limiting device. 3,627,356, Cl. 285-118.  
Anderson, Lowell R.: *See—*  
Young, David E.; Gould, Douglas E.; Anderson, Lowell R.; and Fox, William B., 3,627,799.  
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Andis, Ernest R. Massaging device. 3,626,934, Cl. 128-55.  
Andreetta, Alberto: *See—*  
Pregaglia, Gianfranco; Andreetta, Alberto; and Benzoni, Luigi, 3,627,843.  
Andrews Industries Incorporated: *See—*  
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Andriussi, Francois; and Rouques, Pierre, to S.E.R.M.A.G. Societe d'Etudes et de Recherches Magnetiques. Ventilating device for cooling a heat engine. 3,627,445, Cl. 416-170.  
Anner, George; and Wieland, Peter, to Ciba Corporation. 3-Oxo-steroid-oximes. 3,627,789, Cl. 260-397.45.  
Annibale, Joseph R., to United States of America, Navy. Landing aid alignment mast. 3,626,884, Cl. 114-43.5.  
Añón, George, to Andax Proprietary Limited. Partition assembling machine. 3,626,818, Cl. 93-37.  
Ansuini, Frank J.; Schramm, Jacob; and Badia, Frank A., to International Nickel Company, Inc., The. Two phase nickel-zinc alloy. 3,627,593, Cl. 148-32.  
Anzen Products, Inc.: *See—*  
Lorenzen, Walter C., 3,626,972.  
Aoki, Hisashi: *See—*  
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Appalachian Electronic Instruments, Inc.: *See—*  
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Applied Information Industries: *See—*  
Ray, Robert H.; and Holt, John M., 3,627,069.  
Arahamian, Robert; and Bhuta, Pravin G., to TRW Inc. Acoustoholographic method and apparatus for internally imaging and interferometrically analyzing objects. 3,626,753, Cl. 73-88.  
Aqua-Mec Inc.: *See—*  
Jones, Phillip T.; and Smith, Dresden G., 3,626,970.  
Aquino, Herman A.; and Schuller, James J., to Pullman Incorporated. Motor actuated railway hopper car doors. 3,626,865, Cl. 105-240.  
Arai, Tadashi; and Kuroda, Shyuko. Antibiotic copiomycin. 3,627,880, Cl. 424-120.  
Araya, Takeshi: *See—*  
Endo, Tadashi; Sakagami, Mitsuhiro; Nomura, Hiroshi; Suzuki, Masamichi; and Araya, Takeshi, 3,627,978.  
Arbon, Dennis C.; and Guillot, Jack. Device to ensure lubrication, regulation and reliability of Thermostatic elements operation of gas turbine. 3,626,693, Cl. 60-39.28.  
Archer, Sydney: *See—*  
Schulenberg, John W.; and Archer, Sydney, 3,627,832.  
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Argabright, Perry A.; and Phillips, Brian L., to Marathon Oil Company. Isocyanurate and halogen-containing polyisocyanates. 3,627,689, Cl. 252-182.  
Argus Chemical Corporation: *See—*  
Cohen, Seymour, 3,627,716.  
Arima, Tetsuo; and Harada, Yoichi, to General Foods Corporation. Method of producing proteinaceous fibers. 3,627,536, Cl. 99-17.  
Arkla Industries, Inc.: *See—*  
Lyon, Chester C., 3,626,708.  
Armey, Rutter W. Shot peening machine. 3,626,539, Cl. 15-95.  
Armstrong, Thomas S.: *See—*  
Nobell, Albert; and Armstrong, Thomas S., 3,627,627.  
Arndt, William C., to Weil-McLain Company. Sealing arrangement for sectional boiler construction. 3,626,908, Cl. 122-231.  
Arnmann, Gerhard, to Fordertechnik Hamburg Harry Lassig. Apparatus for stacking and destacking barrels. 3,627,149, Cl. 214-6.  
Aronstein, Jesse; and Gunther, Richard J., to International Business Machines Corporation. Electrical contact cleaning device. 3,628,144, Cl. 324-158.  
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*  
Aishima, Itsuho; Sakurai, Hisaya; Kitaoka, Atsushi; and Katayama, Yoshihiko, 3,627,852.  
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Ashland Oil, Inc.: *See—*  
Grimm, Robert A.; and Slagel, Robert C., 3,627,794.  
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Astor-Werke Otto Berning & Co.: *See—*  
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Atlantic Richfield Company: *See—*  
Dunlap, Henry F., 3,627,044.  
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- Ditthardt, Alfred R., 3,628,150.
- Zergenyi, Janos; and Habicht, Ernst, to Geigy Chemical Corporation. Benzofuran-2-carboxylic acids. 3,627,785, Cl. 260-346.2.
- Zettler, John F., to Data Printer Corporation. Hammer driving circuits for high speed printers. 3,628,100, Cl. 317-137.
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- Zickar, Frank R.; and Voytik, Paul, to Westinghouse Electric Corporation. Methods of constructing electrical transformers. 3,626,587, Cl. 29-605.
- Ziegenbein, Willi: See—  
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- Ziermann, Hermann, to United Aircraft Corporation. Fluid mixer utilizing fluidic timer actuating fluidic amplifier valves. 3,626,963, Cl. 137-81.5.
- Zimmerman, Robert Paul; and Kessler, Kenneth Quentin, to Deere & Company. Tree shearing and bunching apparatus. 3,627,351, Cl. 280-179.
- Zinner, Ira D.; and Sherman, Herbert. Separable denture tray. 3,626,594, Cl. 32-17.
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- Zollner, Hermann; Nunn, Robert H.; and Chaffin, Lane Curtis, to Winkhofer, Joh., & Sohne United States of America, Navy. Chain tensioning device Method and means for controlling the thrust in a solid propellant rocket motor. 3,626,697, Cl. 60-204.
- Zook, Elmer S.; and Ronn, Paul W., to Reed Rolled Thread Die Co. Truncated through feed thread rolling die for rolling flat rooted threads. 3,626,733, Cl. 72-104.
- Zosel, Albrecht: See—  
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- Zuccarello, Mario. Electric iron with steam emission under pressure, transformable into a room humidifier. 3,626,615, Cl. 38-77.8.
- Zuech, Ernest A., to Phillips Petroleum Company. Dimerization of olefins with chromium halide complex catalyst systems. 3,627,700, Cl. 252-429.
- Zurakowski, Jan. Motor mount. 3,626,893, Cl. 115-17.
- Zust, Armin: See—  
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- Zytus, Eugene Henry: See—  
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## LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM  
DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 14TH DAY  
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

- Bidlack, Harvey D., and W. T. Irvine. Method for the selective control of annual grass. T893,002, 12-14-71, Cl. 71-92.
- Continental Oil Co.: See—  
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- Elitex, Zavody textilniho strojrenstvi: See—  
Prasil, Vladimir. T893,008.
- Firestone Tire & Rubber Co., The: See—  
Mayes, William G. T893,004.
- Moosavian, Hossein. T893,005.
- Fisler, John D. Ultrasonic cleaning process and apparatus. T893,001, 12-14-71, Cl. 134-1.
- Gatzmeyer, Almond J., and G. B. Grim. Bearing insert retaining means. T893,014, 12-14-71, Cl. 308-237.
- General Electric Co.: See—  
Vrabel, Edward A. T893,012.
- Grim, George B.: See—  
Gatzmeyer, Almond J., and Grim. T893,014.
- Hanggi, George J., and T. T. Martin, to Continental Oil Co. Automatic track changing apparatus. T893,011, 12-14-71, Cl. 250-219.
- Hauni-Werke Korber & Co. KG.: See—  
Wenninger, Fritz. T893,006.
- Imperial Chemical Industries Ltd.: See—  
Oxley, David F. T893,010.
- Irvine, William T.: See—  
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- Kibler, Charles J., and B. J. Sublett. Process for producing spinnable, basic dyeable poly(ethyleneterephthalate) copolyesters. T893,013, 12-14-71, Cl. 260-75.
- Martin, Theodore T.: See—  
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- Mayes, William G., to The Firestone Tire & Rubber Co. Block copolymers of butadiene and styrene. T893,004, 12-14-71, Cl. 260-880.
- McCormick, Robert M. Process for packaging fibrous bales. T893,007, 12-14-71, Cl. 53-27.
- Moosavian, Hossein, to The Firestone Tire & Rubber Co. Process for removing carbon disulfide from an organic solvent by emulsification employing an alcoholic alkali hydroxide. T893,005, 12-14-71, Cl. 260-676.
- Nix, Fred D. Self-suspending ammonium polyphosphate suspension fertilizer. T893,009, 12-14-71, Cl. 71-34.
- Oxley, David F., to Imperial Chemical Industries Ltd. Production of laminates. T893,010, 12-14-71, Cl. 264-45.
- Prasil, Vladimir, to Elitex, Zavody textilniho strojrenstvi. Device for controlling the operation of a winding unit in automatic winding machines. T893,008, 12-14-71, Cl. 242-35.6.
- Sublett, Bobby J.: See—  
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- Tuite, Robert J. Fluorescent multicolor additive system. T893,003, 12-14-71, Cl. 96-82.
- Vrabel, Edward A., to General Electric Co. Liquid-filled fuse cutout with explosion resistant metal cover. T893,012, 12-14-71, Cl. 337-277.
- Wenninger, Fritz, to Hauni-Werke Korber & Co. KG. Blade for cut-off devices in tobacco processing machines and method of making the same. T893,006, 12-14-71, Cl. 83-663.

## LIST OF REISSUE PATENTEEES

TO WHOM  
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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aerts, Louis J., H. F. J. G. Batriot, and P. L. Van Asbroeck, to Societe Belge pour l'Industrie Nucleaire, S.A. Centre d'Etude de l'Energie Nucleaire. Fuel element. Re. 27,242, 12-14-71, Cl. 29-400.
- Antonov, Elmar A.: See—  
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- Batriot, Hubert F. J. G.: See—  
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- Bergeron, Durcan C.: See—  
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- Buerkel, David H., to The Connecticut Development Credit Corporation. Polarity reversible current regulator apparatus. Re. 27,245, 12-14-71, Cl. 307-24.
- Chrysler Corp.: See—  
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- Connecticut Development Credit Corporation, The: See—  
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- Gronner, Alfred D.: See—  
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- Institute Gidrodinamiki Sibirskogo Otdelenia: See—  
Voitsekhovskiy, Bogdan V., Antonov, Nickolaev, Shoikhet, Dudin, Shevchenko, and Olenkov. Re. 27,244.
- Nickolaev, Valentin P.: See—  
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- Nuss, Christopher: See—  
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- Ropiequet, Richard L.: See—  
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- Sare, James R., R. L. Ropiequet, and D. C. Bergeron, by Alta Industries, Inc. Method of manufacturing cellular packing materials. Re. 27,243, 12-14-71, Cl. 161-42.
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- Barker, Jim D., to Ethyl Development Corp. Bottle or similar article. 222,712, 12-14-71, Cl. D9-148.
- Bates, Raymond W. Chair shell. 222,714, 12-14-71, Cl. D15-1.
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- Boyer, Robert B., and S. F. Marsocci. Console for reading identifying imprints on documents. 222,717, 12-14-71, Cl. D26-5.
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3.626.582	3.627.110	3.627.660	3.628.065	3.626.685	3.626.966
3.626.590	3.627.118	3.627.672	9 : 3.626.544	3.626.718	3.627.000
3.626.591	3.627.130	3.627.692	3.626.568	3.626.750	3.627.001
3.626.593	3.627.134	3.627.739	3.626.665	3.626.805	3.627.018
3.626.600	3.627.161	3.627.771	3.626.791	3.626.942	3.627.050
3.626.608	3.627.176	3.627.897	3.626.796	3.626.961	3.627.054
3.626.609	3.627.181	3.627.903	3.626.799	3.626.999	3.627.055
3.626.617	3.627.182	3.627.912	3.626.948	3.627.096	3.627.057
3.626.625	3.627.191	3.627.926	3.626.967	3.627.154	3.627.058
3.626.626	3.627.192	3.627.932	3.627.192	3.627.205	3.627.072
3.626.630	3.627.196	3.627.933	3.627.015	3.627.338	3.627.102
3.626.634	3.627.211	3.627.934	3.627.116	3.627.340	3.627.105
3.626.635	3.627.238	3.627.935	3.627.162	3.627.464	3.627.117
3.626.638	3.627.243	3.627.949	3.627.231	3.627.737	3.627.121
3.626.647	3.627.277	3.627.961	3.627.321	3.627.861	3.627.123
3.626.651	3.627.287	3.627.963	3.627.367	3.628.140	3.627.128
3.626.664	3.627.302	3.627.965	3.627.575	3.628.151	3.627.133
3.626.670	3.627.315	3.627.970	3.627.615	3.628.183	3.627.144
3.626.697	3.627.316	3.627.972	3.627.642	3.626.797	13 : 3.626.797
3.626.747	3.627.326	3.627.991	3.627.813	3.626.817	3.627.167
3.626.753	3.627.329	3.627.995	3.627.828	3.626.871	3.627.169

## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

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	17	: 3.627.186	22	: 3.627.095	26	: 3.626.954	34	: 3.626.946	36	: 3.626.802	37	: 3.627.370
		3.627.219		3.627.476		3.626.956		3.626.958		3.626.808		3.627.538
		3.627.248		3.627.555		3.627.036		3.626.988		3.626.809		3.627.605
		3.627.249		3.627.637		3.627.089		3.626.992		3.626.846		3.627.676
		3.627.289		3.627.746		3.627.100		3.627.040		3.626.873		3.627.687
		3.627.290		24	: 3.626.641	3.627.189		3.627.069		3.626.874		3.627.867
		3.627.300		3.626.644		3.627.279		3.627.082		3.626.886		3.627.994
		3.627.318		3.626.653		3.627.288		3.627.088		3.626.894		3.628.086
		3.627.325		3.626.721		3.627.347		3.627.141		3.626.900		3.628.091
		3.627.331		3.626.757		3.627.348		3.627.160		3.626.921		3.628.096
		3.627.351		3.626.765		3.627.360		3.627.164		3.626.938		3.628.161
		3.627.354		3.626.882		3.627.373		3.627.171		3.626.971	38	: 3.627.183
		3.627.361		3.627.075		3.627.377		3.627.179		3.626.974	39	: 3.626.516
		3.627.415		3.627.150		3.627.386		3.627.251		3.626.979		3.626.529
		3.627.416		3.627.188		3.627.391		3.627.261		3.627.023		3.626.561
		3.627.425		3.627.242		3.627.400		3.627.272		3.627.034		3.626.572
		3.627.450		3.627.353		3.627.401		3.627.275		3.627.086		3.626.597
		3.627.465		3.627.424		3.627.437		3.627.309		3.627.093		3.626.616
		3.627.469		3.627.433		3.627.500		3.627.310		3.627.103		3.626.712
		3.627.470		3.627.529		3.627.502		3.627.339		3.627.108		3.626.762
		3.627.523		3.627.633		3.627.515		3.627.362		3.627.148		3.626.773
		3.627.542		3.628.113		3.627.518		3.627.405		3.627.177		3.626.810
		3.627.543	25	: RE.27.246		3.627.565		3.627.409		3.627.203		3.626.824
		3.627.560		3.626.533		3.627.603		3.627.423		3.627.204		3.626.868
		3.627.601		3.626.563		3.627.608		3.627.452		3.627.218		3.626.925
		3.627.611		3.626.604		3.627.714		3.627.498		3.627.220		3.627.006
		3.627.667		3.626.611		3.627.779		3.627.505		3.627.227		3.627.013
		3.627.674		3.626.620		3.627.801		3.627.526		3.627.229		3.627.022
		3.627.681		3.626.631		3.627.802		3.627.528		3.627.230		3.627.024
		3.627.755		3.626.733		3.627.803		3.627.530		3.627.241		3.627.099
		3.627.756		3.626.741		3.627.806		3.627.540		3.627.246		3.627.122
		3.627.796		3.626.752		3.627.809		3.627.556		3.627.255		3.627.159
		3.627.856		3.626.760		3.627.810		3.627.559		3.627.270		3.627.165
		3.627.878		3.626.785		3.627.819		3.627.568		3.627.278		3.627.168
		3.627.895		3.626.800		3.627.836		3.627.577		3.627.308		3.627.185
		3.627.950		3.626.820		3.627.845		3.627.578		3.627.311		3.627.199
		3.627.954		3.626.821		3.627.851		3.627.596		3.627.313		3.627.256
		3.627.955		3.626.875		3.627.872		3.627.599		3.627.320		3.627.262
		3.627.967		3.626.902		3.627.882		3.627.631		3.627.332		3.627.264
		3.628.042		3.626.943		3.627.887		3.627.636		3.627.344		3.627.273
		3.628.050		3.626.993		3.627.894		3.627.650		3.627.390		3.627.276
		3.628.058		3.626.998		3.627.924		3.627.653		3.627.394		3.627.303
		3.628.093		3.627.140		3.627.958		3.627.671		3.627.402		3.627.304
		3.628.102		3.627.190		3.627.968		3.627.675		3.627.404		3.627.305
		3.628.146		3.627.239		3.628.024		3.627.685		3.627.410		3.627.324
		3.628.150		3.627.247		3.628.163		3.627.704		3.627.418		3.627.359
18	:	3.626.521		3.627.363	27	: 3.626.540		3.627.705		3.627.484		3.627.381
		3.626.576		3.627.388		3.626.564		3.627.708		3.627.495		3.627.420
		3.626.708		3.627.407		3.626.586		3.627.719		3.627.497		3.627.455
		3.626.719		3.627.440		3.626.694		3.627.721		3.627.506		3.627.466
		3.626.748		3.627.488		3.626.744		3.627.730		3.627.522		3.627.487
		3.626.781		3.627.546		3.626.745		3.627.754		3.627.525		3.627.548
		3.626.813		3.627.609		3.626.772		3.627.761		3.627.527		3.627.561
		3.626.823		3.627.613		3.626.853		3.627.782		3.627.533		3.627.570
		3.626.865		3.627.628		3.626.896		3.627.783		3.627.564		3.627.571
		3.626.903		3.627.630		3.626.960		3.627.799		3.627.573		3.627.579
		3.626.908		3.627.678		3.627.004		3.627.812		3.627.583		3.627.581
		3.626.918		3.627.690		3.627.073		3.627.822		3.627.589		3.627.600
		3.626.964		3.627.724		3.627.269		3.627.833		3.627.593		3.627.626
		3.626.978		3.627.744		3.627.376		3.627.848		3.627.595		3.627.629
		3.627.145		3.627.840		3.627.537		3.627.873		3.627.607		3.627.686
		3.627.383		3.627.864		3.627.617		3.627.874		3.627.619		3.627.688
		3.627.392		3.627.866		3.627.677		3.627.879		3.627.624		3.627.693
		3.627.396		3.627.900		3.627.722		3.627.886		3.627.643		3.627.695
		3.627.444		3.627.901		3.627.794		3.627.888		3.627.647		3.627.725
		3.627.453		3.627.918		3.627.814		3.627.889		3.627.655		3.627.738
		3.627.454		3.627.936		3.627.902		3.627.891		3.627.662		3.627.787
		3.627.462		3.627.959		3.627.925		3.627.920		3.627.663		3.627.791
		3.627.661		3.627.993		3.627.982		3.627.921		3.627.668		3.627.797
		3.627.707		3.628.017		3.627.999		3.627.944		3.627.694		3.627.818
		3.627.742		3.628.026		3.628.028		3.627.947		3.627.716		3.627.837
		3.627.883		3.628.040	28	: 3.627.143		3.627.953		3.627.726		3.627.842
		3.627.930		3.628.046	29	: 3.626.595		3.627.974		3.627.732		3.627.858
		3.627.948		3.628.081		3.627.010		3.627.983		3.627.735		3.627.960
		3.628.041		3.628.100		3.627.131		3.628.021		3.627.743		3.627.983
		3.628.085		3.628.104		3.627.172		3.628.022		3.627.798		3.627.986
		3.628.103		3.628.112		3.627.174		3.628.023		3.627.832		3.627.987
		3.628.115		3.628.129		3.627.224		3.628.045		3.627.908		3.627.990
		3.628.152		3.628.139		3.627.282		3.628.070		3.627.909		3.628.004
19	:	3.626.904		3.628.142		3.627.314		3.628.127		3.627.919		3.628.075
		3.627.003		3.628.167		3.627.327		3.628.138		3.627.928		3.628.083
		3.627.051		3.628.180		3.627.333		3.628.149		3.627.956		3.628.087
		3.627.053	26	: RE.27.241		3.627.357		3.628.156		3.627.979		3.628.088
		3.627.059		3.626.556		3.627.385		3.628.166		3.628.000		3.628.176
		3.627.060		3.626.560		3.627.696		3.628.170		3.628.053	40	: 3.626.607
		3.627.061		3.626.566		3.628.106		3.628.171		3.628.055		3.626.627
		3.627.063		3.626.577	31	: 3.626.550		3.628.173		3.628.056		3.626.675
		3.627.155		3.626.578	32	: 3.627.094		3.628.174		3.628.063		3.626.742
		3.627.178		3.626.580		3.627.521		3.628.177		3.628.077		3.626.846
		3.627.235		3.626.602	33	: 3.627.200		3.628.182		3.628.080		3.627.037
20	:	3.626.530		3.626.632		3.627.927		3.628.185		3.628.089		3.627.138
		3.626.668		3.626.646		3.628.044		3.628.186		3.628.094		3.627.222
		3.626.669		3.626.715	34	: 3.626.536		3.628.187		3.628.097		3.627.258
		3.626.755		3.626.720		3.626.938	35	: 3.626.938		3.628.099		3.627.259
		3.626.923		3.626.728		3.626.546		3.627.068		3.628.107		3.627.358
		3.627.087		3.626.768		3.626.657		3.627.496		3.628.119		3.627.377
		3.627.098		3.626.788		3.626.660	36	: 3.626.517		3.628.144		3.627.489
		3.627.446		3.626.815		3.626.679		3.626.594		3.628.148		3.627.645
		3.627.701		3.626.835		3.626.696		3.626.618		3.628.184		3.627.706
21	:	3.627.071		3.626.843		3.626.702		3.626.629		3.628.188		3.627.743
		3.627.312		3.626.887		3.626.774		3.626.640		3.626.640		3.627.851
		3.627.827		3.626.906		3.626.795		3.626.650	37	: 3.626.571		3.627.869
		3.628.019		3.626.913		3.626.850		3.626.662		3.626.684	41	: RE.27.243
22	:	3.626.551		3.626.914		3.626.879		3.626.687		3.626.952		3.626.799
		3.626.758		3.626.927		3.626.881		3.626.716		3.627.153		3.626.888
		3.626.932		3.626.935		3.626.928		3.626.769		3.627.274		



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41 : 3,627,119	42 : 3,627,114	42 : 3,627,912	48 : 3,626,624	48 : 3,628,011	53 : 3,628,031
3,627,350	3,627,124	3,627,973	3,626,648	3,628,029	3,628,116
3,627,535	3,627,158	3,628,008	3,626,666	3,628,057	3,626,725
3,627,938	3,627,166	3,628,060	3,626,677	3,628,130	3,627,265
42 : RE.27,215	3,627,180	3,628,068	3,626,722	3,628,131	3,627,616
3,626,531	3,627,193	3,628,082	3,626,780	49 : 3,626,996	3,628,030
3,626,557	3,627,244	3,628,092	3,626,784	55 : 3,626,596	3,626,676
3,626,565	3,627,285	3,628,095	3,626,801	3,627,319	3,626,710
3,626,567	3,627,291	3,628,114	3,626,854	3,627,992	3,626,711
3,626,575	3,627,292	3,628,117	3,626,856	50 : 3,626,997	3,626,771
3,626,587	3,627,369	3,628,123	3,626,969	3,627,520	3,626,778
3,626,598	3,627,408	3,628,132	3,626,982	3,628,108	3,626,807
3,626,605	3,627,435	3,628,137	3,627,042	51 : 3,626,592	3,626,812
3,626,606	3,627,448	44 : 3,626,534	3,627,044	3,626,601	3,626,934
3,626,639	3,627,460	3,626,680	3,627,045	3,626,766	3,626,937
3,626,671	3,627,473	3,626,883	3,627,046	3,626,884	3,626,945
3,626,682	3,627,478	3,627,028	3,627,048	3,627,106	3,626,962
3,626,704	3,627,493	3,627,107	3,627,049	3,627,120	3,627,030
3,626,731	3,627,503	3,627,215	3,627,056	3,627,414	3,627,031
3,626,734	3,627,504	3,627,399	3,627,065	3,627,541	3,627,033
3,626,743	3,627,513	3,627,941	3,627,126	3,627,996	3,627,035
3,626,834	3,627,514	3,628,179	3,627,221	3,628,002	3,627,115
3,626,837	3,627,549	45 : 3,626,714	3,627,240	3,628,110	3,627,156
3,626,860	3,627,574	3,627,658	3,627,260	52 : 3,626,828	3,627,197
3,626,864	3,627,588	3,627,691	3,627,271	53 : 3,626,628	3,627,281
3,626,867	3,627,590	3,627,984	3,627,283	3,626,703	3,627,365
3,626,885	3,627,646	46 : 3,626,838	3,627,294	3,626,836	3,627,372
3,626,890	3,627,661	3,627,964	3,627,335	3,626,845	3,627,371
3,626,899	3,627,614	47 : 3,626,825	3,627,337	3,626,872	3,627,372
3,626,965	3,627,682	3,627,194	3,627,356	3,626,924	3,627,371
3,626,995	3,627,699	3,627,301	3,627,384	3,626,941	3,627,372
3,627,020	3,627,731	3,627,317	3,627,442	3,627,066	3,627,372
3,627,021	3,627,792	3,627,179	3,627,456	3,627,147	3,627,372
3,627,062	3,627,826	3,627,547	3,627,551	3,627,170	3,627,372
3,627,081	3,627,859	3,627,654	3,627,622	3,627,212	3,627,372
3,627,091	3,627,863	3,627,727	3,627,648	3,627,237	3,627,372
3,627,092	3,627,870	48 : 3,626,523	3,627,825	3,627,254	3,628,005
3,627,112	3,627,899	3,626,584	3,627,830	3,628,014	3,628,101
3,627,113	3,627,906	3,626,588	3,628,006		

## Design Patents

6 : 222,718	11 : 222,715	34 : 222,734	36 : 222,722	36 : 222,727	44 : 222,717
222,720	29 : 222,712	222,735	222,723	222,728	47 : 222,713
222,737	34 : 222,724	36 : 222,716	222,725	222,731	48 : 222,719
11 : 222,714	222,729	222,721	222,726	222,736	53 : 222,738

## DEFENSIVE PUBLICATIONS APPLICATIONS (Notice of Dec. 16, 1969, 869 O.G. 687)

41 : T893,009	26 : T893,002	39 : T893,004	40 : T893,011	47 : T893,013	76 : T893,008
17 : T893,014	36 : T893,001	T893,005	45 : T893,007	51 : T893,006	80 : T893,010
25 : T893,012	T893,003				

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# PATENT OFFICE NOTICES

## TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

### Chapter I—Patent Office, Department of Commerce

#### PART 1—RULES OF PRACTICE IN PATENT CASES

##### Drawing Requirements

These rule changes are intended to facilitate the handling and filing of patent application drawings in the Patent Office. Changing the drawing size to 8½ by 14 inches will permit filing of the original drawings in the application file wrapper in the Patent Office. The new size will also permit the use of standard storage equipment, mailing envelopes, and copying equipment.

The revised rules will prohibit the use of names within the "sight" of the drawing, thereby making additional space available for illustration and reducing the number of formal objections and corrections required.

Permanently mounted color photographs in plant patent applications will be accepted. This should result in substantial savings to applicant.

Since no names or other identification will be permitted within the "sight" of the drawing, applicants are expected to use the space above and between the hole locations to identify each sheet of drawings (note § 1.84(1)). This identification may consist of the attorney's name and docket number or the inventor's name and case number and may include the sheet number and the total number of sheets filed (for example, "sheet 2 of 4").

Notice of proposed rule making regarding revision of §§ 1.59, 1.84, 1.85, 1.123, and 1.165 and revocation of §§ 1.82 and 1.87 of Title 37, Code of Federal Regulations, relating to drawing requirements, was published in the Federal Register of January 15, 1971 (36 F.R. 610). Interested persons were given an opportunity to participate in the rule making process through submission of comments in writing and at an oral hearing held on March 23, 1971.

**Effective date.** This revision shall become effective on the date of its publication in the Federal Register. However, until Jan. 1, 1972, drawings complying with the unrevised rules will also be accepted.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. Section 1.59 is revised to read as follows:

#### § 1.59 Papers of complete application not to be returned.

Papers in a complete application, including the drawings, will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

#### § 1.82 [Revoked]

2. Section 1.82 is revoked.

3. In § 1.84 the introductory text preceding paragraph (a) and paragraph (h) are revoked and paragraphs (a), (b), (c), (j), and (l) are revised to read as follows:

#### § 1.84 Standards for drawings.

(a) **Paper and ink.** Drawings must be made upon pure white paper of a thickness corresponding to two-ply or three-ply bristol-board. The surface of the paper must be calendered and smooth and of a quality which will permit erasure and correction with India ink, India ink, or its equivalent in quality, must be used for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not acceptable.

(b) **Size of sheet and margins.** The size of a sheet on which a drawing is made must be exactly 8½ by 14 inches. One of the shorter sides of the sheet is regarded as its top. The drawing must include a top margin of 2 inches and bottom and side margins of one-quarter inch from the edges, thereby leaving a "sight" precisely 8 by 11½ inches. Margin boarder lines are not permitted. All work must be included within the

"sight." The sheets may be provided with two ¼-inch-diameter holes having their centerlines spaced eleven-sixteenths inch below the top edge and 2¾ inches apart, said holes being equally spaced from the respective side edges.

(c) **Character of lines.** All drawings must be made with drafting instruments or by a process which will give them satisfactory reproduction characteristics. Every line and letter must be absolutely black and permanent; the weight of all lines and letters must be heavy enough to permit adequate reproduction. This direction applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. All lines must be clean, sharp, and solid, and fine or crowded lines should be avoided. Solid black should not be used for sectional or surface shading. Freehand work should be avoided wherever it is possible to do so.

#### (h) [Revoked]

(j) **Arrangement of views.** All views on the same sheet must stand in the same direction and should, if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the two-inch margin is on the right-hand side. One figure must not be placed upon another or within the outline of another.

(l) **Extraneous matter.** An inventor's, agent's, or attorney's name, signature, stamp, or address, or other extraneous matter, will not be permitted upon the face of a drawing, within or without the margin, except that identifying indicia (attorney's docket number, inventor's name, number of sheets, etc.) should be placed within three-fourths inch of the top edge and between the hole locations defined in paragraph (b) of this section. Authorized security markings may be placed on the drawings provided they be outside the illustrations and are removed when the material is declassified.

4. Section 1.85 is revised to read as follows:

#### § 1.85 Informal drawings.

The requirements of § 1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required. The necessary corrections or mounting will be made by the Office upon applicant's request or permission and at his expense. (See §§ 1.21 and 1.165.)

#### § 1.87 [Revoked]

5. Section 1.87 is revoked.

6. In § 1.123, paragraph (a) is revised to read as follows:

#### § 1.123 Amendments to the drawing.

(a) No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by the Office. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed. The paper requesting amendments to the drawing should be separate from other papers.

7. In § 1.165, paragraph (b) is revised to read as follows:

#### § 1.165 Drawings.

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water

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color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See § 1.84. Nonpermanently mounted copies will be correctly mounted at applicant's expense, § 1.21(1).

WILLIAM E. SCHUYLER, JR.,  
Commissioner of Patents.

Approved: May 25, 1971.

JAMES H. WAKELIN, JR.,  
Assistant Secretary for  
Science and Technology.

[FR Doc. 71-7504 Filed 5-27-71; 8:49 am]

Published in 56 F.R. 9774; May 28, 1971

### Availability of Annual Report on Government Patent Policy

The Combined December 1969 and 1970 Annual Report on Government Patent Policy of the Federal Council for Science and Technology recently has been published.

The report assesses the effectiveness of the 1963 Presidential Statement of Government Patent Policy based on the information available from the seven years' operation, and describes the progress made to date by the Committee on Government Patent Policy.

The report contains:

The revised Memorandum and Statement of Government Patent Policy issued by President Nixon on August 23, 1971 and an explanation of the revisions.

A report on a Government-wide comprehensive patent licensing program. This report contains the proposed licensing regulations to be promulgated by the General Services Administration. It also contains legal memoranda of the Department of Justice which discuss the concept of issuing limited exclusive licenses on Government-owned inventions.

A statistical analysis of the Government's patent operations for fiscal years 1963 through 1970. This report includes the total number of invention disclosures reported to the Government agencies, the type of patent clauses used in R & D contracts, the extent of patent protection sought by the Government, and the available information on the licensing of Government-owned patents.

A list, by agency, of all statutes, memoranda and regulations pertaining to the allocation of rights to inventions. This list also contains the identity of the office within each agency which has the primary responsibility for Government patent policy matters.

Information on the merger of the Patent Advisory Panel and the Committee on Government Patent Policy of the Federal Council for Science and Technology.

The report may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, for \$1.25. A check or money order made payable to the Superintendent of Documents must accompany your order.

O. A. NEUMANN,  
Executive Secretary,  
Committee on Government Patent Policy  
Federal Council for Science and  
Technology.

### Customer Relations Center

A Customer Relations Center, located in Crystal Plaza adjacent to the Public Search Room, Building 4, Rooms A102 and A103, has been established to provide a central customer complaint and inquiry service. The Center is staffed with six highly experienced employees who process inquiries concerning copies of U.S. patent documents previously ordered but not received. This Center handles not only walk-in but telephonic, and written requests for assistance as well. In addition to improving customer relations, this service is intended

to relieve the primary customer service areas (Patent Copy Sales, Document Services, and Reference Order Branch), and Patent Office officials, or interruptions and irregular demands on their time.

The telephone number for this service is (703) 557-2003.

Nov. 26, 1971.

ROBERT GOTTSCHALK,  
Acting Commissioner of Patents.

### Patented Files Service

Delays have frequently been experienced in receiving files and other papers ordered from the Federal Records Center at Suitland, Md. To provide better service in this respect, the Patent Office has initiated its own pick up and delivery service to and from the storage facility. Customer orders are now normally filled within two days.

Orders for files may be placed at the Attorneys and Record Room Desk, Building 4, Room 1D01. There is no charge for this service.

Nov. 26, 1971.

ROBERT GOTTSCHALK,  
Acting Commissioner of Patents.

### New Application Processing

Because of the delays in processing newly filed applications and the various problems attendant with those delays, a temporary Parallel Application Branch has been established.

This unit is processing all new applications filed after Oct. 27, 1971, and will be mailing application filing receipts within one month of the application filing date. The regular Application Branch will continue to operate and process the inventory of new applications and papers received through Oct. 27, 1971.

As a result of this arrangement, applicants may receive filing receipts on applications filed after Oct. 27, 1971, prior to receiving filing receipts on applications filed before that date.

The temporary Application Branch will continue operations until the regular Application Branch has disposed of its inventory of unprocessed applications. At that time, approximately Apr. 1, 1972, it is planned to resume all processing of newly filed applications in the regular branch by improved methods designed to keep the flow of applications moving on a current basis.

As previously, all applications received by the Patent Office will be microfilmed for record and reproduction purposes. The temporary operation of two application branches will effectively double the output of processed applications and will place excessive demands on our "in-house" microfilming capabilities. Accordingly, the applications being processed in the regular Application Branch will be microfilmed using facilities outside the Patent Office. As a result, these applications will be unavailable for approximately a two week period while they are being microfilmed. Consequently, the filling of requests for copies of these applications may be somewhat delayed.

However, all application copy requests which are submitted subsequent to two weeks after mailing of the filing receipt will be promptly filled. Copies requested at the time of filing the application will be mailed within two weeks after the mailing of the filing receipt.

All mailed inquiries concerning requests for application copies should be addressed to the:

Commissioner of Patents  
Washington, D.C. 20231  
Attn: Customer Relations Branch

Telephone and in-person inquiries concerning copy requests should be directed to the Customer Relations Desk (703) 557-2003 which is located adjacent the Public Search Room, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Va. All other inquiries about applications undergoing Application Branch processing should be addressed or directed in the usual manner.

Nov. 22, 1971.

ROBERT GOTTSCHALK,  
Acting Commissioner of Patents.



## Registration to Practice

The following list contains the names of all applicants for registration to practice before the United States Patent Office who attained passing grades in the examination of September 7, 1971. Information tending to affect the eligibility of any of said applicants on moral or ethical grounds should be furnished the Commissioner of Patents on or before January 24, 1972.

ROBERT GOTTSCHALK,

Nov. 23, 1971. Chairman, Committee on Enrollment.

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## Access to Patent Application and Interference Files

In order to insure that access to patent application and interference files is given only to persons who are entitled thereto or who are specially authorized to have access under Rule 14 of the Rules of Practice in Patent Cases, and to insure also that the file record identifies any such specially authorized person who has been given access to a file, the following practice will be observed by all personnel of the Patent Office:

1. Access, as provided for in the Rules of Practice, will be given on oral request to any applicant, patentee, assignee, or attorney or agent of record in an application or patent only upon proof of identity or upon recognition based on personal acquaintance.
2. Where a power of attorney or authorization of agent was given to a registered firm prior to July 2, 1971, access will be given upon oral request as in paragraph 1 above to any registered member or employee of the firm who has signatory power for the firm.



3. Unregistered employees of attorneys or agents, public stenographers, and all other persons not within the provisions of paragraphs 1 and 2 above will be given access only upon presentation of a *written authorization for access* signed by a person specified in paragraph 1 above, which authorization will be entered as a part of the official file.

ROBERT GOTTSCHALK,  
Acting Commissioner of Patents.  
Nov. 24, 1971.

### STATUS INQUIRIES

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

### New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL-327 in every case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL-327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL-85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL-327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the OFFICIAL GAZETTE are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

### Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

### In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to

the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,  
Assistant Commissioner of Patents.  
Nov. 24, 1971.

### Public Records Certification Desk

The certification desk, located in Crystal Plaza in the Attorneys and Record Room, Building 4, Room 1D01, provides "on-the-spot" certifying service. This desk handles walk-in requests for certified copies of file wrappers, patented applications, patents, and selected papers from patented application files. The usual fee for this service (\$1.00 per certification) may be applied at this location in the form of a paid cash order form, obtainable at the Cashier's Office adjacent the lobby of Building #2.

ROBERT GOTTSCHALK,  
Acting Commissioner of Patents.  
Nov. 26, 1971.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,604,313, R. W. Grantham, DRYERS; 2,643,463, same, LAUNDRY APPARATUS, filed Feb. 12, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c251. *Paulette Grantham et al. v. McGraw-Edison Co.* Filed mandate U.S.C.A. order is reversed and cause is remanded for further proceedings in USDC, July 8, 1971.

2,643,463. (See 2,604,313.)

2,661,084, J. J. Steffan, DOOR FRAMES; 2,678,843, same, KEEPER MECHANISM; 2,765,884, same, DRY WALL JAMB; 3,194,363, Steffan and Williams, DOOR FRAMES; 3,265,427, J. L. Williams, METAL DOOR JAMB STRIKE PLATE ASSEMBLIES, filed June 29, 1971, D.C., E.D. Mo. (St. Louis), Doc. 71C401(A), *Dolores Williams, also known as Dolores Rollhous v. Jelco Mfg. Co. and Jelma Tool and Mfg. Co.*

2,664,162, Howard, McGowen, Jr. and Moore, MEANS FOR INSTALLING AND REMOVING FLOW VALVES; 2,679,903, McGowen, Jr. and Moore, Jr., MEANS FOR INSTALLING AND REMOVING FLOW VALVES OR THE LIKE; 3,074,485, H. E. McGowen, Jr., LATCH FOR RETRIEVABLE VALVES OR THE LIKE, filed Aug. 12, 1971, D.C., N.D. Tex. (Fort Worth), Doc. CA-4-1805, *CAMCO, Incorporated, Perry R. Bass, Inc. and Sid W. Richardson v. Teledyne, Inc. and Teledyne Merla.*

2,667,243, H. D. Fenske, CONVEYANCE CONSTRUCTION; 3,010,822, Altenburger and Bourke, COLUMBIUM CONTAINING STEELS, PROCESS FOR THEIR MANUFACTURE AND ARTICLES PREPARED THEREFROM, filed May 24, 1967, D.C. Md. (Baltimore), Doc. 18371, *National Steel Corporation v. Baltimore & Ohio Railroad and Armco Steel Corporation* (additional defendant per amended complaint filed Nov. 2, 1967). Order, dismissing the amended complaint with prejudice, Aug. 12, 1971.

2,678,843. (See 2,661,084.)

2,679,903. (See 2,664,162.)

2,765,884. (See 2,661,084.)

2,934,932, H. B. Wagner, HYDRAULIC CEMENT MORTAR COMPOSITIONS AND METHOD OF USE; 2,990,382, Wagner and Fitzgerald, COMPOSITION COMPRISING HYDRAULIC CEMENT, METHYL CELLULOSE AND RE-EMULSIFIABLE POLYVINYL ACETATE, METHOD OF PREPARING SAME AND MORTAR PREPARED THEREFROM, filed June 14, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1407-FW, *Tile Council of America, Inc. v. Custom Building Products, Inc., Mike Bilak and Thomas R. Peck.*

2,948,926, Ebneth and Falk, PROCESS FOR MANUFACTURING FOAMED POLYURETHANE ARTICLES, filed Mar. 11, 1971, D.C.N.J. (Newark), Doc. 363-71, *Mobay Chemical Company et al. v. Hudson Foam Plastics Corporation et al. Same*, filed Mar. 12, 1971, D.C., District of Columbia (Washington), Doc. 529-71, *Mobay Chemical Company et al. v. Hudson Foam Plastics Corporation et al.*

2,980,982. (See 3,214,899.)

2,990,382. (See 2,934,932.)

3,010,822. (See 2,667,243.)

3,038,964. (See 3,582,553.)

3,045,240. (See D. 188,460.)

3,074,485. (See 2,664,162.)

3,084,584. (See Re. 25,278.)

3,194,363. (See 2,661,084.)

3,214,899, Wininger and Dyer, CORDAGE PRODUCT; 2,980,982, Costa, Le Boeuf and Lefevre, FIBROUS ARTICLE, filed June 21, 1971, D.C., N.D. Ala. (Birmingham), Doc. 71-545-E, *Eastman Kodak Co. v. Indian Head Inc.*

3,237,485, J. M. Van Vleet, METHOD OF TAP MANUFACTURE, filed July 12, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1683, *Balaz, Inc. v. Continental Screw Co.*

3,265,437. (See 2,661,084.)

3,392,875, K. R. Bockenstette, STACKING TRAY WITH 90° NESTING, filed June 21, 1971, D.C., S.D. Ohio (Dayton), Doc. 4075, *Ekco Products, Inc. and Vanguard Industries, Inc. v. Dare Plastics, Inc.*

3,436,787, W. H. Wisdom, STEAM AND VACUUM NOZZLE; 3,439,374, same, filed Feb. 9, 1971, D.C., S.D. Fla. (Miami), Doc. 71-206-JLK, *Steamatic, Inc. v. Edward H. Crane and Steam-O-Vac, Inc.* Order of dismissal with prejudice to the plaintiff, July 15, 1971.

3,439,374. (See 3,436,787.)

3,441,027, I. S. Lehman, COMPOUND SUPPORT, filed Sept. 7, 1970, D.C., S.D. Fla. (Miami), Doc. 70-1366-C-JLK, *Ira S. Lehman v. Stephen Michelson and All Orthopedic Appliance.* Consent decree, plaintiff owner of said patent; defendants have infringed and are permanently enjoined. Defendants' counterclaim dismissed with prejudice, June 24, 1971.

3,453,493, J. B. Godwin, Jr., STATIC CABLE SYSTEM FOR FUEL TANKS, filed July 12, 1971, D.C., S.D. Tex. (Houston), Doc. CA 71-H-760, *James B. Godwin, Jr. v. Olin Corporation.*

3,475,561, Kraslu and Greene, TELEPHONE CARRIER SYSTEM HAVING SELF-CONTAINED INDEPENDENTLY ATTACHABLE LINE TAP UNITS, filed May 26, 1971, D.C., E.D.N.C. (Raleigh), Doc. 1232-C, *Superior Continental Corporation v. Anaconda Wire and Cable Company.*

3,485,312, Swenson and Skime, SNOWMOBILE TREAD DRIVE AND SUSPENSION SYSTEM, filed Feb. 9, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70-C-65, *Arctic Enterprises, Inc. v. Dolenshek Marine, Inc.* Plaintiff's notice of voluntary dismissal pursuant to Rule 41(a) F.R.C.P., July 13, 1971.

3,555,677, A. J. Cusato, WIRE CUTTING TOOL, filed July 14, 1971, D.C., E.D. Pa. (Philadelphia), Doc. 71-1745, *Henry Mann, Inc. v. Silverman's.*

3,582,553, A. G. Bose, LOUDSPEAKER SYSTEM; 3,038,964, same, filed July 12, 1971, D.C., S.D.N.Y., Doc. 71-C-3103, *Bose Corporation v. Linear Design Labs., Inc.*

3,589,793, L. E. Curtiss, GLASS FIBER OPTICAL DEVICES, filed June 29, 1971, D.C. Del. (Wilmington), Doc. 4165, *Laurence E. Curtiss et al. v. Warner-Lambert Co.*

Re. 24,992, E. E. Elmes, METHOD OF TREATING FRESH MEATS, filed Apr. 7, 1971, D.C., S.D. Ohio (Columbus), Doc. 71-74, *Tee-Pak, Inc. v. St. Regis Paper Company.*

Re. 25,278, J. J. Borell, MUSICAL INSTRUMENT; 3,094,584, A. Iorio, ELECTRICAL MUSICAL INSTRUMENT, filed Jan. 22, 1970, D.C., S.D.N.Y., Doc. 70-272, *Iorio Instruments Inc. et al. v. Bell Accordion Corp. et al.* (amended).

Re. 26,130, Bellinger and Chapdelaine, SOLUTION AND METHOD FOR BRIGHTENING CADMIUM, filed June 25, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1528, *Conversion Chemical Corp. v. Du Tone Chemical Co. Inc.*

D. 188,460, R. D. Raynor, ONE PIECE SHELL FOR AN INDOOR ANTENNA; 3,045,240, same, RABBIT EAR ANTENNA, filed Feb. 5, 1968, D.C., S.D.N.Y., Doc. 68-C-470, *Clear Beam Antenna Corporation v. JFD Electronics Corporation.* Stipulation and order of discontinuance with prejudice, June 15, 1971.



## Certificates of Correction for the Week of Dec. 21, 1971

Re. 26,978	3,568,577	3,581,902	3,586,813
Re. 27,137	3,568,907	3,582,141	3,586,896
2,995,436	3,571,568	3,582,802	3,587,115
3,341,895	3,572,158	3,582,849	3,587,204
3,429,945	3,573,898	3,582,899	3,587,328
3,515,249	3,575,454	3,583,450	3,587,428
3,522,460	3,575,462	3,583,972	3,587,544
3,530,100	3,575,493	3,584,102	3,587,690
3,536,498	3,576,312	3,584,124	3,588,206
3,545,775	3,577,445	3,584,507	3,588,689
3,546,261	3,577,802	3,584,556	3,589,025
3,547,937	3,577,996	3,584,884	3,589,202
3,549,971	3,578,320	3,584,918	3,589,311
3,552,564	3,578,694	3,585,108	3,589,468
3,552,906	3,578,884	3,585,145	3,589,661
3,554,938	3,579,037	3,585,281	3,589,783
3,555,172	3,579,563	3,585,385	3,590,407
3,555,927	3,579,584	3,585,655	3,590,913
3,556,682	3,579,634	3,585,858	3,590,966
3,557,544	3,580,125	3,585,936	3,591,220
3,558,226	3,580,146	3,586,090	3,591,302
3,561,100	3,580,187	3,586,107	3,591,687
3,561,685	3,580,727	3,586,190	3,592,275
3,562,371	3,581,006	3,586,199	3,592,952
3,564,356	3,581,366	3,586,412	3,593,608
3,566,370	3,581,444	3,586,416	3,594,334
3,566,380	3,581,634	3,586,540	3,597,397
3,566,555	3,581,725	3,586,680	

## Disclaimers

2,985,271.—*Lawrence A. Wilson*, Apalachin, N.Y. CLUTCH. Patent dated May 23, 1961. Disclaimer filed May 20, 1971, by the assignee, *International Business Machines Corporation*.

Hereby disclaims all that portion of the term of the patent subsequent to May 17, 1971.

3,228,927.—*Heini Kappeler*, Bettingen, and *Robert Schwyzer*, Rethen, Switzerland. METAL COMPLEXES OF NEW TETRACOSAPEPTIDES AND INTERMEDIATES FOR THE PREPARATION THEREOF. Patent dated Jan. 11, 1966. Disclaimer filed Sept. 1, 1971, by the assignee, *Ciba-Geigy Corporation*.

Hereby enters this disclaimer to claim 4 of said patent.

3,239,765.—*Robert L. Carbrey*, Madison, N.J. PHASE SHIFT COUNTING CIRCUITS. Patent dated Mar. 8, 1966. Disclaimer filed Sept. 2, 1971, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby enters this disclaimer to all claims of said patent.

3,240,193.—*Max Ephraim, Jr.*, Chicago, and *Carl R. Sakradda*, and *James J. Kotlin*, Downers Grove, Ill. PISTON AND PISTON COOLING MEANS. Patent dated Mar. 15, 1966. Disclaimer filed Sept. 23, 1971, by the assignee, *General Motors Corporation*.

Hereby enters this disclaimer to claims 1 through 4, 7 through 10, and 14 through 16 of said patent.

3,283,131.—*Robert L. Carbrey*, Madison, N.J. DIGITAL SIGNAL GENERATOR. Patent dated Nov. 1, 1966. Disclaimer filed Sept. 2, 1971, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby enters this disclaimer to claims 7 and 8 of said patent.

3,515,052.—*Ernest E. Brandes*, Madison, Wis. AIR DISTRIBUTING APPARATUS. Patent dated June 2, 1970. Disclaimer filed Oct. 13, 1971, by the inventor.

Hereby enters this disclaimer to claims 1 to 10 of said patent.

## Dedications

3,187,146.—*Roger F. Schrader*, Pittsfield, Mass. BUSHING FUSE PROVIDED WITH A FUSE BODY OF STRONG INSULATING MATERIAL HAVING FLATTENED ENDS. Patent dated June 1, 1965. Dedication filed Oct. 6, 1971, by the assignee, *General Electric Company*.

Hereby dedicates to the Public the entire term of said patent.

3,315,414.—*William A. Nolan* and *John S. Gilles*, Louisville, Ky. EDGEWISE MOVABLE WALL CLOSURE CONSTRUCTION AND METHOD OF MAKING THE SAME. Patent dated Apr. 25, 1967. Dedication filed Oct. 12, 1971, by the assignee, *Reynolds Metals Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,425,123.—*Roland E. Miller*, Orangeville, *Clyde Wayne*, Wilmette, and *William T. Kirby*, Park Ridge, Ill. ELONGATED CHEESE RIBBON CUTTING DEVICE. Patent dated Feb. 4, 1969. Dedication filed Oct. 22, 1971, by the assignee, *Kraftco Corporation*.

Hereby dedicates to the Public the entire term of said patent.

3,557,090.—*Kenneth Butler*, Old Lyme, Conn. UNSATURATED ALIPHATIC ESTERS OF  $\alpha$ -CARBOXY ARYL PENCILLINS. Patent dated Jan. 19, 1971. Dedication filed Oct. 13, 1971, by the assignee, *Pfizer Inc.*

Hereby dedicates to the Public the entire term of said patent.

## Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,426,043, P. N. Green and M. Shapero, 2-GUANIDINYLMETHYL-2,3-DIHYDROBENZOFURANS, decided Aug. 26, 1971, interference No. 97,210, claims 1 and 6.

Patent No. 3,433,750, J. M. Fain and E. McDonnell, NOVEL WATER REPELLENT COMPOSITIONS, decided Oct. 20, 1971, interference No. 97,188, claim 3.

Patent No. 3,363,099, E. Lind and H. Kramer, METHOD FOR PRODUCING A LATENT ELECTROSTATIC IMAGE ON AN ELECTROSTATICALLY CHARGED RESIN LAYER BY EXPOSURE TO RADIANT HEAT, decided July 30, 1971, interference No. 96,541, claims 1, 2, 3, 4 and 5.

Patent No. 3,121,698, J. A. Orsino, D. F. Herman and J. J. Brancato, PROCESS OF COATING CELLULOSIC PARTICLES BY POLYMERIZING A 1-OLEFIN ONTO SAID PARTICLES: PROCESS OF REMOVING THE CELLULOSIC PARTICLES FROM THE COATED PARTICLES AND HOLLOW SHELLS OBTAINED THEREFROM, decided July 30, 1971, interference No. 96,369, claims 4 and 5.

## Patents Available for Licensing or Sale

3,102,721. PANTAGRAPH EQUILIBRIUM SPRING MECHANISM. Correspondence to: Paul D. Levie, 2333 N. Central Ave., Phoenix, Ariz., 85004.

3,493,179. SQUEEZE BOTTLE. Tsu Hsuen Lee, Taipei, Taiwan. Correspondence to: Garry Juettner, Pigott & Cullinan, Suite 2301, 33 N. Dearborn St., Chicago, Ill., 60602.

3,570,130. HOLDING DEVICE FOR SURVEYING INSTRUMENTS. Sheldon Boehm, 5405 Queen Ave. S., Minneapolis, Minn., 55410.

3,581,466. PROCESS OF SEPARATING TETRAFLUOROETHYLENE FROM GAS MIXTURES CONTAINING THE SAME. Kall-Chemie Aktiengesellschaft, Hannover, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,611,989. RECEPTACLE FOR SAFETY RAZORS. William F. Lovelace, 204-B Georgetown Drive, Casselberry, Fla., 32707.

The following 2 patents are offered by: Mrs. Lean L. Troutman, 418 W. Monroe St., Salisbury, N.C., 28144.

D. 217,408. GAS FLAME COMBINED COVER PLATE AND SIMMER.

3,396,749. TEMPERATURE CONTROL HOT AND COLD WATER FAUCET ATTACHMENT.

General Motors Corporation is prepared to grant non-exclusive licenses under the following patent upon reasonable terms.

Application for license may be addressed to: The Director, Patent Section, General Motors Building, 3044 W. Grand Boulevard, Detroit, Mich., 48202.

3,460,760. FUEL INJECTION NOZZLE ASSEMBLY.

General Electric Company is prepared to grant non-exclusive licenses under the following 2 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following 2 patents may be addressed to: Division Patent Counsel, Power Transmission Business Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,588,520. HIGH-VOLTAGE ELECTRIC CIRCUIT BREAKER WITH HIGH-SPEED STRIPPING MEANS.

3,597,556. VACUUM-TYPE CIRCUIT BREAKER WITH FORCE SUPPLEMENTING MEANS FOR INCREASING CURRENT-CARRYING ABILITIES.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 44 patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036.

D. 222,358. ANTENNA.

D. 222,359. ANTENNA FOR A RADIO OR TELEVISION SET.

3,610,817. TELEVISION SIGNAL SEEKING SYSTEM WITH HORIZONTAL SYNCHRONIZING PULSE DETECTOR CIRCUIT FOR CONTROLLING THE SIGNAL SEEKING.

3,610,819. VIDEO RECORDING WITH ALTERNATE PERIOD INVERSION AND LOW-FREQUENCY EMPHASIS.

3,610,840. STEREOGRAPHIC PHONOGRAPH PICKUP WITH SINGLE PAD FOR PIEZOELECTRIC ELEMENT COUPLING, SUPPORT AND DAMPING.

3,610,956. DRIFT-COMPENSATED AVERAGE VALUE CROSSOVER DETECTOR.

3,610,960. SCAN GENERATOR CIRCUIT.

3,611,004. BILATERAL PINCUSHION CORRECTION CIRCUIT.

3,611,012. POWER SUPPLY.

3,611,059. TRANSISTOR ASSEMBLY.

3,611,096. SERVO SYSTEM FOR RECORDER-REPRODUCER APPARATUS UTILIZING FREQUENCY AND PHASE SYNCHRONIZING.

3,611,113. HOMOPOLAR APPARATUS WHICH REQUIRES NO MOVING PARTS FOR PRODUCING DIRECT CURRENT.

3,611,153. BALANCED MIXER UTILIZING STRIP TRANSMISSION LINE HYBRID.

3,611,170. BIAS NETWORKS FOR CLASS B OPERATION OF AN AMPLIFIER.

3,611,176. FREQUENCY CONTROLLED OSCILLATOR.

3,611,183. DOUBLE-ENDED ION LASER TUBE.

3,611,192. BULK SEMICONDUCTOR NEGATIVE RESISTANCE LOADED SLOW-WAVE DEVICE AMPLIFIERS AND OSCILLATORS.

3,612,653. DIGITAL LIGHT DEFLECTOR HAVING LIQUID AND VAPOR STATES.

3,612,654. LIQUID CRYSTAL DISPLAY DEVICE.

3,612,754. COLOR TEMPERATURE CONTROL CIRCUITS.

3,612,757. COLOR TELEVISION KINESCOPE SETUP APPARATUS.

3,612,954. SEMICONDUCTOR DIODE ARRAY VIDICON TARGET HAVING SELECTIVELY INSULATED DEFECTIVE DIODES.

3,613,035. TUNING ARRANGEMENT FOR A STRIP TRANSMISSION LINE IN A HERMETICALLY SEALED PACKAGE.

3,613,773. CONSTANT TEMPERATURE OUTPUT HEAT PIPE.

3,613,976. APPARATUS FOR HANDLING ENDLESS TAPE.

3,614,189. HOLOGRAPHIC MEMORY WITH ILLUMINATION HOLOGRAM PROVIDING REFERENCE AND OBJECT BEAMS.

3,614,200. LIGHT VALVE MATRIX.

3,614,210. LIQUID CRYSTAL DAY/NIGHT MIRROR.

3,614,320. STEREOGRAPHIC SOUND ENHANCEMENT SYSTEM WITH REVERBERATION CHAMBER.

3,614,400. MAXIMUM LENGTH PULSE SEQUENCE GENERATORS.

3,614,546. SHIELDED SEMICONDUCTOR DEVICE.

3,614,553. POWER TRANSISTORS HAVING CONTROLLED EMITTER IMPURITY CONCENTRATIONS.

3,614,579. SQUEEZE FILM BEARING SERVOSYSTEM.

3,614,645. DIFFERENTIAL AMPLIFIER.

3,614,714. EDGE CONNECTOR WITH POLARIZING MEMBER.

3,614,767. ELECTRONIC PHOTOCOMPOSING SYSTEM THAT FORMS CHARACTERS OF DIFFERENT POINT SIZES.

3,614,785. DOPPLER CORRELATION RADAR SYSTEM.

3,615,449. METHOD OF GENERATING HIGH AREA-DENSITY PERIODIC ARRAYS BY DIFFRACTION IMAGING.

3,615,562. CYANINE DYE PHOTOGRAPHIC FILM.

3,615,856. GERMANIUM-TIN ALLOY INFRARED DETECTOR.

3,615,870. THERMOELEMENT ARRAY CONNECTING APPARATUS.

3,615,942. METHOD OF MAKING A PHOSPHORUS GLASS PASSIVATED TRANSISTOR.

3,615,952. PHOTORESIST COMPOSITION AND METHOD OF FORMING AND USING THE SAME.

3,616,348. PROCESS FOR ISOLATING SEMICONDUCTOR ELEMENTS.

## Patents Withdrawn From Register

General Electric Company hereby withdraws the following patents from the Register of Patents Available for Licensing or Sale. The patents were listed as being available in the OFFICIAL GAZETTE as indicated below:

3,156,539. SUPERCONDUCTIVE MATERIALS. Aug. 22, 1967.

3,165,403. SUPERCONDUCTIVE MATERIALS. Aug. 22, 1967.

3,169,559. SUPERCONDUCTIVE MATERIALS. Aug. 22, 1967.

3,291,758. SUPERCONDUCTIVE MATERIALS. Aug. 22, 1967.



## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 16, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director..... Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director..... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-11-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director..... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	5-11-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-01-70
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-16-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director..... Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-21-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-23-70
PHYSICS, GROUP 280—R. L. EVANS, Director..... Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	9-28-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director..... Industrial Arts; Household, Personal and Fine Arts.	10-12-70
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Apparatuses; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	9-02-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-07-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director..... Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-20-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-19-70

Expiration of patents: The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 660, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,695,998 to 2,698,433, inclusive  
Plant Patents..... Numbers 1,328 to 1,338, inclusive

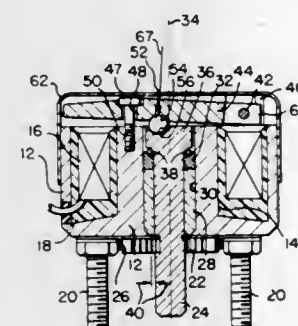
## REISSUES

DECEMBER 21, 1971

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**27,247**  
**ROTARY SOLENOID**  
Raymond J. Ganowsky, Clifton Springs, N.Y., assignor to Cliftronic, Inc., Clifton Springs, N.Y.  
Original No. 3,419,831, dated Dec. 31, 1968, Ser. No. 593,838, Nov. 14, 1966. Application for reissue Feb. 13, 1970, Ser. No. 11,048  
Int. Cl. H01f 7/08  
U.S. Cl. 335—228

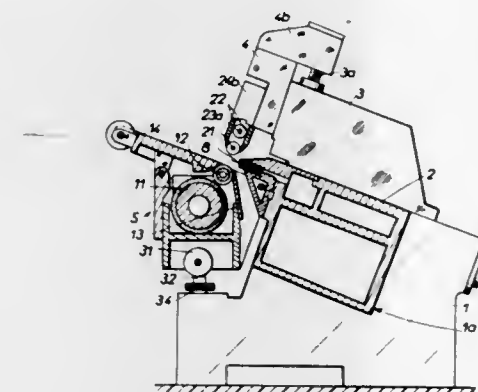
21 Claims



A rotary solenoid having only a single antifriction ball converter between the armature, preferably a hinged "clapper" type, and the top surface of the rotatable output shaft. There are a pair of coactive oppositely inclined cam surfaces, one each in the armature and top surface of the output shaft between which is retained the single ball converter for transmitting arcuate pivotal movement of the armature into rotary movement of the output shaft.

**27,248**  
**TANNING AND TAWING MACHINE FOR THE SLITTING OF HIDES AND SKINS**  
Christian Mercier, Ardeche, France, assignor to Mercier Freres, Annonay, Ardeche, France  
Original No. 3,393,538, dated July 23, 1968, Ser. No. 509,815, Nov. 26, 1965. Application for reissue July 21, 1970, Ser. No. 56,984  
Int. Cl. C14b 1/14  
U.S. Cl. 69—10

30 Claims

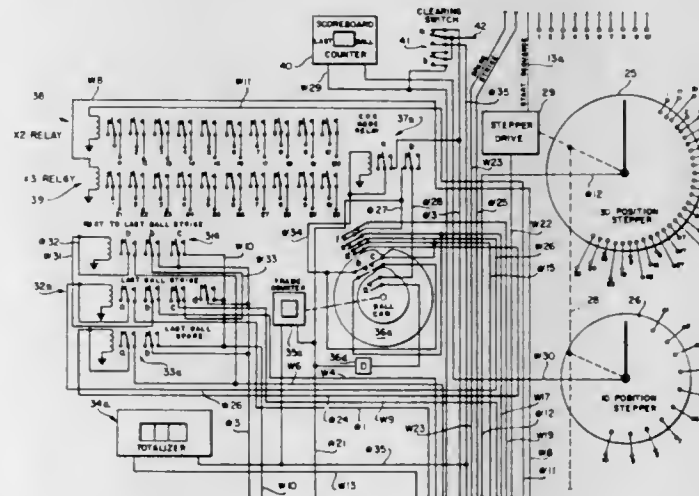


In a roller feed, band knife, leather splitting machine, the arrangement of the lower feed roller for three line mounting between the rear edge of the work feed table, the surface of a driving drum and a bar rearward and

below the line of cutting action; the lower feed roller, the feed table, the driving drum and the bar being mounted for movement as a unit from the knife edge.

**27,249**  
**AUTOMATIC BOWLING SCORE COMPUTER**  
William D. McJunkin, 2603 Little John Trail SE., Marietta, Ga. 30060, and Joseph A. Webb, Sr., Friendswood, Tex.; said Webb assignor to said McJunkin  
Original No. 3,385,600, dated May 28, 1968, Ser. No. 408,862, Nov. 4, 1964. Application for reissue May 28, 1970, Ser. No. 41,654  
Int. Cl. A63d 5/04  
U.S. Cl. 273—54 C

11 Claims



An automatic bowling score computer for connection to automatic pinsetting equipment and having a separate individual scoring totalizer for each of a plurality of bowlers; the computer including a rotary camming switch adapted to indicate up to a pin count of thirty being added to an appropriate totalizer for each operation of the pin-setting equipment, plus a pair of relays for doubling and tripling the pinfall sensed by the pinsetting equipment for addition of game score to the appropriate totalizer for each operation of the pinsetting equipment. Associated with each individual scoring totalizer is a set of three relays; one being energized during the scoring of the first ball after a spare to operate the doubling relay of the computer, another being energized during the scoring of the first ball after a strike to operate the doubling relay of the computer, and the third being energized during the scoring of the second ball after a strike to operate the doubling relay of the computer. The circuitry of the computer further provides that when the two preceding balls thrown are a strike involving one of the individual scoring totalizers, the scoring of the first ball thrown after the second strike has both second and third individual relays energized which in turn energize both the doubling and tripling relays for tripling the pinfall addition being added to the associated individual scoring totalizer for that ball.

A ball and frame counter is provided with each of the individual scoring totalizers which in turn operates a control means so as to prevent tripling the pinfall of any ball thrown after the first ball of the tenth frame and to prevent doubling the pinfall of any ball thrown after the sec-







# PATENTS

GRANTED DECEMBER 21, 1971

## GENERAL AND MECHANICAL

3,628,189

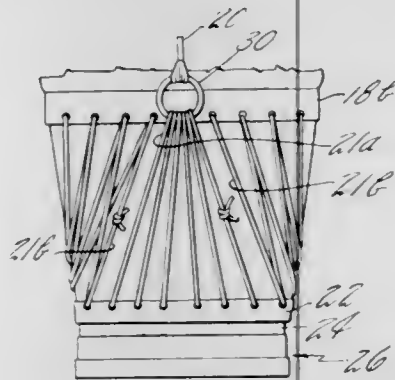
### PRESSURE SUIT LOAD-RELIEVED SIZE-ADJUSTMENT JOINTS

Michael A. Marroni, Jr., Weatogue, and Douglas E. Getchell, Windsor Locks, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.  
Continuation of application Ser. No. 785,612, Dec. 20, 1968, now abandoned. This application June 22, 1970, Ser. No. 48,946

Int. Cl. A62b 17/00

U.S. Cl. 2-2.1 A

3 Claims



Plug loads in a pressurized suit are transmitted across size-adjusting joints in order to relieve convolute distortion which increases the torque required for flexing the various portions of the pressurized suit. In a first arm embodiment, the plug load restraint terminates in a rigid arm ring; in a second arm embodiment, the plug load restraint terminates in an eyelet which is laced in a fanned out fashion to the opposite side of the adjustment joint, thereby to spread the load to a substantially rigid wrist ring. In a leg embodiment, the plug load restraint of the knee section is joined to a plug load restraint of an ankle section directly, by an adjustable strap, the ankle section terminating in a load-distributing member near the sole of the boot.

3,628,190

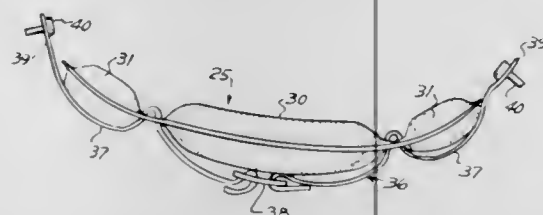
### HELMET NECKGUARD

Stephen J. Molitoris, Farmington, Mich., assignor to American Safety Equipment Corporation of Michigan, Detroit, Mich.

Filed Jan. 7, 1970, Ser. No. 1,137  
Int. Cl. A42b 3/00

U.S. Cl. 2-3 A

1 Claim



A helmet neckguard formed of a horizontally elongated pad arranged within the rear lower edge of a helmet shell for engaging the rear and rear sides of the base of the wearer's skull, and secured to the shell by an adjustable length strap slidably arranged on the rear face of the pad and with its opposite ends fastened to the shell near the ends of the pad, for adjusting the position of the pad relative to the front of the helmet, and thereby the size of the helmet, by adjusting the strap length.

3,628,191

### HEADGEAR FOR WRESTLERS

Bobby E. Douglas, 8 Boyd Avenue, Bridgeport, Ohio  
Filed June 8, 1970, Ser. No. 44,345  
Int. Cl. A42b 3/00

U.S. Cl. 2-3 R

5 Claims



A unitary headgear for wrestlers made entirely from elastic or resilient material. This headgear includes an integral head and chin fitting harness together with protective ear pads and by virtue of the elastic characteristics of the material used, it is capable of a snug but comfortable form fit on different sizes and shapes of heads which is accomplished without the use of any adjustment clamps, buckles, laces or similar adjustment devices that are susceptible of becoming loose or that would be likely to cause injury to the opponent of the wearer.

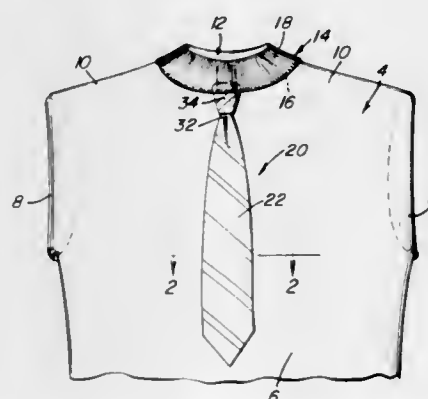
3,628,192

### COMBINED TIE AND SHIRT

Frank Artz, Sr., 500 Joseph St., New Orleans, La.  
Filed Nov. 8, 1968, Ser. No. 774,377  
Int. Cl. A11b 3/00; A41d 25/00

U.S. Cl. 2-130

2 Claims



A slipover shirt made from stretch-type knit fabric such as "Ban-Lon" or an equivalent launderable knitted material. This shirt has a turtleneck or mock turtleneck collar. It is unique in that it is provided with a simulated four-in-hand necktie also made of knit fabric. This innovation transforms a sport shirt into an acceptable dress shirt.

3,628,193

### TACTILE IMAGE PROJECTION SYSTEM

Carter C. Collins, Mill Valley, Calif., assignor to The Institute of Medical Sciences, San Francisco, Calif.  
Filed Feb. 19, 1969, Ser. No. 800,909  
Int. Cl. A61n 1/36

U.S. Cl. 3-1

11 Claims

A tactile image converter for blind subjects comprises a television camera device the output of which modulates a commutating cathode-ray tube comprising a conductor array sealed in one face thereof. The camera device and commu-

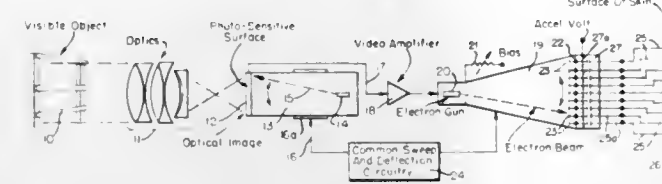
DECEMBER 21, 1971

GENERAL AND MECHANICAL

819

tating tube are scanned in synchronism with one another at a rate producing current pulses in the conductor array having pulse widths preferably in the order of 10 to 100

microseconds. The conductors of the array are coupled respectively to electrodes in contact with the subject's skin to produce a two-dimensional electrical skin stimulation pattern of a visible object.



microseconds. The conductors of the array are coupled respectively to electrodes in contact with the subject's skin to produce a two-dimensional electrical skin stimulation pattern of a visible object.

3,628,194

### VALVE STRUCTURE FOR CONTROLLING DISCHARGE OF WASTE LIQUID INTO PNEUMATIC SEWAGE DISPOSAL SYSTEM

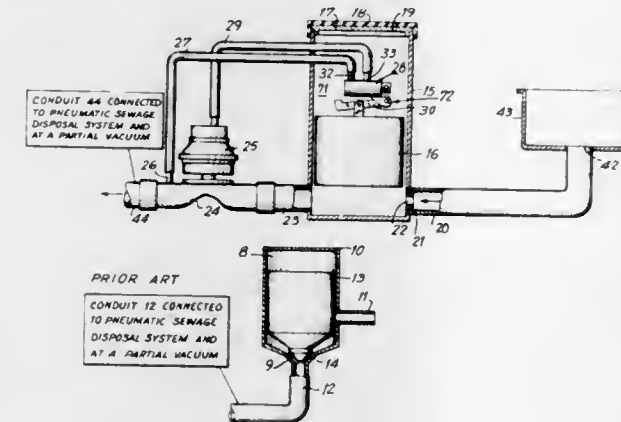
Sven Algot Joel Liljendahl, Kallhall, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed July 15, 1970, Ser. No. 54,927

Claims priority, application Sweden, Sept. 8, 1969, 12366/69  
Int. Cl. E03d 1/00, 5/00, 3/00

U.S. Cl. 4-10

12 Claims



The specific air supply device comprises an inverted cup filled with air on each flushing cycle and having its air supply added to the tank at the start of the next flushing cycle.

3,628,196

### FLEXIBLE CHEMICAL TOILET

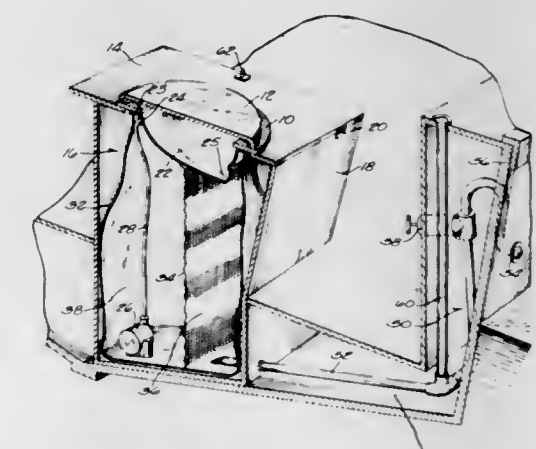
Ronald G. Quiram, Michigan City, Ind., and Gaylord M. Borst, Galesburg, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 24, 1969, Ser. No. 869,019

Int. Cl. A47k 11/02; B63b 17/06

U.S. Cl. 4-115

10 Claims



Waste liquid is discharged into a pneumatic sewage disposal system through a discharge conduit from the outlet of a place in a kitchen or laundry or a fixture in a bathroom like a bathtub or washbasin, for example. Flow control structure is operatively associated with the discharge conduit which opens when liquid starts to flow from the outlet and closes when the flow of liquid stops.

3,628,195

### AIR BALANCE FOR WATER CLOSET

E. Chris Skousgaard, Box 805, Lake Arrowhead, Calif.

Filed Mar. 3, 1969, Ser. No. 803,658

Int. Cl. E03d 3/00, 3/10

U.S. Cl. 4-26

5 Claims

A water closet of the tank type in which a limited supply of air is entrapped in the tank by water under pressure of the domestic supply and serves to assist the water pressure in expelling flushing water to the bowl during the flushing cycle having means for maintaining the supply of air at the desired level despite absorption of air by the water, such means in-

Disclosed herein is a recirculating marine toilet including a bowl having a discharge outlet, a flexible container containing chemically treated fluid located to receive waste fluid from the outlet, a flexible filter screen separating the flexible container into a first compartment for waste fluid and a second compartment for filtered fluid, and a recirculating pump in the second compartment to pump the chemically treated filtered fluid from the second compartment to the bowl to flush waste through the outlet into the first compartment. A vacuum discharge port and an overboard discharge can be provided from the first compartment for removal of waste fluid from the container.



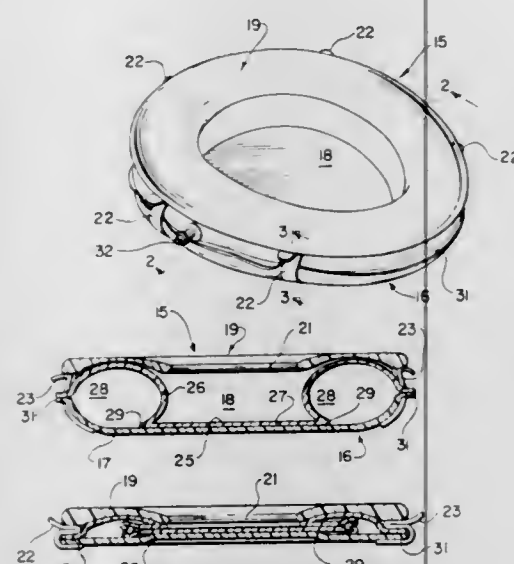
3,628,197

**COLLAPSIBLE AND DISPOSABLE BEDPAN**Ruth Lee Leventhal, 440 East 57th St., New York, N.Y., and  
William R. Gold, 77 East 12th St., New York, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,172

Int. Cl. A61g 9/10

U.S. Cl. 4-113



A bedpan is provided which is collapsible and may be disposable. The two main components of the bedpan are a rigid seat which may be sterilized, and a disposable waste receptacle. The waste receptacle consists of an inflatable donut-shaped ring of flexible material, and a membrane of the same material within the ring to retain the waste. The disposable component is designed to facilitate construction in either heat-sealed vinyl, or moulded rubber. The bedpan may be conveniently positioned under the patient in its collapsed state of approximately 1-inch height, inflated to usable size, used, removed, emptied and washed, deflated and reused as required. When no longer necessary, the flexible portion may be detached and disposed of, and the rigid seat sterilized for reuse, cooperating snap elements being provided to attach the seat to the inflatable receptacle. The unit may be inflated by a hand- or foot-operated pump, a compressed air supply, or a charged capsule, either by a patient or by an attendant. An alternate construction may consist of an integral seal and inflatable waste receptacle using a throwaway liner in the receptacle.

3,628,198

**PROTECTIVE COPING FOR A SWIMMING POOL**

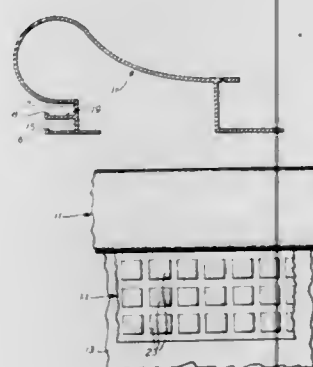
Frederick Katzman, 372 Hamilton Blvd., Piscataway, N.J.

Filed Sept. 30, 1970, Ser. No. 76,803

Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172.21

7 Claims



The invention is a swimming pool coping construction having a pair of channels, into the one of which, a swimming pool liner is fitted, and into the other of which, a protective

panel is snap-fitted, thereby to present an ornamental face, simulating a tile border.

3,628,199

**HOSPITAL-TYPE BED**

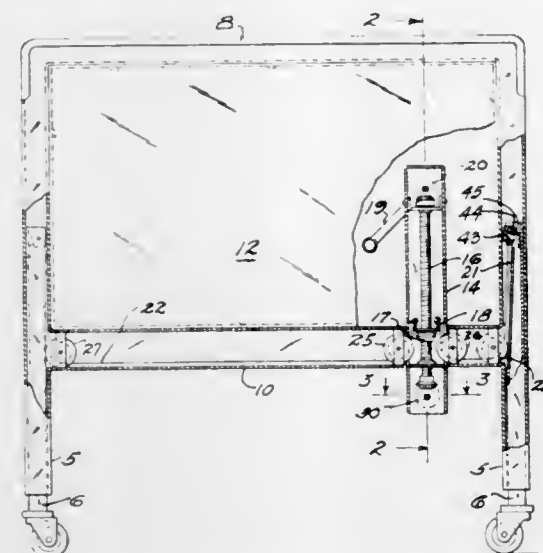
William J. Helton, Affton, Mo., assignor to Foster Bros. Manufacturing Company, St. Louis, Mo.

Filed Sept. 25, 1969, Ser. No. 860,916

Int. Cl. A61g 7/00, 7/10

U.S. Cl. 5-63

2 Claims



A bed having end frames with corner posts telescoping assembled with floor engaging legs, there being separate cable elements associated with each end frame and each secured at one end to the upper portion of a leg and passing over sheaves in the end frame and secured at its other end to a takeup device on the end frame, and mechanism for actuating the takeup devices simultaneously. The takeup devices are intermediate the sides of the bed and the takeup devices at both ends of the bed are actuated by a single-operating crank projecting from the upper portion of one end of the bed. Preferably the takeup devices and mechanisms are substantially enclosed in the end frames except for a crank projecting from one end frame for manual operation.

3,628,200

**HOSPITAL-TYPE BED**

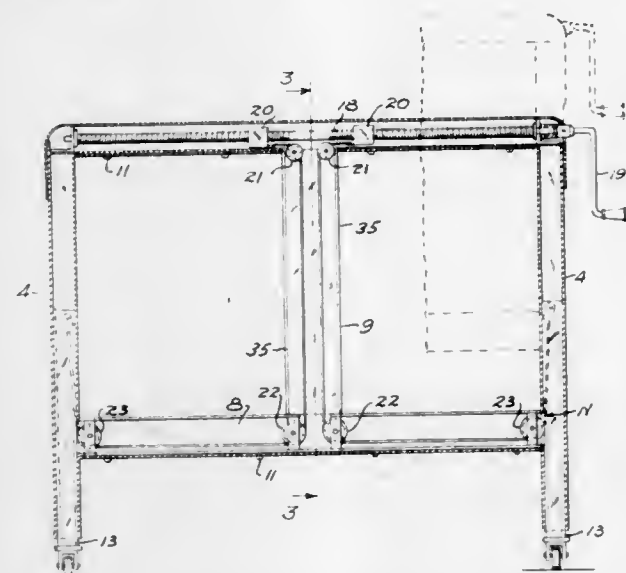
William J. Helton, Affton, Mo., assignor to Foster Bros. Manufacturing Company, St. Louis, Mo.

Filed July 3, 1969, Ser. No. 838,787

Int. Cl. A61g 7/00; A61q 7/10

U.S. Cl. 5-64

4 Claims



A hospital-type bed including a frame with head and foot members each having tubular upright corner posts connected

by upper and lower horizontal members of channel shape which are braced intermediate their ends by a wider upright member of channel shape. A panellike cover plate is detachably secured to each member. Each corner post is open at its lower end and telescopically receives an upright, floor-supported leg. A single elongated threaded shaft is journaled in the upper horizontal member of each end frame and is rotatable by a crank applicable to either end of the shaft. Nuts on the shaft are slidable lengthwise of the upper horizontal member by rotation of the shaft. An individual cable is secured at one end to each nut and extends over sheaves in the frame and is secured at its other end to the upper end of a floor-supported leg. When the crank is actuated to rotate the shaft, the cables are taken up or paid out to raise or lower the end frame on the telescoping legs. A friction pawl on each leg automatically engages the associated corner post to hold the leg against dropping from the post when the leg and cable do not support the end frame.

3,628,201

**BOX SPRING STRUCTURE**

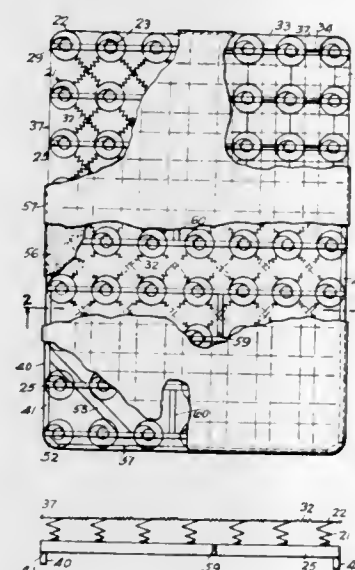
Daniel Krakauer, Great Neck, N.Y., assignor to Kay Manufacturing Corp., Brooklyn, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,582

Int. Cl. A47c 23/04, 25/00

U.S. Cl. 5-241

7 Claims



A combined inner spring unit and an upholstery framing unit utilizing to the utmost the load-sustaining properties of the parts and reducing to a minimum the cost and weight of the finished box spring. A number of crossbeams of greater depth than thickness each has attached to the upper edge thereof, the bottom coils of a row of cone springs about 3 to 4 inches high or about half the overall height of the finished box spring. The large top coils of the springs may be interconnected before the crossbeams are connected. Optionally, before the ends of the crossbeams are connected, an even number of inner spring units may be interdigitated and shipped with or without the upholstery framing parts, to the upholsterer. The framing parts comprise opposed side rails arranged edgewise to produce the conventional overall height of about 7 to 8 inches. The siderails connect the ends of the crossbeams and terminate adjacent the end crossbeams. Additional frame bracing is optional. A relatively stiff turn of the springs is optional to prevent bottoming.

3,628,202

**TOOL FOR FORMING ELECTRICAL CONNECTIONS**

Christopher Kingsey Brown, Camp Hill, William Roderick Over, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 776,383, Nov. 18, 1968, abandoned

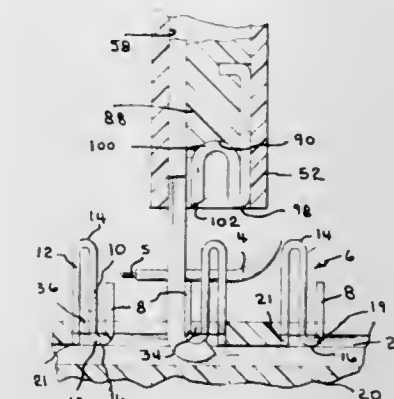
Filed Aug. 21, 1970, Ser. No. 66,050

Int. Cl. B25f 1/04; B25b 27/14

U.S. Cl. 7-14.1

12 Claims

Tool for inserting a wire into a slot in a terminal member comprises housing having slidable plunger mounted therein.



Terminal support or reaction member extends from the housing and is adapted to support the terminal on its side which is opposite to the side on which the slot is provided. By virtue

of this support member, none of the forces applied to the wire and the terminal during insertion of the wire are transmitted to the housing in which the terminal is mounted.

3,628,203

**AMPHIBIAN TRAILER**

Lutz Nohse, Niels-Bohr-Ring 5, 2400 Lubeck, Germany

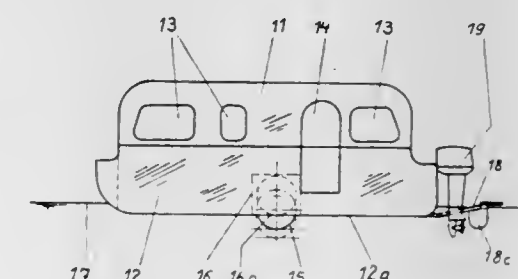
Filed Feb. 27, 1969, Ser. No. 802,884

Claims priority, application Germany, Mar. 2, 1968, P 15 56 829.5; Aug. 14, 1968, Germany J 18274, Aug. 16, 1968 J 18275

Int. Cl. B63c 13/00

U.S. Cl. 9-1 T

5 Claims



In an amphibian trailer comprising wheels each rotatably mounted on a pivotal spring arm and each individually movable out of a lower position for traveling on land into an upper position when floating on water, in which latter position the wheels are accommodated in wheel boxes forming parts of the undercarriage of the trailer to which they are connected in a watertight manner, the provision of: an adjustment arm pivotal about a common axis with the spring arm and extending angularly thereto, spring means connecting the free ends of both arms, and drive means in form of a threaded spindle and nut engaging the adjustment arm and operable from the interior of the trailer; a bifurcated tow bar adapted to be coupled to a motor vehicle and pivoted with its fork ends by clutch means to the undercarriage of the trailer lockable in any position between a lower and an upper position, the tow bar in a raised position serving simultaneously to support a platform hinged to the undercarriage; a course stabilizing plate vertically extending from the tow bar into the water when the tow bar is in its lower, substantially horizontal position; and mounting means for an outboard motor arranged at that end of the trailer which forms the stern when floating.



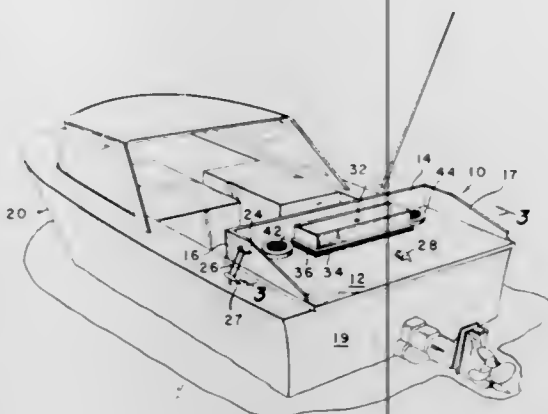
### 3,628,204 FISH DECK

Herbert J. Hoffman, Jr., 433 Bontona Ave., Fort Lauderdale, Fla.

Filed July 6, 1970, Ser. No. 52,437  
Int. Cl. B63b 25/18

U.S. Cl. 9-1

10 Claims



A fish deck adapted to be secured to the stern of a boat providing a surface for cleaning fish and including means for supporting fishing rods, bait pails, a fish box and a gaff.

### 3,628,205

#### OCEANOGRAPHIC SURVEY DEVICE

Bertrand Julian Starkey, and Alexander Smith Watson, both of Dartmouth, Nova Scotia, Canada, assignors to EMI Limited, Hayes, Middlesex, England

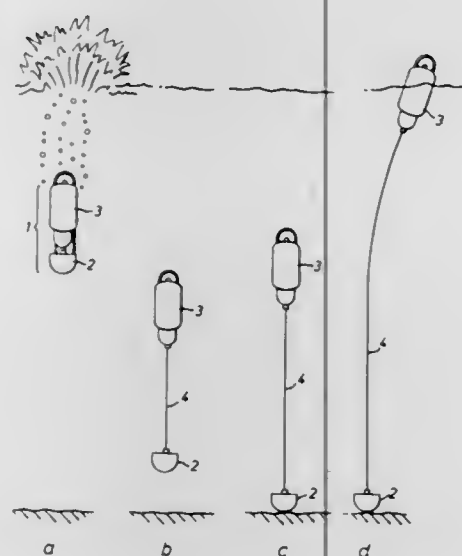
Filed Dec. 12, 1968, Ser. No. 783,382

Claims priority, application Great Britain, Jan. 31, 1968, 4,906/68

Int. Cl. B63b 21/16

U.S. Cl. 9-8 R

6 Claims



An oceanographic survey device according to the invention comprises a buoy, means for mooring the buoy at a predetermined depth to the ocean bed, instruments attached to the buoy for one or more recorders carried by the buoy for measuring one or more parameters, means for causing the buoy to move up and down in the water along a substantially vertical line, and clock means for sequentially initiating operation of the means for causing the buoy to move at regular predetermined times after the buoy is moored. Means are provided for controlling the operation of the means for causing the buoy to move so that in response to each initiation of the operation thereof the buoy moves vertically in the water from the predetermined depth to a second depth and back to the predetermined depth.

### 3,628,206

#### COMBINATION COASTER AND RAFT

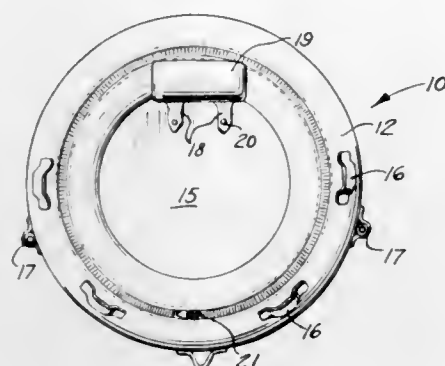
John L. Mecham, 1193 E. 2nd North, Orem, Utah

Filed Nov. 21, 1967, Ser. No. 684,657

Int. Cl. B63c 9/04

U.S. Cl. 9-11

1 Claim



This device is composed of an inflated rubber innertube which forms the main body portion of the device and a bottom portion is secured to a toroidal-shaped canvas or neoprene covering which is laced together at the top area of the device, the base portion of the device being constructed of fiberglass or other suitable material with foam rubber secured to the top of it to form a comfortable seating area within the device. The device may be used as a coasting structure for riding on soft snow safely down slopes and it also serves as a raft when used upon water.

### 3,628,207

#### CONTROL SYSTEM INTERCONNECTING THE OPERATION OF TWO MACHINES

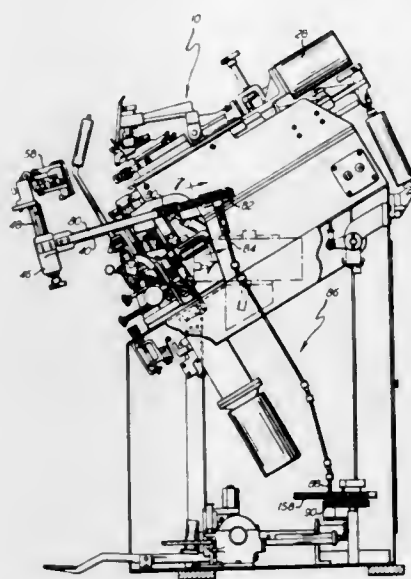
Jacob S. Kamborian, 70 Crestwood Road, West Newton, Mass.

Filed Sept. 22, 1970, Ser. No. 74,347

Int. Cl. A43d

U.S. Cl. 12-1 R

8 Claims



In an arrangement for first operating a toe-lasting machine to toe last a shoe and then operating a heel-lasting machine to heel last a shoe, a mechanism for shifting the position of a toe rest of the heel-lasting machine in accordance with the length of the shoe as determined by the position of engagement with the shoe of a heel clamp in the toe-lasting machine.

### 3,628,208

#### MACHINE FOR PERFORMING WORK ALONG A SELECTED PORTION OF THE PERIPHERY OF A WORKPIECE

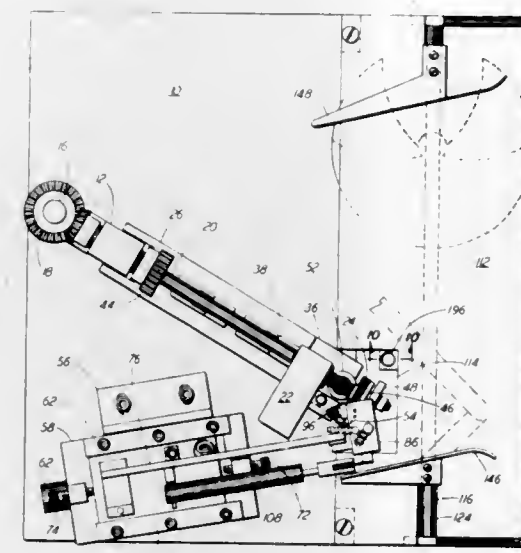
Wladyslaw Typrowicz, and Otto M. Springer, both of Belmont, Mass., assignors to Jacob S. Kamborian, West Newton, Mass.

Filed Mar. 6, 1970, Ser. No. 17,089

Int. Cl. A43d 43/06

U.S. Cl. 12-20

56 Claims



A machine for applying a ribbon of cement along the periphery of a sole. The machine incorporates a control for feeding the sole periphery past a cement extruding nozzle and for terminating the feed and the cement extrusion after the portion of the sole periphery to be coated has moved past the nozzle, a control for changing the position of the nozzle inwardly of the sole periphery during the feeding and a control for concomitantly changing the feed speed and the rate of cement extrusion.

### 3,628,209

#### DEVICE FOR CONNECTING VARIOUS FLOORS OF A CONSTRUCTION LOCATED AT DIFFERENT LEVELS

Leon G. Parent, Liege, Belgium, assignor to CIREB S.A.

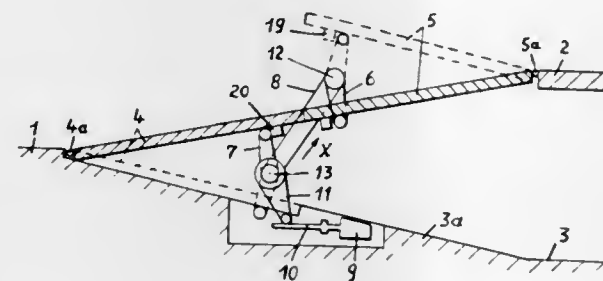
Filed June 9, 1969, Ser. No. 831,670

Claims priority, application Belgium, June 12, 1969, 41789

Int. Cl. B65g 11/00

U.S. Cl. 14-71

8 Claims



Disclosed herein is a device for connecting several superposed levels of a structure with an access surface. The device comprises at least two ramps articulated at their opposed outer extremities and positionable in one position in which they are aligned and another position in which the extremities opposite the articulated extremities are separated from one another by means of arms associated with and disposed laterally with respect to each ramp. The arms pivot in a frame at one extremity thereof under the action of a driving force; and the other extremity of each arm is provided with a roller for supporting the ramp. The pivoting movement of the arms associated with each ramp are arranged to counterbalance the movement of the other ramp.

### 3,628,210

#### ELECTRIC PLASTER-FINISHING TROWEL

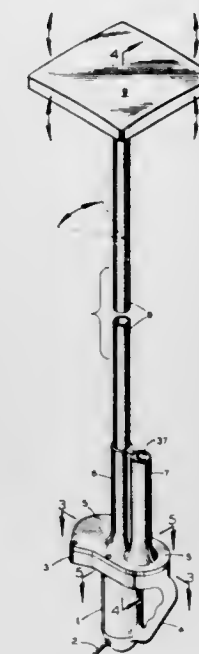
Edwin Padgett, 630 S.W. 7 Avenue, Hallandale, Fla.

Filed Sept. 19, 1969, Ser. No. 859,366

Int. Cl. E04f 21/16

U.S. Cl. 15-3

2 Claims



A portable electric motor driven plaster finishing device having a pair of sockets to selectively receive a shaft terminating in a troweling plate universally connected to the shaft. The device includes a transmission which will oscillate the shaft and a troweling plate when the latter is positioned in one socket and the device energized to form a first type of variegated pattern in uncured planar plaster surfaces. The transmission is also adapted to rotate the shaft and troweling plate when the shaft is placed in the second socket for forming different types of patterns on uncured planar plaster surfaces.

### 3,628,211

#### CARPET SWEEPER

Hiroshi Fukuba, 2-320-82, Matsugaoka, Nagareyama, Chiba Prefecture, Japan

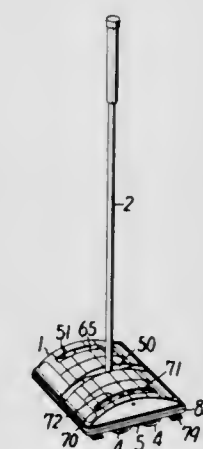
Filed May 12, 1969, Ser. No. 823,570

Claims priority, application Japan, May 15, 1968, 43/32148

Int. Cl. A47f 11/33

U.S. Cl. 15-42

2 Claims



A carpet sweeper to be moved back and forth by operating a handle is provided with a rotary cleaning brush adapted to be moved in contact with the floor by means of drive wheels on a sweeper body. The frame cover of the sweeper body is of a double-wall structure made of a thin, lightweight synthetic resin plate. The sweeper body further comprises dust receptacles covering the under portion and positioned to



the front and rear of the rotary brush, means for elevating the drive wheels and comb members to clean the rotary brush. The operating members for opening or closing the dust receptacles and for elevating means are disposed on the upper surface of the frame cover.

3,628,212

**WHEEL WASHER ASSEMBLY**

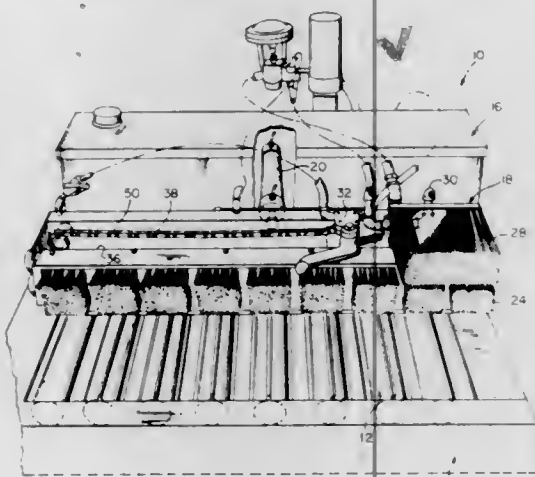
Russel A. Van Brakel, Wood Dale, Ill., assignor to Haverberg Auto Laundry Equipment Co., Inc., Chicago, Ill.

Filed Aug. 20, 1969, Ser. No. 851,539

Int. Cl. B60s 3/04

U.S. Cl. 15-21 B

4 Claims



A conveyor moves a vehicle along a path through a wheel washer. A wheel of the vehicle is rotated as it is moved along the path. A lower brush, stationary in respect to the direction of the path, and an upper movable brush having elongated flexible bristles are moved into engagement with the wheel with the lower brush engaging the tire and the upper brush engaging the hub cap. The upper brush carries a spray nozzle and is moved in synchronism with the wheel by a sensing device that is engaged by the wheel. In one form the upper brush is stepped to engage the center of the hub cap and its inset edge.

3,628,213

**VACUUM CLEANING APPARATUS TO REMOVE INDUSTRIAL WASTE FROM MACHINERY**

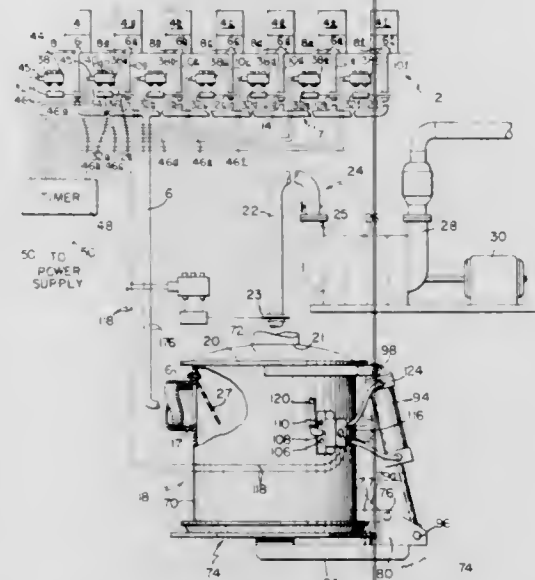
Oliver H. Ramo, North Abington, Mass., assignor to Abington Textile Machinery Works, Inc., North Abington, Mass.

Filed Oct. 13, 1969, Ser. No. 870,487

Int. Cl. A471 5/00

U.S. Cl. 15-352

17 Claims



Textile vacuum cleaning apparatus for automatically providing in timed sequence repetitive, intermittent im-

sions of waste into a piping system having therein a waste receiving tank for collecting the imploded waste, in which the receiver tank is automatically and intermittently unloaded each time an implosion occurs without interrupting the impositions and in which waste imploded into such piping system by such impositions is collected in said receiver tank between impositions, whereby the size of the receiver tank can be substantially reduced and whereby the waste collected in the tank between impositions is not subjected to the surging action of subsequent impositions.

3,628,214

**WHEEL OR ROLLER STRUCTURE WITH BRAKE**

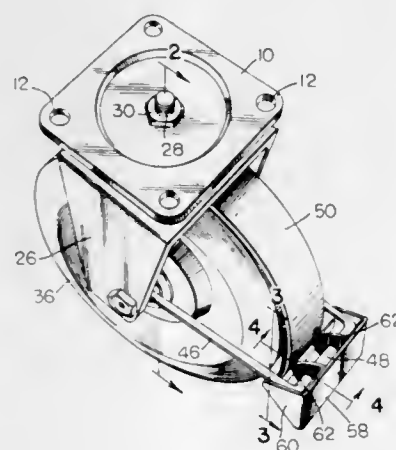
Robert H. MacKay, Fort Wayne, Ind., assignor to Lincoln Manufacturing Company, Inc., Ft. Wayne, Ind.

Filed Aug. 22, 1969, Ser. No. 852,409

Int. Cl. B60b 33/00; A47b 9/100

U.S. Cl. 16-35

2 Claims



The invention relates to a caster wheel or roller adapted for being mounted on an article which is to be rolled from place to place. The wheel may be provided with a selectively operable brake for locking it against rotation. A double bearing is interposed between the wheel supporting fork of the center wheel assembly and the part of the assembly that attaches to the supported article.

3,628,215

**UNITARY HINGE AND SPRING MEMBER**

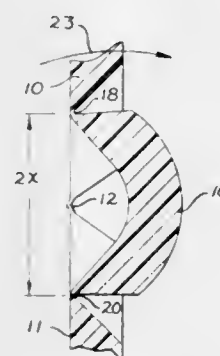
Donald E. Everburg, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 27, 1967, Ser. No. 693,828

Int. Cl. E05d 7/00; E051 1/12

U.S. Cl. 16-150

7 Claims



A combined hinge and spring device which may be molded of a plastic material in a single unit for use and application in a variety of products employing a spring hinge.

3,628,216

**ARTICULATED DOOR HINGE**

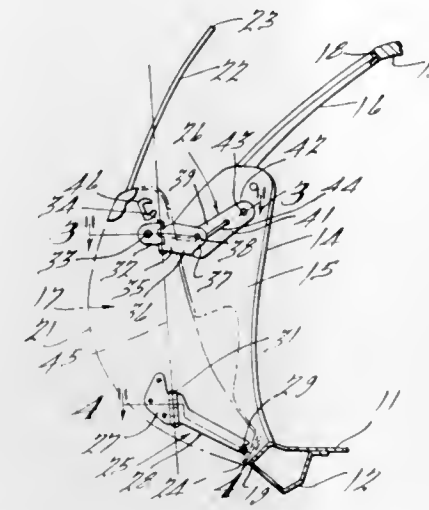
Charles L. Savell, Warren, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 1, 1970, Ser. No. 51,482

Int. Cl. E05d 3/10

U.S. Cl. 16-163

15 Claims



A door hinging system for supporting a door on a vehicle body for movement between closed and opened positions or opened and closed positions, movement in either opening or closing direction including in sequence a partially opened position at which a transfer of movement from one hinge axis to another occurs. For example, the sequence of movements in opening direction comprises a first movement about a longitudinal axis so that the door attains a partially opened outwardly tilted position relative to the vehicle body opening, the degree of outward tilt being determined by an extensible control element. Upon the proper outwardly tilted attitude being reached, upper and lower hinge pintles become axially aligned and provide a hinge axis about which the door is swingable in a conventional manner, as about a substantially vertical hinge axis, to an opened position permitting ingress to or egress from the vehicle interior.

Movement from opened to closed position of the door occurs in reverse sequence.

3,628,217

**HINGE FOR ARTICULATING A WALL PIVOTABLE TO AND FRO BETWEEN OPEN AND CLOSED POSITIONS**

Christian Schaber, Lossburg, and Gunter Schmid, Dietersweiler, both of Germany, assignors to Messrs. Franz Hettich KG, Alpirsbach, Germany

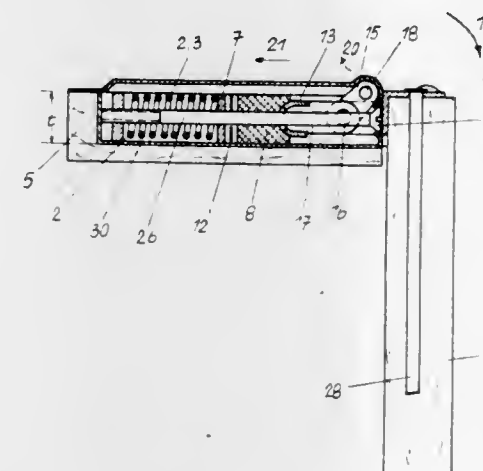
Filed Sept. 30, 1968, Ser. No. 763,792

Claims priority, application Germany, Oct. 25, 1967, H 60597

Int. Cl. E05d 1/12

U.S. Cl. 16-190

14 Claims



A hinge for pivoting a door or the like to a stationary member has coil springs acting in such a way on the door as

to tend to hold it in open position. The springs operate on the door through a sliding block which frictionally engages the wall of the casing in which the springs are mounted so as to exert a braking effect on the movement of the door.

3,628,218

**CARCASS PROCESSING MACHINE**

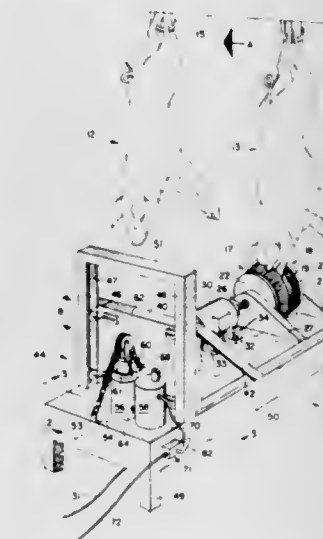
Knud Simonsen; Soren Sondergaard, both of Islington, Ontario, and Erik Norgaard Eriksen, Malton, Ontario, all of Canada, assignors to Knud Simonsen Industries Ltd.

Filed Nov. 20, 1969, Ser. No. 878,351

Int. Cl. A22b 5/08

U.S. Cl. 17-1

9 Claims



A machine for effecting a processing treatment such as a cleaning operation on each of a series of animal carcasses sequentially fed to an operating station at which such a machine is disposed comprises a carcass-treating unit and a positioning means for moving the carcass-treating unit towards and away from each animal carcass disposed at the operating station in response to dimensional characteristics of each said carcass. The machine which is especially suited for cleaning hog heads after singeing depilation usefully includes a pneumatic means containing a volume of air which is compressed to an extent dependent on the reactive force exerted by each animal carcass on the carcass-treating unit of the machine so as to permit the desired variable movement of the carcass-treating unit of that machine away from each such animal carcass.

3,628,219

**METHOD AND APPARATUS FOR FORMING A COMBED SLIVER**

Minoru Nakamura, Amagasaki-shi; Megumi Minamibata, Takarazuka-shi; Munetaka Terao, Itami-shi; Sueo Kawabata, Nara-shi; Masateru Nishimura, Ichinomiya-shi; Toshio Kato, Gifu-shi, and Kazuo Yamada, Haguri-gun, all of Japan, assignors to Osaka Kiko Kabushiki Kaisha, Osaka and Chuwa Wool Industry Co., Ltd., Ichinomiya-shi, Japan

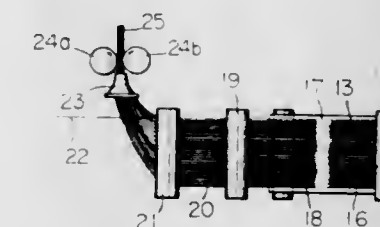
Filed Apr. 21, 1969, Ser. No. 817,995

Claims priority, application Japan, Dec. 13, 1968, 43/91728;

Dec. 26, 1968, Japan, 43/96222

U.S. Cl. 19-231

4 Claims



A method and apparatus for forming a combed sliver having a preferable arrangement of component fibers so as to produce drafted sliver having uniform thickness of sliver. In



the sliver-forming step according to the present invention, each component tuft of fleece delivered from a detaching roller of a comb is provided with shear of fiber end arrangement so that leading ends of individual fibers of the component tuft are substantially arranged with uniform density with respect to an axis of sliver. The sliver-forming apparatus according to the present invention is provided with means for producing shear of fiber end arrangement so as to create uniform distribution of fiber ends in the sliver and provided with an auxiliary means for effecting positive movement of fibers during the sliver-forming operation.

3,628,220

# SPACE-AGE NECKTIE AND BUTTON ENGAGING FASTENER

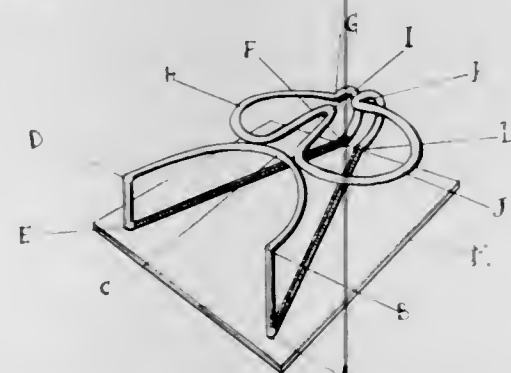
Gaetano Alibrandi, 214 Commonwealth Ave., Boston, Mass.

Filed Dec. 2, 1970, Ser. No. 94,337

Int. Cl. A41d 25/04

U.S. Cl. 24-56

2 Claims



This invention concerns a necktie essentially composed by two parts of which: one is an already-made ornamental apparel, hereafter called "necktie," that can have various perimetral forms and different sections and that does not require any further manipulation, preparation or elaboration with regard to its appearance and looking; the other part composing and completing my invention is a button engaging fastener attached on the rear upper portion of the necktie for removably securing said necktie to the collar button of a wearer. Said button engaging fastener having a base portion securable to the necktie so as to lie in the plane of the necktie, a button engaging so as to lie in the plane of the necktie, a button engaging portion lying in a plane generally parallel to the plane of the necktie, and means connecting said base portion and button engaging portion, said button engaging portion being formed from wirelike material and comprising a generally heart-shaped loop defining an elongated button-straddling slot between two opposed loops and a generally C-shaped loop which abuts and closes the said button-straddling slot.

3,628,221

# DEVICE FOR CLAMPING AND TIGHTENING CABLES AND THE LIKE

Max Pasbrig, Casa Luce-Via all'Eco, Orselina, Switzerland

Filed Apr. 30, 1969, Ser. No. 820,410

Claims priority, application Germany, May 2, 1968, P 12 80

369.9, July 17, 1968, July 17, 1968, July 17, 1968, May 22,

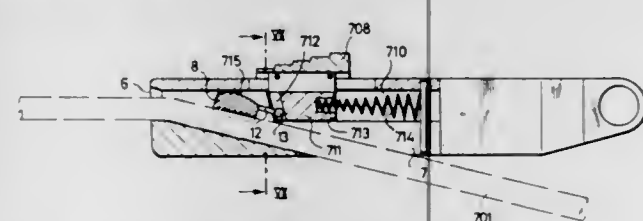
1968, Germany, Germany, Germany, Great Britain,

P 17 65 781.7, P 17 65 784.0, P 17 65 782.8, 24,444/68

Int. Cl. F16g 11/00; A44b 11/10

U.S. Cl. 24-126 L

31 Claims



The invention relates to a device for detachably connecting, fixing and tightening connecting elements, particularly

electric cables, wire ropes, chains, belts and the like. The device consists of a housing equipped with a recess with wedge-shaped clamping surfaces against which at least one spring-loaded clamping member tightens at least one associated connecting element. The connecting element passes rectilinearly through the housing and may be fitted thereinto from the side. A sleeve or bush is provided for releasing the clamping effect, is displaceable on the housing and surrounds the same wholly or partially. The clamping device may be constructed as a closure in which case the connecting element has a pan-shaped configuration.

3,628,222

# LATCHING MECHANISM

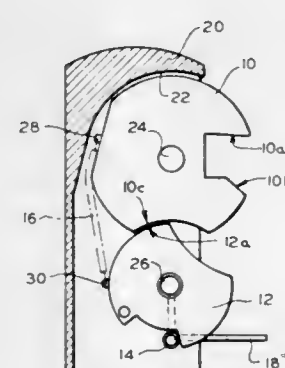
Richard L. Palen, New Buffalo, Mich., assignor to Clark Equipment Company

Filed Oct. 6, 1969, Ser. No. 864,084

Int. Cl. A44b 17/00; A43c 11/08; A62b 35/00

U.S. Cl. 24-201

3 Claims



A latching mechanism having two pivotally mounted and interacting members. This mechanism provides for automatic locking when moved to the latched position with provisions for unlocking when unlatching is desired. The latching mechanism is particularly adaptable for use in latching shipping containers to the bed of transporting vehicles.

3,628,223

# CLIMBING CONCRETE FORM HOIST

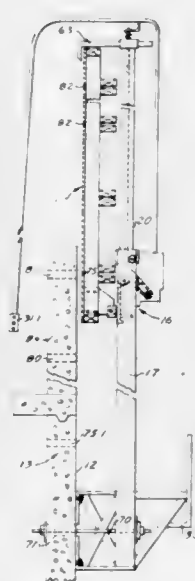
Alexander Babee, 325 Stratford Avenue, North Burnaby, British Columbia, Canada

Filed May 11, 1970, Ser. No. 36,087

Int. Cl. E04g 11/22

U.S. Cl. 425/65

7 Claims



A climbing form hoist for raising a form panel progressively up a concrete wall under construction, the hoist having a telescopic mast, the mast having an upper member secured to upper and lower edges of the panel, and a lower member

releasably securable at a lower end to the wall. Means are provided to extend and retract the mast so that with the mast secured to the wall the form panel can be released from the wall and raised to a new position and with the form panel resecured to the wall the lower end of the mast can be released from the wall, raised and resecured.

3,628,224

# PROCESS AND APPARATUS FOR CONTINUOUSLY TREATING MANMADE FILAMENT TOWS UNDER A NORMAL PRESSURE CONDITION

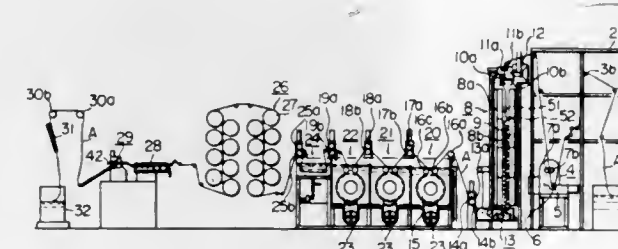
Kenichi Murotani; Hiroshi Sugimoto; Hajime Sahara; Kenzo Kosaka; Kiyoshi Adachi, and Tunekiko Nakamura, all of Nagoya, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed June 18, 1970, Ser. No. 47,369

Claims priority, application Japan, June 30, 1969, 44/51093; May 20, 1970, Japan, 45/42423

U.S. Cl. 28-1.6

27 Claims



A process and apparatus are disclosed for continuously and uniformly wet-treating a manmade filament tow under a normal pressure condition without undesirable entanglement and excessive elongation of the filaments. The manmade filament tow is impregnated with a treating liquid, accumulated in a treating box in a square column-form, heated at a given temperature for a predetermined time period while passing through the treating box, cooled in a cooling means by passing cooling water through said tow accumulation, washed in a washing means with a washing liquid and then crimped into a desired crimped form. These processes are carried out uniformly and continuously without any disturbance of the filament tow. The process and apparatus of the present invention is valuable for obtaining the wet-treated and crimped manmade filament tow which is adequate to be subjected to draft-cutting-type tow spinning.

3,628,225

# METHOD OF MAKING A MILITARY BLANK CARTRIDGE

Robert W. Parker, 668 N. Hart, Orange, Calif.

Filed July 19, 1968, Ser. No. 746,071

Int. Cl. B21d 51/54

U.S. Cl. 29-1.3

19 Claims



A blank cartridge for use in military rifles and machine guns, such cartridge having a metal-coated plastic body the nose of which is swaged into an elongated tapered configuration after the body is loaded. An apertured gas-seal and metering element is mounted between the nose and the base, the latter being locked to the cartridge body by a locking and sealing insert. In accordance with the method, the body is a metal-coated plastic extrusion which is first locked to the base, then loaded with powder, and then swaged to form the elongated tapered nose portion.

# 3,628,226 METHOD OF MAKING HOLLOW COMPRESSOR BLADES

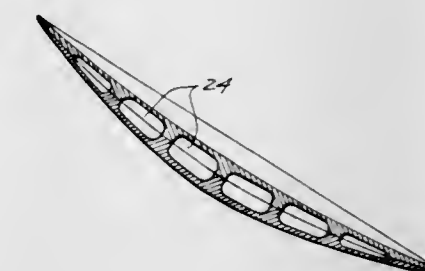
Marvin L. Nelson, Fullerton, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Mar. 16, 1970, Ser. No. 19,897

Int. Cl. B23p 15/02, 15/04

U.S. Cl. 29-156.8 H

3 Claims



A method of manufacturing hollow compressor blades. A pair of forgings are first rough machined into flat blanks. Complimentary grooves are machined in one surface of each half, and the other surface is hot-formed to an airfoil shape. The grooved surface of each blank is machined to a flat plane, and the finished blanks are bonded together. Finally, the bonded blade is twist-formed and final-machined to produce a finished hollow compressor blade. A principal improvement over the prior art lies in bonding the two blanks before twist-forming is accomplished.

3,628,227

# METHOD OF EXPANDING TUBES

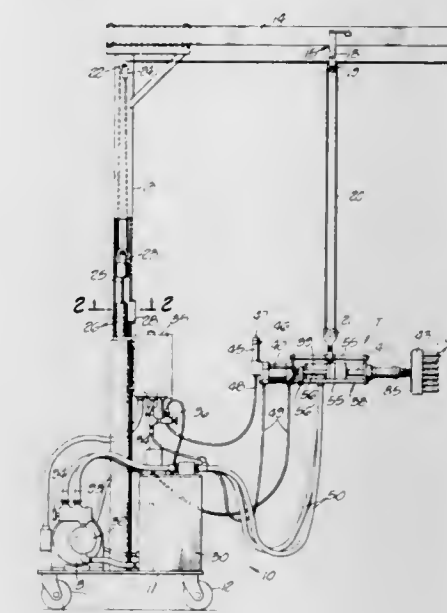
Marvin J. Blackburn, Pasadena, and Harry L. Corwin, Los Angeles, both of Calif., assignors to Vernon Tool Co., Ltd., Alhambra, Calif.

Filed Feb. 28, 1969, Ser. No. 803,375

Int. Cl. B21d 53/00; B21k 29/00; B23p 15/26

U.S. Cl. 29-157.4

9 Claims



A tube expander apparatus and method for expanding heat-exchange tubing into pressure assembly with a header bore. Expanding power is supplied by hydraulically powered motive means supplied with pressurized fluid from electrically driven pump means. Torque-sensing means is employed to arm the automatic cycling of the expanding operation and to condition the apparatus for restoration to starting position at the end of the tube-expanding cycle. The expansion cycle can be held in dwell condition at any stage at the user's option for any purpose. Gripper means swivelly mounted on the expander is effective to hold the tube against rotation during initial stages of the cycle should this be desirable.



3,628,228

**APPARATUS FOR CRIMPING ELECTRICAL CONNECTORS TO WIRES**

Lodevicus Lambertus Johannes van de Kerkhof, 's-Hertogenbosch, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

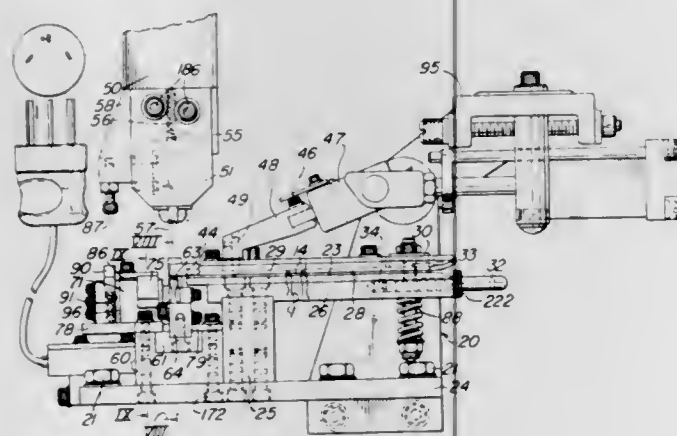
Filed Mar. 9, 1970, Ser. No. 17,411

Claims priority, application Netherlands, Mar. 28, 1969, 69.04810

Int. Cl. H01r 43/04

U.S. Cl. 29—203 DTS

5 Claims



A method of and apparatus for crimping a ferrule part of an electrical connector to a wire end is disclosed for use with connectors wherein a portion of the contact part of the connector extends beyond the base of the U-section ferrule part in the opposite direction to that in which the U-arms of the ferrule part extend.

3,628,229

**AUTOMATIC ARMATURE WINDING MACHINE**

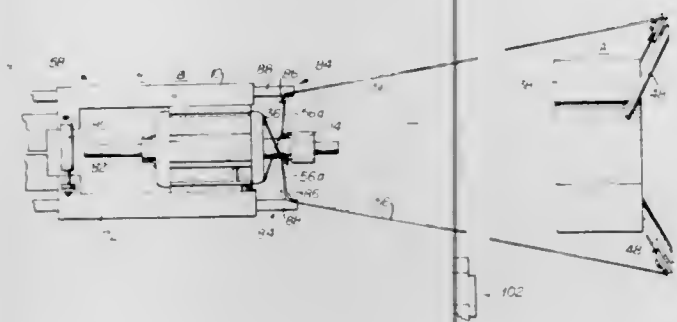
John M. Biddison, and Clarence W. Donnakker, both of Dayton, Ohio, assignors to The Globe Tool and Engineering Company, Dayton, Ohio

Filed Apr. 1, 1969, Ser. No. 812,258

Int. Cl. H02k 15/00

U.S. Cl. 29—205 C

11 Claims



In the automatic winding of armatures, the last lead wire from a coil wound in an armature is looped about an appropriate commutator tang and the wire portion connected between the newly wound armature and an unwound armature is cut closely adjacent the aforementioned commutator tang. Also disclosed is a double-flier apparatus for winding armatures, wirecutting assemblies, and a transfer mechanism adapted to hold the connecting wire portions in a position where they may be cut closely adjacent the tangs about which the wires are looped. In one embodiment the commutator tangs are collapsed at the time the connecting wire portions are cut.

A machine tool has a tool loader and unloader for inserting and ejecting tooling into the movable tool station of a machine tool remotely from its work station, for example into the turret of a punch press. A fluid actuator operates raising and lowering means that include concentric tool support surfaces piloted against rotation and having nests for receiving tooling of various sizes, one of such nests being rotatable for angularly positioning shaped tooling. Coacting therewith is tool ejection means that employs a single fluid actuator for reciprocating a tooling support plunger and a tooling ejecting plunger, there being a driving connection between the plungers enabling relative reciprocation thereof.

3,628,230

**HOG RING GUN**

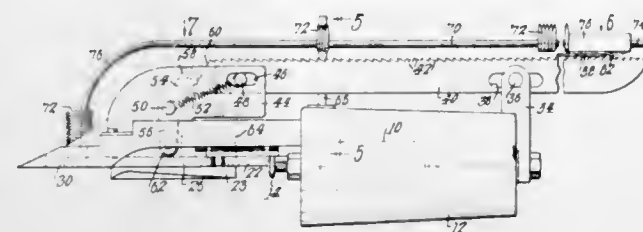
Frederick G. J. Grise, West Brookfield, Mass., assignor to Novelty Tool Company, Inc., Spencer, Mass.

Filed Jan. 15, 1970, Ser. No. 3,042

Int. Cl. B23q 7/10; B23p 11/00

U.S. Cl. 29—212 D

13 Claims



A hog ring gun including usual means for ejecting and clinching the rings, in combination with a bayonet type of magazine on which the hog rings are slidable and mounted in a row, a manually operated spring-actuated reciprocating toothed rack exerting predetermined pressure and alternate relief step by step on the row of rings on the bayonet to feed the rings to the anvil one at a time. Means is provided for causing the hog rings to become clinched substantially in a circle.

3,628,231

**MACHINE TOOL HAVING TOOL LOADER AND UNLOADER**

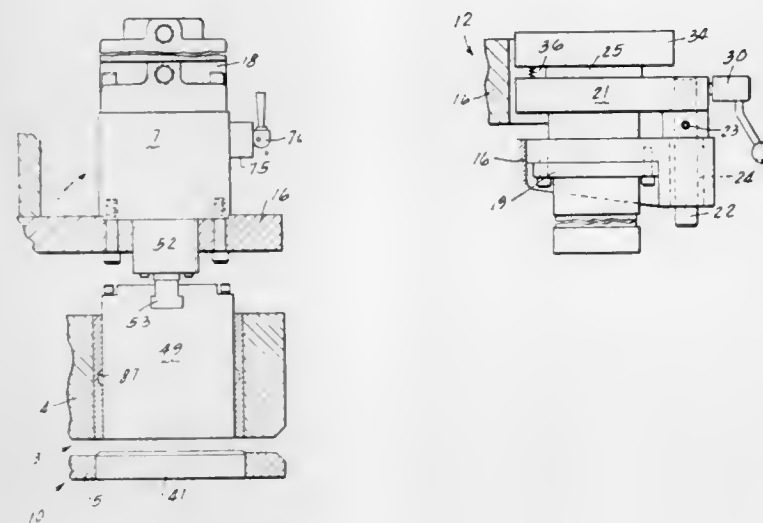
James J. Pancook, Tonawanda, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,370

Int. Cl. B23p 19/04

U.S. Cl. 29—243

27 Claims



3,628,232

**WALL PANEL LAYOUT METHOD**

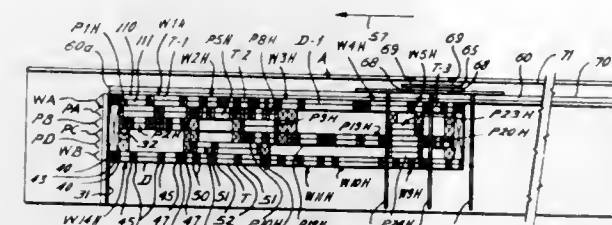
Lloyd E. Brewer, 7903 Katy Road, Houston, Tex.

Filed Aug. 8, 1969, Ser. No. 848,634

Int. Cl. B23q 17/00

U.S. Cl. 29—407

4 Claims



A wall panel layout method wherein the bottom and top plates for all of the wall panels of a building are laid out and marked in accordance with a floor plan drawing of a building, with pairs of top and bottom plates for each exterior and interior wall being laid out lengthwise in one direction and parallel to each other, and with the markings of studs on the plates for intersecting walls, corners, window openings, door openings and the like being related to fixed reference points on the floor plan drawing, whereby wall panels may be subsequently assembled rapidly and accurately by relatively inexperienced personnel.

3,628,233

**METHOD FOR THE LOW-TEMPERATURE JOINING OF CARBIDES**

John J. Sowko, Sr., Bethel Park, Pa., assignor to Carmet Company, Pittsburgh, Pa.

Filed Nov. 3, 1969, Ser. No. 873,697

Int. Cl. B23k 31/02

U.S. Cl. 29—473.1

4 Claims

Described herein is a method of joining metal carbides from the group consisting of tungsten carbide, tantalum carbide and titanium carbide which permits the use of low-silver, alloy solder at brazing temperatures under about 800° F.

3,628,234

**CONNECTION OF METALS TO CERAMICS**

Edward Alan Russell, Pontypool, Wales, assignor to Joseph Lucas Industries Limited, Birmingham, England

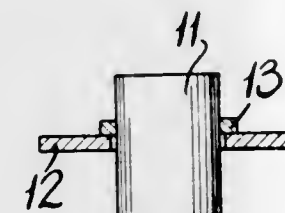
Filed Sept. 22, 1969, Ser. No. 859,812

Claims priority, application Great Britain, Sept. 30, 1968, 46,262/68

Int. Cl. B23k 31/02

U.S. Cl. 29—473.1

2 Claims



In the connection of a ceramic post to a metal plate, the post is located in a hole in the plate with a porous ring of brazing alloy surrounding the post in contact with the plate. The brazing alloy is then heated to braze the ring to the plate, and the invention resides in the provision of a ring of brazing alloy which has such an initial porosity that when the ring is heated to the brazing temperature the ring sinters to have less porosity and expands less than the post and so will be a tight fit on the post.

3,628,235

**METHOD OF MAKING EDGELAY MATERIAL**

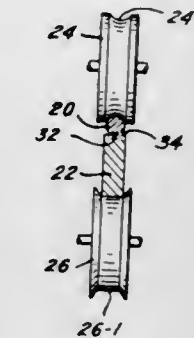
Joseph A. Willoughby, Attleboro, Mass., and Brian R. Ruark, Kettering, Ohio, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 25, 1969, Ser. No. 836,562

Int. Cl. B23k 31/02

U.S. Cl. 29—480

5 Claims



A novel composite edgelay material has a thin strip of a first metal secured to an edge of a strip of another base metal. The thin metal strip extends along the edge of the base metal strip as an edgelay and is preferably coextensive with the edge surface of the base metal strip. However, the edgelay strip is secured to the base metal edge surface only along a thin stripe which is of a width less than the width of the base metal edge surface. This novel composite material is made in a novel method in which a metal wire or rod is disposed with a thin stripe extending along the wire or rod periphery in engagement with the edge surface of the base metal strip. The wire or rod is then resistance welded to the base metal edge and, preferably, is deformed to a different cross-sectional configuration such as a rectangular cross-sectional configuration coextensive with the base metal strip edge surface.

3,628,236

**TUBE JOINING METHOD AND MEANS**

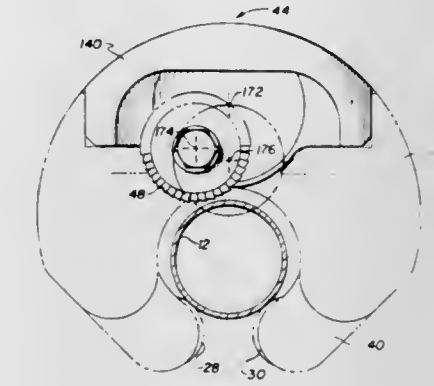
Roderick G. Rohrberg, Torrance, and Don E. Harvey, Inglewood, both of Calif., assignors to North American Rockwell Corporation and Air Products and Chemicals, Inc., Allentown, Pa., part interest to each

Original application Feb. 23, 1968, Ser. No. 707,819, now abandoned. Divided and this application Mar. 23, 1970, Ser. No. 21,674

Int. Cl. B23k 1/20, 31/02

U.S. Cl. 29—482

1 Claim



A portable carriage adapted to be mounted on a tubular workpiece is used to perform cutting operations followed by in place welding operations on such workpiece using two subassemblies interchangeably mounted on the carriage, one for cutting and one for welding. The carriage is rotatable around the stationary workpiece or may be held stationary while the workpiece rotates. After preliminary trimming, fusion welding is progressively accomplished in a circular path to join the abutting ends of the workpiece components.



3,628,237

**METHOD OF CONSTRUCTING AN ENGINE WITH A PREFABRICATED CYLINDER LINER**

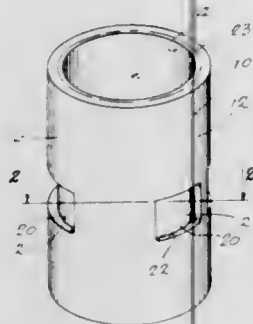
Kurt F. Ziegler, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 23, 1969, Ser. No. 887,518

Int. Cl. B23p 17/00, 25/00

U.S. Cl. 29—527.6

3 Claims



Disclosed herein is a method of constructing an engine having a cast iron cylinder liner and in which the engine block is die cast around the cylinder liner. The cylinder liner is cast with blind ports or recesses on the exterior surfaces. The outside and inside of the liner are machined to make the surfaces concentric, and the engine block is die cast around the liner by using a two-piece die with fingers which extend into the blind ports to prevent entry of the metal therein.

The recesses are opened after the block is die cast by further machining of the inside surface of the liner.

3,628,238

**METHOD OF MANUFACTURING WOUND STATORS**

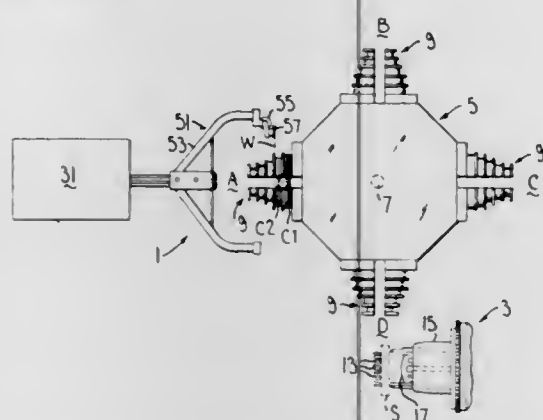
Donald E. Hill, 522 Sandy Ann Lane, Fort Wayne, Ind.

Original application May 19, 1966, Ser. No. 551,328, now Patent No. 3,508,316, dated Apr. 28, 1970. Divided and this application June 26, 1969, Ser. No. 870,857

Int. Cl. H02k 15/00

U.S. Cl. 29—596

1 Claim



A method of providing a stator of the type having a bore and slots extending outward from the bore with a set of pole windings in which a wire is wound into a plurality of groups of coils of different sizes, each group constituting a pole winding of the set, for placement in the slots of the stator without severing the wire between successive coils of each pole winding and without severing the wire between successive pole windings. Each pole winding is wound at a winding station and moved, following completion of its winding, to an unloading position. Each pole winding of a set of pole windings, after movement to the unloading position, is transferred to a means located adjacent the unloading position for placing the set of pole windings in the slots of the stator without severing the wire between the successive pole windings of the set. The wire between the last pole winding of said set and the first pole winding of the next successive set is severed. A stator is placed on the placing means, and the latter is operated to place entire set of pole windings in the slots of the stator in a single operation.

3,628,239

**METHOD OF MAKING DYNAMO MACHINES**

John William Archibald Hunt, Northfield, and Bernard Alan Potter, Kings Heath, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

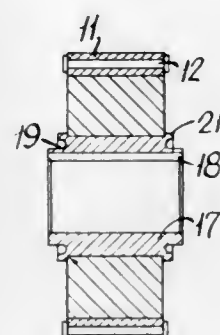
Filed Feb. 4, 1969, Ser. No. 796,324

Claims priority, application Great Britain, Feb. 9, 1968, 6,463/68

Int. Cl. H02k 15/00

U.S. Cl. 29—596

2 Claims



A method of manufacturing a permanent magnet rotor including the steps of positioning a plurality of permanent magnets between a central polygonal core and an outer pole assembly so that the magnets are in contact with both the pole assembly and respective faces of the core, then deforming at least one axial end of the core to prevent relative axial movement between the core and the magnets, encapsulating the unit thus formed, and then removing portions of the pole assembly to separate the poles.

3,628,240

**METHOD AND APPARATUS FOR TREATING MAGNETIC CORES AND WINDINGS**

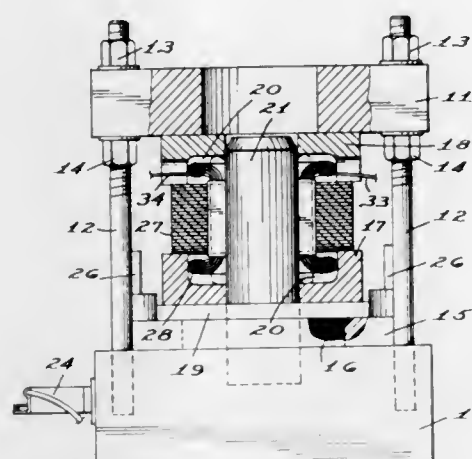
Norman A. Bender, Fort Wayne, Ind., assignor to General Electric Company

Filed Feb. 28, 1969, Ser. No. 803,395

Int. Cl. H02k 15/00

U.S. Cl. 29—596

11 Claims



A device utilizing high-energy electrical pulses for positioning coil windings in core slots of the stator of a dynamoelectric machine, for applying mechanical force to position the end turns of such windings, and for pounding stator cores to reduce core loss comprises a top and bottom plate positioned by tie rods which have nuts for adjusting the separation distance of the plates, a flat coil winding overlying the bottom plate, and a metal plate overlying the flat coil. When the device is used to pound stator cores a stator is placed on the metal plate and a high-energy electric pulse is sent through the flat coil. This creates a strong transient magnetic field which causes the metal plate to snap the stator against the top plate of the device. When the device is used

3,628,243

**FABRICATION OF PRINTED CIRCUIT**

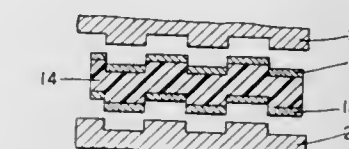
Karl-Helmut Phol, Boulder, Colo.; Arthur T. Spencer, New Providence, and Robert F. Westover, Princeton, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 14, 1969, Ser. No. 876,830

Int. Cl. B41m 3/08; H05k 3/00

U.S. Cl. 29—625

7 Claims



to position coil windings in the stator, forming blocks having annular grooves to fit the end turns of stator coils are positioned on the metal plate and top plate and a stator with loose coil windings placed therebetween. The coil windings themselves are then subjected to a high-energy pulse, or series of such pulses. This compacts the windings within the stator core slots and draws the end turns down toward the stator core. The forming blocks are then positioned against the end turns and the flat coil is energized by a high-energy electrical pulse, or series of such pulses. The transient magnetic field created thereby causes the metal plate to move toward the top plate thereby squeezing the stator and end turns between the two forming blocks. The mechanical working of the end turns produced by this squeezing positions them firmly in the desired relationship to the stator core.

3,628,241

**METHOD OF MAKING A WOUND CORE AND APPARATUS THEREFOR**

Kozo Toyoda, Hitachi, and Katutosi Akatu, Iwaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

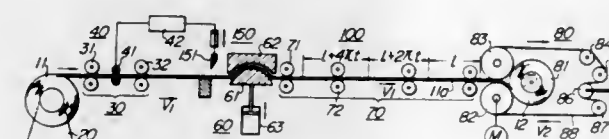
Filed Apr. 28, 1970, Ser. No. 32,634

Claims priority, application Japan, May 2, 1969, 44/33611

Int. Cl. H01f 7/06

U.S. Cl. 29—605

12 Claims



A magnetic steel strip is continuously fed into a cutting device which cuts the steel strip into a prescribed length. The cutting device is operated in response to a first metering device which meters the length of the magnetic steel strip to be cut, and cuts the steel strip into the prescribed length successively utilizing a compulsory hump forming device disposed at the feed-out side of the cutting device without stopping the feed of the magnetic steel strip. The cut magnetic steel strips are transferred to a feed-out device and further to a continuous winding device. By the winding device the cut magnetic steel strips are wound into a wound core in which the seam positions are overlapped by a prescribed length.

3,628,242

**MANUFACTURE OF ELECTRIC SWITCHES**

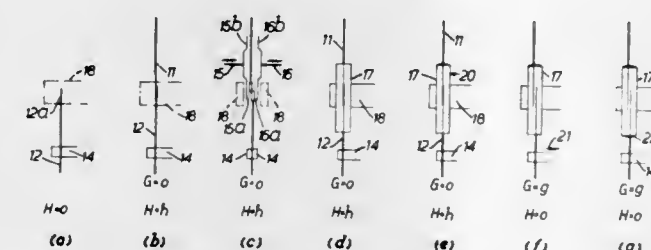
Peter M. Zollman, Weybridge, England, assignor to Badalex Limited

Filed Mar. 27, 1969, Ser. No. 811,033

Int. Cl. H01h 11/00; G01r 4/00

U.S. Cl. 29—622

5 Claims



The invention concerns a method for assembling reed contact units. In assembling such units, one reed is positively held and the second is magnetically held from the first and is aligned with it while so held. A fusible element is sealed to both reeds, the sealing being completed, and the reeds held positively, after the reeds have been displaced relatively through a distance corresponding to the desired gap between the reeds in the finished contact unit.

3,628,245

**METHOD AND APPARATUS FOR FORMING AND APPLYING TERMINALS**

Constantine George Mates, Elmhurst, and Herbert G. Burkert, Crystal Lake, both of Ill., assignors to Thomas &amp; Betts Corporation, Elizabeth, N.J.

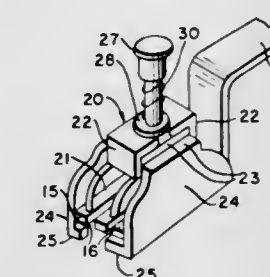
Filed Nov. 21, 1969, Ser. No. 878,714

Int. Cl. H01r 43/04

U.S. Cl. 29—628

8 Claims

A method and apparatus for sequentially preforming and applying electrical terminals includes a cutting, bending and crimping die set assembly which receives a substantially flat, precut strip stock and simultaneously crimps a terminal to a

**METHOD AND TOOL FOR ASSEMBLING LEADS INTO CIRCUIT BOARD APERTURES**

William M. Halstead, P.O. Box 881, Glen Burnie, Md.

Filed Feb. 19, 1970, Ser. No. 12,673

Int. Cl. H05k 3/30, 13/04

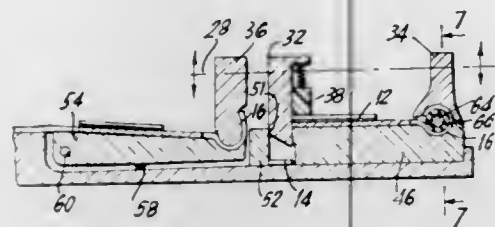
U.S. Cl. 29—626

11 Claims

A handle-equipped head of the tool is formed with open slots to receive rows of terminal leads of an electrical module so that the leads are straightened and aligned in the direction of the slots when the module is applied to the head. A separate attachment is applicable to the head with the module thereon and is provided with jaws having notches for receiving and straightening the leads so that they are aligned transversely of the slots for insertion in apertures of a printed circuit board while the module is being held by the tool.



lead wire, cuts this terminal free from the strip stock, preforms the wire grip elements of the next succeeding strip



terminal, and, during these operations, restrains the free terminal being crimped against motions.

3,628,246

## APPARATUS FOR TUBE REMOVAL

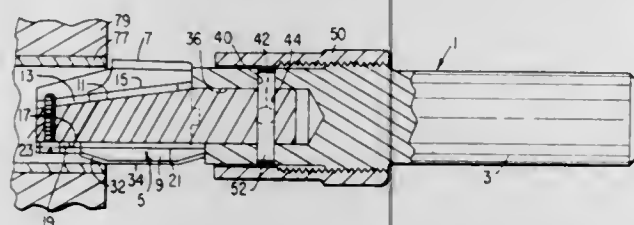
William B. Bronne, and Harley E. Liathicum, both of Springfield, Ohio, assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 6, 1968, Ser. No. 757,963

Int. Cl. B23d 21/06; B26b 27/00; B26d 3/16

U.S. Cl. 30—92.5

8 Claims



A method and apparatus for relieving the hoop stresses securing a tube in a tube sheet to allow removal of the tube therefrom, the hoop stresses being relieved by removing material from the tube to form two axial slots having a radial depth less than the tube wall thickness and depressing the portion of the tube between the slots to break the portion loose from the remainder of the tube to relieve the hoop stresses therein.

3,628,247

## CABLE-CUTTING PLIERS WITH GUIDE LOOP

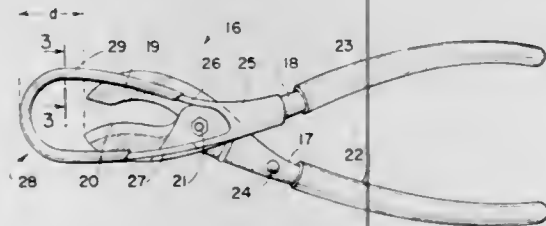
Leroy E. Lattin, and Bjarne I. Byberg, both of San Fernando, Calif., assignors to Universal Products Corporation, San Fernando, Calif.

Filed Feb. 20, 1970, Ser. No. 13,055

Int. Cl. B26b 13/00

U.S. Cl. 30—233

2 Claims

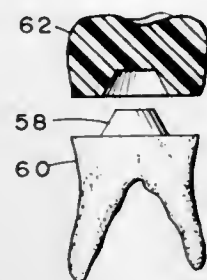


A cable-cutting pliers is provided with a closed guide loop secured to the pliers through which may be passed the cut end of a specific cable to be removed from among a plurality of cables. After an initial cut is made at the terminal point on the frame where the cable can be positively identified, the cut cable is held captive to the pliers and yet the pliers may be moved along the cable and the cable rack towards the other end so that the dead cable may be lifted and cut at various points along the route with the assurance that it is the same cable initially cut. Several such cuts ordinarily will be required due to the length of the cable rack, the interference of other cables and the construction of the rack itself.

3,628,248  
PROCESS FOR FORMING ARTIFICIAL IMPLANTS  
Ernest A. Kroder, Hellam, Pa., and John F. Glenn, Millford, Del., assignors to Dentsply International Inc., York, Pa.  
Filed July 22, 1969, Ser. No. 843,336  
Int. Cl. A61c 13/00

U.S. Cl. 32—10 A

9 Claims



Process for forming artificial implants for replacement of vertebrate animal hard tissue elements and parts thereof and formed from synthetic resin, without preparation prior to surgery. The process includes removal of the animal tissue element or part to be replaced, investing it in quick-setting elastomeric material to form a mold cavity of the same, forming a synthetic resin reproduction of said element or part from said mold, and removing said reproduced element or part from the mold for introduction into a natural animal body, from which the original element was removed, for attachment of natural tissues thereto by natural growth.

3,628,249

## DENTAL CLAMP

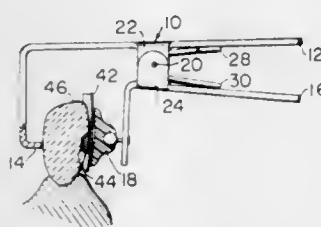
Loel R. Wurl, 2113 Woodland Drive, Haperville, Ga.

Filed July 25, 1969, Ser. No. 844,882

Int. Cl. A61c 5/12

U.S. Cl. 32—63

5 Claims



A dental clamp that includes a pair of resiliently biased members adapted to grip a tooth therebetween wherein one of said members is shaped generally to conform to the contour of the face of a tooth and the other of said members being provided with a universally mounted or swiveled pressure pad to engage the face of the tooth being filled to hold the filling material in place in said tooth face until the filling is set.

3,628,250

## MECHANICAL SPHERICAL TRIANGLE COMPUTER

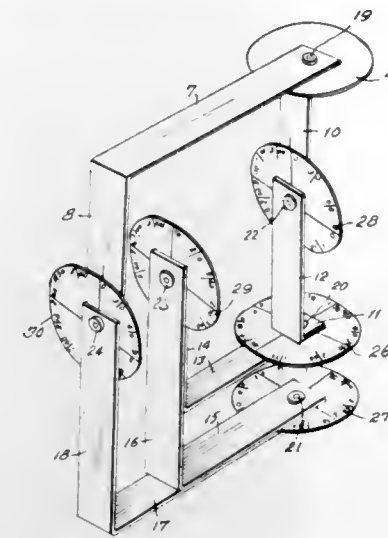
Mitchell E. Timin, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Army

Filed Oct. 16, 1969, Int. Cl. B43i 13/20 Ser. No. 866,927 U.S. Cl. 33—1 SA

4 Claims

Instruments for use in solving basic problems of mathematics in navigation are generally complicated and expensive. The present invention teaches a simple instrument for the purpose comprising six L-shaped members, pivoted together with a protractor at each pivot, to indicate the angle

between the adjacent legs. The extended axes of the pivot members intersect at a common point, the center of a sphere.



The protractors and indicia marks on the L-shaped members indicate the angles sought of the spherical triangle involved.

3,628,251

## ROTATING PENCIL-COMPASS

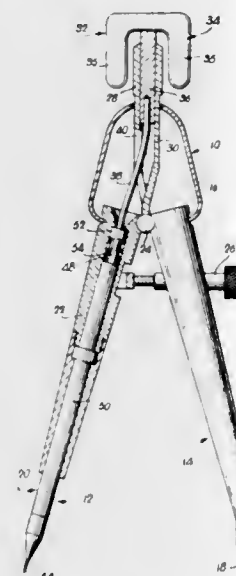
Erich J. Feldt, 1422 McCain Lane, Manhattan, Kans.

Filed Sept. 16, 1970, Ser. No. 72,580

Int. Cl. B43i 9/02

U.S. Cl. 33—27 B

9 Claims



One leg of a compass has a pencil which is rotatable about its longitudinal axis relative to the remainder of the compass. A yoke at the top of the compass is rotatable relative to the finger knob of the compass is operably coupled with the pencil and is adapted to be manually held against rotation while the compass is turned by the knob. Relative rotation between the pencil and the remainder of the compass is thereby effected during such turning and the pencil tip remains sharpened.

3,628,252

## DRAFTING APPARATUS

Jurgen Muller, Bad Hersfeld, and Winfried Lotz, Sörga, both of Germany, assignors to Zuse K G, Bad Hersfeld, Germany

Filed July 11, 1969, Ser. No. 841,067

Claims priority, application Germany, Oct. 4, 1968, P 18 01 024.7

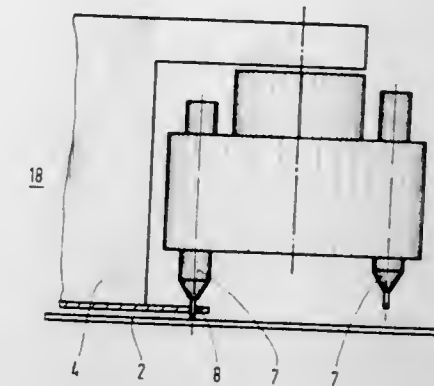
Int. Cl. B43i 13/02

U.S. Cl. 33—32 C

10 Claims

A drafting apparatus comprises a support mounted for predetermined movement above and with reference to a

paper on which drafting is to take place. A plurality of drafting pens are provided each of which has a line-forming contact portion of different width, and which all have identical shaft portions each connected to and extending rearwardly



from one of the contact portions. Shaft-holding means is provided on the support and serves to engage the shafts of respective ones of the drafting pens for maintaining the same in predetermined orientation with reference to the support and to the paper.

## ERRATUM

For Class 33—143 see:  
Patent No. 3,629,639

3,628,253

## EXTENSIBLE CONSTRUCTION MARKER

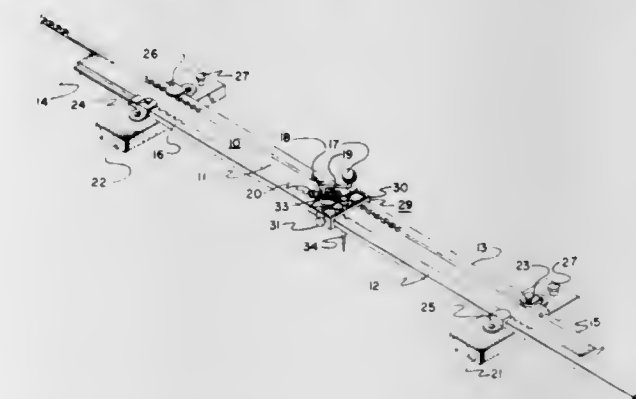
Wallace D. Shepard, 10 N. Williams St., Kennewick, Wash.

Filed Feb. 18, 1970, Ser. No. 12,405

Int. Cl. B25d 5/00

U.S. Cl. 33—189

3 Claims



The marker includes a pair of grooved slides each having a rack rectilinearly disposed along one of the respective terminal edges thereof slidably engaged with respective tongue portions of the body of the marker. A pair of pinion gears engaging respective racks of the slide members are journaled for rotation in the body. The pinion gears also engage a gear carried by a crank rotatably mounted in the body, the crank and gears being operable to simultaneously move the slide members in opposite directions. Each of the slide members are provided with marking means mounted at the respective outermost opposite terminal ends of each of the slide members.

3,628,254

NONPENDULOUS FLUX VALVE COMPASS SYSTEM  
William W. Burmeister, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Apr. 1, 1970, Ser. No. 24,576

Int. Cl. G01c 17/38

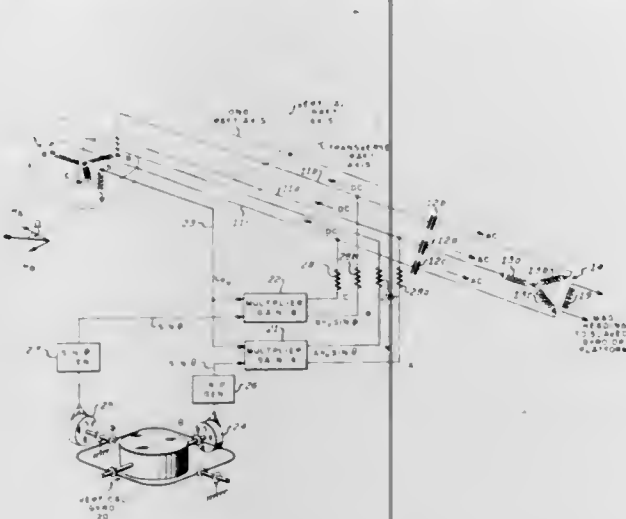
U.S. Cl. 33—225

14 Claims

A magnetic compass system utilizing a strapped-down, Y-configured flux valve in combination with an orthogonally



disposed sensor responsive to magnetic field components oriented normal to the plane of the flux valve windings. Multiplier circuits coupled to the orthogonal sensor modify its output signal in accordance with pitch and roll attitude of the flux valve to produce respective DC compensation signals which are applied to the flux valve output windings in a



manner to generate magnetic fields thereabout for cancelling vertical field components aligned with the valve as a consequence of the pitching and rolling motion. The output windings of the flux valve are coupled in conventional fashion to a synchro-type receiver mechanism for driving the compass indicator.

#### ERRATUM

For Class 34—56 see:  
Patent No. 3,628,258

3,628,255

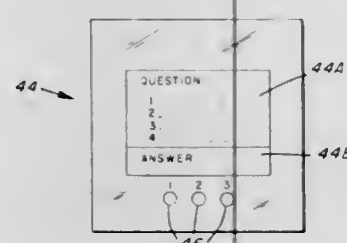
#### APPARATUS FOR TEACHING OR TESTING AN APPLICANT

John R. Golden, Tulsa, Okla., assignor to Gemco, Inc., Tulsa, Okla.

Filed Nov. 26, 1969, Ser. No. 880,019  
Int. Cl. G09b 7/06

U.S. Cl. 35—9 E

8 Claims



This invention relates to an apparatus for teaching or testing an applicant. More particularly, the invention relates to an apparatus for teaching or testing an applicant including a rear lighted screen for viewing by the applicant, a projector for projecting a slide onto the rearward side of the screen, the projector including means for projecting an image displaying a question section in the upper portion of the screen and an answer section on the lower portion of the screen, a shield supported adjacent the screen and pivotally positionable between a first and second position, the first position of the shield obstructing the answer portion and the second position allowing the answer portion to be displayed on the screen, and means of pivoting the shield between the first and second position at appropriate times. A further embodiment includes means of automatically advancing the projector in random automatic unpredictable sequence.

#### 3,628,256 AIRCRAFT NAVIGATION TEACHING DEVICE

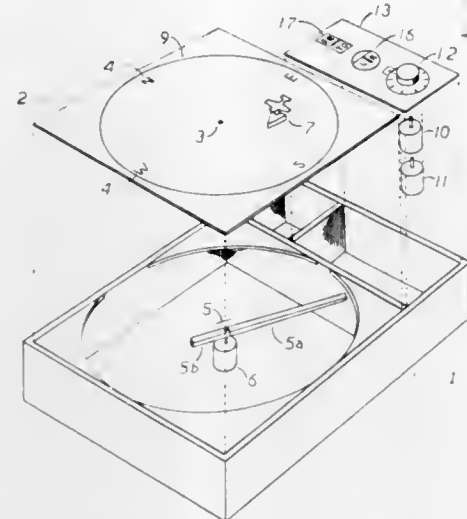
Roger W. Story, 26 Hill St., Alphaus, N.Y.

Filed Mar. 25, 1970, Ser. No. 22,551

Int. Cl. G09b 9/08, 9/16

U.S. Cl. 35—10.2

2 Claims



A device for demonstrating and teaching the principles of aircraft radio navigation with reference to an omnirange station in which movement of a model aircraft on a surface representing the geographical area around an omnirange station is followed by a position sensing system. The position sensing system incorporates a course selector dial and indicators similar to those generally provided in an aircraft omnirange navigation system. Manipulation of the model aircraft and the course selector dial results in indicator displays which are consistent in nature and sense with those which would be observed in actual aircraft radio navigation.

3,628,257

#### BRAILLE DICTIONARY

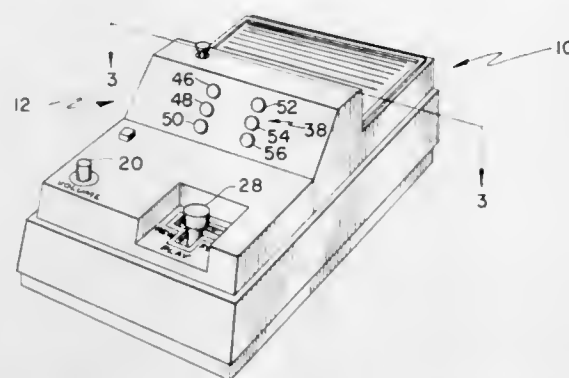
Charles R. Budrose, Melrose, Mass., assignor to Bio-Dynamics, Inc., Cambridge, Mass.

Filed Apr. 9, 1970, Ser. No. 26,949

Int. Cl. G09b 5/04

U.S. Cl. 35—35 A

10 Claims



An electromechanical apparatus adapted for interconnection with a cassette communicative mechanism in place of the cassette is provided for audio presentation of selected braille symbol definitions. The apparatus includes a length of magnetic tape having representations of audio reproducible braille symbol definitions, a switch matrix in a braille cell configuration, a brake for stopping the magnetic tape at a desired location and a memory logic circuit for receiving input signals from the switch matrix and selectively controlling the brake. Initially, the magnetic tape is advanced rapidly in search for the braille symbol representation entered into the memory from the switch matrix. Once the braille symbol representation is located, a signal generated by the memory logic circuit actuates the brake. Thereafter, the mechanism is placed in the PLAY position and the definition of the selected braille symbol is presented as an audio signal for aural perception.

3,628,258

#### HEAT TUNNEL FOR SHRINKING PLASTIC JACKETS

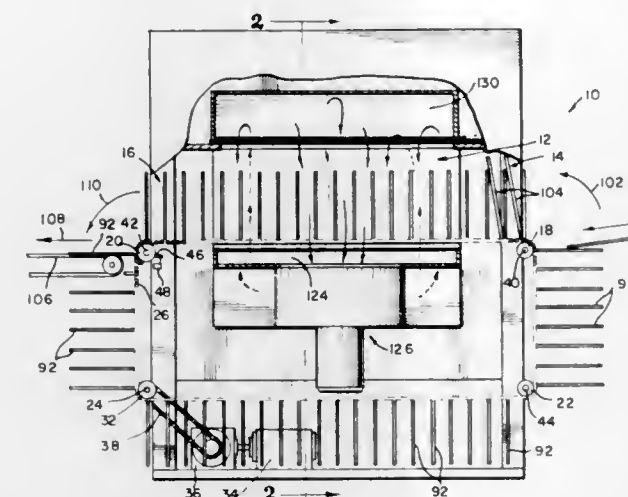
Alfred H. Schlemmer, and Melvin A. Pearson, both of Indianapolis, Ind., assignors to Ralph Hamill, Indianapolis, Ind.

Filed Feb. 16, 1970, Ser. No. 11,724

Int. Cl. F26b 13/10

U.S. Cl. 34—56

14 Claims



An apparatus for heat shrinking plastic covers or jackets on planar-shaped articles, such as record albums, comprising an elongated tunnel having an entry end and an exit end and means for serially conveying such articles longitudinally through the tunnel. The conveying means includes endless means arranged to provide at least one run thereof extending longitudinally through the tunnel and, at spaced-apart points therealong, means for engaging such articles and holding them in generally parallel planes extending transversely to their direction of movement through the tunnel. The spaces between the adjacent, parallel articles define a series of generally parallel passages moving longitudinally through the tunnel. Blower means is provided for forcing heated air transversely through the tunnel and in a direction generally parallel to the parallel planes of the articles. The endless means is driven in a step-by-step manner and the means for driving the endless means is controlled by switch means which may be dominated or operated by other apparatus which feeds the articles or by the movement of the articles into the entry end of the tunnel.

3,628,259

#### SELF-EDUCATIONAL DEVICE

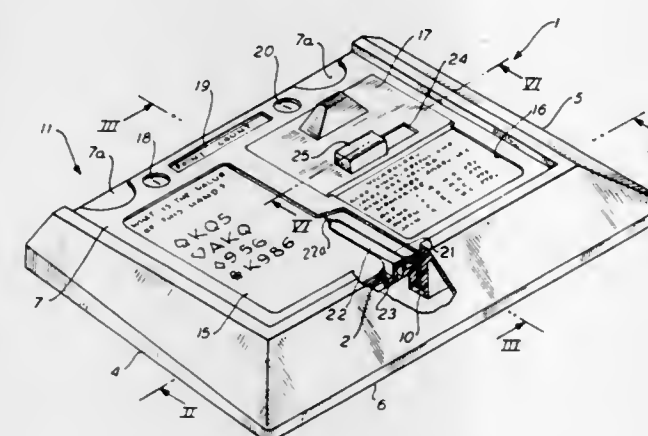
Herbert Kahn, 151 Legion Place, Malverne, N.Y.

Filed May 28, 1969, Ser. No. 828,471

Int. Cl. G09b 3/00

U.S. Cl. 35—9 E

17 Claims



A self-educational device adapted to provide a programmed plan of instruction for teaching bidding in the game of contract bridge, said device being adapted to hold a plurality of cards representing a set to be studied. The device in-

cludes means for allowing incremental, selective and progressive exposure and study of data on said cards so as to firstly, incrementally provide a student with text material, secondly, present the student with the problems in an increasing order of complexity, thirdly, selectively present rationale to solutions so as to require restudy in the case of a wrong answer, fourthly, provide immediate self correction without distraction, fifthly, instill a logical approach to problem solution thereby teaching the student to think, sixthly, allow filing of the cards so as to make ready for immediate restudy, and seventhly, automatically provide a grading so that an instructor is able to readily determine which students are most in need of help.

3,628,260

#### FINE AND GRAPHIC ARTS PRODUCTS FOR ENABLING AMATEURS AND OTHERS TO SELECT AND UTILIZE COLOR MATERIALS WITH OPTICAL RESULTS OF INCREASED PREDICTABILITY

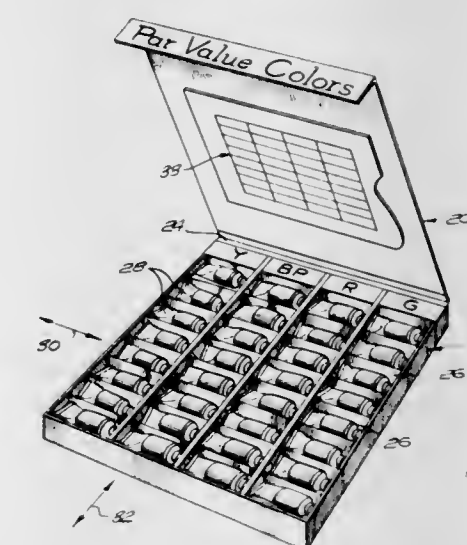
Nathaniel J. Jacobson, 7 Harvard St., Brookline, Mass.

Continuation of application Ser. No. 694,736, Dec. 29, 1967, now abandoned. This application Oct. 6, 1970, Ser. No. 78,644

Int. Cl. G09b 11/00

U.S. Cl. 35—28.5

2 Claims



A limited number of predetermined, systematically identified color materials are predeterminedly arranged in an array of distinguishable groups of colors of like "value," with reference to the terms "hue," "value" and "chroma" as used in the "Munsell Color System" (or with reference to equivalent terms as used in analogous systems). The user, in working with the array, efficaciously is enabled to create a particular color of predicted optical character by mixing given colors from a particular group of premixed colors of like "value."

3,628,261

#### EDUCATIONAL TOY DEVICE

Robert I. Thompson, 7444 St. Charles Ave. Apt. 3F, New Orleans, La.

Filed Feb. 3, 1970, Ser. No. 8,183

Int. Cl. A63h 33/04

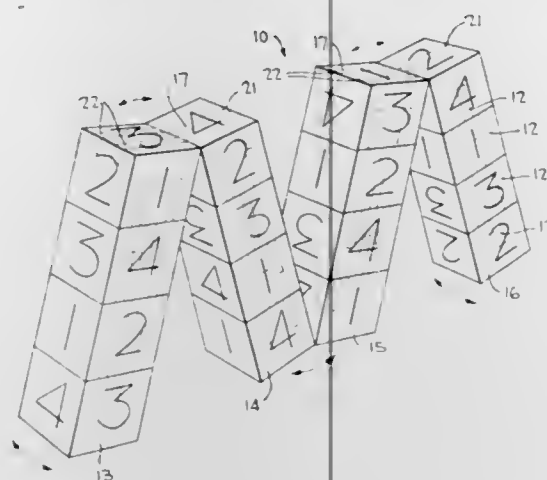
U.S. Cl. 35—70

4 Claims

An educational toy device comprising multiple groups of cubes wherein each group is interconnected by means of a double hinge and each cube in each group is also connected by means of a double hinge thereby permitting any number of cube combinations for forming various configurations. Each of the cubes in each group is provided with a selected



numeral on each of its six faces in a manner whereby the numerical sum on the faces of at least any pair of cubes adjacent another pair along a common line of symmetry is the same regardless of the various cube combinations.



3,628,262

## CUSHION ATTACHMENT FOR SHOES

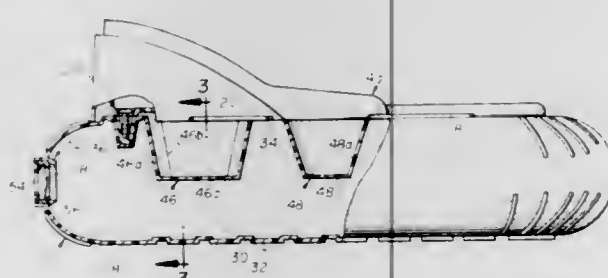
Benjamin Stopek, West Hempstead, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Sept. 17, 1970, Ser. No. 73,097

Int. Cl. A43b 3/10

U.S. Cl. 36—7.5

10 Claims



Low gravity is simulated in toy space boots by provision of a cushion attachment for a shoe that includes a reservoir that gives way slowly as the weight of the wearer is placed thereon so that a sinking sensation is produced with each step of the wearer. The cushion attachment is provided with a leveling feature so that the foot of the wearer is substantially level at the end of a step although the wearer has a normal "heel and toe" stride. The maximum collapse of the reservoir is controlled by internal means. Sound effects associated with the steps of the user are produced by further means incorporated in the attachment.

3,628,263

## PRESSURE DIFFERENTIAL MEASURING MEANS FOR SUCTION DREDGING INSTRUMENTS

Romke van der Veen, Jutphaas, Netherlands, assignor to N. V. Ingenieursbureau Voor Systemen en Octrooien "Spanstaal", Rotterdam, Netherlands

Filed July 2, 1969, Ser. No. 838,712

Claims priority, application Netherlands, July 15, 1968, 68.09986

Int. Cl. E02f 3/88

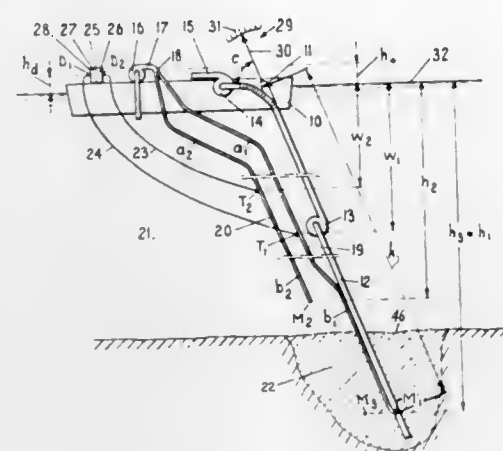
U.S. Cl. 37—58

4 Claims

A pressure differential measuring device is located on board a dredging vessel. The water-filled lines transmitting to the measuring device communicate with branches of a purgative water system at points located sufficiently higher than the discharge points of the branches that the pressures at

such communication points never falls below the value of the vapor pressure of the water, thus allowing the onboard placement of the measuring device.

Also, the communicating points are so located that the ratio of the branch flow pressure loss in one branch at its



communicating point with respect to the branch flow pressure loss at its discharge point is equal to the ratio of these values in the other branch. In this way, the measured pressure differential is independent of the purgative pump output.

3,628,264

## EARTH-MOVING MACHINES FOR SUBGRADING HIGHWAYS

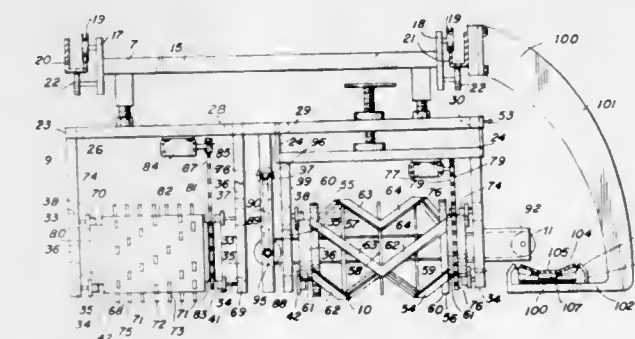
Murray A. Rowe, Canton, S. Dak., assignor to K & R Industries Inc., Canton, S. Dak.

Filed Oct. 13, 1969, Ser. No. 865,674

Int. Cl. E02f 5/00

U.S. Cl. 37—108 R

6 Claims



Earth-moving machine embodying a trusswork for spanning highways, and the like, with an earth-handling unit movable back and forth along the trusswork for simultaneously loosening, picking up and discharging off from the highway subgrade material.

3,628,265

## OSCILLATING BLADE ASSEMBLY FOR EARTH WORKING MACHINES

Alex J. Galis, Box 480, Rte. 3, Albany, Ga.

Continuation-in-part of application Ser. No. 532,141, Mar. 7, 1966, now abandoned. This application June 2, 1969, Ser. No. 829,296

Int. Cl. B60p 1/58; E02f 3/76

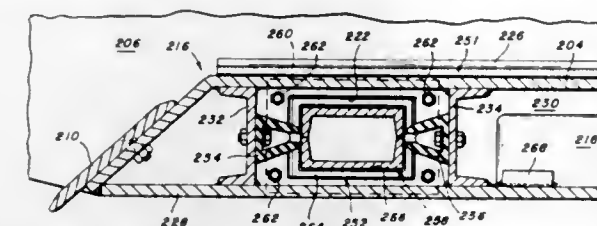
U.S. Cl. 37—126 A

5 Claims

An earth working machine blade assembly wherein a separate blade edge is movably mounted on the blade body and is connected to an eccentric weight-type oscillating device. Resilient means are mounted on the machine and connected to the oscillating device to both augment the force exerted by the oscillating device on the blade edge and ab-

sorb a portion of the force exerted by the oscillating device on the machine. The oscillating device imparts an oscillatory

merchandise. The shank is encased by and interlocked in a button. A plierlike attachment tool and a cutting tool for label removal.



motion to the blade edge to dislodge earth masses from the ground being worked by the machine.

3,628,266

## RETAIL PRICE TAG AND PROTECTIVE ENVELOPE ASSEMBLY

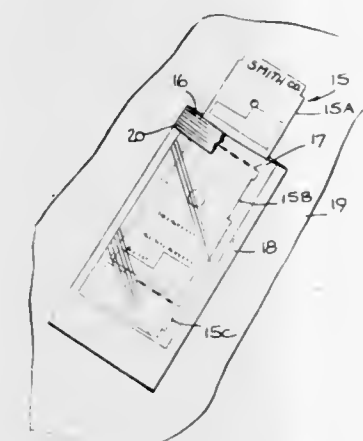
Lester V. Wise, Old Westbury, Long Island, and Henry A. Gripekoven, Bronxville, both of N.Y., assignors to Federal Business Products, Inc., New York, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,678

Int. Cl. A44c 3/00

U.S. Cl. 40—10 R

7 Claims



A retail merchandise price and data tag suitable for data processing, the tag being divided by tear lines into an upper section, a main section, and a lower section, the main section containing data related to an item of merchandise and being in coded punch hole or magnetic record form. The tag is partially inserted in an envelope formed by a rear panel and a transparent front panel releaseably secured to the rear panel. The upper section of the tag, which extends outside of the envelope, and the rear panel of the envelope are permanently attached to the merchandise. By stripping off the front panel of the envelope, one then has access to the main section of the tag which may be torn from the upper section for data processing.

3,628,267

## LABEL ATTACHMENT

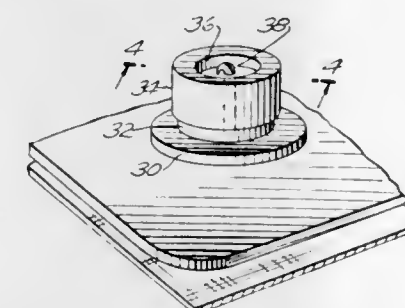
Arthur J. Minasy, Woodbury, N.Y., assignor to The National Bank of North America, New York, N.Y.

Filed Dec. 7, 1966, Ser. No. 599,922

Int. Cl. G09f 3/08

U.S. Cl. 40—20

6 Claims



A label attachment arrangement comprising a tacklike element whose shank passes through a label and an article of

3,628,268

## PURE FLUID DISPLAY

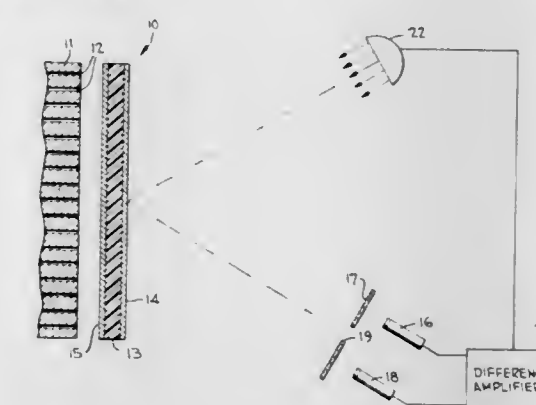
Richard N. Johnson, Gaithersburg, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed May 28, 1970, Ser. No. 41,340

Int. Cl. G09f 11/00

U.S. Cl. 40—28 R

10 Claims



A pure fluid display. A thermally sensitive layer whose optical characteristics are a function of temperature is subjected to the impingement of a plurality of fluid sources whose temperature is different from the ambient temperature of the sensitive layer. This produces a temperature pattern on the surface of the sensitive layer which in turn creates a color pattern to correspond to the temperature pattern. The fluid sources, which may comprise the outputs of a plurality of fluid amplifiers, are generally arranged in the form of a two-dimensional array parallel to the surface of the sensitive layer. Coextensive supporting members having low-thermal capacity are provided on both sides of the sensitive layer, the first supporting member being opaque and the second being transparent on the viewing side. A temperature control system is provided to maintain the sensitive layer within a predetermined temperature range.

3,628,269

## MAGNETIC CARD INDEX

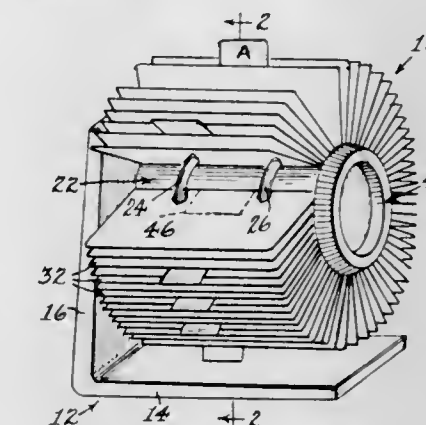
Ernest A. Dahl, Jr., 729 Greenwood Ave., Wilmette, Ill.

Filed Jan. 26, 1970, Ser. No. 5,557

Int. Cl. G09f 11/34

U.S. Cl. 40—68.6

13 Claims



The present invention relates generally to rotary magnetic card index devices, and more particularly to devices of this general type in which magnet means is provided within a rotary index card supporting drum for causing the automatic fanning or lateral separation of a restricted number of index cards in the vicinity of said magnet means. The embodiment of the invention disclosed herein comprises a frame and a nonmagnetic index card supporting drum rotatably mounted



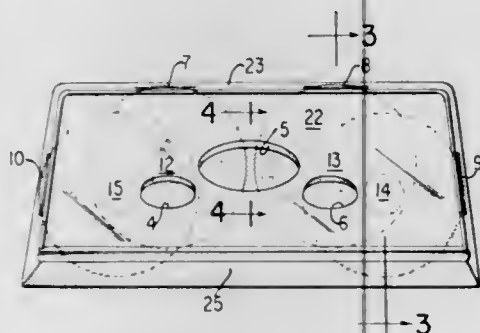
on said frame. A plurality of radially disposed index cards have their inner margins, equipped with unmagnetized magnetic areas, detachably associated with the drum periphery so as to cooperate with a fixed permanent ceramic type magnet within the drum to effect fanning or lateral separation of index cards located in the vicinity of the magnet.

### 3,628,270 PERPETUAL CALENDAR

Jack Fairchild Fleming, Morris Plains, N.J., assignor to Sterling Plastics Company, Mountainside, N.J.  
Filed Nov. 19, 1969, Ser. No. 878,156  
Int. Cl. G09d 3/08

U.S. Cl. 40-113

5 Claims



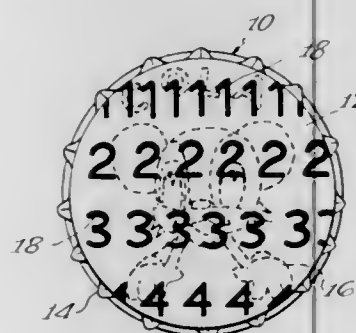
A perpetual calendar shows the day of the week, date of the month, and month, by means of rotatable dials. A small portion of the dials protrudes from the case to enable them to be manually turned. The dials are formed with an integral spring portion which cooperates with teeth on bosses, upon which the dials are mounted, to provide a detent action.

### 3,628,271 FLUORESCENT MARKING

Lelah A. Carrell, and Richard W. Morris, both of Crawfordville, Ind., assignors to H-C Industries, Inc.  
Filed Sept. 26, 1969, Ser. No. 862,815  
Int. Cl. G09f 3/00

U.S. Cl. 40-311

6 Claims



Container caps or containers having a varnish outer coating, or other resinous outer surface, are coded by marking indicia thereon with a fluorescent ink made of a fluorescent brightening agent in an organic solvent but having no resinous vehicle. The solvent softens the varnish and the fluorescent brightening agent penetrates into the varnish layer to remain therein after the solvent is dried off and is brought to view when desired by exposure to ultraviolet light.

### 3,628,272 CYLINDRICAL BREECH WITH SLEEVED OBTURATOR

Jules E. Van Langenhoven, La Hulpe, Brussels, Belgium, assignor to Engineering Developments Limited, Fribourg, Switzerland

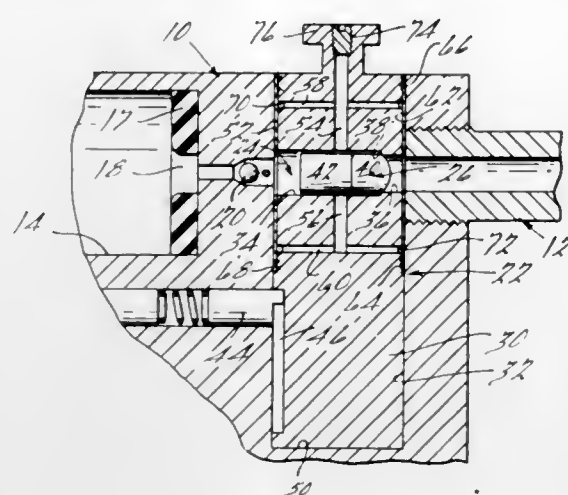
Filed July 24, 1969, Ser. No. 844,458  
Int. Cl. F41c 13/00

U.S. Cl. 42-39.5

6 Claims

There is herein disclosed an air rifle and/or an air ignition system firearm having a movable breech in the form of a

cylindrical plug with an expandable and contractable thin walled obturator jacket to obturate the firing chamber by ex-



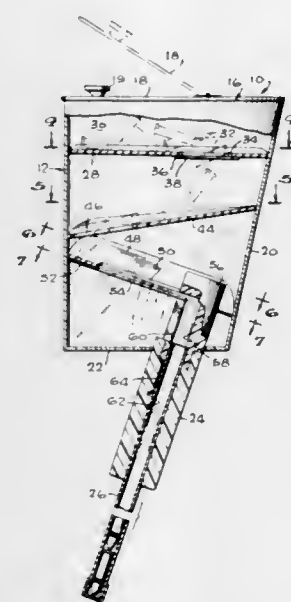
pansion of the obturator jacket by application of force from high-pressure air and/or propellant gases.

### 3,628,273 CARTRIDGE TUBE LOADER

Andrew Lach, 14303 Sylvan St., Van Nuys, Calif.  
Filed June 5, 1970, Ser. No. 43,677  
Int. Cl. F42b 39/04, 39/06

U.S. Cl. 42-87

12 Claims



Cartridge tube loader for the loading of rimmed cartridges for firearms serially into a tube from whence the cartridges can be serially delivered into a firearm magazine. The cartridge tube loader has a reservoir or storage compartment for randomly oriented rimmed cartridges. A manually operated gate controls the delivery of cartridges from the reservoir into orienting means. The orienting means engages upon the cartridge rim so that the cartridges are finally positioned side by side with bullet end down and depending from the cartridge rim. A bottom guide of the orienting means extends angularly downward so that the cartridges are delivered off the end of the guide into a tubular channel, from whence the cartridges are delivered to the cartridge loading tube. The cartridges are moved from the reservoir to the tube via the force of gravity.

### ERRATA

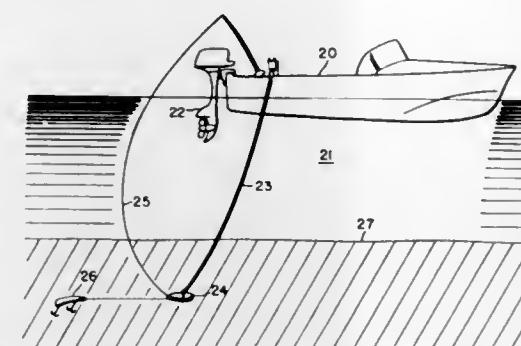
For Classes 42-25 and 42-62 see:  
Patent Nos. 3,628,277 and 3,628,278

### 3,628,274 TEMPERATURE-SENSING SYSTEM FOR PLACEMENT OF FISHING LURES

Charles P. Wojahn, Holland, Mich., assignor to Charles William Wojahn, Holland, Mich., a part interest  
Filed Aug. 7, 1969, Ser. No. 848,197  
Int. Cl. A01k 95/00, 97/00

U.S. Cl. 43-43.12

4 Claims



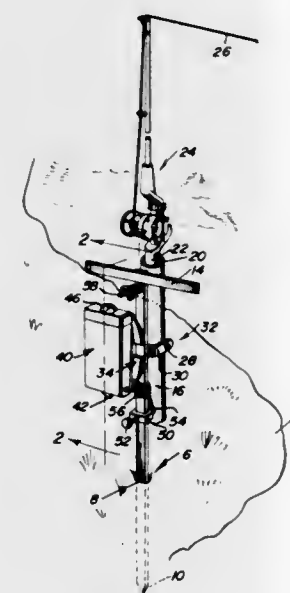
A weighted device releasably holding a fishline near the lure, incorporating a temperature sensor for reading the exact temperature of the water in which the lure is moving, regardless of the length of the line payed out, or the line attitude.

### 3,628,275 FISHING ROD HOLDER WITH BITE SIGNAL

Charlie C. Howard, Rural Route, Hudson, Ill.  
Filed Oct. 24, 1969, Ser. No. 869,040  
Int. Cl. A01k 97/12

U.S. Cl. 43-17

2 Claims



A cuplike socket member is pivotally and tiltably bracketed on a ground penetrating and anchoring standard. This standard provides an upstanding portable stake and is provided on a median side portion with a flashlight which provides a pull-responsive bite signal. The handle is a fishing rod is removably inserted in the socket. When the fish takes the hook, the rod tilts the socket member whose bottom portion presses a spring-returned pushbutton switch to operate the visual signal. Spring-biased plunger means is mounted atop the standard and assists in maintaining the socket member in a balanced ready-to-function position.

### 3,628,276 TWO-PIECE FISHING LURE

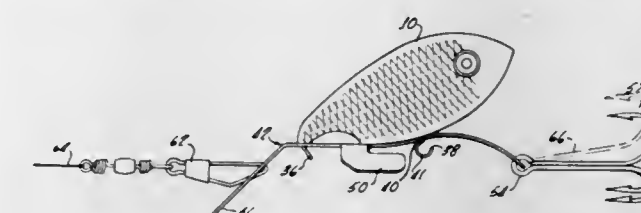
Thomas E. Coalson, 15182 Warwick Circle, Westminster, Calif.  
Filed May 28, 1970, Ser. No. 41,399  
Int. Cl. A01k 85/00

U.S. Cl. 43-42.09

10 Claims

A fishing lure having an elongate body, a resilient unitary

carrier snap embedded longitudinally in the body and a removable hook carrier of flat resilient material snapped under the body, the hook carrier bearing a triple-shank, barbed hook. shaped ends of the carrier snap extend under



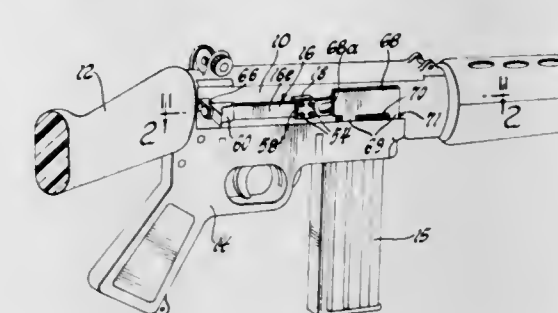
the body forming shanks which are spread when passed through apertures in the hook carrier, the apertures being spaced apart a small distance greater than the distance between the shanks.

### 3,628,277 ROUND EXTRACTOR FOR CASELESS FIREARM

Roy D. Plumer, Santa Barbara, and Harold Shrout, Goleta, both of Calif., assignors to General Motors Corporation, Detroit, Mich.  
Filed July 18, 1969, Ser. No. 843,097  
Int. Cl. F41c 15/00, 15/02

U.S. Cl. 42-25

4 Claims



An extractor for removing a round of caseless ammunition from the chamber of a firearm capable of firing caseless ammunition. The extractor comprises an elongated spring steel member having a forked end providing a pair of spaced spring fingers which are adapted to embrace the molded propellant of a round of caseless ammunition. The elongated spring steel member is slidably supported by a guide block mounted on the exterior of the firearm and the spring steel member can be axially projected into a position where it grips the round of caseless ammunition and then moved back to withdraw the round from the chamber of the firearm. The spaced fingers of the extractor are formed with beveled edges which permit the extractor to slidably engage the molded propellant of the caseless round when the extractor is being moved forward but include a sharp edge which bites into the caseless round to form a means for withdrawing the round from the chamber when the extractor is pulled back. The firearm has an opening which is closed by a pivotally mounted door and the extractor is arranged to move the door to an open position and grip the caseless round of ammunition, when the extractor is projected into the chamber to grip the round of ammunition. The door is spring biased toward a closed position, and when the extractor is moved back to the position outside of the chamber, the door is returned to the closed position.

### 3,628,278 REVOLVER CYLINDER CRANE LATCH MECHANISM

William B. Ruger, Southport, Conn., assignor to Sturm, Ruger & Co., Inc., Southport, Conn.  
Filed Feb. 11, 1970, Ser. No. 10,525  
Int. Cl. F41c 1/00

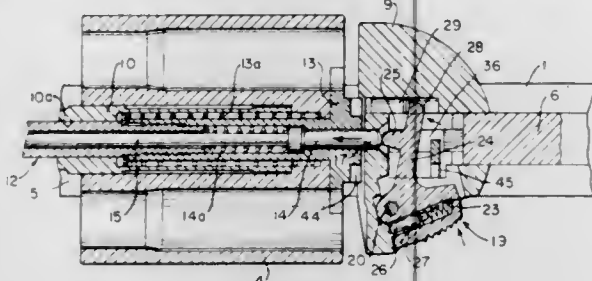
U.S. Cl. 42-62

8 Claims

The cylinder of a revolver rotatably mounted on a cylinder



crane is retained in its closed or firing position by a spring-pressed crane latch plunger that engages an opening formed in the frame of the revolver. A crane latch release lever is pivotally mounted on the frame for rotation in a horizontal plane that coincides with the axis of the rotation of the cylinder, the crane latch release lever disengaging the crane latch plunger when rotated forwardly against the rearward



end of the plunger. The crane latch release lever also may cooperate with the cylinder-actuating pawl to prevent the cylinder from being moved from its closed position to its open position when the revolver is cocked and to prevent the revolver from being cocked when the cylinder is in its open position.

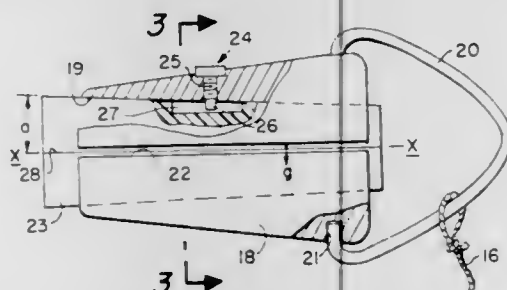
3,628,279

#### FISHING LURE RETRIEVER AND METHOD FOR USING SAME

William Halone, 776 Sierra View Way, Chico, Calif.  
Filed Apr. 8, 1970, Ser. No. 26,672  
Int. Cl. A01k 97/00

U.S. Cl. 43-17.2

10 Claims



A fishing lure retriever comprises a tubular metallic housing defining a tapered bore having a mating, tubular plastic sleeve disposed therein. Overlying longitudinal slits are formed through the housing and sleeve to permit the retriever to be placed onto a fishing line having a snagged lure attached to its free end. When the sleeve is moved axially in the housing, the slit formed on the sleeve closes to prevent the fishing line from escaping. The retriever is then lowered by a recovery cable attached thereto to free the fishing line and attached lure.

3,628,280

#### BREATH POWERED OSCILLATOR NOVELTY

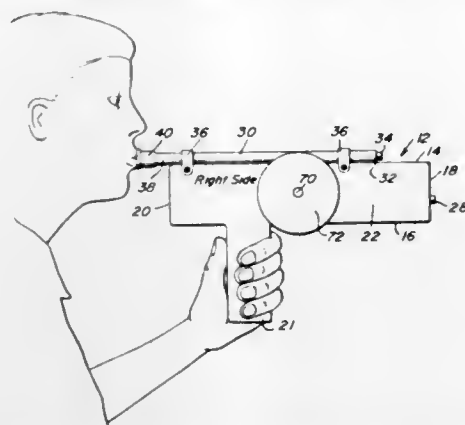
Richard L. Nave, 805 W. Mulberry Ave., San Antonio, Tex.  
Filed Sept. 28, 1970, Ser. No. 75,832  
Int. Cl. A63h 29/16

U.S. Cl. 46-44

10 Claims

A breath powered toy held and supported by either hand and adapted to stimulate breathing, improve respiratory capabilities by exercising the user's lungs and unique in that its attractive operation promotes one's incentive to use it. A column of air is blown by way of a tube and suitably ported conduit means into an oscillatory or rocking cylinder, that is, a cylinder (with or without a figure toy) provided with a piston whose reciprocating pitmanlike rod operates a shaft-

supported disk and a complementary flywheel. This intriguing cylinder-piston-eccentric assembly alerts and engenders in-



terest and, in so doing, accomplishes the respiratory result desired.

3,628,281

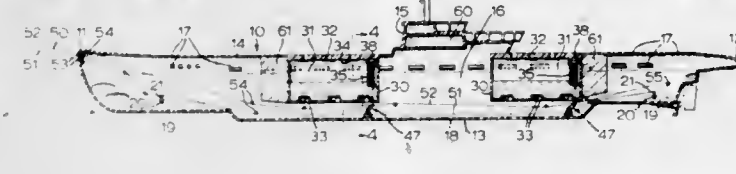
#### SUBMARINE WITH REMOTELY CONTROLLED DIVING AND SURFACING MEANS

Gary Horace Whitman, 68 Eaglewood Blvd., Mississauga, Ontario, Canada

Filed Sept. 18, 1970, Ser. No. 73,447  
Int. Cl. A63h 23/00, 23/04

U.S. Cl. 46-94

10 Claims



A remote controlled toy submarine having neutral buoyancy. A closed tank in the hull of the vessel has separate fluid inflow ports and fluid outflow ports in its upper portion, and free fluid inflow and outflow ports in its lower portion. A remote control flexible line controls diving vanes on the hull and means to control the fluid outflow ports, to open the latter for diving and to close the latter for surfacing.

3,628,282

#### ARTICULATED FASHION DOLL

Rollin C. Johnson, Jamul; J. Stephen Lewis, Pacific Palisades; Jack H. Malek, Palos Verdes Peninsula, all of Calif.; Herbert J. Peters, La Center, Wash.; George Sanchez, Compton; Jurgis Sapkus, Manhattan Beach, and John W. Ryan, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 25, 1969, Ser. No. 861,016  
Int. Cl. A63h 3/20

U.S. Cl. 46-161

1 Claim



A doll of lifelike appearance with limbs that move in a lifelike manner. The head of the doll is coupled to the neck

by a double ball-and-socket joint that permits turning and tilting of the head. The upper arm is connected to the shoulders by a combined ball-and-socket and pin joint, while the hand is coupled to the arm by a double-pin joint. The leg is connected to the torso by a sidewardly extending ball-and-socket joint that allows the legs to move apart and together as well as to kick up and back, while the foot is connected to the lower leg by a ratchet joint to position the foot for low and high heel shoes.

3,628,283

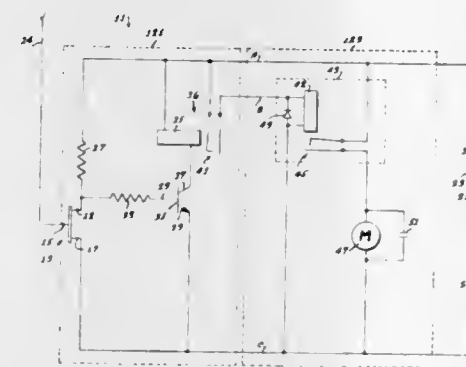
#### ELECTRONIC CONTROL DEVICE SENSITIVE TO ELECTROSTATIC CHARGE FOR CONTROLLING ELECTRICALLY OPERATED TOYS AND THE LIKE

Henri Mizoule, Sevres, France, assignor to Mattel, Inc., Hawthorne, Calif.

Filed June 1, 1970, Ser. No. 42,421  
Int. Cl. A63h 33/26

U.S. Cl. 46-233

8 Claims



An electronic control device utilizing a field effect transistor or similarly operating element wherein its input or gate electrode is connected to an antenna and its output or channel portion is connected in series with a load impedance across a DC current source. A utilization portion including a current activated device, which may be a part of an animation portion of a toy, such as a relay, is also connected across the current source in parallel with the transistor's channel portion and is further coupled to the output of the transistor and responsive to its conductive state for activating the current activated device.

3,628,284

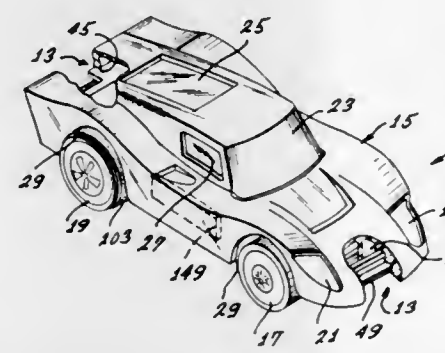
#### MINIATURE HIGH-SPEED ELECTRIC TOY RACING VEHICLE WITH RECHARGEABLE BATTERY

George Soulakis, Los Angeles; William R. Baynes, and Harvey W. La Branche, both of Palos Verdes Peninsula, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 2, 1970, Ser. No. 7,487  
Int. Cl. A63h 29/22

U.S. Cl. 46-243 LV

52 Claims



A lightweight support structure carrying front and rear wheel assemblies and carrying a rechargeable battery with electric circuitry including an on-off series connected switch and a battery charging arrangement, the circuitry connecting

the battery to a self-contained high-speed electric motor except when the battery is being charged. The motor is directly coupled to the vehicle's driven wheel assembly for high-speed operation.

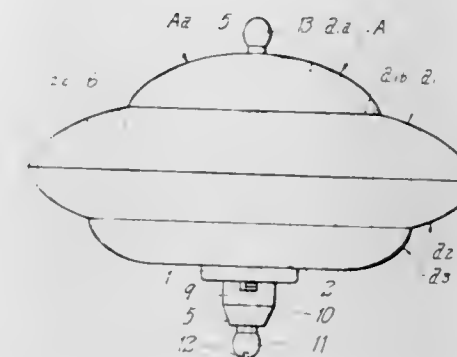
3,628,285

#### GYROSCOPIC TOP DEVICE

Masahiro Murakami, c/o Tomy Kogyo Co. Ltd. of No. 10, 9, 7-chome, Tateishi, Katsushika-ku, Japan  
Filed Nov. 20, 1969, Ser. No. 878,281  
Int. Cl. A63h 33/26, 1/06

U.S. Cl. 46-243

6 Claims



An electrically operated gyroscopic top device which comprises a hollow body, an electric motor housed in said hollow body and having an output shaft extending in alignment with the central axis of said body, at least one end of said output shaft projecting outwardly of said body, and a flywheel fixedly mounted on the output shaft. The device can be used either independently or in combination with certain accessories.

3,628,286

#### AMPHIBIAN TOY

Arimura Mashahiro, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1970, Ser. No. 86,898  
Claims priority, application Japan, Mar. 7, 1970, 45/22255  
Int. Cl. A63h 33/26, 23/10

U.S. Cl. 46-247

10 Claims



A toy for use in water and on solid surfaces having a casing formed in the shape of some amphibious animal, and a working unit removably installed therein. The casing includes a pair of rudders, shaped for instance like the wings of a penguin, and a water tank which, when containing water, enables the toy to swim underwater. The working unit contains a switch mechanism, which can be operated by means of a lever extending through the casing, electric cells, a motor, transmission gears and the like. The motor rotation is conveyed to a pair of flat-shaped foot members through gearing and shafting. These foot members can be slid along the arched bottom of the working unit and fixed at different positions, so that the toy is capable of making variety of motions in water besides walking on solid surfaces.



3,628,287

**PRODUCTION OF DIOSGENIN BY PLANT TISSUE CULTURE TECHNIQUE**

Emil John Staba, Minneapolis, Minn., and Balkrishna Kaul, Jersey City, N.J., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare

Continuation-in-part of application Ser. No. 740,076, June 26, 1968, now abandoned. This application Oct. 20, 1969, Ser. No. 867,894

Int. Cl. A01g 31/00; A01n 9/24; C12k 9/00; C07c 173/00  
U.S. Cl. 47—58 8 Claims

A method for growing callus or undifferentiated tissue cultures of *Dioscorea* seeds and other plant parts under aseptic conditions thus producing diosgenin which is recovered and may be used in the production of corticosteroids, hormones, anabolics and related steroid derivatives.

3,628,288

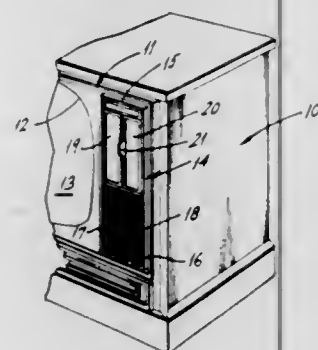
**DOOR STRUCTURE**

Arthur Berenbaum, Holland, and Robert M. McDonough, Philadelphia, both of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Sept. 3, 1970, Ser. No. 69,282  
Int. Cl. E05c 7/06

U.S. Cl. 49—109

5 Claims



Hinged door means in which movement of one of a pair of doors causes corresponding and simultaneous movement of the other. The apparatus includes means for mounting the doors for opening and closing movements across an access area provided in the cabinet frame or mask. A special panel is provided which forms part of the decorative finish of the cabinet mask, serves to form bearing means for the doors, secures the doors and door-operating linkage in operative position, and provides a stop against which the doors abut when in closed position.

3,628,289

**SLIDING DOOR CONSTRUCTION**

Herman L. Buffington, and Robert M. Stribling, both of Spartanburg, S.C., assignors to Beverage Air Company, Spartanburg, S.C.

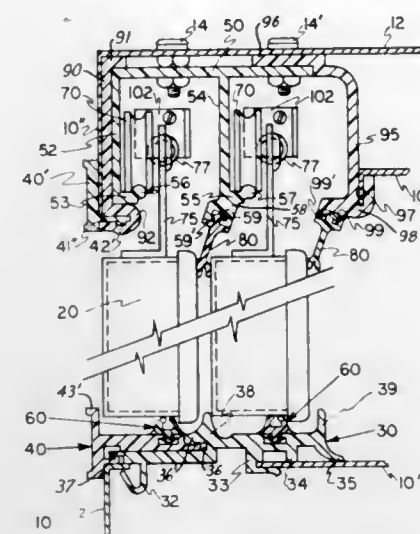
Filed May 25, 1970, Ser. No. 40,087  
Int. Cl. E05d 13/02

U.S. Cl. 49—409

3 Claims

A refrigerator door unit received in an opening in a refrigerator wall and adapted for horizontal movement therein to provide access to a refrigerator compartment. The door system comprises a unit frame and two parallel doors mounted for horizontal movement therein. The system is unique, in that, a complete thermal barrier is provided across the access opening. Such a barrier is accomplished by ther-

mally insulated doors equipped with means to seal the space between the doors and by the unit frame which exposes no



3,628,290

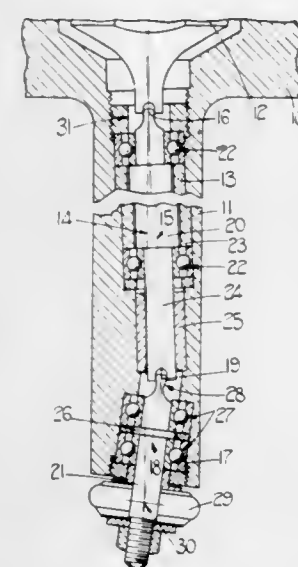
**GRINDING MACHINES**

William Albert John Wilson, and Hempstead Hemel, both of 16 Ravensdell, Hertfordshire, England

Filed June 9, 1970, Ser. No. 44,754  
Int. Cl. B24b 5/00, 41/00

U.S. Cl. 51—134.5

2 Claims



A grinding spindle for supporting and transmitting drive to a rotary grinding wheel, the spindle comprising a head portion whereby the spindle can be secured to a grinding machine, a cylindrical portion extending from the head portion and there being provided within the cylindrical portion, a pair of bores which are inclined to each other and to the axis of the cylindrical portion. The bores contain shafts respectively and which are interconnected by the universal joint. The driven shaft projects from the cylindrical portion and mounts the grinding wheel.

3,628,291

**AUTOMATIC BAND POLISHING MACHINE**

Ottorino Visconti, 11, V. Carducci, Milan, Italy

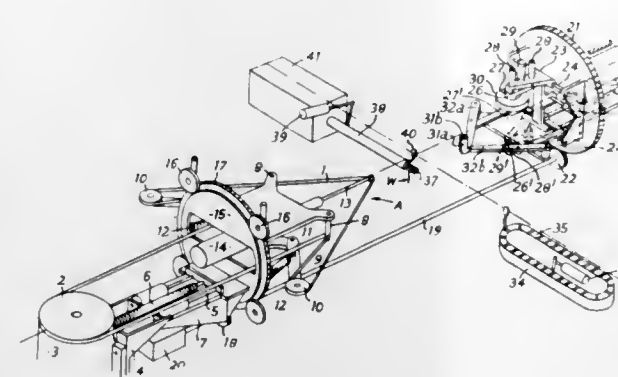
Filed Aug. 11, 1970, Ser. No. 62,975  
Claims priority, application Italy, Sept. 16, 1969, 22087 A/69  
Int. Cl. B24b 21/16

U.S. Cl. 51—148

11 Claims

A machine for polishing inside walls of a ring-shaped workpiece, such as handles of scissors and the like, in which the

workpiece is automatically selected, set up in position and burnished by an endless belt, after which the workpiece is dropped and another workpiece selected. The machine includes a pair of spaced supports for the endless belt with the workpiece therebetween and performs the polishing operation automatically by pushing a loop of the belt through the



workpiece opening, expanding the passed-through loop, placing this expanded loop upon a pulley, and then rotating the belt, the spaced supports also being simultaneously rotated around its longitudinal axis and the workpiece position altered so as to enable all interior surfaces of the ring to be polished.

3,628,292

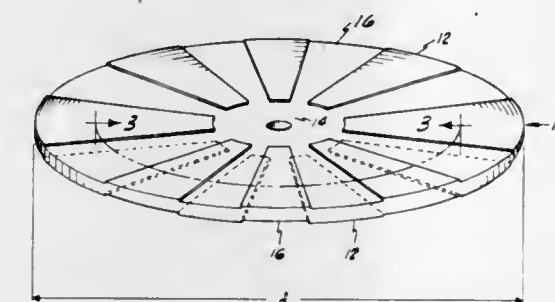
**ABRASIVE CUTTING WHEELS**

Charles V. Rue, Tiffin, Ohio, assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,653  
Int. Cl. B24d 5/12, 7/02

U.S. Cl. 51—206 R

6 Claims



Cutting wheels are provided having an abrasive matrix including a plurality of abrasive grains and a resinous bonding agent. The cutting wheels have bosses on both sides of the wheel. The bosses are alternately arranged with intervening grooves on both sides of the wheel and extend in a generally radial direction.

3,628,293

**APPARATUS FOR INTERCEPTING AIR FILMS ROTATING WITH GRINDING WHEELS**

Akiyoshi Kobayashi, and Kikujiro Nomura, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

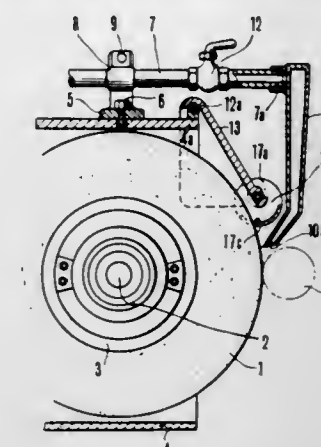
Filed Apr. 28, 1970, Ser. No. 32,614  
Claims priority, application Japan, May 12, 1969, 44/43405  
Int. Cl. B24b 55/02

U.S. Cl. 51—267

3 Claims

In apparatus for intercepting the air film rotating with a grinding wheel for positive supply of coolant to the grinding point of the grinding wheel, an arcuate baffle plate adjacent to a coolant nozzle for supplying coolant and extending in parallel with the axis of the grinding wheel is pivotally

mounted on the outer end of a cover plate covering a portion of the periphery of the grinding wheel to take up the air film



and deflect the same away from the periphery of the grinding wheel.

3,628,294

**PROCESS FOR MAKING A BEVELLED CAVITY IN A SEMICONDUCTOR ELEMENT**

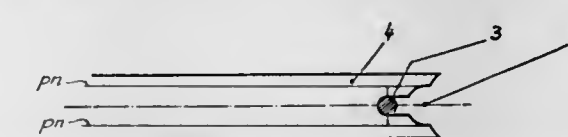
Gunter Sattler, Mannheim-Kaferthal (D), and Klaus Weimann, Lampertheim, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed May 12, 1969, Ser. No. 823,592  
Claims priority, application Germany, May 17, 1968, P 17 64 326.4

U.S. Cl. 51—283

Int. Cl. B24b 1/00

3 Claims



A bevelled cavity in the periphery of a disc of semiconductor material having at least two parallel spaced PN-junctions reaching to the edge of the disc is formed by grinding out the cavity, the grinding being carried out by using separate grinding wires which are of progressively smaller diameter.

3,628,295

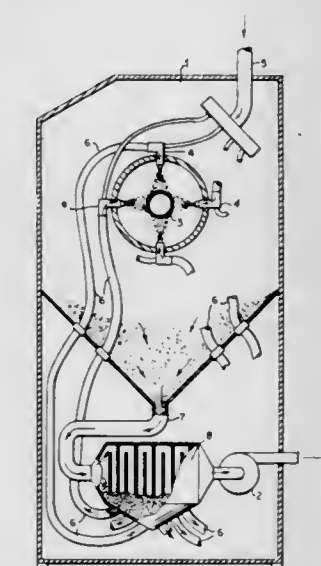
**MANUFACTURE OF PLASTIC ARTICLES HAVING A MOTTLED SURFACE**

Philip F. Curtiss, Myerstown, Pa., assignor to Paulsboro Chemical Industries, Inc.

Filed Oct. 27, 1969, Ser. No. 869,882  
Int. Cl. B24c 1/06

U.S. Cl. 54—319

4 Claims



This invention relates to the manufacture of plastic articles having a mottled surface, particularly sleeves of textile bob-



bins used to support yarn packages, by blasting them with glass beads made of silica glass.

3,628,296

**BREAKAWAY SIGN SUPPORT**

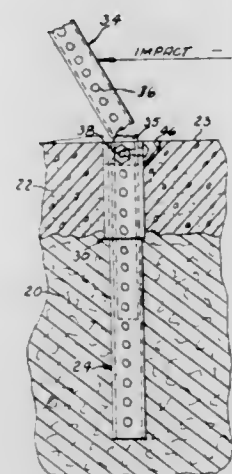
Herbert J. Henry, Dearborn Heights, Mich., assignor to Unistrut Corporation, Wayne, Mich.

Filed Sept. 2, 1969, Ser. No. 854,637

Int. Cl. E04h 12/32

U.S. Cl. 52—98

15 Claims



A structural sign support assembly composed of a plurality of telescopically assembled, perforated tubular members comprising a ground anchor, a reinforcing sleeve and a post member in which the longitudinally perforated tubular ground anchor, whose upper surface is substantially flush with the ground surface or the concrete or asphalt topping alongside a roadway, has its upper portion encompassed by a larger close-fitting longitudinally perforated tubular reinforcing sleeve for rigidity and added strength at a surface level breakaway point. A longitudinally perforated tubular sign support post is telescopically retained within the ground anchor and secured by a bolt member or members extending through aligned perforations of the post, the ground anchor and the reinforcing sleeve. The perforations of the post at or immediately above the top surface of the ground anchor and its supporting sleeve provide a relatively weak breakaway section so that the post will break off on impact from a vehicle or the like above the ground surface without damaging the reinforcing sleeve and the tubular ground anchor with the lower end of the standard or post remaining therein. The post can thereafter be easily removed from the ground anchor which remains in the concrete or soil of the ground for replacement with a new post.

3,628,297

**WALL INSTALLATION**

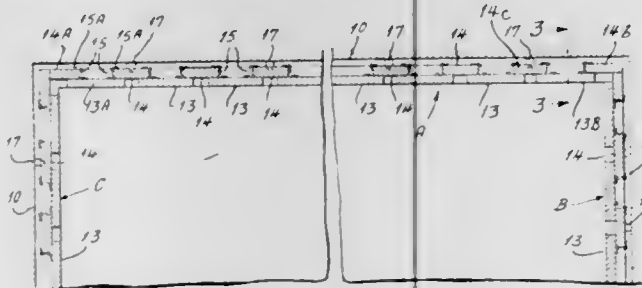
Cletus Richardson, 3419 A. Winnebago, St. Louis, Mo.

Filed Jan. 2, 1970, Ser. No. 354

Int. Cl. E04f 13/10

U.S. Cl. 52—267

6 Claims



A wall installation including means for aligning and supporting a plurality of lapped panels connected by panel securing means which are concealed during panel erection.

3,628,298

**DECORATIVE SHUTTER FOR MOBILE HOMES AND THE LIKE**

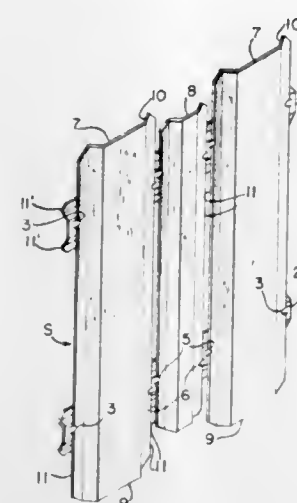
Raymond W. Sickler, RD #2, Wellsburg, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,588

Int. Cl. E04c 2/42; E06b 9/01

U.S. Cl. 52—473

4 Claims



A decorative shutter for mobile homes and the like comprising a plurality of vertically arrayed extruded aluminum panels held in a desired assembled fashion by means of horizontally disposed extruded aluminum stringers having a plurality of short tabs punched therefrom which receive opposite edge portions of the vertically arrayed panels. The assembled shutter is affixed to the side of the mobile home or the like by means of suitable fastening means passed through the stringers into the side of the mobile home or the like.

3,628,299

**ARCHITECTURAL SYSTEM OF INTERIOR MODULAR CONSTRUCTION**

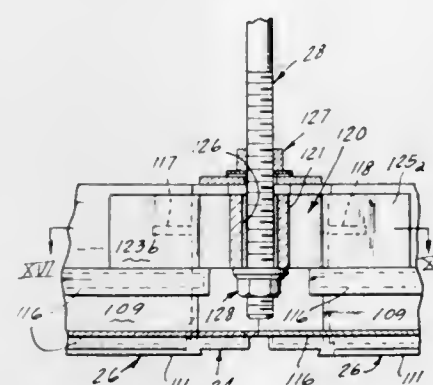
Yoshio Nakazawa, 927 Ridge Ave., Evanston, Ill., and Harold A. Lipper, 514 Webster Ave., Chicago, Ill.

Original application July 15, 1969, Ser. No. 870,942. Divided and this application June 11, 1970, Ser. No. 57,882

Int. Cl. E04b 5/52, 5/58

U.S. Cl. 52—488

3 Claims



An architectural system of modular construction for building structures including floor and ceiling rails or stringers forming rectangular floor and ceiling sections in vertical alignment with one another, pedestals adapted to be supported on a structural concrete floor for supporting the floor rails, suspension rods adapted to be hung from a structural concrete ceiling for supporting the ceiling rails and vertical corner posts which may be erected at the corners of any of the vertically aligned floor and ceiling sections to extend between the floor and ceiling rails. Panels for the floor and ceiling are supported in the same plane as the floor and ceiling rails on horizontal flanges extending from the floor and

ceiling rails. Thus the panels are disposed adjacent the rails, and do not overly the rails. Partition wall panels may be mounted between the erected corner posts in abutting relation with the floor and ceiling rails for selective partitioning of the floor and ceiling sections. The pedestals are adapted for vertical adjustment from above the floor line without removing the floor panels and the corner posts and partition wall panels can be erected and removed without interference with the floor and ceiling rails and panels to provide for a highly flexible and easily altered modular construction.

3,628,300

**JOINT BETWEEN H-SHAPED MEMBERS AND METHOD FOR PRODUCING THE JOINT**

Nariyoshi Tsurumi, Tokyo, Japan, assignor to Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan

Filed June 24, 1970, Ser. No. 48,980

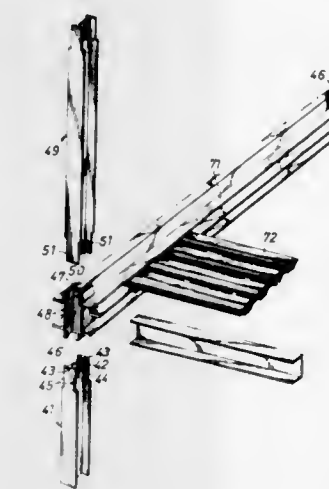
Claims priority, application Japan, June 28, 1969, 44/51306;

Apr. 25, 1970, 45/35555

Int. Cl. E04c 3/06; B23p 17/00

U.S. Cl. 52—721

15 Claims



Method for joining two H-shaped steel members each provided with longitudinal cutouts in a web and in each end of opposite flanges by using in combination a joint having a web and flanges to be fitted into the cutouts. After the H-shaped steel members and the joint are fitted together, the flanges of the H-shaped steel members and the joint in engagement with each other are welded together.

3,628,301

**CLOSURING CONTAINERS**

Emile Raymond Vermeulen, Ghent, Belgium, assignor to Sidaplex N.V., Gentbrugge, Belgium

Filed Oct. 21, 1969, Ser. No. 868,162

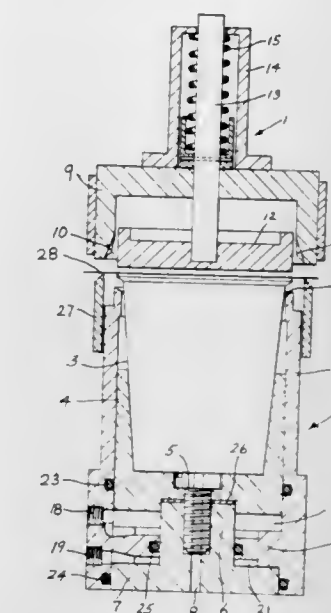
Claims priority, application Great Britain, Oct. 28, 1968, 51,058/68

Int. Cl. B65b 61/18, 7/28

U.S. Cl. 53—14

13 Claims

Method and apparatus for closing a lipped container with a sheet of biaxially orientated thermoplastic by pushing down on portions of the sheet overlapping the lip of the container with a heating element which softens but does not heat-seal the sheet to the container, while at the same time clamping heat-softened overlapping portions tightly against the container to prevent them from shrinking. The pushed-down portions are then crimped under the lipped edge whereupon the portion of the sheet extending over the open top of the container is shrunk by heating to pull the crimped portions tightly underneath and against the lip. The package thus formed includes a sheet closure of biaxially orientatable thermoplastic, the closure having an outer biaxially orien-



ly unorientated portion extended over an open end of the container.

3,628,302

**BAG PACKAGING SYSTEM**

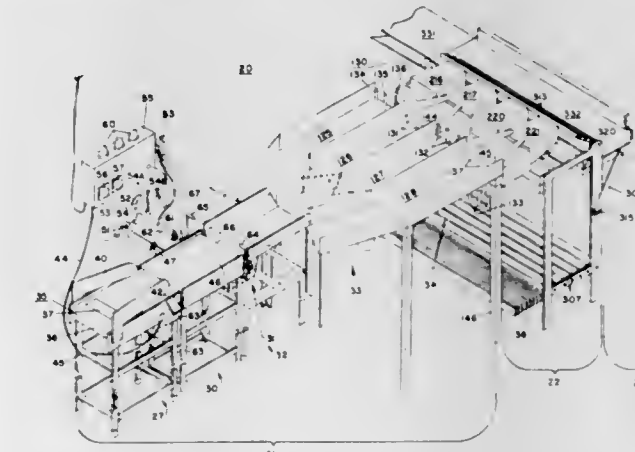
John T. Roberts, Simpsonville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Feb. 9, 1970, Ser. No. 9,869

Int. Cl. B65b 57/02, 31/04

U.S. Cl. 53—59

7 Claims



Apparatus and method for classifying products to be packaged, distributing the classified products to index positions corresponding to their classifications and holding the classified products for packaging, indexing bags into product loading positions corresponding to the index positions by conveying imbricated taped bags into loading positions keyed to the classifications, inflating the taped bags, inserting the indexed items into the bags and removing the loaded bags from the loading position, conveying the loaded bags to an evacuating and closing position, evacuating and closing the bags and subsequently shrinking the bags.

3,628,303

**METHOD OF FORMING AND FILLING CONTAINERS AT HIGH RATES OF SPEED**

Seymour C. Graham, 330 W. Diversey, Chicago, Ill.

Filed July 24, 1969, Ser. No. 844,313

Int. Cl. B65b 47/02

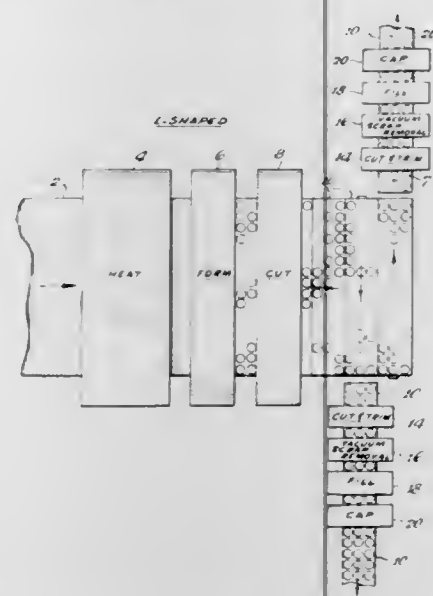
U.S. Cl. 53—30

11 Claims

The method of thermoforming and filling containers while operating both forming and filling equipment at optimum speeds. This is accomplished by taking a wide sheet or web of



plastic and forming a substantial number of transversely spaced containers. The stroke, or forward motion of the sheet, is kept as short as practical, thus minimizing any heat loss in the plastic sheet while it moves from the heating station to the forming station. After forming, portions of the plastic sheet containing the formed containers—or the con-



tainers themselves—are severed from the main web and moved off at an angle relative to the longitudinal direction movement of the main web to filling stations, where filling can take place at the desired rate. With this system, there can be utilized the advantages of efficient forming, and of rapid filling.

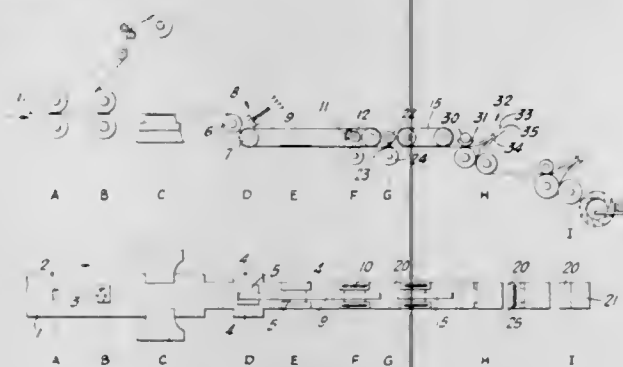
3,628,304

**METHOD OF FORMING ENVELOPES HAVING INSERTS THEREIN FROM A MOVING BLANK WEB**  
Helmut O. Hornung, Altoona, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Dec. 1, 1969, Ser. No. 881,071  
Int. Cl. B65b 11/34; B31b 1/62, 1/82

U.S. Cl. 53—31

7 Claims



A method of forming envelopes having inserts therein in a continuous manner from a moving blank web of paper or the like. The web is advanced along a line at a selected forward speed and sequentially has side flaps cut therein, inserts placed between those side flaps, the side flaps folded inwardly into overlying contact with the insert materials, bottom and closure flaps cut therein and gummed as required and finally, folded and sealed to form envelopes having inserts sealed therein.

3,628,305

**METHOD AND APPARATUS FOR APPLYING CARRIERS ONTO CONTAINERS**

Ronald C. Owen, Harwood Heights, and Robert J. Jurin, Chicago, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

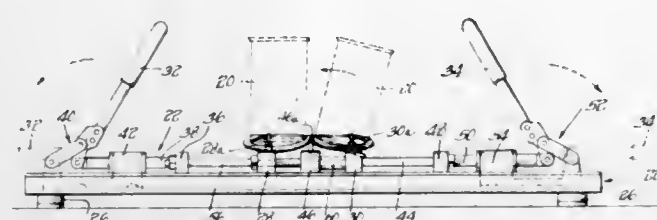
Filed Dec. 29, 1969, Ser. No. 888,529  
Int. Cl. B65b 15/00, 17/02, 67/00

U.S. Cl. 53—35

14 Claims

The present invention relates generally to improvements in

container carrier applicators and more particularly to apparatus for and methods of applying to containers, carriers of the type comprising a sheet of stretchable or elastic material having at least one container accommodating opening provided therein. The apparatus disclosed herein comprises a



stationary platelike base section and a pair of reciprocable sections associated therewith, having a plurality of pins arranged in predetermined spaced relation. Handles pivotally mounted on the stationary base section serve to control the reciprocation of the pin carrying sections and consequently the stretching of the carrier material.

3,628,306

**PACKAGING APPARATUS**

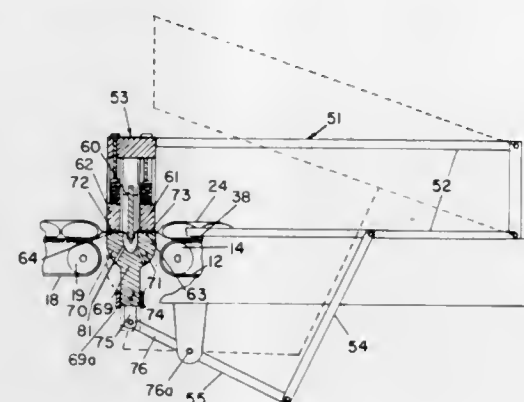
Sylvester O. Jacobson, and Norman M. Arneson, both of Eau Claire, Wis., assignors to Jams, Ltd., Eau Claire, Wis.

Filed May 26, 1970, Ser. No. 40,583

Int. Cl. B65b 9/02

U.S. Cl. 53—182

1 Claim



Apparatus for packaging articles between two heat-sealable plastic films. The apparatus feeds roll-stock film over an infeed conveyor and articles to be packaged are placed on the film. A second roll-stock film is fed over the top of the articles and sealed to the bottom film by a transverse timed-drop heat-sealing knife. The sealing knife operates between spring tensioned clamping bars which hold the films together both fore and aft of the sealing knife. The lower clamping bar is provided with a series of air vents for cooling the transverse seals. The sides of the package are sealed by a pair of heat-sealing wheels which are insulated by inwardly spaced discs to protect the articles being packaged against scorching. A perforator saw wheel runs on the top film as it passes over a rubber roller to provide a perforated line of weakness in the top film.

3,628,307

**CONTAINER CAPPING APPARATUS**

William Herbert Croasdale, Morris Plains, and Donald Owen Johnson, Matawan, both of N.J., assignors to American Can Company, New York, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,169

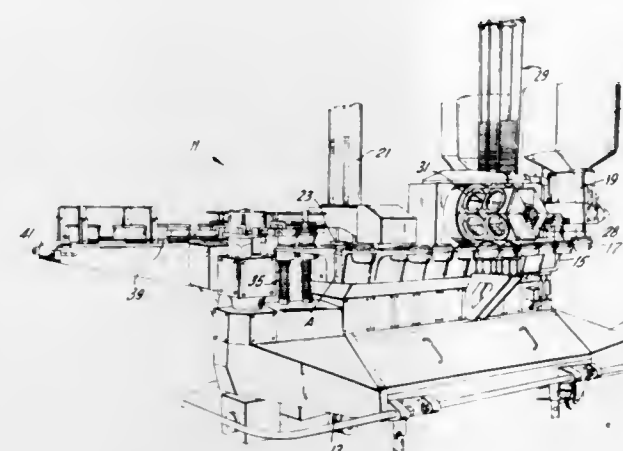
Int. Cl. B65b 7/28

U.S. Cl. 53—299

18 Claims

The invention is directed to apparatus particularly adapted for securing coverings or lids upon containers primarily used for storage of generally perishable goods. The lids are supplied to a rotary element upon which they are held in a tem-

porary or quasipermanent location to be transferred at appropriate later time periods individually to loaded containers moving along a conveyor line to an outlet region. The loaded containers are carried along a conveyor which is moved in step-by-step fashion prior to and following loading. Both the loadings and the lid coverings are applied during conveyor movement arrest periods. Provisions are made for coordinat-



ing all of the container loading operations, the movements of the covering elements, and the rate of advance of the container both prior to and subsequent to a loading or takeoff. Various means may be provided for achieving the foregoing results including the use of vacuumlike grippings and the positioning of the container relative to a plungerlike element to discharge the container covering and then to transfer it to the container proper.

## ERRATUM

For Class 53—230 see:  
Patent No. 3,628,309

3,628,308

**BIT**

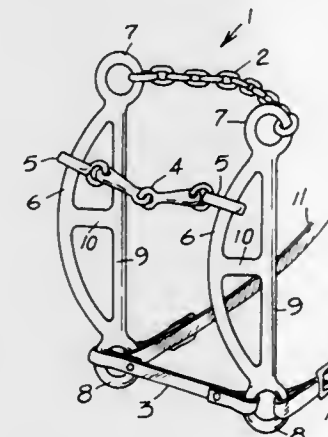
Walter W. Lozier, 937 Fredensborg Canyon Rd., Solvang, Calif., assignor Georganne C. White, San Francisco, Calif., part interest

Filed May 11, 1970, Ser. No. 36,214

Int. Cl. B68b 01/06

U.S. Cl. 54—8

4 Claims



In order to prevent excessive pulling of the mouth of a horse by the reins, control is accomplished by pressure on a nerve above the chin groove of the horse nearer to the neck. The bit has a pair of parallel shanks, each of which has a forwardly curved shank portion slideable in a ring on the end of the mouthpiece which latter may be a chain or broken snaffle. A chin strap connects the tops of the shanks and is located higher than the chin strap on a regular bit. The reins are secured to the lower ends of the shanks, so that when the

reins are pulled the curved portions of the shanks slide downward with the rings on the ends of the mouthpiece and pivot around the rings so as to draw the chin strap against a nerve above the chin groove. A leather strap connects the lower ends of the shanks to keep them parallel.

3,628,309

**AUTOMATIC MACHINE FOR THE CONDITION OF CIGARETTES INTO PACKETS**

Ariosto Seragnoli, Via della Rose 50, Bologna, Italy

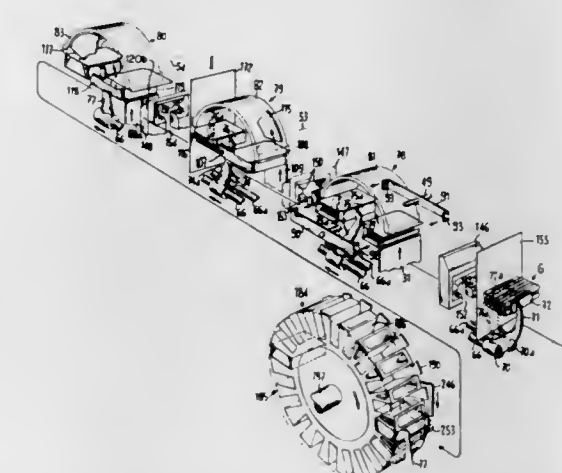
Filed Apr. 15, 1968, Ser. No. 721,525

Claims priority, application Italy, Apr. 20, 1967, 1621A/67

Int. Cl. B65b 11/42

U.S. Cl. 53—230

2 Claims



An automatic cigarette packaging machine having a plurality of pairs of translator members, having opposed parallel surfaces disposed in parallel with axially aligned batches of cigarettes, for successively holding and supporting the batches of cigarettes during packaging maneuvers, and for moving the cigarettes through the machine in directions perpendicular to their axes.

3,628,310

**METHOD AND APPARATUS FOR EMPLOYING SOLUTION AND ADSORPTION CHARACTERISTICS OF SOLIDS AND LIQUIDS FOR THE BALANCING OF TEMPERATURE DEPENDENCE OF SOLUBILITY AND ADSORBABILITY OF VAPORS AND GASES**

John Howard Purnell, Bishopston, Swansea, South Wales, assignor to The Foxboro Company, Foxboro, Mass.

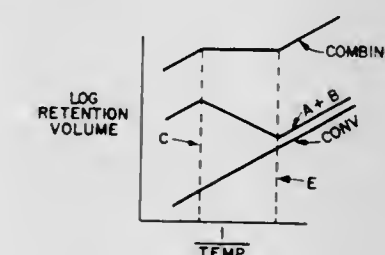
Filed Sept. 16, 1968, Ser. No. 759,970

Claims priority, application Great Britain, Nov. 14, 1967, 51,851/67

Int. Cl. B01d 15/08

U.S. Cl. 55—67

13 Claims



Method and apparatus for balancing over a selected range the temperature-dependence of a characteristic of a chemical system exhibiting mass transfer of species through and between phases over a selected range by introduction of a countervailing temperature effect exhibited by a substance or a mixture of substances having a temperature range between phase or species changes for the purpose of achieving a result exhibiting a predetermined and restricted temperature dependence.



3,628,311

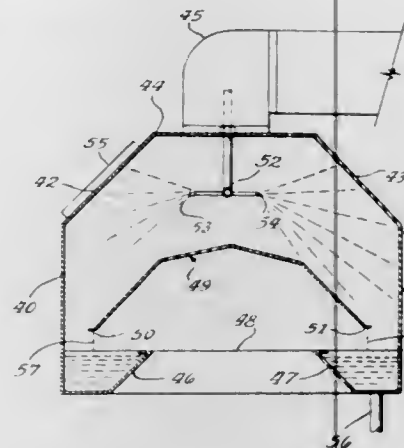
**AIR PURIFICATION SYSTEMS**

Nino F. Costarella, and Anthony A. Giuffre, both of Milwaukee, Wis., assignors to Nino's Inc., Milwaukee, Wis.  
Filed July 7, 1969, Ser. No. 839,383

Int. Cl. B01d 47/06

U.S. Cl. 55-223

4 Claims



A ventilating hood and duct structure for stoves wherein a baffle and water spray arrangement within the hood forces the smoke to pass through successive water curtains. Grease and other impurities are drained from the hood structure through a rectangular trough which overlies the fire area.

**3,628,312  
HUMIDIFIER**

Hans Rudolf Stoop, Mutschellen, and Karl Flury, Dietikon, both of Switzerland, assignors to Defensor AG, Zurich, Switzerland

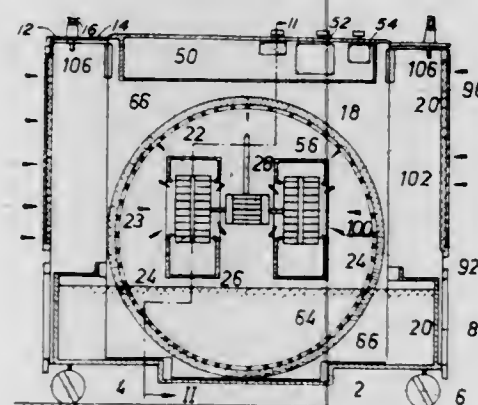
Filed May 8, 1968, Ser. No. 727,476

Claims priority, application Switzerland, May 17, 1967,  
6914/67

Int. Cl. B01d 46/10; F24I 3/14

U.S. Cl. 55-232

3 Claims



A humidifier which incorporates a rotatable moisturizing roller partially immersed in a water reservoir. The moisturizing roller has an outer surface formed by at least one layer of porous material. Further, the moisturizing roller has an open end face which confronts a partition wall member, a blower being located within the moisturizing roller. The partition wall member is provided with an air passage opening communicating with the interior of the roller through its open end face. The axis of the blower extends transversely with respect to the axis of rotation of the moisturizing roller and such blower provides a double-sided or dual inlet radial blower having a substantially spiral-shaped casing. This spiral-shaped casing having an outlet portion which extends through said air passage opening in the partition wall member and communicates with the outlet opening of the housing of the humidifier.

3,628,313

**APPARATUS FOR SEPARATING TEXTILE FIBERS FROM CONVEYING AIR**

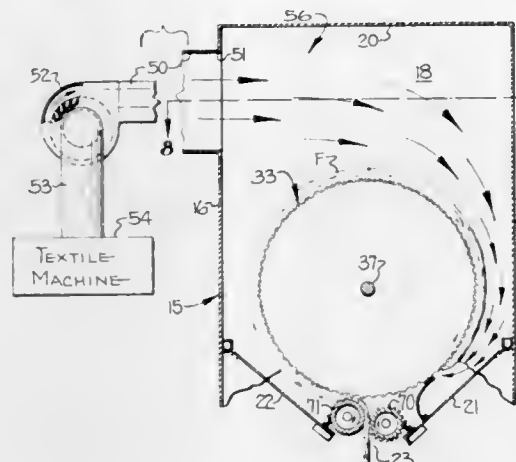
Arnold Broadbent, Shaw, England, assignor to Parker-Cramer (Great Britain) Ltd., Lancashire, England  
Filed May 21, 1969, Ser. No. 826,550

Claims priority, application Great Britain, June 4, 1968,  
26,542/68

Int. Cl. B01d 46/26

U.S. Cl. 55-283

7 Claims



An apparatus for separating textile fibers from a conveying airstream while utilizing collected fibers to augment filtering fibers, dust and the like from the conveying airstream, wherein the fiber-laden airstream is directed against and in generally tangential relation to a cylindrical filter drum within a confining casing to form a porous air-filtering batt of fibers on the drum while the filtered air is exhausted from within the drum. Upon a predetermined rise in air pressure (back pressure) within the casing incident to the buildup of fibers on the drum, the drum is automatically momentarily rotated in the opposite direction from the flow of the airstream to expose a previously shielded portion of the filter drum to the flow of air therethrough sufficient to relieve the back pressure in the casing as a portion of the batt previously formed is removed from the filter.

3,628,314

**PACKED-BED RETAINER**

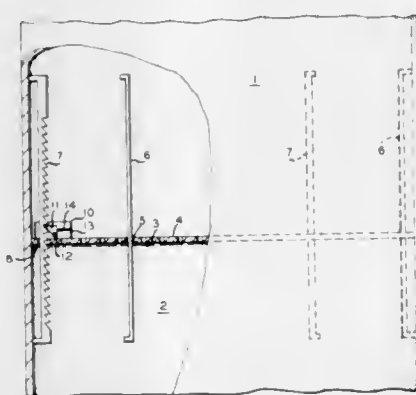
William C. McCarthy, and Merritt V. De Lano, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Nov. 20, 1969, Ser. No. 878,383

Int. Cl. B01d 53/04; C01d 9/04

U.S. Cl. 55-387

7 Claims



A packed-bed retainer which comprises an apertured plate which rests on the surface of the bed to be retained and which is guided to rest on the bed and move downward as the level of the bed drops but which is adapted with means to prevent movement of the plate along the guide in an upward direction.

3,628,315

**MOWER SAFETY DEVICE**

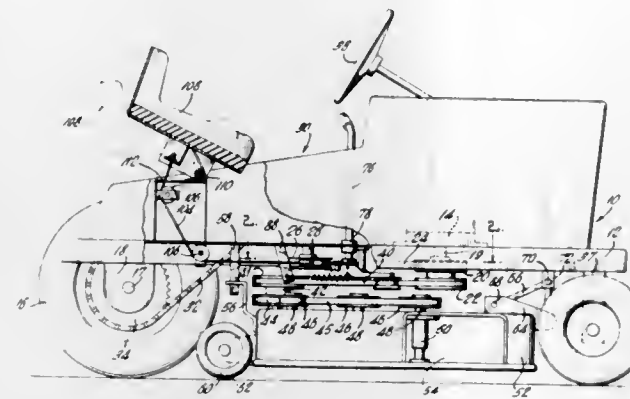
Robert W. Bartholomew, 318 Hickory St., Michigan City, Ind.

Filed Aug. 17, 1970, Ser. No. 64,192

Int. Cl. A01d 35/26

U.S. Cl. 56-10.5

8 Claims



A safety device for controlling the delivery of power to the cutting blades of a riding mower having means thereon movable from a first position to a second position under the weight of an operator and back to the first position upon removal of the weight of the operator. The safety device comprises force applying means associated with the means movable by the operator and with a clutch which controls the transmission of power to the cutting means, the force applying means being effective to apply a force to disengage the clutch and halt the transmission of power to the cutting blades only upon removal of the weight of the operator.

3,628,316

**SELF-PROPELLED SWEET CORN HARVESTER**

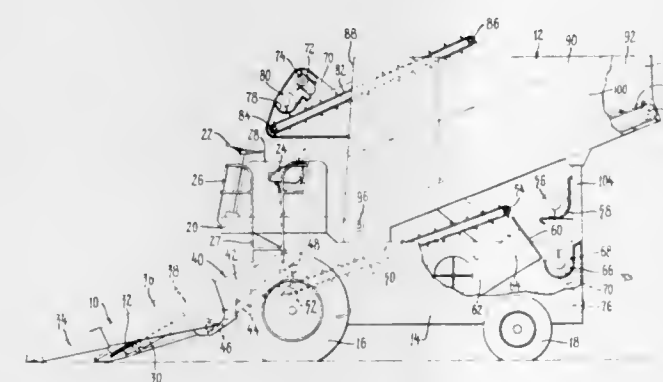
John H. Rea, Sr., Box 86D, Touchet, Wash.

Filed May 5, 1969, Ser. No. 821,593

Int. Cl. A01d 45/02

U.S. Cl. 56-13.3

1 Claim



A self-propelled sweet corn harvester with a multiple row harvesting head having snapping rolls and gathering chains, a cleaning means with an auger for ejecting stalks and a fan to blow light trash from the harvested ears of corn, a bin for temporary storage of ears of unhusked green corn, and a conveyor to unload the bin.

3,628,317

**HARVESTER HEADER**

Lester C. Lederer, Rt. 1, Box 226, Willows, Calif.

Filed July 20, 1970, Ser. No. 56,316

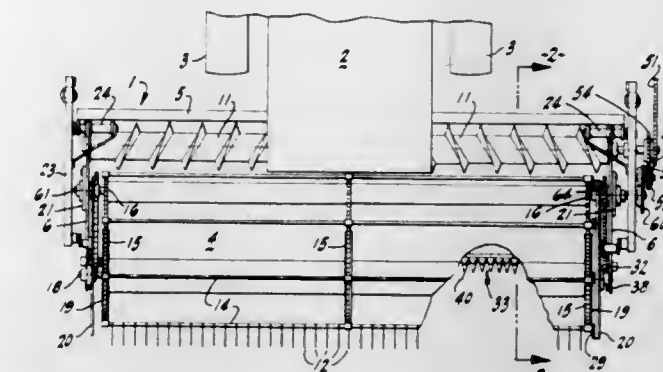
Int. Cl. A01d 57/02

U.S. Cl. 56-219

8 Claims

A harvester header is a leading portion of a mechanized harvester which gathers in grain or the like growing in the

field, severs the grain near ground level, feeds the grain toward a central point usually by an auger-type feeder from



which central point the grain is conveyed away for some further operations such as threshing.

3,628,318

**REEL-TYPE LAWN MOWER WITH HEIGHT OF CUT ADJUSTMENT**

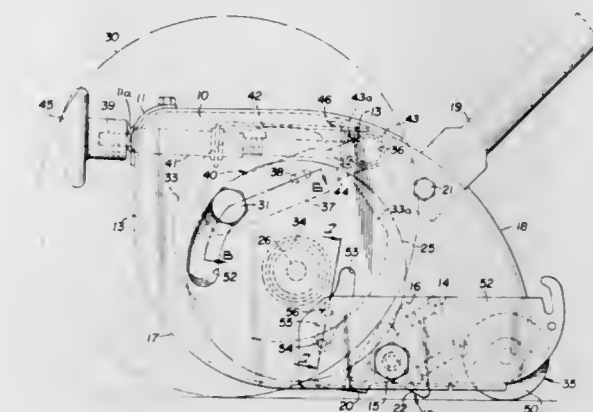
Ben T. Grobowski, Newark, Ohio, assignor to A-T-O Inc., Cleveland, Ohio

Filed Feb. 11, 1970, Ser. No. 10,449

Int. Cl. A01d 55/20

U.S. Cl. 56-249

8 Claims



A reel-type lawn mower with height of cut adjustment by means of which the reel and associated cutter blade or bedknife are maintained in cooperative relationship, with the cutter blade in a predetermined angular relationship relative to the ground, or other surface on which the supporting wheels are disposed, throughout the extent of the adjustment. The adjustment is such that it simultaneously adjusts both side plates along with the reel and cutter blade or bedknife supported thereby, by bodily moving the sideplates vertically while maintaining both the wheels and rear supporting roller in contact with the ground. The adjustment is accomplished by moving the wheels vertically relative to the side plates and, through a parallelogram linkage connection, simultaneously moving the supporting roller vertically in the same direction and to the same extent relative to the sideplates.

3,628,319

**METHOD AND APPARATUS FOR HARVESTING TOBACCO**

Bobby G. Moore, Rt. 4, Conway, S.C.

Filed Apr. 24, 1969, Ser. No. 827,454

Int. Cl. A01d 45/16

U.S. Cl. 56-27.5

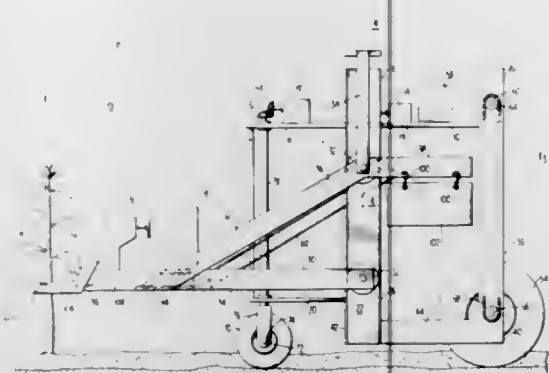
28 Claims

A self-propelled, mechanical tobacco harvester with novel, variable, swath-cutting means, automatic guidance system,



stalk-supporting means, leaf-orienting means and variable height containers, the operation station and cutting means

Collection apparatus is employed to twist the material by spinning. The coating, twisting and spinning operations, use-



being cantilevered from the harvester frame at a predetermined height.

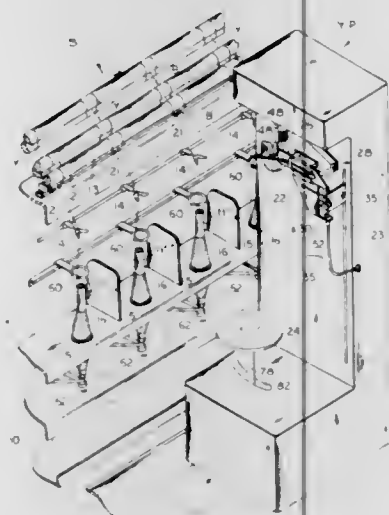
### 3,628,320 METHOD AND APPARATUS FOR TRAVELER THREADING

Albert D. Harmon, Clemson, S.C., assignor to Maremont Corporation, Chicago, Ill.  
Filed Aug. 1, 1969, Ser. No. 846,681

Int. Cl. D01h 15/00

U.S. Cl. 57-34 R

8 Claims



In the automatic piecing of broken yarn upon a textile spinning frame or like machine of the ring-traveler type, yarn on the bobbin is located, retrieved, and positioned first horizontally above the ring at a predetermined distance thereabove and then at a prescribed low angle relative to the spinning ring to facilitate proper traveler threading and the subsequent resumption of normal spinning operations. Both nonthreading and double-threading of the traveler are prevented.

### 3,628,321 ASBESTOS PROCESSING APPARATUS

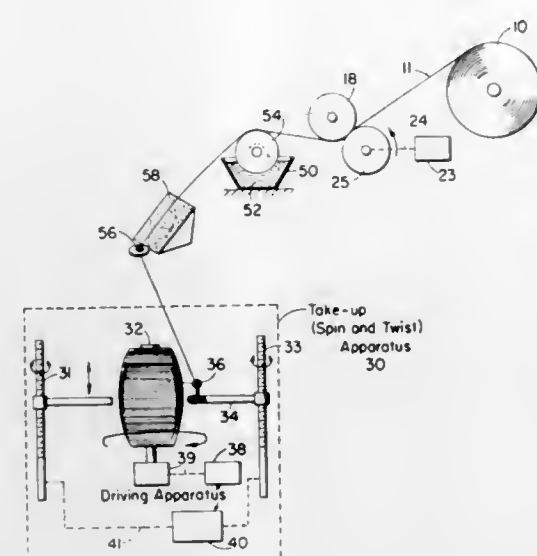
Imre Meir Schwartz, 566 Broadway, Paterson, N.J.  
Filed Nov. 20, 1969, Ser. No. 878,343

Int. Cl. D02g 3/20, 3/36; D07b 7/14

U.S. Cl. 57-35

3 Claims

Asbestos or like roving (or tape, sliver, or other raw material strand form) is supplied by a metering drive roll to a coating or impregnating station for application of a solution or emulsion. The coated asbestos roving is twisted, and loose and fringe fibers thereof integrally formed into, and secured within the evolving asbestos yarn when the wet material is drawn over a wiping pad.



ful per se, also obviate environmental contamination during the spinning process.

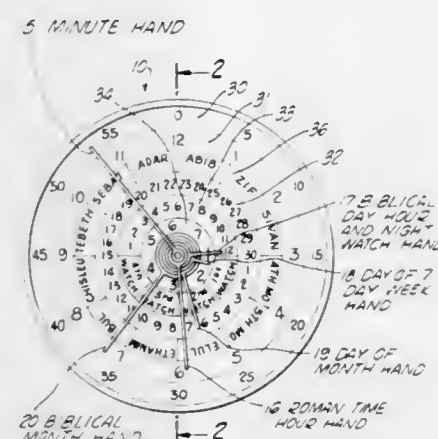
### 3,628,322 BIBLICAL TIMEPIECE

Samuel E. McDuffee, and Pauline M. McDuffee, both of General Delivery, Wrightwood, Calif.  
Filed Apr. 30, 1970, Ser. No. 33,369

Int. Cl. G04b 19/24

U.S. Cl. 58-4

3 Claims



A clock, watch or the like having a dial on which time may be measured by the Roman system and at the same time, time may be measured by the system laid down in the Bible. Roman time is measured by the conventional 12-hour dial which is traversed by a minute hand once each hour and by an hour hand twice for each 24 hours. Biblical time is measured in hours, watches, days of the week, days of the month and months of the year, and the dial of the invention is traversed by a plurality of hands, one of said hands traversing the dial once each hour; another hand once each 12 hours; another hand once each 24 hours, (which are divided into 12 hours of the day and four watches of the night); by another of said hands once each 7 days to continuously designate the current day of a 7-day week; by another of said hands once each month to continuously designate the current day of the month and by another of said hands once each year to continuously designate the current month of the year.

### 3,628,323 MINIATURIZED ELECTRONIC WATCH

Werner R. Baumgartner, Orpund, and Hans P. Kaufman, Bienne, both of Switzerland, assignors to Bulova Watch Company Inc., New York, N.Y.

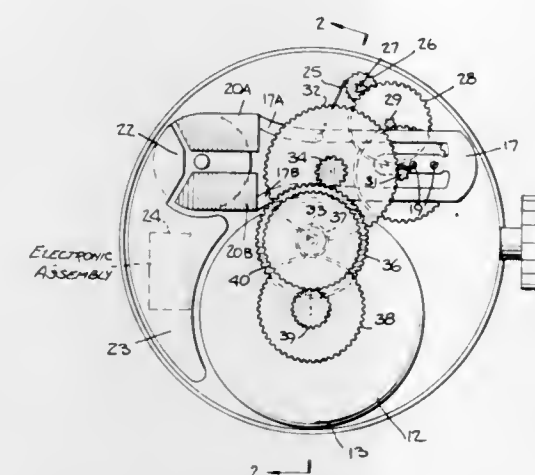
Filed Jan. 14, 1970, Ser. No. 2,819

Claims priority, application Switzerland, Feb. 6, 1969, 1798/69

Int. Cl. G04c 3/00

U.S. Cl. 58-23 BA

5 Claims



A miniaturized electronic watch in which a tuning fork resonator is sustained in vibration by a transistorized drive circuit energized by a single power cell, the vibratory action being converted into rotary motion to operate a dial train which turns the hands of the watch. The watch movement includes a pillar plate below which the power cell is so positioned that its periphery coincides at one point with the border of the plate, the body of the cell extending to or beyond the geometrical axis of the hands, which axis is normal to the plate. The tuning fork is disposed to one side of the cell below the plate, whereas the dial train is mounted above the cell to provide a highly compact layout.

### 3,628,324 ELECTRIC TIMEPIECE

Remy Chopard, and Rene Besson, both of Neuchatel, Switzerland, assignors to Ebauches S.A.

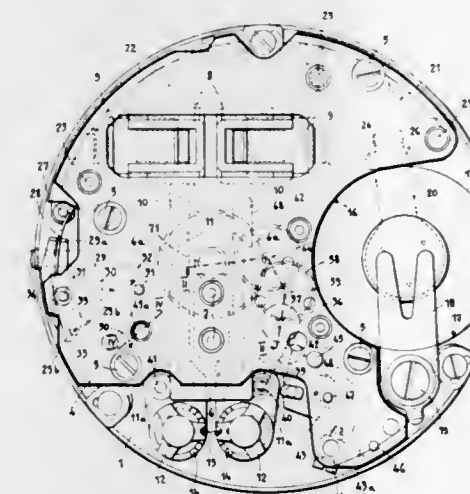
Filed Feb. 27, 1970, Ser. No. 15,029

Claims priority, application Switzerland, Mar. 17, 1969, 3926/69

Int. Cl. G04c 3/00

U.S. Cl. 58-28 D

4 Claims



An electric timepiece inclusive of a flexible resonator wherein a vibrating flexible blade drives a ratchet counting wheel in a step-by-step manner through the intermediary of a pawl.

### 3,628,325 SELF-WINDING WATCH

Katsuhiko Morita, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

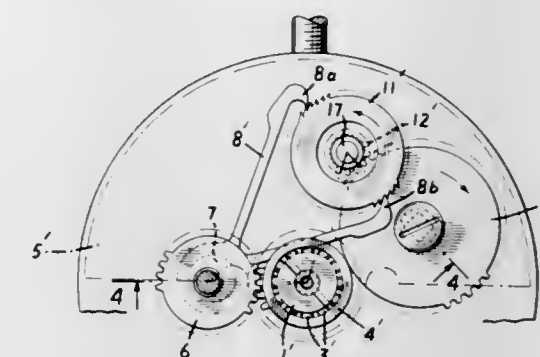
Filed June 30, 1969, Ser. No. 837,679

Claims priority, application Japan, July 2, 1968, 43/55817

Int. Cl. G04b 5/02

U.S. Cl. 58-82 R

2 Claims



A winding system for a self-winding wrist watch having a driven ratchet wheel for winding a mainspring by driving the ratchet from an oscillatory pawl oscillated by an eccentric axle driven by an oscillating weight and without the use of a conventional bridge element.

### 3,628,326 AUTOMATICALLY WINDING WATCH

Raymond Polo, La Chaux-de-Fonds, Switzerland, assignor to Fabriques Movado, La Chaux-de-Fonds and Fabriques des montres Zenith S.A., Le Locle, Switzerland

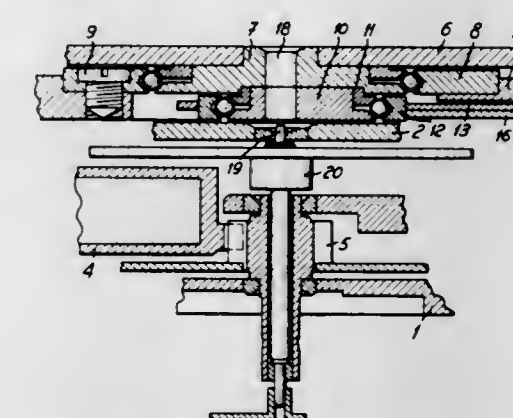
Filed Nov. 21, 1969, Ser. No. 878,842

Claims priority, application Switzerland, Dec. 23, 1968, 19137/68

Int. Cl. G04b 5/02

U.S. Cl. 58-82 A

2 Claims



An automatically winding watch comprises superimposed first and second ball bearings. The first ball bearing is fixed by its outer race and the inner race is rotatably oscillated by an oscillating mass. The inner race of the second ball bearing is eccentrically mounted in a recess in the inner race of the first ball bearing and the outer race thereof drives a pawl-bearing yoke with an oscillating movement. The two inner races can have a common bore allowing access to a sweep second pivot.

### 3,628,327 CLUBTOOTH LEVER ESCAPEMENT

Kenji Abe, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Chuo-ku, Tokyo, Japan

Filed Apr. 6, 1970, Ser. No. 25,720

Claims priority, application Japan, Apr. 14, 1969, 44/28481

Int. Cl. G04b 15/00

U.S. Cl. 58-116

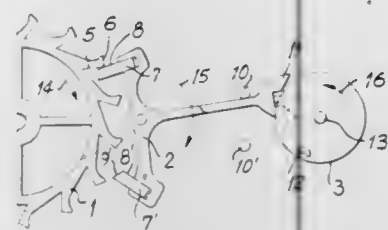
3 Claims

A clubtooth lever escapement with high transmission efficiency having an escapement wheel and an anchor, and



satisfying at least one of  $2.0 \leq L_G/L_{AI} \leq 1.0$  and  $2.0 \leq L_G/L_{AD} \leq 1.0$ , where  $L_G$  is the length of the impulse face of said escape

interconnected at one end, and hot gas is passed in a swirling manner along the axis of the actuator. The time differential



wheel tooth,  $L_{AI}$  is the length of the impulse face of the entry pallet jewel of said anchor and  $L_{AD}$  is the length of the impulse face of the exit pallet jewel of said anchor.

3,628,328

# DEVICE FOR AUTOMOBILES FOR PREVENTING AIR CONTAMINATION

Kenji Matsuzawa, Yokohama, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan

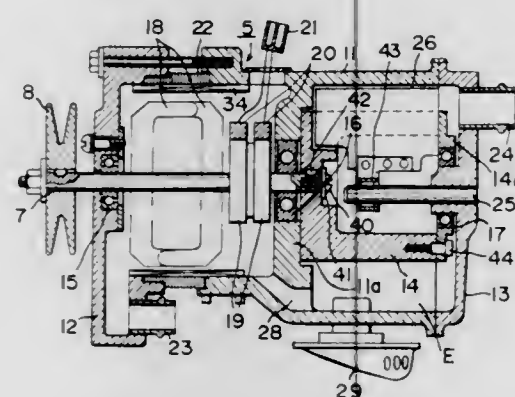
Filed Dec. 2, 1968, Ser. No. 780,502

Claims priority, application Japan, Dec. 6, 1967, 42/78083

Int. Cl. F01n 3/10; H02k 9/06

U.S. Cl. 60—30

1 Claim



A device for automobiles for preventing air contamination by forcing compressed air to an engine exhaust manifold for reburning the incompletely burned components of the engine exhaust gas. The device comprises a compact air-pump-alternator consisting of an air pump portion and an alternator portion connected in series with the air pump along a common shaft. The air pump delivers compressed air generated thereby into the alternator for cooling. The compressed air, which is heated by cooling the alternator, is forced into the engine exhaust manifold for effectively reburning the incompletely burned components.

3,628,329

# GAS TURBINE ENGINE INLET GUIDE VANE ACTUATOR WITH AUTOMATIC RESET

William R. Spencer, Cincinnati, Ohio, assignor to General Electric Company

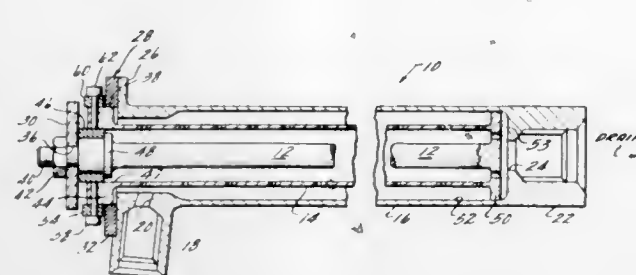
Filed Feb. 24, 1970, Ser. No. 13,628

Int. Cl. F02c 9/02

U.S. Cl. 60—39.29

11 Claims

An actuator is described which positions an element upon sensing a parameter and, after a certain time limit has elapsed, automatically repositions the element to its initial position. A central solid rod is surrounded by a thin perforated sleeve constructed of material having the same coefficient of expansion as the rod. The rod and sleeve are rigidly



expansion of the two members is utilized to initially position and then reposition a controlled element.

3,628,330

# SPEED-PROGRAMMED FRICTION WELDER CONTROL

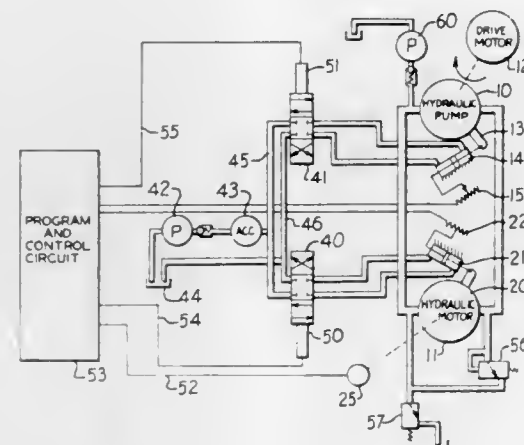
Robert G. Miller, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 16, 1970, Ser. No. 24,458

Int. Cl. F15b 15/18

U.S. Cl. 60—53 R

8 Claims



A drive in a speed-programmed friction welder can be controlled by an electronic loop employing circuits to continuously compare the actual speed of the drive with the programmed speed throughout the weld interval and adjusting the drive so the relative rotational speeds of the parts (workpieces) being welded will decrease to zero according to a prescribed programmed pattern. Since the necessary relative rotational speeds of the workpieces may vary when welding stock of different sizes or materials, and also the weld time interval may change, a control must provide independent control of both speeds and time during the weld cycle which are features of the instant invention.

3,628,331

# HYDRAULICALLY BALANCED OPEN CENTER HYDRAULIC POWER BRAKE

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 29, 1970, Ser. No. 76,474

Int. Cl. F15b 7/00, 13/02, 11/08

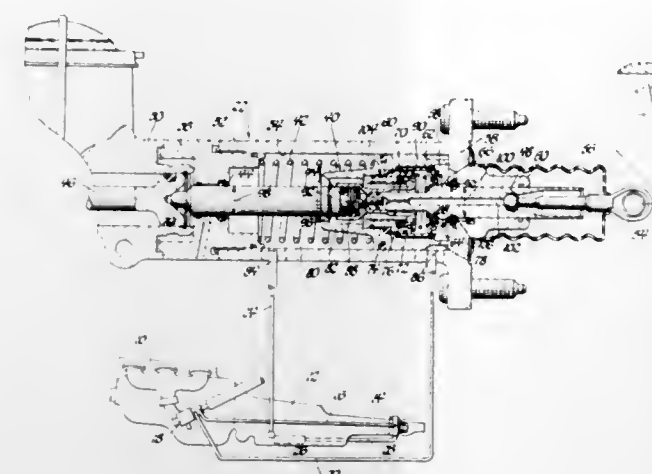
U.S. Cl. 60—54.6 P

2 Claims

A hydraulic power brake booster in a vehicle hydraulic system in which a pump supplies fluid to the power steering gear of the vehicle and then to the brake booster, after which the fluid is returned to the pump. The booster has an open

center control valve and is provided with a hydraulic balance so that back pressure generated downstream of the booster

fence sections to enclose at least part of a selected water surface area, each of the fence sections including vertically elongated strut members having buoyant devices to support them at a selected level in the water, stringers connecting the tops and bottoms of the strut members and plural sets of har-



will not be transmitted to the booster input member to which the brake pedal is connected.

3,628,332

# NONPOLLUTING CONSTANT OUTPUT ELECTRIC POWER PLANT

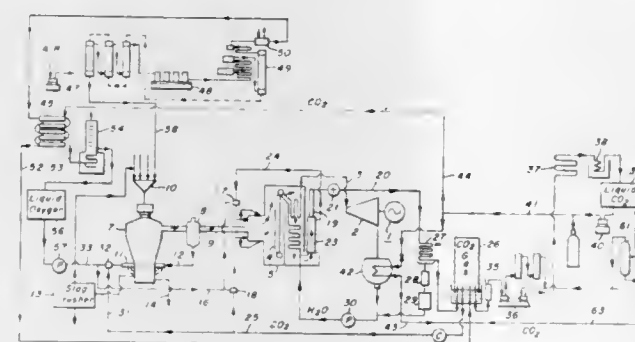
John J. Kelmar, 2205 Cypress Drive, White Oak Borough, Pa.

Filed Apr. 16, 1970, Ser. No. 29,061

Int. Cl. F22b 35/00; F01b 27/00

U.S. Cl. 60—105

13 Claims



Oxygen is delivered to a gas producer to gasify coal to produce fuel which is then delivered with more oxygen to a boiler furnace to generate steam and to form products of combustion that include water vapor and carbon dioxide. The water vapor is condensed and separated from the carbon dioxide. The steam is conducted to a steam turbine at a rate that enables it to operate the plant at substantially full capacity continuously. The turbine drives an electric generator. During periods of reduced load, surplus power from the plant is used for liquefying some of the separated carbon dioxide. Some of the surplus power also is used for operating air separation apparatus, to which the liquefied carbon dioxide is conducted to aid in producing liquid oxygen in excess of the oxygen requirements of the gas producer and furnace during the reduced load period. The surplus liquid oxygen is stored for use, after warming, in the plant between the periods of reduced load when the air separation apparatus is not operating.

3,628,333

# FLOATING CONTAMINANT CONSTRAINING FENCE

Eugene W. Newton, 5804 Berkeley Ave., Baltimore, Md.

Filed June 26, 1970, Ser. No. 50,170

Int. Cl. E02b 15/04; C02c 1/38

U.S. Cl. 61—1

23 Claims

A floating contaminant constraining fence structure wherein the fence is assembled from a plurality of modular



ness ropes for supporting the modular fence sections in a desired arrangement, together with a cloth web extending above and below the water level supported by the stringers. The method of laying out such a floating fence structure, and settling tank structure usable therewith are also disclosed.

3,628,334

# FLOATING BREAKWATER

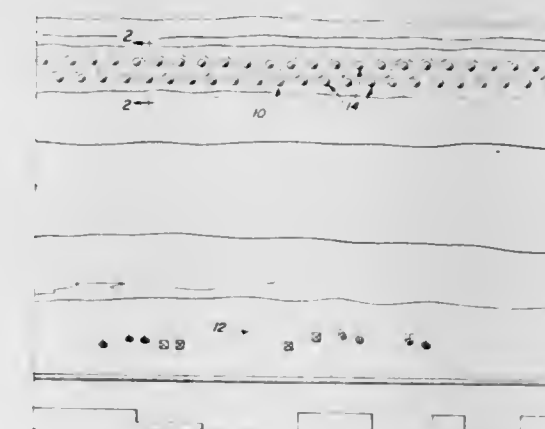
Arthur J. Coleman, 1841 N.E. 42nd St., Pompano Beach, Fla.

Filed July 31, 1969, Ser. No. 846,372

Int. Cl. E02b 3/06

U.S. Cl. 61—5

8 Claims



A series of hollow rigid spherical floats anchored in an offshore grouping so as to act in the manner of a breakwater for breaking up and smoothing wave action. Each of the floats is anchored to the bottom by a flexible cable and, through internal ballast, rides partially submerged in the water.

3,628,335

# SUPPORT ASSEMBLIES FOR MINERAL MINES

Heinrich Behr, Altunten, Germany, assignor to Gewerkschaft Eisenhutte Westfalen, Bei Lunen, Westfalen, Germany

Filed May 7, 1969, Ser. No. 822,586

Claims priority, application Germany, Oct. 12, 1968, P 18 02 886.9

Int. Cl. E21d 15/44

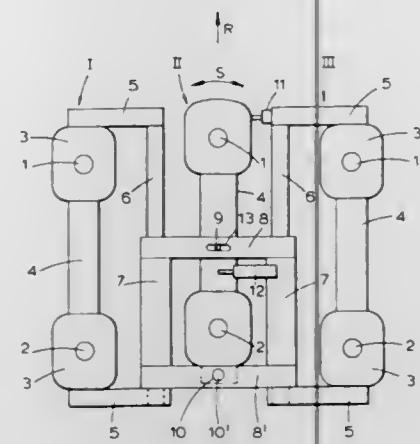
U.S. Cl. 61—45 D

5 Claims

A support assembly for mineral mines having three frames each having a resilient floor rail a roof bar and several telescopic props therebetween.



The frames are interconnected by two shifting units which effect successive advancement of the central frame in relation to the outer frames and vice versa. The shifting units are



linked by resilient transverse elements and the central frame is so mounted on one of the elements that when desired it can pivot in relation to the outer frames either inherently in operation or under the action of separate adjusting units.

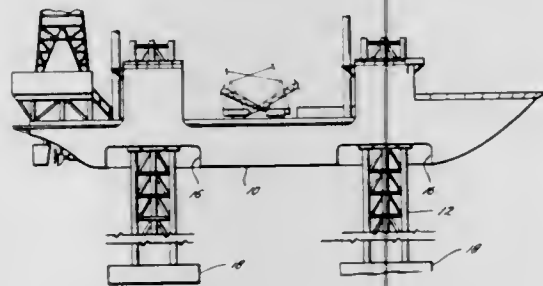
### 3,628,336 DRILLING PLATFORM

William H. Moore; George T. Richardson, and Floyd T. Pease, all of Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Filed Apr. 28, 1969, Ser. No. 819,623  
Int. Cl. E02b 17/00

U.S. Cl. 61-46.5

11 Claims



A floating vessel suitable as a drilling platform in which the vessel has legs extending therethrough which in their upper position are tightly held by the vessel and each leg includes a footing which can be secured thereto or to the vessel when the legs are lowered to raise the vessel into operating position to provide the lower end of the legs with an extended bearing surface for engagement with the bottom.

### 3,628,337 ANCHORABLE PILE

Fred C. Stepanich, c/o CDM P.O. Box 2-55, Bangkok, Thailand, and Thomas L. Adams, C. M. Upham Int'l, c/o OTCC/Thailand, APO San Francisco, Calif.

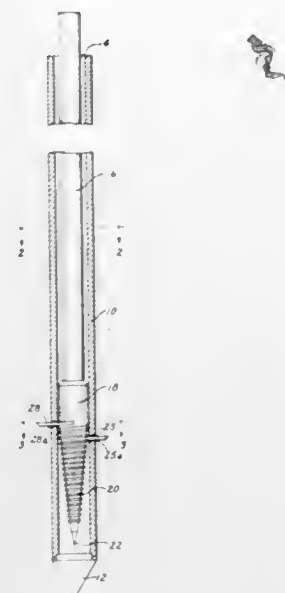
Filed Sept. 26, 1969, Ser. No. 861,368  
Int. Cl. E02d 5/54, 5/80

U.S. Cl. 61-53.68

10 Claims

A piling consisting of a main, elongated pile member which has within its body, a plurality of retracted anchors which

after the pile is inserted into the ground, are capable of being independently moved laterally of the piling member to provide



anchors for the piling member without movement of the piling member.

### 3,628,338 SHIPBUILDING DEVICE

Kiyoshi Terai; Tatsumi Kurioka; Hideshi Takeuchi, and Zirou Nakao, all of Hoyogo, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hoyogo, Japan

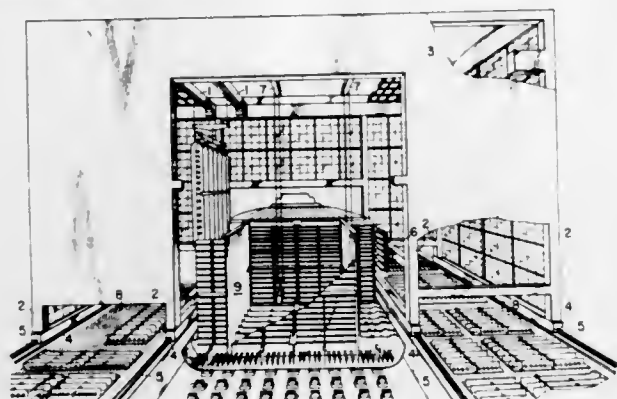
Filed Sept. 16, 1969, Ser. No. 858,425

Claims priority, application Japan, Sept. 21, 1968, 43/68426; May 10, 1969, 44/35974

Int. Cl. B63b 9/00; B63c 3/00

U.S. Cl. 61-67

3 Claims



A movable building structure surrounds a ship during its construction and is composed of a front frame and a rear frame each including pillar members supporting the building structure which spans across rails, one or more of which are laid on both sides of a building dock building the ship and also to one side of an area accommodating surface plates for assembling parts of the ship structure. The front and rear frames are combined into a boxlike construction and a plurality of overhead traveling cranes are supported inside of the building structure by the frames and pillars. The whole building structure rests on wheels or rollers which rotate on the rails, allowing the building structure to be moved along the rails in accordance with the progress of the shipbuilding works by a hydraulic winch.

### 3,628,339 FLUID SAMPLE STREAM CONDITIONING

Joe A. Porter, Whittier, Calif., assignor to Beckman Instruments, Inc.

Filed Jan. 27, 1970, Ser. No. 6,058

Int. Cl. F25b 9/02

U.S. Cl. 62-5

17 Claims

The instant disclosure relates to apparatus for and a method of conditioning a fluid sample stream, for example,

for passage through an analytical instrument. The method involves passing a gas under pressure into a vortex tube so that the gas separates into two exit streams from the vortex tube, a heated stream and a cooled stream. The cooled stream is passed into heat exchange relationship with the fluid sample stream so that the fluid sample is cooled. The heated stream is passed into heat exchange relationship with the cooled fluid sample so that the fluid sample is heated, whereby the fluid sample stream is conditioned. The apparatus includes a fluid conduit having an inlet and an outlet. A hollow heat exchange jacket having a cooling section and a heating section surrounds the conduit so as to form a heating section

multipass heat exchangers through which the gas flows for stepwise cooling, with interstage separation of condensates which are expanded and passed in a reverse flow path for autogenous refrigeration. Supplemental refrigeration is provided for the last cooling stage to maintain the plant in proper heat balance for variations in feed gas composition and to facilitate startup.

3,628,341  
PROCESS FOR SEPARATING AND PURIFYING  
CRYSTALS FROM A CRYSTAL SUSPENSION  
Gunter Klotz, Krefeld-Bockum, and Hans Helmut Schwarz, Krefeld-Bockum, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

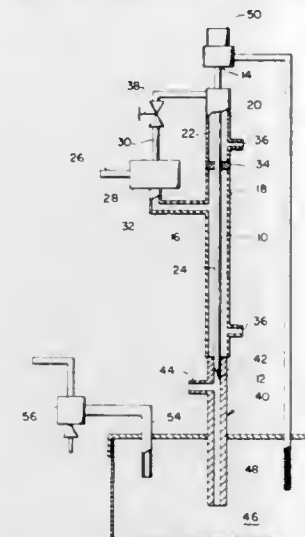
Filed Sept. 4, 1969, Ser. No. 855,229

Claims priority, application Germany, Sept. 21, 1968, P 17 94 202.8

Int. Cl. B01d 9/04

U.S. Cl. 62-58

3 Claims



and a cooling section in the conduit. Means are provided for introducing a gas under pressure into a vortex tube so that the gas separates into two exit streams from the vortex tube, a heated stream and a cooled stream. Means are provided for passing the heated gas stream into the heating section of the heat exchange jacket and means are also provided for passing the cooled gas stream into the cooling section of the heat exchange jacket. Suitable means are provided for passing the fluid sample stream through the conduit so that it travels through the section surrounded by the cooling section of the jacket and through the section surrounded by the heating section, whereby the fluid sample stream is cooled and heated.

### 3,628,340 PROCESS FOR CRYOGENIC PURIFICATION OF HYDROGEN

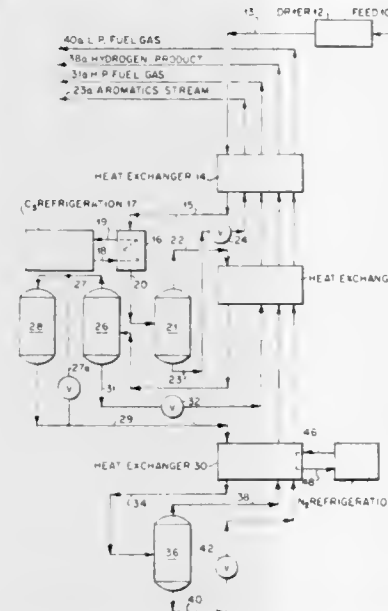
Joseph Meisler, Teaneck, N.J.; Edward Harold Van Baush, Pearl River, and Gregory Christ Banikiotes, Seaford, both of N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,294

Int. Cl. F25j 3/00, 3/06, 3/08

U.S. Cl. 62-18

2 Claims



A process for separating and purifying crystals from a crystal suspension by filtering the crystal suspension in a filter zone of a column under the influence of pulsation, delivering the crystal cake formed to an adiabatic reflux zone in which the pure melt is used as washing liquid flowing in the countercurrent to the crystal cake, and the thus-purified crystals are melted in a melting zone from which some of the melt is run off as the end product and some is used as the washing liquid. The pressure surges are measured above the filtration zone and used to regulate the quantity in which the mother liquor runs off and hence to regulate the entire sequence of operations in the column.

### 3,628,342 METHOD AND DEVICE FOR THE GENERATION OF BEAMS OF MATTER WITH SHARP SPATIAL COLLIMATION

Erwin Willy Becker, Karlsruhe-Durlach, Germany, assignor to Gesellschaft Fur Kernforschung mbH, Karlsruhe, Germany

Filed Nov. 17, 1967, Ser. No. 684,054

Claims priority, application Germany, Nov. 25, 1966, G 48553

Int. Cl. F25j 3/06

U.S. Cl. 62-23

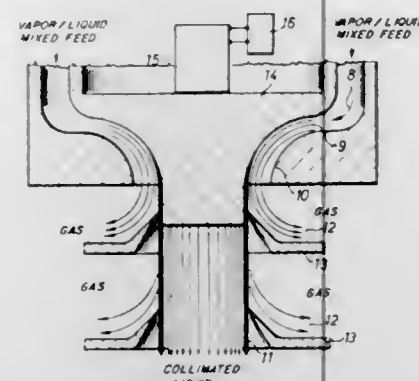
6 Claims

A process for separating condensable contaminants such as methane from a crude hydrogen stream utilizing a series of

Formation of sharply collimated plasma beam by bending a stream produced by expanding a gas out of a nozzle contain-



ing condensed and noncondensed components; separating the bent stream into its components; and feeding the con-



densed components into a vacuum chamber in collimated form.

3,628,343

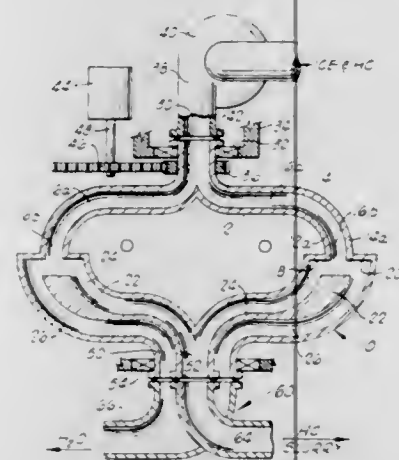
**METHOD FOR ROTATIONAL ENERGY EXCHANGE CRYSTALLIZATION AND MATERIAL SEPARATION**  
Harold M. Bradbury, 1217 W. Brooks; Robert I. Loeffler, 1200 Caddell; Jerry L. Lott, 725 Schulze St., and Billy L. Thomas, 510 Sunrise, all of Norman, Okla.

Filed Oct. 4, 1968, Ser. No. 765,211

Int. Cl. B01d 9/04

U.S. Cl. 62-58

12 Claims



A process and apparatus for effecting exchange crystallization and component separation in a nongaseous mixture by subjecting the mixture to compressional and centrifugal forces. The apparatus employed includes a mixture confining chamber, structure for moving this chamber through a curvilinear path so that an acceleration producing force acts on the mixture tending to change its direction of movement toward a barrier wall of the chamber, a mixture conveyance system for conveying the mixture to the chamber, and discharge ducts or passageways for removing one part of the mixture from a location relatively near the barrier wall, and another part of the mixture from a location relatively remote from the barrier wall.

3,628,344

**APPARATUS AND METHOD FOR CONCENTRATION OF LIQUID BEARING SOLIDS BY FREEZING**  
Alfred T. King, 615 York Ave., Lansdale, Pa.

Filed Feb. 17, 1969, Ser. No. 799,714

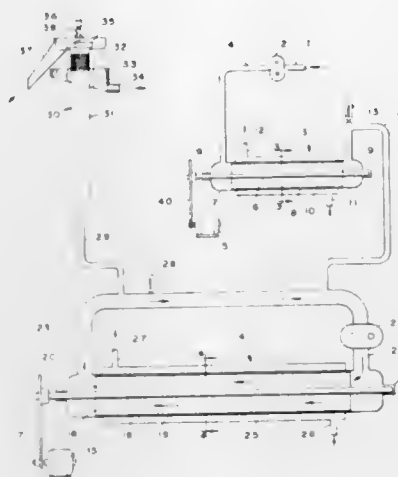
Int. Cl. B01d 9/00

U.S. Cl. 62-58

7 Claims

Apparatus and process concentrating the solids content of a solids-containing solution or suspension by forming seed crystals of the vehicle or solvent and, by accurately controlled refrigeration and circulation of such solution, promot-

ing growth of said seed crystals into larger crystals, and separating the concentrated solute from such larger crystals by causing a column of said crystals to rise, while the circulation system is closed to the atmosphere, and draining the concentrated solute from said rising column of crystals while



gently washing the crystals, if necessary, and removing the ice crystals and concentrated solute separately from the system. While useful in other fields, the invention is especially adapted to making beverage concentrates such as coffee, tea, fruit juices and the like.

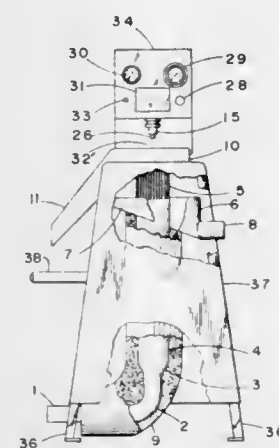
3,628,345

**ICE-LIQUID SEPARATION COLUMN**  
Alfred T. King, 614 York St., Lansdale, Pa.  
Continuation-in-part of application Ser. No. 799,653, Feb. 17, 1969, now abandoned. This application Aug. 19, 1970, Ser. No. 65,314

Int. Cl. B01d 9/04

U.S. Cl. 62-123

6 Claims



Mechanism for separating a concentrated solution of soluble solids from a solvent previously frozen into crystals thereof, providing means in which a column of the crystals is arranged into a loosely packed mass highly capable of rising by natural buoyancy in the solution in the column while holding smaller crystals in the rising mass and permitting the concentrated solution to drain from the upper portion of said rising column and thereby separate the same from said frozen crystals, applying a washing spray of the same solvent to the top of said rising column, and continuously removing the washed crystals from the top of said column of crystals to permit the column to continue to rise while draining concentrated solution therefrom.

3,628,346  
**APPARATUS FOR INDICATING THERMAL AND AIR VELOCITY CONDITIONS OF AIR IN THE PLENUM OF A CENTRAL AIR-CONDITIONING SYSTEM**

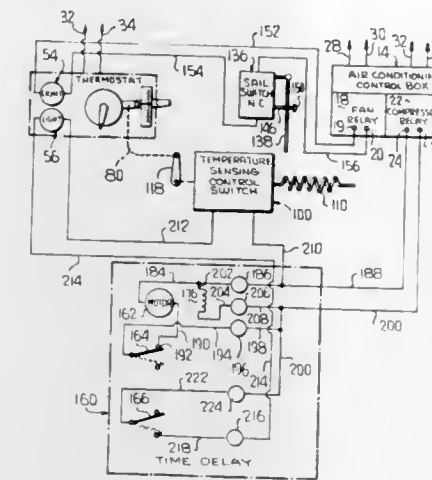
Cecil G. Lagrone, Jr., 2002 Belle Grove Drive, Bossier City, La.

Filed Oct. 21, 1970, Ser. No. 82,560

Int. Cl. F25b 49/00

U.S. Cl. 62-126

8 Claims



Thermal and air velocity responsive electrical switch means disposed in the plenum of a central air-conditioning system and electrically connected in a signal system, the apparatus being operable to actuate indicating or signal means calling attention to fan and/or motor-compressor malfunction or failure.

3,628,347

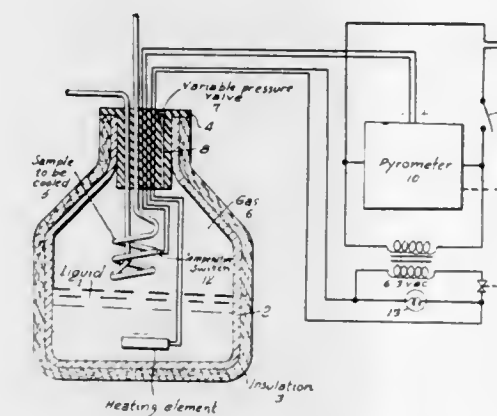
**REFRIGERATING VAPOR BATH**  
Lawrence J. Puckett, Churchville; Marion Warfield Teague, Aberdeen, and Donald G. McCoy, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the United States Army

Filed Apr. 13, 1970, Ser. No. 27,928

Int. Cl. F25b 41/00

U.S. Cl. 62-208

1 Claim



In the laboratory, or for other limited refrigeration purposes, the cooling effect of a liquid refrigerant may be used for a limited period of time without recompressing and reliquifying the refrigerant. The present disclosure teaches how to accomplish this feat with maximum efficiency by placing the specimen to be cooled in proximity to the liquid, thereby permitting heat transfer directly to the gaseous refrigerant which is vaporizing from the liquid. Further, the rate of cooling is variable, in accordance with the need for cooling, by warming the liquid to vaporize more liquid, thereby increasing the vapor density above the liquid. With greater vapor density (or, we might say, by making the fog thicker) the heat exchange rate (cooling rate) is increased.

Conversely, when heat is not supplied to the liquid, and the vapor density is decreased, the rate of heat exchange (cooling rate) is decreased. The rate of cooling, and the minimum temperature obtainable, may be varied further by adjustable pressure relief means to control the "boiling" point of the refrigerant. Vacuum may be applied to the container if desired to lower the boiling point even lower to achieve a lower temperature.

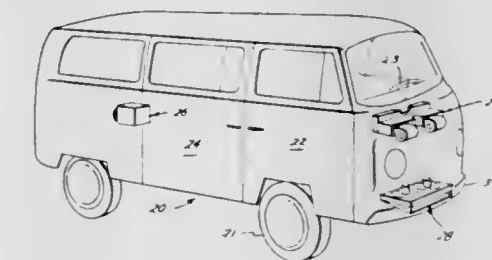
3,628,348

**AUTOMOBILE AIR CONDITIONING SYSTEM**  
Don P. Dixon, 4926 Space Center Drive, San Antonio, Tex.  
Original application Mar. 11, 1968, Ser. No. 712,216, now Patent No. 3,494,540. Divided and this application Feb. 9, 1970, Ser. No. 9,781

Int. Cl. B60h 3/04

U.S. Cl. 62-241

7 Claims



A bus-type Volkswagen automobile having an air conditioning system in which the condenser assembly is mounted on the underside of the frame beneath the passenger compartment and forwardly of the front axle, and the compressor is mounted on the left hand side of the motor in a rear compartment of the automobile. The condenser assembly includes a relatively thin coil arranged with its wide faces extending horizontally, an air scoop beneath the coil, a shroud providing an enclosed space above the coil, a fan for drawing air from the space, and means for supporting the coil, scoop, shroud, and fan from the underside of the floor board of the automobile. The compressor is supported on a bracket which is connected to the motor by existing parts which connect the distributor bracket and a heat exchanger conduit to the engine block and a sheet metal covering to the cylinder head. A "1600" Series type Volkswagen having an air conditioning system in which the compressor is connected to the crankshaft by a pulley adapted to be connected to the crankshaft by the same bolt which connects a pulley thereto for driving the generator.

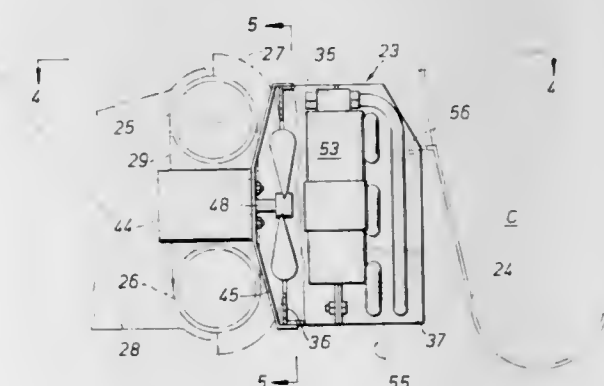
3,628,349

**AUTOMOBILE AIR CONDITIONING SYSTEM**  
Don P. Dixon, 4926 Space Center Drive, San Antonio, Tex.  
Filed June 29, 1970, Ser. No. 50,653

Int. Cl. B60h 3/04

U.S. Cl. 62-243

3 Claims



An air conditioning system for a "bug"-type Volkswagen automobile including a condenser assembly supported behind



the spare tire compartment by means of bolts which extend into existing tapped holes in the front end of the automobile frame.

## ERRATUM

For Class 62—290 see:  
Patent No. 3,628,590

3,628,350

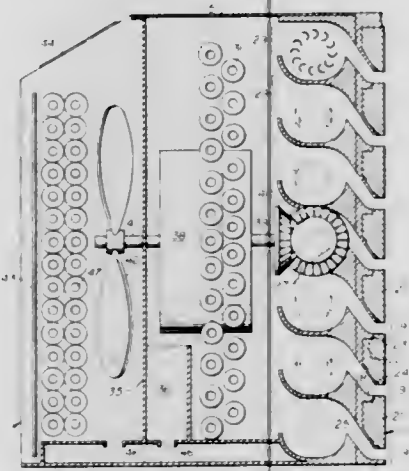
## WALL AIR CONDITIONER

Samuel M. Ruth, 226 South Burnet St., East Orange, N.J.  
Filed June 22, 1970, Ser. No. 48,309

Int. Cl. F25d 17/06

U.S. Cl. 62—429

10 Claims



A wall air conditioner having an external face simulating the appearance of the wall in which it is mounted, the face having a plurality of spaced apart, horizontal openings melding with the external face, each opening connecting to the inlet side of an elongated rotary air compressor, the air compressor being interconnected to a single drive source, the drive source also driving a plurality of air compressors for external makeup air and a single air compressor for evaporator circulation.

3,628,351

## RING MANUALLY ADJUSTABLE TO A PLURALITY OF CONSTANT SIZES

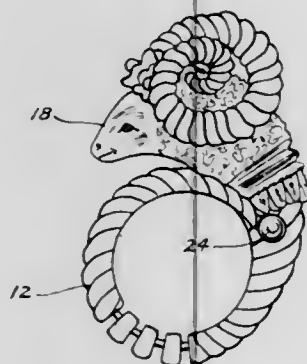
Michael Chernow, New York, N.Y., assignor to Monocraft, Inc.

Filed Oct. 24, 1969, Ser. No. 869,278

Int. Cl. A44c 9/02

U.S. Cl. 63—15.5

7 Claims



An ornamental finger ring which can readily be adjusted to fit a variety of finger sizes. The ring is formed from an elongate shank having a pair of ends, into a circular configuration. The ends are positioned proximate each other, and at least one of them is formed with an ornamental member thereon. A flexible insert is embedded in a portion of the shank, and at least one gap or spacing is provided in the shank so that it surrounds the insert and divides the shank into at least two segments.

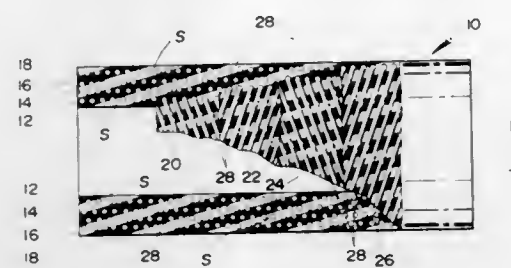
3,628,352  
FLEXIBLE COUPLING  
Robert E. Stuemky, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed July 9, 1970, Ser. No. 53,369

Int. Cl. F16d 3/52

U.S. Cl. 64—15 C

12 Claims



A flexible coupling member generally of tubular shape and having oppositely wound spiral spring elements disposed within a matrix of rubber material. The coupling member may further include a plurality of textile cords disposed between the spring elements; and a pair of concentric annular sleeves sandwiching and bonded to the rubber matrix at each end of the coupling member. End caps are fitted to each end of the coupling member by either displacing a portion of the coupling member into concavities of the end caps, or by mechanically joining the sleeves of the coupling member to the end caps.

3,628,353

## DAMPER ASSEMBLY FOR DRIVE TRAIN

Jack W. Armstrong, Baldwinville, N.Y., assignor to Lipe Rollway Corporation, Liverpool, N.Y.

Filed Sept. 8, 1969, Ser. No. 856,031

Int. Cl. F16d 3/14

U.S. Cl. 64—27 F

10 Claims



Driving and driven members of a drive train are arranged as plates astraddle a flange with springs arranged between the plates to engage the flange for resisting angular displacement between the plates and the flange. Elastomeric annuli are compressed between the plates and the faces of the flange with sufficient force to maintain a nonslip engagement with these parts as viscoelastic deformation of the annuli dampens the smaller of the angular displacement. The compressive force on the annuli is insufficient to prevent slipping of the annuli for larger angular displacements to prevent destruction of the annuli.

3,628,354

## MEANS FOR CONTROLLING GUIDE BARS IN WARP KNITTING MACHINES

Roy Farwell, Derbyshire, England, assignor to Clutson-Penn International Limited, Highfields, Coalville, Leicestershire, England

Filed May 8, 1970, Ser. No. 35,820

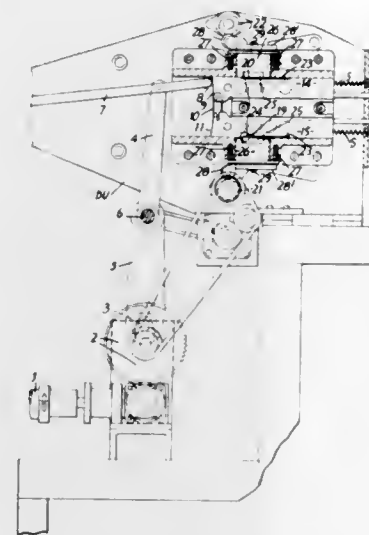
Claims priority, application Great Britain, May 27, 1969,

26,611/69

Int. Cl. D04b 23/00

U.S. Cl. 66—86

16 Claims



A mechanism controlling longitudinal movements of guide bars in a warp knitting machine. It separates selections of such movements to the extents of different needle spacings from the driving influence effecting the same. The mechanism comprises, for each guide bar, (a) a driving unit incorporating not only slides profiled to provide a cam face and operable to vary the latter but also a continuously drivable radius lever with a follower for following the cam face and transmitting required movements to the guide bar; and (b) a separate program unit outputs from which effect movements of the slides to vary the profile of the cam face. (a) functions to move the guide bar only after (b) has determined the extent and direction of such movement.

3,628,355

## ECCENTRIC-RING COMBINATION LOCK

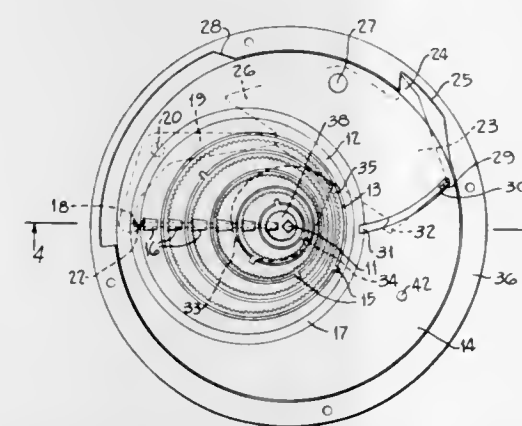
Roy A. Zangrando, Clifton, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 9, 1970, Ser. No. 70,806

Int. Cl. E05b 37/00

U.S. Cl. 70—315

12 Claims



A combination lock having an outer operating dial connected through a dial shaft with an internal coding mechanism comprising a number of rotatable eccentric code rings placed successively radially about each other in the

same plane and connected with the dial shaft. Rotation of the dial according to a coded combination effects rotation of the rings to positions in which the widest portions are in radial alignment. The eccentricity of the mechanism is then maximum with the outer ring at a maximum distance from the shaft. At this point contact is made with a separate unlocking or output mechanism to trigger it into locking connection with the dial shaft for unlocking operation by the dial.

3,628,356

## DOOR LOCK PROTECTION DEVICE

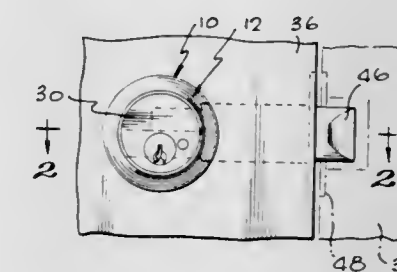
George L. Deahl, 836 North Hollywood Way, Burbank, Calif.

Filed Apr. 22, 1970, Ser. No. 30,920

Int. Cl. E05b 9/04, 15/02

U.S. Cl. 70—449

4 Claims



An escutcheon which surrounds and centers the cylinder in a door lock and has integrally formed therewith a tubular securement cylinder which extends through the lock hole in the door. The tubular securement cylinder has a transverse hole through at least one wall. This transverse hole is in alignment with the latch housing and intersects the cylinder axis so that the latch housing extends through the securement cylinder wall to prevent rotation and removal of the escutcheon and securement cylinder and prevent burglar access to the latch.

3,628,357

## SAFETY CONTROL CIRCUIT FOR PRESSES AND THE LIKE

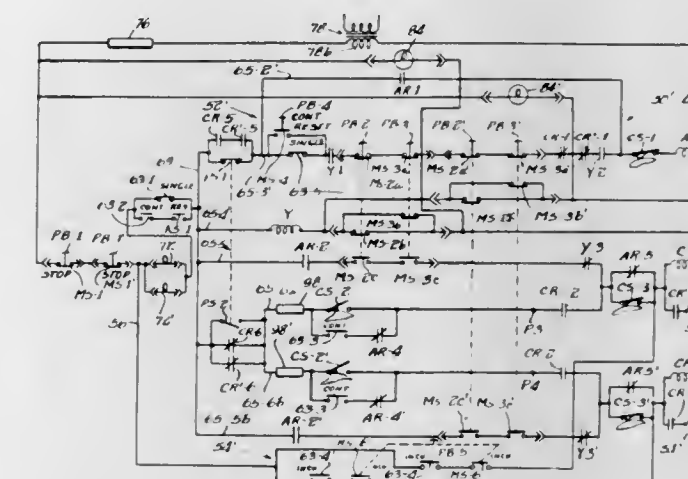
Kurt K. Luenser, De Sota, Tex., assignor to Verson Allsteel Press Company, Chicago, Ill.

Filed Nov. 14, 1969, Ser. No. 876,672

Int. Cl. B21j 9/20

U.S. Cl. 72—6

44 Claims



An electrical control circuit for a multicontrolled machine having manually operates switch means operated by respective self-returning manually operable control means at a number of operator stations, all of which switch means must be operated at the same time to initiate movement of a work producing portion of the machine. The manually operated switch means includes normally open switches in a drive con-



trol relay circuit and normally closed switches connected in parallel between a manually controlled relay and a source of power so that the manually controlled relay cannot be deenergized until all of the normally closed switches are opened and will not become deenergized until all of the normally closed switches have been closed. The manually controlled relay operates normally closed switch means in the drive control relay circuit, and normally closed switch means in an antirepeat relay circuit which prepares the drive control relay circuit for energization by closure of all of the normally open manually operated switch means.

3,628,358

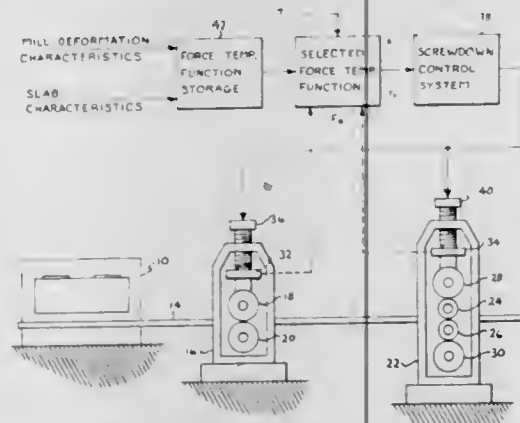
# METHOD OF REVISING WORKPIECE TEMPERATURE ESTIMATES OR MEASUREMENTS USING WORKPIECE DEFORMATION BEHAVIOR

Donald J. Fapiano, Schenectady, N.Y., and Allyn S. Norton, Jr., Charlottesville, Va., assignors to General Electric Company

Filed Oct. 7, 1969, Ser. No. 864,414  
Int. Cl. B21b 37/00

U.S. Cl. 72-8

4 Claims



For use in setting up a rolling mill, a method of revising an estimate or measurement of workpiece temperature based on prior deformation behavior of the workpiece. According to the method, roll forces are expressed as functions of workpiece temperatures for different rolling conditions. Prior to a rolling pass during which a revised temperature is to be established, one of these functions is selected on the basis of anticipated rolling conditions. Using an initially established temperature, the selected function yields a predicted roll force value. When the rolling pass is executed, a measured roll force value is used with the selected function to establish an apparent workpiece temperature. The revised temperature, taken for purposes of stability to be an average of the initially established temperature and the apparent temperature, is used in force and draft calculations needed for setting up the rolling mill for upcoming rolling passes.

3,628,359

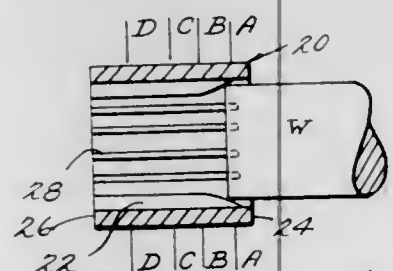
# FORMING TOOL

Erich Tlaker, Springfield, Vt., assignor to The Fellows Gear Shaper Company, Springfield, Vt.

Filed June 6, 1969, Ser. No. 831,133  
Int. Cl. B21j 13/02

U.S. Cl. 72-76

7 Claims



A flex ring forming tool, forming apparatus, and method of cold-forming a profiled workpiece through radial material

flow is disclosed wherein the flex ring has an internal profile complementary to the profile of the finished workpiece and wherein the lands of the flex ring forming profiles have uniform, relatively narrow widths from the minimum depth leading ends to the maximum depth trailing ends of the profiles while the widths of the forming profiles at a given radial distance from the center of the flex ring gradually increases from their leading to their trailing ends. The flex ring is deflected inwardly to penetrate the workpiece blank as the workpiece is fed therethrough with the feed of the workpiece and the flexing of the ring by the apparatus being coordinated so that the workpiece is progressively formed into the desired profile by the straining of localized circumferential areas of the workpiece and the resulting radial material flow in the workpiece blank.

3,628,360

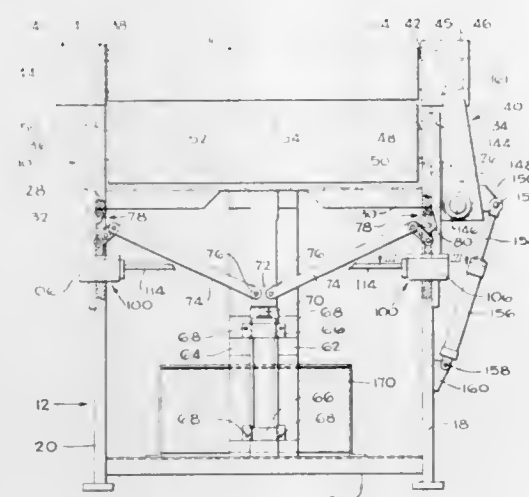
# ROLL FORMING MACHINE

Frederick E. Munschauer, Jr., Eggertsville, and George H. Trautman, Jr., Kenmore, both of N.Y., assignors to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,554  
Int. Cl. B21d 5/14

U.S. Cl. 72-169

2 Claims



A roll forming machine comprising a pair of rolls between which sheet material is fed and bent to arcuate form. The upper drive roll is a rigid steel roll rotated by a hydraulic motor and the lower roll is of a compressible material such as polyurethane and is driven from the upper roll by the relative movement of the workpiece therethrough. A drop-end member is pivoted at its lower end about an axis located slightly below the periphery of the lower roll for movement in an arcuate path toward and away from the roll. A bearing block is provided at the upper end of the drop-end member for engagement with the free end of the upper roll for rotatably supporting the same.

3,628,361

# APPARATUS FOR GUIDING PREPUNCHED PLATES THROUGH A ROLL-FORMING MACHINE

James L. De Rupa, Reading, Pa., assignor to Dana Corporation, Toledo, Ohio

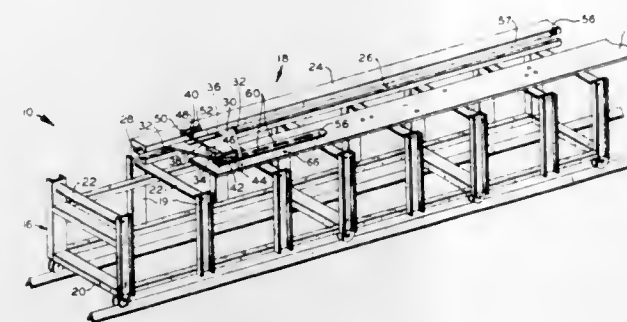
Filed Oct. 21, 1969, Ser. No. 868,144  
Int. Cl. B21d 5/08

U.S. Cl. 72-181

7 Claims

A guide mechanism for guiding prepunched plates through a roll-forming machine is provided including a support and guide track means fixed relative to the guide mechanism and a cantilever plate having wheels which roll along the guide track means, the said cantilever plate including a gravity operated latch dog which engages in a slot in a guide bar. The guide bar, in turn, is positively positioned relative to the prepunched plate by the insertion of pins through some of the perforated holes in the plate and corresponding holes in

the guide bar. The cantilever plate disengages from the guide bar upon the perforated plate reaching the end of the guide mechanism through the functioning of a cam plate which lifts a latch nose from the slot in the guide bar, thus permitting the perforated plate and attached guide bar to continue through the rolls of the roll-forming machine. The guide bar



provides the additional function of centering the perforated plate relative to the rollers while the prepunched plate is in the roller forming area so that an extremely close tolerance can be reached during the rolling operation and the perforated holes in the prepunched plate maintained within  $\pm 0.030$  inches tolerance in the finally formed structural shape.

3,628,362

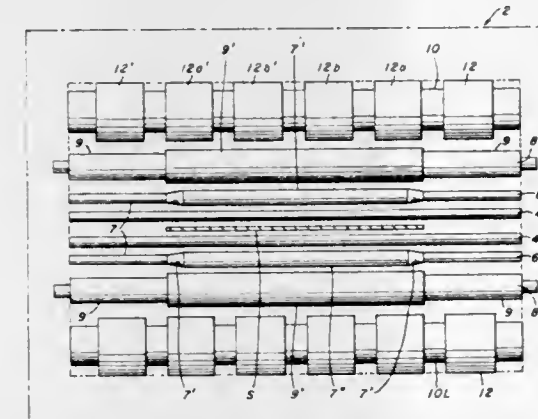
# MILL FOR ROLLING A THIN, FLAT PRODUCT

John James Stone, Marengo, Ill., assignor to The Arnold Engineering Company, Marengo, Ill.

Filed Mar. 25, 1969, Ser. No. 810,278  
Int. Cl. B21b 29/00

U.S. Cl. 72-242

5 Claims



A cluster-type rolling mill for rolling very thin sheet, strip or the like, which applies rolling force substantially over only the width of the rolled product thereby eliminating roll flexing forces conventionally existing in the rolls outside the width of the rolled product.

3,628,363

# APPARATUS FOR POSITIONING A MEMBER DISPLACEABLY MOUNTED IN A HOUSING

Lucien Diolot, Neuilly, France, assignor to Societe Nouvelle Spidem, Paris, France

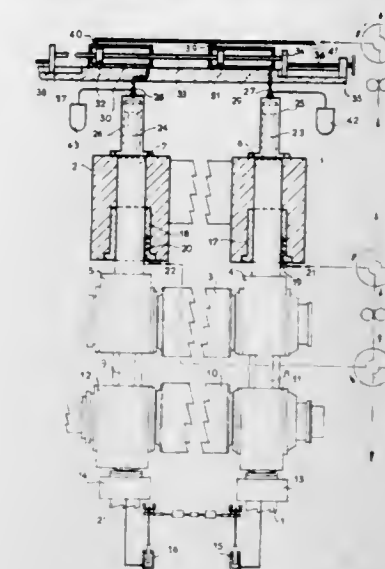
Filed Feb. 20, 1969, Ser. No. 801,108  
Claims priority, application France, Feb. 20, 1968, 140561

U.S. Cl. 72-245

5 Claims

Apparatus for positioning a member, displaceably mounted

in a housing, comprising two oppositely acting controllable pressure devices and a third controllable pressure device



capable of locking the member in position and releasing the member.

3,628,364

# METHOD FOR HOT ROLLING PLATE

Lloyd J. Fenstermaker, Baldwin Borough, Pa., assignor to United States Steel Corporation

Filed May 8, 1970, Ser. No. 35,911  
Int. Cl. B21b 1/22, 39/14

U.S. Cl. 72-227

5 Claims

In the method of hot rolling steel plate, the leading edge of the plate emerging from the roll is turned slightly, to prevent undesirable jamming against objects and the ensuing cobble. This slight turn in the edge is effected toward the larger roll when the ratio of the diameters of the rolls is between about 1.0015 to 1.007.

3,628,365

# DEVICE FOR THE AXIAL ADJUSTMENT OF ROLLS, PARTICULARLY GROOVED ROLLS

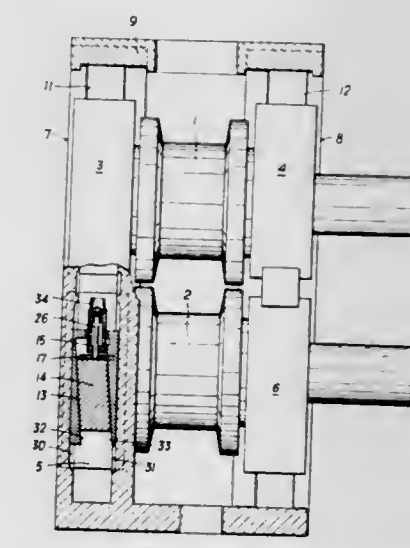
Ernst Hinterholz, Linz, Austria, assignor to Vereinigte Österreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed July 24, 1969, Ser. No. 844,338  
Claims priority, application Austria, Apr. 23, 1969, A 3914/69

U.S. Cl. 72-237

Int. Cl. B21b 31/18

8 Claims



A device for the axial adjustment of rolls, particularly grooved rolls, which are displaceably supported with the aid



of inserts in the frame of a rolling stand, comprises, for axial adjustment of one roll together with its inserts, one or two substantially portal-shaped guide members arranged in a slot of a roll-supporting standard, said guide members having inclined slide surfaces engaging corresponding slide surfaces on a shoulder of the insert extending with play into said slot and forcedlocked to a threaded spindle.

### 3,628,366 ROLLING MILL

Hermann J. Leitner, Langenfeld, Germany, assignor to SIEMAG Siegener Maschinenbau G.m.b.H., Hilchenback-Dahlbruch, Germany

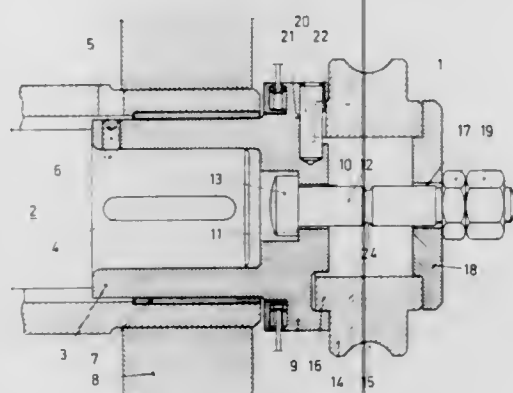
Filed Nov. 12, 1969, Ser. No. 875,703

Claims priority, application Germany, Nov. 26, 1968, P 18 10 941.6

Int. Cl. B21b 35/14

U.S. Cl. 72-249

10 Claims



This invention relates to a rolling mill and, more particularly, to the construction of a cantilever-supported roll having means for disconnecting the roll drive in the event of an overload in the mill.

### 3,628,367 SCROLL CUTTING AND SLITTING MACHINE WITH TENSION CONTROL MEANS

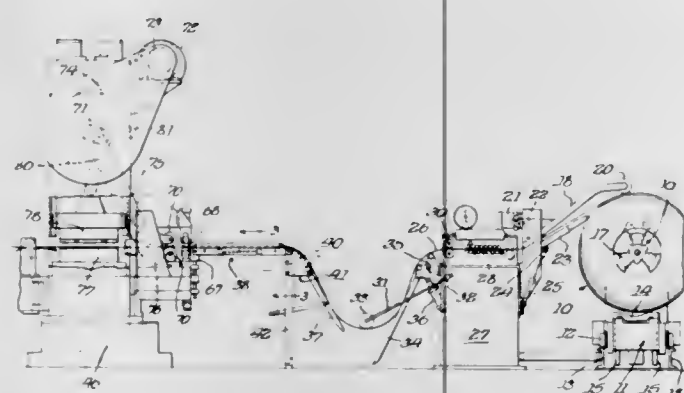
Chester M. Wilg, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed Dec. 12, 1969, Ser. No. 884,574

Int. Cl. B21d 43/28; B26d 7/06

U.S. Cl. 72-324

7 Claims



Stock material is unwound from a coil and passed through a straightening machine. Clearance openings and pilot holes are then punched in the stock material as a preliminary to the slitting operation for producing a plurality of individual scroll-shaped strips. Feeding of the strips is continued for each strip, respectively, and which are individually tensioned and wound on respective cylinders. Following the winding operation, the rotation of the supporting mandrel is stopped and the cylinders are removed by a pusher plate having telescoping relation with the mandrel.

### 3,628,368 WORKPIECE-POSITIONING APPARATUS AND MACHINE USING SAME

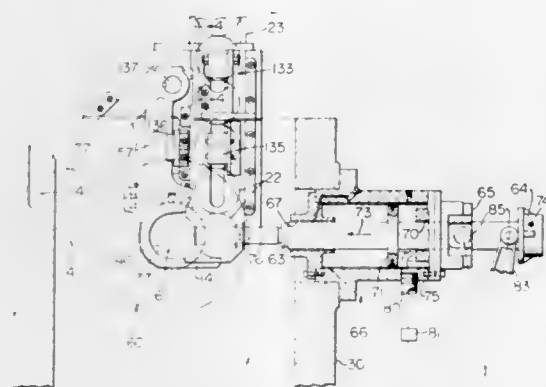
Daniel S. Cvacho, Chesterfield County; John J. Duss, Jr., Henrico County, and Harry W. Lee, Jr., Chesterfield County, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Sept. 18, 1969, Ser. No. 858,994

Int. Cl. B21d 43/04

U.S. Cl. 72-361

22 Claims



An apparatus for precisely positioning a cup-shaped workpiece or cup into position at a drawing and ironing station of an associated machine. The apparatus utilizes a workpiece-positioning member which is supported for movement toward and away from the station and has a stop provided thereon. A fixed control surface is provided adjacent the positioning member and an actuator is employed to urge the positioning member toward such station causing the positioning member to engage and move the cup into the station to a precise position controlled by a portion of the positioning member engaging the control surface.

### 3,628,369 TUBE FLATTENING AND BENDING MACHINE

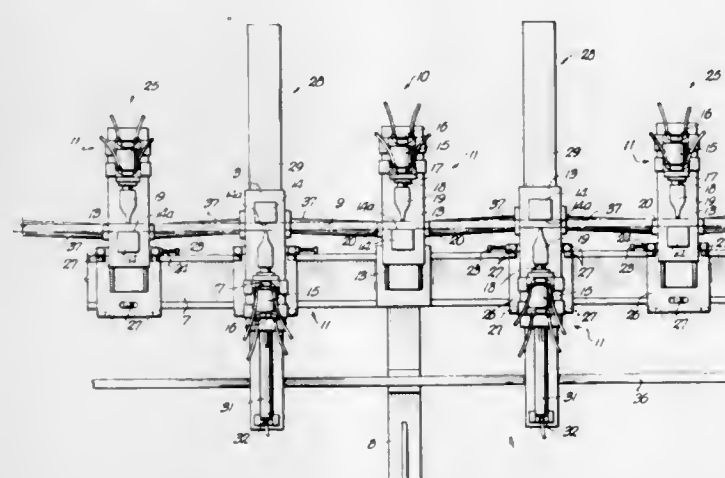
Dan G. Williamson, Independence, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed July 16, 1969, Ser. No. 842,212

Int. Cl. B21d 13/02

U.S. Cl. 72-385

12 Claims



A machine for flattening portions of a straight length of tubing and for bending the tubing into a zigzag shape. Movable outboard stations are mounted by rollers on a rail extending to each side of an immovable central station. Associated with each station is an anvil and hammer assembly to hold, to flatten and to grip a portion of the tubing. A hydraulic cylinder is mounted on alternate outboard stations to move the anvil and hammer assembly in an upwardly direction from the rail, thereby bending the tubing into a zigzag shape.

### 3,628,370 DIE ASSEMBLY

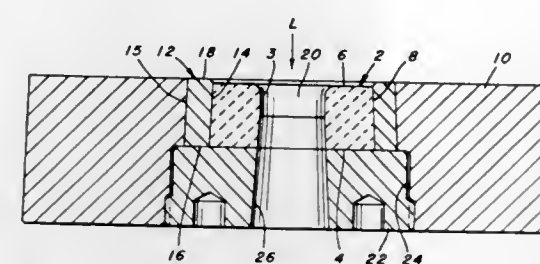
William H. Phillips, Jr., North Bergen, N.J., assignor to Car-met Company, Pittsburgh, Pa.

Filed Oct. 8, 1969, Ser. No. 864,841

Int. Cl. B21c 3/00

U.S. Cl. 72-467

5 Claims



A die assembly for use in forming operations such as hot extruding wherein the forming insert is frustoconical in shape and is cold-pressed into a sleeved support casing with the major base facing the exit side of the assembly and is supported under axial load by a backer bushing affixed to the support casing.

### ERRATUM

For Class 72-468 see:  
Patent No. 3,628,449

### 3,628,371 TESTING EXPEDIENT FOR FLUID JET DEFLECTION-TYPE INSTRUMENT

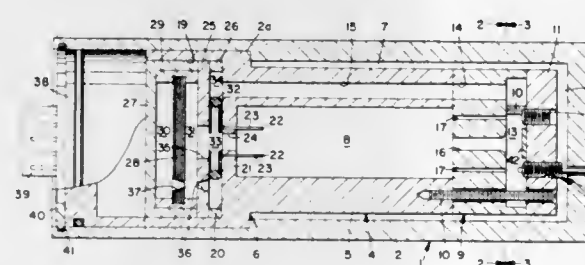
Alvin G. Moore, Cumberland, and Wilfred C. Schuemann, Rawlings Heights, Rawlings, both of Md., assignors to Hercules Incorporated, Wilmington, Del.

Filed June 5, 1969, Ser. No. 830,827

Int. Cl. G01p 21/00

U.S. Cl. 73-1 D

4 Claims



An instrument wherein the deflection of a fluid jet, induced for example by the angular movement of the instrument, produces a signal proportional to the deflection, and particularly a testing expedient in such an instrument for testing the instrument while at rest to determine whether it is functioning correctly, the testing expedient comprising a selectively actuatable means for deflecting the fluid jet a predetermined amount whereby the instrument will, if functioning properly, produce a predetermined output signal.

### 3,628,372 FLUIDIC ANGULAR POSITION SENSOR

Thomas S. Honda, Scotia, N.Y., assignor to General Electric Company

Filed June 1, 1970, Ser. No. 42,292

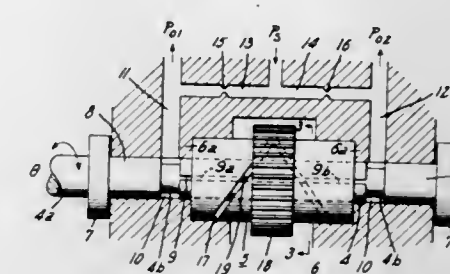
Int. Cl. G01b 13/00

U.S. Cl. 73-37

10 Claims

The relative angle of a rotary shaft is sensed by a fluidic bridge circuit consisting of a pair of fixed restrictors and a pair of variable restrictors. The variable restrictors are formed by an axial groove in the rotary shaft and a vented,

constant pitch, helical groove in a sleeve member surrounding the shaft. The vented point of overlap of the helical groove with respect to the shaft axial groove divides the axial



groove into the two variable restrictors. Pressurized fluid is supplied to the juncture of the fixed restrictors, and the fluid pressure at the juncture of each fixed and variable restrictor varies linearly with change in shaft angular position.

### 3,628,373 PRESSURE-MEASURING SYSTEM

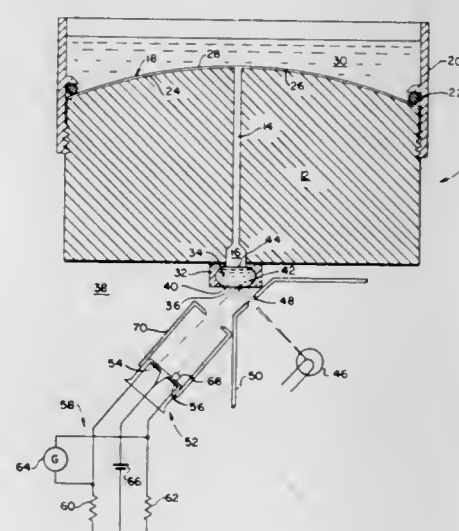
Paul T. Gilbert, Los Altos Hills, Calif., assignor to Beckman Instruments, Inc.

Filed June 29, 1970, Ser. No. 50,462

Int. Cl. G01n 11/00

U.S. Cl. 73-64.3

10 Claims



A pressure-measuring system including a pressure-responsive membrane formed by the interface between two immiscible fluids bounded by the edge of an orifice in a vessel. One of the fluids is a liquid. Means are provided for detecting the position of the membrane in response to a given pressure.

### 3,628,374 ULTRASONIC TESTING APPARATUS

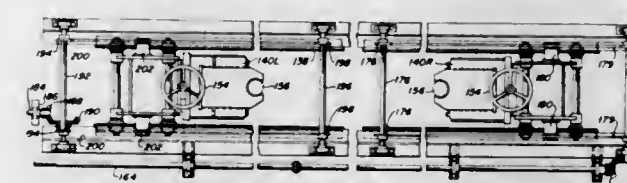
Helmut F. Laudien, Gary, and Eugene E. Smith, East Gary, both of Ind., assignors to United States Steel Corporation

Filed Jan. 15, 1970, Ser. No. 3,153

Int. Cl. G01n 29/00

U.S. Cl. 73-67.8

10 Claims



Apparatus for ultrasonically testing a plate includes a pair of spaced-apart rails between which the plate is positioned in



a horizontal plane. A crane mounted on the rails for movement therealong supports a trolley for movement transverse of the rails. The trolley carries a sonic testing wheel which contacts the top of the plate and rolls along the plate as the trolley traverses it.

3,628,375

# APPARATUS FOR ULTRASONIC INSPECTION OF A LENGTH OF TEST MATERIAL

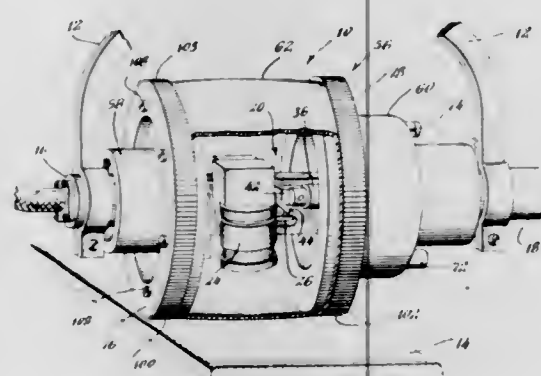
Dominick A. Pagano, 91 Strawberry Hill Ave., Stamford, Conn.

Filed Apr. 28, 1970, Ser. No. 32,518

Int. Cl. G01n 29/04; H04r 17/00

U.S. Cl. 73-71.5

8 Claims



Apparatus for ultrasonic inspection of a length of test material adapted for rolling along the material and capable of adjustably aiming an ultrasonic beam at the material to be tested. Yoke means including a plane surface is disposed between axially aligned supporting shafts for adjustably mounting an ultrasonic transducer thereto. Coaxial coupling means is associated with one of the shafts and connected to said transducer for externally adjusting the position of the transducer along the plane of the yoke means for varying the angle of incidence at which the ultrasonic beam is transmitted to the test material. Wheel means including a cylindrical member transparent to the ultrasonic beam is rotatably mounted to the shafts and hermetically encloses the yoke means for providing rotation about the yoke means and the transducer. Back reflection attenuation means is operatively associated with the wheel means for attenuating unwanted back reflections to eliminate their detection by the transducer. Coupling fluid is retained within the wheel means for fluid coupling the ultrasonic beam to the test material through a portion of the cylindrical member in contact with the test material. Valve means is provided for simultaneously bleeding the wheel means as it is being filled with the coupling fluid to provide simultaneous removal of air therefrom, thereby minimizing the formation of air bubbles within the fluid. Traction means operatively associated with the wheel means provides frictional driving contact with the test material and prevents frictional contact of the end portions of the cylindrical member with the test material.

3,628,376

# O-RING TEST INSTRUMENT

Robert L. Dega, Mount Clemens, and Donald J. Mandley, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1970, Ser. No. 27,601

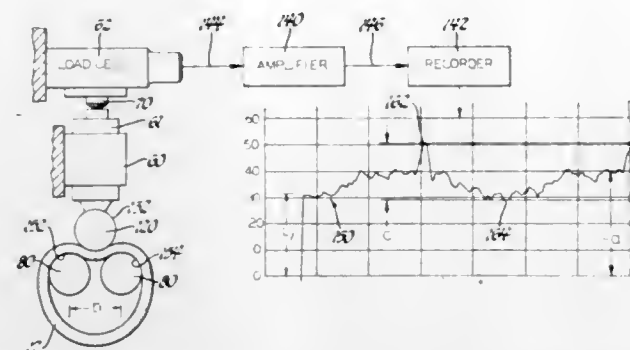
Int. Cl. G01b 5/30

U.S. Cl. 73-89

2 Claims

A test instrument for determining processing and manufacturing uniformity in molded elastomeric articles such as O-rings wherein the O-ring is flexed between two power driven rollers while being loaded at a predetermined deflection by a third roller connected to a load-sensing element. The output of the sensing element is directed to an instrumentation

device which records the stress level about the circumference of the O-ring the output variations being indications of inter-



nal discontinuities and manufacturing defects in the tested article.

3,628,377

# STRAIN LEVEL COUNTER

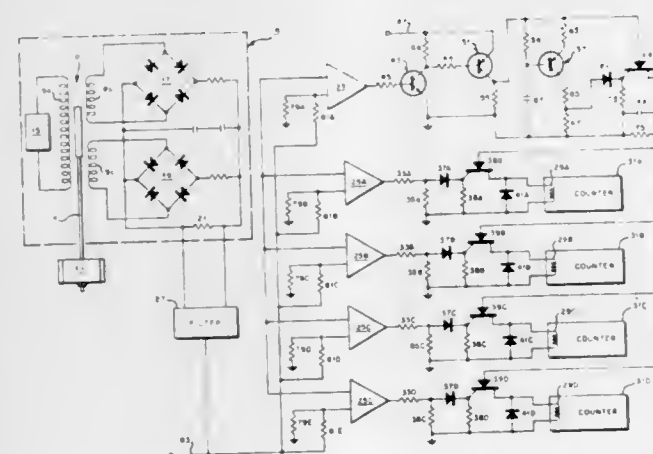
David E. Weiss, 1408 Mellon Road, Wyncote, Pa.

Filed July 24, 1969, Ser. No. 844,431

Int. Cl. G01n 3/32

U.S. Cl. 73-91

2 Claims



Present invention relates to novel and improved apparatus for indicating and/or recording the history of the magnitude and frequency of strains to which a structure such as aircraft wing is subjected during its service life. The apparatus includes a ferromagnetic rod which is secured at one point to the structure to be monitored for fatigue and the coil assembly of a transducer which is secured at another point on the structure. Application of tensile and/or compressive strains to the structure varies the axial disposition of the rod in the coil assembly and the electromagnetic coupling between coils of the transducer. The resulting electrical pulses developed by the transducer drive-counting devices through high-gain differential amplifiers provide a record of the number of applied strains that exceed preselected reference levels.

3,628,378

# PNEUMATIC PORTABLE DYNAMOMETER

Edgar P. Regan, Jr., Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 16, 1970, Ser. No. 11,530

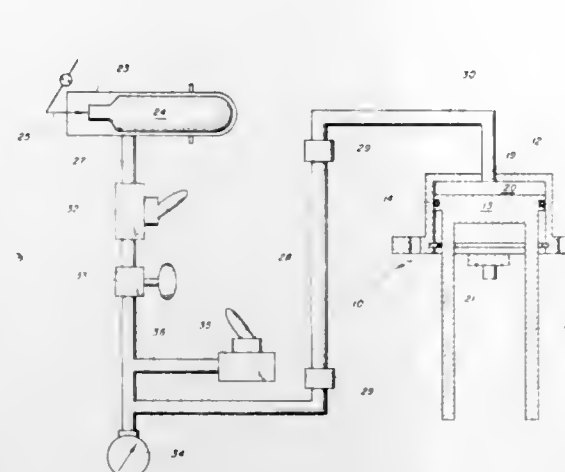
Int. Cl. G01n 3/10

U.S. Cl. 73-93

5 Claims

A portable pneumatic dynamometer for developing, measuring and applying at a controlled rate both tension and compression-type loads between two movable members. A pressurized gas cartridge is utilized as the power source for which power regulation is provided by a pneumatic toggle switch and a needle valve, for controlling the rate of flow of

the gas, and the movable parts consist of a housing and a piston slidable therein. Suitable attachment hardware is



mounted to the housing and the piston for holding test specimens.

3,628,379

# CONTAINER COMPRESSIVE LOAD-TESTING APPARATUS

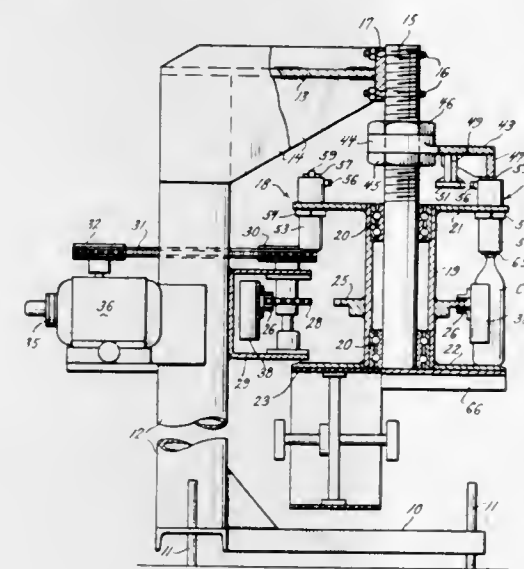
Momir Babunovic, Des Peres, Mo., assignor to Barry-Weh-miller Company, St. Louis, Mo.

Filed Apr. 20, 1970, Ser. No. 29,993

Int. Cl. G01n 3/08

U.S. Cl. 73-94

8 Claims



Apparatus for subjecting frangible containers to an axial compressive load for a short period of time to determine the strength thereof and suitability for commercial use. The apparatus comprises a conveyor to properly space containers, register each container with a load-applying head, and prevent the collapse of a container from causing damage to adjacent containers.

3,628,380

# LOWER VELOCITY WIND TUNNEL

Charles L. Feldman, 36 Canterbury Drive, Sudbury, Mass.

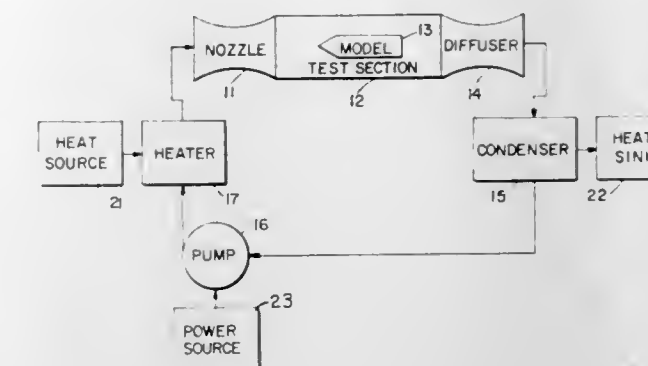
Filed May 9, 1969, Ser. No. 823,345

Int. Cl. G01m 9/00

U.S. Cl. 73-147

19 Claims

A wind tunnel uses a working fluid in which the speed of



be tested in a relatively low-velocity stream to determine performance when moving relatively much faster in air.

3,628,381

# ELECTRICAL PRESSURE TRANSDUCER FOR HIGH-TEMPERATURE FLUID SYSTEMS

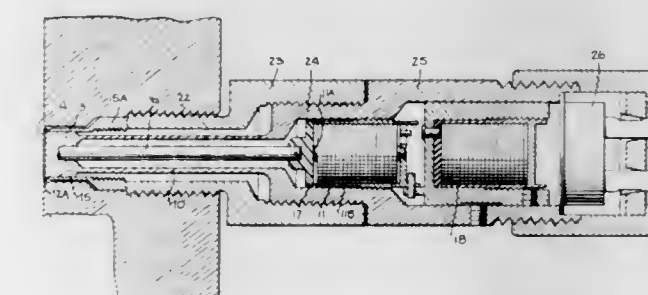
Martin L. Aronow, Westbury, and Denis Rehse, Long Island City, both of N.Y., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed July 27, 1970, Ser. No. 58,490

Int. Cl. G01l 9/10

U.S. Cl. 73-398 R

8 Claims



An electrical pressure transducer for high-temperature fluid systems, the transducer including a sensor in the form of a hollow column, one end of which is provided with a headpiece, the other end being anchored. The column is inserted in a bore in the wall of a chamber or passage containing the fluid whose pressure is to be measured. The bore is hermetically sealed by a removable nipple having a diaphragm flush with the inner surface of the wall, the headpiece of the column abutting the diaphragm to transmit a compressive load to the column that reduces the longitudinal dimension thereof to an extent proportional to fluid pressure. Attached to the headpiece and disposed coaxially within the column is a rod which is axially displaced as a function of fluid pressure, the motion of the rod being converted into a corresponding electrical value.

3,628,382

# AUTOMATIC SEPTUM-CHANGING MECHANISM

Tom H. Vannus, Pomona, Calif., assignor to Hamilton Company, Whittier, Calif.

Filed June 16, 1970, Ser. No. 46,696

Int. Cl. G01n 1/00

U.S. Cl. 73-422 GC

8 Claims

A septum-changing inlet apparatus for chromatographs having a ported body and a septum strip moved linearly in successive increments relative to the port of said body to overlie said port with unused or imperforated parts of the septum strip. A septum compression plate movable between a position pressing the septum strip, overlying the port of the



body against the face of the inlet and a septum release position. Fluid pressure actuated means is adapted to move said

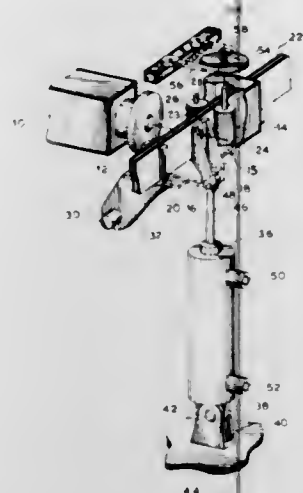


plate and as said plate is actuated or moved, the septum strip is moved linearly.

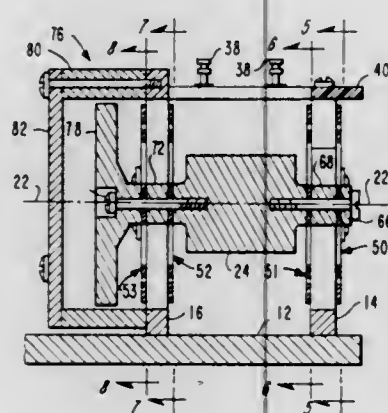
### 3,628,383 ACCELEROMETER

William A. Tikanen, Reseda, and John H. Hering, Palos Verdes, both of Calif., assignors to Genisco Technology Corporation, Compton, Calif.

Filed Feb. 28, 1969, Ser. No. 803,264  
Int. Cl. G01p 15/08

U.S. Cl. 73-516

16 Claims



A compact, air-damped accelerometer useful for aerospace applications is disclosed having a seismic mass limited to rectilinear motion along a predetermined sensing axis by symmetrical cantilever spring suspensions coupled to each end of the mass. Each cantilever suspension includes a pair of springs each having connected inner and outer ring portions. During imposition of accelerations transverse to the sensing axis, the inner portion of one spring and the outer portion of the other spring are subjected to compressive loads that are equal and opposite and therefore cancel so that no deflection error is introduced. The remaining ring portions of the springs are subjected to equal and opposite tensile loads the effects of which therefore also cancel.

### 3,628,384 ACCELERATION SENSOR

Trevor O. Jones, Milwaukee, Wis., assignor to General Motors Corporation, Detroit, Mich.

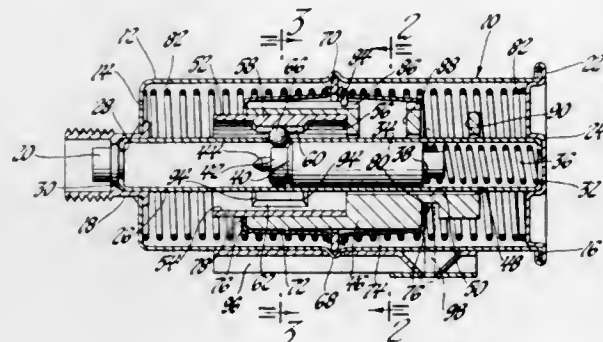
Filed May 11, 1970, Ser. No. 36,280  
Int. Cl. G01p 15/02

U.S. Cl. 73-514

4 Claims

A multidirectional sensor having an operator mounted within a guide tube and spring biased in one axial direction for movement from a first position to a second actuated position. The operator is constrained against movement by the

engagement of a plurality of balls mounted within apertures in the wall of the guide tube with a shoulder of the operator. The balls are held against movement outwardly of the guide tube apertures by an internal annular wall of an annular pendulous seismic mass mounted on the guide tube for movement axially and rotationally thereof. The axis of the guide tube, the axis of pendulosity of the mass, and the axis of the mass are coaxial. This wall is interrupted by a plurality of equally spaced axial grooves and the balls normally engage



the wall intermediate the grooves. Spring seats on spaced annular walls of the mass and a common stop on the sensor housing are engageable by opposing threshold springs to locate the mass against movement axially of the guide tube. One of the springs torsionally engages the mass to locate the mass against movement rotationally of the guide tube. The sensor can be externally reset when the operator is in actuated position.

### 3,628,385 SELF-COMPENSATED AZIMUTH PICKOFF DEVICE

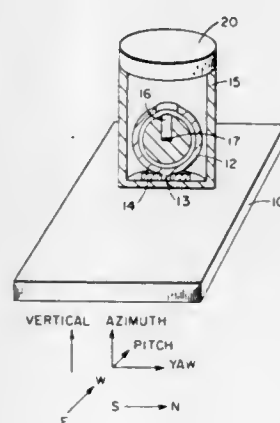
Lester M. Ross, Sr., and William W. Stripling, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 17, 1969, Ser. No. 885,766

Int. Cl. G01c 19/28

U.S. Cl. 74-5.6

4 Claims



A device for measuring a small angular displacement of the case of a spinning sphere gyro with relation to an east-west line as defined by the spinning sphere. The case is mounted on a stabilized platform. Although the device is subjected to angular displacements about the case vertical axis and about one of the case horizontal axes, it provides an electrical output proportional only to the input about the vertical axis. This is accomplished by employing a light source projecting on a mirror carried by the sphere, with two detectors arranged orthogonal to each other. Each detector includes two photosensitive elements. The outputs of the elements are so combined that horizontal axis displacement is nulled, but vertical axis displacement is not.

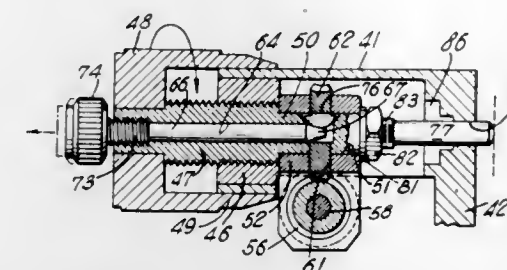
### 3,628,386 MICROMETER STAGE ADVANCE DEVICE FOR SCIENTIFIC INSTRUMENTS OR THE LIKE

Josef Blum, Norwalk, Conn., assignor to Ivan Sorvall, Inc., Newton, Conn.

Filed Mar. 5, 1970, Ser. No. 16,814  
Int. Cl. F16h 27/02

U.S. Cl. 74-89.15

14 Claims



A micrometer for adjusting the position of a movable stage in a microtome or the like having both coarse and fine adjustment means. The fine adjustment means is operative throughout the whole range of movement controlled by the coarse adjustment means.

### 3,628,387 MECHANISMS FOR CONVERTING ANGULAR MOTION TO STRAIGHT LINE MOTION

Joseph Gaskell, Wigan, and Terence Hamilton, Shevington, near Wigan, both of England, assignors to Dobson Gullick Limited, Inc., Wigan, Lancashire, England

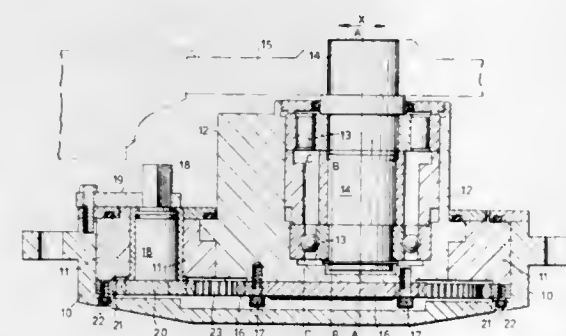
Filed Mar. 3, 1970, Ser. No. 16,194

Claims priority, application Great Britain, Mar. 15, 1969, 13,728/69

Int. Cl. F16h 27/04

U.S. Cl. 74-89

2 Claims



A tensioning mechanism for a belt or chain particularly a conveyor belt or chain comprises two eccentric devices mounted one within the other and geared together by an epicycliclike gear train. One eccentric device carries a shaft for a wheel around which the belt or chain passes. A member of the epicycliclike gear train has means whereby it can be rotated manually so as to cause relative angular displacement of the eccentric devices and thereby movement of the shaft in substantially a straight line in a tension-adjusting direction for the belt or chain.

### 3,628,388 FRICTION-TYPE VARIABLE-SPEED TRANSMISSIONS

Pierre Bouthors, and Philippe Quemerais, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Nov. 26, 1969, Ser. No. 880,077

Claims priority, application France, Dec. 12, 1968, 177941

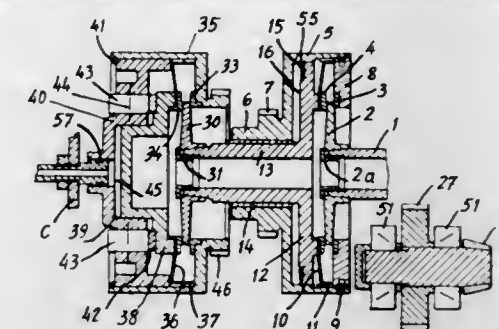
Int. Cl. F16h 15/14

U.S. Cl. 74-199

4 Claims

Variable-speed transmission of the type comprising a disc interposed between a pair of rings coaxing therewith

through corresponding friction surfaces, and a driving shaft to which said disc is attached and a driven shaft parallel to said driving shaft and rigid with a drum in which said rings



are mounted, said driven shaft being adapted to move transversely about a lay shaft parallel thereto for producing the desired speed variation.

### 3,628,389 INFINITELY VARIABLE SPEED BELT TRANSMISSION WITH CONICAL PULLEYS

Hans Wiegmann, and Helmut Germann, both of 6349 Sinn, Dillkreis, Germany

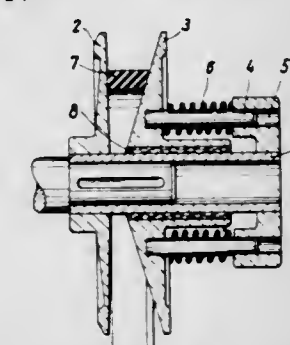
Filed Feb. 24, 1970, Ser. No. 13,736

Claims priority, application Germany, Feb. 27, 1969, P 19 09 887.4

Int. Cl. F16h 55/52

U.S. Cl. 74-230.17

7 Claims



One of the two conical pulley discs mounted on a common shaft of an infinitely variable speed belt transmission has a central bore lined with a smoothly cylindrical antifriction bushing which permits free movement of the disc on the shaft in an axial direction and does not interfere with rotation of the disc on the shaft. The bushing has a continuous metallic backing fixedly fastened to the axially movable disc and a facing of porous sintered metal on the backing and engaging the shaft, the pores of the facing being filled at least partly with a solid fluorocarbon.

### 3,628,390 VARIABLE RATIO TRANSMISSIONS

Cornelis Van Der Lely, 7, Bruschenrain, Zug, and Hendricus Jacobus Cornelis Nieuwenhoven, Baar, both of Switzerland

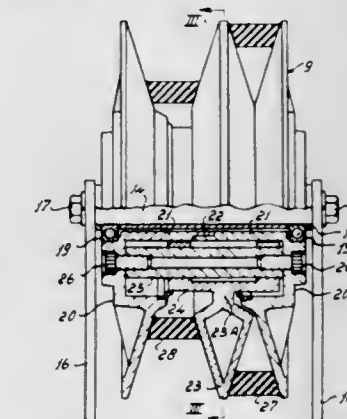
Filed Dec. 23, 1969, Ser. No. 887,571

Claims priority, application Netherlands, Jan. 2, 1969, 6900003

Int. Cl. F16h 55/22

U.S. Cl. 74-230.17 A

14 Claims



This invention relates to variable ratio transmissions intended for use in agricultural implements.



3,628,391

**DRIVE APPARATUS FOR CABLES**

Willi Gumlich, Marktoberdorf, Allgau, Germany, assignor to Schlang & Reichart Maschinenfabrik, Marktoberdorf, Germany

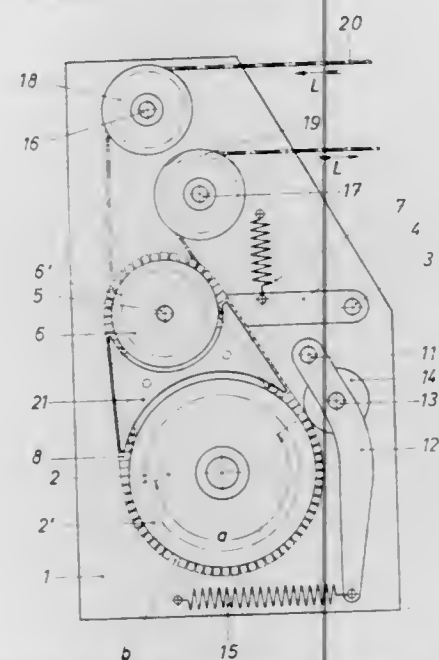
Filed Jan. 19, 1970, Ser. No. 3,730

Claims priority, application Germany, Jan. 22, 1969, P 19 02 970.0

Int. Cl. F16h 55/36

U.S. Cl. 74-230.24

11 Claims



A cable drive for load bearing cables having a drive disc with a keyed groove which serves as a running groove and coacts with pairs of jaw-type clamps which are drawn into the groove by the cable tension. The clamps include a recess for gripping the cable, and are mounted on a further endless cable which serves as a hinge for the clamped pairs.

3,628,392

**MULTIROW FLAT-LINK CHAIN**

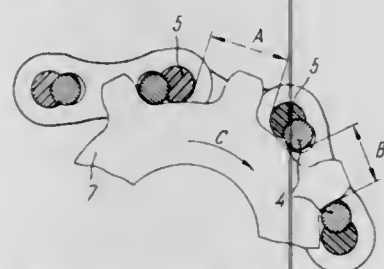
Ilya Ilich Ivashkov, 9 Parkovaya ulitsa 43/26, kv. 198, and Vasily Alexandrovich Frolovstev, Ferganskaya ulitsa, 18, kv. 263, both of Moscow, U.S.S.R.

Filed Jan. 2, 1970, Ser. No. 276

Int. Cl. F16g 13/02

U.S. Cl. 74-245 R

5 Claims



A multirow flat-link chain, whose hinges are formed by supporting members contacting each other by their external working surfaces of which one is convex and the other concave. The chain is simple in manufacture, strong, durable and is reliable when used in corrosive, chemically active and pulverized media.

3,628,393

**ENERGY RECEIVING AND STORING SINGLE LEVER CONTROL FOR ACTUATING ONE OR MORE REMOTE MECHANISMS**

Richard D. Houk, Stow, Ohio, assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Apr. 20, 1970, Ser. No. 30,003

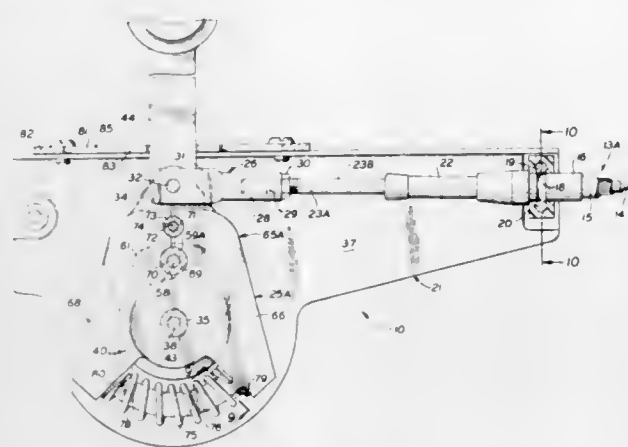
Int. Cl. G05g 1/00

U.S. Cl. 74-470

16 Claims

A control device having a single lever movable between at least two locating positions to apply an actuating force to one

or more remote servient mechanisms. A holding means retains the control lever in the selected locating position, and a first drive means operatively connects the control lever to a tong means comprised of rotatably opposed tong arms. Engagement of the first drive means with the tong means rotates one arm thereof in response to movement of the control lever, and an energy receiving and storing means between the



tong arms receives the force incident to rotation of the one tong arm and applies it biasingly against the second tong arm for rotation thereof. A second drive means operatively connects the tong means to a throw member so that rotation of the second tong arm will move the throw member to operate a motion-transmitting device connected between the control and each remote servient mechanism.

3,628,394

**OPERATOR-MANIPULATIVE CONTROL APPARATUS**

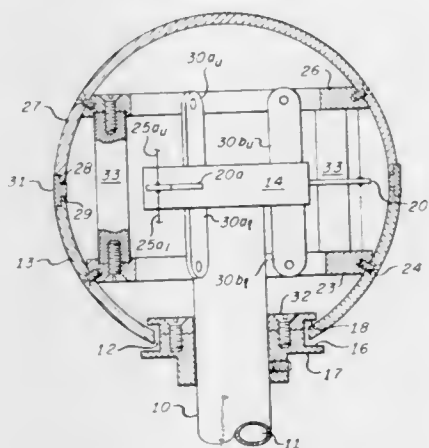
Gerald R. Keatinge, Bayville, and Herman S. W. Young, Huntington Station, both of N.Y., assignors to Sperry Rand Corporation

Filed Feb. 9, 1970, Ser. No. 9,755

Int. Cl. G05g 9/04

U.S. Cl. 74-471 XY

17 Claims



An operator-manipulative control mechanism comprising a spherical housing internally suspended from a fixed center post by a network of interconnected coil springs and leaf springs, the latter being cantilevered from the center post so as to flex in response to variously directed motions of the housing whereby strain gauges mounted thereon for sensing the flexure provide resolved control signals proportionate to operator forces applied to the housing.

3,628,395

**TRANSMISSION CONTROL MECHANISM**

Herman J. Maurer, Terre Haute, Ind., assignor to J. I. Case Company

Filed Nov. 6, 1969, Ser. No. 874,493

Int. Cl. G05g 9/02

U.S. Cl. 74-473 R

11 Claims

A control mechanism for shifting a pair of control devices forming part of the transmission of a vehicle. The control

3,628,397

**VALVE ACTUATOR**

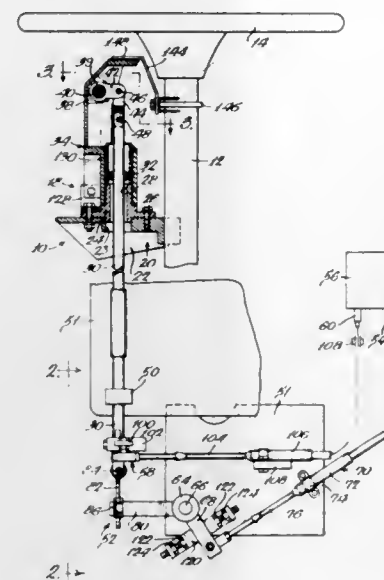
John M. Sheesley, Houston, Tex., assignor to Research Engineering Company, Houston, Tex.

Filed July 14, 1969, Ser. No. 841,318

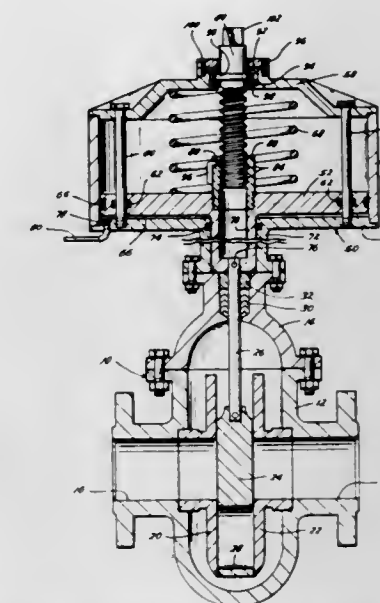
Int. Cl. F16h 35/00, 55/22

U.S. Cl. 74-625

1 Claim



through a single control rod connected at one end to the shift lever and at the opposite end to the respective control devices. The connections to the control devices incorporate mechanism which transmits only the rotary motion of the rod to one of the control devices and the axial shifting of the control rod to the other of the devices.



An actuator for operating a valve having a reciprocating operating stem may comprise: housing; a piston disposed in the housing and operable by fluid pressure on one side of the piston to move the piston in a first direction, the piston being connected to the valve stem; a spring biasing the piston in a second direction; and a shaft mounted in the housing for rotation only in threaded engagement with a nut member attached to the piston for reciprocation of the piston on rotation of the shaft. The shaft and nut member may comprise components of a ball screw mechanism in which their engagement is accomplished through ball bearings carried by the thread grooves of said shaft and nut.

3,628,396

**ADJUSTABLE STEERING ASSEMBLY**

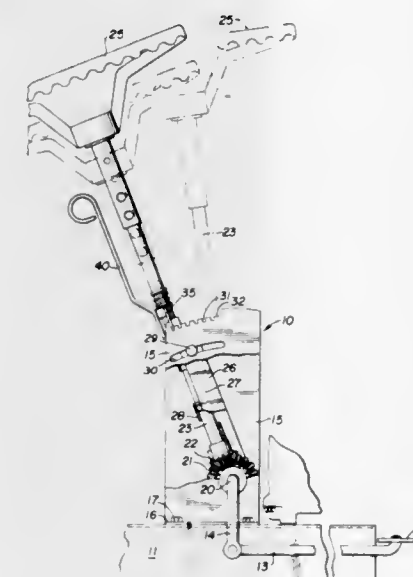
Ben T. Grobowski, Newark, Ohio, assignor to A-T-O Inc., Cleveland, Ohio

Filed Feb. 2, 1970, Ser. No. 7,577

Int. Cl. B62d 1/18

U.S. Cl. 74-493

5 Claims



A low cost adjustable steering assembly comprising a pair of upstanding support plates to be fastened to the frame of the vehicle and between which the steering shaft is pivoted for forward and rearward adjustable swinging movement about a pivot and crankshaft also carried thereby. The crankshaft is connected by suitable linkage to the vehicle wheels to be steered. The crankshaft is turned by gears connecting the steering shaft and the crankshaft which are arranged to permit the swinging adjustment. The upstanding support plates have notched indexing portions on their upper ends, which cooperate with an indexing rod and bracket adjustably carried by the steering shaft and having biasing means for normally keeping the bracket in selective engagement with the notched indexing portions.

3,628,398

**POWER TRANSMISSION**

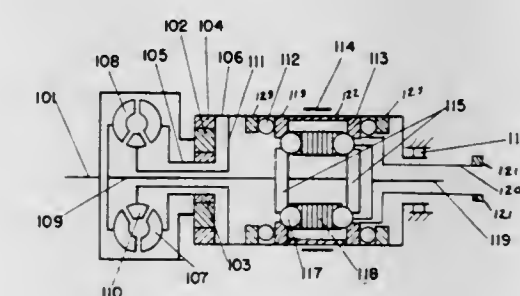
Walter V. Chery, 744 Alden St., Meadville, Pa.

Filed Aug. 22, 1967, Ser. No. 662,397

Int. Cl. F16h 57/10

U.S. Cl. 74-688

6 Claims



This invention relates to transmissions and, more particularly, to the traction-type (rolling elements) infinitely variable transmission.

3,628,399

**HYDRAULIC LIMITED SLIP DIFFERENTIAL**

William R. Seitz, Rochester, and Donald R. Whitney, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1970, Ser. No. 57,221

Int. Cl. F16h 1/44

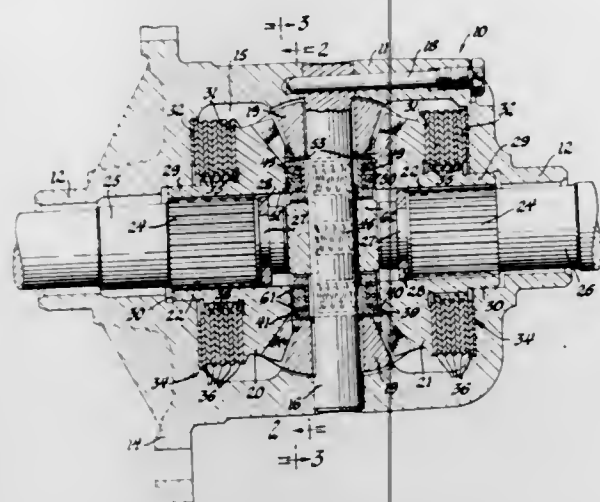
U.S. Cl. 74-711

4 Claims

Improved limited slip differential arrangements employing hydraulic actuators with hydrodynamic bearing pump pres-



sure developing means wherein the hydraulic clutch-actuating means are disposed between the side gears so as to urge



them outwardly to actuate clutches between the side gears and differential case.

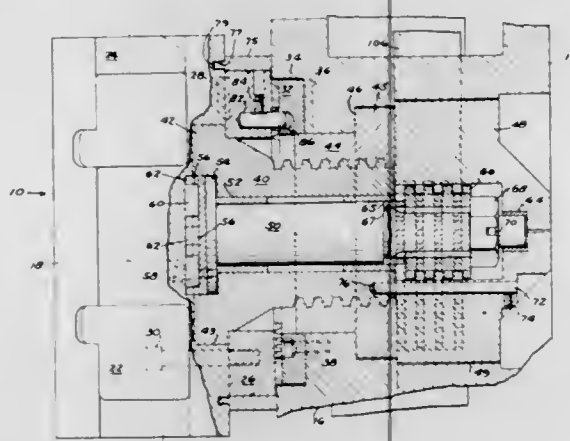
3,628,400

## INDEXING TURRET

Ronald D. Chope, and Frank A. Hevonkoski, both of Detroit, Mich., assignors to Snyder Corporation, Detroit, Mich.  
Filed Apr. 13, 1970, Ser. No. 27,945  
Int. Cl. B23b 29/32

U.S. Cl. 74-826

12 Claims



A tool turret mounted for rotation about and axial movement with a threaded sleeve carried by a base. The freely rotatable turret is selectively locked to the base by a locknut carried by the base and threadingly engaging the sleeve which axially displaces the tool turret to urge curvic couplings fixed to the turret and the base into locking engagement. The turret is rotated or indexed by a rack and a gear fixed to the turret for axial and rotary movement therewith. The gear and rack both have segmented teeth with the segments axially spaced so they disengage when the turret is locked and become engaged to index the turret only when it is axially displaced to unlock the curvic couplings.

3,628,401  
GEARINGS

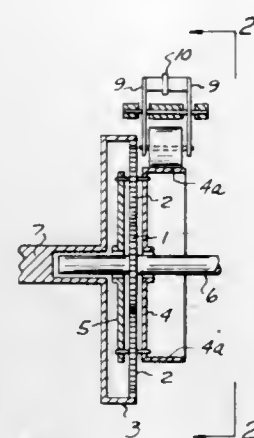
Robert P. Wuerfel, 4010 Galt Ocean Drive, Fort Lauderdale, Fla.  
Continuation-in-part of application Ser. No. 29,904, Apr. 20, 1970, now abandoned. This application Jan. 11, 1971, Ser. No. 105,273  
Int. Cl. B60k 21/00; F16h 57/10

U.S. Cl. 74-865

7 Claims

A gearing of the sun gear, outer gear, and planetary gearing type wherein means are provided to retard or inhibit walking movement of the planetary gearing around the sun

gear to change the drive ratio, and wherein such means comprises a mechanical, operator-controlled means for applying a holding force to the planetary gearing to a greater or lesser extent.



The gearing may be used wherever it is desired to change the drive ratio in a gearing; and may also be used as parts of other apparatus, such as double wheel drives wherein one wheel moves faster than the other despite being driven from a common drive.

## ERRATUM

For Class 81-3.42 see:  
Patent No. 3,628,405

3,628,402

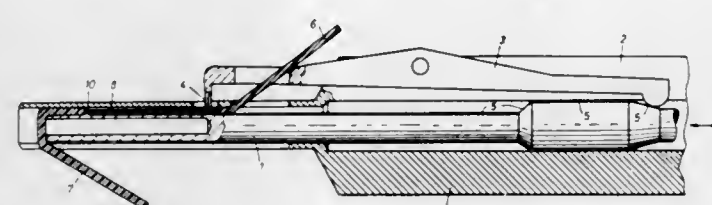
## WIRE STRIPPING AND WRAPPING GUN

Bruno Staiger, Rosenfeld, Germany, assignor to International Standard Electric Corporation, New York, N.Y.  
Filed June 9, 1970, Ser. No. 44,827  
Claims priority, application Germany, June 16, 1969, P 19 30 479.1

Int. Cl. H02g 1/12

U.S. Cl. 81-9.5 R

4 Claims



A wire stripping and wrapping gun includes a wrapper pin, a lever knife and an actuating device. The actuating device moves the wrapper pin axially and causes the knife to strip the insulation from the wire. The cutting edge of the lever knife is bifurcated to include a channel wide enough to receive the bare wire. A circular aperture is provided to be contiguous with the channel to relieve the pressure tending to be built up in the insulation being stripped and causing the insulation to crimp or jam the knife. The crimping and jamming may be further alleviated by making the inner surface of the knife facing the insulation concavely curved.

3,628,403

## POWER-ASSISTED CHANGE-SPEED TRANSMISSION MECHANISMS

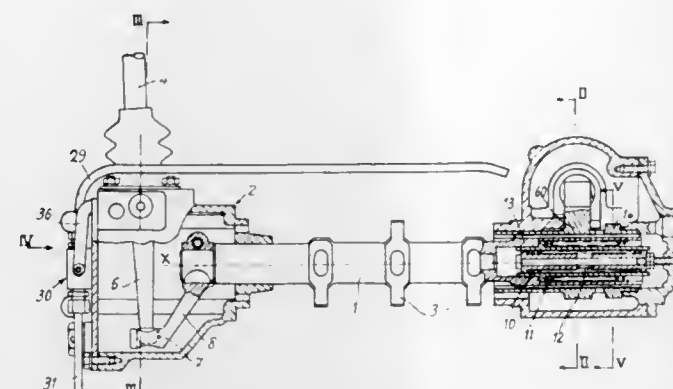
Pierre Labat, 8 quai Gallieni, Suresnes, France  
Filed Sept. 21, 1970, Ser. No. 73,908  
Claims priority, application France, Oct. 3, 1969, 6933935  
Int. Cl. F16h 5/06

U.S. Cl. 74-335

2 Claims

A power-assisted control device for a change-speed transmission mechanism providing a plurality of gear ratios en-

gageable at will, which comprises a gear selector adapted to perform a directed movement of selection and a directed movement of engagement of the gear ratios of said transmission mechanism, a manually operated gear change lever, a servo action device operatively connected to said gear selector, means responsive to said gear change lever for actuating said servo action device, characterized in that there are provided, as a power-assisted control device, a pair of single-act-



ing pneumatic actuators of the cylinder and piston type wherein the pistons acting in opposition on said gear selector, are immersed in the lubricant of the transmission casing with their faces opposite to the pneumatic control chamber of said actuators, each piston aforesaid forming a damping chamber having a fixed wall in the casing, with at least one throttling passage for the lubricant between said casing and said damping chamber.

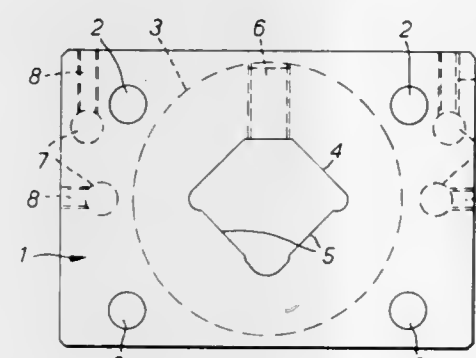
3,628,404

## MACHINE TOOLS

Raymond A. Riley, Bulkington, Nuneaton, England, assignor to The Dunlop Company Limited, London, England  
Filed May 14, 1969, Ser. No. 824,444  
Claims priority, application Great Britain, May 17, 1968, Nov. 15, 1968, 23,520/68; 54,263/68  
Int. Cl. B23b 21/00

U.S. Cl. 82-24

10 Claims



In a machine tool arranged to accept preset tools, a tool carrier on which the preset tools are detachably mounted. Locating surfaces formed either in an aperture or on a support projection of the carrier are arranged to engage corresponding seating surfaces on a tool holder so that with the tool carrier in the operative position the locating surfaces extend parallel to the spindle axis of the machine tool.

3,628,405

## STOPPER REMOVING IMPLEMENT

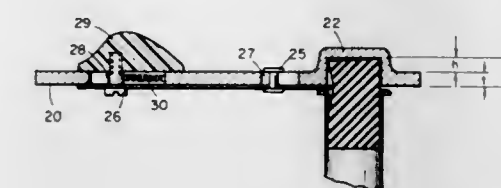
Martin Fleisher, 45 Knott Drive, Glen Cove, N.Y.  
Filed Mar. 2, 1970, Ser. No. 15,488  
Int. Cl. B67b 7/06

U.S. Cl. 81-3.42

7 Claims

Apparatus for removing a resilient stopper which protrudes substantially from the rim of a test tube. An elongated base

member having an aperture therein is provided. A stopcap element covers the aperture on one side of the member and a blade element is slidably mounted on the other side. In



operation, the stopper is inserted in the aperture and the blade element engages the least protruding portion of the stopper.

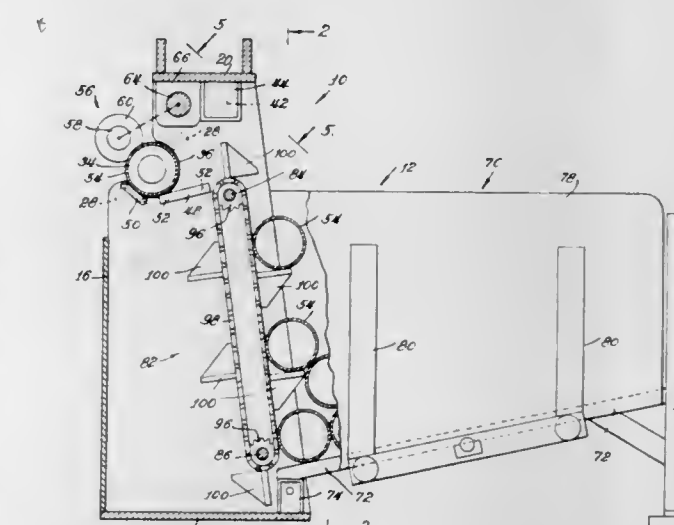
3,628,406

## TUBE FEEDING MEANS

Bruce W. Stevens, Appleton, Wis., assignor to Menasha Corporation, Neenah, Wis.  
Filed Apr. 2, 1970, Ser. No. 25,110  
Int. Cl. B23b 5/14

U.S. Cl. 82-89

11 Claims



Tube storage and feeding apparatus for use in a tube-cutting machine having a work station and a reciprocating mandrel adapted to selectively support a tube disposed in the work position, the tube storage and feeding means including a storage bin, a tube-advancing elevator having tube-lifting lugs selectively secured to lift chains movable through driven sprocket shafts, a spiral cam rotatable in direct response to movement of the mandrel, and clutch means operative to effect advancing movement of the lift lugs only during movement of the mandrel to a position removed from the work station of the machine.

## ERRATUM

For Class 83-38 see:  
Patent No. 3,628,450

3,628,407

## PRECISION LONG REACH HOLE PUNCH

Hobart S. Adams, 1700 Delancey St., Philadelphia, Pa.  
Filed Dec. 22, 1969, Ser. No. 887,447  
Int. Cl. B26f 1/02

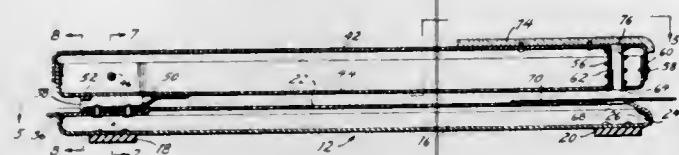
U.S. Cl. 83-140

3 Claims

Apparatus for perforating sheet material is disclosed, wherein perforations are made by a hollow punch having a central bore therein, the lower end of the bore being visible



from above so that an operator can precisely position the



punch with respect to the material by sighting through the bore.

3,628,408

## STAMP DISPENSER

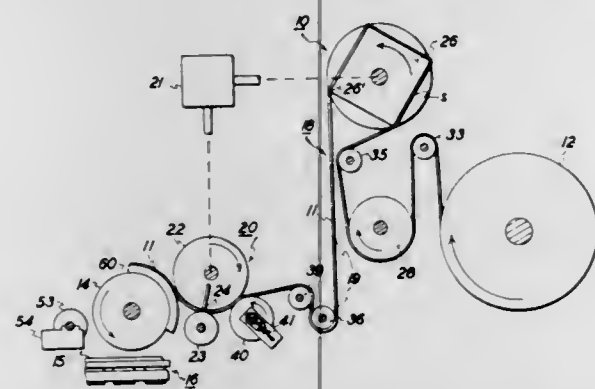
Trygve R. Rod, Mundelein, Ill., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,709

Int. Cl. B26d 5/22

U.S. Cl. 83-175

4 Claims



A stamp dispenser including means for cutting stamps from a weblike supply of uncut stamps weakened as by perforations between adjoining stamps; means for feeding the web of uncut stamps forward to the cutting means including a polygonal-shaped feed wheel, the length of each side of the feed wheel being substantially equal to the length of the stamp or stamps to be dispensed, the feed wheel being driven in unison with the cutting means; and means for holding a portion of the web of uncut stamps in contact with the feed wheel such that at least one of the web perforated portions is always bent about one corner of the feed wheel whereby to maintain the web of uncut stamps in nonslip contact with the feed wheel and in constant registration with the stamp cutting means.

3,628,409

## DEVICE FOR CUTTING SHEET MATERIAL

Pierre Imbert, Fleury-Les-Aubrais, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

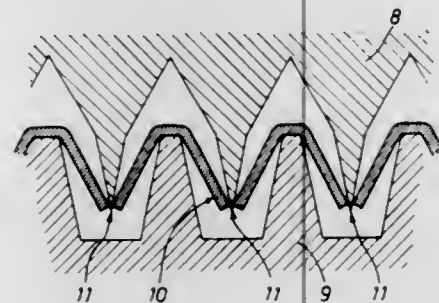
Filed July 15, 1968, Ser. No. 744,879

Claims priority, application France, July 19, 1968, July 24, 1968, 114 728; 115 317

Int. Cl. B26d 7/14

U.S. Cl. 83-175

12 Claims



Apparatus for cutting sheet material into strips, including means for applying a drawing force to a sheet of said material

to cause said sheet to be drawn along and simultaneously causing restraining forces to be applied to said sheet on either side thereof to restrain it against the drawing action of said drawing forces.

3,628,410

## CUTOFF CONTROL FOR CUTTING LONG SHEETS

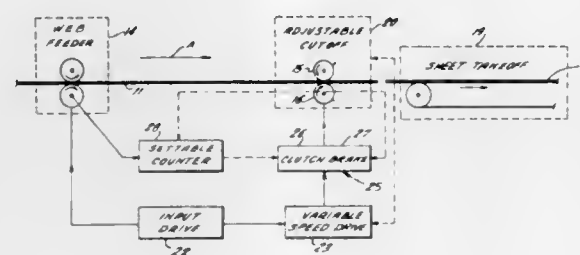
Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,678

Int. Cl. B23d 25/12, 25/16

U.S. Cl. 83-287

4 Claims



Actuation of a brake means brings a cyclically variable drive transmission for cutoff knives to a stop at a minimum speed point in each cycle and the transmission remains stopped until a predetermined length of the web is fed past the knife bars. Thereafter, the brake is released and substantially at the same time a clutch mechanism is actuated to supply power to drive the transmission, which then drives the knife bars through a cutting operation while the web continues in motion.

3,628,411

## RETRACTABLE SPECIMEN HOLDER FOR A MICROTOME

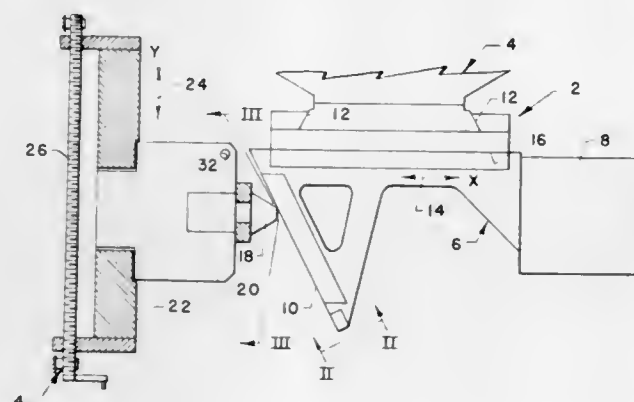
Norman W. Shatzel, Williamsville, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jan. 26, 1970, Ser. No. 5,708

Int. Cl. G01n 1/06

U.S. Cl. 83-414

2 Claims



A microtome in which the feed is accomplished by a screw-adjusted nose cam against which is biased an inclined plane. The inclined plane is a part of the specimen head which reciprocates relative to the microtome knife. The nose cam is screw advanced at the top of each stroke before the next downward or cutting stroke.

The nose cam is eccentrically and rotatably mounted relative to the microtome frame. At the bottom of each cutting stroke, this nose cam is rotated causing it to displace laterally, allowing the inclined plane and the specimen head to retract slightly from the knife for the upstroke.

3,628,412

## GRAPHIC ARTS CUTTING INSTRUMENT

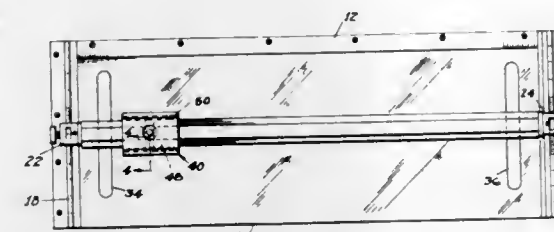
Harry W. Rogers, Jr., 14 Packard St., Hudson, Mass.

Filed Mar. 2, 1970, Ser. No. 15,659

Int. Cl. B26d 7/02

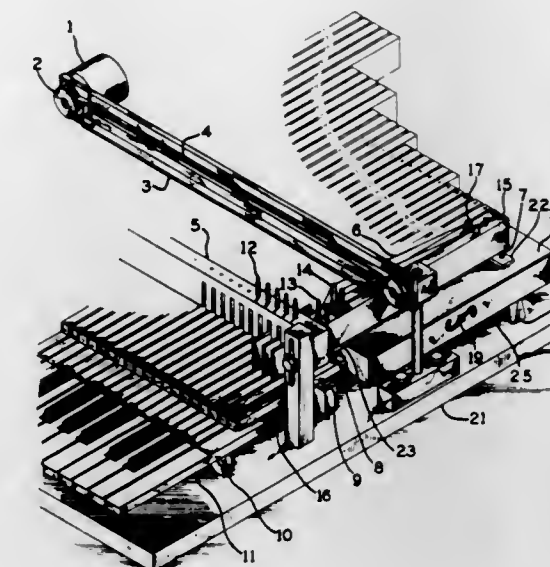
U.S. Cl. 83-455

1 Claim



Graphic arts cutting instrument comprising a board, a monorail on the board mounted in spaced relation above the same, a double cutter mounted on a slider on the monorail for cutting a column on the board, and a holddown device for the work being cut, said holddown device including magnetic clamping means therefor.

as to place the string in contact with a moving belt. A flexible



pin is provided to act as a spring for returning the lever to its rest position and to connect the lever to a sound box.

3,628,413

## SHEET METAL CUTTING MACHINE

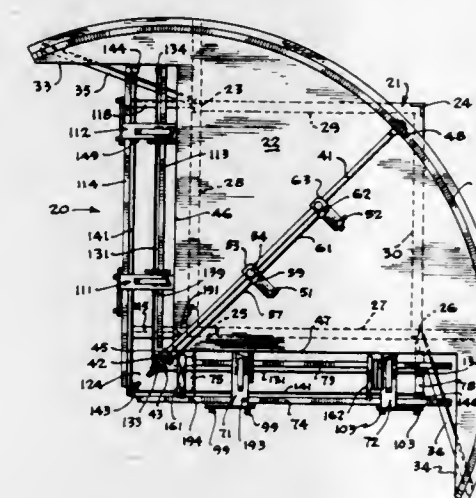
Louis F. Miklos, 6151 Delaware, Gary, Ind.

Filed Apr. 13, 1970, Ser. No. 27,663

Int. Cl. B26d 11/00

U.S. Cl. 83-513

9 Claims



A cutting machine for cutting out sheet metal panels for elbows and other curved duct sections, including a table for supporting a sheet metal workpiece and two sets of notching devices, mounted adjacent two different sides of the table. A common positioning drive links the two sets of notching devices. At least one cutter is mounted on a support arm that swings the cutter across the table to cut the workpiece along a desired arc. Index devices coordinate the cutter positions with the notching devices to align the notches and the cut.

3,628,414

## VIOLIN PIANO

Louis Elteto, 605 N. Lincoln Ave., Alliance, Ohio

Filed Sept. 9, 1968, Ser. No. 758,550

Int. Cl. G10c 1/00

U.S. Cl. 84-257

1 Claim

A violin piano having a plurality of pivotal levers each carrying a string. When a key is struck the levers are pivoted so

3,628,415

## MORTAR

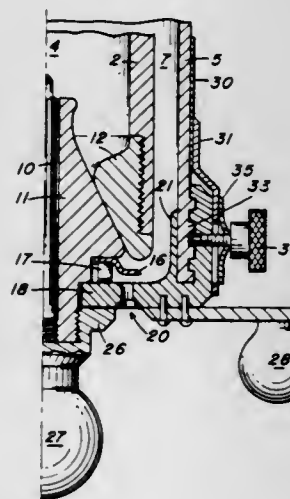
Stuart H. McElroy, Box 278, Dahlgren, Va.

Filed Jan. 27, 1970, Ser. No. 10,108

Int. Cl. F41f 1/06

U.S. Cl. 89-1 F

8 Claims



A method and apparatus for setting and continuously changing the range of a mortar. The mortar is provided with a variable vent that acts to regulate chamber pressure. The vent setting is determined by a range matrix plate located on the mortar barrel. A drain path is provided for trapped rain water and the same opening allows a cooling airflow into the interior of the barrel. Combustion residue is carried out through the open variable vent by exhaust gases.

3,628,416

## FLARE-DISPENSING AND IGNITING APPARATUS

George L. Kernan, 1810 Market Ave., San Pablo, Calif.

Filed Oct. 15, 1969, Ser. No. 866,534

Int. Cl. F41f 5/00

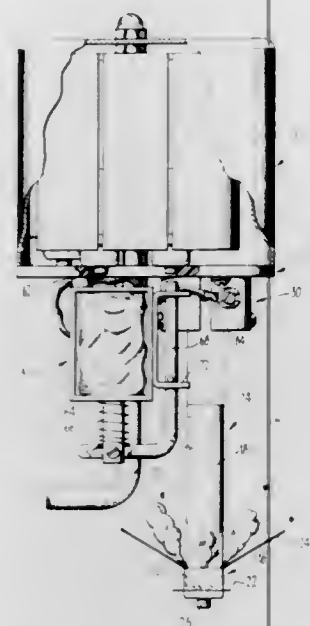
U.S. Cl. 89-1.5 R

9 Claims

An apparatus adapted to be supported on a vehicle for storing an ignitable safety flare, dispensing the flare to deposit the same on the road, and in the process of dispensing the flare causing the same to be ignited. In one embodiment of the invention a plurality of flares are stored



in a rotatable turret or magazine. The latter is rotatable to position sequential flares at a discharge station with a metal conductor pin extending through the flare serving as the sole support for the flare. Sending an electrical current through



such a pin causes the pin to heat up, ignite the powder in the flare, and simultaneously, due to the melting of the pin, results in the dropping of the ignited flare from the storage magazine.

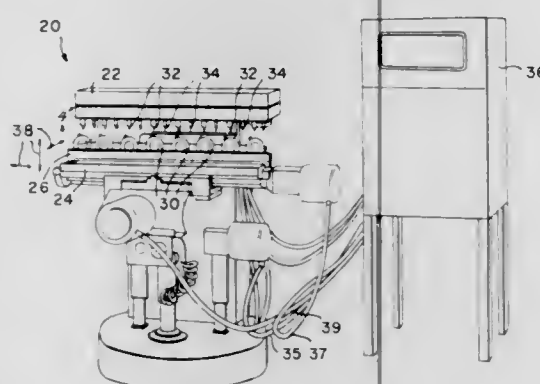
3,628,417

# METHOD AND APPARATUS FOR ENGRAVING CHARACTERS

Herman Graboyes, Jenkintown, Pa., assignor to Numerical Control Program Service, Inc., Moorestown, N.J.  
Filed Mar. 9, 1969, Ser. No. 814,684  
Int. Cl. B23c 1/16

U.S. Cl. 90-13 C

8 Claims



A method and apparatus for engraving characters by the use of numerically controlled machine tools. The characters are engraved by moving a first machine tool about the outline of the desired character. Where the character has inside corners, a second numerically controlled machine tool is moved about the outline at the inside corner at a plurality of depths to reduce the radius of the curvature at the inside corner.

3,628,418

# VORTEX VALVE SERVOACTUATOR

Thomas S. Honda, Scotia, N.Y., assignor to General Electric Company

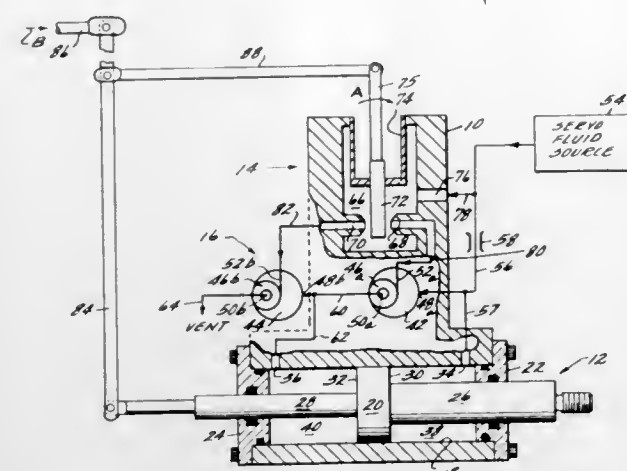
Filed Jan. 22, 1970, Ser. No. 4,849  
Int. Cl. F15b 13/042, 9/10, 15/17

U.S. Cl. 91-47

5 Claims

A servoactuator is disclosed which comprises a two stage servo in combination with a differential piston area actuator,

the second servo stage comprising a pair of serially con-



nected fluid vortex amplifiers.

3,628,419

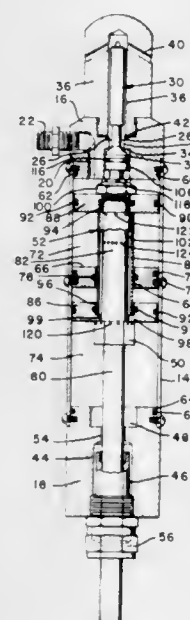
# FLUID-OPERATED MOTOR

George E. Doughton, Tobaccoville, N.C., assignor to Doughton Manufacturing Company, Inc., Charlotte, N.C.

Filed Aug. 21, 1969, Ser. No. 851,829  
Int. Cl. F01H 15/12; F01b 7/18

U.S. Cl. 91-224

5 Claims



A source of pressurized fluid is constantly introduced into one end of a cylinder having a double acting reciprocating piston assembly mounted therein. A valve assembly including piston elements is slidably secured to the main piston assembly for displacement relative to the cylinder and piston assembly for controlling the application of fluid pressure to opposite ends of the piston assembly alternately.

3,628,420

# TRACTIVE STRESS DETECTOR FOR TRACTORS

Raymond Boueil, and Marcel Rolland, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, France

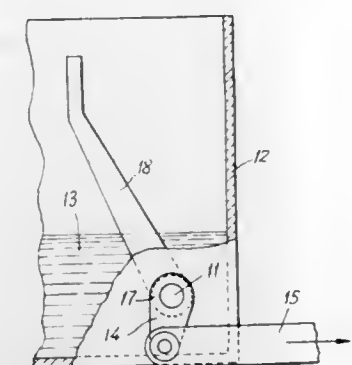
Filed Oct. 14, 1968, Ser. No. 767,252  
Claims priority, application France, Nov. 24, 1967, 129537  
Int. Cl. G05g 1/00; A01b 63/112; F15b 13/16

U.S. Cl. 91-367

1 Claim

Device for detecting tractive stress on farming tractors, which comprises traction rods fulcrumed to levers secured to a rotary shaft mounted in an oil-tight manner in two opposite

walls of the rear axle case by means of rubber bushes adhering both to said shaft and to said walls. Said shaft acts upon a reaction mechanism including freely floating lever means operable in a second stage to resist movement of the actuat-



distributor controlling the hydraulic raising of the equipment, and an elastic means counteracts the rotation of said shaft urged for rotation by the tractive stress.

3,628,421

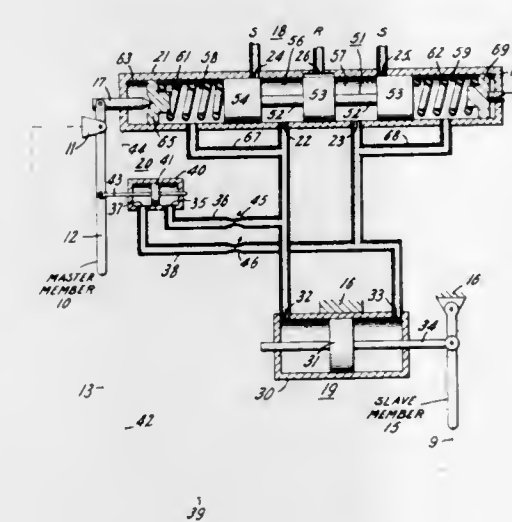
# BILATERAL HYDROMECHANICAL SERVOSYSTEM

Raymond L. George, Schenectady, N.Y., assignor to General Electric Company

Filed Apr. 30, 1970, Ser. No. 33,191  
Int. Cl. F15b 13/16

U.S. Cl. 91-358

5 Claims



A single control valve is utilized in the slave loop and master force feedback loop. Instabilities in the master loop due to the high gain required in the slave loop are eliminated by utilization of the actuator in master loop in cooperation with orifices to provide a dashpot in the master loop to suppress instabilities in the master loop.

3,628,422

# POWER BRAKE REACTION MECHANISM

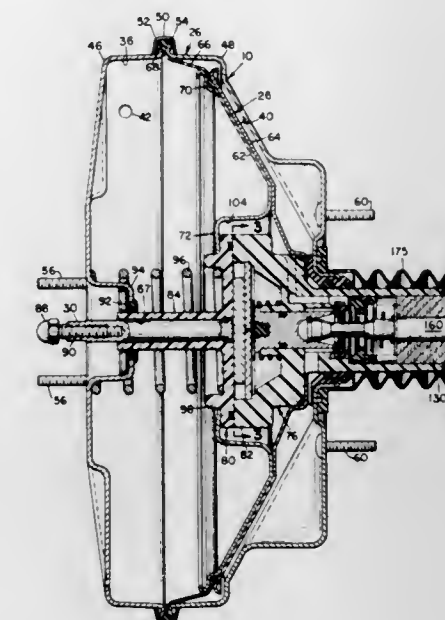
Sydney R. Acre, Elsie, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Aug. 4, 1969, Ser. No. 847,112  
Int. Cl. F15b 9/10

U.S. Cl. 91-369 B

4 Claims

A reaction mechanism for a two-stage power brake unit having a pressure-responsive movable wall, valve means controlling the pressure differential on opposite sides of the wall and actuating means operable in a first stage to effect movement of the valve means in response to manual effort, the



ing means in a substantially direct and uniform ratio to the force developed by the wall.

3,628,423

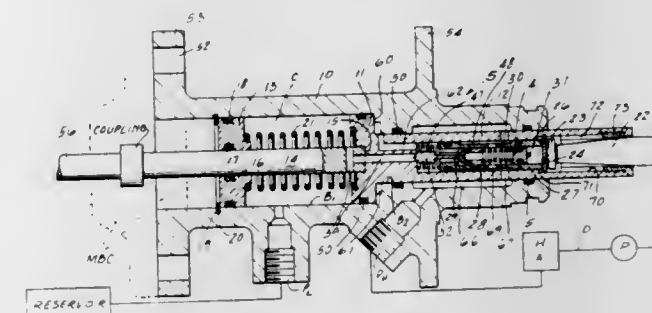
# POWER BRAKE BOOSTER

Richard Warren Dymond, Rochester, Mich., assignor to TRW, Inc., Warren, Mich.

Filed Oct. 30, 1969, Ser. No. 872,575  
Int. Cl. F15b 9/10

U.S. Cl. 91-376

4 Claims



A power brake booster uses high-pressure hydraulic fluid as an energy source. A piston and rod assembly is guided by coaxial bores in a housing. Valve means for controlling the operation of the booster are contained within the piston and rod assembly and are actuated in response to movement of an input rod adapted to be connected through a brake pedal. The flow of hydraulic fluid from a high-pressure port through the valve mechanism is regulated through a working chamber behind the piston and from the working chamber to a low-pressure port adapted to be connected to the reservoir or tank of the hydraulic system. The output rod of the piston is connected to a master cylinder assembly.

3,628,424

# HYDRAULIC POWER CIRCUITS EMPLOYING REMOTELY CONTROLLED DIRECTIONAL CONTROL VALVES

Waldo G. Fruehauf, and Robert W. Rue, both of Kalamazoo, Mich., assignors to General Signal Corporation

Filed May 14, 1970, Ser. No. 37,200  
Int. Cl. F15b 13/042, 13/06

U.S. Cl. 91-446

5 Claims

Hydraulic power circuit in which each actuating cylinder is controlled by an open center, pilot-operated directional con-



trol valve which is operated by a low-pressure remote control system utilizing fluid taken from the same pump which supplies motive fluid for the cylinders. The fluid which is supplied to the pilot valves of the remote control system at a reduced pressure is drawn from the supply path for the directional control valves at a point upstream of a throttle valve. This valve is automatically controlled so that it as-



sumes a low flow-restricting position when the pilot valves, and consequently the directional control valves, are in neutral position, and assumes a high flow-restricting position whenever one of the pilot valves is shifted away from neutral position. An override control, which responds to supply pressure, shifts the throttle valve to low flow-restricting position during actuation of a cylinder.

3,628,425

**FLUID MOTOR-PUMP CONSTRUCTION**

Kiyoshi Morita, Chikushino-machi, and Shigemi Kawano, Fukuoka-shi, both of Japan, assignors to Messrs. Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

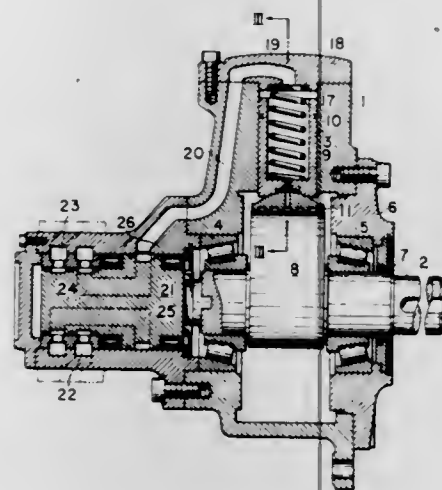
Filed Dec. 9, 1969, Ser. No. 883,545

Claims priority, application Japan, Dec. 13, 1968, 43/91444

Int. Cl. F01b 1/06

U.S. Cl. 91-491

9 Claims



A device such as a motor or a pump includes a rotatable eccentrically carried member or plate which is connected to rotate one or more radially extending pistons so as to reciprocate them in their associated cylinders for displacing fluid therein, and it includes a slipper pad having a surface on one side which conforms to the curvature of the eccentric plate and is engaged for sliding contact therewith. Each slipper pad engages at its opposite side with a piston member which is radially arranged for reciprocation within its associated cylinder. The piston includes a closed end face adjacent the slipper which conforms to and is maintained in bearing contact with the slipper. Each slipper and associated

closed end face of the piston is provided with a communicating passage for permitting the flow of the fluid being pumped into one or more grooves defined on the face of the slipper which is in bearing contact with the cam plate in order to provide lubrication for the bearing sliding contact of the slipper with the cam plate. During the reciprocation of the piston fluid is directed into and out of the associated cylinder through a passage communicating at one end with a distributor valve and which connects at its opposite end into a respective cylinder through a cylinder cap or headpiece arranged at its radial outer end.

3,628,426

**DEVICES FOR OPERATING WINDOWS**

Werner Frach, Friedenstrasse 16, 858 Bayreuth, and Bernhard Janke, Kulmbach, both of Germany, assignors to said Frach by said Janke

Filed Feb. 16, 1970, Ser. No. 11,691

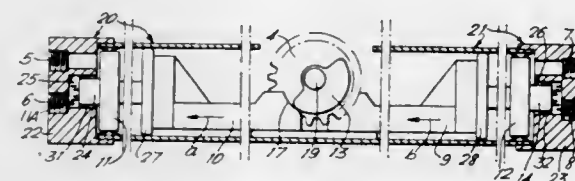
Claims priority, application Germany, Feb. 20, 1969, P 19 08

367.1

Int. Cl. F01b 9/00

U.S. Cl. 92-138

9 Claims



A rack and pinion device with cam designed to hold the rack in a selected position in combination with a piston and cylinder arrangement operated by movement of the rack for producing and controlling hydraulic pressure, and the complete drive system wherein said device is arranged to actuate the hydraulic circuits in sealing, moving or locking of casement windows.

3,628,427

**COMBUSTION GAS SEAL**

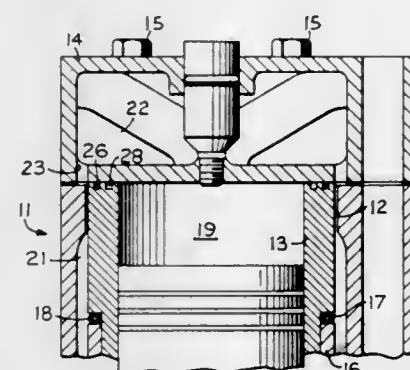
John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 6, 1970, Ser. No. 25,966

Int. Cl. F01b 31/08

U.S. Cl. 92-144

7 Claims



A seal for effectively sealing an engine cylinder liner and cylinder head against gas leakage from a cylinder combustion chamber. The seal is arranged to reduce the gas pressure and heat loads acting on a conformable and resilient sealing element to provide improved sealing with the ability to utilize lower cost sealing materials.

3,628,428

**CONTAINER-FORMING MACHINE**

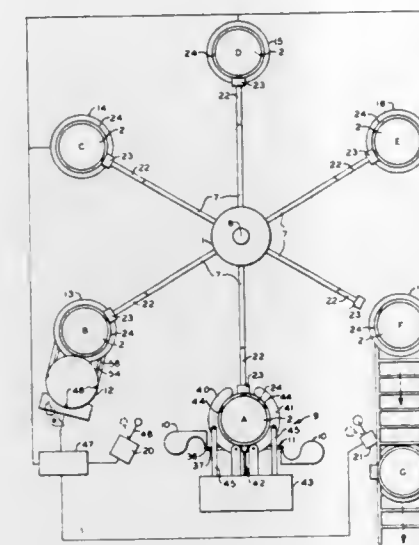
Carl R. Peacock, Fulton, N.Y., assignor to Phillips Petroleum Company

Filed Oct. 23, 1969, Ser. No. 868,789

Int. Cl. B31b 3/02, 3/60, 17/02

U.S. Cl. 93-39.2

9 Claims



An improved turret container-forming machine having a plurality of mandrels, a sidewall applicator, a bottom disc inserter, and consecutively positioned operating stations, each station having a separate machine component for automatically, continuously forming cartons.

3,628,429

**EXPOSURE DEVICE FOR MANUFACTURING COLOR PICTURE TUBES**

Piet Gerard Joseph Barten, and Johannes Cornelis Adrianus Vannes, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,464

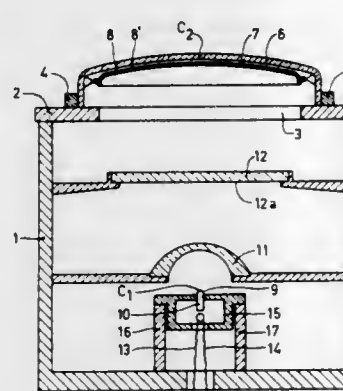
Claims priority, application Netherlands, Dec. 4, 1968,

6817330

Int. Cl. G03b

U.S. Cl. 95-1

4 Claims



An exposure device for projecting aperture patterns from a mask onto a photosensitive layer on a picture screen for cathode-ray tube comprising a conical light source and a substantially rotationally symmetrical negative lens between the light source and the mask to diverge the light thereby enlarging the transverse dimensions of the light source as viewed from the mask. The dimensions of the light source are increased to compensate for any loss in brightness from the lens.

3,628,430

**PHOTOGRAPHIC APPARATUS FOR PRODUCING A TAMPERPROOF IDENTIFICATION CARD**

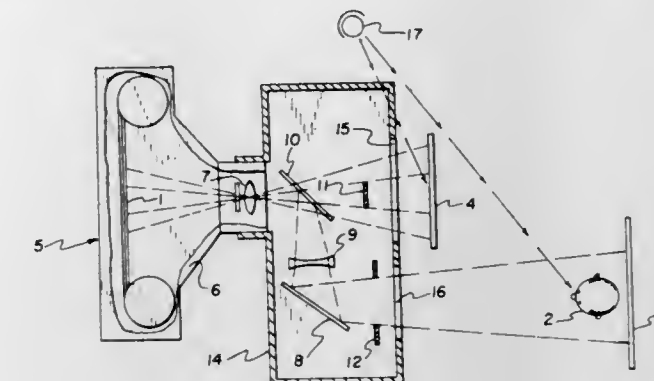
John E. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,393

Int. Cl. G03b 27/70

U.S. Cl. 95-1.1

13 Claims



An optical apparatus for photographing images of two or more objects at different magnifications to produce a composite photograph of complementary images having a blurred transition zone without clearly discernible edges between such images. The apparatus includes at least two objectives for forming images of at least two objects on a single record medium. A portion of the light from one object is effectively blocked by a mask which is complementary to a second mask which effectively blocks a portion of the light from a second object. The complementary masks are spaced from the objectives a distance sufficient to blur the edges of the images defining the masked areas thereby producing the blurred transition zone. The apparatus is especially suited for making tamperproof identification cards.

3,628,431

**FIRING AND SYNCHRONIZING MECHANISM FOR PERCUSSION-IGNITABLE FLASHLAMPS**

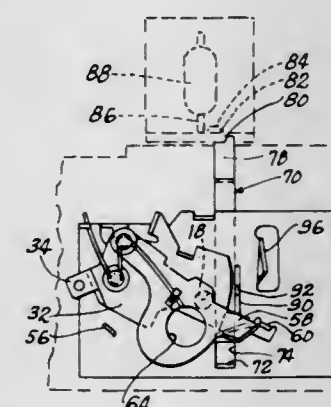
George Irwin, Highland Park, Ill., assignor to Imperial Camera Corp., Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,544

Int. Cl. G03b 9/70

U.S. Cl. 95-11.5 R

8 Claims



A camera construction including a housing holding a length of film and having film-advancing means and a shutter means for exposing successive frames of film. The shutter means consists of movable plates with an opening defined by one plate for registering with a camera lens opening. A flash-bulb of the type which will operate in response to impact from a spring-loaded finger is adapted to flash immediately prior to film exposure. The spring-loaded finger of the flash-bulb is operated in timed relationship with the film exposure by means of a push bar which engages the finger in response to engagement of the bar by the movable shutter plates.



3,628,432

**FILM METERING MECHANISM**

Helmut Ettischer, Esslingen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

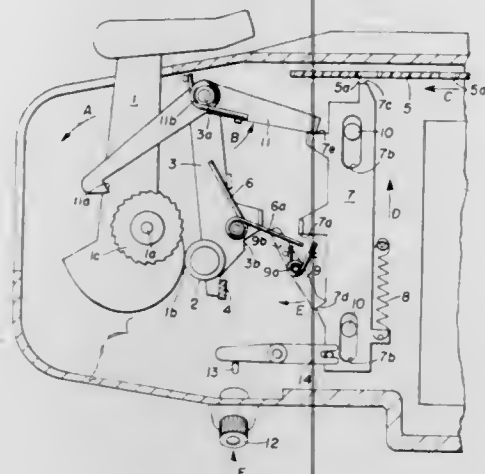
Filed Sept. 5, 1969, Ser. No. 855,542

Claims priority, application Germany, Sept. 28, 1970, P 17 97 450.4

Int. Cl. G03b 1/62

U.S. Cl. 95—31 FM

7 Claims



A film metering mechanism for cameras using film having spaced perforations at predetermined metering intervals, the mechanism including a film-advancing member and a sensing member adapted to engage a perforation to control film transport. A continuous biasing force is applied to the film-sensing member so as to resiliently urge it in a direction to intercept and engage a respective perforation as the film is advanced. An additional biasing force is applied to the film-sensing member to transiently increase the total biasing force only during operation of the film-advancing member. Thus, in order to disengage the film-sensing member from a perforation for whatever purpose, it is necessary to overcome only the continuous biasing force.

3,628,433

**PHOTOGRAPHIC ELECTRONIC SHUTTER WITH POWER SWITCH CONTROL DEVICE**

Masao Takayama, Tokyo-to, and Kiyoyuki Arai, Gyoda, both of Japan, assignors to Kabushiki Kaisha Kōparu, Tokyo-to, Japan

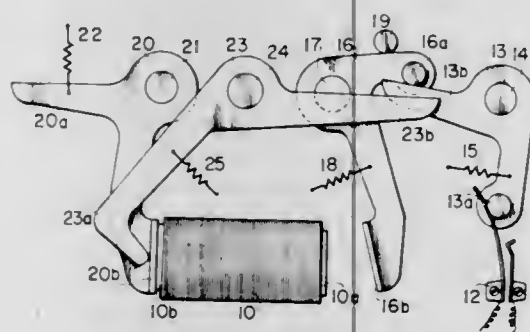
Filed Apr. 28, 1970, Ser. No. 32,623

Claims priority, application Japan, May 8, 1969, 44/35338

Int. Cl. G03b 9/08

U.S. Cl. 95—53 EB

3 Claims



An electronic photographic shutter has an electromagnet which is energized upon closing of a power switch and is deenergized after the time controlled by a delay circuit has elapsed. A shutter-closing member is magnetically attracted to the electromagnet when the electromagnet is energized and is freed from the electromagnet to initiate closing of the

shutter when the electromagnet is deenergized. A power switch-holding member is moved by the shutter release button of the camera into a position where it is held by the electromagnet until the electromagnet is deenergized.

3,628,434

**FOCAL-PLANE SHUTTER FOR PHOTOGRAPHIC CAMERA**

Ludwig Leitz, and Willy Franke, both of Wetzlar, Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

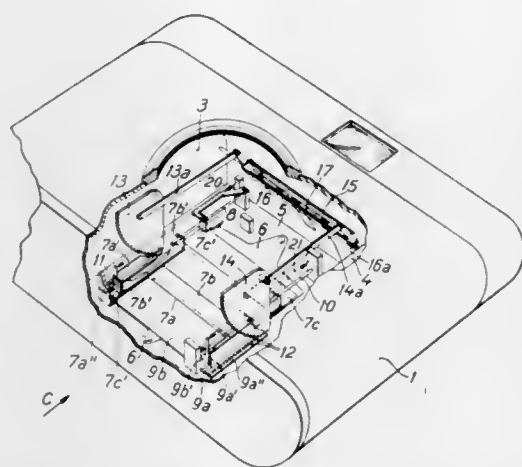
Filed May 2, 1969, Ser. No. 821,329

Claims priority, application Germany, May 9, 1968, P 17 72 399.8

Int. Cl. G03b 9/36

U.S. Cl. 95—55

8 Claims



The leading and the lagging shutter blade of a focal-plane shutter are both provided with a racklike row of teeth at the outer edges of each blade and extending in parallel to the direction of shutter-blade movement. The blades move in the direction of the short side of the image aperture in the image-aperture plate, and toothed segments are arranged in the camera between the cone of light, travelling from the camera lens to the film through the image aperture and the adjacent partition walls of the camera housing; the segments being permanently in mesh with the racks of the blades and being used either for driving the shutter blades after shutter release and for returning them to their starting position or only for the latter purpose.

3,628,435

**FILM MAGAZINE LOCATING MEANS**

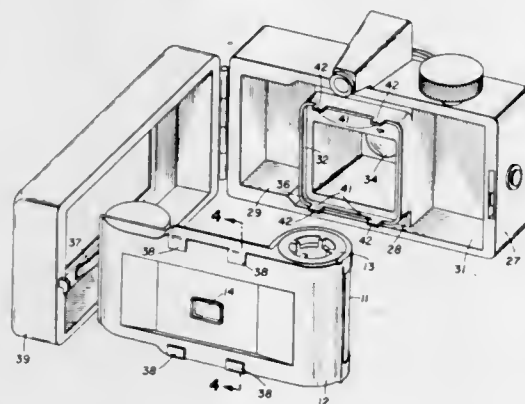
Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 667,894, Sept. 15, 1967, now Patent No. 3,490,350, dated Jan. 20, 1970. This application Nov. 6, 1969, Ser. No. 871,620

Int. Cl. G03b 17/26, 17/30

U.S. Cl. 95—31 CA

7 Claims



A film magazine includes a front-casing member provided with an exposure aperture and a rear-casing member defining

a film-support surface adapted to support a film exposure area in the focal plane of the lens system of a corresponding camera. The magazine is characterized by forwardly facing support surface means defined in predetermined relation to the film-support surface by the rear-casing member of the magazine and adapted to engage corresponding rearwardly facing support-surface means located on the camera in predetermined relation to the lens system thereof.

3,628,436

**SHOCK-PREVENTING DEVICE FOR A MIRROR-MOVING MECHANISM OF A SINGLE LENS REFLEX CAMERA**

Akihiko Sato, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

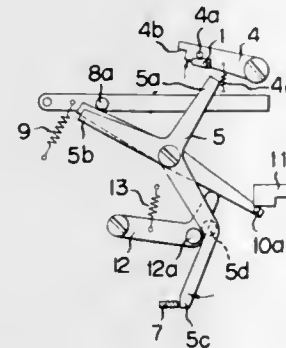
Filed May 14, 1969, Ser. No. 824,486

Claims priority, application Japan, May 17, 1968, 43/40597

Int. Cl. G03b 19/12

U.S. Cl. 95—42

4 Claims



A resilient member is interposed between the mirror of a single lens reflex camera and the shutter actuated quick-return mechanism for the mirror when the quick-return mechanism is manually overridden to detain the mirror in the exposure position. The resilient member prevents the quick-return mechanism for striking the mirror when the shutter is released.

3,628,437

**PHOTOGRAPHIC CAMERA**

Paul Fahlenberg, Baierbrunn, Germany, assignor to Computur-Werk Gesellschaft mit beschränkter Haftung & Co., Munich, Germany

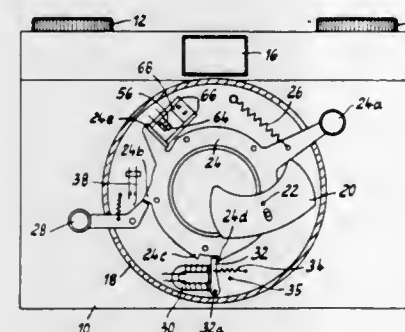
Filed Apr. 15, 1969, Ser. No. 816,307

Claims priority, application Germany, Apr. 18, 1968, P 17 72 237.1

Int. Cl. G03b 9/58

U.S. Cl. 95—53 E

2 Claims



A photographic camera in which the exposure time or shutter speed is controlled by an electronic time control arrangement set into operation by an electronic switch operated by an electrical impulse. The initiating impulse is

preferably derived from a gate, which may take various forms. In one disclosed form, the impulse is produced by a magnetic gate; in another, by a photoelectric gate; and in a third form, by a capacitive gate.

3,628,438

**SWINGING SECTOR CAMERA SHUTTER**

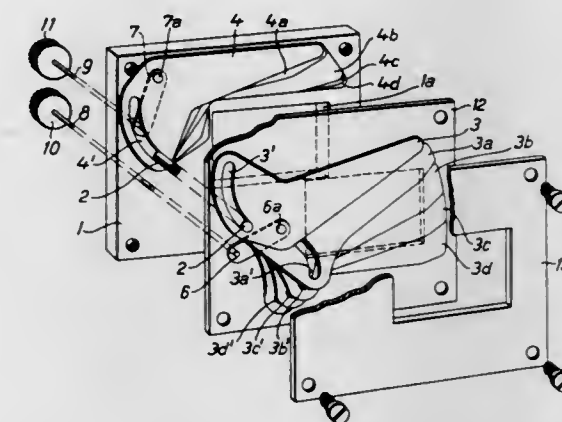
Peter Loseries, Diez, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Continuation-in-part of application Ser. No. 782,173, Dec. 9, 1968, now abandoned. This application Jan. 2, 1970, Ser. No. 212

Int. Cl. G03b 9/10

U.S. Cl. 95—55

3 Claims



A swinging-sector camera shutter comprising a plurality of sectors. Each sector comprises a plurality of blades including a primary blade and a plurality of covering blades. The primary blade of each sector executes a combined rotary-sliding movement while the covering blades execute a rotary movement about a common pivot point.

3,628,439

**PHOTOGRAPHIC CAMERA**

Motoyoshi Furusawa, Ohmiya, Japan, assignor to Fuji Shashin Kōki Kabushiki Kaisha, Saitama-ken, Japan

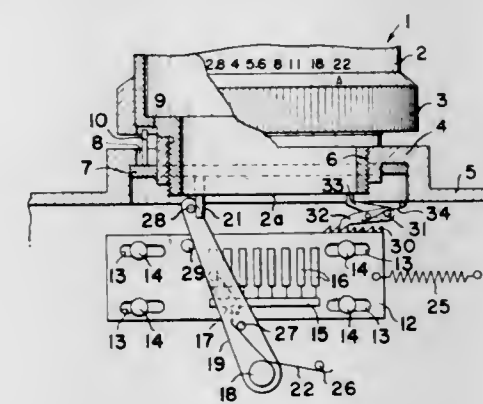
Filed Mar. 16, 1970, Ser. No. 19,840

Claims priority, application Japan, Nov. 11, 1969, 44/106962

Int. Cl. G03b 7/20, 17/12

U.S. Cl. 95—64 R

1 Claim



A photographic camera so constructed that a lens assembly having a lens tube is exchangeably screwed into the front face of a camera body. The lens assembly is provided with a rotatable diaphragm ring for manually adjusting the exposure aperture of the lens, and means for detecting the rotational position of the diaphragm ring and means for compensating an error in the mounting position of the lens assembly relative to the camera body are provided in the camera body in combination.



3,628,440

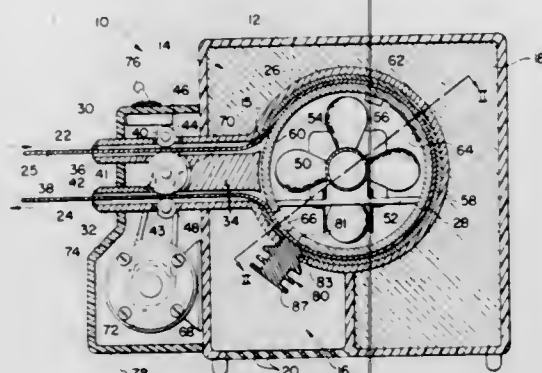
**APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL WITH RADIATION**

George K. Czarnikow, and William S. Owen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,199  
Int. Cl. G03d 13/00

U.S. Cl. 95-89 R

12 Claims



Apparatus for receiving photographic materials exposed to radiation images and for processing resultant latent images. More specifically, one illustrative embodiment comprises a feed mechanism including a drive roller and first and second idler rollers for respectively inserting and withdrawing the photographically sensitized paper, a passageway for guiding the sensitized paper from and to the drive roller, and a single source of radiation. The single source of radiation serves the dual purpose of heating the sensitized paper to thereby retard the development of nonexposed portions of the sensitized material and, after heating, for developing the latent image by photolysis.

3,628,441

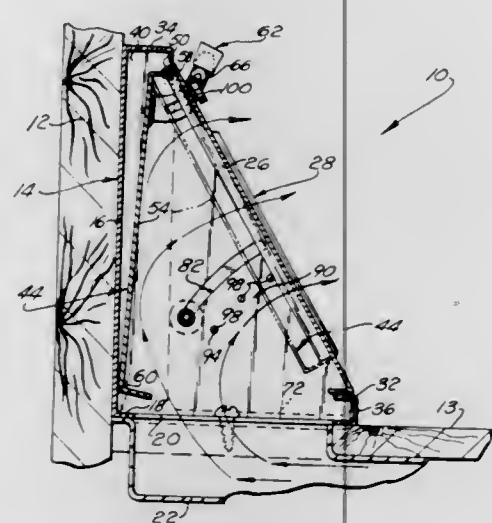
**REGISTER ASSEMBLY WITH A MOVABLE FRONT PANEL**

Wallace F. Ardussi, and Herbert F. Curtis, both of Lakewood, Ohio, assignors to The Auer Register Company, Cleveland, Ohio

Filed Dec. 10, 1969, Ser. No. 883,837  
Int. Cl. F24f 13/00

U.S. Cl. 98-40 C

3 Claims



An improved register assembly includes a louvered front panel which is movable between a closed position extending across an opening through which air flows and an open position extending upwardly to provide an unrestricted opening in the top portion of the register assembly. In the closed position the louvered front panel is adapted to disperse or diffuse a flow of warm air. A damper is advantageously mounted on

the front panel to control this flow of warm air. When the front panel is in the open position, the register assembly is adapted to direct a relatively large flow of cool air upwardly.

3,628,442

**LIGHT-INHIBITING VENTILATING DEVICE**

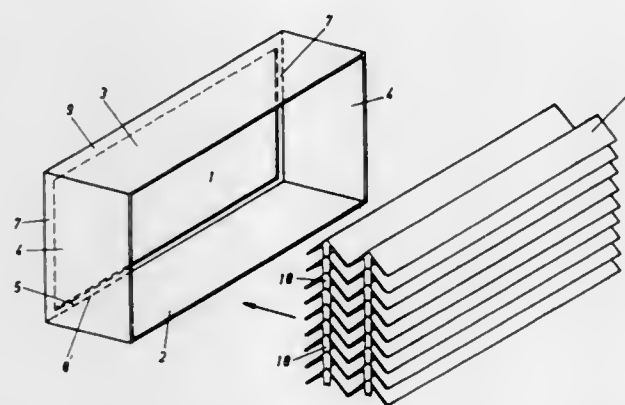
Hendrik Johannes Antonius Nijhuis, Aalst, Netherlands, assignor to Tiger Plastics N.V. Industrieterrein, Geldrop, Netherlands

Filed Oct. 3, 1969, Ser. No. 864,301  
Claims priority, application Netherlands, Sept. 12, 1969, 6913893

Int. Cl. F24f 13/08

U.S. Cl. 98-121

11 Claims



A light-inhibiting device includes a plurality of similar elongated laminations having parallel margins and a parallel peak offset from the margins to allow passage of air between laminations but to exclude light, with extensions extending between laminations to removably space the laminations within a rectangular housing.

3,628,443

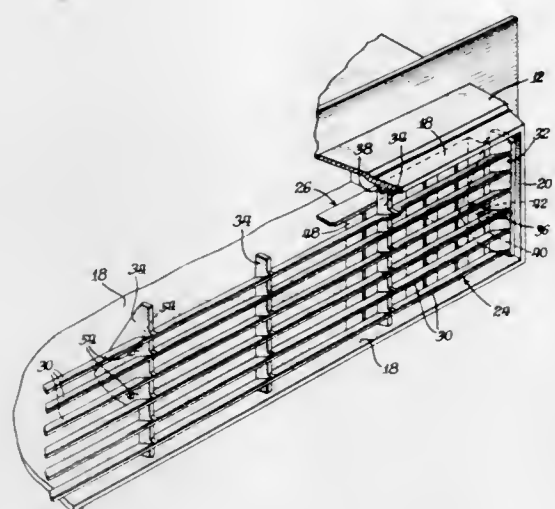
**ADJUSTABLE AIR-DIRECTION MEANS FOR A CONDITIONER**

John Henning, Albion, Mich., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Dec. 9, 1969, Ser. No. 883,568  
Int. Cl. F24f 13/08

U.S. Cl. 98-121

6 Claims



Air-direction device for adjustably redirecting air from an air conditioner, including two unitary louvers each having pitched air-directing vanes, means mounting one of the louvers on the conditioner to pivot about an axis parallel generally to its vanes for adjustably redirecting the air in planes parallel to the pivot axis, and means releasably mounting the second louver on the first louver in either of two positions where the vanes cross and in series with the air flow so

3,628,446

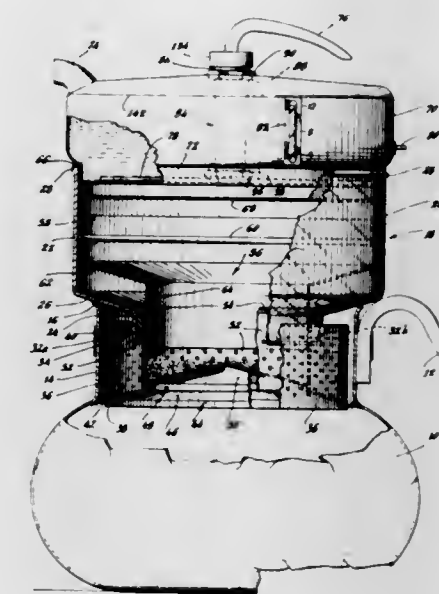
**COMBINATION COFFEE MAKER AND TEAKETTLE**

Stephen Joseph Raiteri, 617 Webbs Hill Road, Stamford, Conn.

Filed May 20, 1969, Ser. No. 826,227  
Int. Cl. A47j 31/10

U.S. Cl. 99-305

12 Claims



There is disclosed a coffee maker which includes a coffee pot and a filter assembly for retaining ground coffee. An electrically heated teakettle is positioned atop the filter assembly and includes a valve which may be actuated to release a controlled amount of hot water into the filter assembly. This combination forms a drip coffee maker, the brewed coffee being retained in the pot. The teakettle may thereafter be removed and the remaining water used for brewing tea.

3,628,447

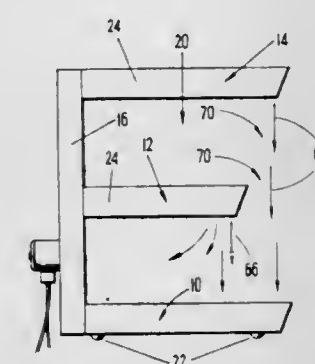
**HOT FOOD DISPLAY UNIT**

George Levenback, Swampscott, Mass., assignor to Joseph M. Linsey Corp., Somerville, Mass.

Filed Jan. 26, 1970, Ser. No. 5,517  
Int. Cl. A47j 39/02

U.S. Cl. 99-341

11 Claims



A hot food display and vending unit for popcorn or the like including a plurality of vertically spaced trays mounted to a vertical support. The upper surface of each tray supports the food package. The underside of each tray includes radiant heating means directed downwardly toward the food supported by a tray immediately below to heat the food supported thereon. The unit includes a device which recirculates air through a passage in the underside of each tray and then directs the air downwardly above the periphery of each tray to generate a thermal curtain about the space where the food is displayed.

3,628,444

**MACHINE FOR THE PRODUCTION OF AERATED BEVERAGES FROM PREFABRICATED CARTRIDGES CONTAINING FLAVORING SUBSTANCES**

Lamberto Mazza, Pordenone, Italy, assignor to Kantor International S.A., Luxembourg, Luxembourg

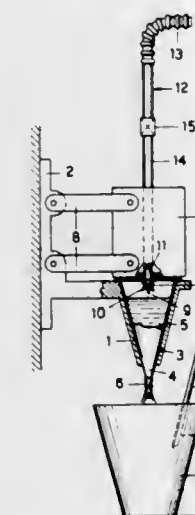
Filed Dec. 3, 1969, Ser. No. 881,763

Claims priority, application Italy, Dec. 18, 1968, 25,275 A/68

Int. Cl. A23i 1/00

U.S. Cl. 99-275

17 Claims



A machine for the production of aerated beverages, employing the method of dissolving a flavoring (and/or sweetening) substance sealed in a cartridge with an aqueous liquid in which the aerated liquid medium, usually carbonated water, is first fed to a vessel underlying the cartridge, after which the cartridge is pierced and the substances contained therein fall into the vessel which already holds the aerated or carbonated liquid medium. The machine can also be used in the conventional manner for the preparation of "flat" beverages by cutting off the aerated liquid-medium feed.

3,628,445

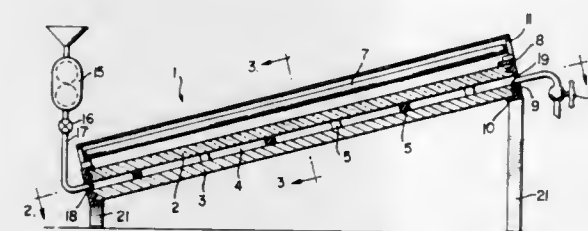
**IRRADIATION DEVICE**

Georges R. Weber, Geneva, Switzerland, assignor to Research Development Techniques, Inc., Staten Island, N.Y., a part interest

Filed June 23, 1969, Ser. No. 835,376  
Int. Cl. C12h 1/06

U.S. Cl. 99-277.1

7 Claims



A device for irradiating alcoholic beverages and including a pair of parallel plates forming a compartment therebetween with means for dividing the compartment into a number of inner communicating chambers so that beverage passing from one end of the compartment to the other must follow a tortuous path through the chambers. An actinic light source is positioned adjacent one of the plates of the device and means are provided for pumping alcoholic beverages through the device in order to accelerate the aging process of such beverages.



3,628,448

## APPARATUS FOR TREATING ARTICLES

Jort Boer, Oostzaan, Netherlands, assignor to Stork Amsterdam N.V., Amsterdam, Netherlands

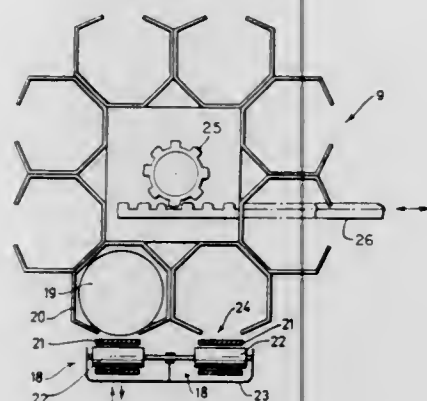
Filed Oct. 10, 1969, Ser. No. 865,359

Claims priority, application Netherlands, Oct. 10, 1968, 6814480

Int. Cl. A23l 3/04; B65g 47/34

U.S. Cl. 99—362

4 Claims



An apparatus for the thermal treatment of commodities packed in containers, traveling in carriers which are rotatably supported in a conveyor. This conveyor passes through a treatment space and the containers are loaded into and discharged from said carriers. Each carrier comprises a number of compartments or cases with a C-shaped cross section, actuating members being provided for simultaneously loading or discharging more than one case from a carrier.

3,628,449

## ADJUSTABLE DRAW DIE

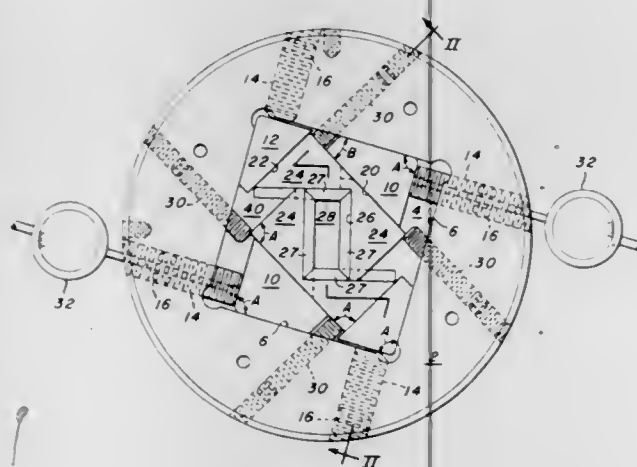
William H. Phillips, Jr., North Bergen, N.J., assignor to Carmet Company, Pittsburgh, Pa.

Filed Oct. 1, 1969, Ser. No. 862,675

Int. Cl. B21c 3/00

U.S. Cl. 72—468

6 Claims



An adjustable die for drawing polygonal tube, rod, bar, or the like having a casing with a polygonal recess therein, a plurality of adjusting wedges arranged one to each side of the polygonal recess, and a plurality of die blocks having a principal angle equal to the principal angle of the polygon and a forming surface disposed substantially perpendicularly to the bisection of the principal angle of the draw block. Each block is disposed in the recess to be primarily supported by an adjusting wedge, and the wedge and block assembly is disposed against a backing plate to be axially supported against the forces of drawing.

3,628,450

## DIE ACCELERATOR

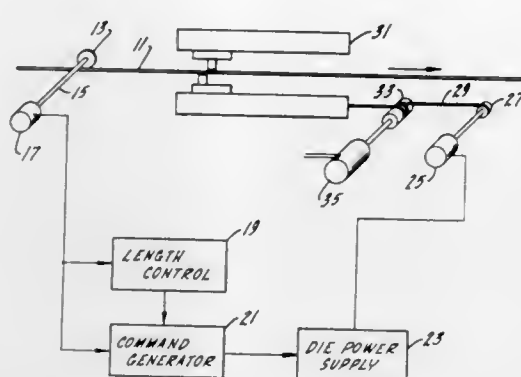
Robert W. Schmidt, 5744 West 77th Hill, Oak Lawn, Ill.

Filed Sept. 25, 1969, Ser. No. 860,961

Int. Cl. B23d 25/16

U.S. Cl. 83—38

6 Claims



A method of and an apparatus for controlling the movement of a cutting die to bring it to the velocity of moving material to cut the material into pieces of predetermined lengths. The position of the die is controlled from the start of its acceleration until the material is cut in accordance with the velocity of the moving material.

3,628,451

## APPARATUS FOR AND METHOD OF SHAPING WORKPIECES

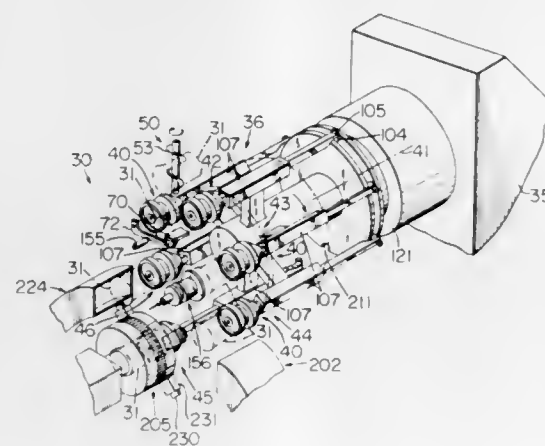
Hearst McClellan, Henrico County, and Daniel S. Cvacho, Chesterfield County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed May 23, 1969, Ser. No. 827,310

Int. Cl. B44b 5/00; B41f 17/20

U.S. Cl. 101—4

34 Claims



An apparatus for and method of serially embossing workpieces, such as cans, wherein each can is precisely fed to an infeed station where it is grasped while maintaining its sidewall completely accessible and then sequentially indexed to a plurality of stations including an embossing station for precision embossing of its sidewall.

3,628,452

## INVOICE AND TAPE PRINTING MACHINE

Charles A. Shaw, 7 Coronet Drive, Columbia, S.C.

Continuation-in-part of application Ser. No. 741,101, June 28, 1968, now abandoned. This application Sept. 23, 1970, Ser. No. 74,777

Int. Cl. B41f 19/00; B41f 3/22

U.S. Cl. 101—90

22 Claims

A multiple sales transaction recording method and device in which a visually readable invoice for the individual

customer is prepared simultaneously with the preparation of a cumulative machine-readable record retained in the device for use by the salesman. In a first embodiment, the products involved are identified by one of a number number of strips inserted in grooves on the upper surface of a housing and the quantity of that product is indicated by individually adjustable printing heads of a register associated with each groove. In a second embodiment, the product strips are positioned on

receive print thereupon from the character elements thereof by engagement therewith.

3,628,454

## OFFSET MISTER AIR DIE

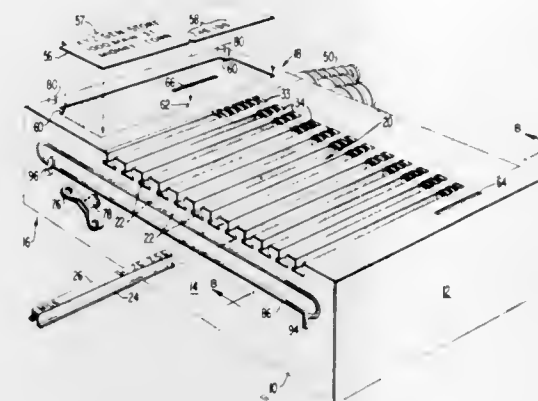
David H. Eberly, Jr., Fairfield, Conn., assignor to United States Banknote Corporation, New York, N.Y.

Filed July 16, 1969, Ser. No. 842,252

Int. Cl. B41f 25/00

U.S. Cl. 101—147

16 Claims



the upper surface of the housing and the quantity of the product indicated by individually adjustable printing heads of a register selectively associated with each product. In both embodiments a credit card may be placed on the upper surface of the housing and a tape advanced from feed and takeup reels mounted for rotation within the housing in printing relation to the register(s), a product identifying code on the strips and a portion of the credit card. An invoice placed in overlying relationship to the strips and the tape is printed in a visually readable font simultaneously with the printing of the machine readable tape.

3,628,453

## WORDPRINTER EDUCATIONAL AID

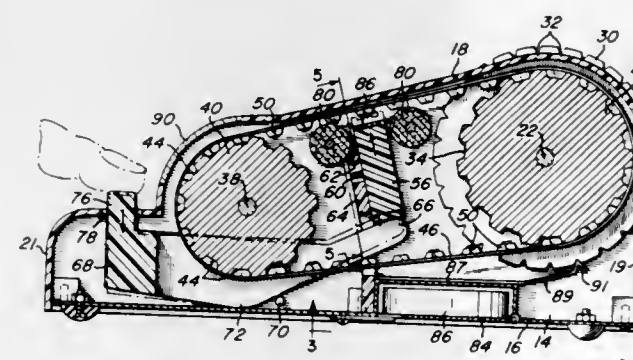
Robert C. Jackson, 2450 Bending Willow Drive; James C. Mueller, 650 Princewood Ave., both of Dayton, Ohio, and Edgar E. Hardy, 3324 Sunnycrest Lane, Kettering, Ohio

Filed Dec. 22, 1969, Ser. No. 886,825

Int. Cl. B41j 1/20

U.S. Cl. 101—111

5 Claims



Printer apparatus which is particularly adapted for use as an educational device for teaching children words or the alphabet. A plurality of annular belts or the like are retained in side-by-side relationship, and each belt is individually rotatably movable. Each belt carries a series of character elements on one of the surfaces thereof and a similar series of character elements on an opposite surface thereof. The series of character elements on the opposed surfaces of the belt are arranged so that when a given character element on one surface of the belt is positioned at a print position, a similar character element on the opposed surface of the belt is positioned at a view position. Print receiver material, such as paper or the like, has a portion disposed adjacent the belts to

A method and apparatus for transferring moisture to a printing cylinder for use in lithographic and preferably offset lithographic printing. The difficulty of controlling the amount and distribution of water applied to the cylinder is substantially resolved as described below by first impinging on the rotating cylinder chilled, dry air to cool it. The chilled air is then removed and warm, substantially moisture-saturated air is directed to the just-cooled regions of the cylinder to cause water droplets to form and be deposited continuously on the cylinder. By establishing control of the conditions affecting droplet formation, such as the temperature of both the chilled and warm air, the quantities and velocity of both and the relative humidity of the warm air, the droplet size and density can be easily controlled to control the water-ink balance and hence the quality of printed matter produced from the cylinder.

3,628,455

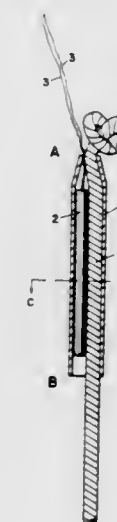
SLEEVE CONNECTOR AND DETONATING ASSEMBLY  
Richard G. Nelson, Tamaqua, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Aug. 5, 1969, Ser. No. 847,636

Int. Cl. F42b 3/10

U.S. Cl. 102—28

6 Claims



A sleeve connector for holding an electric blasting gap securely to a detonating cord, the assembly so formed, and



the method of forming it. The sleeve connector is a cylinder having a small opening at one end. The blasting cap is passed through the sleeve connector via the small opening, the detonating cord is passed through and knotted at the small opening, and the blasting cap is retracted into the sleeve connector.

3,628,456

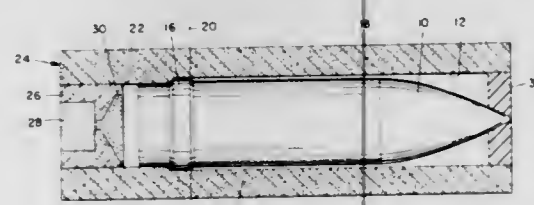
# PROPELLANT CHARGE FOR TELESOPED CASELESS AMMUNITION HAVING A DETERRENT-COATED AFT-END

Joseph I. Harrell, Sussex, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 29, 1969, Ser. No. 861,885  
Int. Cl. F42b 5/18, 9/16

U.S. Cl. 102-38

11 Claims



An improved propellant charge for telescoped caseless ammunition is provided. A telescoped caseless round is a caseless round in which the projectile is fully contained within an axial bore in the propellant charge. The propellant charge has a burning rate deterrent applied to its aft-end which results in improved ballistic performance for the round.

3,628,457

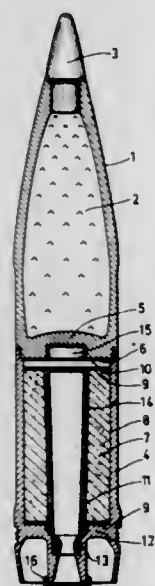
# ROCKET-ASSISTED PROJECTILE OR GUN-BOOSTED ROCKET WITH SUPPORTED PROPELLANT GRAIN

Ingemar Arnold Magnusson, 4, Ringvagen, Grodinge; Per Tage Marklund, 60, Olshammatsgatan, Bandhagen; Sven Malte Broddner, 65, Tideliugatan, Stockholm; Lars Ax, 13, Stenvagen, Tumba, and Robert Bert Andersson, 49, Gallerstagrand, Bandhagen, all of Sweden

Filed Dec. 24, 1968, Ser. No. 786,551  
Int. Cl. F42b 13/28

U.S. Cl. 102-49.3

6 Claims



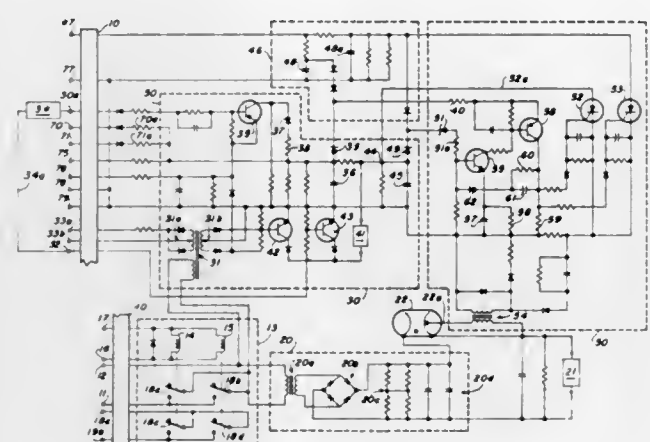
A rocket-assisted projectile having a central supporting tube surrounded by an annular propellant charge, with an annular space between the tube and propellant decreasing in width towards the rear of the projectile. The axial length of the propellant charge is less than that of the chamber containing the propellant to permit elastic deformation of the propellant in the axial direction.

## 3,628,458 MISSILE DESTRUCT INITIATION ASSEMBLY

Emmett J. Sands, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1969, Ser. No. 879,070  
Int. Cl. F42c 11/00, 15/40, 13/00  
U.S. Cl. 102-70.2 R

9 Claims



A missile destruct initiation assembly is provided that interconnects a detonator to a high-current source and contains a command destruct circuit for passing a command destruct signal to initiate detonation, and an autodestruct circuit responsive to an autodestruct signal, representative of internal missile malfunction to initiate the detonator. Thus, the assembly for initiating missile destruction performs the dual function of being responsive to a command destruct source or an autodestruct source.

3,628,459

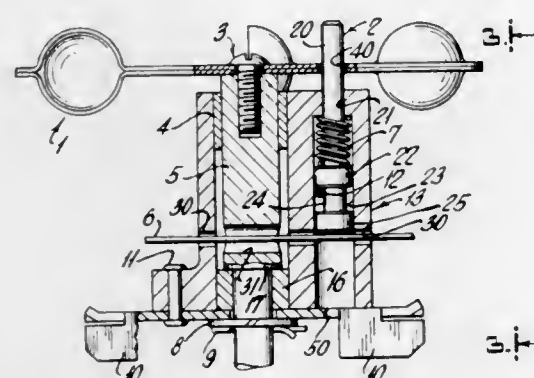
# LOCKING DEVICE FOR AIR-DRIVEN BOMB FUSE

Johnie N. Lesikar, Macon, Ga., assignor to Maxson Electronics Corporation, Long Island, N.Y.

Filed May 21, 1969, Ser. No. 826,535  
Int. Cl. F42c 15/00

U.S. Cl. 102-81.2

5 Claims



A locking device for an air-driven assembly for arming a bomb fuse used on multiple bomb racks of supersonic aircraft, whereby the drive assembly is vane driven and incorporates a locking device which prevents all rotational and axial forces created in the driving vane, as a result of turbulent airflow, from being transmitted to the arming wire.

3,628,460

# COMBINED TIE AND RAIL GRIPPER

Helmuth Rolf Erich Von Beckmann, 189 Castle Road, Columbia, S.C.

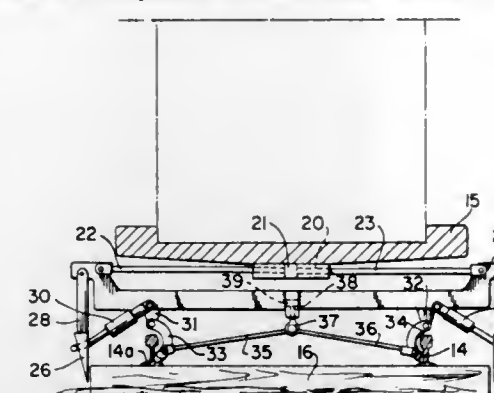
Filed Sept. 15, 1969, Ser. No. 857,901  
Int. Cl. E01b 33/02

U.S. Cl. 104-8

1 Claim

The invention provides method and apparatus wherein rail-

road track comprised of two rails secured to a tie is moved



by applying lateral force simultaneously to both one rail and the tie.

## 3,628,461 MACHINE FOR WORKING ON RAIL FASTENING ELEMENTS

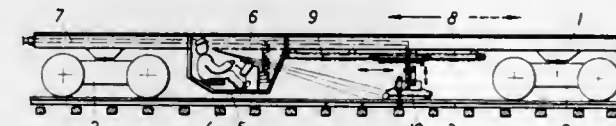
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed Oct. 13, 1969, Ser. No. 865,886  
Claims priority, application Austria, Oct. 26, 1968, A 10453/68

Int. Cl. E01b 29/26

U.S. Cl. 104-17 R

11 Claims



The toolholder of a machine for working on track spikes or bolts is floatingly mounted on its carriage so that the tool can resiliently move into a perfectly centered position in respect of the spike or bolt on which it works.

3,628,462

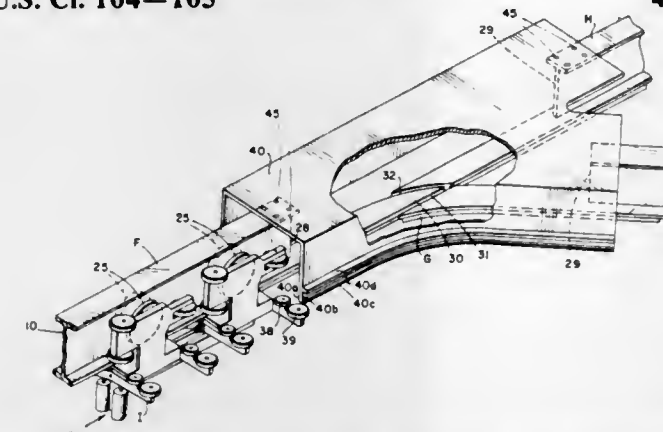
# VEHICLE SWITCHING APPARATUS

William J. Holt, Garland, Tex., assignor to Republic National Bank of Dallas; Irving Trust Company and Union Bank

Filed July 16, 1969, Ser. No. 842,138  
Int. Cl. E01b 25/26; B61b 3/02

U.S. Cl. 104-105

4 Claims



Mechanical route switching means comprise selectively operable trolley members carried by a suspended vehicle and uninterrupted guides supported by a monorail track to be engaged by the trolley members for selecting a designated route from alternate available routes along the track.

3,628,463

# SPEED-CONTROL DEVICE

Gerald M. Kwiatkowski, Dolton, and Paul E. Redelman, South Holland, both of Ill., assignors to Interlake Steel Corporation

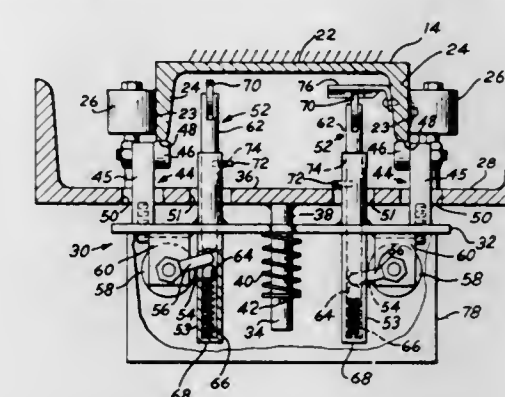
Filed Feb. 20, 1970, Ser. No. 13,039  
Int. Cl. B611 3/14

U.S. Cl. 104-152

10 Claims

A speed-control device for controlling the speed of a

moveable assembly at a given point in a predetermined path of travel along a guidance rail includes an inclined cam adjacent the point. At least a pair of cam followers are mounted on a support member, which is mounted on and moveable relative to the moveable assembly, so as to engage the guidance rail to establish a first reference plane and the inclined cam which establishes a second reference plane. Both followers are continuously spaced a given distance from each other and are simultaneously moveable as the distance



between the assembly and the guidance rail varies to maintain said given distance. When one of the followers contacts the inclined cam, it is moved so as to vary the distance between the respective followers and variably actuate a rheostat to reduce the speed of the assembly.

3,628,464

# ELASTOMERIC RAILWAY CAR SIDE BEARING

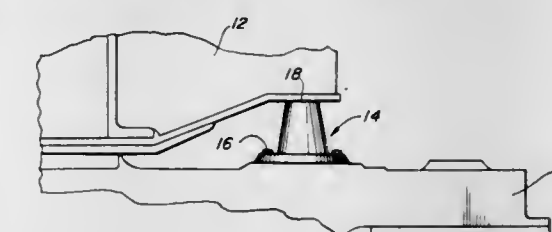
John H. Van Moss, Jr., Highland Park, Ill., assignor to Vanguard Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 767,450, Oct. 14, 1968, now Patent No. 3,556,503, dated Jan. 19, 1971. This application June 5, 1970, Ser. No. 43,835

Int. Cl. B61f 5/14; F16c 17/04, 17/08

U.S. Cl. 105-199 R

5 Claims



A preloadable side bearing for railroad cars having a formed body portion of hard elastomeric material incorporated in a base which is adapted for attachment to a supporting surface, such as the truck bolster of a railroad car, with provision for an initial reduction in the overall height of the bearing in response to preloading forces and to then absorb substantial loading forces with resulting compressive depression of the body portion and wherein the body portion and base are formed of a material such as polyurethane. The mass is provided with an axial bore for the reception of a rod.

3,628,465

# STABILIZING HIGH SPEED RAILWAY TRUCKS

Richard N. Dobson, Burlington, Ontario; Kenneth E. Boyce, Hamilton, Ontario; John A. Gaiser, Stoney Creek, Ontario, and Conrad D. Gris, Hamilton, Ontario, all of Canada, assignors to Dominion Foundries and Steel Limited, Hamilton, Ontario, Canada

Filed Jan. 13, 1969, Ser. No. 790,757  
Int. Cl. B61f 3/08, 5/20, 5/24

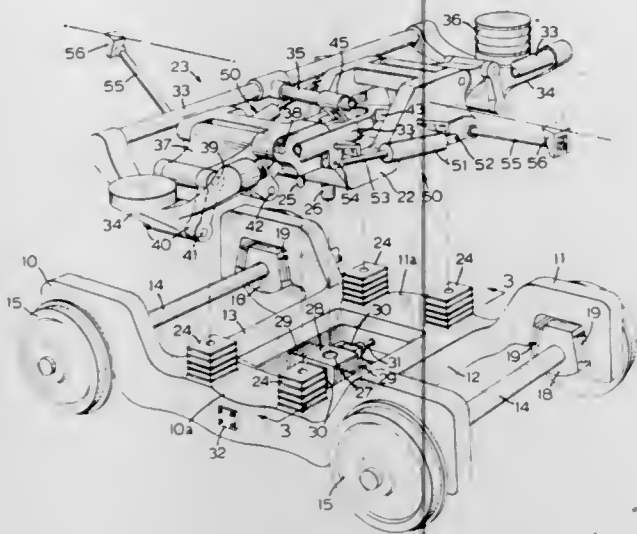
U.S. Cl. 105-201

5 Claims

In a railway truck a pivot between the truck frame and the cooperating bolster is permitted to have lateral displacement to improve the riding qualities of the truck. The pivot is maintained automatically centered by motor means which



oppose centrifugal forces that would displace the pivot, e.g., while the truck traverses a curve, thereby ensuring that lateral displacement is still possible under such conditions. A special design of such a truck is provided with a bolster comprising two parts, designated upper and lower parts, the



lower bolster part being pivotally mounted on the truck transom, while the upper bolster part mounts the vehicle body for vertical springing movement; the two bolster parts are connected together by an articulated linkage for lateral arcuate movement about a longitudinal tilting axis under the action of motor means.

### 3,628,466 RAILROAD BOXCAR AND MOVABLE PLATFORM STOPS THEREFOR

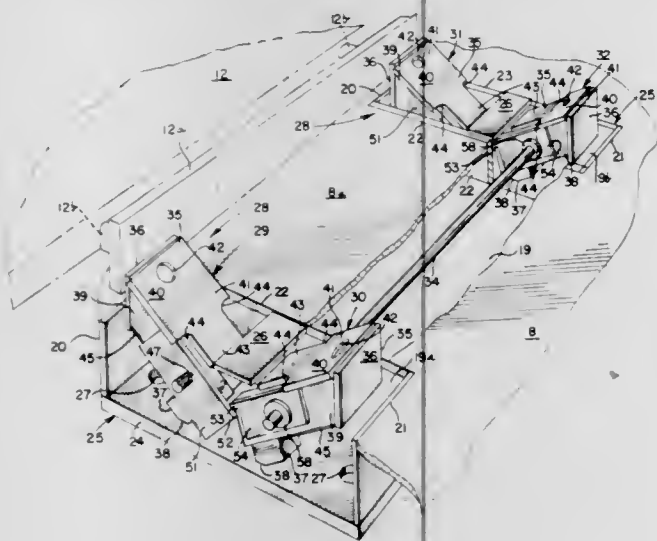
Robert W. Lyons, Michigan City, Ind.; Robert R. Parmenter, Chicago, Ill., and James B. Semanick, Hammond, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed July 15, 1969, Ser. No. 848,391

Int. Cl. B60p 7/08

U.S. Cl. 105—366 R

15 Claims



A railroad boxcar having fixed sidewalls at each end of the car and an open central portion enclosed by movable sidewalls and rollingly mounted platforms movable from each end to the central openable portion of the car, stop means retaining each of two platforms in its respective end position or selectively holding each of the platforms in the open central portion, the stop means, including three evenly spaced stop sets in the central portion for holding each of the platforms between two of each stop sets, each stop set including a pair of laterally spaced stop structures for limiting movement of a platform in either direction, each stop structure in-

cluding a pair of longitudinally spaced pivotally mounted stops recessed within the car floor and having stop plate opposed to the stop platform plate of the other stop, and clutch means on each of the stops for simultaneously moving each stop plate from an elevated platform obstructing position to a lowered unobstructing position of the platform and shaft means interconnecting the stop of one stop structure with the stop of the other stop structure for conjunctive pivoting of each stop wherein each of the interconnected stops have their stop platform plates facing in the same direction in obstructing and unobstructing platform positions.

### 3,628,467 PALLET RESTRAINING SYSTEM

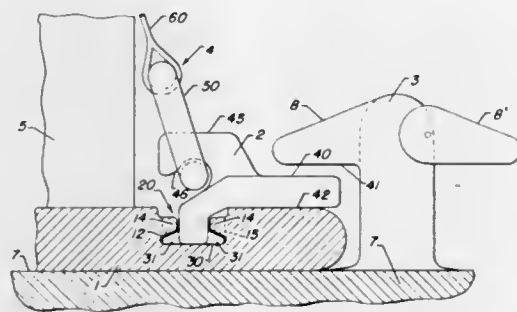
David A. Stout, New Milford, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 2, 1970, Ser. No. 229

Int. Cl. B60p 7/10; B61d 45/00

U.S. Cl. 105—369 A

4 Claims



A cargo restraining system for holding down cargo to a pallet and then to a vehicle floor utilizing novel tiedown adapters that have special load transferring capabilities. The system utilizes a pallet which has slotted "holddown" track sections adjacent the edges. Nets or other forms of cargo holding means are attached to the tiedown adapters which in turn are locked into the slotted track section adjacent the pallet locks. Each adapter has a load transferring portion extending between the pallet lock and the top of the pallet. The load transferring capability of the system is manifested when the vehicle is subjected to deceleration forces. At certain deceleration loads the pallet will lift and the load transferring portions of the tiedown adapters will abut the pallet locks, thus transferring some of the load away from the stud fittings and slotted track through the load transferring portions of the tiedown adapters, through the edge portions of the pallet, and through the pallet locks to the vehicle floor.

### 3,628,468 PLASTIC PALLET WITH REINFORCING MEMBERS

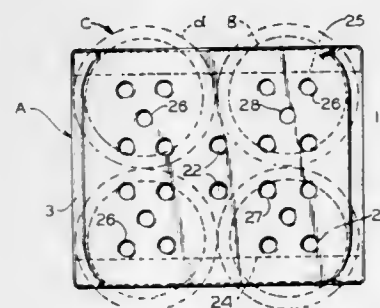
John A. Angelbeck, Jr., Chesterfield, Mo., assignor to Pack-Rite Packaging & Crating Co., Inc.

Continuation-in-part of application Ser. No. 819,130, Apr. 25, 1969, now Patent No. 3,563,184. This application May 6, 1970, Ser. No. 34,947

Int. Cl. B65d 19/18

U.S. Cl. 108—53

6 Claims



A pallet used for the storage and transporting of containers such as beer kegs and the like. The pallet is formed as a uni-

tary plastic member in a rotational molding operation and includes a pair of spaced outer skins which are internally connected by a plurality of properly spaced webs for internal strength. The skins also have a plurality of strategically located apertures which extend through each of the skins and are formed by webs which extend between the skins. A pair of reinforcing members formed of wood, metal or the like extend longitudinally through the pallet and engage the interiorly presented surfaces of a portion of the skins. The pallet has a plurality of downwardly extending shoulders for engagement with containers on its underface and is also provided with supporting areas on its upwardly presented surface for removably supporting a plurality of like containers.

### 3,628,469 REINFORCED PALLET

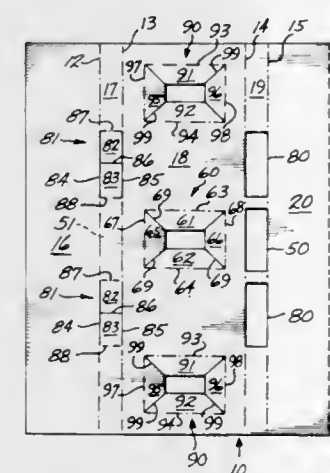
Nicholas R. Neitzke, Lakewood, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Jan. 4, 1971, Ser. No. 103,542

Int. Cl. B65d 19/18

U.S. Cl. 108—56

5 Claims



A reinforced pallet, formed of a pair of rectangular tubular members spaced by a channel-shaped member. A rigid foamed resin material capable of holding weight is placed in pockets within the tubular members.

### 3,628,470 PORTABLE LIGHTWEIGHT FOLDABLE SUPPORT PLATFORM

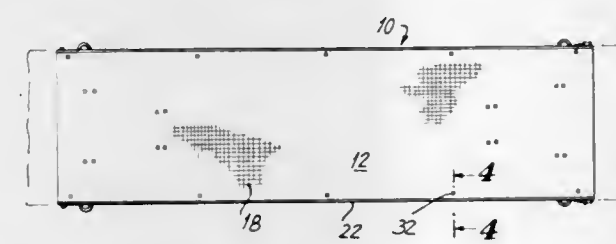
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Port Washington, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,895

Int. Cl. A47b 57/00

U.S. Cl. 108—64

10 Claims



A portable, lightweight and foldable support platform comprising a planar support member and a pair of support leg assemblies secured to the support member at the lateral ends thereof with the support member being fabricated having a core of lightweight, high-strength material, such as a balsa wood composition, and having a plastic layer secured to the underside of said core and a nonskid textured plastic layer secured to the upper surface of the core, the longitudinal sides of the core having aluminum rails secured thereto; the leg assemblies being provided with pivotable hinges to enable the same to be folded flat against the underside of said support member for storage thereof; and the ends of said

longitudinal side edges being provided with mating toggle latches to enable adjacent ones of said support platforms to be securely interconnected to form a support assembly.

### 3,628,471 FOLDING TABLE WITH INTERLOCKING LEGS AND APRON OR SHIELD

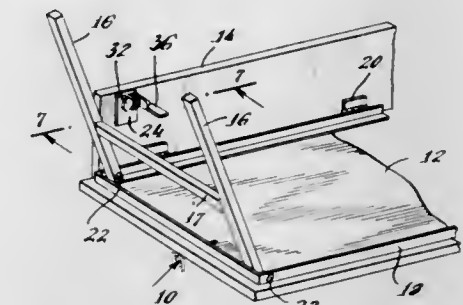
Alan Carleton Burr, East Norwalk, Conn., assignor to Howe Folding Furniture, Incorporated, New York, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,497

Int. Cl. A47b 3/08

U.S. Cl. 108—132

4 Claims



A table or stand has pairs of legs which are mounted along two opposite margins of the top for swinging movement toward and away from each other, and an apron mounted along a third margin of the top and outwardly of the adjacent legs for swinging movement in a direction normal to the swinging movement of the legs, the legs which are adjacent the apron having slots in their inner faces respectively leading to spaces within the legs, and the apron having on its inner surface brackets which each support a rotatable locking member extending laterally of the apron and defining a head which in one angular position can pass through the slot in an opposed leg, and means for controlling the rotational position of the locking member, the legs being moveable outwardly beyond operative position so that on being moved inwardly to operative position the slots in the legs adjacent to the apron will be aligned with the heads of the locking members respectively and will receive the heads if they have been properly positioned, and the apron being moveable outwardly beyond operative position so that when the apron and legs are not interlocked the legs may be swung inwardly past the brackets and locking means carried by the apron, to folded position. The apron may then be folded over and on top of the folded legs.

### 3,628,472 BURNER CONSTRUCTION

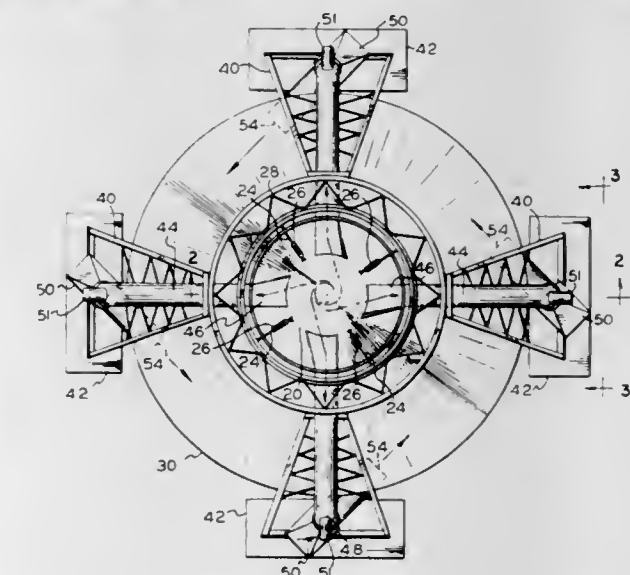
Jerry S. Lausmann, P.O. Box 1608, Medford, Oreg.

Filed Mar. 19, 1970, Ser. No. 21,135

Int. Cl. F23g 5/00

U.S. Cl. 110—7 R

11 Claims

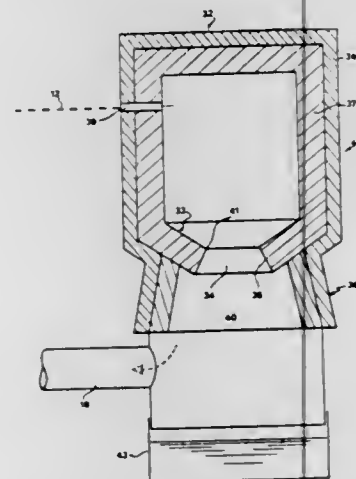


A waste burner has a fire pile enclosed by a shell open at the top. A collector is mounted in the shell independently of



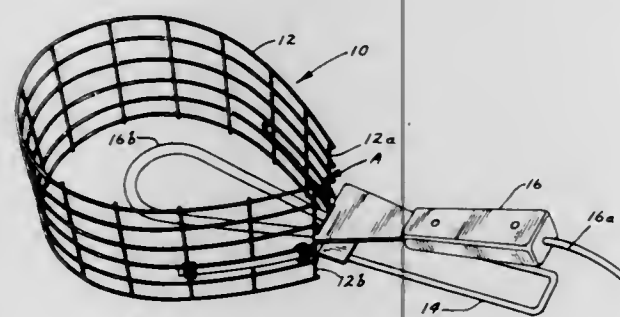
the shell by a skeletal structure which is exterior of the shell and also supports recirculating ducts which draw off gases and unburned particles from the collector. Blowers reintroduce these gases and particles tangentially into the lower portion of the shell. The outlets of the blowers are spaced around the shell and each blower outlet is directed at a point just behind the next adjacent blower.

**3,628,473**  
**SEWAGE MUD SLUDGE DRYING AND INCINERATING INSTALLATION**  
Claude Maille, Sarcelles, France, assignor to Stein Industries, Paris, France  
Filed Apr. 15, 1970, Ser. No. 28,710  
Claims priority, application France, Apr. 16, 1969, 6911743  
Int. Cl. F23g 5/12  
U.S. Cl. 110-7 R 3 Claims



A cyclone furnace for an installation for drying and incinerating mud or sludge such as sewer sludge comprises a vertical cylindrical chamber closed at its upper end and extended downwardly by an internal frustoconical wall. The fuel and air for combustion are introduced, optionally with the material to be incinerated, tangentially into the cylindrical chamber. The waste gases are removed by a duct at the lower end of the combustion chamber. The temperature is sufficiently high to enable the ash to drop from the lower end of the combustion chamber in liquid form.

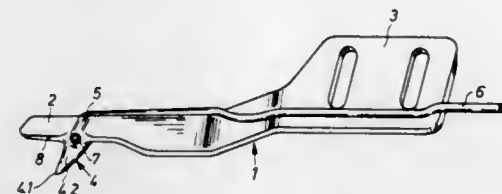
**3,628,474**  
**CHARCOAL STARTING APPARATUS**  
Charles A. Rehwaldt, 913 6th Ave. S., St. Cloud, Minn.  
Filed May 7, 1970, Ser. No. 35,350  
Int. Cl. F23b 3/00  
U.S. Cl. 110-1 F 3 Claims



A charcoal starting apparatus consisting of a basket formed of wire mesh forming upstanding sidewalls, the end portions of which are in spaced-apart relationship so as to form a slot in the upstanding sidewall of the basket and having a handle element mounted across the slot of the basket to form a connection between the end portions of the mesh and provide a support for an electric starting device to be

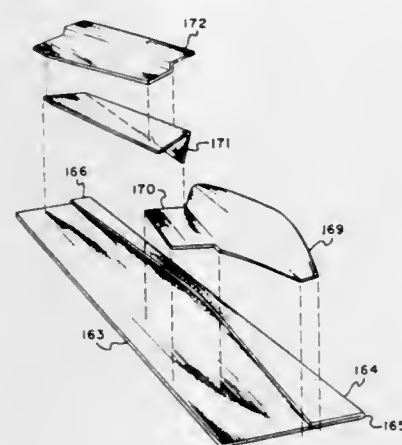
removably placed thereon with the electric element thereof extending through the slot.

**3,628,475**  
**DEVICE FOR SEWING PLUSH FABRICS OR FURS**  
Herbert Erb; Erhard Marionek, and Walter Steinbach, all of Kaiserslautern, Germany, assignors to G.M. Pfaff AG, Kaiserslautern, Pfalz, Germany  
Filed June 9, 1970, Ser. No. 44,794  
Int. Cl. D05b 35/00  
U.S. Cl. 112-149 4 Claims



Device for sewing plush fabrics or furs that are covered at the pile or hair side by means of a spur or tail that tapers in the manner of a wedge in the direction of sewing and divides the pile which is disposed at the broad side of a flat support facing the pile side of the work blank where a duct conducting air under pressure passes through the pile divider spur, the discharge opening of which is disposed on the side of the pile divider spur remote from the pile side of the work blank, so that a current of air acts in the direction of sewing upon the material being sewn.

**3,628,476**  
**FLAT ARTICLE PROCESSING APPARATUS**  
Thomas L. Flanagan, Killingworth, Conn., assignor to Wagner Research Corporation, New York, N.Y.  
Original application May 13, 1968, Ser. No. 728,664, now Patent No. 3,489,113. Divided and this application Dec. 18, 1969, Ser. No. 886,325  
Int. Cl. D05b 35/08  
U.S. Cl. 112-147 4 Claims

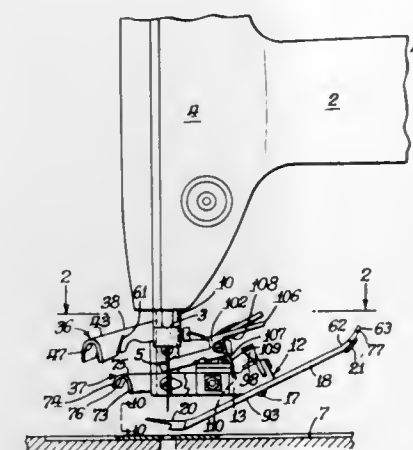


An underfolder device for turning under the edge of a previously folded piece of limp material passing through the device for underfolding the material in readiness for automatically sewing an underfolded hem thereon, such as on bedsheets and similar articles.

**3,628,477**  
**BEAD-FORMING DEVICE FOR SEWING MACHINES**  
Stanley Habas, 3518 W. Le Moyne Ave., Chicago, Ill.  
Filed Feb. 13, 1970, Ser. No. 11,114  
Int. Cl. D05b 35/06  
U.S. Cl. 112-151 10 Claims

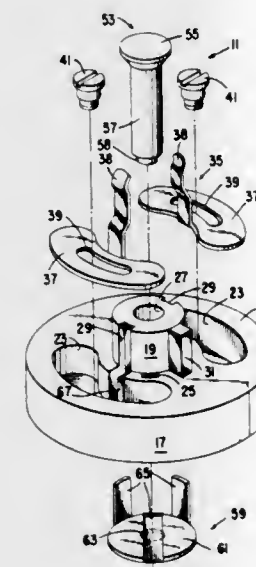
A bead-forming device for a sewing machine comprising an attachment to the foot support of such sewing machine and comprising a material-folding element with a needle guide. A projection extends laterally from the element and

has an undercut guide slot into which one folded edge portion of the bead forming fabric strip is inserted to form an inner flap beneath the projection and an intermediate portion of the strip is passed under the inner flap and folded over the lateral free edge of the extension and forms a top flap which



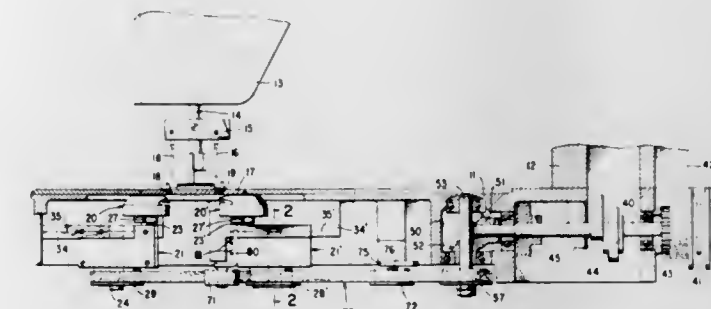
extends over the needle guide. A U-shaped clamp having top and bottom flanges is telescoped over the extension and releasably holds the fabric strip in folded position and continuously folds the strip to form the bead as the strip is advanced during sewing.

**3,628,478**  
**MECHANISM FOR SELECTIVELY RETAINING OR REMOVING AN EXCHANGEABLE PATTERN**  
John C. Seck, Colonia; Howard D. Rogers, Westfield; Thomas G. Graham, Point Pleasant Beach, and James H. Hannen, Jr., Brick Town, all of N.J., assignors to The Singer Company, New York, N.Y.  
Filed Aug. 17, 1970, Ser. No. 64,546  
Int. Cl. D05b 3/02  
U.S. Cl. 112-158 5 Claims



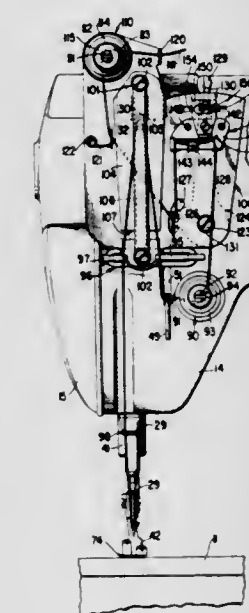
A pattern cam removal device for removing a seated pattern cam upwardly from the interior of a sewing machine to an accessible position. A plunger is slidable axially relatively to the cam shaft and at the lower end of the plunger there is attached a pronged elevator member. When the plunger is raised, the pronged elevator member raises a pattern cam to a position where it is accessible for exchange. A pair of resilient-retaining fingers hold the pattern cam in place on the base portion of the device.

**3,628,479**  
**LOOP TAKER SUPPORT FOR SEWING MACHINES**  
Rudolf Schafer, Karlsruhe, Germany, assignor to The Singer Company, New York, N.Y.  
Filed June 3, 1970, Ser. No. 43,062  
Int. Cl. D05b 1/08  
U.S. Cl. 112-167 2 Claims



A support for mounting a loop taker saddle in the bed of a sewing machine in which the saddle is formed along opposite sides with parallel channels which slidably embrace and span ways which are secured in the machine bed. The loop taker saddle may be clamped in selected position in the sewing machine bed by a securing screw which is arranged to deflect one of the ways.

**3,628,480**  
**LOOSE STITCH FORMING MECHANISM FOR LOCKSTITCH SEWING MACHINES**  
William C. Van Ness, Parsippany, N.J., assignor to The Singer Company, New York, N.Y.  
Filed July 9, 1970, Ser. No. 53,604  
Int. Cl. D05b 57/14  
U.S. Cl. 112-181 11 Claims



A lockstitch sewing machine with needle and bobbin thread metering and controlling mechanisms whereby selected looseness may be provided in the threads of the resulting stitched seams including the presence of precisely controlled amounts of surplus slack thread in the seam.



3,628,481

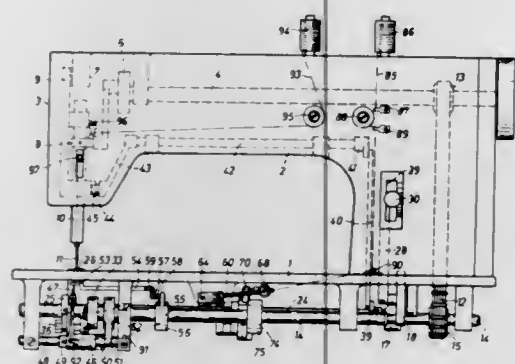
**AUTOMATIC LOOPER THREAD CONTROL  
MECHANISM FOR CHAINSTITCH SEWING MACHINES**  
Helmut Gross, Kaiserslautern/Pfalz, Germany, assignor to G.  
M. Pfaff AG, Kaiserslautern/Pfalz, Germany

Filed May 11, 1970, Ser. No. 36,333  
Claims priority, application Germany, May 13, 1969, P 19 24  
283.2

Int. Cl. D05b 1/06

U.S. Cl. 112-199

8 Claims



In a double-chainstitch sewing machine having a reciprocating needle, a thread-carrying oscillating looper, a work feed dog, a stitch controller and an oscillating looper thread takeup lever, the amount of looper thread withdrawn by the takeup lever during a stitching cycle is automatically varied in direct proportion to the stitching length. For this purpose, the takeup lever is operated via a pair of oscillating drives to impart thereto a basic and constant amplitude oscillating movement in one direction from a zero reference position, corresponding to a minimum stitching length, said basic oscillating movement having superimposed thereon an additional oscillating movement increasing in amplitude as the stitching length is increased. The basic oscillating movement of the takeup lever is derived from the main drive shaft of the machine via an eccentric and the additional oscillating movement of the lever is derived, via drive means including a knuckle joint, from the rockshaft of the machine oscillating at varying amplitudes in accordance with the adjustment of the stitch controller and controlling the feed dog displacement in the direction parallel to the sewing direction.

3,628,482

**LINKAGE DEVICE FOR COUPLING CONTROL BARS ON  
SEWING MACHINES**

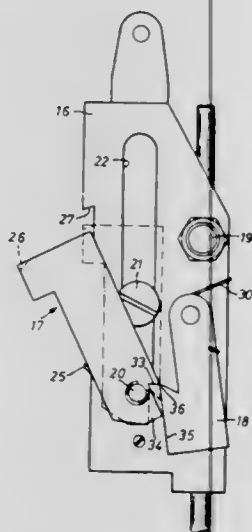
Herbert Wenz, Kaiserslautern, and Fritz Jehle, Alsenborn, both of Germany, assignors to G. M. Pfaff AG, Kaiserslautern/Pfalz, Germany

Filed Dec. 24, 1969, Ser. No. 887,907  
Claims priority, application Germany, Feb. 15, 1969, G  
6905958

Int. Cl. D05b 69/00

U.S. Cl. 112-217.4

3 Claims



Linkage device for coupling control bars of sewing machines having a coupling motor and a pedal for controlling

the speed of the motor, where the linkage has a latching device connected to one bar that provides the connection between the two bars and where when pressure is applied to both bars by way of an abutment element connected to one of the bars, the device is movable out of latched position and operable to restore the latched position.

3,628,483

**METHOD OF MAKING POWER FRAME FOR  
INTEGRATED CIRCUIT**

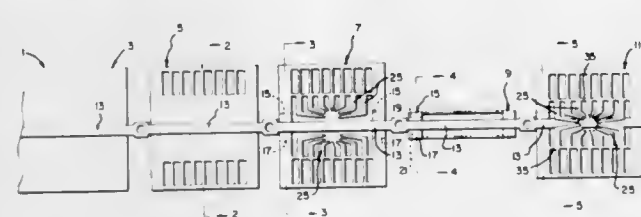
William Vito Pauza, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 20, 1970, Ser. No. 21,328

Int. Cl. H01r 9/00

U.S. Cl. 113-119

4 Claims



This disclosure relates to power frames for mounting integrated circuits and, more particularly, to a metallic mounting member upon which a semiconductor device may be mounted and connected to form a completed device utilizing automatic equipment for assembly encapsulation, the mounting member including provision for efficient and rapid dissipation of heat produced in the semiconductor device.

3,628,484

**TRIM TAB MEANS FOR MARINE CRAFT**

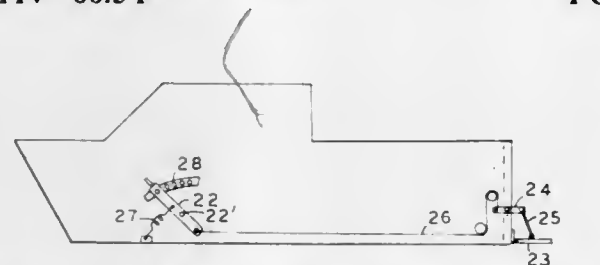
Philip M. Banner, 28 Oxford Road, Massapequa, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,476

Int. Cl. B63b 1/22

U.S. Cl. 114-66.5 P

1 Claim



A pair of trim tabs are pivotally connected to the transom of a craft adjacent the water line. The angle of the trim tabs is adjusted by a linkage comprising a rigid member connected to a handle-operated screw member with a universal joint. A modification of the invention shows the control handle means mounted inside the craft.

3,628,485

**PLANING BOAT WITH STEPPED HULL**

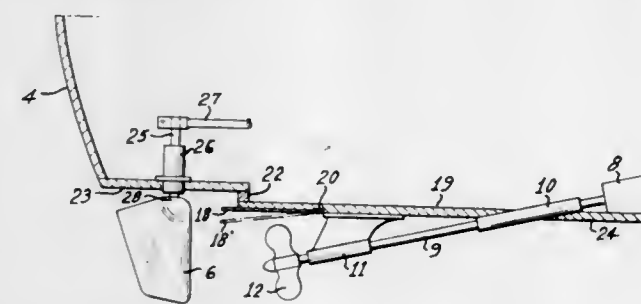
John D. Gill, 2209 Segovia Circle, Coral Gables, Fla., and James R. Wynne, Miami, Fla.

Filed Sept. 24, 1969, Ser. No. 860,589

Int. Cl. B63b 1/22

U.S. Cl. 114-66.5 P

14 Claims



A planing boat having a step near the stern, with the bottom aft of the step normally out of water. The boat is pro-

vided with one or more trim flaps attached along their forward edges to the portion of the hull bottom which is forward of and adjacent the step, with the flaps extending aft of the step. A control member for adjusting each flap extends upwardly from the upper surface of the flap through the hull bottom portion which is aft of the step. One or more rudder shafts extend through the hull bottom aft of the flaps and carry rudders with the relatively thick upper portions of the rudders where they join the rudder shafts disposed at a level generally above the level of the after or trailing edges of the flap or flaps. One or more propeller shaft struts may be connected to the after hull bottom portion with the relatively thick upper mounting portions of the struts under the hull bottom being generally above the level of the after edges of the flaps.

3,628,486

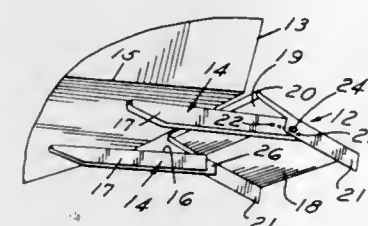
**AUTOMATIC TRIM ATTACHMENT FOR POWER BOATS**  
Charles H. Bennett, 20400 Nine Mile Road, St. Clair Shores, Mich.

Filed Jan. 15, 1970, Ser. No. 3,114

Int. Cl. B63b 1/22

U.S. Cl. 114-66.5 P

20 Claims



A boat having a pair of trim tabs pivotally mounted rearwardly of the transom on transverse axes intermediate the leading and trailing edges of the trim tabs. The trim tabs are operable at slow speeds to lift the rear of the boat and become inoperable at high speeds.

3,628,487

**HYDRAULICALLY OPERATED TRIM ATTACHMENT  
FOR POWERBOATS**

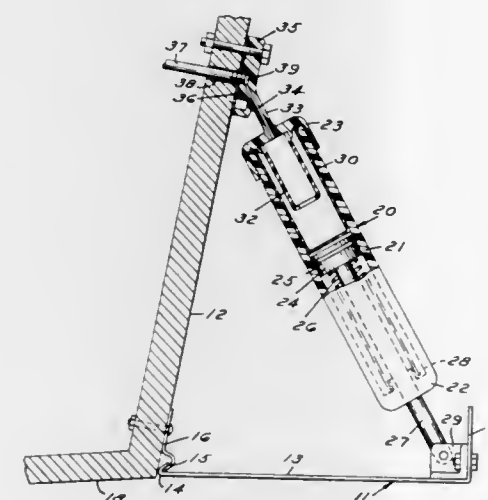
Charles H. Bennett, 20400 Nine Mile Road, St. Clair Shores, Mich.

Filed Jan. 19, 1970, Ser. No. 3,756

Int. Cl. B63b 1/22

U.S. Cl. 114-66.5

22 Claims



A powerboat including a pair of trim members hinged to the stern of the boat and a hydraulic cylinder individual to each trim member. Each hydraulic cylinder is constructed

and arranged so that no external hydraulic lines are needed between the boat and the cylinder. The hydraulic pump has unique features to control volume and pressure.

3,628,488

**DILUTED SOLUTION DISPENSING APPARATUS FOR  
BOATS**

Ralph Edminster Gibson, Los Angeles, Calif., assignor to Gibson Associates Incorporated

Continuation-in-part of application Ser. No. 807,881, Mar.

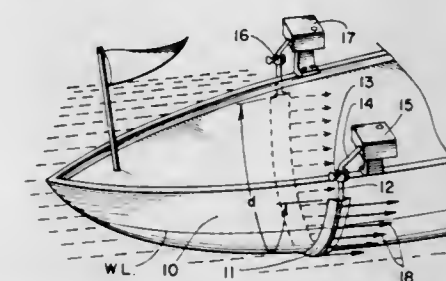
17, 1971, now abandoned. This application Mar. 23, 1970,

Ser. No. 21,585

Int. Cl. B63b 1/38

U.S. Cl. 114-67 A

4 Claims



An elongated flexible strip incorporating a longitudinally extending central tube provided with egress openings is arranged to be wrapped about the hull portion of a boat adjacent its bow. A chemical is fed into the central tube and passes out in controlled quantities from the egress openings to thereby form with water passing by the hull a diluted solution which then passes down the length of the hull and thereby reduces the friction of the boat hull when passing through water.

3,628,489

**HULL-CLEANING BRUSH**

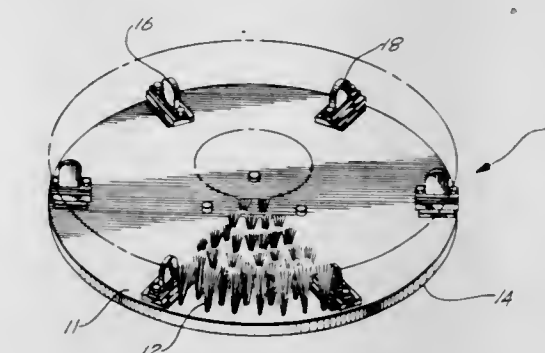
Randolph C. H. Michaelsen, Malibu, Calif., assignor to Global Marine, Inc., Los Angeles, Calif.

Filed Nov. 10, 1969, Ser. No. 875,464

Int. Cl. B63b 59/00

U.S. Cl. 114-222

6 Claims



A rotary brush for removing barnacles and other underwater fouling from the hull of a ship. The brush comprises a large wooden disc with nylon bristles and a plurality of resiliently mounted metal blades which have working edges spaced toward the disc from the free ends of the bristles to shear barnacles adjacent their bases without damaging the hull surface.

3,628,490

**AMPHIBIOUS VEHICLE**

Hermann Walter Gehlen, Pirmasenser Strasse 60, Kaiserslautern/Pfalz, Germany

Filed Jan. 8, 1970, Ser. No. 1,393

Claims priority, application Germany, Sept. 30, 1969, P 19

49 206.9

Int. Cl. B60f 3/00

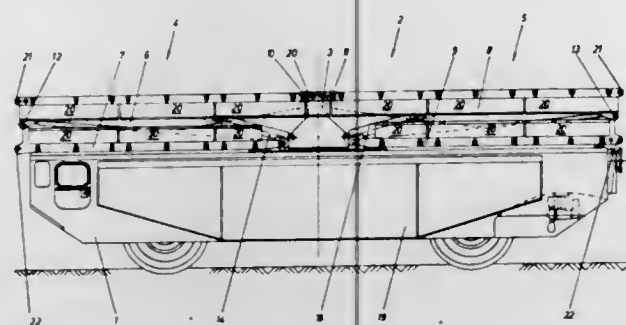
U.S. Cl. 115-1 B

3 Claims

An amphibious vehicle adapted particularly as a part of a floating bridge but also deployable as a ferry having a runway



portion pivotably movable about a vertical axis which at one end is formed as a ramp pivotable relative to the remaining part of the runway about a horizontal axis extending transversely of the direction of travel, where this ramp is subdivided centrally about a horizontal axis that extends again transversely of the runway about which the outer free half of



the ramp can be folded under the inner half thereof and the front end of the runway section thus formed is adapted to be coupled to the corresponding front end of the runway section of an adjacent amphibious vehicle and where the vehicle section pivotable about a vertical axis is also constructed at its other end as a ramp constructed in this manner.

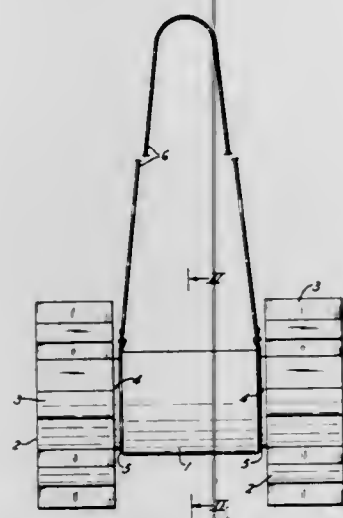
3,628,491

**WATER-WALKING DEVICE**

William R. Conrad, 1299 Ashland Ave., Columbus, Ohio  
Filed Apr. 23, 1970, Ser. No. 31,173  
Int. Cl. B63h 5/00, 16/00

U.S. Cl. 115-2

3 Claims



A floating water-walking device has a horizontal cylindrical tread portion joined at its opposite ends to a pair of paddle wheels coaxial with it. Each of the wheels has circumferentially spaced radial vanes and is at least as great in diameter as the tread portion. The latter is large enough to stand on so that if the floating device is rotated by the feet of a person standing on it the paddle wheels will cause it to travel across the water.

3,628,492

**OUTBOARD MOTOR ATTACHMENT**

William C. Baldwin, Anaheim, and Theodore N. Meyer, Westminster, both of Calif., assignors to Plasmachem, Inc., Newport Beach, Calif.

Filed Oct. 27, 1969, Ser. No. 870,682

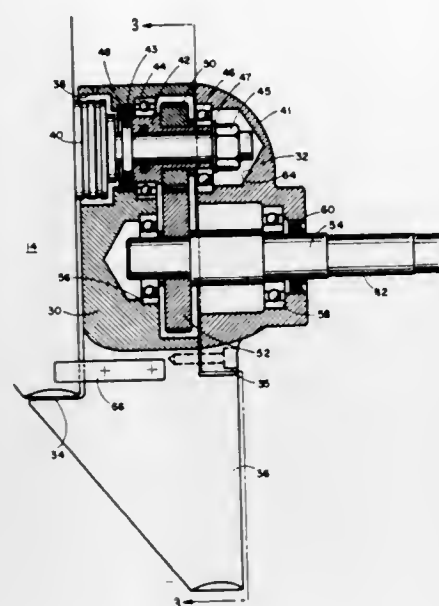
Int. Cl. B63h 21/26

U.S. Cl. 115-17

2 Claims

An auxiliary gear-reduction apparatus to be mountable to the drive shaft of an outboard motor for a boat in place of

the conventional propeller, the apparatus reducing the rotational shaft velocity of the power output shaft and increasing



the physical diameter of the propeller thereby increasing the area of thrust for the propeller.

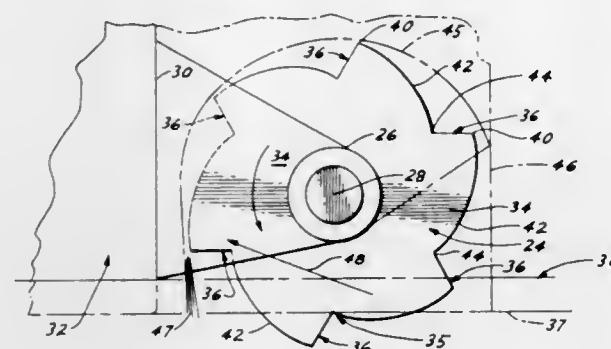
3,628,493

**IMPELLER WHEEL FOR AMPHIBIOUS VEHICLE**

Edward E. Headrick, 4900 Crown Ave., La Canada, Calif.  
Filed June 12, 1969, Ser. No. 832,628  
Int. Cl. B60f 3/00; B63h 5/02

U.S. Cl. 115-19

19 Claims



An impeller wheel for a waterborne or amphibious vehicle for providing forward thrust and support for the vehicle. The impeller is provided with one or more transverse impact surfaces raised from the peripheral surface of the impeller angled so as to be approximately parallel to the water surface upon contact and entry into the water under forward rotation. Adjustment of the precise angle of impact, the number of impact surfaces provided on each impeller, the speed of rotation of the impellers and the number of impellers on a vehicle vary according to particular applications and desired capabilities. In several embodiments the impellers generate sufficient force to raise the vehicle hull out of the water during high-speed waterborne operation.

3,628,494

**FIRE ALARM DEVICE**

Joseph A. Bilotta, 20500 Goddard Ave., Apt. 217, Detroit, Mich.

Filed Dec. 10, 1970, Ser. No. 96,699

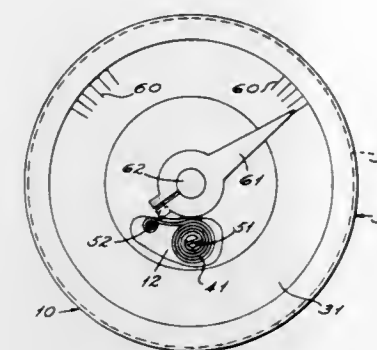
Int. Cl. G08b 17/00

U.S. Cl. 116-102

2 Claims

A self-contained independently operable audible-sound fire-alarm device sensitive to dangerously high ambient tem-

perature comprising a spring motor geared to a driven oscillating escapement mechanism pivotally connected to a hammer arm to oscillate the hammer arm against a bell flange to sound the alarm. The hammer arm is normally held silent by a stop leg and an axially movable stop abutting the stop leg. The stop is moved axially out engagement with the stop leg by the angular movement of a wing cam lying in a



cam groove of the stop. A temperature sensitive bimetal coil angularly moves the wing cam under increased temperature calculated to be dangerous to move the stop clear of the stop leg to allow oscillation of the hammer arm against the bell flange. The wing-cam and cam groove on the stop have a low-angle high-mechanical advantage inclined-plane relationship easily operated by and highly sensitive to movement of the bimetal coil when reacting to increased temperature.

3,628,495

**INDICATING DEVICES**

Leo Hagedorn, Wuppertal-Elberfeld, Germany, assignor to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Germany

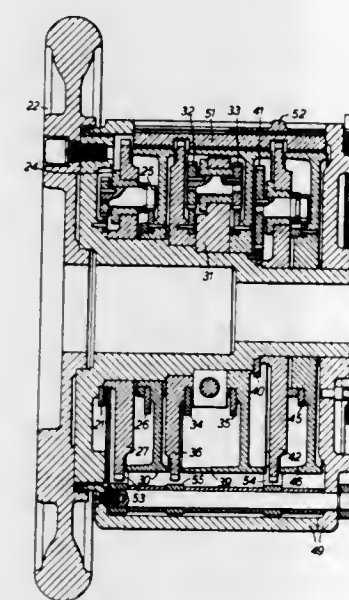
Filed Mar. 11, 1968, Ser. No. 712,043

Claims priority, application Great Britain, Mar. 13, 1967, 11,591/67

Int. Cl. B23q 17/00

U.S. Cl. 116-115.5

4 Claims



An indicating device for giving metric measurements with a feed screw of inch fractional pitch or vice versa comprises a handwheel for the screw, an index scale and a gear drive, preferably epicyclic, between the handwheel and scale. The ratio of the gear drive provides the conversion. There may be another index scale and another gear drive, the second scale indicating feed in the same measurement system as the screw. Either indicating system may have a supplementary

geared scale so that there is a coarse and fine scale for that system. There may be a fine metric scale, a fine inch scale and a combined coarse inch and metric scale, driven by three respective epicyclic gears. One member of each epicyclic gear, normally stationary, may be movable after release of a brake for zero adjustment. The gearing and scales may be within a windowed casing fastenable to a machine, the hand wheel being external to the casing.

3,628,496

**HEIGHT GAUGE**

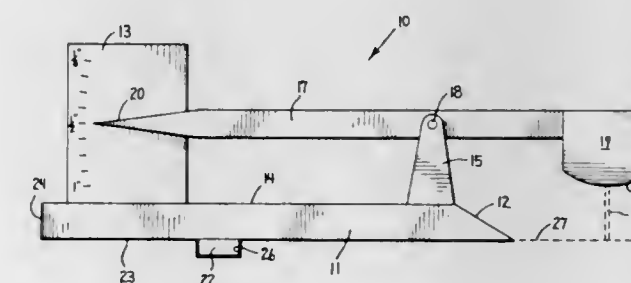
Frank J. Schmitt, R. R. #3, Eagle River, Wis.

Filed May 9, 1969, Ser. No. 823,333

Int. Cl. G09f 9/00

U.S. Cl. 116-124

1 Claim



A height gauge for circular saws or any attachment that fits on the saw arbor. An indicator arm pivotally attached to a pair of spaced mounting brackets. The first end of said indicator arm comprises a contact member which is adapted to contact circular objects. A second end forming a needle pointer which is positioned adjacent to a graduated scale. Components all attached to a suitable base.

3,628,497

**CONNECTION POINT LOCATING APPARATUS**

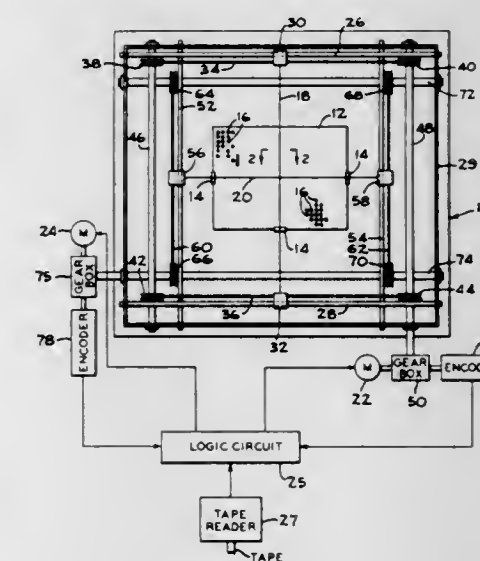
Franklin D. Neu, 2855 Shane Drive, Richmond, Calif.

Filed Dec. 14, 1970, Ser. No. 97,905

Int. Cl. G09f 9/00

U.S. Cl. 116-124

1 Claim



A connection point locator for the panels of integrated circuits with their numerous connection sockets and/or terminal prongs, comprising a base for attachment of the panel, resilient strings moveably supported from said base in rectilinear condition and at right angles to each other to represent the ordinate and abscissa, respectively, of a Cartesian coordinate system, and means for moving each of said strings over the panel predetermined distances in a direction parallel to the other string while in rectilinear condition, to



vary the location of their point of intersection which identifies a desired connection point on the panel. According to the invention, said strings are made of resiliently yieldable material, such as rubber, so that they may be moved out of the immediate environment of the discovered connection point, for the operator to establish the desired connection without hinderance and without impairment of the accuracy of the locator in subsequent connection-point-locating operations.

3,628,498

## OPTICAL READER ASSEMBLY

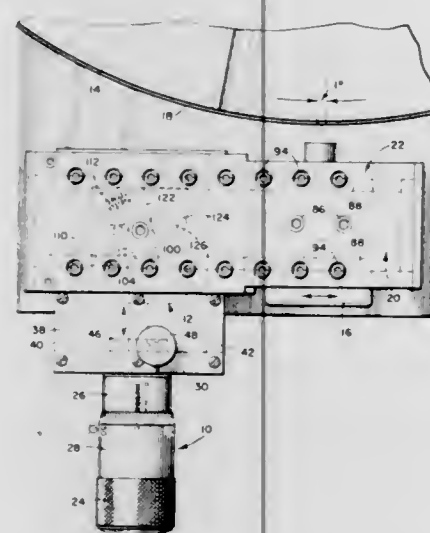
Adolph H. Kleinsorge, Affton, Mo., assignor to W. B. Knight Machinery Co., St. Louis, Mo.

Filed Feb. 24, 1970, Ser. No. 13,726

Int. Cl. G01p 13/00

U.S. Cl. 116—115

9 Claims



An optical reader assembly for accurately determining the angular position of a rotary worktable or the like regardless of the diameter of the worktable. The position of the optical reader is adjusted by a micrometer with movement of the micrometer stem translated to movement of the optical reader tangentially to the periphery of the worktable. To enable the assembly to be utilized with worktables of different diameters, adjustable cam means regulate the amount of movement of the optical reader occasioned by a predetermined movement of the micrometer stem.

3,628,499

## ACOUSTICAL SIGNAL GENERATOR

Konrad H. Benford, San Francisco, Calif., assignor to Bowles-Benford

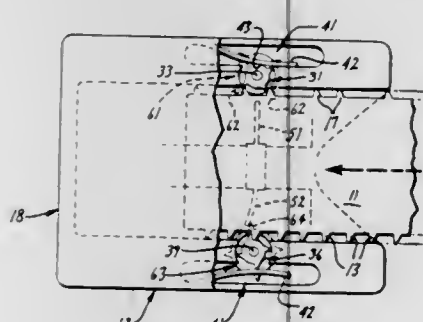
Continuation-in-part of application Ser. No. 480,449, Aug. 17, 1965, now Patent No. 3,500,326, dated Mar. 10, 1970.

This application Jan. 29, 1970, Ser. No. 6,805

Int. Cl. B06b 3/00

U.S. Cl. 116—137 A

7 Claims



An acoustical signal generator for establishing a serial pulse signal of reference pulses at a given audiofrequency

and code pulses at a different audiofrequency wherein the presence or absence of a code pulse between adjacent reference pulses establishes a particular code pattern which can be used for identification and/or control. The generator is mechanically operated requiring no electrical power and constructed for inexpensive mass production and of a size suitable for being conveniently carried by person at practically all times.

3,628,500

## CEMENTING APPARATUS FOR WORKPIECES, SUCH AS SHOES

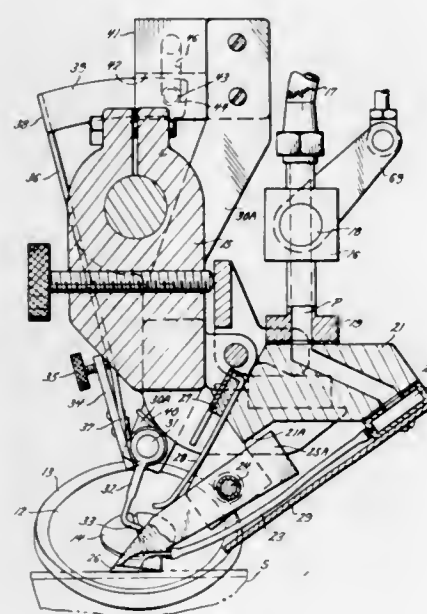
Gordon E. Matlock, Sullivan, Mo., assignor to Brown Shoe Company, Inc., St. Louis, Mo.

Filed Jan. 2, 1970, Ser. No. 355

Int. Cl. B05c 5/02, 11/10

U.S. Cl. 118—3

3 Claims



The apparatus automatically applies a uniform width band of cement about the periphery of the bottom surface of a workpiece, such as a shoe, in response to the positioning of a shoe against the cement nozzle and upon a feed wheel that is located to one side of the nozzle so as to be free of contamination by the cement. The cement nozzle comprises a plurality of individually movable nozzle elements resiliently responsive to the surface conditions of the shoe bottom so that cement will be spread in accordance with the high and low surfaces. The nozzle elements actuate a control follower which is connected into a control system for starting and stopping the supply of cement whereby a uniform band of cement is deposited on the shoe bottom as the shoe is manipulated on the feed wheel and caused to travel about its periphery from a starting point and moved around the sides, the heel and the toe.

3,628,501

## APPARATUS FOR COATING A SURFACE OF A SUBSTRATE WITH POWDERED MATERIAL

Albert Edward Jackson, Gwernaffield, and Robert Gordon Russell, Penyffordd, near Chester, both of England, assignors to John Summers & Sons Limited, Shotton Deeside, England

Filed Dec. 11, 1968, Ser. No. 782,897

Claims priority, application Great Britain, Dec. 15, 1967, 57,096/67

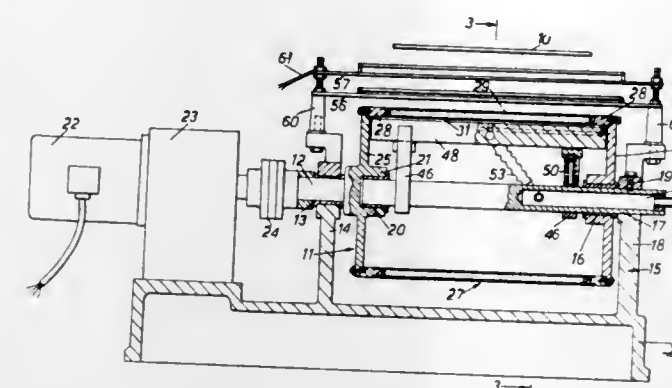
Int. Cl. B05b 5/08

U.S. Cl. 118—630

8 Claims

Apparatus for coating a surface of an earthed substrate with powdered material comprising an earthed dispensing rotor to direct powdered material towards the substrate suc-

cessively through two electrically conducting screens, which are disposed between the dispensing means and the substrate, the screens nearer to the substrate being electrostatically charged, the screen nearer to the dispensing means being electrically isolated and having in operation an electrical



3,628,503

## APPARATUS FOR COATING WOVEN OR NONWOVEN WEBS

Clemens Neuhaus; Klaus Boehme, both of Erlench, and Hermann Gutermuth, Kleinwallstadt, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed Aug. 6, 1969, Ser. No. 848,038

Claims priority, application Germany, Aug. 6, 1968, P 17 52 921.4

Int. Cl. B05c 3/00

U.S. Cl. 118—410

3 Claims

charge induced therein. The rotor has a fluid-permeable curved wall structure filled with porous material the outer periphery of the wall having packets sequentially supplied with powder, fluid being supplied to a portion of the inner periphery which at any moment is angularly spaced from the pockets being supplied with powder.

3,628,502

## APPARATUS FOR MANUFACTURING ADHESIVE TAPE PRODUCTS

Joseph C. Komp, Bowling Green, Ky., assignor to The Kendall Company, Boston, Mass.

Original application Dec. 11, 1968, Ser. No. 786,815, now

Patent No. 3,523,859, dated Aug. 11, 1970, which is a

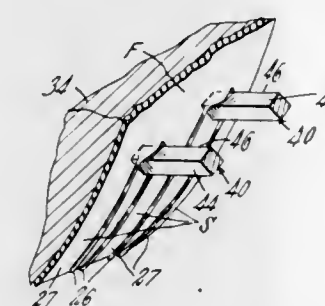
continuation of application Ser. No. 437,813, Mar. 8, 1965, now abandoned. Divided and this application Jan. 23, 1970,

Ser. No. 5,310

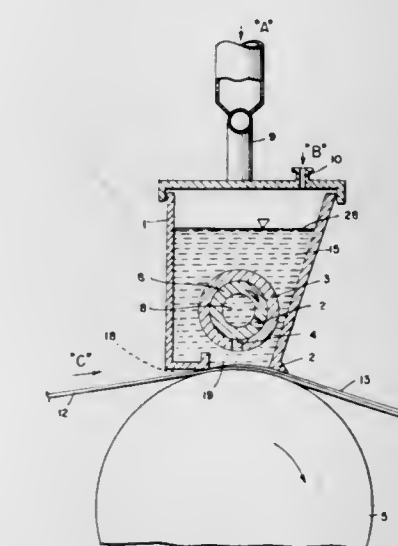
Int. Cl. B05c 11/10

U.S. Cl. 118—261

9 Claims



Apparatus for making pervious pressure-sensitive adhesive-coated fabric from thermoplastic adhesive and a fabric backing sheet comprising a moving surface for supporting a pressure-sensitive adhesive film, a multiplicity of fixed plough elements transversely spaced from one another with their free ends continuously maintained in pressure contact with said movable surface for separating it into a multiplicity of continuous transversely spaced strips each of substantially greater thickness at its edges than in its central portion and spaced from one another by continuous openings, said surface carrying said adhesive film past said plough elements causing lateral flow of said adhesive moving past said plough elements continuously to form said openings by displacing film material from said openings laterally to the edges of the strips, creating said openings and providing said greater thickness of film at the edges of said strips continuously



The invention consists of an apparatus and process for applying a coating to a woven or nonwoven web. The apparatus is comprised of a casting box for holding a coating material, an arrangement of slotted, rotating and nonrotating tubes for supplying a moving stream of coating composition into a pressure balancing zone above the web, a means for supplying the coating composition to the tubes, and a doctor blade suitably disposed above the web to achieve a coating of uniform thickness. In the process, the movement of the coating composition relative to the web is in the form of periodically recurring, parallel lines, intersecting the center axis of the web at a constant angle of  $0^\circ < \alpha < 90^\circ$ . By utilizing the apparatus and process disclosed herein, a uniform coating, free of color bands or strips, can be achieved.

3,628,504

## ADJUSTABLE MOUNTING DEVICE FOR ELECTROSTATIC COPIER DEVELOPER MAGAZINE

Ray S. Richmond, Placitas, N. Mex., assignor to The Singer Company, New York, N.Y.

Filed Mar. 23, 1970, Ser. No. 21,609

Int. Cl. G03g 13/00

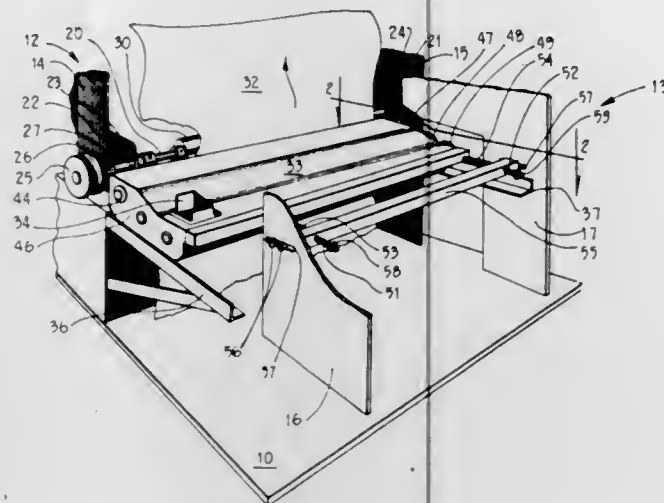
U.S. Cl. 118—637

10 Claims

A mounting apparatus for the developer magazine of an electrostatic copier which enables the developer brush—xerographically sensitive element spacing to be varied across the width of the brush. Two independently adjustable eccentric cams bear upon the rear of the developer magazine to deter-



mine the spacing. A spring-loaded anchor bar is slidably received on spaced guide members secured to the front of



the developer magazine to provide a rearward thrust for maintaining the spacing constant independently of dimensional changes in the copier frame units.

3,628,505

**OVERHEAD WINCH CONSTRUCTION**

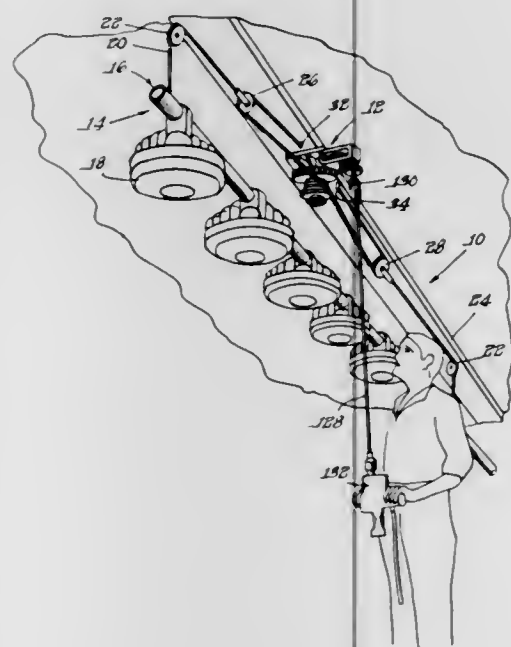
Lawrence A. Myers, Milford, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Continuation of application Ser. No. 718,677, Apr. 4, 1968, now abandoned. This application Apr. 9, 1970, Ser. No. 24,431

Int. Cl. A01k 5/00

U.S. Cl. 119-61

5 Claims



There is disclosed a winch construction for vertically adjustably supporting an apparatus such as a mechanical poultry feeder and comprising a frame mountable at an overhead position and having a vertically disposed drum and a drive shaft connected by gearing, automatically operable means for releasably locking the drive shaft, which means and shaft are constructed for enabling an operator located beneath the winch to actuate the winch manually or with the aid of a portable motor or electric drill.

**3,628,506**  
**SUCKLING DEVICE FOR CALVES OR SIMILAR YOUNG CATTLE**

Jan Willem Cornelis Glasbergen, Doetinchem, Netherlands, assignor to Domaf N.V., Doetinchem, Netherlands

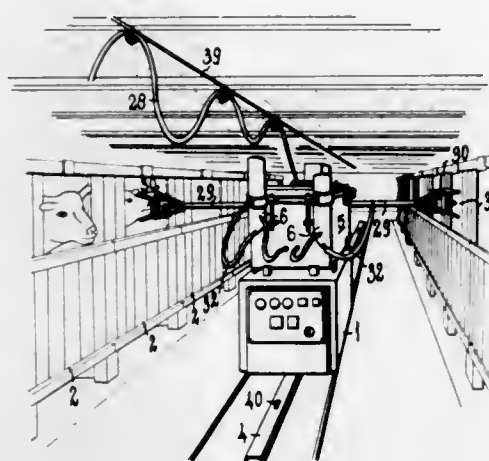
Filed Dec. 2, 1969, Ser. No. 881,500

Claims priority, application Netherlands, Dec. 4, 1968, 6817418

Int. Cl. A01k 09/00

U.S. Cl. 119-71

7 Claims



A device for suckling calves and similar young animals, comprising a carriage adapted to be intermittently moved along a row of suckling stations and provided with a supply container, at least one measuring and suckling cup being connected to said container and being vertically movable relative to said container between a lower position in which the supply opening of the cup lies under the (minimum) level of the containers, and an upper position in which said opening is located above the (maximum) level in the container.

3,628,507

**LIQUID METAL HEATED STEAM GENERATORS AND SUPERHEATERS**

Alfonso Saporiti, Genoa, Italy, assignor to Progettazioni Meccaniche Nucleari S.p.A., Genoa, Italy

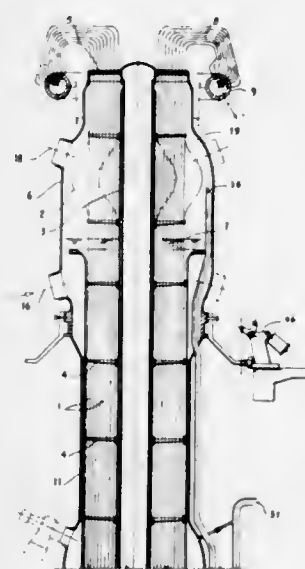
Filed Dec. 5, 1969, Ser. No. 882,618

Claims priority, application Italy, Dec. 14, 1968, 7530 A/68

Int. Cl. F22b 1/06

U.S. Cl. 122-32

10 Claims



Saturated or superheated steam generators and superheaters fed with liquid metal, particularly with sodium as a heat transfer medium from a fast reactor or from an inter-

mediate heat exchanger is a nuclear thermoelectric plant, have cylindrically shaped bodies with superposed annular chambers about their lower portions, and around their middle portions if deemed advisable. The annular chambers do not communicate directly with one another but each of them communicates with the interior of the cylindrical body, preferably through a circumferential slot which is horizontally arranged, i.e. normal to the axis of the cylindrical body. The slots are arranged at the base of each chamber just above the separation wall between two adjacent chambers, so that each chamber acts as an independent multiple pneumatic bell suitable to counteract, as quickly and efficiently as possible, the development of overpressures due either to the reaction  $2\text{Na} + \text{H}_2 = 2\text{NaOH} + \text{H}_2$  or to the direct action of steam or indirect action of hot water (flash effect).

3,628,508

**WASTE-HEAT BOILERS AND LIKE GAS/LIQUID HEAT TRANSFER SYSTEMS**

Joachim Kummel, Ickenerstr. 32, Castrop-Rauxel, Germany

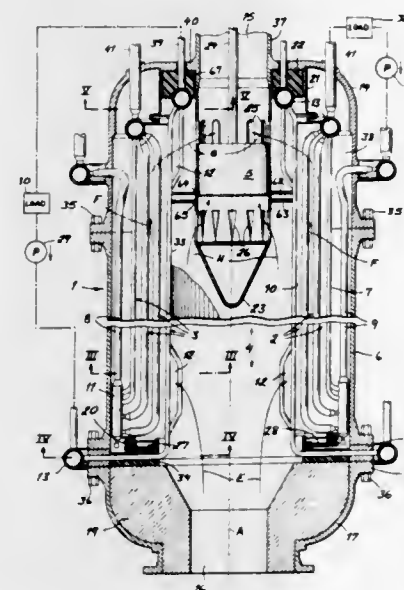
Filed Dec. 24, 1969, Ser. No. 887,942

Claims priority, application Germany, Dec. 24, 1968, P 18 17 002.0

Int. Cl. F22b 1/18

U.S. Cl. 122-7 R

10 Claims



A waste-heat boiler, for use in a system having two units in tandem in the direction of gas flow and with at least one unit having a valved bypass, has a three-section cylindrical housing in which a plurality of heat-exchange pipes extend axially. At one housing end is a gas inlet and at the opposite end a gas outlet. An outer row of the pipes is welded together to form a gastight wall that defines an annular insulating chamber with the housing interior. Another such circular row of pipes forms another wall having openings at each end near the inlet and outlet. This other wall forms an annular gas chamber with the first-mentioned wall, in which chamber the rest of the pipes are located. A central, axial bypass passage through the boiler is pipe-free and has a valve for blocking gas flow and forcing air through the other chamber. The three housing sections are axially displaceable relative to one another and the two walls are similarly relatively displaceable, the outer wall being fixed to the top housing section.

3,628,509

**FABRICATED BLAST FURNACE COOLING PLATE**

Ronald F. Becker, Pittsburgh, Pa.; Ralph T. Hanna, Atlanta, Ga., and Ernest L. Waterhouse, Allison Park, Pa., assignors to United States Steel Corporation

Filed July 17, 1970, Ser. No. 55,807

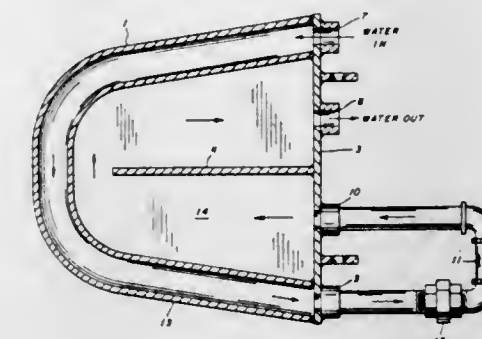
Int. Cl. F22b 37/00

U.S. Cl. 122-6.5

6 Claims

A blast furnace cooling plate is constructed by bending a steel pipe into a U-shape to form a first fluid conduit, and

welding to it a top, bottom and end plate to form an enclosed chamber, which serves as a second fluid conduit. This second



conduit permits the plate to function even if failure of the first conduit occurs.

3,628,510

**FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE PROVIDING TIMED CRANKING ENRICHMENT**

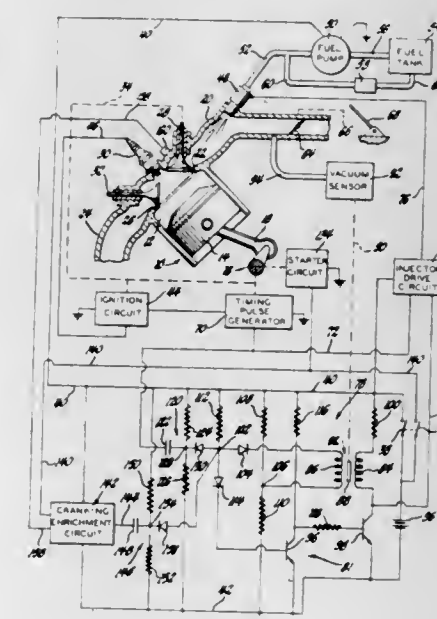
John W. Moulds, Penfield, and Edwin C. Storey, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed June 10, 1970, Ser. No. 44,988

Int. Cl. F02b 3/00; F02n 17/08

U.S. Cl. 123-32 EA

7 Claims



In an electronic fuel injection system, fuel is applied to an internal combustion engine for the duration of individual control pulses developed in synchronization with the rotation of the engine. The engine-starting sequence is divided into alternate cranking periods and resting periods. During each cranking period, additional control pulses are supplied at a frequency which is inversely related to the temperature of the engine. Further, the additional control pulses are supplied only during an enrichment interval. The minimum duration of the enrichment interval is determined as a direct function of the duration of the cranking period. The maximum duration of the enrichment interval is determined as a direct function of the duration of the preceding resting period and as an inverse function of the duration of the previous cranking period.



3,628,511

**PISTON FOR INTERNAL COMBUSTION ENGINE WITH DIRECT FUEL INJECTION**

Hans Fischer, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Nurnberg, Germany

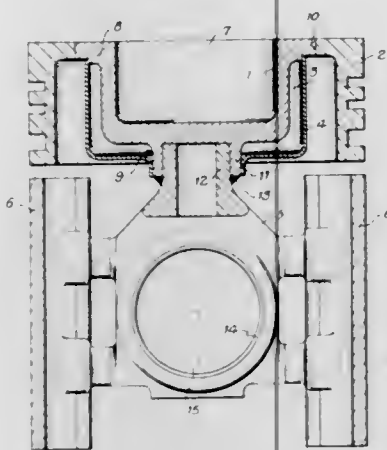
Filed Jan. 5, 1970, Ser. No. 711

Claims priority, application Germany, Feb. 1, 1969, P 19 05 029.4

Int. Cl. F01p 1/04; F01b 31/08

U.S. Cl. 123—41.35

5 Claims



A piston of the type including a pistonhead having a combustion chamber in its upper face and piston ring receiving grooves about its periphery. The pistonhead is machined with a concentric element on its underside adapted to engage a concentric element on a wrist pin bearing frame on which partial skirts or slipper elements are mounted to distribute the transverse thrust of the piston against the cylinder wall. The combustion chamber is surrounded by a shell element through which the on concentric element extends and to which it is sealed, preferably by welding. The upper portion of the shell extends upwardly spaced from the wall of the combustion chamber to provide a cooling space to receive a meltable first coolant, and a second annular shell element, or border member, may be mounted between the inner wall of the ring supporting periphery of the pistonhead below the piston ring grooves and the outer wall of the shell element, to form a chamber for a second coolant which may be the engine lubricant.

3,628,512

**INDUCTION SYSTEM FOR A V-TYPE INTERNAL COMBUSTION ENGINE**

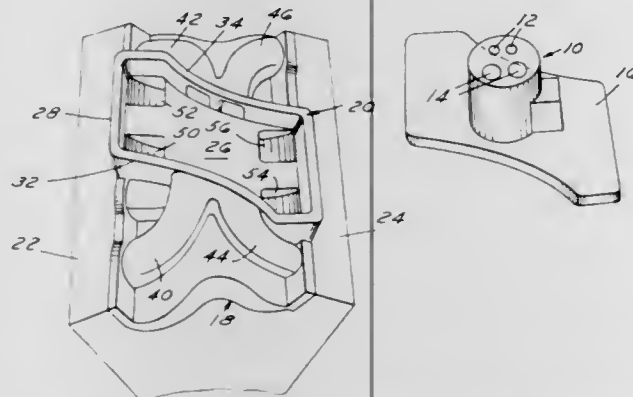
Tao-Yuan Wu, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 13, 1970, Ser. No. 63,353

Int. Cl. F02b 75/18, 75/22

U.S. Cl. 123—52 MV

8 Claims



An intake manifold has a plenum chamber defined in part by a floor located substantially perpendicular to and directly

below the induction passages of a carburetor. Runners connecting the plenum chamber with the end cylinders of each bank open into the plenum chamber through sidewalls extending above the floor while runners connecting the plenum chamber with intermediate cylinders open into the plenum chamber through the peripheral portions of the floor. The manifold improves fuel and air distribution and also improves driver control over engine torque.

3,628,513

**INTERNAL COMBUSTION ENGINE VALVE GEAR LUBRICATION**

Albert Grosseau, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

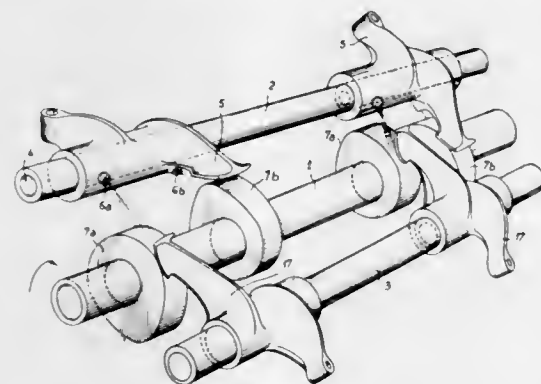
Filed June 19, 1970, Ser. No. 47,795

Claims priority, application France, June 26, 1969, 6921519

Int. Cl. F01m 9/10, 1/08

U.S. Cl. 123—90.34

6 Claims



This invention constitutes an improvement in the pressure lubrication of rocker-type valve gears of internal combustion engines, and more particularly in the lubrication of the bearing areas between rocker heels and cams in valve gears comprising at least one overhead camshaft associated with at least one hollow rocker shaft acting as a lubricant supply duct, said rocker shaft being formed with oil-dispensing ports in the form of radial holes coincident with radial holes formed in said rockers themselves in order to form lubricant jets directed towards the working surfaces of said cams in a zone located just upstream of the line of contact between the cams and the corresponding rocker heels.

3,628,514

**TAPPETS**

Ronald Phillips, Northolt, England, assignor to Simms Group Research and Development Limited, London, England

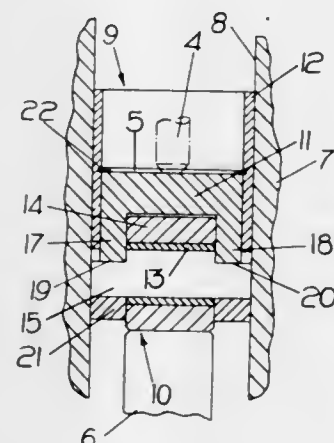
Filed Jan. 14, 1970, Ser. No. 2,921

Claims priority, application Great Britain, Jan. 23, 1969, 3,754/69

Int. Cl. F01l 1/14; F16h 53/06

U.S. Cl. 123—90.48

7 Claims



A tappet assembly including a hollow cylindrical tappet housing a roller assembly carried by a pin, the pin having ex-

tending portions beyond the side faces of the roller and the tappet assembly including a bridge piece having leg portions, which bear upon the pin. The force is transmitted from a cam acting upon the roller assembly to the bridge piece by way of the roller assembly, the extending portions of the pin and the leg portions of the bridge piece. The tappet housing serving only to locate the bridge piece and roller and to guide the movement of same under the action of the cam.

3,628,515

**MEASURING DEVICE FOR A FUEL INJECTION SYSTEM**

Heinrich Knapp, Leonberg, and Konrad Eckert, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

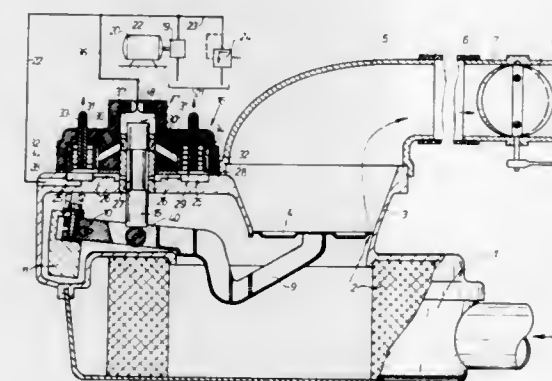
Filed Sept. 25, 1970, Ser. No. 75,350

Claims priority, application Germany, Dec. 1, 1969, P 19 60 147.9

Int. Cl. F02m 69/00

U.S. Cl. 123—119

8 Claims



A measuring and distributing fuel valve for an external-ignition engine has a flow-responsive disc mounted in the suction duct at one end of a pivotable arm carrying a counterweight at its other end. A roller on the arm controls the rotatable slider of a measuring and distributing valve and engages frictionally with an eccentric point on the end face of the slider.

3,628,516

**INTERNAL COMBUSTION ENGINE CARBURETOR**

Jean-Louis Perrin, and Henri Milliot, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France, part interest to each

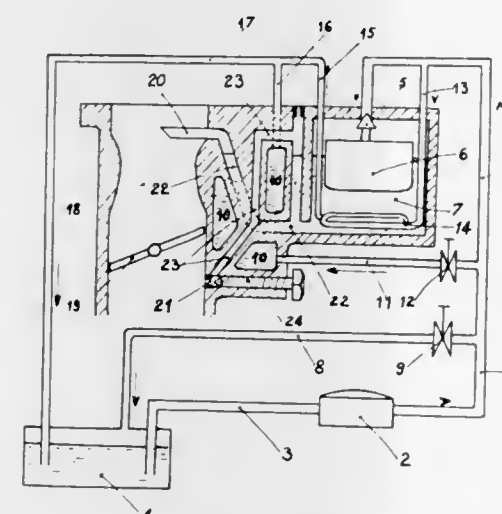
Filed Mar. 10, 1970, Ser. No. 18,043

Claims priority, application France, Mar. 10, 1969, 6906790

Int. Cl. F02m 5/10

U.S. Cl. 123—136

3 Claims



Improvement in internal combustion engine carburetion devices of the type comprising an internal circuit for cooling

3,628,517

**VALVE FOR EVAPORATIVE LOSS CONTROL**

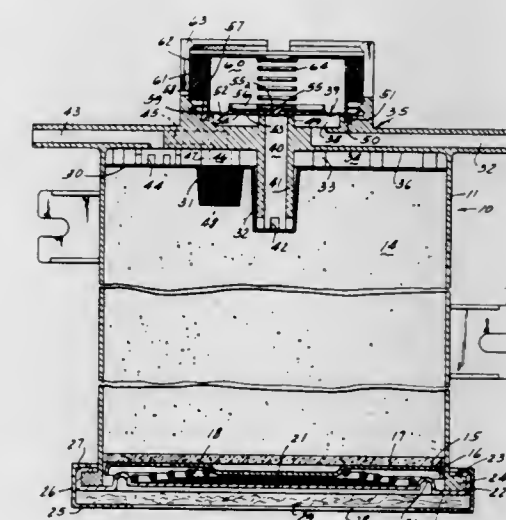
George A. Soberski, Des Plaines, Ill., assignor to Eaton Yale &amp; Towne Inc.

Filed Dec. 16, 1968, Ser. No. 783,821

Int. Cl. F02m 25/00

U.S. Cl. 123—136

13 Claims



Apparatus for evaporative loss control employs a single diaphragm-type valve which is operable in response to pressures developed by fuel vapors, ambient conditions and engine vacuum to control evaporative loss in an automobile fuel system.

3,628,518

**INTERNAL COMBUSTION ENGINES**

Gordon Purves Blair, Newtownabbey, and Mervyn Bradshaw Johnston, Belfast, both of Ireland, assignors to The Birmingham Small Arms Company Limited, Small Heath, Birmingham, England

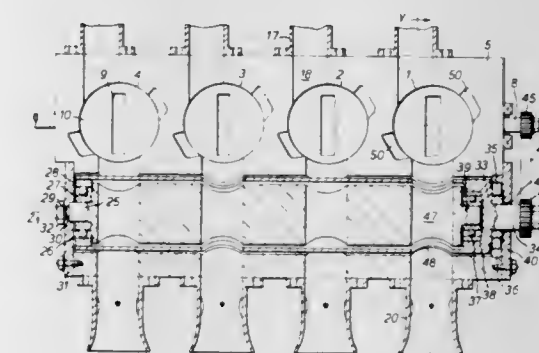
Filed Sept. 10, 1969, Ser. No. 9,250

Claims priority, application Great Britain, Sept. 12, 1968, 43,315/68

Int. Cl. F01l 7/00, 7/12

U.S. Cl. 123—190 AA

5 Claims



A rotatable sleeve with openings surrounds a stator having passages therethrough disposed in the induction passage of a two stroke cycle engine.



3,628,519

**DEMOUNTABLE ARCHERY BOW**

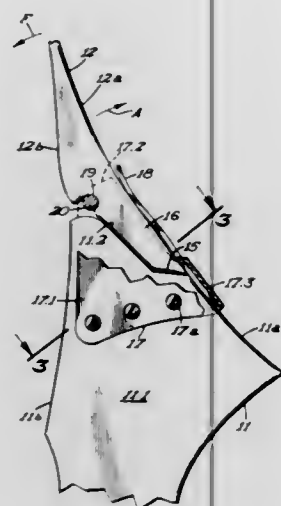
Russell N. Hofmeister, Waseca, Minn., assignor to Herter's, Inc., Waseca, Minn.

Filed Nov. 24, 1969, Ser. No. 879,296

Int. Cl. F41b 5/00

U.S. Cl. 124-24

3 Claims



An archery bow wherein the limbs are detachable from the handle; the handle having a recess extending endwise to receive the end of the limb and to rigidify the bow when flexed for stringing the bow and when the bow is drawn and released for casting an arrow; the limbs and handle having a spring-pressed insert and socket-latching device retaining the limbs to the handle when the limbs are relaxed.

3,628,520

**STABILIZER FOR ARCHERY BOW**

Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

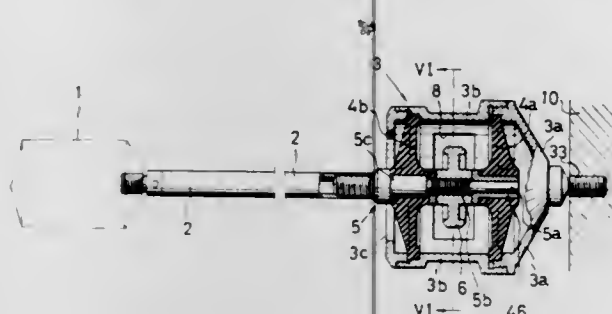
Filed June 25, 1970, Ser. No. 49,806

Claims priority, application Japan, Feb. 21, 1970, 45/16719

Int. Cl. F41b 5/00

U.S. Cl. 124-30 R

11 Claims



A stabilizer for archery bow comprising an elongated rod member having a weighting element at one end thereof, a number of resilient members each constructed in the form of a plurality of radially extending resilient elements or in the form of a radially extending disklike resilient element, for supporting the other end of the rod member. A housing is provided as a structural member for supporting the radially outward ends of the plurality of radially extending resilient elements or the circumferential portion of the disklike resilient element, whereby when the stabilizer is attached on the archery bow, any shock or vibration created in the archery bow is effectively absorbed and damped out within the stabilizer. In the stabilizer, a screw member for adjusting the tension of the resilient member or members may be further provided between the resilient members.

3,628,521

**HEATER FOR ENCLOSED SPACES**

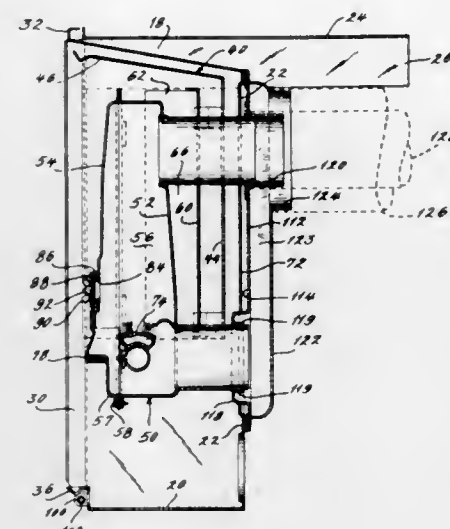
Ralph R. Hodges, Belleville, Ill., assignor to Empire Stove Company, Belleville, Ill.

Filed Mar. 2, 1970, Ser. No. 15,684

Int. Cl. F24h 3/00; F23j 11/00

U.S. Cl. 126-85 B

16 Claims



A heater for enclosed spaces includes a casing which is easily installed in a cabinet having a rectangular cutout in one wall thereof. The casing houses a removable sealed combustion chamber assembly having a heat fin positioned behind the actual walls which define the combustion chamber, but in heat-conducting and radiant-heat-absorbing relation therewith. An interior heat shield in the casing surrounds the upper portion of the combustion chamber assembly so that the temperature of the outer walls on the casing does not become excessive, thus enabling those walls to be positioned next to wood and other conventional construction material. A removable airdrop is connected to the backwall of the casing for diverting combustion air from an inlet pipe to the inlet duct leading to the combustion chamber. The airdrop also conveys the flue gases into a flue pipe located within the inlet pipe. The flue pipe and inlet pipe connect with a vent cap which projects only a slight distance beyond the outer wall of the enclosed space. The vent cap enables the burner in the combustion chamber to operate under a wide variety of wind velocity conditions, from a slight wind to a high-velocity wind. Thus, the heater is ideally suited for use in over-the-road vehicles such as trailers.

3,628,522

**SURGICAL INSTRUMENT DRILL FOR BIOPSY**

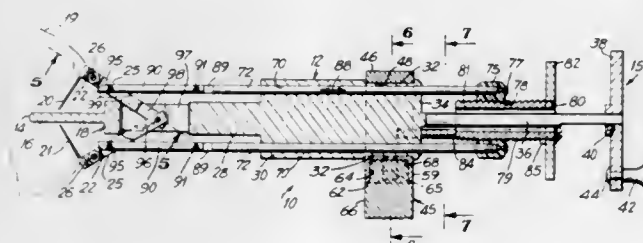
Mikio Kato, 1003 Nottingham Place, La Vale, Md.

Filed Sept. 24, 1970, Ser. No. 75,151

Int. Cl. A61b 10/00, 17/32; B26b 3/04

U.S. Cl. 128-2 B

10 Claims



The device is a surgical instrument having a pair of pivotally mounted surgical blades for removing a conical section, which blades are coupled by linkage means so that their angular movement is controlled as the handle means acts as a

sleeve to permit angular rotation of the supporting means with which the blades coact. The linkage means includes a pair of pivotally mounted support arms which in their extended position extend outwardly from the supporting means and in their retracted position partially extend within a slot in the supporting means and in overlapping relation to each other.

3,628,523

**SYRINGE**

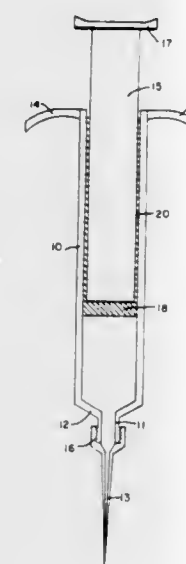
Othel L. Pirtle, Jr., 2718 Stratford, Pearland, Tex.

Filed Dec. 5, 1968, Ser. No. 781,391

Int. Cl. A61b 6/00; A61m 5/18

U.S. Cl. 128-2

4 Claims



A syringe for the injection of radioactive medicinal and diagnostic compositions into the body, the syringe having a cylindrical body of lead glass with a hypodermic needle attached at one end thereof and at the other end, a plunger of stainless steel for slidable engagement with the inner surfaces of the wall of such cylindrical body, the plunger being coated at least along its surfaces adjacent the wall of the cylindrical body with a coating material which is a resilient polymeric material, rubber or combinations thereof.

3,628,524

**BIOPSY NEEDLE**

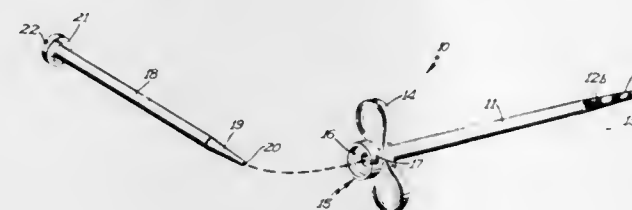
Khosrow Jamshidi, 124 4th Ave. N.W., Faribault, Minn.

Filed Feb. 28, 1969, Ser. No. 803,199

Int. Cl. A61b 10/00

U.S. Cl. 128-2 B

5 Claims



A biopsy needle of uniform diameter throughout the major portion of its length includes a tapered distal end portion which terminates in a distal cutting edge. An elongate stylet is insertable into the needle and has a closed distal end which is positioned in close proximity to and cooperates with the distal cutting edge of the needle to present a symmetrical closed end to facilitate insertion of the needle into a patient and collection of a biopsy specimen. The stylet and needle are releasably interlocked together whereby upon removal of

the stylet, a biopsy tissue will be collected in the tapered distal end portion of the needle. Because of the expanded tapered interior of the needle there is little, if any, compression of the tissue specimen within the needle and therefore little, if any, damage to the tissue specimen.

3,628,525

**BLOOD OXYGENATION AND PULSE RATE MONITORING APPARATUS**

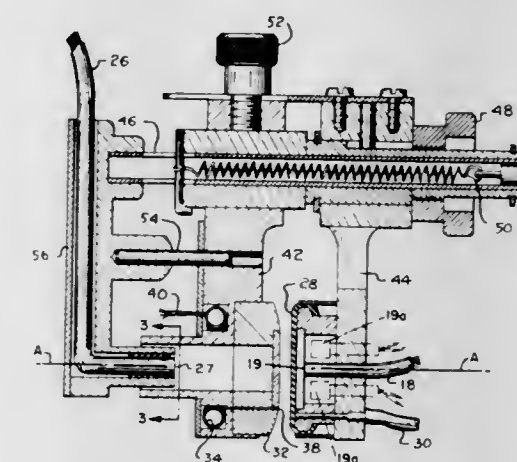
Michael L. Polanyi, Webster, and David S. Ostrowski, Dudley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed June 19, 1969, Ser. No. 834,735

Int. Cl. A61b 5/00

U.S. Cl. 128-2 R

13 Claims



An ear oximeter functioning as a transducer for monitoring blood oxygen saturation and pulse rate comprising an ear clamp having a pair of opposed jaws between which body tissue may be clamped for transillumination by light emitted from one jaw into the clamped tissue. Thermostatically controlled heating means arterializes the transilluminated tissue and light emitter from the tissue is monitored by a photoelectric light-intensity meter for indication of percent oxygen in blood within the arterialized tissue.

3,628,526

**PHYSIOLOGIC FLUID PRESSURE SENSOR HEAD**

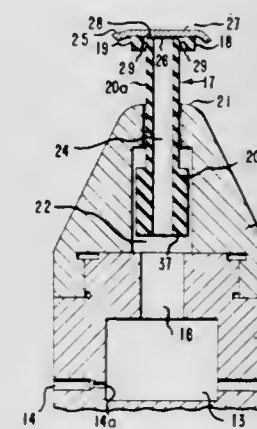
Robert P. Bigliano, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 14, 1969, Ser. No. 815,731

Int. Cl. A61b 5/02

U.S. Cl. 128-2.05 E

12 Claims



A pressure sensing head for measuring physiologic fluid pressure through an elastic body membrane, which is composed of: a membrane depressor-element with a membrane-depressing face adapted to engage the surface of the membrane; a supporting structure containing a pressure-develop-



ment cavity, a port for introducing gas under pressure into the pressure-development cavity and a port for measuring the gas pressure developed within the pressure-development cavity; and a feedback chamber formed in the supporting structure and adapted in a manner such that the depressor element is free to move relative to the supporting structure to vary the free volume of the feedback chamber. The feedback chamber is either an integral part of or connected to the pressure-development cavity and is connected through a passage in the depressor element to the membrane-depressing face of the depressor element. The membrane-depressing face is adapted so that the gas introduced into the pressure-development cavity will be discharged into the atmosphere in a manner such that the discharging gas is throttled by the disposition of the membrane relative to the membrane-depressing face.

3,628,527

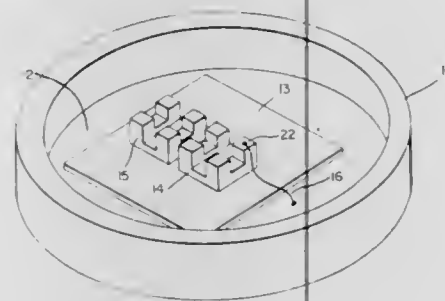
**BIOLOGICAL ELECTRODE AMPLIFIER**

Laurice J. West, Levittown, Pa., assignor to Microcom Corporation, Horsham, Pa.

Filed Oct. 8, 1969, Ser. No. 864,769

Int. Cl. A61b 5/04

U.S. Cl. 128—2.06 B



An apparatus is disclosed comprising an electrode for detection of biopotentials, and a high-input impedance, low-noise amplifier packaged with and in direct contact with the electrode, the input terminal of the first active device of the amplifier being epoxy bonded to the electrode. The amplifier is designed with thick film resistors, and without any capacitors, thus minimizing noise generation in the amplifier.

3,628,528

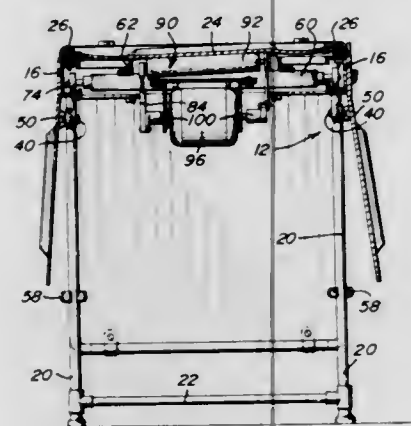
**MASSAGING AND REDUCING MACHINE**

Ray F. Roberts, Siloam Springs, Ark., assignor to Roll-A-Matic, Inc.

Filed May 21, 1970, Ser. No. 39,303

Int. Cl. A61h 15/00

U.S. Cl. 128—57



A massaging apparatus including a support panel mounted in taut generally planar condition and including a first face against which a body portion to be massaged may be placed

and a reverse face. The apparatus further includes an elongated vibrator member supported in generally parallel relation relative to and in contacting relation with the aforementioned reverse face. The vibrator member is supported for lateral reciprocation in a path generally paralleling the support panel and is also mounted for oscillation about an axis generally paralleling the aforementioned path during or independent of lateral movement of the vibrator along the path with the axis of oscillation of the vibrator member disposed generally centrally intermediate the opposite ends thereof. The massaging and reducing machine is illustrated and described hereinafter as a horizontal table upon which a person may lie in order to massage those portions of the body facing downward. However, the massaging apparatus can be mounted on an incline or in a vertical position, if desired. It is also envisioned that the support panel could be disposed over a person in a prone position with the vibrator member of the massaging apparatus disposed above the support panel and utilized to massage those portions of a prone person facing upwardly.

3,628,529

**HYDROMASSAGE ASSEMBLY**

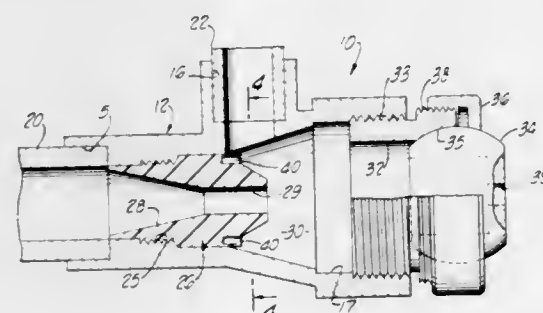
Wayne D. Steimle, 8806 Las Tunas Drive, San Gabriel, Calif.

Filed Dec. 22, 1969, Ser. No. 887,108

Int. Cl. A61h 9/00

U.S. Cl. 128—66

7 Claims



A hydromassage assembly adapted to be permanently embedded in the sidewall of a pool of water and including a detachable aspirator nozzle of nonmetallic material accessible for assembly and disassembly through the discharge port of the embedded assembly. The assembly is highly resistant to erosion from the action of rapidly flowing water and incapable of reacting to form metallic oxides and the like discoloring agents commonly deposited from the water onto the walls of pools and associated equipment.

3,628,530

**INTRAUTERINE DEVICE FOR CONTRACEPTION**

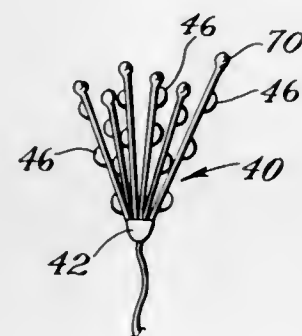
Jerome Schwartz, 1321 Club Drive, Hewlett Harbor, N.Y.

Filed Mar. 24, 1969, Ser. No. 809,834

Int. Cl. A61f 05/46

U.S. Cl. 128—130

18 Claims



An intrauterine device (I.U.D.) for contraception is provided which is comprised of a plurality of rodlike members

made of a soft, inert plastic. One end of each of the rodlike members is joined at a common junction to define, in an expanded condition, an upwardly diverging cone having an envelope that is oval shaped in transverse cross section. The rodlike members may be of equal or unequal lengths and may have irregularly spaced nodules formed thereon. A heat soluble gelation cap may be used to hold the rodlike members in a collapsed condition prior to insertion of the I.U.D.

3,628,531

**BALANCED-BREATHING PRESSURE SUIT WITH HELMET AND HAND-OPERATED CONTROL VALVE**

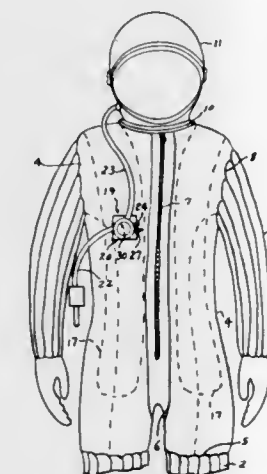
Leonard Harris, 4935 Joe Blanks, San Antonio, Tex.

Filed Apr. 24, 1970, Ser. No. 31,700

Int. Cl. A62b 7/14

U.S. Cl. 128—142.5

3 Claims



The invention is directed toward improved breathing comfort for an aviator subjected to rarified atmosphere at high altitudes. It employs a vest or jerkin which can be fitted by zipper over a passive pressure unit. The vest has secured to its interior a bladder which extends from front thigh up over the shoulder to the rear thigh position. A standard form of helmet is hermetically sealed to the neckline of the vest. Oxygen under pressure is introduced into the bladder and the helmet through a hand-operated valve which may be secured to the vest. This valve has three positions, (1) "Off," (2) "Fill" and (3) "Mission Complete" and has a single tubing to the helmet and a double tubing to the bladder. One of the latter is employed for supplying the bladder with gas. The other of the double tubing contains a pressure-operated check valve which closes the passage between the helmet and the bladder in the event of bladder failure. The aviator would normally turn the valve, first to position (1) to supply the helmet with oxygen and to exhaust the interior of the bladder. He would then turn to position (2) which continues the oxygen supply to the helmet, and in addition, would fill the bladder with oxygen at a pressure as would make breathing more comfortable as the higher altitudes are reached. In the event that the bladder becomes punctured with flake or shrapnel and therefore unable to retain the gas, the valve is moved to position (3) to cause the oxygen, in excess of that necessary for the helmet, to escape to ambient atmosphere through the check valve.

3,628,532

**ASPIRATION AND RESPIRATION APPARATUS**

Joseph M. Magrath, P. O. Box 148, McCook, Nebr.

Continuation-in-part of application Ser. No. 663,035, Aug.

21, 1967, now abandoned. This application Feb. 24, 1969,

Ser. No. 805,983

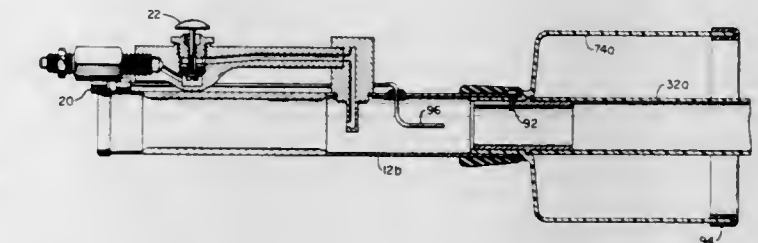
Int. Cl. A62b 7/00

U.S. Cl. 128—145.8

13 Claims

An aspiration and respiration apparatus including a unit comprising first and second conduit means, means for con-

necting each of said conduit means to a single source of pressurized gas, and means for controlling the flow of pressurized gas through each of said conduit means. The first conduit means includes a pair of openings, an inlet disposed intermediate said openings, and means for forming during flow of gas therethrough a zone of reduced pressure, said latter means being disposed intermediate said inlet and a first one of said openings. Each of the first and second conduit means is constructed for connection to a corresponding one of a pair of tubes each of which is adapted to have one end thereof disposed in a trachea of an air-breathing vertebrate whereby pressurized gas and a suitable medication may be introduced into the trachea through said second conduit means and one of the tubes, and whereby matter may be removed from the trachea by the other one of the tubes as a result of the flow of pressurized gas through said inlet into said first



conduit means, through said means for forming a zone of reduced pressure and out of said first one of said openings. The apparatus as described may also include means for closing the first one of said openings and said first conduit means for causing the inflation of the respiration system of a vertebrate for overcoming hypoxia. Additionally, the first one of said openings is constructed to be closeable by the hand of an operator for causing the inflation of the respiration system. The apparatus of this invention may also include a face mask means for enclosing the nasal and oral openings of an air-breathing vertebrate. The apparatus of this invention may also include a means connected to the second conduit means for injecting liquid into at least a portion of said second conduit means and thus function as an irrigator. The apparatus of this invention may also be used in a combination with a catheter to assist in removal of various fluids from the organs of animals.

3,628,533

**DOMED-TIPPED APPLICATOR FOR CATAMENIAL TAMPONS**

Michael Loyer, South Somerville, N.J., assignor to Johnson & Johnson

Filed Apr. 20, 1970, Ser. No. 29,942

Int. Cl. A61f 15/00

U.S. Cl. 128—263

4 Claims



A segmented, domed-tipped, tubular applicator for the insertion of catamenial tampons intravaginally is provided with



sinusoidal curvilinear ribs positioned centrally and extending axially and radially on the inner surface of each of the dome segments to spread the segments apart and permit the tampon to be expelled from the applicator.

3,628,534

## CATAMENIAL TAMPON AND METHOD

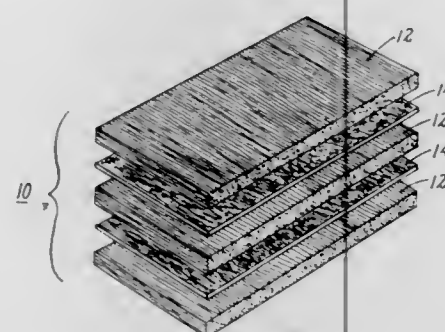
Francis X. Donohue, Wilbraham, Mass., assignor to Tampax Incorporated, Palmer, Mass.

Filed Feb. 10, 1969, Ser. No. 797,985

Int. Cl. A61f 13/20

U.S. Cl. 128—285

13 Claims



A catamenial tampon incorporating an absorbency improving agent which is a cross-linked polyacrylamide in which part of the amide groups have been hydrolyzed to carboxylate groups is disclosed. The additive is characterized by a high degree of absorptiveness and remains tack-free throughout its absorptive range. A method of making the tampon is also disclosed.

3,628,535

## SURGICAL INSTRUMENT FOR IMPLANTING A PROSTHETIC HEART VALVE OR THE LIKE

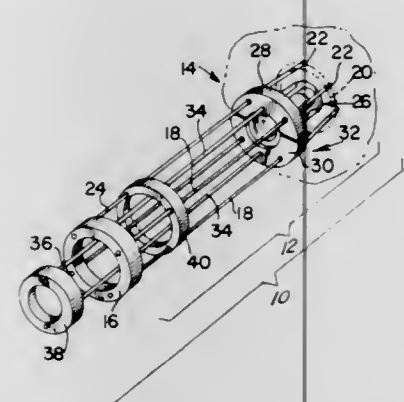
Efrem Ostrowsky, Highland Park; Bart T. Heffernan, Wilmette, and Aaron R. Best, Wheeling, all of Ill., assignors to Nibot Corporation, Lincolnwood, Ill., by said Best and said Ostrowsky

Filed Nov. 12, 1969, Ser. No. 875,989

Int. Cl. A61b 17/00; A61f 1/22

U.S. Cl. 128—303

6 Claims



A valve insertion unit for holding a heart valve or like prosthetic device to be inserted within the body, for engaging and spreading an expansible valve-receiving ring previously implanted in the body, for moving the valve into position within the ring, releasing the ring over the valve and releasing the valve from the holder. The valve holder is normally biased opened, fingers are used to spread the ring and are biased to a normally closely spaced-apart position, and movement of the holder along the fingers while portions of the holder engage the fingers expands the ring. When the holder, in an extreme axial position of travel, leaves the ends of the

fingers, the ring automatically snaps into position to hold the valve in place within the body and the valve holder releases its grip on the valve so the entire instrument may be removed from the body.

3,628,536

## TOURNIQUET

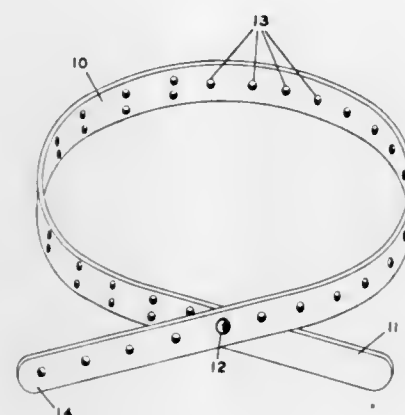
Otto N. Glesne, 1426 N. 12th, Fort Dodge, Iowa

Filed Aug. 15, 1969, Ser. No. 850,530

Int. Cl. A61b 17/12

U.S. Cl. 128—327

1 Claim



A tourniquet for restricting the venous flow of blood is formed by a strip of elastic material having a series of spaced apertures adapted for selective engagement with an upstanding stud for holding the tourniquet tightened around a body member. The apertures are unevenly spaced to compensate for the stretch of the strip so that substantially the same constricting pressure is applied regardless of the size of the body member.

3,628,537

## SELF-RETAINING COLD WRAP

Wilbur C. Berndt, and Harry J. Hardenbrook, both of 3419 S. Harlem Ave., Berwyn, Ill.

Filed Apr. 6, 1970, Ser. No. 25,969

Int. Cl. A61f 7/10

U.S. Cl. 128—402

9 Claims



A self-retaining cold wrap for application to an animal or human to relieve a traumatized area, reduce inflammatory edema and pain, among other uses. The cold wrap embodies an outer envelope, an inner container for a volatile refrigerant communicating with the interior of the outer envelope to provide reduced temperature and also pressure

within the outer envelope, a gastight closure for the outer envelope, and means for attaching the wrap to the body of an animal.

3,628,538

## APPARATUS FOR STIMULATING MUSCLES CONTROLLED BY THE SAME MUSCLES

Samuel Anderson Vincent, Belfast; Fabian Charles Monds, Newtownabbey, and David Roger Armstrong, Belfast, all of Northern Ireland, assignors to National Research Development Corporation, London, England

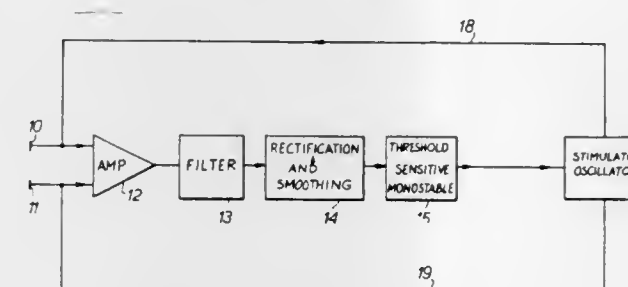
Filed Sept. 4, 1969, Ser. No. 855,281

Claims priority, application Great Britain, Sept. 18, 1968, 44,455/68

Int. Cl. A61n 1/36

U.S. Cl. 128—422

9 Claims



Apparatus for stimulating a muscle, using an E.M.G. signal sensed in the muscle, is described. The signal sensed is amplified, filtered and rectified before being applied to a monostable circuit which, if the E.M.G. signal is greater than a threshold value, enters its quasi-stable state. A stimulator circuit applies a voltage to electrodes adjacent to the muscle while the monostable circuit is in its quasi-stable state but the apparatus reverts to its sensing mode when the monostable circuit is in its stable state, allowing the E.M.G. signal to initiate further stimulation, if required. The apparatus is particularly useful in overcoming incontinence.

3,628,539

## MAMMARY SUPPORT

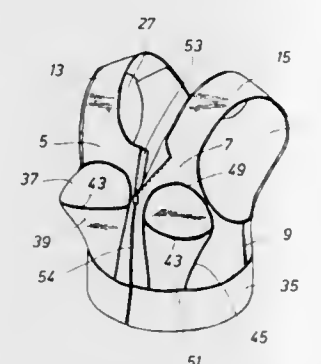
Simon Fredricks, 5111 Contour Place, Houston, Tex.

Filed Feb. 24, 1970, Ser. No. 13,729

Int. Cl. A41c 3/00

U.S. Cl. 128—427

8 Claims



A mammary supportive dressing constructed of uniformly distensible material and having a back panel and front panels, the latter detachably connected to one another for facilitating application and removal of the dressing. Each front panel includes a breast cup means having an upper section of elliptical profile and a lower section of semielliptical profile arranged and connected to one another and to the

detachable panels in a manner reducing respiratory restriction and post operative hematoma and seroma formation while at the same time exerting such uniform force as to maintain artificial implants in position during healing.

3,628,540

## FILTER CIGARETTE

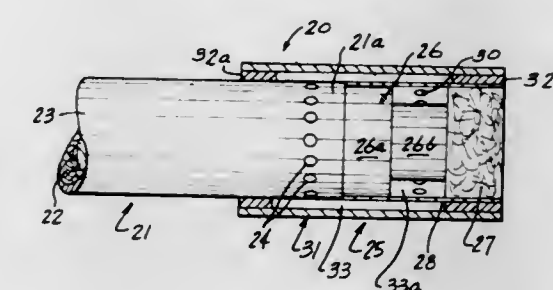
Joseph H. Sherrill, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 15, 1969, Ser. No. 850,414

Int. Cl. A24d 01/04; A24f 07/04, 13/06

U.S. Cl. 131—10.5

7 Claims



A filter cigarette is provided which includes an elongated tobacco rod and a filter assembly fixed to one end of said rod. The filter assembly comprises a core piece of smoke-imperious material. The core piece has a large section disposed adjacent to and in axial alignment with the rod one end and a small section which extends downstream therefrom. Disposed adjacent to the downstream end of the small section is a smoke-pervious member. A first sleeve is provided which encompasses the small and large sections of the core piece and said smoke-pervious member. The first sleeve is provided with a plurality of perforations disposed in encircling relation with respect to said core piece small section. A second sleeve is provided which encompasses the first sleeve and connects same to the rod one end. Portions of the first and second sleeves are in spaced relation and define a passageway, one end of which communicates with the rod one and the other end of which communicates with the perforations encircling the small section of the core piece.

3,628,541

## METHOD OF PRODUCING SHAPED TOBACCO PRODUCTS AND SHAPED PRODUCTS PRODUCED THEREBY

Paul Buchmann; Laszlo Egri, both of Basel, Switzerland, and Monique Beringer, St. Louis, France, assignors to Tamag Basel AG, Basel, Switzerland

Continuation-in-part of application Ser. No. 393,410, Aug. 31, 1964, now abandoned. This application Oct. 10, 1969,

Ser. No. 865,532

Claims priority, application Switzerland, Sept. 2, 1963, Mar. 5, 1964, Apr. 3, 1964, June 5, 1964; 10817/63, 2851/64, 4241/64, 7367/64.

Int. Cl. A24b 03/14

U.S. Cl. 131—140 C

8 Claims

A method is provided for producing shaped tobacco products. Comminuted tobacco material, having an average grain size of up to about 100μ is mixed with an aqueous solution having a pH of about 6 to about 10 and containing, in an amount up to about 15 percent by weight of the tobacco material, a substance selected from the group consisting of inorganic base, organic base, alkali metal and ammonium salts and mixtures thereof to form an aqueous slurry. The slurry is subjected to a temperature of not greater than about 100° C. for a period of up to about 45 minutes to form a pulp. To the resulting pulp is added from about 0.5 to about 3 percent by weight based on the weight of the tobacco of a binding agent. Products are shaped from the resulting pulp and the shaped products are dried at a temperature of from about 60° to about 100° C.



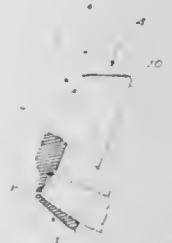
3,628,542

**SMOKER'S PIPE COVER**

Harry Drew, 1639 Steidl Road, Bend, Oreg.  
Filed Nov. 13, 1969, Ser. No. 876,298  
Int. Cl. A24f 05/10

U.S. Cl. 131-176

1 Claim



A smoker's pipe cover includes a bowl cap and skirt formed integrally from rubber or other air-impervious, resilient material. The bowl cap has a width sufficient to span the top of the pipe bowl and is provided with a thickened, stiff central portion opposite the pipe bore for insuring proper location of the cover on the bowl. The skirt resiliently engages the exterior bowl surface, detachably mounting the cover on the pipe. The central portion is arranged to project away from the opposite surfaces of the skirt such that the cover may be inverted regardless of which surface of the central portion is placed within the upper open end of a pipe bowl.

3,628,543

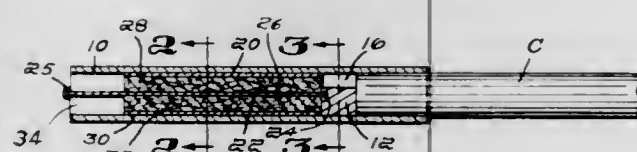
**CIGARETTE HOLDER AND FILTER TUBE**

Elliott T. Bemont, RFD 56 Katie Ford Road, Chatham, Mass.  
Filed Aug. 20, 1970, Ser. No. 65,634

Int. Cl. A24f 13/06

U.S. Cl. 131-207

6 Claims



A hollow cigarette holder has a plug near one end which has an opening. A filter tube movably extends into said holder, and a partition therein provides two channels, each containing filtering material, either of which may communicate with said holder opening. When the cigarette is partly consumed, the tube may be rotated a half turn in the holder by turning the partition, and another channel brought into communication with said plug opening, thus presenting fresh filter material to gather the deposit of foul matter as the remaining part of the cigarette is consumed. Both the holder and the tube may be made from transparent material so that the user may discern the degree of saturation thereof.

3,628,544

**PERMANENT WAVE-FIXING COMPOSITION AND PROCESS**

Gregoire Kalopissis, Paris, and Jean-Louis Abegg, le Perreux, both of France, assignors to Societe Anonyme Dite: L'Oreal  
Filed Feb. 28, 1968, Ser. No. 708,765

Claims priority, application France, Mar. 3, 1967, 97388  
Int. Cl. A61k 7/10

U.S. Cl. 132-7

5 Claims

Process of treating the hair comprising first permanently waving the hair with a thio reducing agent and thereafter applying to the hair an aqueous solution containing a neutralizing agent and a water-soluble diimide compound.

3,628,545

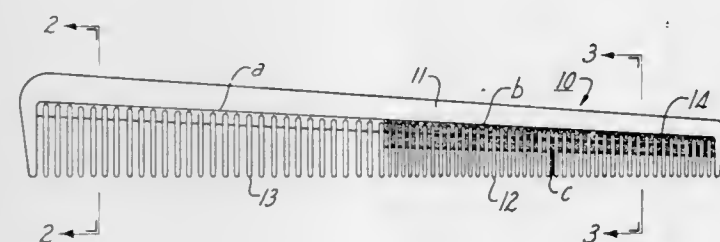
**HAIR-TEASING COMB**

Carl A. Moody, 889 Rolling Rock Road, Pittsburgh, Pa.  
Filed Jan. 5, 1970, Ser. No. 722

Int. Cl. A45d 24/00

U.S. Cl. 132-11

7 Claims



A hair comb having a tooth base teasing sector, band or area of a skid-resistant, soft, nonabrasive, flexible, rubber-like, highly adherent reinforcing material.

3,628,546

**SECTIONAL HAIRPIECES**

Ada Lucille Ensminger, 618 Broadway, Long Branch, N.J.

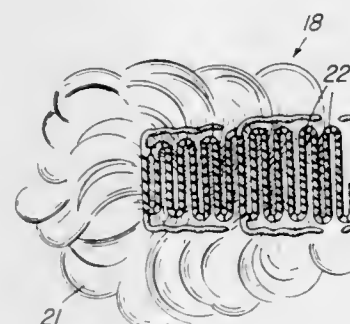
Continuation-in-part of 627,344, Mar. 31, 1967, now abandoned.

Filed Oct. 13, 1969, Ser. No. 865,868

Int. Cl. A41g 3/00

U.S. Cl. 132-53

8 Claims



This invention pertains to a narrow, one-piece, lightweight, self-retracting longitudinal frame forming a self-securing base for sectional hairpieces such as wiglets. The base is characterized by a unitary open frame of undulated formation wherein a wefted strip of hair extends at right angles from each undulation. The frame may be bent into any configuration to conform to any portion of the scalp and to angularly insert integral self-securing means into natural hair.

3,628,547

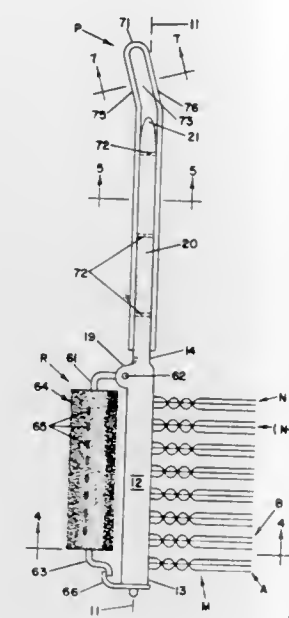
**BEAUTICIANS' HAND TOOL**

Salvatore J. Catania, 2004 S. 88th St., Omaha, Nebr.  
Filed May 5, 1969, Ser. No. 821,738

Int. Cl. A45d 24/00

U.S. Cl. 132-148

6 Claims



A beauticians' hand tool that is especially useful for the styling of wigs and having tricolumnar comb, combing brush, and T-pin remover features. The tricolumnar comb and combing brush features have similar utility when styling naturally growing human hair.

3,628,548

**UMBRELLA**

Heinz Seitel, Solingen-Ohligs, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

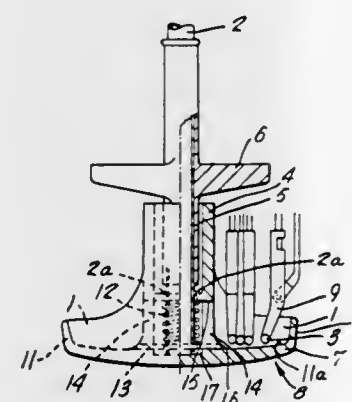
Filed Jan. 13, 1969, Ser. No. 790,750

Claims priority, application Germany, Apr. 3, 1968, P 17 57 134.5

Int. Cl. A45b 25/00, 19/00

U.S. Cl. 135-44

1 Claim



An umbrella having a generally rectangular configuration when folded flat in a collapsed condition; the umbrella including a handle and stick in which the handle is movable downwardly against a normal compression spring pressure which urges the handle recesses into engagement with rib tips of collapsed dome ribs lying along the umbrella stick of the collapsed umbrella.

3,628,549

**METHOD AND VORTEX PRESSURE REGULATING APPARATUS**

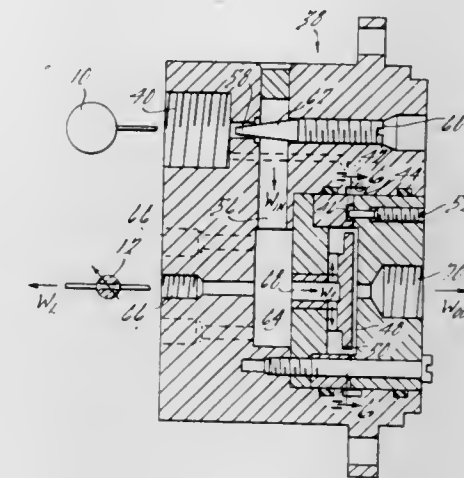
Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation

Filed Jan. 20, 1970, Ser. No. 4,387

Int. Cl. F15c 1/16

U.S. Cl. 137-13

14 Claims



A pressure regulator for maintaining inlet pressure to a fluid device over a range of flow rates to or from the fluid device, using a vortex valve with vertical pressure flow characteristics, connected with the supply inlet in parallel with the fluid device inlet and with a constant control pressure applied. The supply and control flow rates for the given value of regulated pressure are designed so that the range of flow rates experienced because of fluid device inlet flow fluctuations falls in the vertical pressure flow range of the vortex valve. In a second version, the supply and control flow rates are selectively variable so that the pressure regulator may operate in different ranges of regulated pressure values while still operating in the vertical pressure flow range of the vortex valve. A third version provides for pressure regulation at the inlet of an active load element.

3,628,550

**BIDIRECTIONAL INERTIA-RESPONSIVE GAS-DISPENSING APPARATUS**

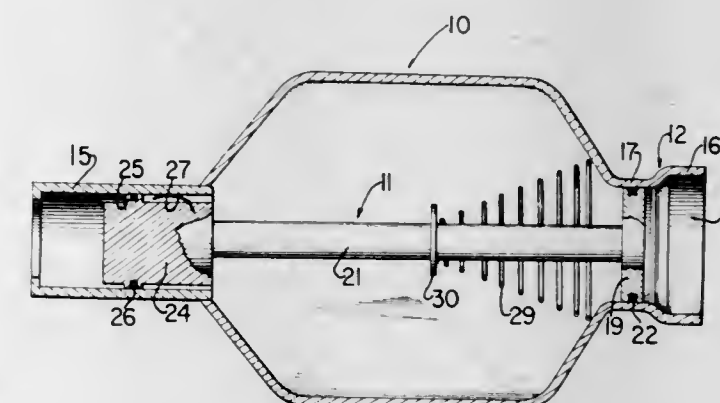
John Cirillo, Glen Ridge, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.

Filed July 15, 1970, Ser. No. 54,913

Int. Cl. F16k 17/36

U.S. Cl. 137-38

3 Claims



Apparatus for dispensing pressurized gas in response to a front or rear end collision including a container having an outlet opening and an open ended tubular member aligned



with the outlet providing a second opening. A valve member extending between the openings has a large diameter piston normally sealing the outlet and a smaller diameter piston sealing the second opening. Movement of the valve member in either axial direction moves the large diameter piston out of the outlet to discharge the container. A spring is provided to hold the valve member in the closed position against the differential pressure force acting on the large diameter piston. When the container is rapidly decelerated or accelerated along the axis of the valve member, the inertia of the valve member causes it to be displaced opening the outlet to permit discharge of the container.

3,628,551

# CONFINED JET AMPLIFIER HAVING A RECEIVER CHARACTERIZED BY HAVING A PLURALITY OF FLOW OPENINGS

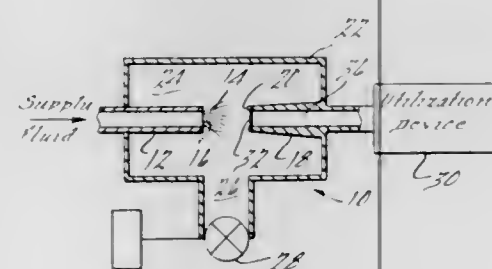
Endre A. Mayer, Birmingham, Mich., and Donald E. Frericks, Bettendorf, Iowa, assignors to The Bendix Corporation

Filed Jan. 5, 1970, Ser. No. 754

Int. Cl. F15c 1/04

U.S. Cl. 137-81.5

10 Claims



A confined jet fluid pressure amplifier having a receiver comprising a plurality of openings to provide increased gain and reduced noise levels.

3,628,552

# FLUID AMPLIFIER TORSIONAL SPEED REFERENCE

Hansjoerg Stern, Scotia, N.Y., assignor to General Electric Company

Filed Mar. 27, 1970, Ser. No. 23,255

Int. Cl. F15c 3/00

U.S. Cl. 137-81.5

9 Claims



A speed reference for fluid amplifier speed controls utilizes a torsional pendulum comprising a taut wire having in the middle thereof an aerodynamically shaped mass.

3,628,553

# SAFETY VALVE HAVING PLURAL LOADING MEANS

Graham Melbourne Wells, and Frank Wooffindin, both of Huddersfield, England, assignors to Hopkinsons Limited, Huddersfield, England

Filed Nov. 29, 1968, Ser. No. 779,714

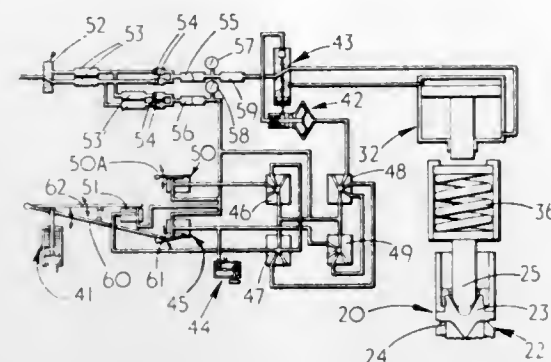
Int. Cl. F16k 17/06

U.S. Cl. 137-81.5

6 Claims

A safety valve provided with two loadings on the same valve component to effect instantaneous operation of the

valve, with one of the loadings being the normal valve loading, such for example as torsion bars or a spring, and the



other loading being a supplementary loading which acts on the valve component through an actuator and precompressed spring.

3,628,554

# FLUID PRESSURE CONTROL VALVE

Alexander J. Wilson, Warwickshire, England, assignor to Girling Limited, Birmingham, England

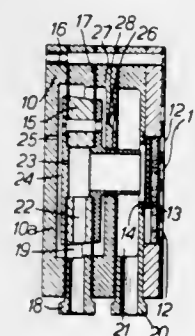
Filed July 22, 1969, Ser. No. 843,394

Claims priority, application Great Britain, Aug. 17, 1968, 39,449/68

Int. Cl. F15b 5/00; G05d 16/00

U.S. Cl. 137-85

3 Claims



In a valve for controlling relative fluid pressures in first and second spaces of the type described in my U.S. Pat. No. 3,310,350, means are incorporated to control the rate of pressure buildup on the side of the second control member which is subjected to a pressure different from that in the first space.

3,628,555

# SYSTEM FOR CONTROLLING THE CONTENT OF ONE FLUID IN ANOTHER FLUID

Yoshihiko Nagano; Kenichi Yamaguchi, and Tomohisa Yamamoto, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

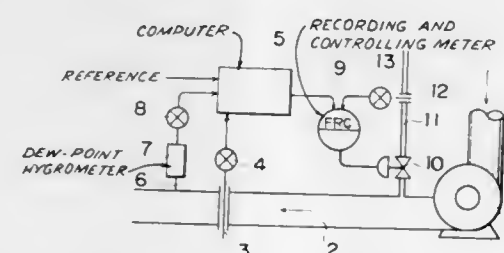
Filed Feb. 16, 1970, Ser. No. 11,403

Claims priority, application Japan, Feb. 15, 1969, 44/10893

Int. Cl. G05d 22/02, 11/08, 21/02

U.S. Cl. 137-88

6 Claims



A control system for controlling the content of one fluid in another fluid. The flow quantity of the mixture of the two

fluids is measured and the content of the one fluid in the other fluid is also measured. An electronic computer is used to control the quantity of the one fluid which is to be added to the mixture in order to maintain the content of the one fluid in the mixture at a predetermined value.

3,628,556

# AUTOMATIC SPOOL VALVE

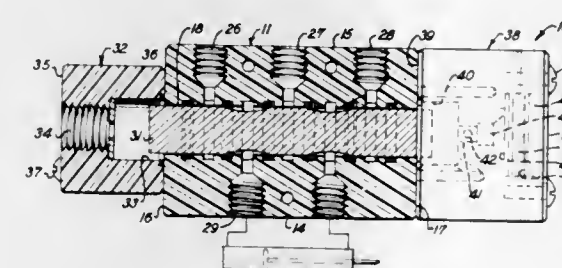
John D. Bachman, 1300 Volunteer Parkway, Bristol, Tenn.

Filed Nov. 18, 1969, Ser. No. 877,669

Int. Cl. F15b 11/15

U.S. Cl. 137-106

13 Claims



The invention includes the automatic control and actuation of pneumatic four-way five-port pressure-actuated spool valves when used to control the cycling operation of double-acting air cylinders. A built-in two-way spring-loaded pressure-actuated valve functions to open and close a vent leading from the pilot chamber of the spool valves. Supply pressure constantly bleeds from the system supply to the pilot chamber and is vented to the atmosphere as long as the two-way valve is held open by residual pressure from exhaust side of the double-acting air cylinder. When residual pressure reaches zero, the two-way valve is closed by spring action and the pilot chamber becomes pressurized from system supply, thus shifting the spool of the spool valve. When the main spool is thus shifted, the previously pressurized side of the double-acting cylinder becomes the exhaust side and its residual pressure then opens the two-way valve venting the pilot chamber.

In a second form of the invention the system supply is bled into the pilot chamber of a second spool valve to provide sequence programming. A differentiating valve is provided to create a system supply pulse to the second spool valve, permitting it to be recycled while the original system supply pressure remains constant for a period.

3,628,557

# VARIABLE PREFERENTIAL FLOW CONTROL VALVE

Harry Newborough, Fife, Scotland, assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Feb. 18, 1970, Ser. No. 12,299

Claims priority, application Great Britain, Aug. 15, 1969, 40,823/69

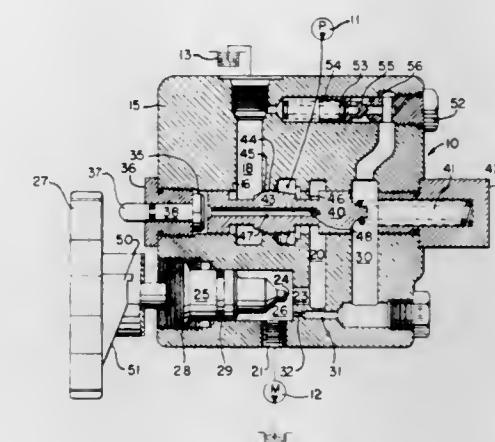
Int. Cl. F16k 31/12

U.S. Cl. 137-116.3

6 Claims

A priority flow control valve for directing a constant flow from the valve inlet to a primary circuit with any excess being directed to a secondary circuit. A cannellured control spool in the valve positions itself responsive to the pressure drop across a variable flow control orifice to proportion inlet flow between the primary and secondary circuits. A control handle for adjusting the variable orifice is provided with a cam which actuates a follower adapted to position the spool in a dumping position when the orifice restriction is reduced to a predetermined size. One additional feature includes a relief valve in communication with a pilot flow in the discharge

passage which operates to relieve pressure to permit the pressure acting against the valve spool to move the main valve to



a dumping position when a predetermined system pressure is exceeded.

3,628,558

# HYDRAULIC CONTROL VALVE

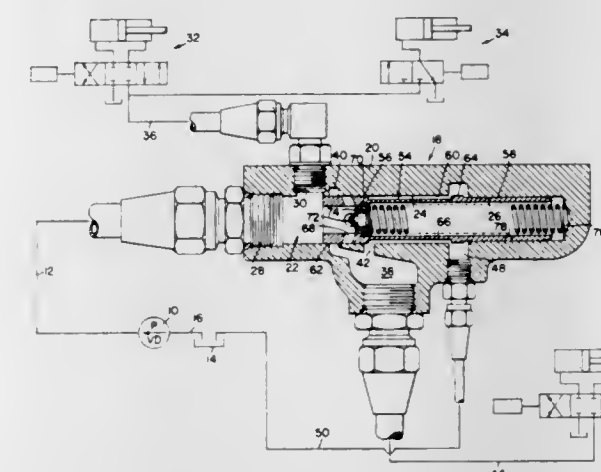
James Melvin Bahl, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sept. 2, 1970, Ser. No. 68,984

Int. Cl. G05d 15/00

U.S. Cl. 137-118

10 Claims



A hydraulic system has a pump, which supplies fluid pressure for both primary and secondary hydraulic functions. A hydraulic control valve is disposed in the system to shut off the fluid pressure supplied to the secondary hydraulic functions when the flow rate required by the hydraulic functions exceeds the pump capacity to cause a reduction in pressure below a predetermined value. The control valve also disconnects the secondary hydraulic function from the rest of the system when the secondary function generates surge pressures above a predetermined value and simultaneously connects the secondary function to the reservoir, so that the valve also functions as a check and relief valve for the secondary function. The valve further automatically connects the pump to the reservoir when the pump is driven at very low speeds and produces a very low-flow rate, such as during starting of the engine which drives the pump, to lessen the load on the starting motor.



3,628,559

**ULLAGE OPENING SPILLAGE PREVENTION SYSTEM**

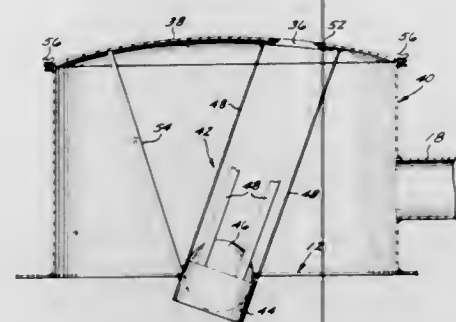
Mariani Branko, 663 W. 13th St., San Pedro, Calif.

Filed Oct. 16, 1970, Ser. No. 81,200

Int. Cl. F16k 31/18

U.S. Cl. 137—202

6 Claims



A system for preventing spillage or overflow of liquid cargo through the ullage openings of cargo tanks of a tanker. An elongated guide is provided in the expansion trunk of each of the cargo tanks, the guide being characterized by an open framework which mounts a float for movement toward the ullage opening when the liquid cargo rises in the tank. The float is engageable with a seat adjacent the opening to seal off the opening and prevent cargo spillage occasioned by inadvertent overfilling. The open framework of the guide permits the ullage opening to still be used to insert a probing element into the cargo tank, the guide preferably being inclined from the vertical for this purpose. Conduits are also provided to convey overflow cargo to empty cargo spaces.

3,628,560

**SUPPORT AND SEAL FOR A DRIVE MEANS**

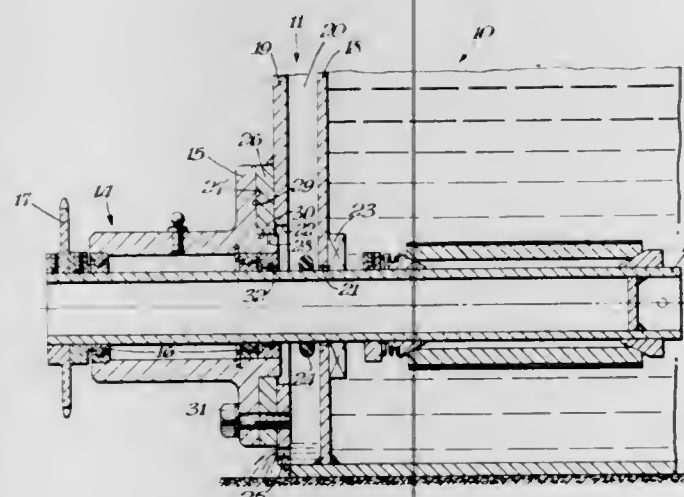
Robert H. Ettinger, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed June 13, 1969, Ser. No. 833,112

Int. Cl. F16j 15/54

U.S. Cl. 137—312

6 Claims



A drive for an operation carried on within a fluid contained in a double-walled tank in which a drive extending into the tank in which a drive extending into the tank is supported only at the end of the shaft outside of the tank and is accurately positioned in driving position by the mating of machined surfaces of the support. An annulus around the shaft and rotating with the shaft is positioned on the shaft in the dead space between the inner and outer panels of the tank double wall to prevent seepage through the inner panel

from reaching the drive shaft support. A seal against seepage at the outer panel and at the shaft support is eliminated.

The combined drive shaft and support axially movable, independent of the tank, and quickly and easily mounted on and supported by the tank double wall with the mating of machined surfaces on the support and machined surfaces on the tank providing positioning and aligning of the shaft while the annulus mounted on the shaft is positioned in the double-wall dead space to protect against seepage during subsequent operation of the drive.

3,628,561

**VALVE STRUCTURE FOR EXTRUDERS**

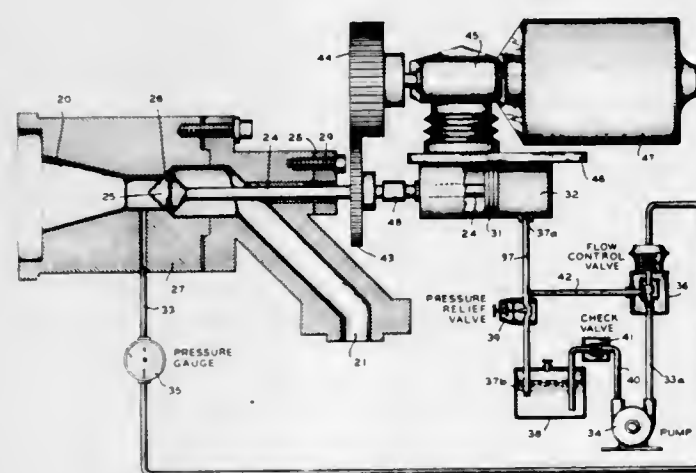
Herbert O. Corbett, Carrollton, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 396,563, Sept. 15, 1964. This application Dec. 17, 1969, Ser. No. 885,770

Int. Cl. F16k 29/02

U.S. Cl. 137—331

5 Claims



A servosystem for the valve of a plastic extruder wherein the valve is connected to a fluid pressure means operated from a source of constant pressure; the system includes gauge means for ascertaining the pressure of extrudate passing through said valve and flow control valve means associated with said gauge means and said constant pressure means, said flow control valve means being responsive to any variation in extrudate pressure, as indicated by said gauge means, for automatically adjusting the pressure of said constant pressure means to correct any variation from a predetermined pressure.

3,628,562

**CLOSING DEVICE WITH A STOP VALVE WHICH IS SITUATED OUTSIDE THE VALVE HOUSING**

Johannis Bruins, Barendrecht, Netherlands, assignor to De Rotterdamse Droogdok Maatschappij N.V.

Filed Oct. 9, 1969, Ser. No. 865,115

Claims priority, application Netherlands, Oct. 10, 1968, 68.14521

Int. Cl. F16k 17/24

U.S. Cl. 137—459

5 Claims

A closing device, particularly for use in vessels, comprising:

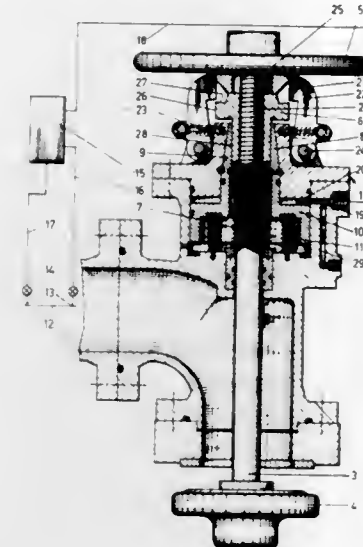
- a valve housing having a passage therethrough;
- a valve adapted to seal said passage through said valve housing;
- a valve rod passing through said valve housing, connected at one end to said valve, a portion of said valve rod adjacent its other end being threaded;
- a hand wheel connected to the upper end of said valve rod;
- a valve rod nut threadedly engaged with the threaded portion of said valve rod;

f. a first spring biasing said valve rod not towards said hand wheel;

g. means mounted around said valve and including a flexible part composed of a plurality of claws having an outer surface tapered axially toward said hand wheel, and a rigid part;

h. a second spring biasing said means in an axial direction toward the said hand wheel;

water flow previously stored in a first memory device during a predetermined sampling period. The apparatus for detecting the pressure drop of the water in the water service main operates when the amplitude of the existing water pressure falls below the water pressure previously stored in a second memory device. The supply of water into the water service main is stopped by the simultaneous operation of both these detecting devices.



i. a portion of the inner surface of the said valve housing having a frustoconical shape cooperating with the tapered outer surface of said claws adapted to clamp the said valve rod nut in a set position; and

j. said valve housing and said rigid part defining therebetween a chamber adapted to be connected to a pressure source to move said rigid part against said second spring and unclamp said flexible part from said valve rod nut.

3,628,563

**EXPLOSION DETECTING MEANS FOR A FLUID PIPELINE**

Takehiko Tomita, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

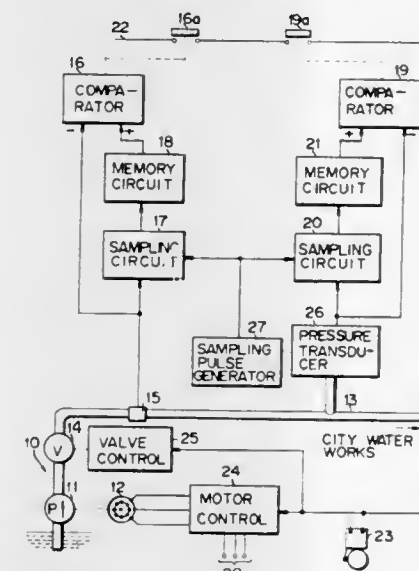
Filed Dec. 1, 1969, Ser. No. 881,103

Claims priority, application Japan, Dec. 10, 1968, 43/90067

Int. Cl. F16k 17/20

U.S. Cl. 137—460

8 Claims



A device for detecting an increase in water flow through a water service main and for detecting the pressure drop existing in the water flowing through the main is disclosed. The device operates when the volume of the existing water flow in the main exceeds by a predetermined value a volume of

3,628,564

**FLUID FLOW CONTROL VALVE ASSEMBLY**

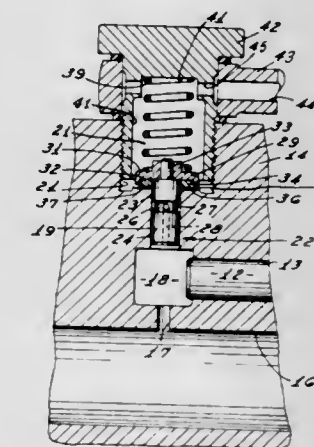
Irving N. Bishop, Farmington, and Louis L. Repko, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 2, 1969, Ser. No. 863,173

Int. Cl. F16k 21/04

U.S. Cl. 137—516.29

12 Claims



A retraction-type delivery valve assembly for a fuel injection system of an internal combustion engine. The assembly controls fuel flow through and pressure within an adjoining injecting line. The assembly includes a spool valve received in a bore of the valve body and having an enlarged head portion which abuts a portion of the valve body in one direction of movement of the valve. A plurality of substantially concentric microgrooves are formed in the valve body about the spool valve bore. The head portion of the spool valve includes a plastic sealing disc formed with a plurality of corresponding microgrooves that matingly engage the microgrooves of the valve body when the valve assembly is closed.

3,628,565

**FLEXIBLE CHECK VALVES**

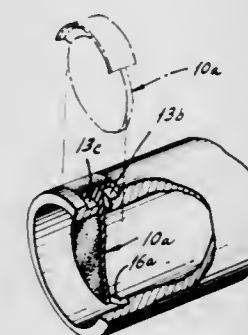
Irvin E. McWethy, Oxford, Ohio, and Bjorn O. Beck, Richmond, Ind., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Mar. 3, 1970, Ser. No. 16,095

Int. Cl. F16k 15/16

U.S. Cl. 137—525.3

7 Claims



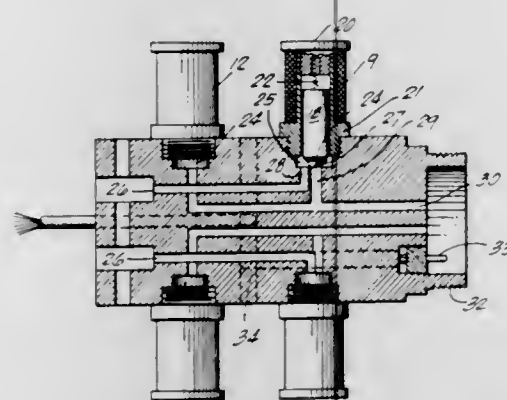
Check valve apparatus for controlling fluid flow, comprising a flexible "flapper"-type valve member and a tubular



valve-receiving collar including an internal annular valve seat. The collar is apertured around a portion of its periphery to accommodate insertion of the flexible valve laterally of the direction of fluid flow. Mounting of a hose over the collar, and clamping of the hose thereon, provides a seal and completes the assembly.

**3,628,566**  
**MULTIPLE FLUID CONTROL DEVICE**  
Clifford C. Carse, 8880 Kewen Ave., Sun Valley, Calif.  
Filed Feb. 2, 1970, Ser. No. 7,841  
Int. Cl. F16k 11/20  
U.S. Cl. 137—594

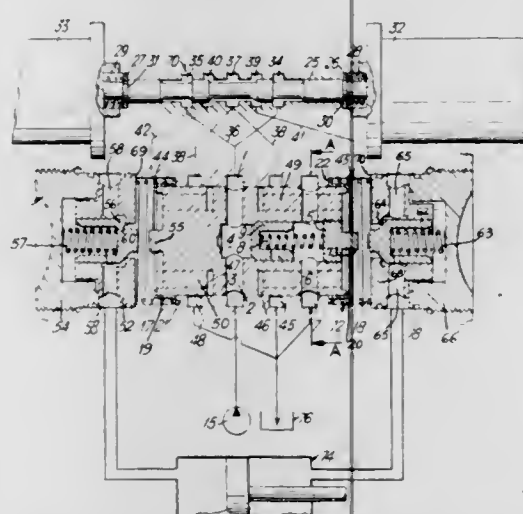
4 Claims



A valve apparatus for a multifluid dispenser which can be located apart from the dispensing head. Flow of each fluid dispensed is selectively controlled by a separate electrically powered solenoid-actuated valve mounted on a valve block having channels therein connected to the fluid reservoirs and the dispensing head. Actuation of a solenoid-controlled valve initiates movement of a paramagnetic core placed within the solenoid coil in such a manner as to open a fluid path from the fluid reservoir to the dispensing head. The core is positionally biased so as to block the fluid path upon deenergization of the solenoid. The particular solenoid valve actuated is selected by a multiposition switch in the dispensing head.

**3,628,567**  
**POWER CONTROL VALVE**  
Alfred Bender, Hofheim, and Horst A. Hornig, Frankfurt am Main, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.  
Filed June 15, 1970, Ser. No. 46,109  
Claims priority, application Germany, June 14, 1969, P 19 30 387.8  
Int. Cl. F16k 11/07  
U.S. Cl. 137—596.13

9 Claims

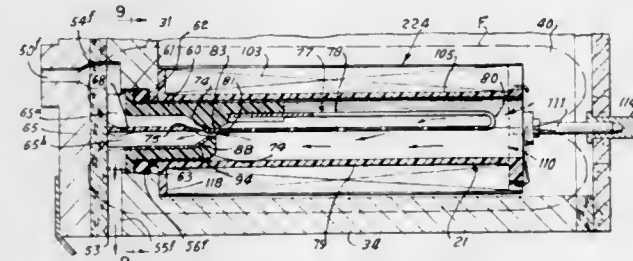


A two-stage hydraulic valve system for controlling a double-acting load the system having a three-position first stage

valve for supplying pressure medium to pressure chambers on either end of a piston valve slide in a power control valve having twin lift valves for connecting the pressure source to the double-acting load. The lift valves, which are in the ends of the piston valve cylinder connect the load to the pressure chambers when the valves are opened, either by the movement of the piston valve slide against the lift valve, or by the increased pressure in the pressure chamber when the valve slide is at one end of its stroke and the pump pressure is applied to the pressure chamber at the other end of the valve slide. In the neutral position of the power valve there is free circulation of pressure medium from the source to the reservoir through a pressurizing valve. This circulation is cut off when the valve is actuated and the full pump pressure applied to one of the pressure chambers by means of valving passages and ports in the cylinder and slide.

**3,628,568**  
**VALVE ASSEMBLY**  
Donald W. Green, Richardson, Tex., assignor to Dow Jones & Company, Inc., New York, N.Y.  
Filed Aug. 14, 1969, Ser. No. 850,134  
Int. Cl. F16k 11/14; F15c 3/00  
U.S. Cl. 137—610

8 Claims



A valve assembly for selectively directing air to either a point of use, such as a nozzle, or to a vent passage, which includes a valve body having a central passage having a restricted portion, a splitter for dividing the passage into two portions and a valve member operatively associated with the splitter and extending into the restricted portion for selectively directing air into either of the two portions of the central passages. The valve member comprises a magnetizable U-shaped resilient valve member having one leg portion fixed to tee valve body and a free leg portion extending into the restricted portion. The apparatus additionally includes an electromagnetic coil or winding disposed about the valve member and the valve body which, when energized, actuates the free leg portion to move it from its normally open nonactuated to its actuated position. The valve assembly may also include a magnetic strip also magnetizable by the current flowing in the winding which cooperates with the free leg portion to increase its speed and efficiency of operation. A combination of a plurality of the above described valve assemblies are disposed in a plenum of a housing into which air is introduced under pressure, each of the valve assemblies selectively directing air to either a vent passage or to nozzles mounted on the housing.

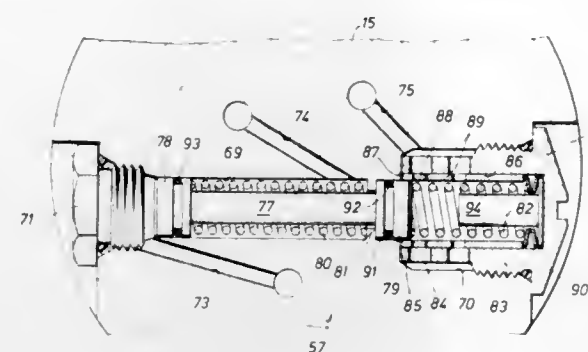
**3,628,569**  
**CONTROL VALVES FOR WELL TOOLS**  
Harold J. Urbanosky, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.  
Original application Dec. 12, 1969, Ser. No. 884,531, now Patent No. 3,565,170, dated Feb. 23, 1971. Divided and this application June 10, 1970, Ser. No. 44,951  
Int. Cl. F16k 5/14  
U.S. Cl. 137—625.3

6 Claims

The invention disclosed herein is directed to new and improved control valves which are particularly adapted for selectively operating pressure-actuated well tools. In particu-

lar, different embodiments are disclosed of high-pressure control valves which are especially adapted for repetitively

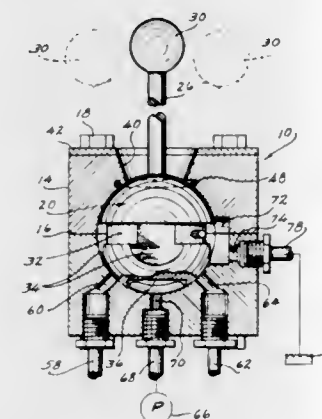
between the chamber on the downstream side of the valve and a low-pressure reservoir before lifting the valve from its seat.



operating at the extreme pressure differentials typically experienced in well bores.

**3,628,570**  
**OMNIDIRECTIONAL FLUID-CONTROL VALVE**  
Allen Richard Andis, 3209 Elwood Drive, Racine, Wis.  
Filed Nov. 20, 1970, Ser. No. 91,277  
Int. Cl. F16k 11/02  
U.S. Cl. 137—625.23

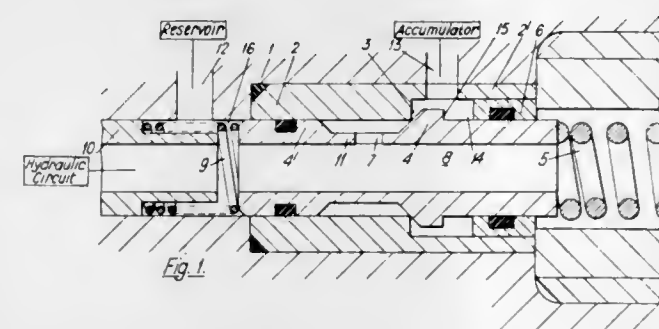
4 Claims



A fluid-control valve having a spherical control member surrounded by a body having a chamber that conforms intimately with the surface of the control member. Fluid passageways are provided on the control member which are alignable with ports in the body when the member is nutated relative to the chamber. Fluid under pressure is thus selectively directed to hydraulic equipment to actuate a ram or other device.

**3,628,571**  
**VALVE**  
Fritz Ostwald, Buchschlag, and Gerhard Nonn, Hofheim, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.  
Filed Mar. 26, 1970, Ser. No. 22,763  
Claims priority, application Germany, Mar. 29, 1969, P 19 16 334.9  
Int. Cl. F15b 13/04  
U.S. Cl. 137—627.5

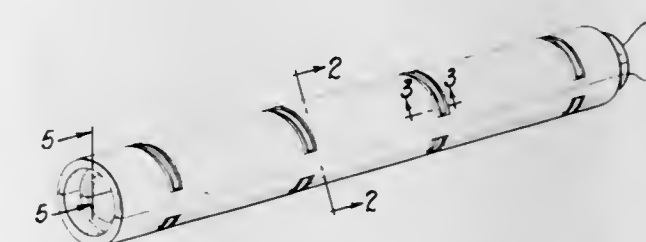
10 Claims



In this seat valve the flow direction is in opposition to the valve opening and the valve actuator closes a connection

**3,628,572**  
**PIPE INSULATION AND METHOD OF INSTALLING SAME**  
Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation  
Filed Dec. 29, 1969, Ser. No. 888,241  
Int. Cl. F16l 9/22  
U.S. Cl. 138—161

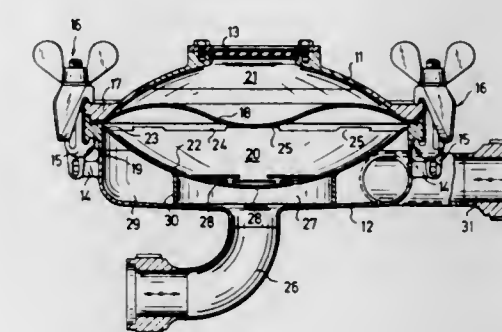
3 Claims



Pipe insulation comprising two abutting blocks of insulation each having a half annular cross section whose central cavity receives the pipe. The leg of each block on opposite sides of the pipe are stepped, and the blocks are held together by C-clips which are positioned in circumferentially extending grooves so that the clips lie beneath the surface of the insulation. The steps of the abutting legs of the blocks preferably have an interference fit which, in some instances, may be slightly Z-shaped so that the blocks are locked together by the spring action of the clips to prevent radiation and convection losses. The end surfaces of the insulation blocks are likewise stepped for dovetailing with endwise located blocks, and preferably have an interference fit therewith to prevent radiation and convection losses by separation therebetween.

**3,628,573**  
**DIAPHRAGM CHAMBER-DAMPING DEVICE FOR DAMPING FLUID SHOCKS IN PIPE SYSTEMS**  
Willi Loliger, and Rudolf Schmied, both of Konolfingen, Switzerland, assignors to Alpura AG, Bern, Switzerland  
Filed July 21, 1970, Ser. No. 56,897  
Int. Cl. F16l 55/04  
U.S. Cl. 138—30

8 Claims



The diaphragm chamber-damping device has a dished shell below the diaphragm which cooperates with a separating wall to form a pair of chambers within the liquid compartment while providing for a flow of fluid between the two chambers. One chamber communicates with an inlet pipe while the other chamber communicates with an outlet pipe so that fluid can be passed through the device.



3,628,574

**METHOD FOR THE FABRICATION OF WEAVING HEDDLES**

Paul Ramseier, Pfaffikon, Switzerland, assignor to Bracker AG, Pfaffikon, Switzerland

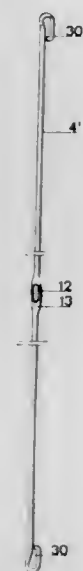
Filed Oct. 14, 1969, Ser. No. 866,345

Claims priority, application Switzerland, Oct. 18, 1968, 15590/68

Int. Cl. B211 45/08

U.S. Cl. 140—72

11 Claims



A novel method is disclosed for fabricating weaving heddles from wire stock by passing the wire through a rolling mill to give the stock a substantially elongated, that is, a comparatively thin and wide cross section. Then a plurality of longitudinal notches are embossed in the stock spaced apart a distance generally equal to the desired length of the heddles, whereupon each notch is spread by means of a wedging tool into an elongated slot to form an eye and there is inserted an eyelet member therein. Thereafter, the individual heddles are cut apart generally midway between consecutive eyes. Each end of the heddle is then formed into a terminal eye by bending between appropriate tool members. The heddles may also be formed from pre-cut sheet stock by bending the ends thereof into terminal eyes by means of tool members generally similar to those used for the wire stock.

3,628,575

**APPARATUS FOR MANUFACTURING WOUND STATORS**

Donald E. Hill, 522 Sandy Ann Lane, Fort Wayne, Ind.

Original application May 19, 1966, Ser. No. 551,328, now Patent No. 3,508,316. Divided and this application Dec. 4, 1969, Ser. No. 882,087

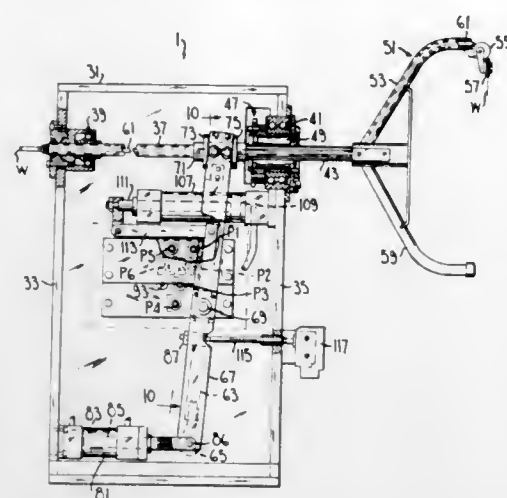
Int. Cl. B21f 3/04

U.S. Cl. 140—92.1

9 Claims

Apparatus for winding coils to be placed in the slots of a stator of an electric motor or the like, comprising a rotary indexing turret having four coil forms spaced at intervals therearound adapted for rotation to bring each coil form to a winding station and thence to an unloading station, and means adjacent the unloading station for placing the coils in the slots of a stator. Each coil form has steps for winding a group of coils of different sizes thereon, winding being effected by a flyer which is shifted for winding coils on the different steps, and which may be traversed for level winding the wire. The wire is wound without severing it between successive coils of each group, and without severing it between successive groups, and a group of coils unloaded from the

coil form at the unloading station is placed in the slots of a



stator while another group is being wound at the winding station.

3,628,576

**VACUUM NOZZLE DEVICE**

Dave L. Owen, Spartanburg, S.C., assignor to W. R. Grace &amp; Co., Duncan, S.C.

Filed July 25, 1969, Ser. No. 844,883

Int. Cl. B65b 31/04

U.S. Cl. 141—65

8 Claims



A manually operated vacuum device for withdrawing air from a package, and positioning the package for closing. The device has only four basic parts that may be disassembled and assembled by hand, a suction tube, a slide tube mounted on the suction tube for reciprocation thereon, a nozzle at the entrance to the slide tube and a valve means trapped between the nozzle and the suction tube for valving the device in response to reciprocation of the slide tube. A special nozzle is of shallow depth and has a closed end with ports entering from the side. Another special nozzle member has a sump in its tip and narrow slot openings entering into its vacuum evacuated bore.

3,628,577

**FILLER MOUTH**

John Kruis, 2221 Industrial Parkway, Elkhart, Ind.

Filed Aug. 12, 1970, Ser. No. 63,211

Int. Cl. B67c 11/00

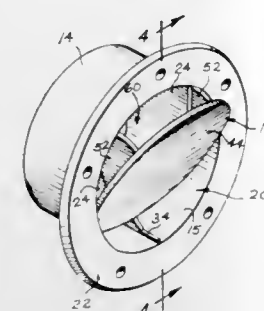
U.S. Cl. 141—333

12 Claims

A mouth through which a receptacle for liquid, granular or similar material may be filled including a housing having an

open-ended chamber therein and an orifice located opposite to the chamber opening which is adapted for connection to the receptacle. A closure is pivotally connected about a horizontal axis to the housing and is adapted to span and seal the chamber opening when shifted into a first position. The closure is also shiftable into a second position in which the

routing tool operating at a beveling angle allows the tool to follow assembled substructure and bevel the edge of the



upper margin of the closure is spaced outwardly from the housing and the lower margin of the closure projects into the housing chamber, abutting and cooperating with portions of the housing to define a funnellike structure which communicates with the orifice in the housing and into which material may be poured for filling the receptacle connected to the housing orifice.

3,628,578

**MOBILE RADIAL ARM SAW AND SAW TABLE**

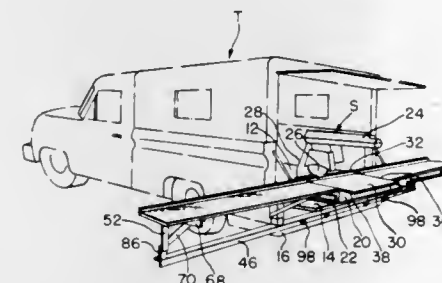
Kenneth D. Berg, 10822 Emander Road, Everett, Wash.

Filed Aug. 27, 1969, Ser. No. 853,386

Int. Cl. B27b 5/20

U.S. Cl. 143—6 A

13 Claims



Truck mounted radial arm saw and detachable saw table extensions. The saw is mounted on the bed of a truck and with appropriate guide and mounting means is slidable from a position on the bed of the truck to a position which locates it entirely or partially on the tailgate. The saw is locked into position and saw table extensions can be quickly attached to the rear of the truck to extend outwardly to each side of the saw table. The extensions are easily mounted and dismounted. The table extensions connect to the truck and to the saw table proper.

3,628,579

**PLASTIC LAMINATE TRIMMER**

Edward Noland Roche, 5 Hickory Hill Road, Cockeysville, Md.

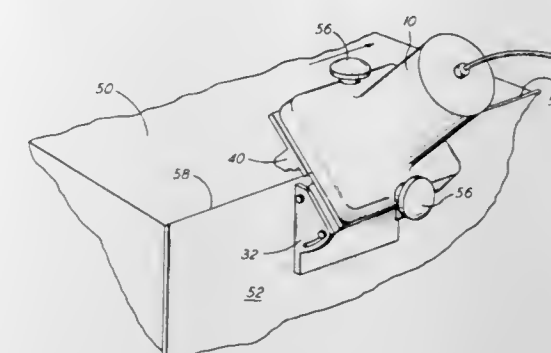
Filed Nov. 18, 1969, Ser. No. 877,616

Int. Cl. B27c 5/10; B23d 9/00

U.S. Cl. 144—325 E

7 Claims

A novel method and tool for fitting laminate to substructure is disclosed. The provision of pad gauges to a motorized



3,628,580

**NUT-CRACKING MACHINE**

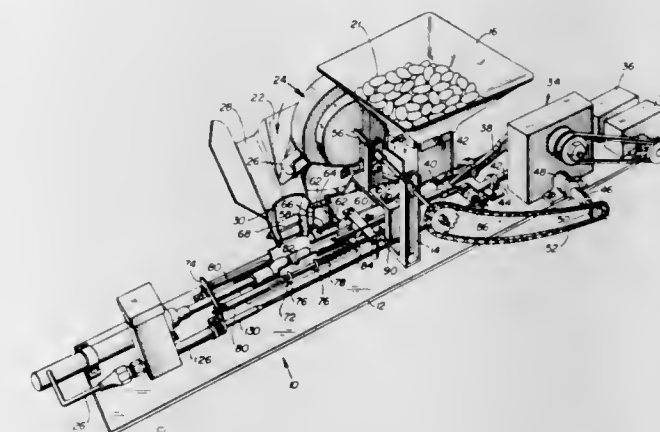
Zachary L. Langston, Rt. 2, Box 66, Locust Grove, Okla.

Filed Jan. 7, 1969, Ser. No. 789,471

Int. Cl. A23n 5/02

U.S. Cl. 146—12

4 Claims



A nut-cracking machine which includes vacuum pickup means to position a nut in nut-cracking means operably interconnected with said vacuum pickup means, said nut-cracking means including hydraulic means to automatically adjust the nut-cracking means to the size of the nut and also provide stop means for a nut-cracking die of the nut-cracking means.

3,628,581

**SLICER**

Katsushi Takahashi, No. 1,021, Miyato, Asaka-shi, Saitama-prefecture, Japan

Filed Dec. 10, 1969, Ser. No. 883,807

Claims priority, application Japan, Dec. 21, 1968, 43/93446

Int. Cl. B26d 4/02

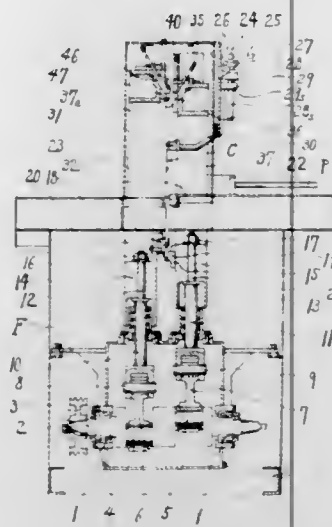
U.S. Cl. 146—153

2 Claims

A slicer having two groups of knife blades, each group formed by a plurality of blades, secured side-by-side in two pairs of blade holders. Each pair of blade holders secures one group of knife blades and is provided with a groove between



each blade of the supported group through which a blade of the other group of blades passes to define a very narrow



opening between adjacent blades. The groups of blades are reciprocated in opposite directions to perform the slicing.

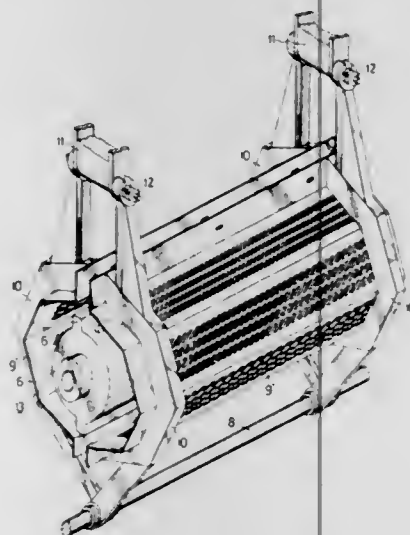
### 3,628,582 GRAIN-POLISHING MACHINE

Toshihiko Satake, No. 2-38, Nishihonmachi, Saijo-Machi, Kamo-gun, Hiroshima-ken, Japan  
Filed Dec. 22, 1969, Ser. No. 887,241  
Int. Cl. B02b 3/08

U.S. Cl. 146-279 H

2 Claims

A grain-polishing machine having a grain-polishing chamber of a cross-sectional configuration with more than six angles, which allows a grain-polishing roller rotatably mounted within said chamber to be of a comparatively large diameter and hence to be driven by a motor of high hor-



sepower, whereby its polishing efficiency is considerably increased compared to a conventional grain-polishing machine of the kind.

### 3,628,583 HANDBAG WITH DUAL-SECURING MEANS

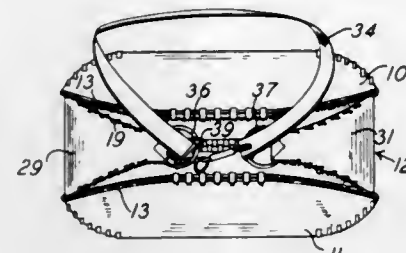
Herman H. Poelman, 1615 Rapids Drive, Racine, Wis.  
Filed Aug. 28, 1970, Ser. No. 67,805  
Int. Cl. A45c 3/00

U.S. Cl. 150-33

8 Claims

A handbag having two spaced-apart side panels and a center section attached to the side panels, all for forming the exterior of the bag and providing the enclosure of the contents in the bag. The center section is provided with a first type of closure, such as a zipper, and it is also provided with

a second type of closure, such as flaps which extend over the zipper and provide additional security against theft and spillage. Further, the flaps are extended along the center section to conceal the zipper and enhance the appearance of the bag. The center section is slightly recessed with respect to the peripheral edges of the side panels, so the side panels serve as supports for setting the bag on a surface. Also, the side panels are shaped in a bowed or curved shape to provide



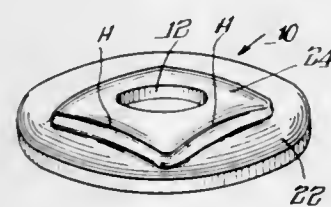
maximum capacity for the bag, and the side panels can be arranged to appear to be the form of an object, such as a football, in the embodiment in the disclosure. Still further, the bag is provided with a strap which is connected to the flaps for holding the flaps in the secured position, and the strap may be in a latched position with the flaps and it may be released from the latched position and moved between a handhold position and a shoulder-hold position.

### 3,628,584 SPRING WASHER

Charles E. Gutshall, Roselle, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.  
Filed Dec. 18, 1969, Ser. No. 886,319  
Int. Cl. F16b 39/24

U.S. Cl. 151-38

8 Claims



The present invention relates generally to spring-type washers, namely; washers which depend for their locking characteristics upon the yieldability or resiliency of the washer body structure when tightened beneath a screwhead or nut. The present application discloses an embodiment of the invention which includes an annular washer body comprising inner and outer marginal sections which are substantially conical in axial cross section. The inner section extends axially outwardly beyond the first section and the periphery thereof defines a multisided structure in the form of a polygon which is spaced radially inwardly of the periphery of the outer marginal section. A circumferentially continuous, rigid strut section integrally joins the aforesaid inner and outer marginal sections of the annular body.

### 3,628,585 PNEUMATIC TIRE CONTAINING A SEALANT

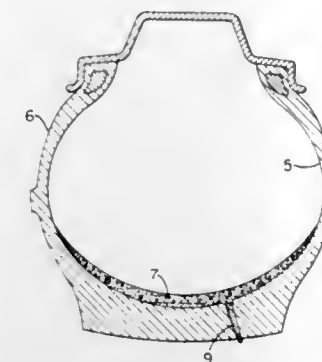
Henry A. Pace, Akron, Ohio, assignor to Goodyear Tire & Rubber Company, Akron, Ohio  
Original application Sept. 9, 1963, Ser. No. 307,556, now Patent No. 3,361,698. Divided and this application Nov. 8, 1967, Ser. No. 681,964  
Int. Cl. B60c 17/00; C08g 41/00; C08k 1/44

U.S. Cl. 152-347

1 Claim

This invention relates to a tubeless pneumatic tire casing having an integral air-retaining liner which contains a puncture sealant composition inside said casing, said puncture

sealant comprising polyurethane elastomers, an inert mineral powder dispersed in a solvent consisting of dimethyl sulfox-



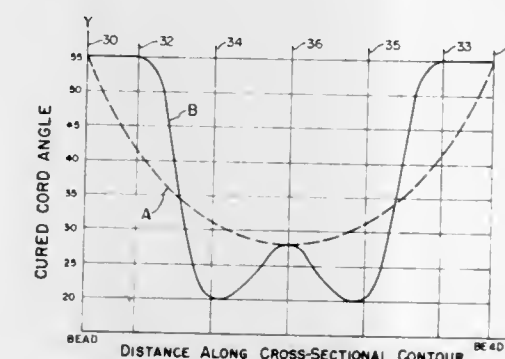
ide, dimethyl formamide, dimethyl acid amide and mixtures thereof.

### 3,628,586 PNEUMATIC TIRE

Walter W. Curtiss, Brimfield, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Filed Nov. 17, 1969, Ser. No. 877,336  
Int. Cl. B60d 9/02

U.S. Cl. 152-356

7 Claims



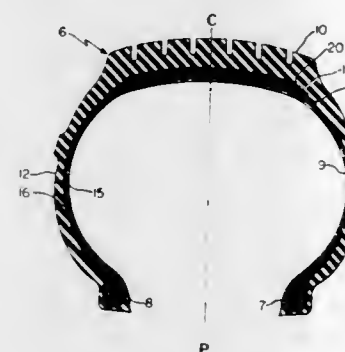
A high-speed pneumatic tire having a stable dynamic tread profile characterized by a low-cord angle in the crown area, an even lower cord angle in the shoulder regions, and a high-cord angle in the sidewalls.

### 3,628,587 BIAS-BELTED TIRE

Kevin B. O'Neil, 4360 Hohman Circle, Akron, Ohio; Cameron R. Fraser, 2215 Winter Pky., Cuyahoga Falls, Ohio, and Paul E. Helms, Jr., SN 527605212 HHC USAA RENBD, Fort Knox, Ky., assignor to Goodyear Tire & Rubber Company, County of Summit, Ohio  
Filed Apr. 22, 1970, Ser. No. 30,733  
Int. Cl. B60c 9/18

U.S. Cl. 152-361

8 Claims



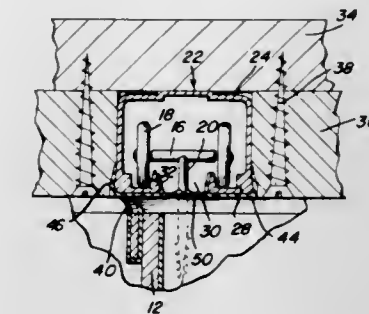
A bias-belted pneumatic tire having a particular combination of reinforcing belts including a polyester cushion sandwiched between belts of fiberglass.

### 3,628,588 TRACK SEAL FOR FOLDING DOORS WITH ALIGNED SEAL FLAPS

Guy E. Dixon, Miami Shores, Fla., assignor to Panelfold Doors, Inc.  
Filed Aug. 26, 1969, Ser. No. 853,160  
Int. Cl. E06b 7/16

U.S. Cl. 160-40

4 Claims



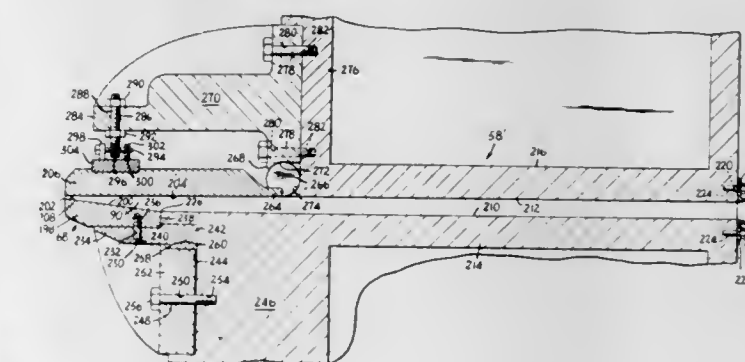
A continuous flexible seal for the entrance slot of a channel-shaped track supporting a folding door therefrom whereby the supporting rods for the door extending through the entrance slot of the track will be sealed by a pair of opposed and aligned flexible sealing strips having adjacent edges substantially in engagement with each other throughout their length to preclude communication between the two sides of the door by sound and air entering the track on one side of the door and exiting on the other side thereof.

### 3,628,589 FLOW SYSTEMS

John A. Means, Norwalk; Kenneth B. Latimer, Westport; James Moran, Norwalk, and Paul J. Thoma, Westport, all of Conn., assignors to Time Incorporated, New York, N.Y.  
Filed Jan. 31, 1968, Ser. No. 702,101  
Int. Cl. D21f 1/06

U.S. Cl. 162-336

3 Claims



Paper stock flows through a header, a first flat channel, flexible hoses, expansion pipes, pipes of changing cross section, a second flat channel, and a slice nozzle. The nozzle lips are substantially rigid, and conventional sizing across the nozzle orifice is obviated. The structure facilitates ejection of stock from the nozzle in a controlled manner so that the stock remains intact as a wide flat jet a substantial distance beyond the nozzle.

### 3,628,590 AIR COOLER HAVING MULTIPLE COOLING COILS

George R. Knebusch, North Olmsted, Ohio, assignor to American Standard Inc., New York, N.Y.  
Filed Nov. 19, 1969, Ser. No. 877,954  
Int. Cl. F25d 21/14

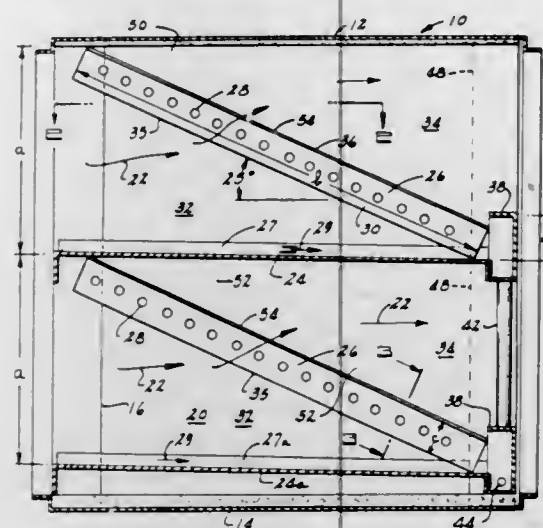
U.S. Cl. 62-290

5 Claims

An air cooler comprising two parallel finned heat exchange coils acutely angled to the direction of airflow and located



within a rectangular duct housing, each coil having a drain trough at its downstream edge. By angling the coils it is possible



ble to provide greater total fin face area, a lower air velocity through the coils, a higher heat transfer, and less pressure drop in the airstream.

3,628,591

# **METHOD OF MANUFACTURING A MATERIAL THAT REACTS WITH AIR IN AN INERT ATMOSPHERE**

Hendricus Elise Michel Cornelius Vos, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

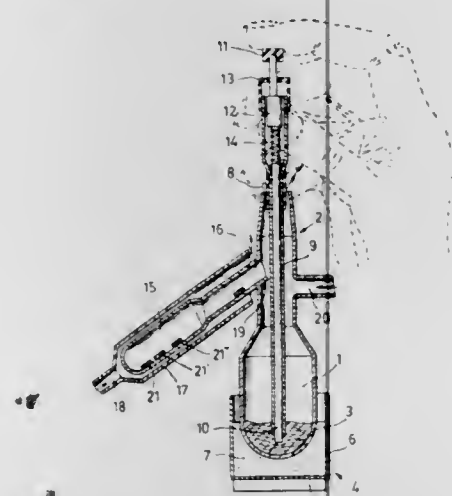
Filed Mar. 7, 1969, Ser. No. 805,280

Claims priority, application Netherlands, Mar. 19, 1968, 6,803,906

Int. Cl. B22d 21/02, 27/16

U.S. Cl. 164-63

4 Claims



Manufacturing a material having at least one metal component which reacts with air in an inert atmosphere comprising sucking said liquid into part of a tube, cooling said tube and liquid in the inert atmosphere to cause the material to solidify and expelling the molded solid material from said tube.

3,628,592

# **FLASKLESS SQUEEZE MOLDING MACHINE**

Russell M. Taccone, Erie, Pa., assignor to Bangor Punta Operations, Inc., New York, N.Y.

Filed Dec. 16, 1968, Ser. No. 783,893

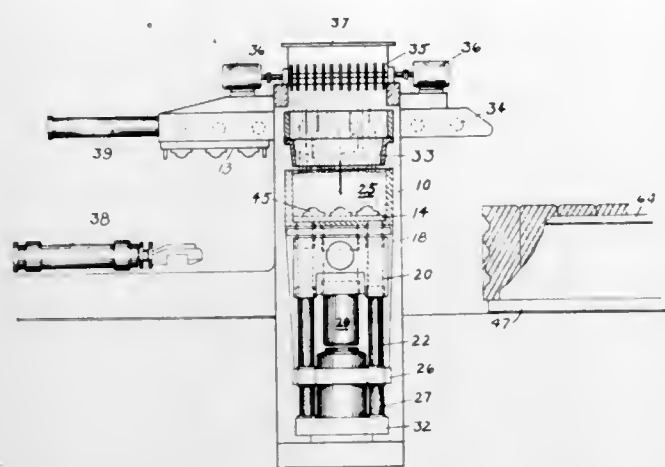
Int. Cl. B22c 17/08

U.S. Cl. 164-183

10 Claims

This disclosure relates to molding machines. The molding machine forms a mold by squeezing a molding medium located in the molding chamber between the vertically spaced pattern plate which cover the upper and lower ends

of the molding chamber. After mold formation the upper pattern plate is removed and the molding chamber together with



the bottom pattern plate are tilted to a horizontal orientation. The mold is pushed out of the flask onto a pouring conveyor.

3,628,593

# **MOLD FORMING COMPACTOR WITH SELECTIVELY VARIABLE HYDRAULIC PRESSURE MEANS**

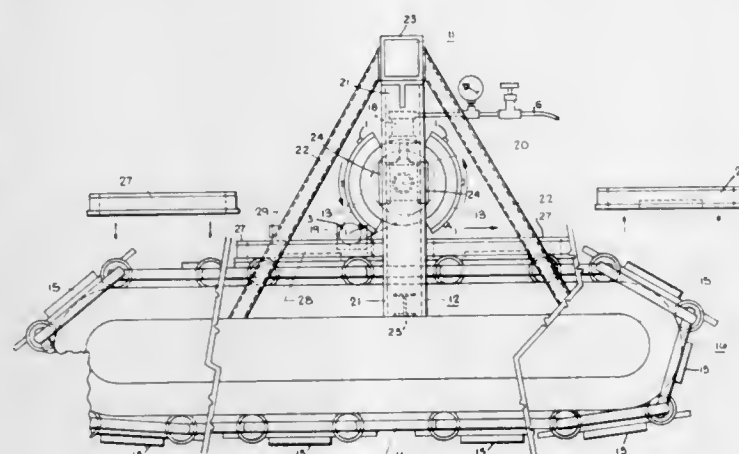
John Staley, 281 Franklin Drive, Pittsburgh, Pa.

Filed May 6, 1970, Ser. No. 35,017

Int. Cl. B22c 15/08; B28b 5/02

U.S. Cl. 164-208

6 Claims



A mold-forming compactor for compressing and packing a molding material such as sand within a flask containing a pattern to a preselected mold hardness wherein a frame is provided to support a compactor roll and an endless loop conveyor which continually passes beneath the compactor roll provided on its periphery with spaced boss members for purposes of compaction. Means are provided to synchronize the timed correlation of the rotary velocity of the compacting roll and the lineal velocity of the conveyor so that these velocities are equal causing the loose mold-forming material deposited in the flask to be compacted by the engaging boss member therein around the pattern. Hydraulic means is provided to support the compacting roll as well as apply compacting pressure thereto to selectively vary the mold hardness of the molding material within the flask.

3,628,594

# **APPARATUS FOR REDUCING THE CROSS SECTION OF A CONTINUOUS CAST STRAND**

Kurt Reinfeld, and Emmanuel V. Gouye, both of Pittsburgh, Pa., assignors to Koppers Company, Inc.

Filed Jan. 13, 1969, Ser. No. 790,608

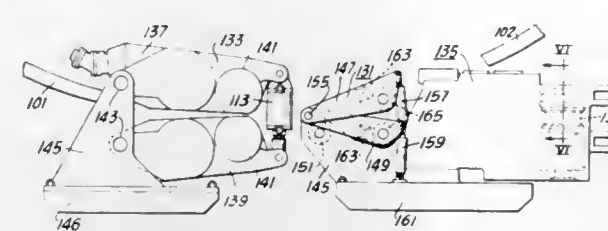
Int. Cl. B22d 11/12

U.S. Cl. 164-270

4 Claims

Apparatus for reducing the cross section of a continuous cast strand includes pairs of powered rollers disposed in

horizontal planes, and pairs of powered rollers, disposed in vertical planes on opposite sides of the continuous cast strand. The strand passes between the roll pairs which are



moved together by fluid-actuated cylinder piston mechanisms to reduce the vertical and horizontal cross-sectional dimensions of the cast strand.

3,628,595

# **PIVOTALLY MOUNTED STARTER BAR IN A CONTINUOUS CASTING MACHINE**

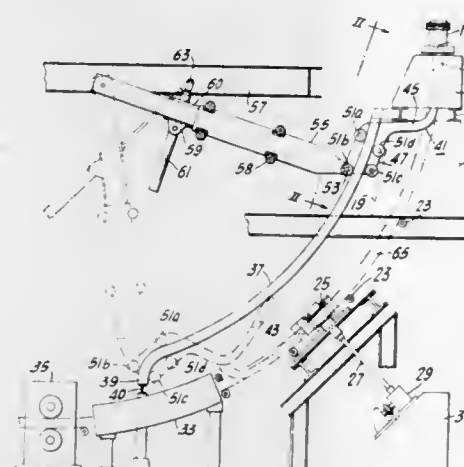
Hartman Mitchell, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Continuation-in-part of application Ser. No. 813,561, Apr. 4, 1969, now abandoned. This application Oct. 22, 1969, Ser. No. 868,353

Int. Cl. B22d 11/08

U.S. Cl. 164-274

14 Claims



A short starter bar is pivotally connected to a radial arm that is power operated and is movable through an angle in a plane to bring the starter bar into cooperative relation with a continuous casting mold. A combination pinch and straightener roll assembly acts on the cast strand to withdraw it from the mold and to disconnect the strand from the starter bar.

3,628,596

# **CONTOURED MOLD FOR HORIZONTAL CONTINUOUS CASTING**

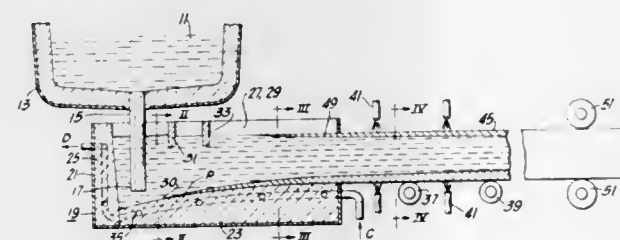
Rufus Easton, and Jose A. Botta, Jr., both of Pittsburgh, Pa., assignors to Koppers Company, Inc.

Filed Dec. 17, 1969, Ser. No. 885,823

Int. Cl. B22d 11/00

U.S. Cl. 164-283

10 Claims



A horizontal mold for continuous casting has a contoured end and bottom, and contoured sides, but has no top. The bottom and sides are so shaped that, as the formed strand

solidifies and is withdrawn from the mold, it emerges with a rectangular cross section.

3,628,597

# **EXTRACTION DEVICE FOR MACHINES FOR CASTING CONTINUOUS METAL INGOTS**

Ilario Properzi, Via V. Pisani 8, Milan, Italy

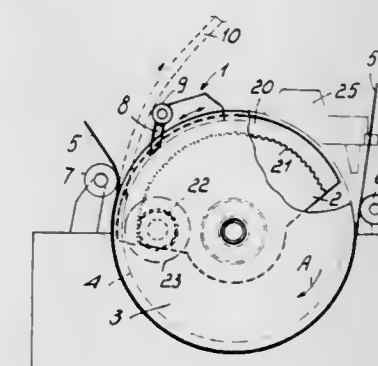
Filed Sept. 24, 1969, Ser. No. 860,759

Claims priority, application Italy, Oct. 4, 1968, 22096 A/68

Int. Cl. B22d 11/06

U.S. Cl. 164-344

1 Claim



This disclosure relates to an extraction device for continuous ingot casting machines, comprising an extraction unit for separating the ingot from the casting wheel of a casting machine and partially straightening such ingot, said separation unit being mounted on a support mounted by the side of the casting wheel for rotation therewith, transmission means being provided to cause a partial rotation of said support when it is desired to adjust the position of said extraction unit.

3,628,598

# **CASTING MOLDS**

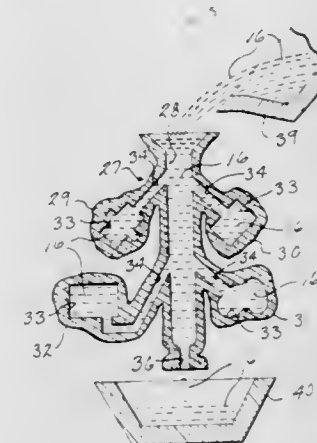
Samuel G. MacNeill, Milwaukee, and Henry L. Eickelberg, Watertown, both of Wis., assignors to Modern Equipment Company, Port Washington, Wis.

Filed Oct. 23, 1968, Ser. No. 769,971

Int. Cl. B22c 9/20

U.S. Cl. 164-350

2 Claims



A novel mold for making castings of metal or other molten material is provided with a vertical main sprue having gating or feeder lines radiating outwardly and extending downwardly at an angle from said main sprue to one or more mold cavities, the novel inclined arrangement of said feeder lines causing molten metal introduced into said mold cavities to be trapped therein and permitting the immediate evacuation of the metal from said main sprue after said cavities have been filled.



3,628,599

**VALANCE HEATING AND COOLING DEVICE**

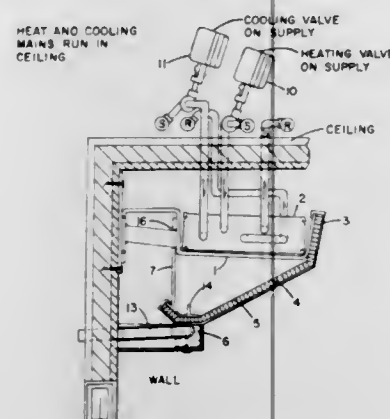
Ray C. Edwards, 101 Alexandria Ave., Pompton Plains, N.J.

Filed Apr. 22, 1970, Ser. No. 30,676

Int. Cl. F24f 3/00

U.S. Cl. 165—22

8 Claims



trolling the flow of a heating medium or a cooling medium through the finned tube unit. The valance structure containing the finned tube unit may be attached to the ceiling or a

This invention relates to a device for regulating the temperature in an enclosure to a desired predetermined degree regulated by a manually set thermostat in the enclosure or room, and heats or cools the enclosure entirely by convection or a combination of convection and radiation, and further embodies a single valance unit embodying a finned tube structure including both heating medium conducting tubes and cooling medium tubes in a single unit, together with thermostatically controlled motorized valves for convection near the ceiling of the enclosure and contains suitable flow directing means to direct cooled air downwardly along the wall, and heated air in horizontally flowing blankets across the ceiling of the enclosure.

3,628,600

**AIR-CONDITIONING SYSTEM AND CONTROL INCLUDING CONTROL METHOD AND MEANS**

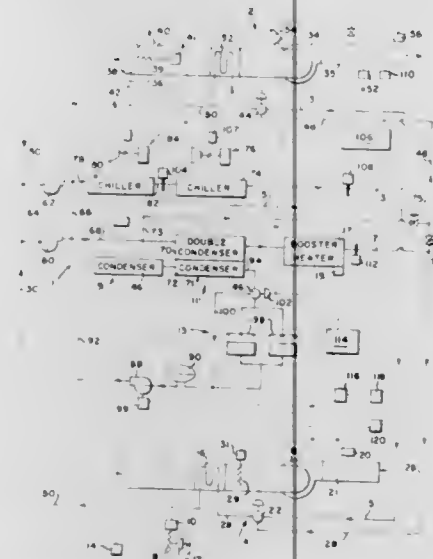
Alden I. McFarlan, 691 Dorian Road, Westfield, N.J.

Filed Feb. 24, 1970, Ser. No. 14,738

Int. Cl. F24f 3/00

U.S. Cl. 165—22

16 Claims



An air-conditioning system is disclosed for a building or buildings with a plurality of conditioned spaces or zones wherein there is a special control system which insures the proper heating and cooling of each of the conditioned spaces or zones with minimum equipment and energy consumption. Refrigeration units provide a constant supply of chilled water and a constant supply of hot water. Separate streams of the chilled and hot water are delivered to air coils through which air is supplied to the various conditioned spaces. The tem-

perature of the water in the hot water line is used to determine whether there is an excess or deficiency of heat in the system, or if an exact balance has been achieved. The controls change the operation to achieve a proper heat balance.

3,628,601

**APPARATUS FOR COOLING REFLECTOR WALLS**

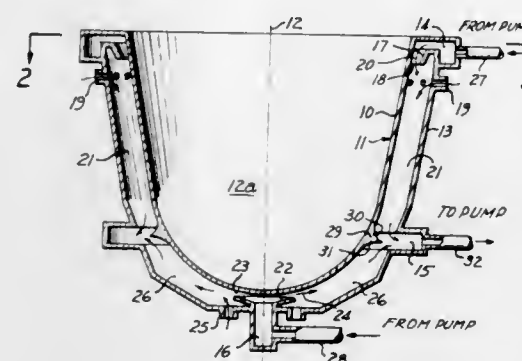
Alvin A. Snaper, Las Vegas, Nev., and Frank C. Farrell, Los Angeles, Calif., assignors to Advanced Patent Technology, Inc., Las Vegas, Nev.

Filed Mar. 23, 1970, Ser. No. 21,589

Int. Cl. F21v 29/00

U.S. Cl. 165—47

7 Claims



Apparatus in accordance with the present disclosure comprises housing defining a wall supporting a reflector also having a wall. A region is defined between the walls and manifolds are located at each end of the region. Nozzle means is in fluid communication with at least one of the manifolds for directing a jet stream of coolant into the region between the walls and tangentially to the wall being cooled to thereby cool the wall. The jet stream is collected and dispelled through a second manifold at the opposite end of the region. Vent apparatus may be provided adjacent the nozzles so that as the jet streams are emitted from the nozzles, air or coolant is drawn into the region to further cool the walls.

3,628,602

**PROCESSING APPARATUS**

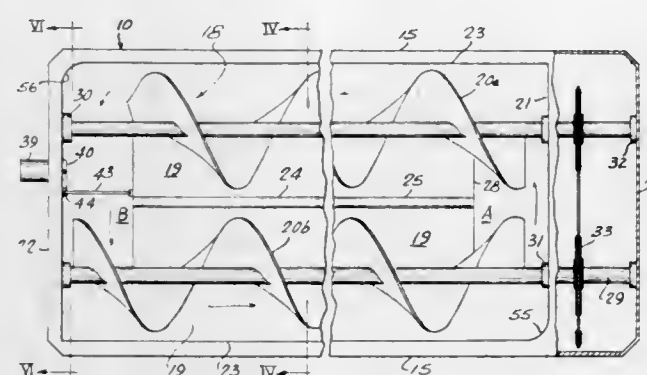
Fred William Brunner, Eugene, Oreg., assignor to Manning's, Inc., San Francisco, Calif.

Filed July 13, 1970, Ser. No. 54,145

Int. Cl. F25b 29/00

U.S. Cl. 165—61

7 Claims



An apparatus is described for heating or cooling food mixes with simultaneous mixing or blending. The apparatus comprises a vessel having a pair of sidewalls, a pair of end walls and a bottom, said bottom including an upwardly extending divider means positioned longitudinally centrally between said sidewalls, said divider means having end walls spaced from the end walls of the vessel and sidewalls spaced from the sidewalls of the vessel, each said divider sidewall and the adjacent vessel sidewall merging into an arcuate bottom portion to form a pair of side-by-side trough portions within said vessel with connecting passages at the ends thereof, heat exchange means for heating or cooling the surfaces of the side-by-side trough portions in contact with the

material and a pair of material conveying augers disposed within said trough portions with the peripheries of the augers in close proximity with the trough portions, means for rotating said augers whereby material acted upon by the flight means of one auger is moved in a direction opposite to that which the other auger moves material whereby the material is caused to move in a circuitous path along the troughs and through the connecting end passageways.

3,628,603

**MULTITUBULAR HEAT EXCHANGER**

Walter Fieni, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

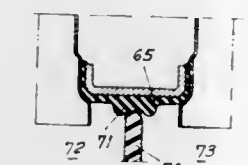
Filed Dec. 12, 1969, Ser. No. 884,581

Claims priority, application France, Dec. 13, 1968, 178074

Int. Cl. F28d 1/04

U.S. Cl. 165—151

7 Claims



An automobile radiator of the type having a plurality of parallel water tubes with fins mounted thereon, header tanks disposed at the ends of the tubes and which in combination with the tubes provide the fluid circuit in the radiator. The tubes are maintained in place by means of securing plates and a sealing arrangement is provided by a gasket which cooperates with the securing plate to seal the tubes relative to the rest of the radiator. At least one of the header tanks has a partition which divides it into compartments. The header tank and the partition form an integrally molded plastic unit. In order to be able to maintain the seal tightness in each of the compartments of a header tank which includes a partition, a variety of sealing means are disclosed comprising a portion integral with the partition in mating relationship with corresponding portions integrally formed with the gasket.

3,628,604

**METHOD AND APPARATUS FOR CEMENTING OFFSHORE WELLS**

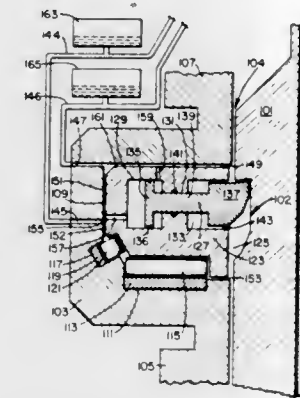
Mark A. Childers, and George H. Bruce, both of Houston, Tex., assignors to Esso Production Research Company

Filed Nov. 26, 1969, Ser. No. 880,032

Int. Cl. F21b 33/035

U.S. Cl. 166—5

7 Claims



Method and apparatus for supporting the casing string and permitting its rotation during well cementing operations carried out from a floating drilling vessel. The apparatus includes an outer housing having an opening extending vertically through it which is normally mounted atop the subsea wellhead assembly. An inner member is supported within the outer housing and is rotatable with respect to it. This inner member has a central bore coaxial with the opening in the housing. At least one hydraulically extensible member is con-

nected to the inner member and serves to anchor a casing string extending through the bore to the inner member. Remotely actuated means are also provided for introducing hydraulic fluid into the inner member to extend or retract each of the extensible members.

3,628,605

**SAFETY APPARATUS FOR PETROLEUM WELLS**  
Maurice Kirkpatrick, 4734 Briarland, and Donnell E. Waggener, 5035 Yarwell, both of Houston, Tex.

Filed June 1, 1970, Ser. No. 41,788

Int. Cl. E21b 33/00

U.S. Cl. 166—226

8 Claims



Safety apparatus for petroleum wells, particularly wells located offshore, wherein the apparatus has means for quickly and positively closing off fluid flow from the well in the event of a well fire, blowout or similar dangerous well condition.

3,628,606

**APPARATUS FOR DAMPENING ERRATIC VERTICAL MOVEMENTS OF WELL TOOLS**

Jean Louis Bernard, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 22,931

Int. Cl. E21b 17/10

U.S. Cl. 166—241

10 Claims



In the preferred embodiment of the present invention disclosed herein, a well tool is dependently coupled to a suspension cable having a large number of relatively stiff, but flexible, laterally projecting members distributed along the lower portion of the cable and adapted to occupy a substantial portion of the annular space between this lower cable portion and the surrounding walls of a well bore. In this manner, as



the well tool is being moved upwardly through a fluid-filled well bore, these outwardly projecting members will induce a viscous drag which will be effective to at least dampen vertical oscillatory movements of the tool and cable that will otherwise be induced by unpredictable differences in the frictional drag of the tool and cable along the well bore wall.

3,628,607

## OIL SPILL REMOVAL METHOD

Daniel N. Dietz, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.

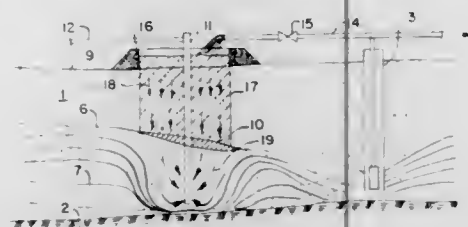
Filed May 7, 1970, Ser. No. 35,449

Claims priority, application Great Britain, May 12, 1969,

24026/69

Int. Cl. E21b 43/16

U.S. Cl. 166—305 R



Taste-spoiling components of oil spilled in a drinking water catchment area are removed from the aquifer by supplying liquid such as water or tasteless oil to the spill area and recovering the liquid together with the undesired components via an auxiliary well.

3,628,608

## RESILIENTLY FLEXIBLE HORSESHOE

Harvey George Sherman, Kalamazoo, Mich., assignor to Flex-Step, Inc., Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 752,343, Aug.

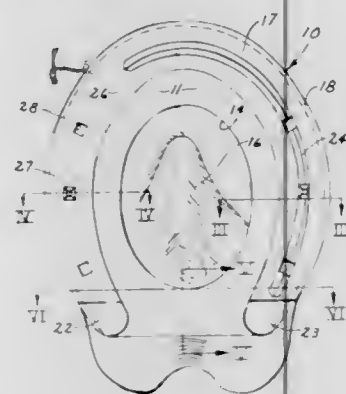
13, 1968, now Patent No. 3,513,915. This application Jan.

28, 1970, Ser. No. 6,538

Int. Cl. A01I 5/00

U.S. Cl. 168—4

8 Claims



An elastomeric horseshoe impregnated with small metal fragments and comprising a sheet means having a central opening and an arcuate gripping member integral with and extending approximately three-quarters of the way around said sheet means adjacent the outer edge thereof.

3,628,609

## HARVESTING MACHINE

Wilbur H. Graybill, R.D. No. 2, Lititz, Pa.

Filed Aug. 11, 1969, Ser. No. 848,993

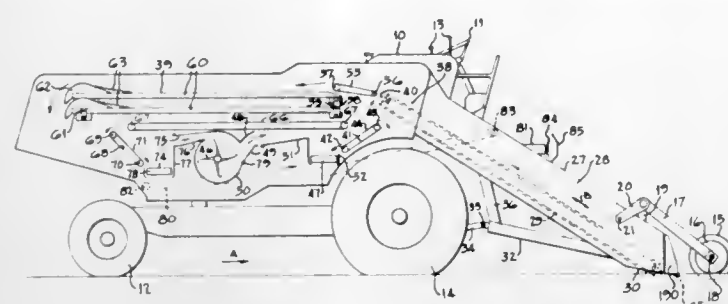
Int. Cl. A01d 17/22

U.S. Cl. 171—14

9 Claims

A tomato-harvesting machine for severing tomato-bearing stalks with reciprocating cutter bars, elevating the stalks and tomatoes with an inclined conveyor, and separating the tomatoes and the stalks with shaker bars, inclined cleaning belts, and a debris-removing fan. A first of the cleaning belts is positioned between the conveyor and the shaker bars to

receive tomatoes previously separated from the stalks and reject soil early in the harvesting process. The second of the cleaning belts is located at an end of the shaker bars remote from the inclined conveyor to receive tomatoes subsequently



3 Claims

separated from the stalks by the shaker bars. A transfer belt bridges the gap between the inclined conveyor and the shaker bars above the first cleaning belt to prevent entanglement of any vegetation in the shaker bar mechanism.

3,628,610

## DRAFT-SENSING MEANS FOR TRACTOR HITCHES

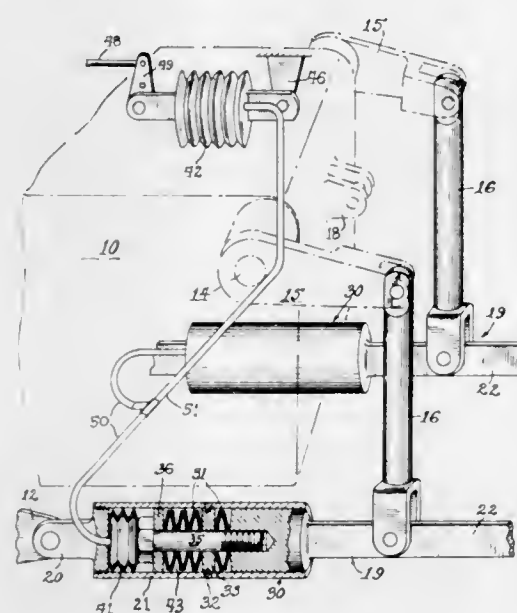
James Morkoski, Clarendon Hills, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed May 1, 1969, Ser. No. 820,752

Int. Cl. A01b 63/32

U.S. Cl. 172—9

11 Claims



For employment with a tractor having a hitch means, a power lift unit for vertically raising and lowering the hitch means on said tractor, actuating means for controlling the power lift unit in response to the draft load of an associated implement, an improved draft-sensing unit for measuring the draft load on said hitch means and for transferring a quantitative draft load signal to the actuating means, the improved sensing unit being incorporated into an element of the hitch and having resilient force-resisting means which will deflect proportionately to the force imposed upon said element and hydraulic measuring means for measuring the deflection of the resilient force resisting means and being interconnected with the power actuator unit for transmitting a quantitative signal of the force imposed on said element to the actuator unit.

3,628,611

## TRASH-CLEARING APPARATUS

Gaynor Carlson, R.F.D. No. 1, Herndon, Kans.

Filed June 9, 1969, Ser. No. 831,363

Int. Cl. A01b 33/16, 19/10

U.S. Cl. 172—39

9 Claims

When a grain drill moves across a field in a sowing operation the row of drill stems gathers stalks, stubble, and weeds

which become aligned laterally and drag dirt along, either raising the drill stems from the ground or creating too much drag for the tractor. The invention comprises a series of shears, usually one for each drill stem, operating in a vertical fore and aft plane to chop the laterally extending trash ele-

a pivot axis perpendicularly related to the axis of the pivot joint between each angling jack and the C-frame.

3,628,613

## AGRICULTURAL IMPLEMENT END FRAMES LIFT MEANS

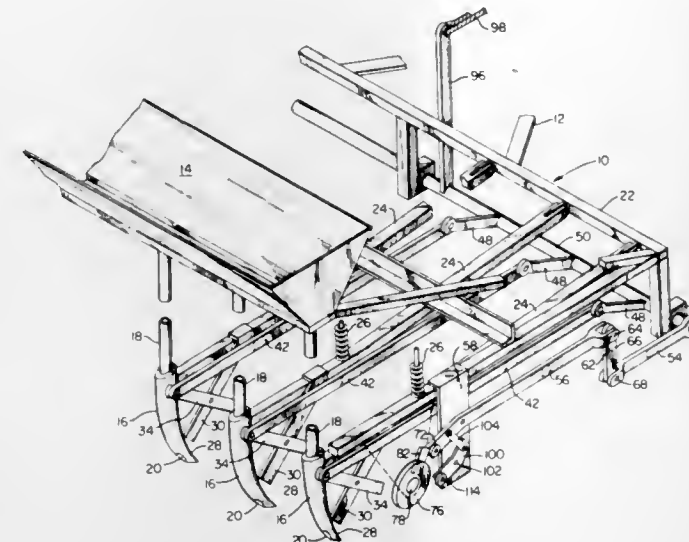
Edward J. Kaufman, North 81, R.R. 1, Newton, Kans.

Filed Aug. 18, 1969, Ser. No. 850,832

Int. Cl. A01b 65/02

U.S. Cl. 172—311

11 Claims



ments into short pieces which then pass between the drill stems and do not pile up or drag dirt. The shears are operated by linkages actuated by rotation of the ground wheels. Linkages may be disconnected for travel over roads or clean fields to reduce wear.

A hydraulic cylinder mounted on the central frame of an agricultural implement connects by sheave and pulley means to end frames to pivotally raise and lower the same.

3,628,614

## DRILL-SUPPORTING APPARATUS

Francis J. Brennan, and Karl H. Christensen, both of Vananda Post Office, Vananda, British Columbia, Canada

Continuation of application Ser. No. 813,134, Apr. 3, 1969,

now abandoned. This application Mar. 23, 1970, Ser. No.

21,985

Int. Cl. E21c 5/11

U.S. Cl. 173—29

17 Claims

## MOUNTING ARRANGEMENT FOR BULLDOZER BLADES

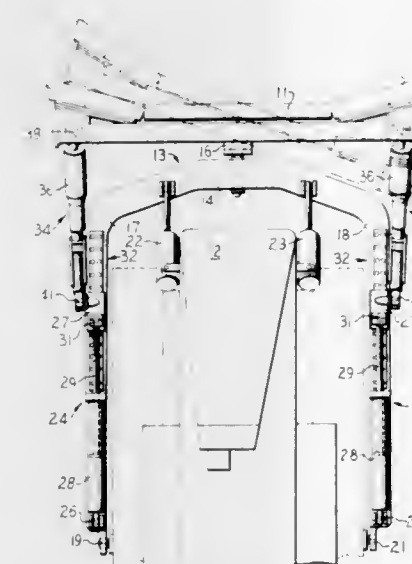
Richard K. Liess, Peoria; Donald E. Ribbing, Joliet; Visvaldis A. Stepe, Willow Springs, and Eugene M. Wilson, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 8, 1969, Ser. No. 855,908

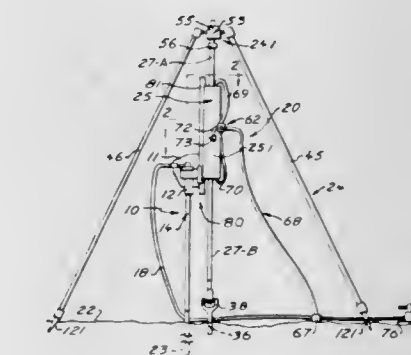
Int. Cl. E02f 3/76

U.S. Cl. 172—804

8 Claims



A mounting and control arrangement for supporting a bulldozer blade upon a tractor by means of a C-frame. The blade is centrally secured to the C-frame by a universal ball joint. Hydraulic angling jacks are interconnected between each leg of the C-frame and a guide member slidably mounted on a T-shaped bar respectively secured to each C-frame leg. A triangular brace supports each end of the blade and is secured to the respective guide members by a ball joint. The angling jacks are pivotally connected to the C-frame legs and the guide members by means of ball joints to reduce stresses with the pivotal connection between the angling jacks and the guide members preferably being a trunnion mounting having



Adapted for use drilling steep or horizontal rock faces. A hydraulic cylinder assembly with upper and lower piston rods extending through upper and lower cylinder heads, the piston rods being secured in a piston. A lower end of the lower piston rod is anchored through universal joint to a rock face being drilled, the upper end of the piston rod being secured at an apex of a tripod. The drill is attached to the cylinder with a longitudinal axis of the drill parallel to a longitudinal axis of the cylinder assembly. Provision for admitting water under pressure to an upper cylinder space with a lower cylinder space being connected to a bleeder pipe having a bleeder valve. With the bleeder valve opened a small amount, the drill is fed downwards against the face at a rate which is a function of the amount by which the bleeder valve is opened. The cylinder is moved upwards with respect to the piston rods by similarly introducing water under pressure to an upper cylinder space, so that the hydraulic cylinder also provides means of pulling a drill rod from the hole. Water supply from source used to lubricate and cool the drill.



3,628,615

**WATER-BASE WELL FLUIDS FOR SHALE STABILITY AND USE THEREOF**

Martin E. Chenevert, Houston, Tex., assignor to Esso Production Research Company  
Continuation of application Ser. No. 702,635, Feb. 2, 1968, now abandoned. This application Jan. 26, 1970, Ser. No. 5,826

Int. Cl. E21b 21/04, 43/25; G01n 7/10

U.S. Cl. 175—65

41 Claims

A method for drilling a borehole through a water-sensitive earth formation with a drilling fluid having a water continuous phase wherein a semipermeable membrane is interposed between the drilling fluid and water-sensitive formation and the aqueous vapor pressure of the drilling fluid is maintained at a level substantially equal to or below that of the water-sensitive formation. Also, improved water-base well fluid compositions which have a continuous aqueous phase, a dispersed phase comprising droplets of oil, a surfactant capable of causing the oil containing the surfactant to coat a water-sensitive earth formation with a semipermeable membrane, and an aqueous vapor pressure depressant in the continuous aqueous phase.

3,628,616

**DRILLING BIT WITH INTEGRAL STABILIZER**

William J. Neilson, Whittier, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Dec. 18, 1969, Ser. No. 886,281

Int. Cl. E21b 9/10

U.S. Cl. 175—375

4 Claims



A rotary drilling bit having depending legs with rotary cutters journaled thereon, the legs terminating downwardly in relatively thin portions facing radially outwardly and the bit body being provided with hard metal wear-resisting stabilizer shoes integral therewith and preferably located vertically above the legs to resist lateral movement of the tool in the formation resulting from lateral movement of the drill string above the tool and thereby reduce wear of the tool legs, and especially their lower portions.

3,628,617

**LIQUID RECIRCULATING AND WEIGHING SYSTEM**

Richard V. Ferrigan, Albany, N.Y., assignor to G A F Corporation, New York, N.Y.

Filed Apr. 3, 1970, Ser. No. 25,396

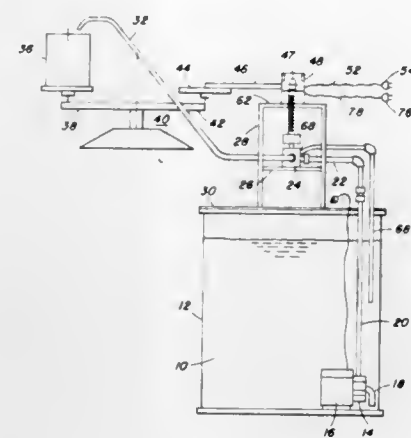
Int. Cl. G01g 13/16, 13/26, 13/32

U.S. Cl. 177—116

3 Claims

Liquid dye is pumped by a pump submerged therein from a supply tank through a feed pipeline and into a portable bucket set on one side of a beam balance scale, until a preselected weight of such liquid in the bucket balances the scale, whereupon the other side initiates an electrical signal and operates a relay which energizes a control circuit, activating a solenoid which, in turn, operates valve means in such feed pipeline to switch the entire flow of liquid from the bucket, back to the tank through a liquid return pipe,

thereby recirculating such liquid as long as the pump is running, which agitates the liquid dye in the tank, keeps the



pump cool, and avoids any need for priming the pump prior to each weighing operation.

3,628,618

**FLAP WHEEL**

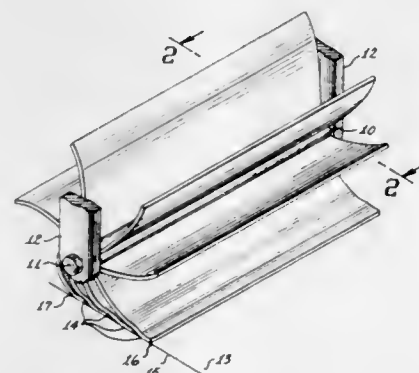
Thomas P. Cash, 158 Glenmar Road, Mesa, Ariz.

Filed Dec. 4, 1969, Ser. No. 882,008

Int. Cl. B62d 57/00

U.S. Cl. 180—7

4 Claims



A flap wheel comprising a series of flexible radially extending ground contacting flaps fixed to a central hub to provide low turning resistance and has a small lower radius to ground and a larger upper free radius so that its load-bearing surface is larger and changes shape in different situations and is capable of doing useful work with the forward half of its upper radius as well as its lower half.

3,628,619

**TRANSMISSION DEVICE FOR A MINIATURE SNOW ENDLESS-TRACK VEHICLE**

Kenzo Tanaka, Hamamatsu-shi, and Fujihiko Tomita, Iwata-gun, Shizuoka-ken, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Dec. 1, 1969, Ser. No. 881,263

Claims priority, application Japan, Dec. 2, 1968, 43/104348

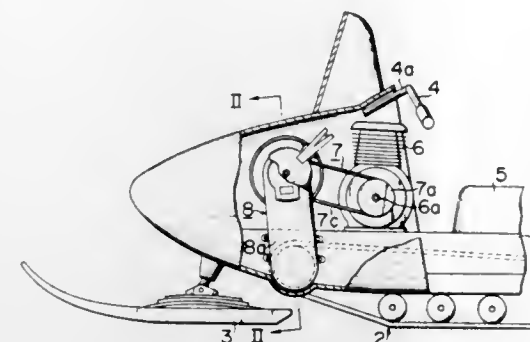
Int. Cl. B62d 55/00; F16h 47/00, 37/00

U.S. Cl. 180—9.64

11 Claims

A transmission device involves a belt-driven pulley for receiving engine power. Said pulley is disposed close to a chain casing for covering a transmission chain-drive, and rotatably mounted on a hollow cylindrical shaft which extends from the side wall of said chain casing and through

which extends a driving shaft fitted with the sprocket wheel of said chain-drive. A hydraulic torque converter for trans-



mitting power from said pulley to said latter shaft is positioned on the opposite side of said pulley to the chain casing.

3,628,620

**STROLLER MOVER**

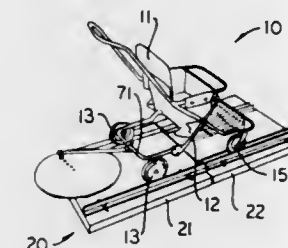
Robert H. Byers, P.O. Box 124, West Point, Ind.

Filed Aug. 18, 1969, Ser. No. 850,936

Int. Cl. B62b 9/22

U.S. Cl. 180—1 D

2 Claims



A portable baby rocking device for use in combination with a stroller to move the stroller back and forth. The stroller is placed on the outside flat surface of a portable housing which has adjustable tracks for guiding the wheels of the stroller. A gear-reduction-type motor is mounted on the housing and has a removable disc secured thereto. A link extends between and connects the disc and a stroller and is readily detachable from both. The disc and the link can be stored in the housing when not in use.

3,628,621

**DRIVE AND CONTROL SYSTEM FOR ELECTRIC AUTOMOBILES**

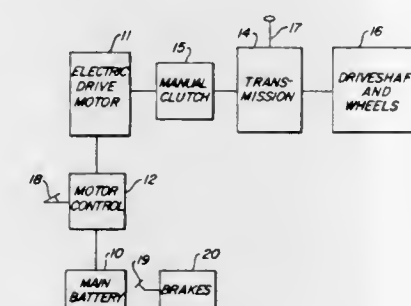
William H. Lee, 505 North Lake Shore Drive 01306, Chicago, Ill.

Filed Jan. 12, 1970, Ser. No. 2,124

Int. Cl. B60l 11/18, 15/12

U.S. Cl. 180—65 R

9 Claims



A drive and control system for electrically powered automobiles. Controlled rectifiers are connected between a battery and the armature circuit of a compound motor to supply increasing amounts of current to the armature for acceleration. Transistors are connected between battery and shunt field to control current thereto. An accelerator pedal con-

nected to a carbon pile resistor controls the conduction of the transistors. Relays connect the battery directly to the shunt field for starting, and control the sequence in which increasing amounts of current are supplied to the armature. A charging circuit permits charging of the main battery from a conventional AC source. A switch is provided to allow connection of the motor as a generator for charging the battery when the vehicle is towed or pushed. Motors and associated switches and relays may be provided to control and operate an automatic clutch in conjunction with the drive and control system.

3,628,622

**ENGINE HOOD FOR A TRUCK**

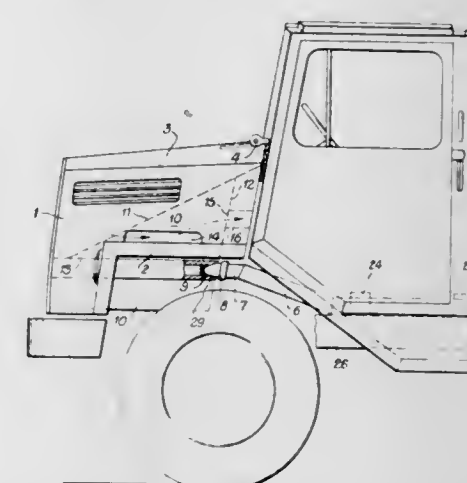
Heinrich Kiwitz, 239 Eversbuschstrasse, 8 Munich-Allach, Germany, assignor to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich 50, Germany

Filed June 30, 1969, Ser. No. 837,584

Int. Cl. B62d 25/10

U.S. Cl. 180—69 C

8 Claims



The engine hood and front fenders are formed in a single piece which is hinged to the cab beneath the windshield. The bottom of the hood is elastically engaged with the front end of the cab frame.

3,628,623

**REVERSELY DRIVABLE FLUIDIC DEVICE**

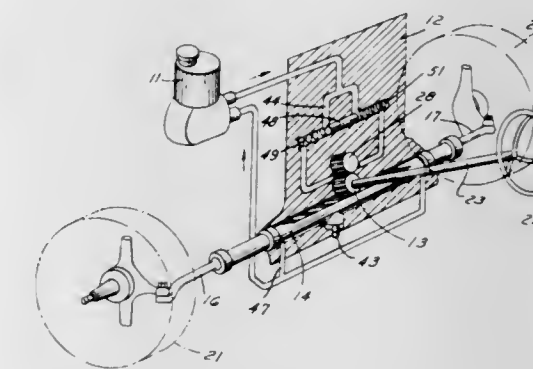
Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 6, 1970, Ser. No. 52,308

Int. Cl. B62d 5/10

U.S. Cl. 180—79.2 R

2 Claims



A reversely drivable double gear fluid motor adaptable for use in a vehicle power steering system in which linear displacement of one of the gears in a direction perpendicular to its axis of rotation within the gear chamber determines the direction of rotation of the motor.



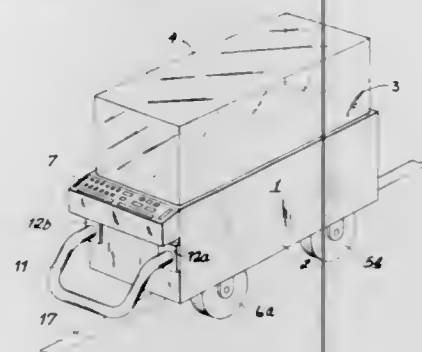
3,628,624

GUIDANCE SYSTEM FOR SELF-PROPELLED  
TRACKLESS CARRIAGES

Erich Wesener, Munich-Laim, Germany, assignor to Buro Patent AG, Glarus, Switzerland  
Continuation-in-part of application Ser. No. 633,871, Apr. 26, 1967, now Patent No. 3,474,877; This application Sept. 24, 1969, Ser. No. 860,566  
Int. Cl. B62d 1/24

U.S. Cl. 180—98

12 Claims



A trackless carriage with two individually drive lateral traction wheels has four sensors, disposed in a diamond-shaped array, which coast capacitively or inductively with a continuous guide strip on the floor to steer the vehicle along a predetermined path by controlling the transmission of driving torque to these wheels. When the two sensors on the longitudinal diagonal of the array register with the strip, both traction wheels are driven; when either or both of these sensors are out of line and one of the two other sensors, on the transverse diagonal, detects the proximity of the strip, the opposite traction wheel is driven to realign the vehicle with the guide path.

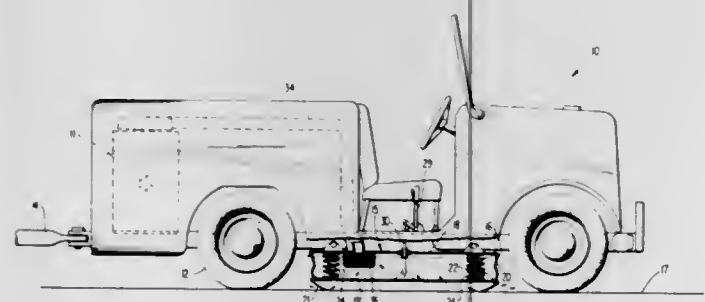
3,628,625

## VEHICLE TRACTION-INCREASING APPARATUS

Richard Q. Boyles, Jr., 4956 Carol Lane, Atlanta, Ga.  
Filed June 20, 1969, Ser. No. 834,991  
Int. Cl. B60b 39/00

U.S. Cl. 180—115

2 Claims



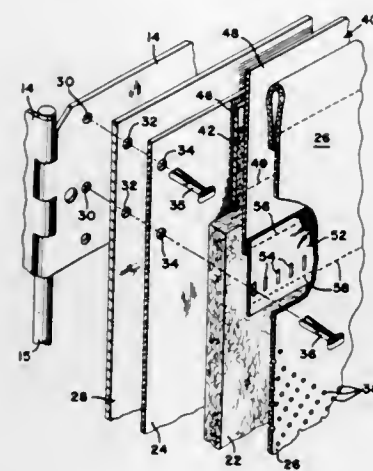
A vehicle traction-increasing apparatus for creating sub-ambient pressure beneath the vehicle to place a load on the vehicle and increase the traction between the driving wheels of the vehicle and the road surface. The air induction system of the vehicle driving engine is connected to a housing located beneath the vehicle. The bottom portion of the housing is open and applied to the road surface. A flexible curtain is connected to the housing about its open side and is urged downwardly toward the road surface. The resiliency and configuration of the curtain is sufficient to allow only a small opening between the road surface and bottom edge of the curtain so that a significant pressure reduction must be created to flex the curtain, yet once the curtain is flexed away from the road surface, it forms a virtually friction-free bearing with the road surface and is movable across the road surface without appreciable drag.

3,628,626

## QUIET WALL

Bennett W. Merrill, New Castle, Ind., assignor to American Standard Inc., New York, N.Y.  
Filed Mar. 25, 1970, Ser. No. 22,577  
Int. Cl. E04b 1/99; G10k 11/04  
U.S. Cl. 181—33 GB

5 Claims



A folding partition consisting of a pair of acoustical assemblies or sides which combine the acoustical properties of sound absorption and sound transmission loss, and include a flexible blanket of sound absorbent fiberglass sandwiched between an inner vinyl lining and an outer fabric and a plurality of metal panels are attached to the inner side of the vinyl lining. The outer fabric is provided with a multiplicity of perforations for admitting sound into the fiberglass blanket where it is absorbed, while the metal panels further reduce the sound which passes through the fiberglass and further prevent it from passing through the closure.

3,628,627

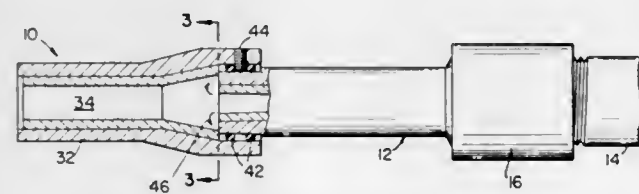
## SILENCER FOR AIR-BLASTING GUN

Ted A. Arnold, Palo Alto, Calif., assignor to Vacu-Blast Corporation, Belmont, Calif.

Filed Oct. 2, 1970, Ser. No. 77,444  
Int. Cl. B24c 3/00; F01n 1/08, 7/08

U.S. Cl. 181—36 R

4 Claims



A silencer adapted to be attached to an abrasive blasting gun comprises a tapered end portion and a straight barrel portion. The end portion forms an annular tapered airspace around the outlet of the blast-gun exit opening which helps to absorb energy from the air-abrasive stream and suppresses the sound produced at the exit end of the silencer.

3,628,628

## SCAFFOLD PLATFORM

William E. Gilbreath, and Edward C. Gilbreath, both of Houston, Tex., assignors to Bleacher Sales Co., Houston, Tex.

Filed Apr. 6, 1970, Ser. No. 25,735  
Int. Cl. E04g 5/08

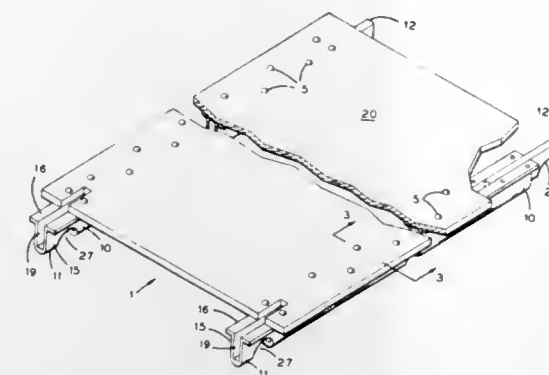
U.S. Cl. 182—222

4 Claims

A scaffold platform comprising a pair of joist supporting and secured to a deck plate, with their ends so fabricated

that they can be disposed on a scaffold to furnish an elongated horizontal platform for the support of building materi-

als and workmen, and for use as a walkway.



3,628,629

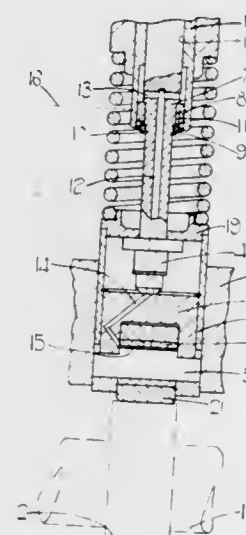
## TAPPET ASSEMBLY LUBRICATING MEANS

Ronald Phillips, Northolt, Middlesex, England, assignor to Simms Group Research & Development Limited, London, England

Filed Feb. 5, 1970, Ser. No. 8,994  
Claims priority, application Great Britain, Feb. 17, 1969, 8,436/69

Int. Cl. F16n 13/14

U.S. Cl. 184—6.17



A reciprocating mechanism includes a roller which cooperates with a cam to effect reciprocation of a plunger. The roller is mounted on a pin and for the purpose of lubrication, the plunger is provided with a piston which is moved in a cylinder during reciprocation of the plunger. The cylinder is connected by a passage to the bearing defined between the pin and the roller and oil is forced along the passage by the piston to lubricate the bearing, during inward movement of the plunger under the action of the cam.

3,628,630

## LUBRICANT DISPENSER

William C. Hammer, Cincinnati, Ohio, assignor to Sharvania Oil & Grease Corporation, Memphis, Tenn.

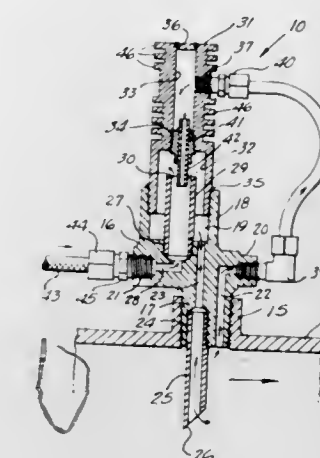
Filed May 19, 1970, Ser. No. 38,738

Int. Cl. F16n 11/10

U.S. Cl. 184—50

7 Claims

A lubricator for supplying lubricant to the steam main leading to steam operated equipment such as a drop forge hammer, a steam engine, pumps, steam driven air compressors, valves, and any other steam driven equipment best lubricated by having a lubricant atomized or fogged into the steam supply. The lubricator includes a mixing cup into



form lubricant fogged steam. The lubricator is mounted on a steam main and is balanced to prevent vibration damage during the operation of the steam equipment.

3,628,631

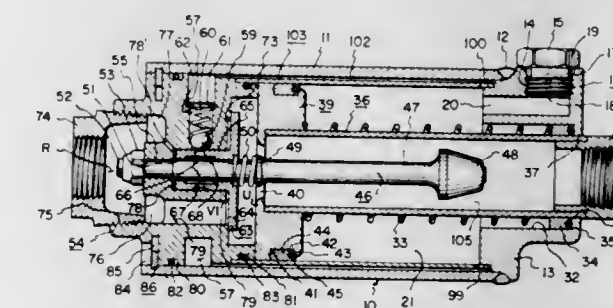
## LUBRICATOR DEVICE

2 Claims Paul C. O'Leary, 2668 Stanford Lane, Salt Lake City, Utah  
Filed June 27, 1969, Ser. No. 837,133

Int. Cl. F16n 7/34

U.S. Cl. 184—55 A

11 Claims



An on-stream lubricator device for interposition between an air-driven tool and an air supply of practically any given pressure above one atmosphere. The lubricator device is constructed to receive and contain lubricating fluid, such as oil, which is maintained under pressure only during operation of the air-driven equipment. Input air pressure is effective, when selectively applied in accordance with the selective operation of the air tool used, to open an air valve in the device so as to supply a rapid stream of air for driving the air tool used and, in addition and simultaneously, to open a lubricating valve and apply positive pressure to lubricant in the device, whereby to pressure-eject lubricant into such air stream for atomization therein, this so that the air stream so entraining droplets of lubricant may be used both to power a tool such as a rock drill and also lubricate the operating moving parts thereof. When the tool's lubricant supply is nearing depletion, valving means positively shut off both air and lubricant.

3,628,632

## AUTOMATIC CHECKOUT COUNTER

Frank Lambert, Bay St., Box 85, Osterville, Mass.  
Filed Aug. 12, 1969, Ser. No. 849,311

Int. Cl. E04h 3/04

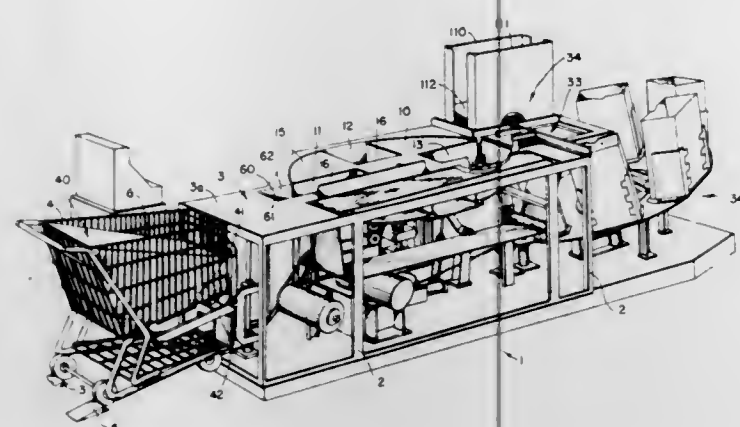
U.S. Cl. 186—1 A

10 Claims

An automatic checkout system for supermarkets and the like in which shopping carts are sequentially and automati-



cally unloaded by an elevator mechanism. The articles in the cart are placed on a carousel-style conveyor by the operator and are moved by the carousel to a bag-loading station hav-



ing means for automatically supplying open bags to receive the articles which are fed automatically from the carousel to the bag. Means are provided for conveying the bags to a storage or pickup area.

3,628,633

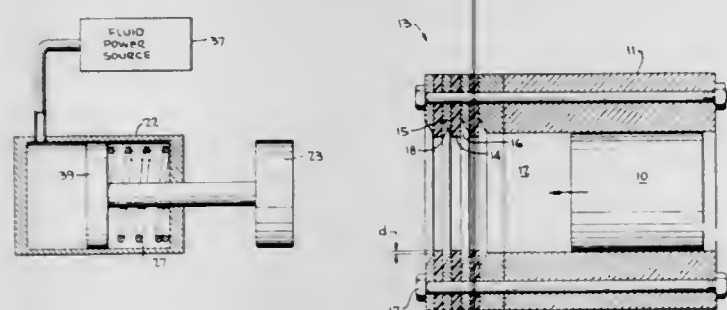
## LINEAR AND ANGULAR VELOCITY BRAKE

Albert D. Meeks, McLean, Va., assignor to The United States of America as represented by the Secretary of the Army  
Filed Feb. 25, 1970, Ser. No. 14,149

Int. Cl. F16f 7/12

U.S. Cl. 188-1 C

10 Claims



A unidirectional braking device comprising a pliable member which is located partially in the path of a moving object for providing the retarding force to the object and a support member to substantially prevent the pliable member from yielding in the forward direction and to permit substantial yielding of the pliable member in the reverse direction. The pliable member comprises a material which is yieldable under the force created by the transmission of the object and braking is accomplished by means of friction between the pliable member and the object. In order to achieve directionality of braking, a nonyielding support member is located to the forward side of the pliable member and is coextensive with the pliable member but recessed from the path of the object. A more gradual braking effect can be achieved with the use of a plurality of pliable members spaced apart by support members, the entire unit being rigidly held together. Each of the support members are coextensive with the pliable members at the forward side of each of the pliable members. A space is provided at the reverse side between each of the support members and the pliable members to permit the pliable members to yield in the reverse direction. This space comprises a recess located at each of the support members. Angular and linear retarding forces to spinning cylindrical projectiles may be achieved by the use of a cylindrical brake.

3,628,634  
FINNED ENERGY ABSORBER

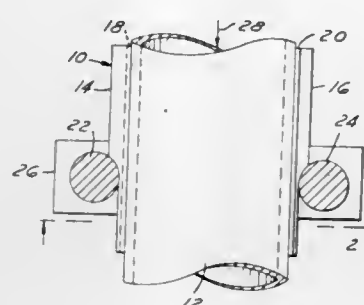
Jonas Valukonis, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of application Ser. No. 823,458, May 9, 1969, now abandoned. This application July 30, 1970, Ser. No. 59,485

Int. Cl. F16f 7/12

U.S. Cl. 188-1 C

13 Claims



A finned energy absorbing device includes a stationary member, a movable member, a deformable fin secured to one of the members and a fin-deforming member secured to the other of the members. The deformable fin and the fin-deforming member are so dimensioned with respect to one another that when they are secured to their associated members, the fin-deforming member interferes with the passage of the fin therepast when the movable member is moved with respect to the stationary member. In one embodiment, the finned energy-absorbing device includes an elongate cylindrical member having a plurality of equally spaced fins lying along the length of the member and projecting radially therefrom. Corresponding to each of the fins is one of a plurality of arcuate deforming members positioned such that movement of the elongate member along its longitudinal axis will result in each of the fins being engaged by one of the deforming members. This engagement results in a combination bending and shearing of the fins whereby energy is absorbed.

3,628,635  
BICYCLE BRAKE

Kiyokazu Yoshigai, 9-15 Wakaeminami-machi 1-chome, Higashiosaki-shi, Osaka-fu, Japan

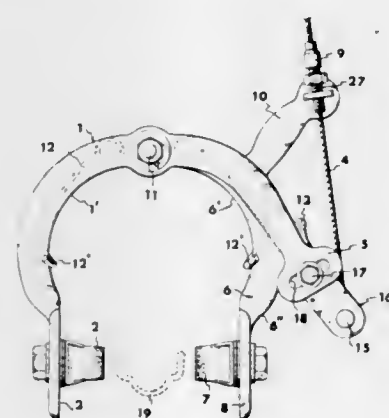
Filed Nov. 12, 1969, Ser. No. 875,699

Claims priority, application Japan, May 10, 1969, 44/42885

Int. Cl. B62f 1/12

U.S. Cl. 188-26

4 Claims



The present invention relates to a side-pull bicycle brake mechanism having major and minor arch members wherein it is required to pull upwards on one end of said major arch member by means of a wire in the case a pair of brake shoes are one-sided from the center, and so constructed that a small tensile force can achieve a big brake effect with easy handling by providing simple force magnifying means

between the pulling member of said major arch member and said wire, so that said pair of brake shoes can be always actuated and applied equally to the two sides of bicycle rim.

3,628,636

## SPOT-TYPE DISC BRAKE

Hans Albert Beller, Bad Vilbel, and Jochen Burgdorf, Offenbach am Main, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,177

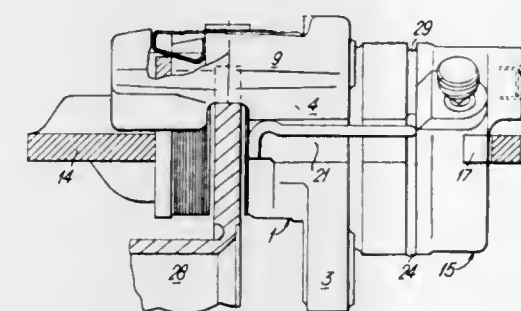
Claims priority, application Germany, Feb. 5, 1969, P 19 05

576.6

Int. Cl. F16d 65/02

U.S. Cl. 188-73.4

1 Claim



This spot-type disc brake for vehicles has a fixed carrier extended over a brake disc and brake shoes slidably mounted on the carrier. A slidable frame having sides which engage slots in the carrier transmits the actuating force from an actuating cylinder and brake shoe on one side of the disc to the brake shoe on the other side of the disc.

3,628,637

## EXTENDABLE SUPPORT COLUMN

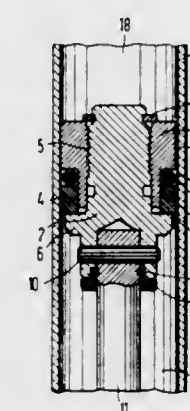
Ludwig Axthammer, Garmisch-Partenkirchen, Germany, assignor to Fichtel & Sachs Aktiengesellschaft, Schweinfurt am Main, Germany

Continuation-in-part of application Ser. No. 707,846, Feb. 23, 1968, now Patent No. 3,503,472. This application Feb. 17, 1970, Ser. No. 11,946

Int. Cl. F16d 63/00

U.S. Cl. 188-300

9 Claims



A hydropneumatic support column for a table top or the like has a cylinder, a two-part piston in the cylinder and a piston rod extending outwardly of the cylinder. Respective axial faces of the two piston parts conformingly engage axially spaced portions of the inner cylinder wall, and spacedly opposite radial walls of the piston parts bound a receptacle for an O-ring dimensioned to define a gap with the inner cylinder wall in the relaxed position. The inner end of the piston rod threadedly engages one piston part and abuttingly engages the other so that the resilient O-ring may be axially compressed between the radial walls of the piston parts by turning the external portion of the piston rod until it closes the gap, thereby breaking communication between two axial

3,628,638

## HYDRAULIC MITIGATOR

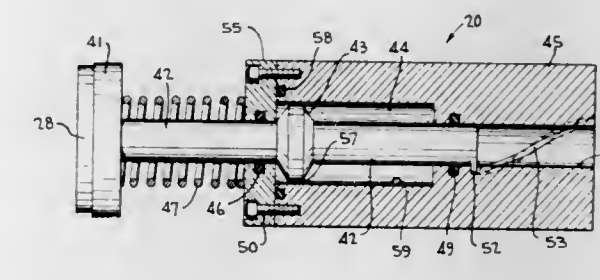
Herbert D. Curchack, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 2, 1970, Ser. No. 7,928

Int. Cl. F16f 9/32, 13/00

U.S. Cl. 188-312

6 Claims



A hydraulic mitigator comprises a relatively massive hollow housing having two coaxial bores, the second bore being larger than the first. A shaft partially extending outside the housing rides in the first bore while a piston which is connected to the shaft rides exclusively within the second bore. The larger bore is filled with a fluid of a known density and a space is provided between the bore and the outer rim of the piston to enable the piston to be propelled through the fluid. The portion of the shaft which extends outside the housing is provided with an enlarged plate which is intended to be struck by the projectile. Any force directed at the plate will be only partially transmitted to the housing, the remainder being dissipated in propelling the piston through the fluid. Thus by properly selecting the density of the fluid and the size of the space between the piston and the bore, one can impose a predetermined deceleration force to the projectile. If the mitigator is spinning at the moment of impact such a spin can be partially transmitted to the projectile. This is accomplished by providing a pin and groove coupling means between the housing and the shaft in order to impart some of the angular acceleration force of the massive housing to the relatively lightweight shaft.

3,628,639

## DISC BRAKE CALIPER-MOUNTING MEANS

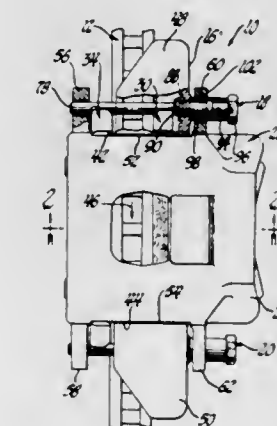
Frank R. L. Daley, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1967, Ser. No. 664,673

Int. Cl. F16d 55/224

U.S. Cl. 188-73.3

4 Claims



A disc brake assembly having a caliper mounting and guide arrangement in which the caliper moves axially of the disc when the brake is actuated so as to bring brake shoes con-



tained within the caliper into frictional engagement with both sides of the disc. The caliper is mounted and guided on pin or bolt assemblies connected to a support bracket so that the caliper is slidable in axial directions relative to the disc and is resiliently cushioned against rattles. The support bracket takes torque reaction directly from the caliper. Once the caliper is installed as a part of a complete disc brake assembly and the vehicle wheel is in place, the caliper is effectively caged by the disc, the wheel, and the support bracket.

3,628,640

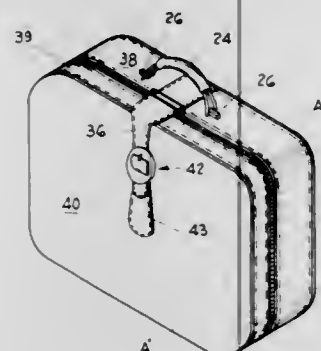
# LUGGAGE WITH SLIDE FASTENER CLOSURE AND SLIDER THEREFOR

Richard Molnar, East Paterson, N.J., assignor to Presto Lock Co., Inc., Garfield, N.J.

Filed Aug. 25, 1969, Ser. No. 852,566

Int. Cl. A45c 13/00

U.S. Cl. 190—41 Z



A luggage case comprising opposed case sections of a sewable material employs a slide fastener for opening and closing the case. A strap is connected to one case section and means connected to the opposite case section is provided for releaseably locking the strap. The strap overlies a slider or sliders in the closed condition of the slide fastener. The slider, or where a pair of sliders are used to open and close the fastener, are each provided with an elongated loop member through which the strap is extended to prevent the slide fastener from being opened, unless the strap is disconnected from the means for locking the strap to the case.

3,628,641

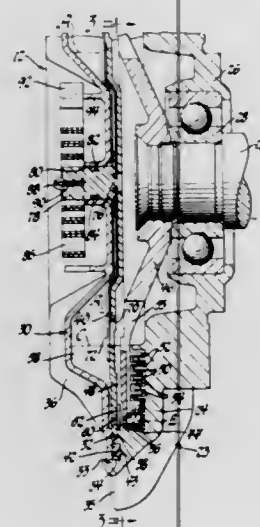
# VISCOUS FLUID CLUTCH

John N. Snodgrass, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1970, Ser. No. 32,265

Int. Cl. F16d 35/00

U.S. Cl. 192—58 B



A viscous fluid clutch including relatively rotatable first and second drive members having a fluid shear space

therebetween and which are cooperable with a fluid medium in the shear space to provide a shear-type fluid drive therebetween, an annular reservoir for at times storing the fluid medium, a temperature-responsive valve for controlling the flow of the fluid medium from the annular reservoir through an inlet port to the fluid shear space, continually open outlet ports and cooperating pump elements or wipers for forcing the fluid medium from the fluid shear space to the reservoir, and an annular cushion member mounted on one of the drive members, radially outwardly of the oppositely disposed ridge and groove shear space elements, between either radially extending or parallel tapered thrust faces of the clutch and housing members for improving the bearing characteristics and/or cushioning the impact therebetween under "wobble" conditions.

3,628,642

# ELECTRONIC CONTROL DEVICE FOR TRANSMISSION MECHANISM

Raymond A. Ravenel, Sceaux, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

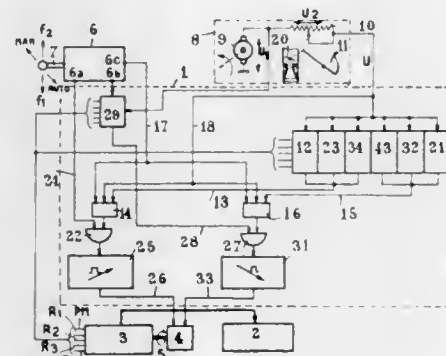
Filed Dec. 29, 1969, Ser. No. 888,764

Claims priority, application France, Dec. 31, 1968, 182,909

Int. Cl. B60k 21/00

U.S. Cl. 192—.073

21 Claims



An automatic device for controlling a stepped-gear transmission mechanism of an automotive vehicle comprising a group of  $n-1$  circuits in parallel for changing up to a higher gear and a group of  $n-1$  circuits in parallel for changing down to a lower gear ( $n$  being the number of forward speeds provided by the transmission mechanism or gearbox), these various circuits comprising level detector stages of which the switching thresholds are arranged in stepped relation to each other as a function of the various gear changes, and a generator of manual control pulses, responsive to a selector, for transmitting to the output stages manual-control pulses in parallel with the automatic-control pulses delivered by the various circuits for changing from a lower gear to an upper gear and vice versa. The gear shifting circuits are controlled by means responsive to accelerator position and a vehicle-driven tachometer, and may also be controlled by brake pedal operation to cause a shift down during vehicle braking. Means controlled by the ignition key cause the transmission to shift to neutral during starting.

3,628,643

# SELECTOR MECHANISM FOR COIN-CONTROLLED ARTICLE DISPENSERS

Floyd V. Bookout, Long Grove, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.

Filed Nov. 7, 1969, Ser. No. 874,915

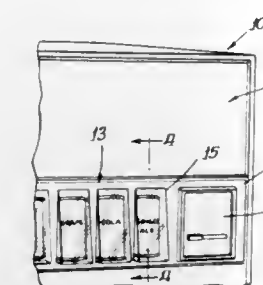
Int. Cl. G07f 11/00

U.S. Cl. 194—10

9 Claims

Selector mechanism for automatic coin-operated vending machines incorporating item display means and an actuator for operating electrical switch means for activating the selector mechanism; the latter including an item display platform and being operationally conditioned by electromechanical in-

terlock means responsive to the availability of items for vending and which activates a mechanical signal system for positioning the carriage at the higher rate in the nonprinting, or return-to-start operation thereof, and the pin rides in the shallow groove to provide a positive return



tively informing the customer of item availability for selection.

3,628,644

# ELECTRICALLY DRIVEN-TYPE ELEMENT

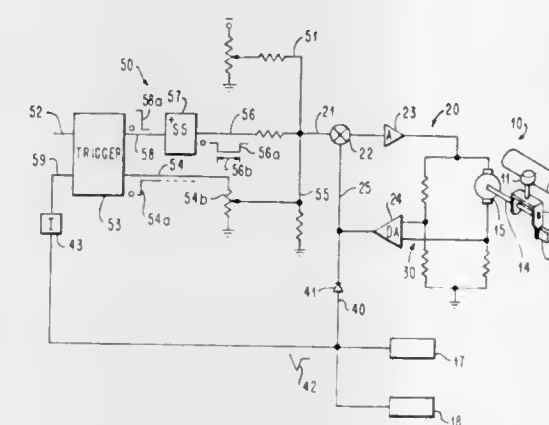
Walter O. Cralle, Jr., Georgetown; Henry W. Simpson, Lexington, both of Ky., and Barry C. Kockler, Statesville, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1969, Ser. No. 886,837

Int. Cl. B41j 23/32

U.S. Cl. 197—12

6 Claims



The impact time of an electrically driven-type element is directly sensed and employed to control a direct printer function, such as the impact drive itself or an ancillary printer function such as letter feed or data input control. Actual sensing of the impact point is preferably accomplished by observing the impact-force-induced polarity change of back EMF of a DC motor employed to drive the type element. Back EMF is also employed to control impact drive velocity.

3,628,645

# CARRIAGE DRIVE MECHANISM

Earl W. McFeaters, Kettering, and James P. Donohue, Faiborn, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

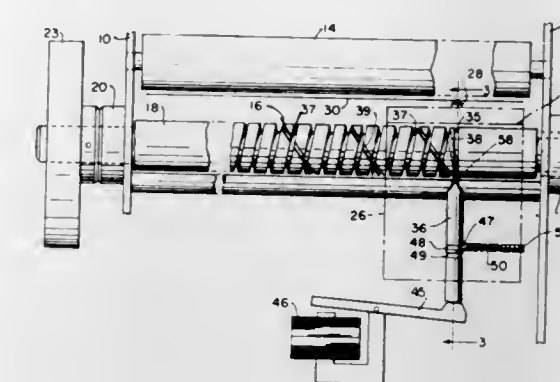
Filed Oct. 23, 1969, Ser. No. 868,779

Int. Cl. B41j 19/20

U.S. Cl. 197—90

11 Claims

A drive mechanism applicable to high-speed printing apparatus for moving a printing carriage along a path in one direction at a specified rate of travel and for returning the carriage in the opposite direction at a substantially higher rate of travel. The mechanism includes a rotating shaft having helical grooves running axially therealong in both directions, one groove being of a certain depth and the other groove being of a lesser depth. A drive pin rides in the deeper groove along the rotating shaft to move the carriage



for the carriage at the higher rate in the nonprinting, or return-to-start operation thereof.

3,628,646

# DEVICE FOR TRANSFERRING INDIVIDUAL ARTICLES TO A PACKAGING MACHINE

Wilhelm Schuster, Karlsruhe, and Adolf Grether, Neureut, both of Germany, assignors to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

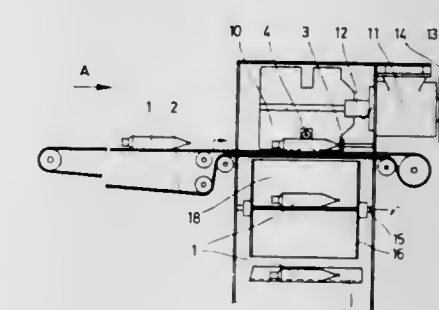
Filed June 25, 1969, Ser. No. 836,535

Claims priority, application Germany, July 20, 1968, P 17 61 913.5

Int. Cl. B65g 47/08, 47/82

U.S. Cl. 198—22

8 Claims



The invention comprises a device for transferring individual articles, such as tubes, bottles, glasses and the like, from the discharge end of a filler and closing machine to the start of a packaging machine. The device comprises at least one horizontally disposed endless transfer band driven in synchronism with an article-receiving conveyor chain of the packaging machine and provided with uniformly spaced pockets, each of which is adapted to receive only a single article to be transferred. From these pockets the individual articles are expelled by a slidable member into a pocket of a pocket wheel from which the articles are discharged one by one onto the conveyor chain of the packaging machine.

3,628,647

# ARTICLE COMBINER

John H. Beard, Salisbury, N.C., assignor to Taylor Manufacturing Company, Salisbury, N.C.

Filed Nov. 12, 1969, Ser. No. 875,773

Int. Cl. B65g 47/22, 47/26

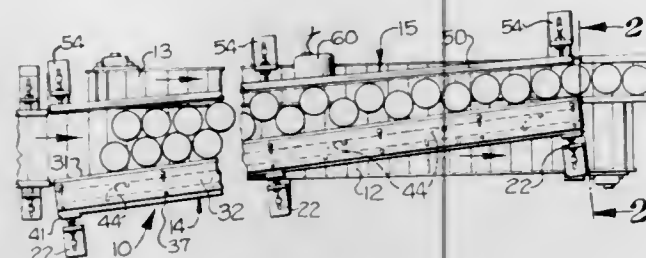
U.S. Cl. 198—30

10 Claims

An article combiner for receiving a plurality of articles advancing abreast and for arranging these articles in tandem relation to form a single row including conveyor means for conveying the articles along a predetermined path, and first and second guide means disposed in converging relation for guiding the articles as they are conveyed, one of the guide means comprising agitating means for agitating articles



brought into contact therewith and buffer means for normally maintaining the articles out of contact with the agitating means but permitting contact therewith upon a jam-up of



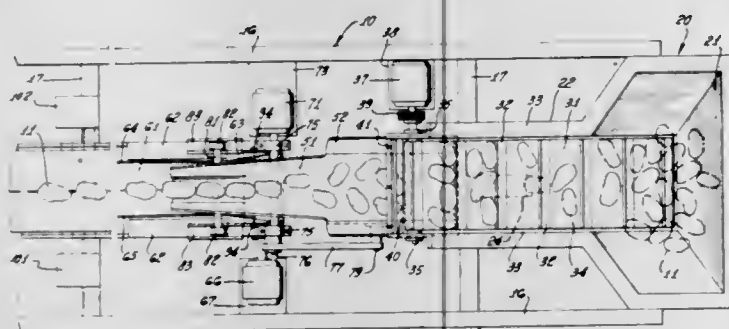
a plurality of articles between the guide means, and the other guide means including a guide rail formed of nonscarring, friction-reducing material.

### 3,628,648 COMPACT ORIENTING AND SINGULATING SYSTEM FOR IRREGULAR ELONGATED OBJECTS SUCH AS POTATOES

Stanley A. McClusky, 3001 Baylor Ave., Bakersfield, Calif.  
Filed Sept. 30, 1969, Ser. No. 862,260  
Int. Cl. B65g 47/26

U.S. Cl. 198—30

15 Claims



A machine and method in which irregular elongated objects, such as potatoes and other produce, are conveyed in limited numbers by a dribble elevator from a bin into a concave trough inclined downwardly towards an outlet and vibrating longitudinally to move the potatoes therealong while the potatoes are being oriented by the concavity of the trough into positions, one behind the other, with their major axes disposed longitudinally of the trough until each potato, singly, slides out of the outlet to be engaged by a faster moving V cross section belt and pulled from the outlet thereby, to advance thereon in spaced oriented tandem relationship for sizing.

### 3,628,649 APPARATUS FOR REGULARLY REGROUPING AND DISTRIBUTING OBJECTS FROM DIFFERENT ORIGINS ON A LEADOUT CONVEYOR

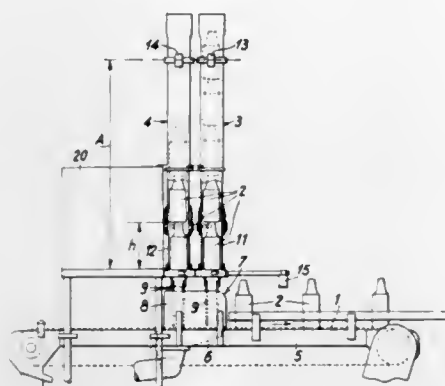
Jacques Arvisenet, Le Havre, France, assignor to Sidel, Societe Anonyme, Le Havre, France  
Filed Dec. 19, 1969, Ser. No. 886,452  
Claims priority, application France, Dec. 31, 1968, 182910  
Int. Cl. B65g 47/26

U.S. Cl. 198—32

3 Claims

An apparatus for regularly regrouping and distributing objects from different origins on a leadout conveyor, these objects being fed by a plurality of feed conveyors extending at right angles to the leadout conveyor. The apparatus comprises, for each feed conveyor, a device for detecting the delivery of the objects onto said leadout conveyor, comprising essentially a lock-chamber disposed at the delivery end of the feed conveyor and equipped with means permitting the

passage of only one object at a time towards the leadout conveyor, and an input pickup device adapted to be energized only by the permanent presence of an object on said feed conveyor at a point located upstream of said lock-chamber. The apparatus further includes an output pickup responsive to the passage of each object on said leadout conveyor, the



various input pickups and the single output pickup being connected to an electric control device causing the simultaneous opening of the lock-chambers of said feed conveyors in which the permanent presence of objects has been detected by their energized input pickups at a rate of opening inversely proportional to the number of energized input pickups.

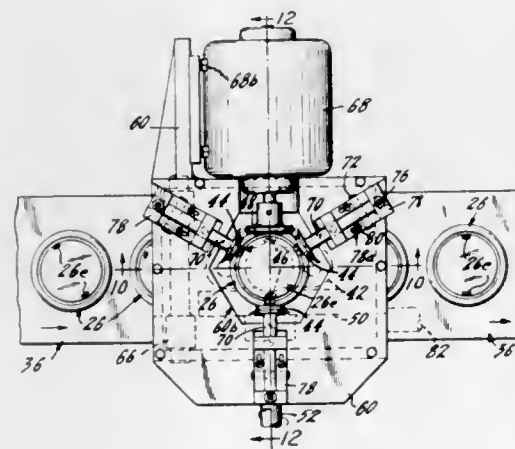
### 3,628,650 APPARATUS FOR ORIENTING CAN ENDS

John Wilson Rouse, Ramsey, N.J., assignor to American Can Company, New York, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,874  
Int. Cl. B65g 47/24

U.S. Cl. 198—33 AB

18 Claims



A method and arrangement for orienting an article to a predetermined angular position. The article is embossed with impressions which conform to the rim surface of a rotatable member. A continuously turning wheel rotates the article to bring the embossment to the angular position which coincides with the position of the rotatable member. When such coincidence in positions is attained, the article is moved against the rotatable member so that the latter projects partially into the embossment shaped in the form of a recess facing the rotatable member. The rotatable member is then removed from the article and the latter is removed by a conveyor in oriented position.

### 3,628,651 DEVICE FOR TILTING ADVANCING CONTAINERS

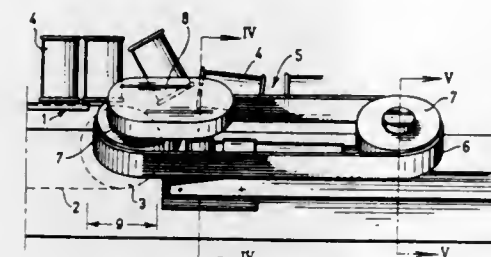
Willem Wolzak, Landsmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed May 13, 1970, Ser. No. 36,795  
Claims priority, application Netherlands, May 14, 1969, 6907412

Int. Cl. B65g 47/24

U.S. Cl. 198—33 AD

3 Claims



A device for tilting consecutively a row of advancing containers from an upright to a lying position by applying an accelerating force in the feed direction to the bottom of the containers so that the containers fall backwards during their uninterrupted travel.

### 3,628,652 DEVICE FOR CONTINUOUSLY OPERATING BAND CONVEYERS

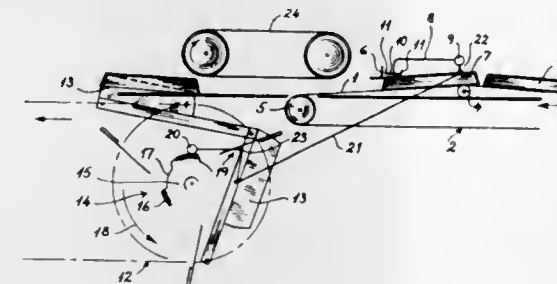
Preben E. R. Ørstam, Copenhagen, Denmark, assignor to Skandinavisk Emballage Aktieselskab, Lyngby, Denmark  
Filed Aug. 7, 1969, Ser. No. 848,260

Claims priority, application Denmark, Aug. 13, 1968, 3911/68

Int. Cl. B65g 47/30

U.S. Cl. 198—34

9 Claims



A device for continuously operating band conveyors to carry on the transport of conveyed objects, e.g. egg cartons, at a preselected distance from one another in the traveling direction, comprising a conveyor band running over support rollers for said band, stop means provided over the upper advancing part of the conveyor band, a pressure member provided over the conveyor band seen in the traveling direction of the band prior to the stop, the said pressure member being adapted to press an object which has arrived at the stop means downwardly so that the said object may advance beneath the stop means.

### 3,628,653 AUTOMATIC DISTRIBUTION SYSTEM FOR FRUIT EMPLOYING TILTABLE CONVEYOR BELT

Aaron James Warkentin, 23561 East Dinuba Ave., Dinuba, Calif.

Filed Feb. 24, 1970, Ser. No. 13,707

Int. Cl. B41j 19/16

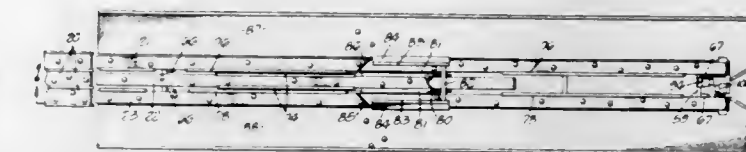
U.S. Cl. 198—81

11 Claims

Apparatus and method of distributing fruit such as citrus fruit or peaches and the like to the tables of a packing house

893 O.G.—35

characterized by the use of at least three conveyor belts for the fruit, the outer two of which are mounted to be tilted to dump fruit thereon to the tables as desired at time or space



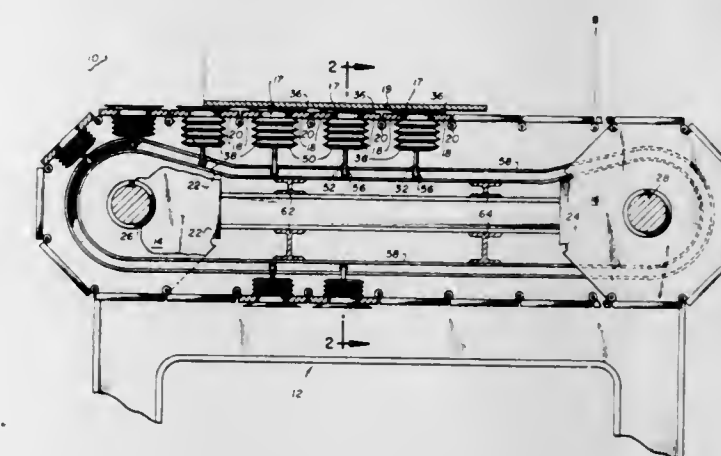
intervals. Deflector means cause fruit to be passed from the inner belt to the outer belts and all drive, support and tensioning means for the outer belts are mounted to be tilted therewith.

### 3,628,654 VACUUM BELT CONVEYORS

Edward F. Haracz, 161 Pershing Road, Clifton, N.J.  
Continuation-in-part of application Ser. No. 860,283, Sept. 23, 1969, now abandoned. This application Oct. 1, 1969, Ser. No. 862,825  
Int. Cl. B65g 15/30

U.S. Cl. 198—179

20 Claims



A vacuum belt conveyor is provided comprising an endless belt or carrier formed of a plurality of hinged or linked together plate members and adapted to be driven by suitably powered sprocket wheels in engagement therewith. Each plate member supports a vacuum or suction applying means including an outer cuplike member and an inner extensible bellows or flexible diaphragm member, the latter having a plunger rod and roller mechanism attached to its free end for actuation by a common cam track cooperatively engageable therewith. The cam track is operable to expand each bellows or diaphragm causing it to form a vacuum or suction plenum communicating with the outer cup member through a common aperture provided therebetween for such purpose. Thus, when a flat plate or object is placed on the endless carrier belt in airtight sealing engagement with a plurality of outer cup members and the bellows means associated with each outer cup member is actuated by the cam track means, a plurality of vacuum or suction forces are applied to the underside of the flat plate or object thereby firmly and securely holding it against the endless belt carrier for movement therewith. The cam track means is designed to actuate the bellows units at a predetermined location relative to the path of travel of the belt and to release the bellows units or deactuate them at a different predetermined location along the path of belt movement.

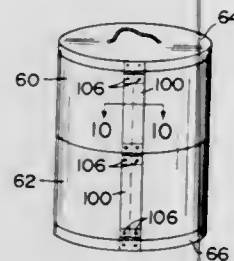


3,628,655

**CONVERTIBLE WIG CASE**

Philip Bohannon, 2802 West Sitka Street, Tampa, Fla.  
Continuation-in-part of application Ser. No. 679,900, Nov. 1, 1967, now Patent No. 3,479,106, dated Nov. 18, 1969. This application Aug. 18, 1969, Ser. No. 850,982  
Int. Cl. A45c 11/02, 7/00; B65d 25/06  
U.S. Cl. 206-8

6 Claims



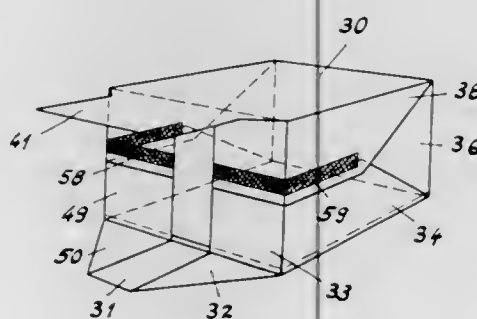
A sectional, convertible wig case for storing and transporting a wig and either a wiglet or fall. The case includes a wig stand having a base which partitions the case into two compartments and which may be supported at various heights within the case. Conveniently, the case is fabricated with removable wall sections such that when only the wig is transported, an upper section of the case may be removed to shorten the case and make it easier to carry. To reduce the shipping cost of the case, each section is adapted to be shipped in a flat condition and afterwards easily assembled into its normal cylindrical configuration by the retailer or purchaser.

3,628,656

**PACKAGE**

Max Knuchel, Schaffhausen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland  
Filed Sept. 15, 1969, Ser. No. 857,873  
Claims priority, application Switzerland, Sept. 30, 1968, 14554/68  
Int. Cl. B65d 85/00  
U.S. Cl. 206-46 R

2 Claims



The objects to be packed rest on a cardboard bottom and are surrounded by cardboard sides comprised by a collar. A sheet of paper is wrapped all around the box thus formed, including the open top, and glued to the bottom and sides. The overlapping edges of the sheet are also glued together.

3,628,657

**METHOD OF AND APPARATUS FOR DETECTING AN OPAQUE OBJECT IN A TRANSLUCENT SUBSTANCE**  
Ronald J. Billett, Sunnyvale, Calif., assignor to FMC Corporation, San Jose, Calif.

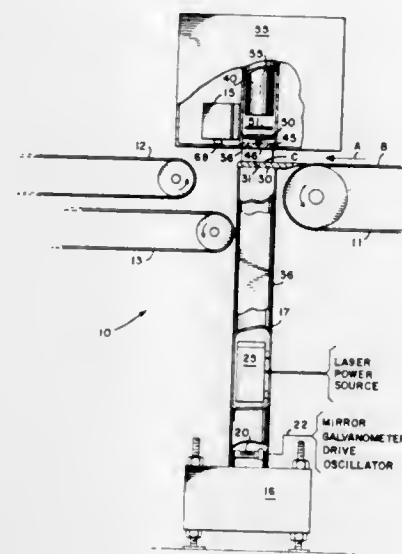
Filed Aug. 15, 1968, Ser. No. 752,857  
Int. Cl. B07c 5/342

U.S. Cl. 209-111.7

19 Claims

The apparatus of the present invention serves to detect a pit or a pit fragment that may remain in a peach half because

of an imperfect pit removing operation. Toward this end, a conventional gas laser casts continuously a beam of laser light on a conventional oscillating mirror. In turn, the oscillating mirror, which is located on one side of an advancing peach half, projects an oscillating pencil of laser light through the advancing peach half. On the other side of the advancing peach half and disposed in the path of travel of the oscillating pencil of laser light is a suitable light sensing device. A conventional light diffusing screen intercepts the oscillating pencil of laser light in the absence of a peach half.



While no peach half is in the path of travel of the oscillating pencil of laser light, the diffusing screen diffuses the oscillating pencil of laser light, the intensity of which is sufficient to cause the light sensing device to produce a no reject signal in the output thereof. When a peach half with no pit or pit fragment therein advances through the oscillating pencil of laser light, it diffuses the oscillating pencil of laser light. As a consequence thereof, a no reject signal is produced in the output of the light sensing device. Should a pit or a pit fragment be present in the advancing peach half, then the oscillating pencil of laser light is partially blocked or intercepted by the opaque characteristics of a pit or pit fragment, which causes a reduction of the intensity of the light impinging on the light sensitive device. This action results in a reject signal being produced in the output of the light sensing device.

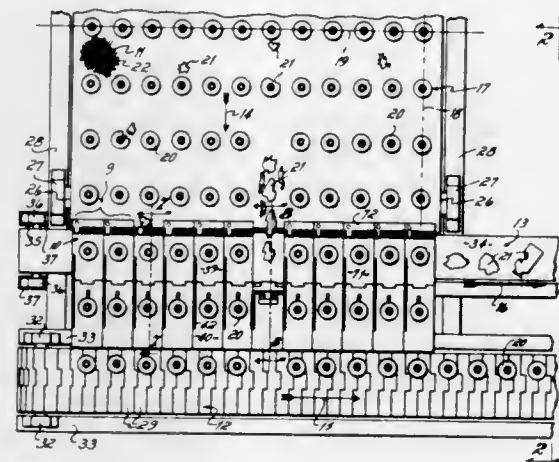
3,628,658

**ASSORTING DEVICE**

James F. Cotter, Lancaster, Ohio, assignor to Anchor Hooking Corporation, Lancaster, Ohio  
Filed Feb. 18, 1970, Ser. No. 12,235  
Int. Cl. B07c 5/06

U.S. Cl. 209-125

26 Claims



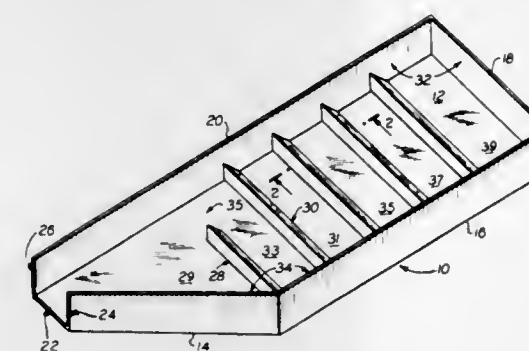
An assorting device having a vibratory live plate or table for disposition between a feed conveyor and a takeoff con-

veyor for moving articles from the feed to the takeoff conveyor under normal operating conditions, and for segregating certain types of abnormal articles to prevent them from being passed to the takeoff conveyor. The device is especially suitable for use in the manufacture of glassware and especially glass containers such as bottles. The table is characterized in that it comprises a trap door preferably associated with a single column of ware carried by the feed conveyor, the trap door being restrainable in the open attitude to permit an entire column of pieces (in the case of glassware, including malformed ware and/or cullet) to be discharged or assorted at the end of the feed conveyor into a discard bin or a collection conveyor without affecting the conveyance of the other columns or pieces across the table onto the takeoff conveyor; such a feature permits the elimination of an entire column of pieces as desired when a common defect exists among such pieces. Further, each trap door is characterized in that it comprises a reciprocating jaw plate at the leading or upstream edge of the trap door, the jaw plate being yieldably retractable downward at an acute angle from the feed conveyor as required to prevent cullet or chips which are trapped or lodged in the feed conveyor from jamming rigidly against the leading edge of the jaw plate; such feature prevents the leading edge of the table from being unduly nicked or deformed or disfigured to the point that the transfer of pieces across the table is adversely affected.

3,628,659  
**SORTER DEVICE**

Emanuel M. Mitchell, 1111 Fordham Lane, Woodmere, N.Y.  
Filed Oct. 22, 1969, Ser. No. 868,524  
Int. Cl. B07c 7/02  
U.S. Cl. 209-126

10 Claims



A sorting tray having a bottom and two upstanding converging sides secured thereto. The ends of these sides which approach each other do not meet but are closely spaced from one another, thereby forming an exit opening. The bottom has a plurality of low transverse upstanding ribs secured thereto defining separate sorting compartments in serial relationship to one another for releasable retention of articles.

3,628,660

**SEPARATOR FOR NONMISCIBLE LIQUIDS**

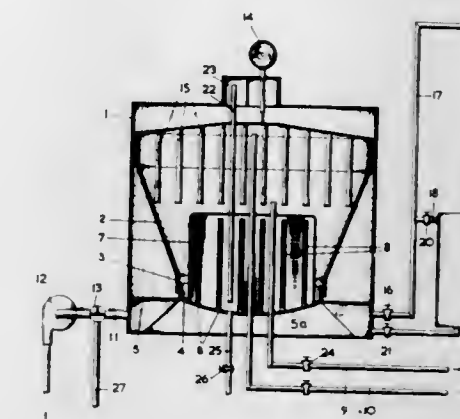
Cornelis In't Veld, Vlaardingen, Netherlands, assignor to Rotterdamse Havenreinigingen Transport Bedrijf  
Filed Mar. 27, 1970, Ser. No. 23,348  
Int. Cl. B01d 35/14

U.S. Cl. 210-104

12 Claims

A separator for nonmiscible liquids such as oil and water comprises a bell immersed in water and into which the oil and water are introduced. The bell floats or not, depending on the quantity of oil it contains, and a control responsive to the upward pressure of the floating bell prevents excessive introduction of oil into the bell. Oil is withdrawn from adjacent the top of the bell and water is withdrawn through an

oleophobic filter beneath the bell. The filter can be backwashed with water. An underpressure in the separator



can be maintained either by gravity or by a downstream pump.

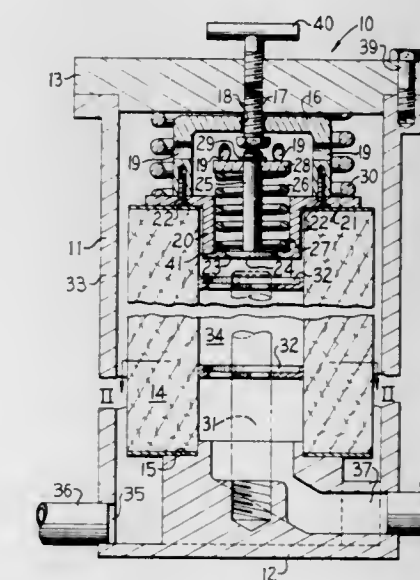
3,628,661

**FILTER ASSEMBLY WITH IMPROVED BYPASS VALVE REGULATING MEANS**

Edward A. Codo, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.  
Filed Feb. 26, 1970, Ser. No. 14,484  
Int. Cl. B01d 35/14

U.S. Cl. 210-130

10 Claims



A filter assembly is provided with a bypass valve which is connected by floating support means to a removable cover. The valve is adapted to rest within the end of a filter element and constructed so that the valve-actuating pressure is independent of filter length.



3,628,662

**FILTER ANTIDRAIN VALVE ASSEMBLY**

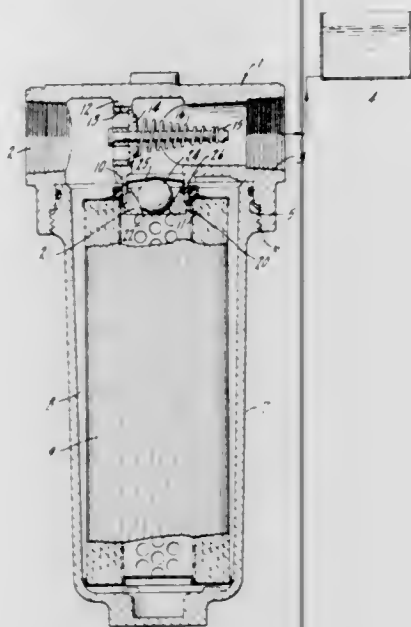
Walter J. Kudlaty, Elmhurst, Ill., assignor to Marvel Engineering Company, Chicago, Ill.

Filed Mar. 26, 1970, Ser. No. 22,867

Int. Cl. B01d 35/16

U.S. Cl. 210-136

3 Claims



A filter assembly having a one-way valve precluding escape of fluid when the assembly is opened.

3,628,663

**AUTOMATIC CONTROL SYSTEM FOR COOLING TOWERS**

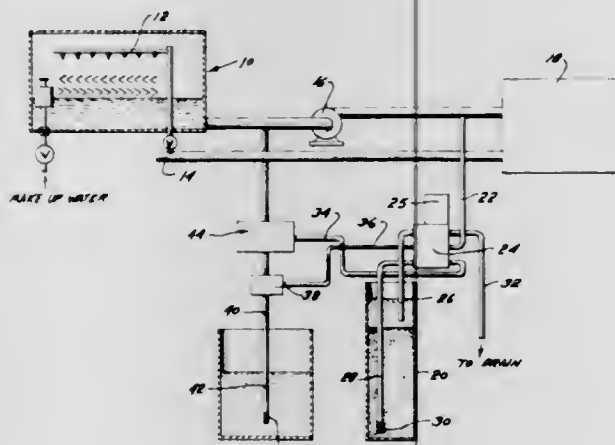
James J. Derham, Dresher, and Edward R. Morgan, Haver-town, both of Pa., assignors to Klenzoid Inc., Philadelphia, Pa.

Filed Aug. 7, 1970, Ser. No. 62,048

Int. Cl. B01d 29/38

U.S. Cl. 210-141

3 Claims



A completely automatic control system for maintaining the chemical integrity of fluids used in a recirculation-type water cooling system such as a cooling tower used to dissipate heat from a gas condenser. In addition to maintaining the chemical purity of the recirculating coolant, the present system automatically filters dirt from the system thus preventing the clogging of vital flow paths therethrough. Chemicals added to

the system are periodically refurbished so as to maintain a constant level of concentration thereby effectively combating corrosion, scale formation and the growth of micro-organisms. Filtering of a portion of the recirculating coolant is continuous, being interrupted only for the purpose of backwashing the filter. The backwash operation is effected using the recirculation coolant thus simultaneously effecting bleed off from the system.

3,628,664

**MEANS OF SKIMMING A POOL BY USE OF VORTEX**

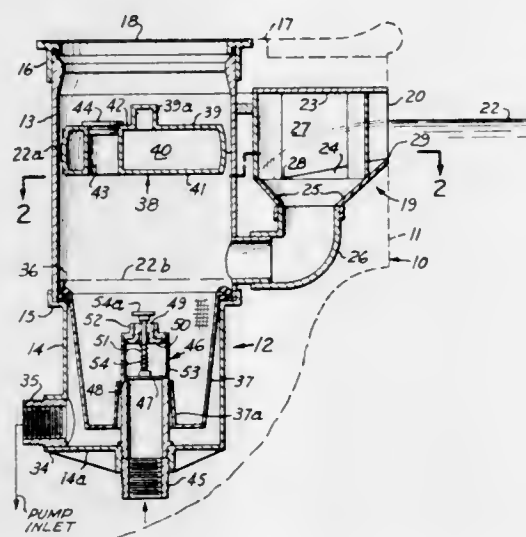
David A. Stanwood, West Covina, Calif., assignor to Swimquip, Inc., El Monte, Calif.

Filed Sept. 4, 1969, Ser. No. 855,177

Int. Cl. E04h 3/20

U.S. Cl. 210-169

15 Claims



A vortex-producing chamber has an inlet from the surface of a pool and an outlet at the bottom of the vortex chamber. A vortex is formed at this outlet which carries the water with any floating debris and the like with it into a tank from which it can be drawn out by action of a suction pump. In the usual arrangement, means such as a float is located in an upper portion of the tank at the water surface. If the tank water level drops abnormally low the float means comes down with the water and engages a seat dividing the upper and lower tank portions from each other and sealing the lower tank portion from air in the upper portion. A bypass conduit leading from a water source such as the pool itself supplies water to the lower tank portion to supply the pump demand when the lower portion is thus sealed from the upper portion.

3,628,665

**FLOATING OIL CONTAINMENT APPARATUS**

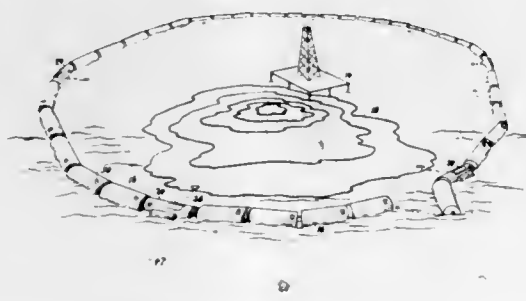
Lubertus Bakker, Wellsville, N.Y., assignor to The Air Pre-heater Company Inc., Wellsville, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,637

Int. Cl. E02b 15/04

U.S. Cl. 210-242

1 Claim



Apparatus for restraining an oil slick floating freely on the surface of a body of water whereby it is at all times under

3,628,666

**FILTERING MACHINE**

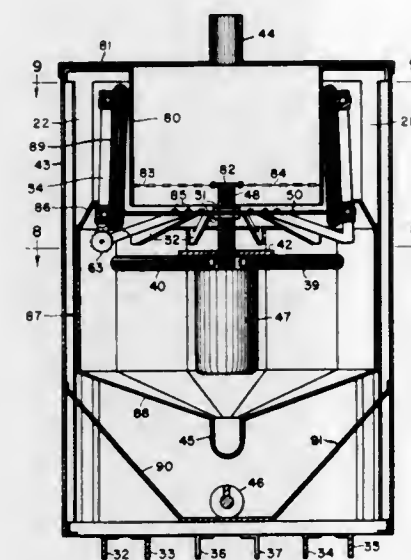
Harvey M. Wenger, and Norman E. Archer, both of Holland, Mich., assignors to Wals, Inc.

Filed Feb. 4, 1970, Ser. No. 8,453

Int. Cl. B04b 3/08

U.S. Cl. 210-370

13 Claims



A filtering machine based upon an endless ring-shaped rotating filter blanket continually being turned inside-out to disengage solid particles impinged upon the inside of the filter blanket.

3,628,667

**DECANTATION APPARATUS**

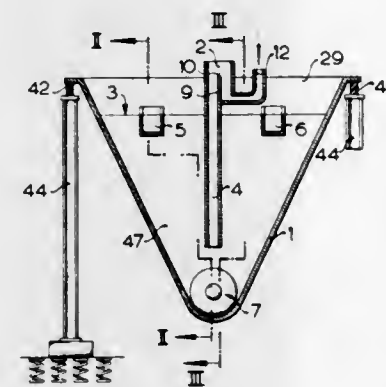
Zdeno Somora; Ladislav Zavodsky, and Benedikt Kalisky, all of Bratislava, Czechoslovakia, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Sept. 23, 1969, Ser. No. 860,367

Int. Cl. B01d 21/12

U.S. Cl. 210-519

32 Claims



A decantation apparatus comprises a horizontally elongated vessel having a top section and a bottom section and being arranged to be filled to a predetermined level of the top section. Feed means feeds the suspension into the vessel. A distributor chamber extends lengthwise of the vessel substantially coextensive within the top section and receives the suspension from the feed means. An elongated loading well extends lengthwise of the distributor chamber below the same and substantially coextensive therewith. It communicates with the distributor chamber and projects downwardly into the bottom section. A pair of outlet chan-

3,628,668

**LEADER PIPE ATTACHMENT**

Max Huppert, Bornweg 28, 6483 Bad Soden, Salmunster, Germany

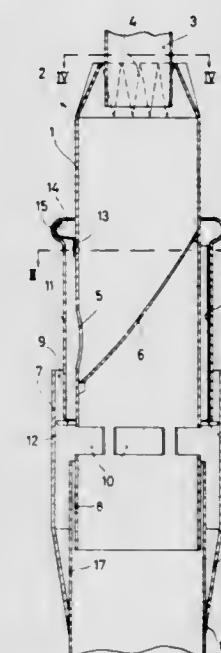
Filed Jan. 14, 1970, Ser. No. 2,925

Claims priority, application Germany, Jan. 18, 1969, July 15, 1969; P 19 02 417.0, G 69 27 952.3

Int. Cl. B01d 35/00

U.S. Cl. 210-446

12 Claims



A leader pipe attachment includes a pipe section mounted between the leader pipe and a standpipe. Dirt coming from the leader pipe is caught on a screen in the pipe section and the rain water spills through a port in the pipe section above the screen into an annular chamber surrounding the pipe section, returning thereto through inlet ports below the screen. A slidable cover surrounds the pipe section and may be moved out of a covering position over the outlet port so that accumulated dirt may be removed through the port.

3,628,669

**SEMI-PERMEABLE MEMBRANES**

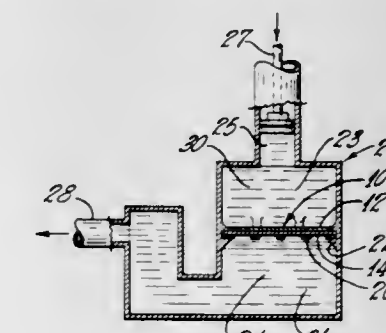
Charles L. McKinnis, and Charles I. Cohen, both of Granville, Ohio, assignors to Owens-Corning Fiberglass Corporation

Original application May 3, 1968, Ser. No. 726,297. Divided and this application Dec. 22, 1969, Ser. No. 1,940

Int. Cl. B01d 39/20, 31/00

U.S. Cl. 210-510

2 Claims



A rigid semi-permeable membrane of essentially silica and apparatus and method for making it that includes leaching an inorganic glass film.



3,628,670

## OIL-TANK-CLEANING APPARATUS

Ray O. McGuire, 1912 North H St., and Joseph C. Peeper, R. 3, both of Elwood, Ind.

Filed Oct. 12, 1970, Ser. No. 79,852

Int. Cl. B01d 21/06

U.S. Cl. 210-528

5 Claims

U.S. Cl. 211-153



A cleaning apparatus for an oil tank. A rod is rotatably mounted to the floor of the tank and to a frame attached to the tank sidewalls. An arm having a sphere at one end contacting the sidewall of the tank is attached to the rod and receives sediment for filtering. An outlet pipe is connected to the tank via this hole and receives the sediment. A motor drives the rod with suitable gearing.

3,628,671

## DISPLAY STAND

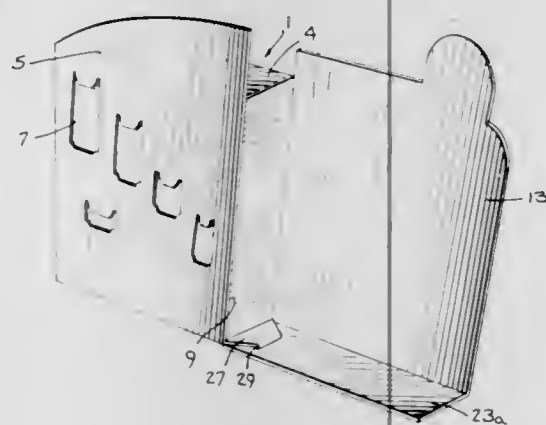
Jay F. Schweickart, deceased, late of Lancaster, Ohio (by Beverly J. Schweickart, administratrix), assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Feb. 17, 1970, Ser. No. 12,106

Int. Cl. A47g 29/00

U.S. Cl. 211-73

7 Claims



A display stand which has a portion for holding articles and a second portion adjacent the first portion which is offset to the rear thereof so as to provide a storage area for carriers for the displayed merchandise. The stand is formed from a planar blank having hinged marginal portions which contain cooperating flap and slit fastening means.

3,628,672

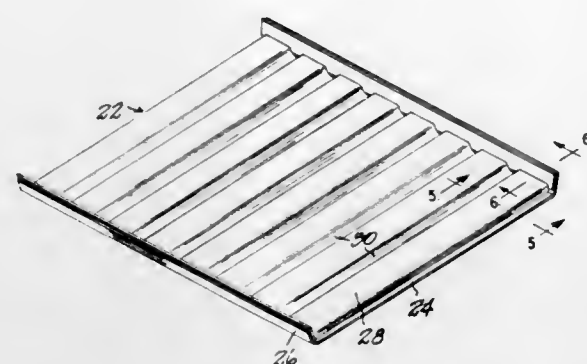
## CAPTIVE PALLET FOR LOAD-STACKING RACKS

Gerald O. Heinz, Streator, Ill., assignor to Streator Dependable Mfg. Co., Streator, Ill.

Filed Jan. 5, 1970, Ser. No. 638

Int. Cl. A47b 96/02; A47f 5/00

1 Claim



A captive pallet is adapted to serve as a removable shelf in a storage rack and to support loads thereon in said rack and during transport between selected stations in a limited area. The pallet has a flat metal bottom plate with opposite upturned flanges and a corrugated metal plate welded to the bottom plate with its corrugations extending perpendicularly between said upturned flanges and with end flanges welded to said bottom plate.

3,628,673

## CARGO-HANDLING SYSTEM

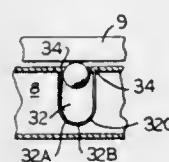
Charles L. Lynn, Jr., Lafayette, Ind., assignor to Lynn Airco, Inc. and Louis Pearlman, Jr., Lafayette, Ind., part interest to each

Filed July 2, 1969, Ser. No. 838,570

Int. Cl. B60v 1/04

U.S. Cl. 214-1 BE

1 Claim



A cargo-handling system wherein cargo is supported on a plurality of low-pressure airstreams which originate from a floor section having a plurality of apertures therein. The positioning of the cargo controls the flow of air through said apertures by the opening and closing of valve means. Compressed air is supplied from a plurality of plenums which are an integral part of the floor section. The preferred valve means are balls which are positioned in pockets below the floor apertures. The cargo-handling system is particularly suited for use in conjunction with aircraft.

3,628,674

## INDUSTRIAL ROBOT

Kunio Koike; Akio Mito, both of Kanagawa, and Masayasu Dezaki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Tokyo Keiki Seizosho (Tokyo Keiki Seizosho Co., Ltd.), Tokyo, Japan

Filed Sept. 18, 1970, Ser. No. 73,315

Claims priority, application Japan, Sept. 24, 1969, 44/75948

Int. Cl. B66c 1/00

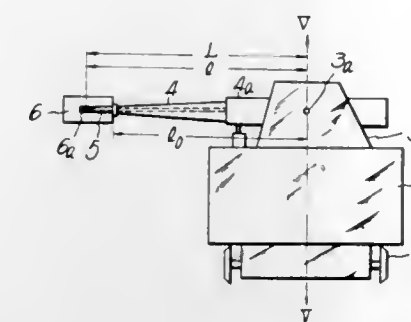
U.S. Cl. 214-1 BD

5 Claims

An industrial robot comprising a truck, an arm support base, an arm mounted thereon, a clamp for a load to be carried, a turning device for the arm, and a pump driving the

arm and turning device through directional valves, in which a device is provided for detecting a force applied to the arm and a sliding device is provided for sliding the arm support

When coal is being charged, the shoe, acting through suitable control apparatus, keeps a damper valve open. But, when in-



base, whereby the detecting device detects the force over a predetermined value to cause the sliding device to move the arm support base toward the load.

3,628,675

## POLE GUIDE

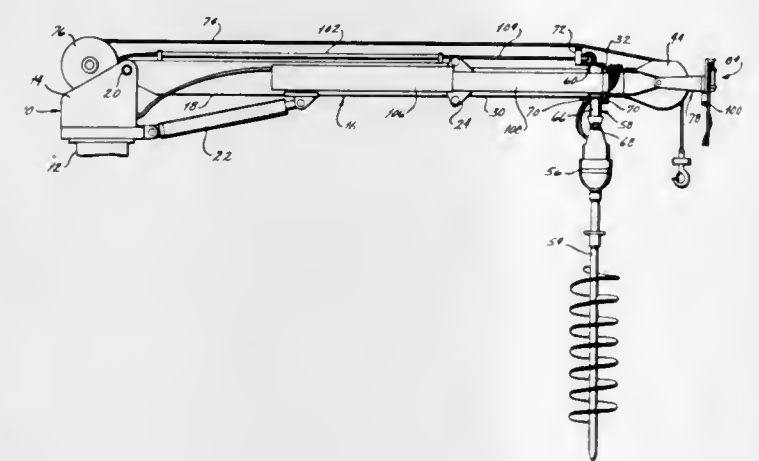
Roy Balogh, St. Louis, Mo., assignor to McCabe-Powers Body Company, St. Louis, Mo.

Filed Sept. 10, 1969, Ser. No. 856,633

Int. Cl. B66f 11/00

U.S. Cl. 214-3

15 Claims



A pole guide is used on a beam assembly having a fixed beam, an extension, and a pullout extension telescopically mounted with respect to one another. The pole guide is mounted on the extension adjacent its upper end, and includes tongs adapted to clamp and hold a pole. The pullout extension includes on its upper end a sheave which is movable from a retracted position wherein it is adjacent the pole guide to an extended position wherein it is spaced from the pole guide.

3,628,676

## COAL FEEDING SYSTEM FOR MECHANICAL FEED-TYPE LARRY CAR

Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company, Inc.

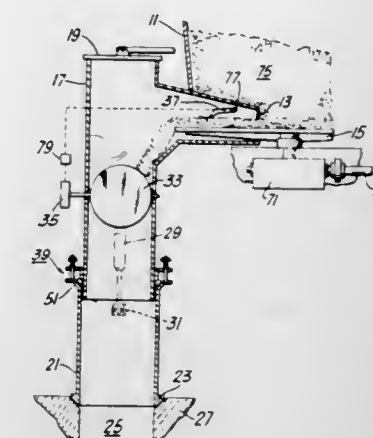
Filed May 6, 1970, Ser. No. 35,010

Int. Cl. C10b 31/02

U.S. Cl. 214-35 R

4 Claims

In conjunction with a mechanical turntable feed-type larry car, apparatus for keeping the charging hole of a coke oven chamber sealed while charging coal includes telescoping tubes, one of which coacts with the charging hole periphery, and a pivotable shoe that rides on coal on the turntable.



sufficient quantity of coal is on the turntable, the shoe closes the damper valve.

3,628,677

## CAR TOP CARRIER

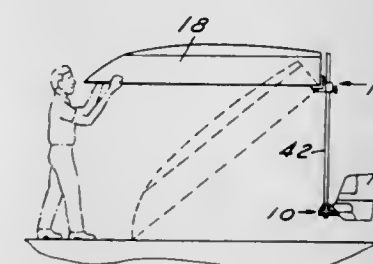
Frank M. Cislav, 27317 Novi Road, Novi, Mich.

Filed May 5, 1969, Ser. No. 821,665

Int. Cl. B60p 3/10

U.S. Cl. 214-450

1 Claim



Means for providing a vertical support on and at one end of a car, a carrier member positionable on the support between a lower and rearwardly disposed position and an upper and forwardly disposed position, and means capable of attachment to the roof of the car and for cooperation with the carrier member in its elevated position to support a boat or other member therebetween.

3,628,678

## HYDRAULIC LOAD CARRIER

Paul E. Redelman, 16628 S. Elm St., South Holland, Ill., and Gerald M. Kwiatkowski, 14815 S. Wabash, Dolton, Ill.

Filed Apr. 21, 1970, Ser. No. 30,453

Int. Cl. B66f 9/14; B65g 1/06

U.S. Cl. 214-730

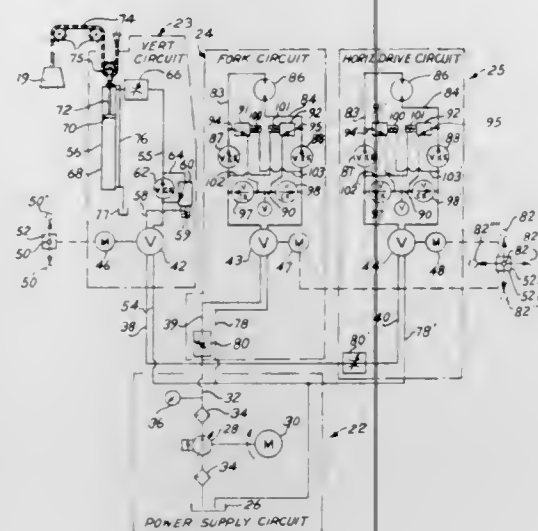
17 Claims

A hydraulic load carrier having a hydraulic powered lift platform, forks and horizontal drive includes variable proportional flow valves to variably control the flow of hydraulic power fluid to the lift platform, forks and drive and an electrical control circuit to variably operate each of the valves. The control circuit is constructed to require the load carrier operator to maintain both hands on manual operating handles in order to effect movement of the lift platform or horizontal movement of the load carrier. In addition, the control circuit includes switches which prevent horizontal movement of the load carrier when the forks are not centered and movement of the forks when the load carrier is moving horizontally. End of run slowdown and cutout means



are also provided in the circuit to slow and stop movement of the forks and the load carrier when they have reached their

position enshrouding said closure cap, the upper flange being rigid though flexible to yield under force and allow said



end of run and the forks are operable either manually or automatically after manual movement has been initiated.

3,628,679

## CAP WITH SAFETY SHIELD

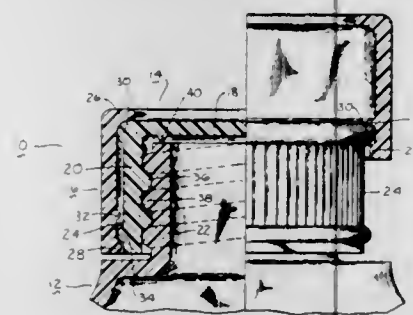
Donald F. Armour, Bloomfield, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1970, Ser. No. 72

Int. Cl. A61j 1/00; B65d 55/02

U.S. Cl. 215-9

3 Claims



A safety closure to deter children from opening containers used to store potentially dangerous substances. The closure includes a screw cap or snap-on cap with a fastening portion on the outer surface of its skirt for slidably mounting a shielding sleeve around the skirt. When the closure is in locked position the shielding sleeve surrounds the skirt and covers gripping portion on the outer surface of the skirt. When it is desired to open the closure the shielding sleeve must be manipulated upwardly in a predetermined manner to expose the gripping portion on the skirt. The cap is then removed by holding the cap by the gripping portion and manipulating the skirt.

3,628,680

## SAFETY GUARD FOR CONTAINER CLOSURES

Danny L. Deaver, 14225 Lora Drive, Los Gatos, Calif.

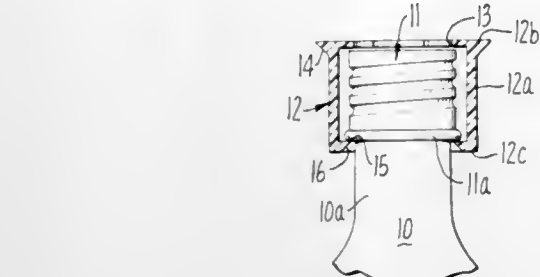
Filed Nov. 14, 1969, Ser. No. 876,754

Int. Cl. A61j 1/100; B65d 55/02

U.S. Cl. 215-9

7 Claims

A safety guard for containers, such as a bottle having a threaded mouth section and a complementary closure cap, said safety guard more particularly comprising a cylindrical body having an upper opening for receiving the upper end of the closure cap therethrough, said body having intumed flanges at the top and bottom thereof, said flanges being engageable with said closure cap for retaining said body in a



guard to move downward and expose said closure cap through the upper opening.

3,628,681

## STOPPER

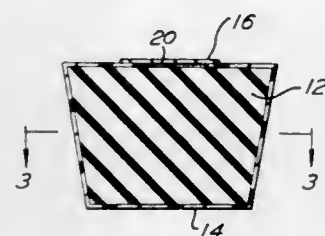
Solomon Schwartz, Pennsauken, N.J., assignor to Plastics Consulting and Manufacturing Co., Camden, N.J.

Filed Oct. 6, 1969, Ser. No. 864,063

Int. Cl. B65d 39/00

U.S. Cl. 215-48

4 Claims



A rubber stopper is encapsulated within a coating of polymerized fluorocarbon resin to obtain the resilience of rubber and the chemical resistance of the fluorocarbon resins.

3,628,682

## LIGHTTIGHT SAMPLE INTRODUCTION SYSTEM

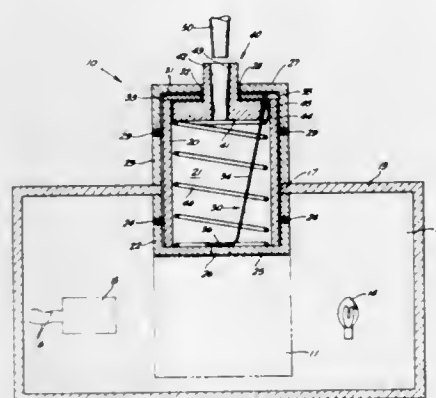
Gerald L. Paulson, Anaheim, Calif., assignor to Beckman Instruments, Inc.

Filed June 29, 1970, Ser. No. 50,464

Int. Cl. G01n 1/10

U.S. Cl. 220-20.5

16 Claims



Apparatus for introducing a sample into a housing while preventing the introduction of light therein, the housing having an access opening therein, wherein a cylinder is mounted in the opening in the housing, the cylinder partially extending into the housing and being open at both ends thereof. A shutter is mounted for movement between a first position blocking the opening at the inner end of the cylinder and a second position providing access to the housing. A piston is mounted for movement through the cylinder, the piston lightsealing the opening through the cylinder. The

piston has a passageway therethrough which is adapted to receive, in lighttight relationship, a sample introduction device, such as a pipette. The piston further includes means for engaging and actuating the shutter, such actuating means moving the shutter from the first position to the second position as the piston is depressed into the cylinder.

3,628,683

## COLLAPSIBLE BOX

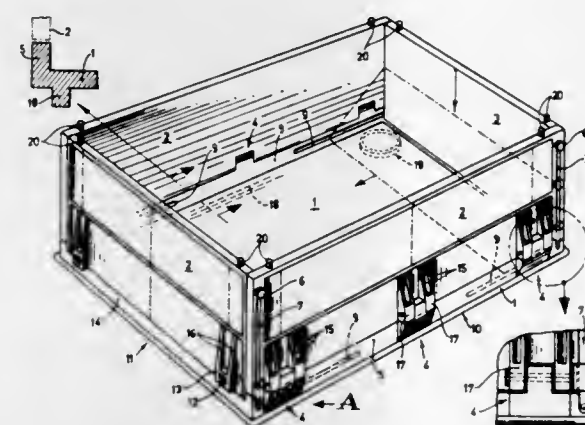
Wolfgang Erhard Friedrich, Bieber Kamp 31, Lendringsen, Germany

Filed Nov. 20, 1969, Ser. No. 878,415

Int. Cl. B65d 7/24

U.S. Cl. 220-6

7 Claims



A collapsible box comprising a bottom plate, two inwardly folding sidewalls and two inwardly folding end walls, in which the sidewalls are connected by hinges to upstanding ridges of the bottom, whereas the edges of the end walls have pegs near the upper ends and pins near their lower ends, which pegs engage in vertical slots along the edges of the sidewalls, whereas the pins engage in horizontal grooves in the upstanding ridges of the bottom plate.

3,628,684

## PLASTIC BOTTLE RACKS

Georges Sere, 8 Avenue du Marechal Foch, Lourdes (Hautes-Pyrenees), France

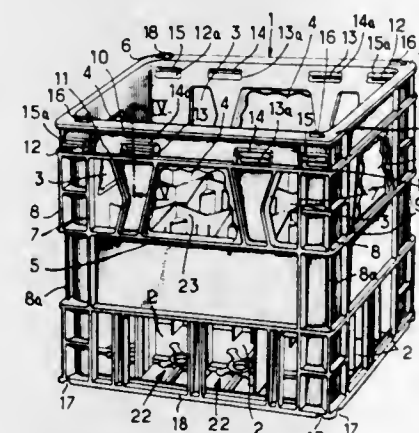
Filed Oct. 2, 1969, Ser. No. 863,059

Claims priority, application France, Oct. 3, 1968, 16,8665

Int. Cl. B65d 1/24, 21/02

U.S. Cl. 220-21

8 Claims



Bottle racks made of plastic material, comprising at their upper part, four handling openings having a trapezoidal form and undulated edges without any sharp angles.

3,628,685

## REFUSE CONTAINER

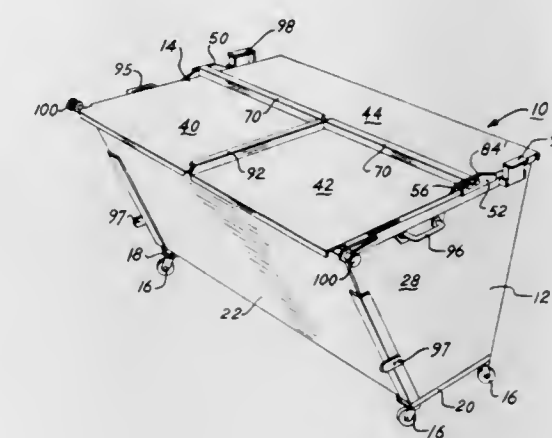
Richard J. Gordon, Grand Junction, Iowa, assignor to Parker Industries, Inc., Silver Lakes, Ind.

Filed Mar. 5, 1970, Ser. No. 16,773

Int. Cl. B65d 51/18

U.S. Cl. 220-29

9 Claims



A refuse container having walls and bottom forming an enclosed container with an open top, and a cover for the top having a rear and two front sections, with the rear section being pivoted to the upper edge of two opposite walls, and the front cover sections being pivoted to the rear cover section. A flange is provided on the front cover section which overlaps the axes between the pivot points of the rear cover section to form an insect restricting and water-repellent joint between the rear section and the two front sections. The two front sections are provided with overlapping flanges on the adjacent edges for forming a joint therebetween, and the container is mounted on casters and includes fixtures for use in lifting the container and dumping the contents into a refuse-collecting truck.

3,628,686

## MEANS FOR SUPPORTING A MEMBER IN A BORE

Harold William Burton, and Harry Herbert Reynolds, both of Birmingham, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

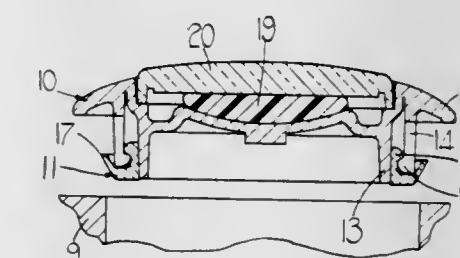
Filed Dec. 10, 1969, Ser. No. 883,902

Claims priority, application Great Britain, Dec. 20, 1968, 60,805/68

Int. Cl. B65d 5/64

U.S. Cl. 220-42 B

4 Claims



A plastic member to be supported in a cylindrical bore and comprising two parts, one of the parts having an annular edge to engage the bore, and the parts having respective snap-engaging formations, the formations on at least one of the parts being formed during molding of that part.



### 3,628,687 STORAGE TANKS

Alexander Arthur Townsend, Crawley, Sussex, England, assignor to The A.P.V. Company Limited, Crawley, Sussex, England

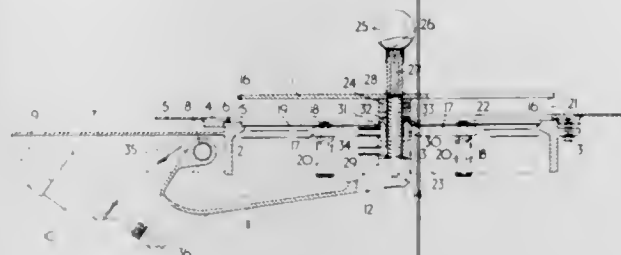
Filed Aug. 12, 1969, Ser. No. 849,455

Claims priority, application Great Britain, Aug. 16, 1968, 39,286/68

Int. Cl. B65d 51/16, 43/16

U.S. Cl. 220—44 R

11 Claims



In order to provide both access and venting openings to storage vessels, particularly for large quantities of food liquids, which vessels need to be cleaned often, a manway access door is provided with has a partially open stable position which may be used for venting during cleaning. The door is preferably part of a subassembly on its own frame for ease of removal and replacement for repair and maintenance. Spray devices for spraying cleaning liquids inside and outside may be provided.

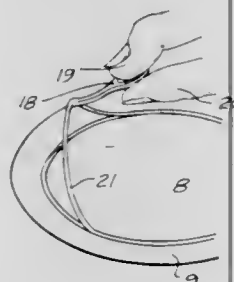
### 3,628,688 CLOSURE MEMBER FOR A CONTAINER

Nils Olof Haggard, Malmö; Bertil Sven Oskar Murne, Malmö, and Kjell Mosvoll Jakobsen, Höhog, all of Sweden, assignors to AB Platmanufaktur, Malmö, Sweden  
Continuation of application Ser. No. 622,966, Mar. 14, 1967, now abandoned. This application May 26, 1970, Ser. No. 40,614

Int. Cl. B65d 43/02, 17/00

U.S. Cl. 220—47

5 Claims



A closure for a container such as a can has a flat ring adapted to be secured along its outer edge to the rim of the container and a circular disc filling the opening of the ring except for a continuous narrow slot defined by the inner and outer peripheral outlines of the ring and the disc, respectively. Strips of an elastic plastic disposed on opposite sides of the ring and the disc cover the slot along its length and overlie the adjacent marginal portions of the ring and the disc. The strips are joined by a continuous neck portion extending through the slot thereby holding the disc in position and sealing it to the ring. Upon stripping of the upper strip the disc is exposed for removal, the remaining lower strip providing a smooth lining for the inner rim of the ring.

### 3,628,689 RECLOSABLE END STRUCTURE FOR CONTAINER BODY

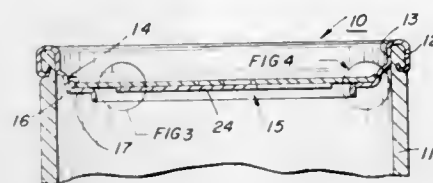
Roy E. Rogers, Glendale, Mo., assignor to Container Corporation of America, Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,238

Int. Cl. B65d 17/24, 5/64, 43/00

U.S. Cl. 220—53

3 Claims



A reclosable container closure for a container having an end closure ring seamed to the container body. The ring has an inward extending seating flange closure disc which is sealed to the flange during shipment and separated therefrom when the container is first opened. The closure disc also is provided with a peripheral ring of pressure sensitive adhesive suitable for holding the closure disc in position to seal the container after it is first opened.

The closure disc may be formed from a plurality of laminae, the top lamina being arranged to provide a pull tab foldable out the plane thereof. The bottom lamina may be of metal to give proper stiffness to the closure disc.

### 3,628,690 EXPANSION CHAMBER CONSTRUCTION

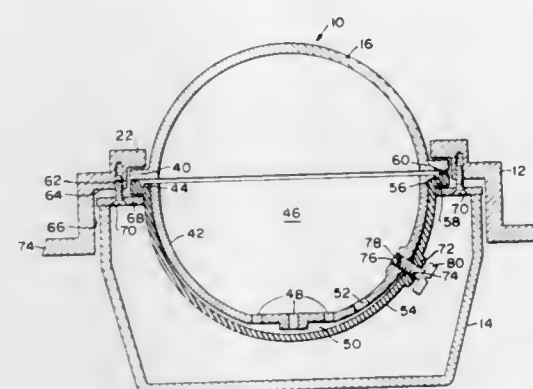
Allen Butman Sherman, Pembroke, Mass., assignor to E. S. Ritchie & Sons, Inc., Pembroke, Mass.

Filed Feb. 3, 1970, Ser. No. 8,343

Int. Cl. B65d 25/26; G01c 17/08; F16c 55/04

U.S. Cl. 220—85 B

4 Claims



An expansion chamber construction for a compass includes an elastic cup-shaped member which surrounds in resting relationship a substantial portion of a split spherical fluid tight chamber structure to define a compact expansion chamber therebetween. The circular rim of the elastic cup-shaped member has integral elastic flange on which is formed an upstanding integral sealing ring. The integral elastic flange and sealing ring are adapted to be compressed in cooperation with flanged portions of the split fluid chamber to seal the chamber. A second sealing ring is preferably integrally formed around a filling hole in the elastic cup to seal the filling hole.

### 3,628,691 TISSUE HOLDER AND ATTACHMENT THEREFOR

Ernest C. Hillman, 1277 S. Adams St., Glendale, Calif.

Filed Mar. 26, 1970, Ser. No. 22,833

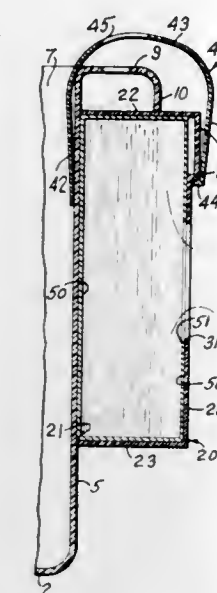
Int. Cl. B65h 1/00

U.S. Cl. 221—45

3 Claims

A box having an open back and a slotted front wall, holds folded tissue napkins or handkerchiefs (termed tissues)

therein which are removably through the slot in the front wall. The box is held by a clamp to the foot end of a baby carrier in a position to allow ready access to the tissues by any person carrying the baby carrier. The device allows a



person carrying the baby in a carrier to have ready access to tissues as needed by extracting tissues with one hand while supporting the baby in the carrier with the other hand and arm and without the necessity of placing the carrier and baby upon some support while obtaining a tissue.

### 3,628,692 PACKAGE FOR STORING AND INDIVIDUALLY DISPENSING THIN SHEETLIKE ARTICLES, ESPECIALLY PROBE COVERS

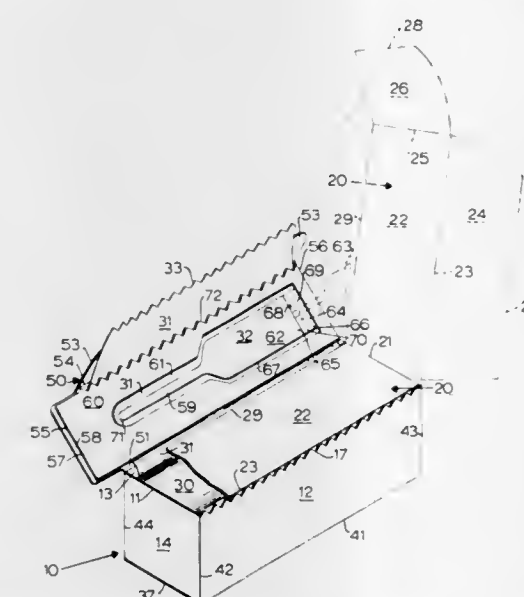
Robert A. Blatz, 5843 Four Oaks Ln., Clayton, Calif.

Filed May 13, 1970, Ser. No. 36,969

Int. Cl. B65h 5/28

U.S. Cl. 221—70

24 Claims



A probe-cover package, wherein a series of identically oriented spaced-apart flattened plastic probe covers are held releasably on a paper sheet rolled about itself into a cylindrical roll. A carton has a receptacle portion receiving and substantially filled by the roll. The carton's front wall has a serrated upper cutting edge, and it has a protective inner cover and an outer cover, both connected integrally to the carton. The inner cover closes the receptacle portion and protects the roll of probe covers. Secured at the side edges only of the inner surface of the outer cover is a stiff frame member which extends beyond the outer cover at one end. The frame member has a cutout opening a little larger than a probe

cover and has a serrated cutting edge adjacent a fold line connecting the outer cover to a forward flap. A leading strip of the cylindrical roll passes between the frame member and the outer cover. A single probe cover can thereby be exposed through the cutout opening to enable a probe to pick up that cover while the other covers remain protected.

### 3,628,693 STACKED PALLET SUPPORT AND DISPENSER APPARATUS

Jesse C. Moore, Fort Recovery, Ohio, assignor to Norman H. Kuhlman, St. Marys, Ohio, a part interest

Original application Jan. 6, 1966, Ser. No. 519,179, now

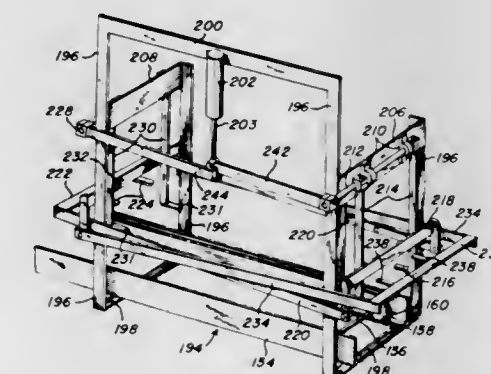
Patent No. 3,483,600. Divided and this application Dec. 4,

1969, Ser. No. 881,991

Int. Cl. B65h 3/22

U.S. Cl. 221—223

4 Claims



Apparatus for retaining a stack of pallets or carrier members and for dispensing the lowermost pallet or carrier while retaining the other pallets in the stack thereof.

### 3,628,694 APPARATUS FOR PACKAGING MEDICINAL TABLETS OR THE LIKE

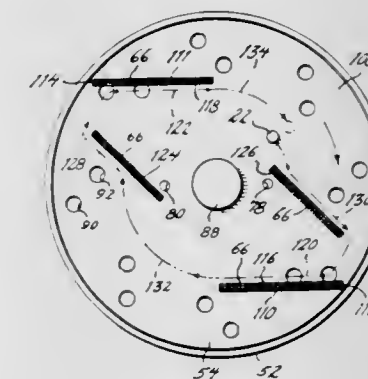
Matthew Nichols, Norristown, Pa., assignor to Sauter Packaging Company, Souderton, Pa.

Filed Apr. 8, 1970, Ser. No. 26,616

Int. Cl. B65b 35/08, 35/30

U.S. Cl. 221—265

6 Claims



An apparatus including a mechanism for making tablet receiving blisters in a continuous strip of thermoplastic material, a mechanism for continually delivering tablets one to each blister, a mechanism for applying continuous sealing strip to the thermoplastic strip to seal the said tablets within the blisters, a mechanism for perforating or scoring the laminated strip to permit easy severance of the strip into segments comprising one or more blisters, the apparatus being characterized by the provision of an easily mounted and dismounted adapter plate whereby tablets of different sizes may be packaged in the same strip by merely changing the indexing plate and without dismantling or modifying any of the other mechanisms comprising the apparatus.



3,628,695

## BEVERAGE CONTAINER DRINKING SPOUT

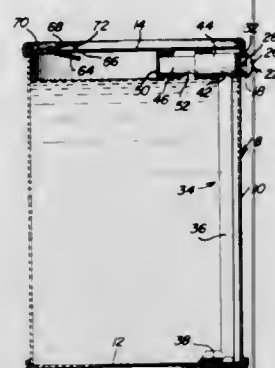
Clifford F. Bryant, Smithfield, Ohio, assignor to Josephine Harris, Smithfield, Ohio, a part interest

Filed July 16, 1970, Ser. No. 55,485

Int. Cl. B67b 7/26

U.S. Cl. 222-89

9 Claims



A soft drink can which is unique in that it is provided with self-contained on-the-spot manually actuatable opening and dispensing means. The can body is provided on one side near its top with a marginally scored seal and is provided on its exterior with a stud-supporting free-turning key equipped with lateral cutting blades. These blades are lined up with and when turned they rip out the seal so that it can be dislodged to uncover the desired liquid discharging opening. Novel dispensing means is enclosed in the can and is cooperable with the seal and comes into play when the seal is removed. This means embodies a projectable spout which can be used for pouring or drinking at will.

3,628,696

## DISPENSER FOR FLEXIBLE WALL TUBE CONTAINERS

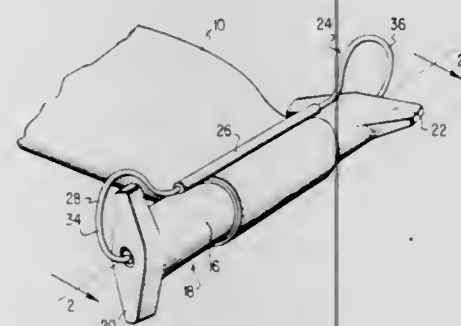
Marion A. Duiker, 1974 Collingswood Road, Columbus, Ohio

Filed July 28, 1970, Ser. No. 58,954

Int. Cl. B65d 35/32

U.S. Cl. 222-99

4 Claims



A dispenser especially adapted for the controlled extrusion of relatively viscous materials from heavy-duty plastic tubes. The tube is simultaneously collapsed and wound upon a mandrel in such a manner that once collapsed, it will not expand; and once wound, it will not unwind.

A tube-collapsing roller is mounted for planetary movement relative to a winding mandrel through the intermediary of a spring wire. The spring wire is formed with looplike projections on either end of the roller to bias the same toward the mandrel which has angularly offset turning lugs at either end of a tube-engaging periphery. Simultaneous counterrotative manual manipulation of one of the lugs and projections results in the collapse and winding of a tube about the mandrel. The offset relationship of the lugs insures that one or the other of the same will always be in position for ready manipulation and the loop projections impart a sufficient resilient bias to the roller to maintain the tube in a wound, collapsed position on the mandrel.

3,628,697

## DRIP-PREVENTING DEVICE FOR BOTTLE

Lucy Gwyneth Dowson, Wrexham, Wales, assignor to D. P. (Inserts) Limited, Wrexham, Wales

Filed Jan. 21, 1970, Ser. No. 4,476

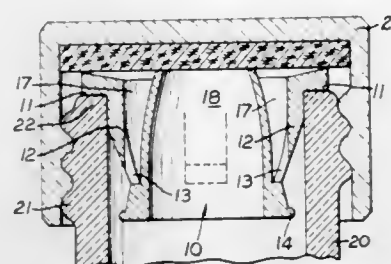
Claims priority, application Great Britain, Feb. 8, 1969,

6,948/69

Int. Cl. B67d 1/16

U.S. Cl. 222-111

4 Claims



A drip-preventing device for a bottle intended to be located in the outlet of the bottle, comprising a funnel coaxial with the neck of the bottle neck and a ring forming part of or engaging with the bottle neck, the funnel being connected to the ring in such a way that a lip of the funnel is annularly spaced at all parts of its periphery from the lip of the bottle outlet.

3,628,698

## LIQUID FILLING MACHINE WITH AUTOMATIC FILLER VOLUME ADJUSTMENT CONTROL

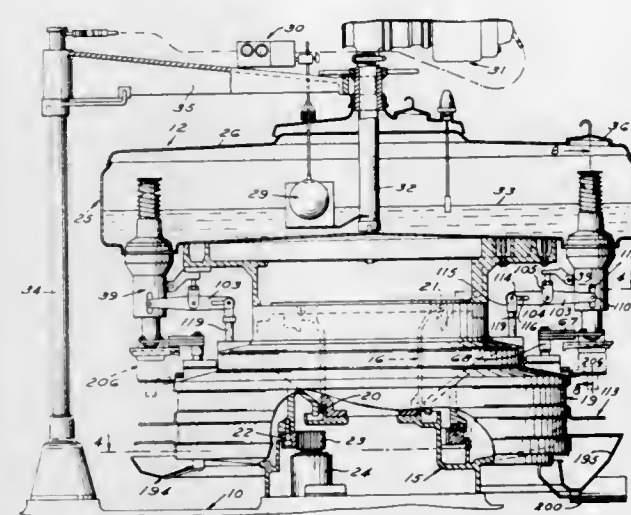
Robert J. Allen, Farmington; Phillip C. Martin, Walled Lake, and Vacys Urbonas, Redford Township, Wayne County, all of Mich., assignors to Ex-Cell-O Corporation, Detroit, Mich.

Filed Feb. 16, 1970, Ser. No. 11,633

Int. Cl. B65b 3/30

U.S. Cl. 222-168

3 Claims



A filler volume adjustment control apparatus for a continuous motion liquid container filling machine which can be operated while the machine is in operation. The filling machine has a plurality of product filler stations and each of the stations has a calibration sleeve which can be selectively moved by a power operated control means for increasing and decreasing the volume of each of the filler stations simultaneously, and by small volume increments. The filling machine is provided with a fixed drain trough so that the filling stations can be cleaned simultaneously in place with the use of the automatic filler volume adjustment control apparatus. The volume adjustment control apparatus is push-buttoned controlled. Each filler station is provided with a dual orifice spray diffuser which can be set in one position for light viscosity products and in another position for heavy viscosity products.

3,628,699

## DIRECTIONAL CLOSURE FOR A CONTAINER

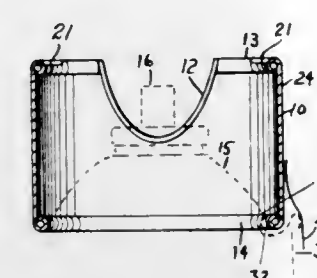
Richard F. Hendrickson, Erie, and Roderick V. King, Girard, both of Pa., assignors to Sterling Seal Company, Erie, Pa.

Filed Sept. 5, 1968, Ser. No. 757,552

Int. Cl. B65d 83/14

U.S. Cl. 222-182

8 Claims



The cap is made up of two parts, a ringlike hollow cylindrical body preferably made of metal and a thermoformed plastic top with a formed recessed shape for orientation of the valve button to the top part of the cap. The outer rim body has two recesses for orienting the plastic top with regard to the metal body. The metal body has two inwardly formed lugs. These lugs align the plastic top with the metal body. The plastic top has two notches that mate with the lugs and a recess that fits the valve and this orients the cap. Thus, the top can be removed from the metal body leaving the metal body oriented with the can.

In another embodiment, the top is formed in a valleyed shape oriented to the body and attached permanently to it by means of a pressure sensitive tape. The lower rim of the cap is curled in such a way as to make it a permanent part of the container.

3,628,700

## PREMEASURED LIQUID SPRAY AND FOAM DISPENSER

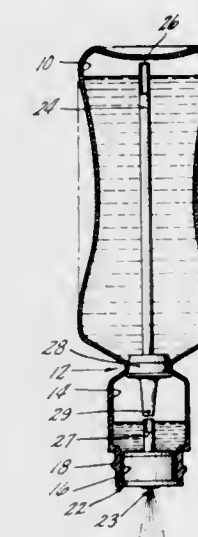
Robert J. Dodoghue, 900 Windsor Ave., Windsor, Conn.

Filed June 2, 1969, Ser. No. 829,553

Int. Cl. B65d 37/00

U.S. Cl. 222-207

4 Claims



A container and closure assembly has a resilient lower storage chamber and a transparent upper dispensing chamber defined either in one unitary body, or in two units which are releasably secured to one another. A transfer tube in a fitment between the chambers serves to transfer a predetermined quantity of liquid from the lower to the upper chamber upon squeezing the lower one. The upper portion of the dispensing and measuring chamber has discharge orifices defined therein, or in an insert provided in a top opening thereof. The insert may comprise either an orifice pattern, an atomizing spray nozzle, or a foam nozzle and may be capped off by a conventional cap.

3,628,701

## TAPPING APPARATUS FOR BEVERAGE KEGS

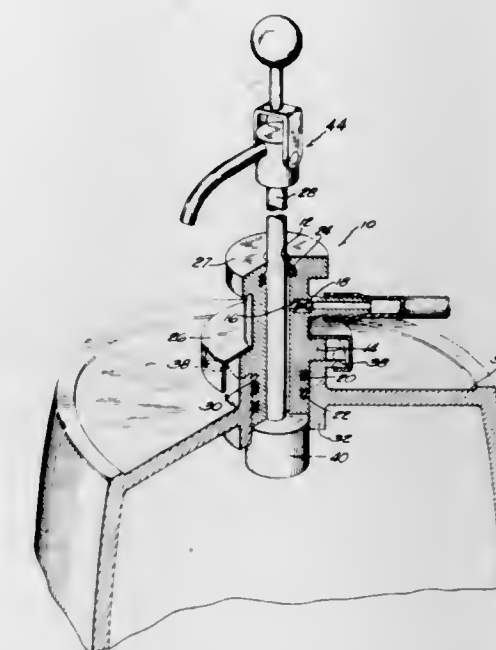
Thomas L. Kissel, 606 South Rural St., Hartford, Wis.

Filed Sept. 19, 1969, Ser. No. 859,451

Int. Cl. B65d 83/14

U.S. Cl. 222-400.7

6 Claims



A tap for beverage kegs comprising a hollow plug which is inserted into the taphole of the keg, to thereby partially push the taphole stopper into the keg, the plug containing two external O-ring seals which provide a seal between the plug and the taphole and one internal O-ring seal provided above the gas inlet of the plug to thereby provide a seal between the tap rod and the plug as the rod is pushed through the plug to completely remove the stopper from the taphole. The internal O-ring also provides a seal for the gas which is supplied to the keg.

3,628,702

## CAP FOR AEROSOL CONTAINER

Eiichi Kimura, No. 198, 3-chome, Kamifukushima-kita, Futushima-ku, Osaka-shi, Japan

Continuation-in-part of Ser. No. 677,256, Oct. 23, 1967, Pat. No. 3,454,200.

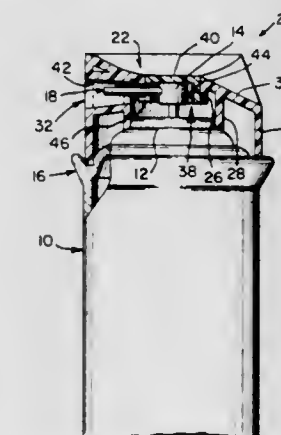
Filed Feb. 10, 1969, Ser. No. 798,040

Claims priority, application Japan, Oct. 28, 1966, 41/100226

Int. Cl. B65d 83/00

U.S. Cl. 222-402.13

3 Claims



A cap for an aerosol container which has a valve button extending upwardly from the center thereof having a nozzle extending outwardly from the valve button and a head portion and a sealing rim on the upper part of the container, the cap having a concave upper surface with a center guiding well defining a central opening in which an inner lid slides above and in contact with the valve button, depending inner and outer cylindrical walls adapted to engage the head portion and sealing rim respectively of the container, a longitudi-



dinal opening extending through the inner and outer cylindrical walls and the guiding wall communicating with the central opening, and a finger slot in the upper surface extending from the outer cylindrical wall to the central opening and located on the opposite side of the cap from the longitudinal opening.

3,628,703

## DISPENSING CONTAINER

Katsuhiko Wakamatsu, 5-go, 10-ban, 2-chome, Momoi, Suginam-ku, Tokyo-to, Japan

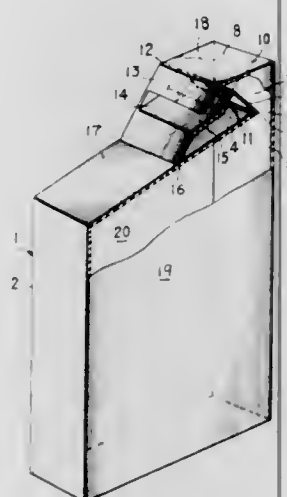
Filed Oct. 21, 1969, Ser. No. 868,074

Claims priority, application Japan, Nov. 25, 1968, 43/85623

Int. Cl. G01f 11/26

U.S. Cl. 222-454

2 Claims



There is described a dispensing container particularly suitable for powdery, granular or the like materials, whereby a predetermined amount of the content material may be dispensed at every one tilting operation of the container, such container being provided on top of the body thereof with a chamber adapted to control the amount of the content material to be dispensed.

3,628,704

## CONTAINER WITH VENTING GASKET

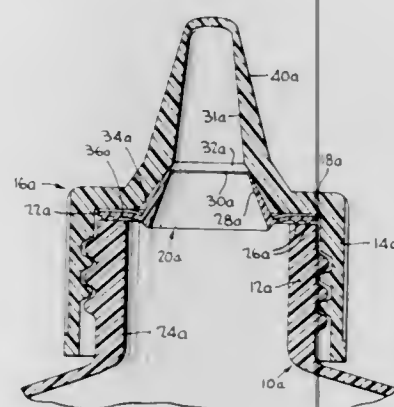
Douglas F. Corsette, Los Angeles, Calif., assignor to Diamond International Corporation, New York, N.Y.

Filed Dec. 10, 1969, Ser. No. 883,870

Int. Cl. B67d 3/00

U.S. Cl. 222-513

3 Claims



A combination gasket and venting member including a gasket portion clamped between the closure cap and the neck of a container in sealing engagement with the neck and further including a flexible annular diaphragm encircled by the gasket portion. The diaphragm extends over the filling and dispensing opening of the container neck and defines a centrally located valve port communicating with such opening and adapted to seat against the underside of the closure

cap. A groove extending across the upper face of the gasket portion from the outer periphery of the latter, where it communicates with the atmosphere, admits atmospheric air above the diaphragm to depress the central portion thereof away from the closure cap when atmospheric pressure exceeds the pressure within the container, thus to admit atmospheric air through the port into the container. In one embodiment the closure cap is formed with an outlet opening positioned for communication with the said port.

3,628,705

## LONG REACH LATERALLY EXTENDABLE AND RETRACTABLE POURING SPOUT

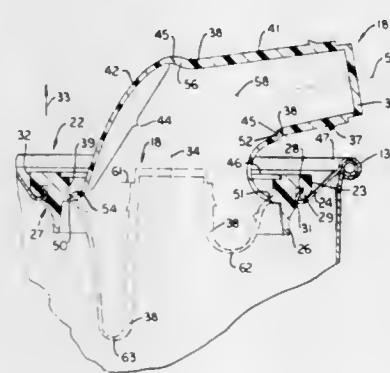
Mahlon E. Rieke, Auburn, Ind., assignor to Rieke Corporation, Auburn, Ind.

Filed Jan. 27, 1969, Ser. No. 794,001

Int. Cl. B65d 25/44

U.S. Cl. 222-527

6 Claims



A normally nesting, extensible spout has a portion between its mounting and its outlet which varies in length from the mounting to the outlet at various locations around its circumference so that as it is pulled from the nesting condition to the extended condition, it assumes an attitude placing the outlet at a location sufficiently offset from the mounting area to facilitate pouring from containers without spillage of effluent onto the top of the container.

3,628,706

## LONG LIFE SPOUT

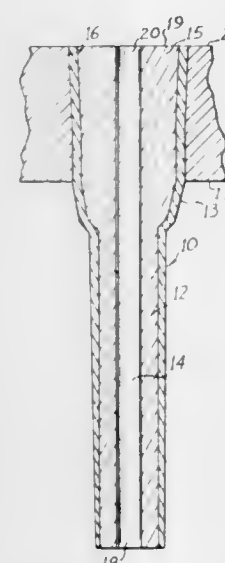
Chester F. Todd, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Oct. 15, 1968, Ser. No. 767,729

Int. Cl. B67d 5/02

U.S. Cl. 222-567

7 Claims



A long life pouring spout for pouring molten metal in a continuous casting system, wherein the body of the spout is

fabricated of graphite and an insulating shield surrounds the pouring spout and prevents air from contacting the outside surface of the pouring spout.

3,628,707

## PACKING CONTAINER FOR SCATTERABLE PARTICULATE MATERIAL

Erhard Hieke, Hamburg-Stellingen, Germany, assignor to Norddeutsche Affinerie, Hamburg and C. F. Spiess & Sohn, Chemische Fabrik, Kleinkarlbach, Germany

Filed Sept. 23, 1969, Ser. No. 860,314

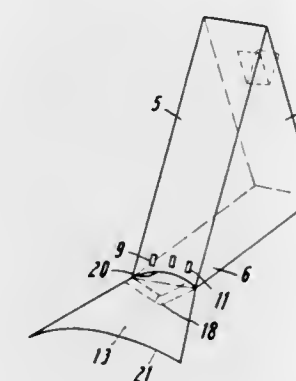
Claims priority, application Germany, Sept. 28, 1968, G 67

52 970

Int. Cl. B65d 25/48

U.S. Cl. 222-567

6 Claims



A combination package and spreader for scatterable particulate solid material such as seed or fertilizer including a container, suitable for holding the particulate material, having at least one lower edge, which edge has at least one aperture therein and means to keep this aperture closed during shipment of the container; and a spreader surface means removably attached to the container below the orifice for receipt of material exiting the container through the orifice and direction of this material in a spreading pattern on a suitable surface. The spreader means suitably flares outwardly from the container and may be arcuate about a longitudinal axis.

3,628,708

## CARRIERS FOR FOOD PLATES AND THE LIKE

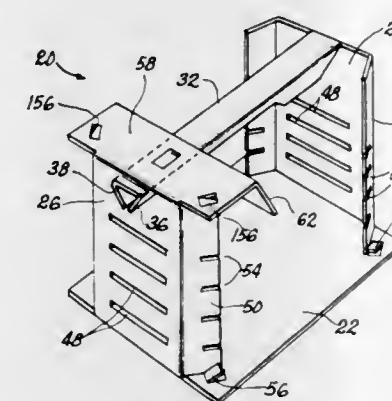
Wallace B. Daugherty, 715 West Elm St., Arlington Heights, Ill.

Original application Oct. 9, 1967, Ser. No. 673,712, now Patent No. 3,517,868. Divided and this application June 10, 1970, Ser. No. 45,012

Int. Cl. B65d 5/46, 5/48

U.S. Cl. 224-45 G

10 Claims



The carrier, made of foldable material, such as corrugated cardboard, solid fiberboard, paperboard, molded pulp, or various solid or foamed plastics, or laminates of these or other materials, for example, comprises a bottom wall, first

and second end walls extending upwardly from said bottom wall, and a handle extending between said first and second end walls, said handle having a horizontal panel and downwardly folded stiffening flanges thereon. The handle is folded from one end wall and is adapted to extend through an opening in the other end wall. The handle and the opening are preferably triangular in shape. Locking means are preferably provided to retain the handle in the opening. Each of the end walls may be provided with vertical retaining flanges folded toward the opposite end wall. The end walls and the retaining flanges may be formed with a series of slots to hold plates or the like. The carrier comprises a top panel folded from said second end wall and a vertical panel folded downwardly from said top panel. The vertical panel is formed with a second opening for receiving the handle. Locking tabs are preferably provided to hold the various retaining flanges in their folded positions.

3,628,709

## CAN OR BOTTLE CARRIERS

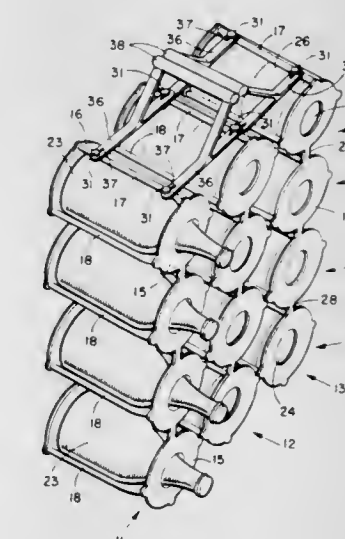
George K. Clifton, 105 Christie St., Toronto, Ontario, Canada

Filed Oct. 10, 1969, Ser. No. 865,293

Int. Cl. B65d 11/14

U.S. Cl. 224-45 AA

10 Claims



A unit holder for a generally cylindrical object such as a beverage bottle or can comprises first and second end members peripherally interconnected by three or more angularly spaced-apart struts. For loading, two adjacent struts are pulled apart to permit the bottle or can to be introduced into the unit and such struts then resiliently return to their nondistorted positions to retain the bottle or can within the unit. Multiunit holders comprising a plurality of such unit holders are also described and such multiunit holders having linear configurations can be detachably coupled together by coupling straps to any desired size. Handles are usefully integrally formed on such coupling straps.

3,628,710

## APPARATUS FOR SEVERING OF METAL BAND

Max Stehle, Mannheim, and Egon Kirchner, Mannheim-Feudenheim, both of Germany, assignors to Brown Boveri & Cie Aktiengesellschaft, Mannheim-Kaferthal, Germany

Filed Aug. 26, 1968, Ser. No. 791,821

Claims priority, application Germany, Aug. 24, 1967, P 16 27 153.7

Int. Cl. B26f 3/00

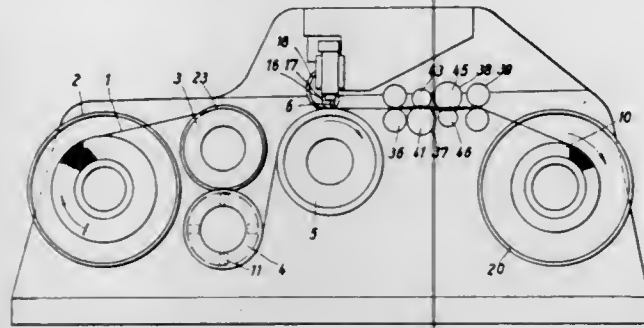
U.S. Cl. 225-96.5

9 Claims

Apparatus for severing a metal band with a chip-removing tool includes drawing off a metal band from a supply reel,



feeding the metal band for a given peripheral angle about a support roller in a groove-forming apparatus, cutting in the metal band and lengthwise thereof at least one groove having a depth equal to at least half the thickness thereof with a tool adjustable during the cutting operation in a direction trans-



verse to the direction of feed of the metal band, and finally separating the remaining material at the bottom of the groove along the groove so as to divide the metal band into at least two bands, and apparatus for carrying out the method.

3,628,711

## INTERMITTENT FILM-FEEDING MECHANISM

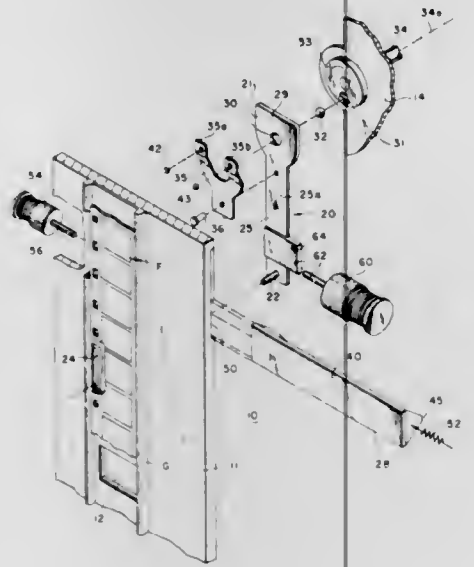
William A. Martin, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,807

Int. Cl. G03b 1/22

U.S. Cl. 226-49

9 Claims

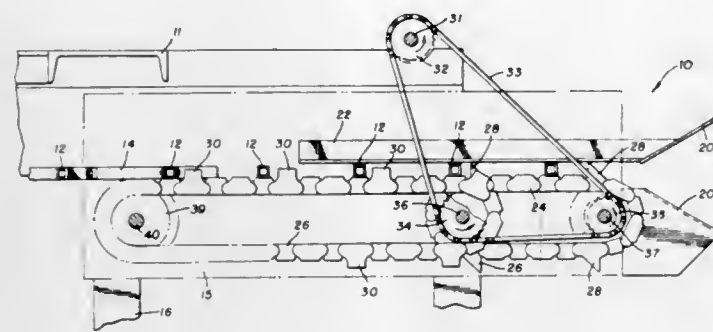


An intermittent film-advancing mechanism especially suitable for use in film projection apparatus comprises a rigid claw member having a film-engaging projection disposed in and guided by a slot provided in a supporting wall. An eccentric cam arrangement drives a follower portion of the claw member to provide the requisite up-down projection movement. A ramp member is provided intermediate between the follower portion of the claw member and the film-engaging projection, and has two symmetric inclined surfaces, the first corresponding to a forward mode of projection and the second corresponding to a reverse mode of projection. Means are provided to selectively position either the first or second inclined surfaces in an engaging relation with the claw member so that in response to up-down movement the projection will reciprocate with the requisite in-out film-engaging movement. An important feature of the invention is the provision of means corresponding to a still mode of projection for engaging the claw member to prevent the projection from engaging the perforations of the film.

3,628,712  
MILLSTOCK FESTOONING CONVEYOR  
Fred E. Clark, Akron, Ohio, assignor to Akron Standard, division of Eagle-Picher Industries, Inc., Cincinnati, Ohio  
Filed June 1, 1970, Ser. No. 41,916  
Int. Cl. B65h 17/42

U.S. Cl. 226-104

4 Claims

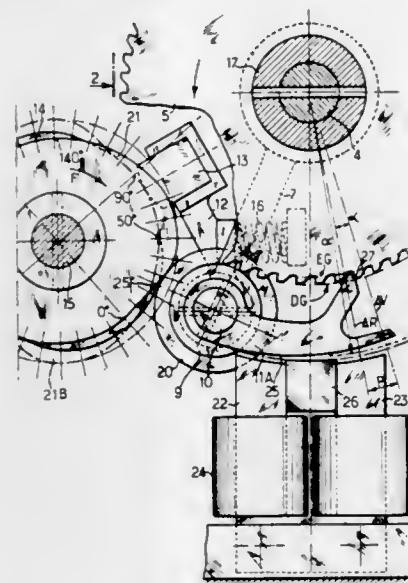


Apparatus for use with a batch-off unit to reposition the outboard ends of spaced cantilever bars for festooning rubber stock from a sheeting or mixing mill, calendar, or extruder for cooling, drying, storage and letoff.

3,628,713  
MECHANISM FOR THE STEP-BY-STEP TRANSPORT OF DOCUMENTS  
Jacques Roland Deproux, Sevres, France, assignor to Societe Industrielle Honeywell Bull  
Filed Jan. 15, 1970, Ser. No. 3,097  
Claims priority, application France, Jan. 29, 1969, 6901792  
Int. Cl. B65h 17/22

U.S. Cl. 226-157

8 Claims



Apparatus for advancing a record medium step by step wherein the medium is advanced by a drive wheel mounted on a shaft to which is affixed a ratchet wheel, wherein the ratchet wheel is advanced tooth by tooth by an actuating pawl, and wherein said pawl moves into engagement with the ratchet wheel and rotates the ratchet wheel through one tooth pitch by the action of respective ones of a pair of cams.

3,628,714  
FRAME-NAILING MACHINE  
Josef Offenwanger, Lombard, Ill., assignor to Signode Corporation

Filed Jan. 19, 1970, Ser. No. 3,746

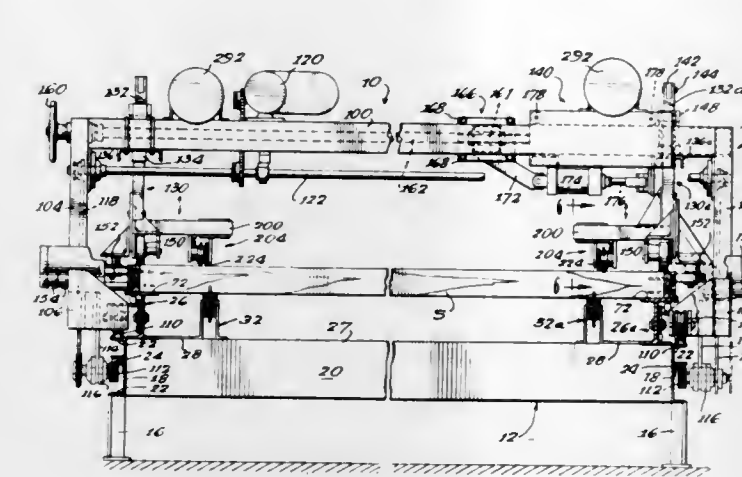
Int. Cl. B27I 7/02

U.S. Cl. 227-7

19 Claims

- A framing machine for assembling skeleton frames such as wall sections made of 2 by 4 inch studs and plates. The fram-

ing machine includes a support bed defining a work surface, and which bed guides a traveling work carriage driven therealong from one end to the other. The plates are spacedly supported in a parallel relationship on the work surface and the studs are perpendicularly positioned intermediate the plates. The traveling work carriage moves along

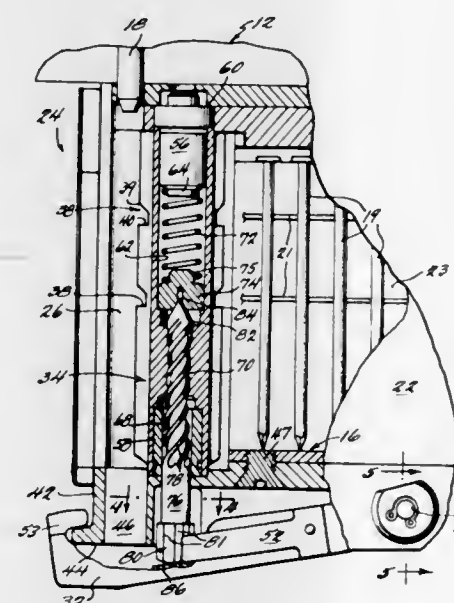


the plates continuously, traversing the studs and sensing the location of each stud, whether single or multiple abutting, to actuate an associated fastener driver carried by the carriage. Fastener drivers are provided at each side to drive at least two fasteners into each stud, through each abutting plate, thereby to assemble a wall section.

3,628,715  
FASTENER FEED MECHANISM  
George A. Maynard, Coventry, R.I., and Peleg B. Briggs, Jr., Mystic, Conn., assignors to Textron Inc., Providence, R.I.  
Filed June 5, 1970, Ser. No. 43,814  
Int. Cl. B25c 1/00

U.S. Cl. 227-136

5 Claims



A feed mechanism for use in headed fastener driving apparatus wherein mated screw threads are provided on a turreted member and feed screw to rotate said turreted member and move a headed fastener from a magazine into a driving passage. Said feed mechanism is further characterized by the use of a pawl to limit the rotation of said feed screw and wherein said pawl is resiliently attached to said driving apparatus by the use of a shock absorbing element.

3,628,716  
ULTRASONIC WELDING DEVICE WITH A SUCTION ROD FOR TREATING MICROSEMICONDUCTOR BLOCKS

Joseph Jules Jacques Fastre, Evere Brussels, Belgium, assignor to U.S. Phillips Corporation, New York, N.Y.

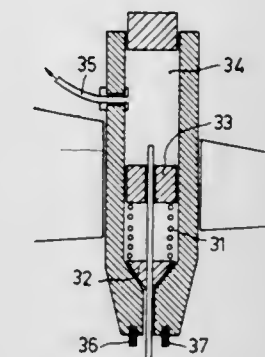
Filed Feb. 17, 1969, Ser. No. 799,812

Claims priority, application Netherlands, Feb. 16, 1968, 6802279

Int. Cl. B23k 1/06, 5/20

U.S. Cl. 228-1

8 Claims



An ultrasonic welding device that includes a welding rod with an axial channel extending to the welding tip. A hollow needle is slidably supported within the channel so that one end extends beyond the end of the welding tip. When a force is exerted on the exposed end of the needle it is retracted into the channel. The other end of the needle is coupled to a suction pump or the like. The welding rod is movable relative to a work support and an ultrasonic generator vibrates the welding rod.

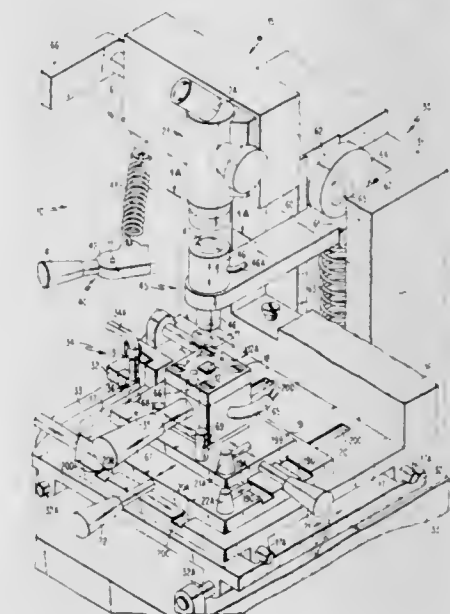
3,628,717  
APPARATUS FOR POSITIONING AND BONDING  
John R. Lynch, Fishkill; Leonard E. Otten, Poughkeepsie, and Herbert Wenskus, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,695

Int. Cl. B23k 1/00, 5/00

U.S. Cl. 228-6

10 Claims



This patent discloses a method and apparatus for aligning and joining a semiconductor chip to a substrate or carrier. The apparatus for first aligning and then bonding the chip to a substrate comprises a first system which includes first alignment means, immediately below the alignment means there being a substrate receiving means which is movable so as to permit alignment of the substrate in a predetermined position



relative to the first alignment means. A second system cooperates with the first system and includes a vacuum-operated chip receiver. The first system is then moved until the chip is superimposed of the substrate and means are provided to press the chip into contact with the substrate. A heater located in the substrate receiving means heats the substrate and while the chip is being held against the substrate the substrate receiving means is rotated arcuately, the substrate bearing against the chip and causing a scrubbing action to inhibit the presence of voids in the bond interface.

### 3,628,718 STORAGE CONTAINER

Ben L. Broyles, Beaumont, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed June 13, 1969, Ser. No. 832,960  
Int. Cl. B65d 5/48

U.S. Cl. 229—15

3 Claims



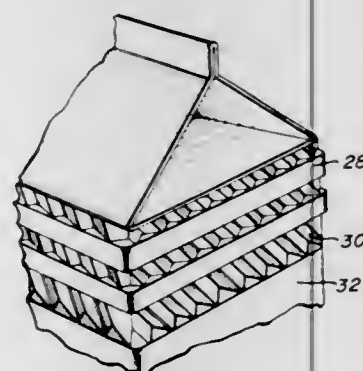
A rectangular carton for storing packages of polymer, which carton is divided by intersecting partitions into four rectangular cells with each cell sized to hold snugly a single stack of such packages. The carton prevents bursting of the packages due to cold flow of the polymer during storage and shipping.

### 3,628,719 CARTON WITH HANDLING MEANS

Arthur W. Ford, Sr., P.O. Box 432, Felton, Calif.  
Filed Jan. 15, 1970, Ser. No. 3,028  
Int. Cl. B65d 5/46

U.S. Cl. 229—52 B

6 Claims



Sealed, paperboard carton containers are provided with external corrugations on parallel sidewalls extending downwardly from an upper closure end to facilitate gripping or handling of the carton. The corrugations completely encircle the carton and are formed by parallel spaced indentations or projections.

### 3,628,720 PLASTICS SACKS PROVIDED WITH VENTING OR AERATING PERFORATIONS

Herbert Schmedding, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany  
Filed Nov. 12, 1969, Ser. No. 875,719  
Claims priority, application Germany, Nov. 18, 1968, P 18 09 578.8

Int. Cl. B65d 37/00; B32h 3/24

U.S. Cl. 229—55

12 Claims

A bag having walls comprising at least two plies of plastic sheet material, each ply having perforations which are offset

from the perforations in the other ply, said perforations each having the form of a tapered nozzle with its tapered end directed in the desired direction of air passages therethrough.



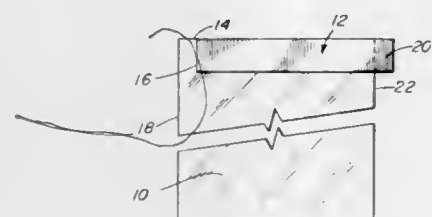
at least one of said plies resting on the tapered ends of the nozzles in the other ply, so as to provide a space between said two plies permitting the passage of air between the plies.

### 3,628,721 RECLOSEABLE PACKAGE MEMBER

Charles E. Palmer, Turnpike Road, Somers, Conn.  
Filed Dec. 1, 1969, Ser. No. 881,088  
Int. Cl. B65d 65/10

U.S. Cl. 229—87 R

15 Claims



A recloseable packaging member produced from a rectangular sheet of packaging material that has a strip of foil bonded adjacent one of its edges, and has two of the other edges bonded together to form a generally tubular configuration with the foil at one end. The foil and associated portions of the sheet of packaging material are folded inwardly and bonded together in overlapping relationship to provide an end wall that extends generally perpendicularly to the sidewall of the package. Reclosure of the end wall, once it has been opened, can be effected by folding the strip upon itself so as to interengage opposed portions of the package.

### 3,628,722 TRANSFERRING INFORMATION

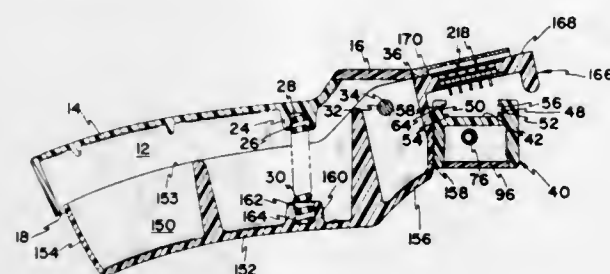
Roger V. Larson, Murray, Utah, assignor to Bio-Logics, Inc., Salt Lake City, Utah

Filed Aug. 18, 1969, Ser. No. 850,774

Int. Cl. G06k 1/08

U.S. Cl. 234—78

6 Claims



Method and apparatus for transferring encoded information from one or a first identification device to another or second identification device, the apparatus having relatively displaceable jaws actuated by oppositely extending handles, the lower jaw receiving and securely holding the first identification device in exposed relation to the upper jaw, and the upper jaw receiving and securely holding the second identification device, a plurality of punch pins being carried by and selectively displaceable relative to the upper jaw. The punch pins are biased toward the lower jaw so that the second identification device can be easily displaced into a device-

receiving chamber and releasably restrained in the chamber. When the jaws are forced together by squeezing of the handles, selected ones of the punch pins are displaced counter to the bias by engagement with code representations on the first identification device to perforate frangible sites in the second identification device.

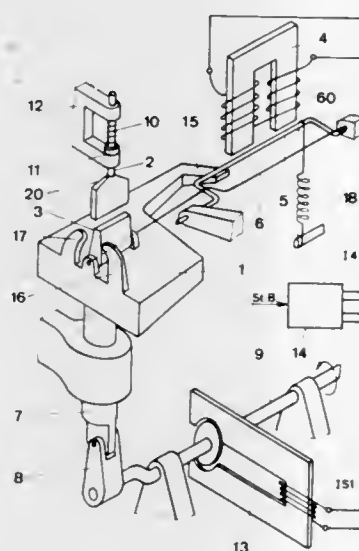
### 3,628,723 OPERATING MEMBER SELECTION SYSTEM

Kurt Ehrat, Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland  
Filed Nov. 21, 1969, Ser. No. 878,803  
Claims priority, application Switzerland, Nov. 25, 1968, 17516/68

Int. Cl. G06k 1/05

U.S. Cl. 234—115

11 Claims



In a system for selectively operating the punches of tape-punching devices, wherein a tappet is hingedly deflected by the armature of an electromagnet, the momentum of a reciprocating member carrying the tappet is used for presenting the armature to the core of the electromagnet and this, in combination with the storage of energy in a torsion member interconnecting the armature and the tappet, makes it possible to rely on minimal magnetic forces and hence to use relatively weak magnetic forces to achieve an optimum operating frequency of the tappet as well as maximum speed and precision without at the same time making stringent demands upon the accuracy of the timing periods of electromagnet energization and deenergization. The tappet is mounted on top of the reciprocable member and the latter has an extension which as it rises, engages the armature and raises it also, towards the core. A control unit energizes and deenergizes the electromagnet in synchronism with the operating cycle of the reciprocating member and the latter has two abutments defining first and second positions between which the tappet moves, a punch-operating member being displaceably mounted above the tappet in one of said positions. Preferably the armature is urged onto said extension by spring means and a lost motion coupling is provided between the spring means and the armature.

### 3,628,724 CASH-DRAWER-OPENING APPARATUS

Joseph R. Showers, Jr., Waldron, Ind., assignor to Indiana Cash Drawer Company, Shelbyville, Ind.

Filed Dec. 3, 1970, Ser. No. 94,777

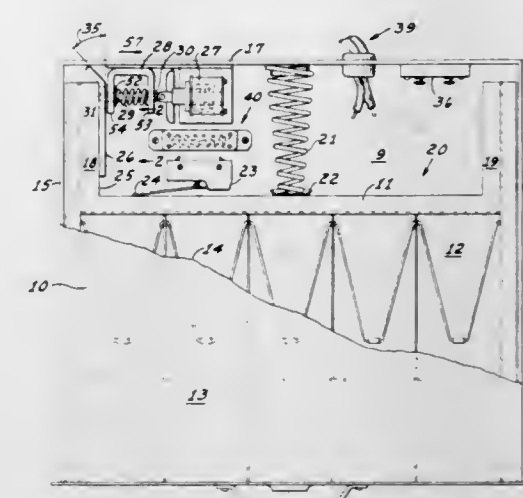
Int. Cl. G07g 1/00

U.S. Cl. 235—22

5 Claims

An apparatus for opening a cash drawer. A spring-loaded cash drawer is mounted in a housing having an electrically operated solenoid. The solenoid has a movable rod projecting through a flange fastened to the drawer. A magnetic reed

relay is operable connected to the solenoid having a pair of contacts closable by a pulse circuit. A switch connected in



parallel with the magnetic reed relay closes whenever the drawer is in the open position.

### 3,628,725 COMPACT TOY LAP COUNTER

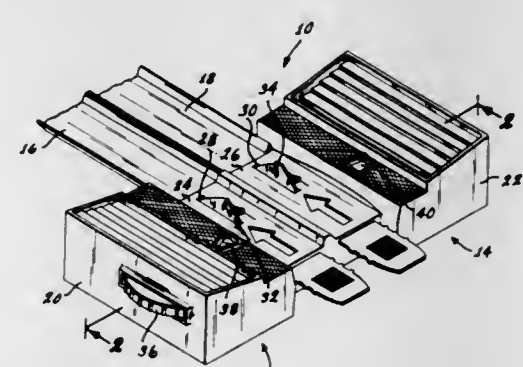
Christopher J. C. Edwards, Glendale; Harvey W. La Branche, Verdes Peninsula, and George Soullakis, Los Angeles, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 16, 1970, Ser. No. 3,356

Int. Cl. B61l 1/16; A63f 9/14

U.S. Cl. 235—99 R

7 Claims



A device for use with a toy track layout to count the number of laps traversed by a toy vehicle, comprising a track section with a slot and a pivotally mounted lever which extends through the slot so it can be pivoted down by a vehicle moving along the track. The lever operates an escapement that allows a number wheel to advance to display a new lap count. A single-coil spring is used to move the number wheel and to urge the lever to a position where it projects from the track.

### 3,628,726 NOZZLE AND CONTROL APPARATUS

Gordon P. Johnson, St. Paul, and Le Roy E. Gerlach, Minneapolis, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,239

Int. Cl. B05b 1/08

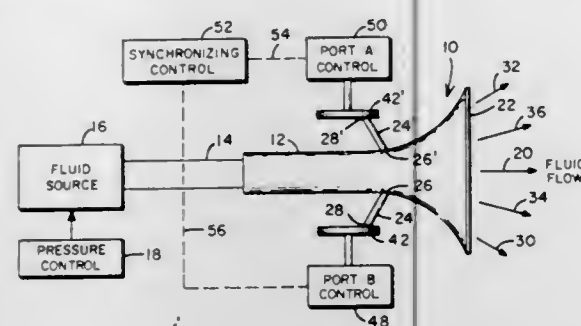
U.S. Cl. 239—101

6 Claims

An improved fluidic nozzle and fluid-flow control apparatus is described. Control apparatus for altering the path



of fluid flow in the nozzle, including chambers capable of



being selectively opened and closed for creating pressure imbalances are shown.

3,628,727

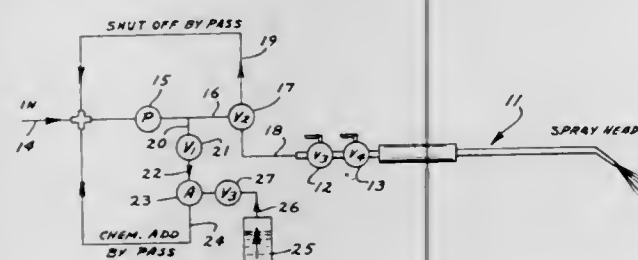
**HIGH-PRESSURE SPRAY DEVICE**

Harlan T. Gjerde, 826 49 1/2 Ave. N. E., Minneapolis, Minn.  
Filed Dec. 22, 1969, Ser. No. 887,235

Int. Cl. B05b 9/00

U.S. Cl. 239-124

5 Claims



A high-pressure spray device utilizing a pump delivering through a conduit to a remote spray head which spray head is provided with control means including on and off and controlled spray selections with valving means arranged in the conduit which are controlled by the selective valve controls at the spray head and which valving means include a complete shutoff and bypass arrangement and a partial flow arrangement during which time an additive is delivered to the spray head. The spray head control system allows complete control of the system through common hydraulics rather than requiring auxiliary control systems.

3,628,728

**SPRAYING METHOD AND APPARATUS**

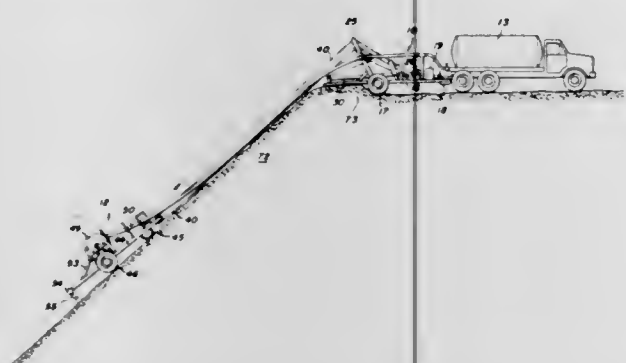
Frank J. Polutnik, West Milford Borough, and Robert W. West, Baytown, both of Tex., assignors to United States Steel Corporation

Filed Apr. 23, 1970, Ser. No. 31,334

Int. Cl. B05b 9/02

U.S. Cl. 239-159

5 Claims



A method and apparatus for spraying liquid on the slopes of large piles of bulk material, particularly for spraying dust-suppressing liquid on coal piles. Apparatus comprises a vehicle and a spray buggy, which can be carried on the vehicle.

Vehicle is positioned at the top of a pile and includes a hoist for moving the buggy down and up the slopes. Buggy includes a hose, hose reel and spray bar with downwardly directed outlets. Hose is connected to tank truck supplying liquid.

3,628,729

**MOBILE IRRIGATION APPARATUS**

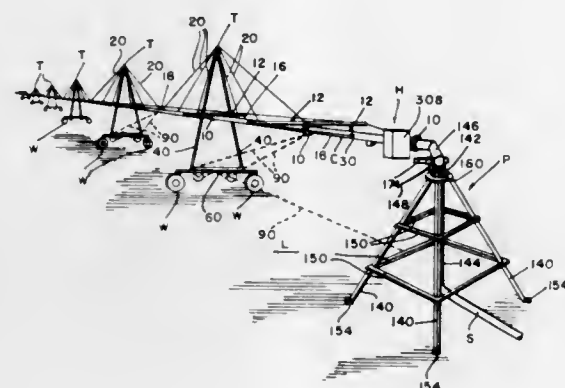
John R. Thomas, Wichita, Kans., assignor to Livingston Irrigation & Chemical Co., Janesville, Iowa

Filed Apr. 17, 1969, Ser. No. 816,923

Int. Cl. B05b 3/00

U.S. Cl. 239-177

39 Claims



A water conduit having sprinkler heads spaced along its length pivots about one end which is connected to a source of water. A series of towers on wheels spaced along its length supports the conduit in its arcuate path which may be 360° or any part thereof, to thereby sprinkle substantially all or part of a tract such as a quarter of a section of land. The other end of the conduit has sprinkler means to irrigate the corners of the field which otherwise would be outside of the circular sprinkling area. Power to the wheels of the towers and control of the system is provided by means including oil hydraulics. The hydraulic control system includes means to reverse power, position sensing means to shut off the system upon misalignment of towers beyond selected tolerances, and adjustable position sensing means to control feed of oil to drive the wheels depending on relative tower alignment (including pulleys and a capstan or other mechanical elements). The tower wheels can be pivoted to tandem position for moving the apparatus from location to location.

3,628,730

**APPARATUS AND METHOD FOR IRRIGATION**

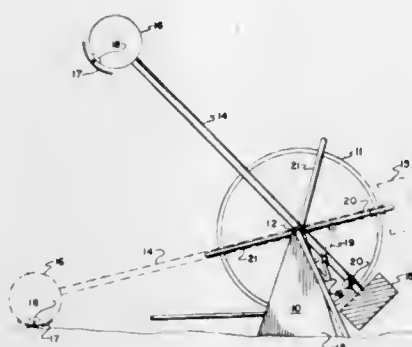
Warren B. Nelson, Route #2, Meridian, Idaho

Filed Jan. 2, 1970, Ser. No. 79

Int. Cl. B05b 3/02

U.S. Cl. 239-189

17 Claims



The present apparatus comprises a frame carrying an accumulating reel having a ratchet distally mounted about the periphery of the reel, a crank having a pawl engageable with the ratchet and means operable to reciprocally drive the crank to drive the reel in one direction. In the embodiments

specified the reel may accumulate flexible conduit thereon by moving over the conduit, or alternatively to accumulate conduit or cable upon the reel while the reel is stationary.

The method of irrigating tracts of land comprising the steps of

placing a mechanical sprinkler in a field to be irrigated, said

sprinkler having a nozzle orifice operable to distribute water at a splash down rate below the predetermined rate of compaction of a selected soil;

supplying a volume of water under pressure through a conduit connected to a water source to said mechanical sprinkler at a rate equal to the predetermined field-absorption rate of a selected soil;

substantially continuously moving said sprinkler at a rate to apply a volume of water to the field below the predetermined field capacity of a selected soil;

repeating the above steps at intervals equal to the change of predetermined reservoir capacity of a selected soil at the lowest terminal end of the root zone of crops in said field.

3,628,731

**CONSTANT SPEED DRIVE MEANS FOR IRRIGATION MACHINES**

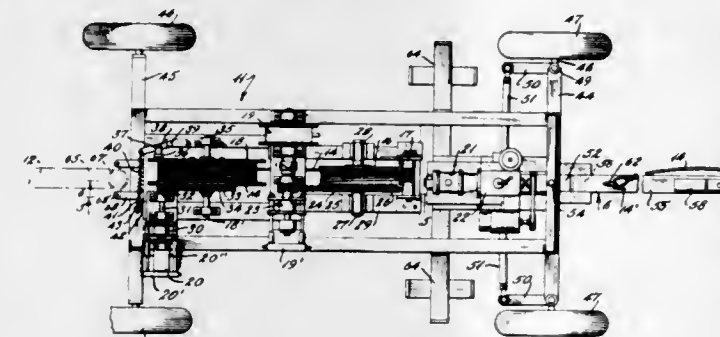
William N. Phillips, Auburndale, Fla., assignor to LECO, Inc., Lakeland, Fla.

Filed Dec. 24, 1969, Ser. No. 887,866

Int. Cl. B05b 3/00

U.S. Cl. 239-189

1 Claim



A self-propelled irrigation machine which receives and discharges water under pressure over an extended area, the machine carrying a driving winch and a cable one end of which is secured in place at a remote location and the other end caused to be wound about the winch resulting in the vehicle travelling in a straight line unattended a prescribed distance.

3,628,732

**SOAP MIXER AND DISPENSER FOR SHOWER BATHS AND THE LIKE**

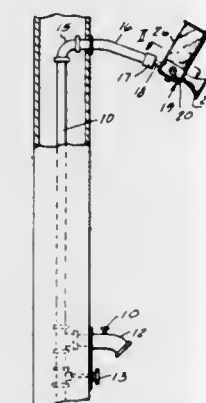
Vincent Vicari, 8253 W. Maple, Norridge, Ill.

Filed Mar. 19, 1970, Ser. No. 21,117

Int. Cl. A62c 5/02; B05b 7/26

U.S. Cl. 239-310

8 Claims



Soap-mixing-and-dispensing shower head in the form of a valve block having an inlet connected with a supply pipe for

clear water and having an outlet having a spray-shower nozzle in communication therewith. The valve block has a soap container extending upwardly therefrom having a spray nozzle therein directed to spray water over a bar of soap in the soap container, and has a soap channel for soapy water leading from the soap container into the valve block. A slide valve is provided in the valve block and is manually movable along its axis into one position to supply clear water to the spray nozzle, and soapy water from the soap channel into the outlet and spray shower nozzle. A reduced cross-sectional area passageway in the valve provides the pressure drop between the inlet and outlet of the valve to draw soapy water from the soap channel. The valve has a diametral passageway leading therethrough positionable in alignment with said inlet and said outlet when the valve is in a second position, to effect the supply of clear water through the shower nozzle.

3,628,733

**TWO-HOLE AEROSOL BUTTON**

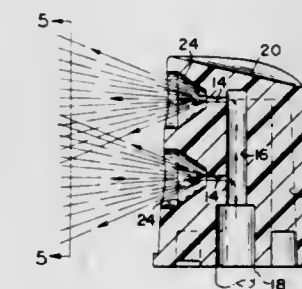
Rolf Kahn, Closter, N.J., assignor to 5 Day Division of Associated Products, Inc., Chicago, Ill.

Filed May 1, 1969, Ser. No. 821,051

Int. Cl. B05b 7/32

U.S. Cl. 239-337

4 Claims



A spray head for aerosol containers provided with dual-parallel, discharge orifices connected to a common inlet passageway. Provision of the dual orifices produces a better spray pattern and lessens the tendency of the spray to diffuse into the atmosphere.

3,628,734

**NOZZLE FOR DISPERSING VISCOUS FLUIDS**

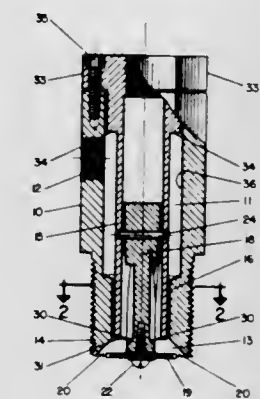
Courtney D. Lindell, Bellingham, and Hugh G. Locker, Ferndale, both of Wash., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Mar. 11, 1970, Ser. No. 18,538

Int. Cl. B05b 7/10

U.S. Cl. 239-403

5 Claims



A low-pressure nozzle for atomizing and dispersing a viscous fluid comprising a housing having a chamber and a



diverging-wall mixing section. The chamber has inlets for the introduction of a dispersing fluid and an area of reduced cross section communicating with the mixing section. A conduit for the viscous fluid extends through the chamber to the diverging mixing section forming at the reduced cross section of the chamber a discharge outlet for the dispersing fluid. A spiral groove member is positioned in the conduit with one end of this member extending into the diverging mixing section with the grooves terminating in the mixing section by a reduction of depth of the grooves for deflecting outwardly fluid flowing in said grooves. A deflection plate is positioned in the mixing section to form an annulus between the edge of the deflection plate and the walls of the mixing section.

3,628,735

**BURNER FOR USE WITH FLUID FUELS**

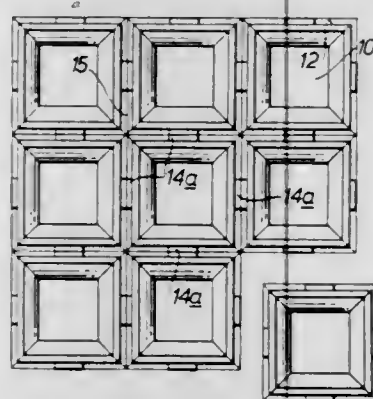
Denis H. Desty, Weybridge, and David M. Whitehead, Camberley, both of England, assignors to The British Petroleum Company Limited, London, England  
Filed Jan. 22, 1970, Ser. No. 4,847

Claims priority, application Great Britain, Jan. 23, 1969, 3,793/69

Int. Cl. B05b 7/06

U.S. Cl. 239—425.5

8 Claims



Burner for fluid fuels comprises a plurality of juxtaposed tubular modules each of which has external outlet surfaces at one end, external closure surfaces at the other end with a waist in between. At least some of the outlet surfaces have projections. The tubular modules cooperate so that the waists form a fuel chamber, adjacent closure surfaces mate to form fueltight joints, and the protruding areas of the outlet surfaces hold apart other areas of adjacent outlet surfaces to form fuel outlet passages. Fuel passes into the fuel chamber and thence via the fuel outlet passages to the combustion zone where it burns with air which enters the combustion zone via the bores of the modules.

3,628,736

**LIQUID SUPPLY NOZZLES**

Dorian Farrar Mowbray, Burnham, Buckinghamshire, England, assignor to C.A.V. Limited, Birmingham, England  
Filed Feb. 24, 1970, Ser. No. 13,518

Claims priority, application Great Britain, Mar. 5, 1969, 11683/69

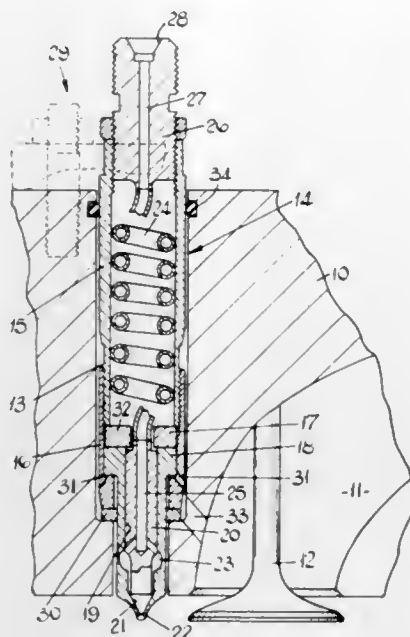
Int. Cl. B05b 1/32

U.S. Cl. 239—533

4 Claims

A liquid supply nozzle including a valve member which is movable by the action of fluid under pressure within a

chamber to permit such fluid to flow through an outlet orifice, the valve member being resiliently loaded by means of a



spring and the spring being formed from tube and serving to convey the fluid under pressure to the aforesaid chamber.

3,628,737

**FUEL NOZZLE**

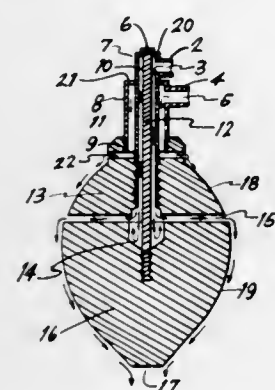
John P. Norton, St. Louis, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 2, 1970, Ser. No. 77,427

Int. Cl. B05b 7/08

U.S. Cl. 239—426

8 Claims



An atomizing nozzle assembly wherein a plurality of fluids enter a first body portion of the assembly in separate conduits and discharge individually in a radially outward direction at openings disposed at selected points downstream of the first body portion. The design of the nozzle is of such a configuration that the discharging gases follow the contour of the outer periphery of a second and third body portion of said nozzle.

3,628,738

**TREATMENT OF CLAYS**

Dennis Mitchell, and Arthur Frank Payne, both of Park House, Courtenay Park, Newton Abbot, Devonshire, England

Filed Oct. 7, 1968, Ser. No. 765,294

Int. Cl. B02c 1/00

U.S. Cl. 241—16

7 Claims

A method of treating clay which is to be dewatered and disintegrated, particularly for use in rubber compounds and as an anticaking agent in fertilizers, in which an organic coating substance is added to the clay before dewatering or, if the substance is of a kind which might decompose at the dewatering temperature, after dewatering, and the mixture of clay and the substance is reduced to a fine powder.

3,628,739

**PROCESS FOR THE MANUFACTURE OF MOST FINELY PULVERIZED RED PHOSPHORUS**

Fritz Muller, Knapsack near Cologne; Karl-Heinz Stendenbach, Bruhl-Pingsdorf; Franz-Josef Dany, Lechenich; Dieter Steidl, Sulzbach/Taunus; Horst Heinrich Weizenkorn, Efferen near Cologne, and Willi Forst, Knapsack near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

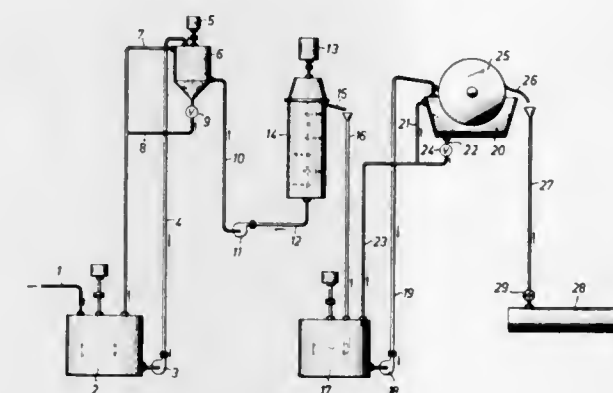
Filed Sept. 23, 1969, Ser. No. 860,275

Claims priority, application Germany, Oct. 3, 1968, P 18 00 870.3

Int. Cl. B02c 17/16, 21/00

U.S. Cl. 241—17

2 Claims



Production of most finely pulverized red phosphorus, by subjecting an aqueous suspension of red phosphorus with a particle size of between about 50 and 100 microns, produced inside a ball mill from yellow phosphorus and water, to pulverization with agitation to obtain particles with a size between 1 and 20 microns, for example 10 microns, prior to filtering the suspension. The red phosphorus is produced using an apparatus wherein a preliminary tank, a preliminary agitator vessel and a ball mill having an agitator placed therein and filled with glass balls of between 1 and 2 mm. in diameter, are disposed ahead of the filter tank.

3,628,740

**CENTRIFUGAL POWDERING MACHINE**

Kazuteru Tako, 29-11-203, 2-chome, Hasune, Itabashi-ku, Tokyo, and Hiroshi Gunji, 1327, Oto, Yono-shi Saitama, both of Japan

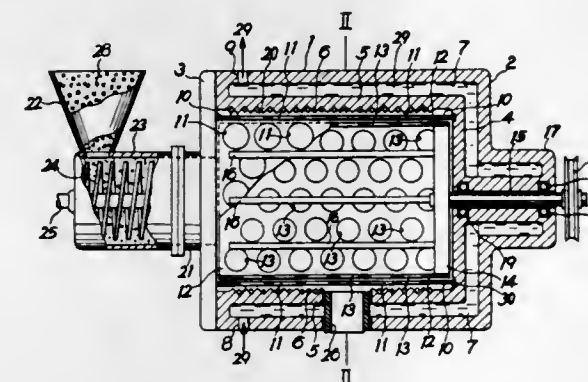
Filed Jan. 2, 1970, Ser. No. 227

Claims priority, application Japan, Jan. 22, 1969, 44/4588

Int. Cl. B02c 17/02, 13/282

U.S. Cl. 241—152 A

1 Claim



A powdering machine utilizing centrifugal force in which there is provided a jacket having percussion protrusions all over the surface of its barrel inner wall, a perforated cylindrical stationary screen inserted removably and fitted in the jacket and a perforated cylindrical rotary screen and beating bars both installed rotatably in the stationary screen so that if the objects to be powdered are deposited in the rotary screen they may be first beaten by the beating bars and then thrown

against the percussion protrusions through the holes of the stationary screen by the centrifugal force of the rotary screen and pulverized into powder.

3,628,741

**DEVICE FOR WINDING TEXTILE THREADS**

Heinrich Enneking, Karlsruhe-Waldstadt, and Gunter Jahrig, Neureut, both of Germany, assignors to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

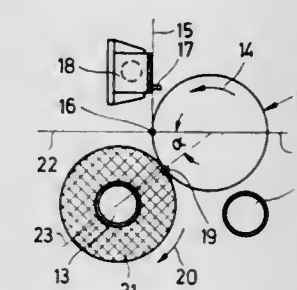
Filed Aug. 22, 1969, Ser. No. 852,366

Claims priority, application Germany, Sept. 11, 1968, P 17 85 322.4

Int. Cl. B65h 54/20, 54/42

U.S. Cl. 242—18 DD

2 Claims



The device for winding textile threads is provided with a roll rotating about a horizontal axis, two bobbin supports disposed below a horizontal plane passing through the axis of rotation of said roll and adapted to be brought into and out of frictional driving engagement with the circumference of said roll, and a horizontally reciprocable thread guide disposed vertically above a surface line of said roll arranged in said horizontal plane. The thread to be wound moves downwardly from said thread guide, engages said roll at said surface line and extends along a portion of said roll until it reaches a point where one of the bobbin supports engages the roll. The thread is now wound on the bobbin support and when the bobbin is completed the thread is transferred to the second bobbin support which has been brought into engagement with the roll. While the second bobbin is wound, the first one is removed from its bobbin support.

3,628,742

**DRIVE SYSTEM FOR STRIP ACCUMULATOR**

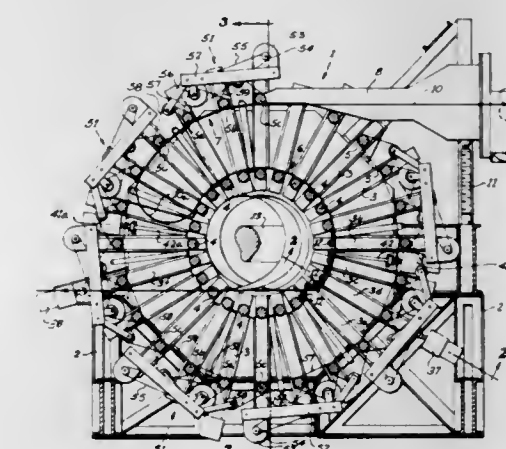
Alfred O. Fritzsche, Hamilton, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed July 8, 1970, Ser. No. 53,089

Int. Cl. B21c 49/00; B65h 51/22

U.S. Cl. 242—55

15 Claims



A drive system for roll cages in a strip accumulator of the type wherein the strip material is accumulated by being coiled into two substantially concentric sets of convolutions—an outer set and an inner set—connected by a free reverse loop which orbits between the sets of convolutions, the sets



of convolutions being formed against expandable roll cages which support and guide the strip. The invention provides improved drive means for positioning the individual rolls making up the inner and outer roll cages, including sets of radially disposed coaxial drive shafts mounting the rollers for independent movement in opposite directions, the drive shafts for the rolls in the inner roll cage being operatively connected to a first ring gear drive means, with the drive shafts for the outer roll cages operatively connected to a second ring gear drive means, the drive system also including drivebelts associated with the rollers in the outer roll cage to implement the coiling of the strip, together with means for enclosing and protecting the coaxial drive shafts and their related mechanism.

3,628,743

**DISPENSING CABINET FOR SHEET MATERIAL**

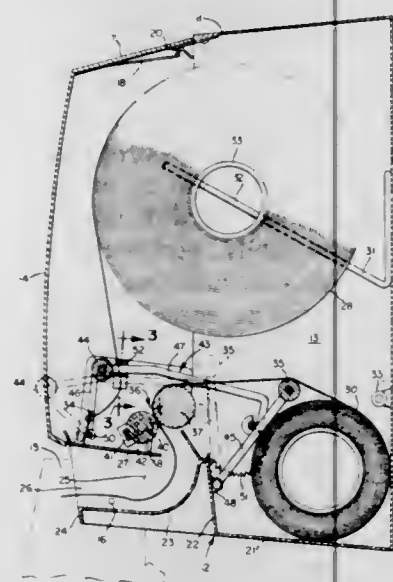
Lehman J. Bastian, Media, and Clyde W. Shuman, Jr., Philadelphia, both of Pa., assignors to Scott Paper Company, Delaware County, Pa.

Filed Nov. 4, 1969, Ser. No. 873,802

Int. Cl. B65h 19/04

U.S. Cl. 242—55.3

14 Claims



A dispensing cabinet for sequentially dispensing sheet material from first and second rolls of spirally wound sheet material, incorporating a mechanism which monitors the diameter of a first roll of sheet material and, when the diameter decreases to a predetermined level representative of the sheet material remaining from a second roll. The arrangement of components in the cabinet enables the rolls to be unwound in either direction without affecting the operation of the cabinet.

3,628,744

**STRIP MATERIAL HANDLING MECHANISM FOR USE WITH NONREWIND CARTRIDGES**

William A. Martin, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 22, 1970, Ser. No. 57,250

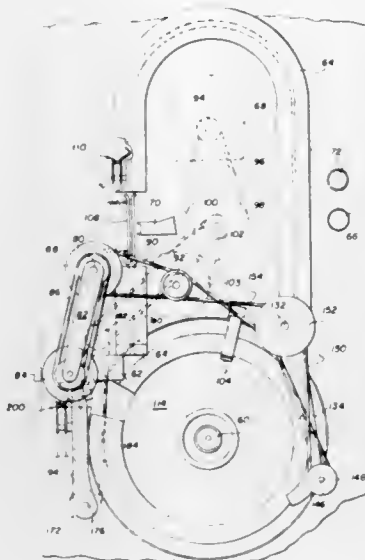
Int. Cl. B65h 17/48; G03b 1/04

U.S. Cl. 242—55.21

11 Claims

A strip material handling mechanism for use with a nonrewind cartridge of the type having a rotatable holder for both supply and takeup rolls of strip material, the takeup rolls being formed radially outwardly of the supply roll in inwardly directed convolutions as additional strip material is advanced into the cartridge. The strip material handling mechanism includes cartridge receiving and locating members to align the cartridge in proper orientation with one end of a channel formed in a guide member. Upon actuation of the mechanism, a drive member enters the cartridge to engage the leading end of the strip material, to extract the leading

end from the cartridge, and to advance the strip material into the channel in the guide member. Presence of the strip material in the channel actuates a cam mechanism to axially move the cartridge and to position a feeder arm to guide the strip material back into the cartridge, thereby forming a takeup roll. As the trailing end of the strip material reenters



the cartridge, mechanism is automatically actuated to cinch the strip material tightly in the cartridge rotatable holder, reforming the supply roll, and to reposition the parts of the strip material handling mechanism to their original orientations ready to be reactivated with the same or another cartridge.

3,628,745

**WINDING SHAFT FOR ROLL-CUTTING MACHINES**

Klaus Taefner, Cologne, and Hermann Lubrig, Leverkusen, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

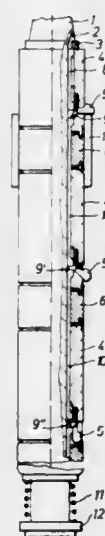
Filed Nov. 26, 1969, Ser. No. 880,087

Claims priority, application Germany, Dec. 23, 1968, P 18 16 550.9

Int. Cl. B65h 19/04

U.S. Cl. 242—56.9

4 Claims



In the winding shaft for roll-cutting machines are provided stops which are pivotal about pivots in a longitudinal groove. The stops have a rest position in which they are disposed inside the longitudinal groove. Additionally they are adapted to pivot into an operating position in which they are perpendicular to the winding shaft axis. An object of this invention is to provide a winding shaft on which winding tubes can be so positioned that they are in exact alignment with separate webs or strips produced in the roll-cutting machine.

3,628,746

**SELF-CINCHING REEL MECHANISM**

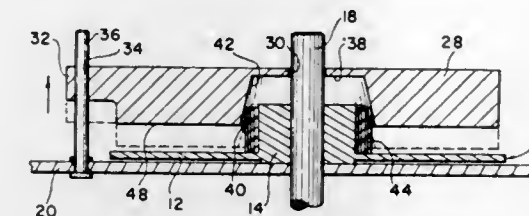
Alphonse B. Di Francesco, and Elmer E. Boase, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1970, Ser. No. 43,526

Int. Cl. B65h 75/28

U.S. Cl. 242—74

16 Claims



A self-cinching reel mechanism for automatically cinching the leading end of a web onto a rotatable reel hub. A film guide cap is supported for axial movement relative to the hub and cooperates with the periphery of the hub and a reel flange to form a passageway for guiding the web around the hub and into frictional engagement therewith, and further cooperates with the reel flange to retain the web convolutions as they accumulate. After the leading end of the web is cinched onto the hub, the web guide cap is axially moved out of the path of the web by the web convolutions as they accumulate on the hub.

3,628,747

**PIRN CAP**

David Bakewell, Mobile, Ala., assignor to Courtaulds North America, Inc., Mobile, Ala.

Filed Dec. 2, 1969, Ser. No. 881,453

Int. Cl. B65h 75/10

U.S. Cl. 242—118.32

1 Claim



A textile pirn upon which filamentary material is supplied is provided with a replaceable end covering ring to prevent damage to the nose end of the pirn, to cover previous damage, and to aid in the runoff of the filament over the nose end.

3,628,748

**FILM-FEEDING MECHANISM**

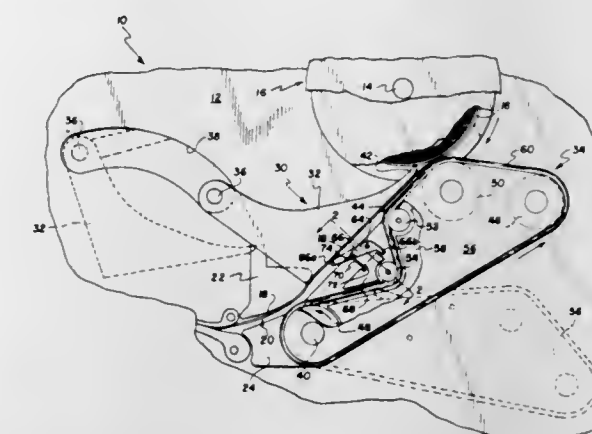
Donald O. Easterly, and Daniel J. Stark, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1970, Ser. No. 22,181

Int. Cl. G11b 15/32, 15/66

U.S. Cl. 242—192

6 Claims



A film-feeding mechanism for a self-threading cartridge loading motion picture projector or the like comprises a stripping finger engageable with a roll of film in a cartridge for deflecting the film from the cartridge for travel along an edge of the finger. A drivebelt is engageable with the roll adjacent to the finger for driving the roll in an unwinding direction during film-stripping operations. Means are provided for urging the film stripped from the roll into positive engagement with the finger along its guide surface to prevent twisting of the film as it is fed from the roll and thereby avoid film threading failures that might otherwise occur by an automatic film threading device of the projector being unable to accept twisted film delivered to such device by the film-feeding mechanism.

3,628,749

**AUTOMATIC FILM THREADING DEVICE**

Wolfgang Ort, Bad Cannstatt, and Gerhard Brauning, Ruit, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

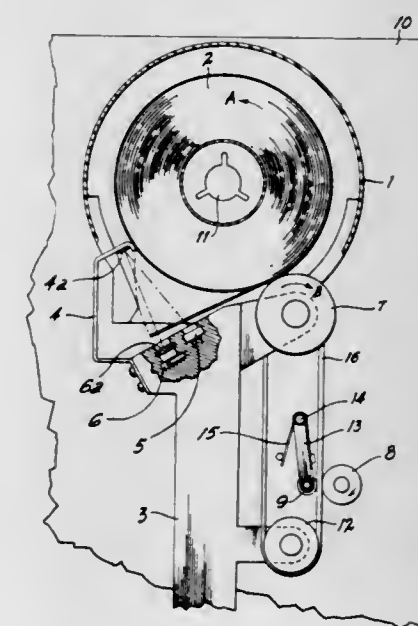
Filed Nov. 12, 1969, Ser. No. 875,813

Claims priority, application Germany, Dec. 12, 1968, P 18 14 222.8

Int. Cl. G11b 15/66, 15/26

U.S. Cl. 242—186

5 Claims



A film-threading device for a cinematographic projector and/or camera comprises a friction or drive wheel adapted to



be placed in engagement with the outer convolution of a roll of film or the like. The film roll may be positioned within a cartridge on a projector and/or camera or the film roll may be unenclosed. A pressure bar is also movable into engagement with the film roll. The bar has a mirror surface. A light source directs a light beam against the mirror surface and then to a photocell. In operation the film roll is first rotated in a takeup direction and, as the leading end of the film passes the pressure bar, it breaks the light beam to the photocell. This effects a switching operation which causes the drive wheel to be driven in a direction for feeding the leading end of the film from the roll to a self-threading mechanism of the projector, camera or the like.

3,628,750

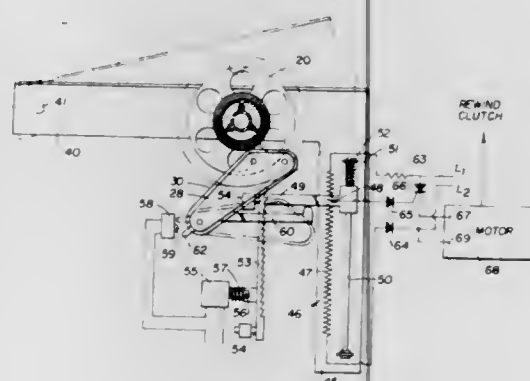
# APPARATUS FOR MONITORING REWIND IN A MOTION PICTURE PROJECTOR

Herman H. Wagershauser; Joseph L. Boon, both of Rochester, and John J. Bundschuh, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
Continuation of application Ser. No. 692,994, Dec. 22, 1967, now abandoned. This application Nov. 3, 1969, Ser. No. 873,478

Int. Cl. B65h 59/38; G03b 1/04; G11b 15/32

U.S. Cl. 242-186

8 Claims



A cartridge-loading motion picture projector is provided with a movable arm for supporting a reel within a cartridge which in turn is supported on the projector. The arm is arranged to assume an angular position dependent on the size of the cartridge. Means are provided for sensing a code indication on the cartridge and means are provided for sensing the amount of film wound on the reel within the cartridge. A comparing means is responsive to the variables sensed by the two sensing means for adjusting the rotational speed of the supply reel during rewind.

3,628,751

# AUTOMATIC FILM-THREADING DEVICE

Gerhard Brauning, Ruit A. F., and Wolfgang Ort, Bad Cannstatt, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,819

Claims priority, application Germany, Dec. 12, 1968, P 18 14 221.7

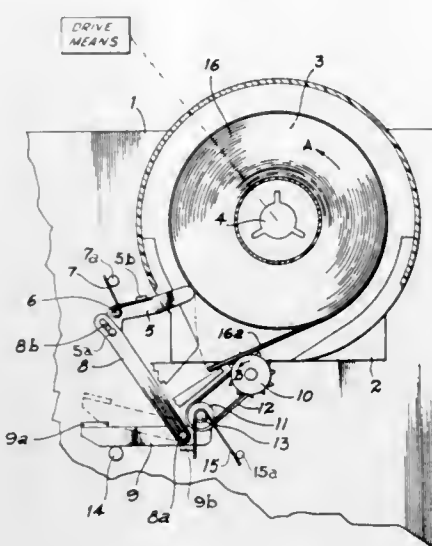
Int. Cl. B65h 59/38; G03b 1/04; G11b 15/32

U.S. Cl. 242-187

8 Claims

A film-threading device for a cinematographic projector and/or camera comprises a film capturing wheel positionable adjacent a film roll. A pressure arm engages and urges a loose end of the film roll radially toward the axis of the roll while the roll is driven in a takeup direction. The arm and wheel are positioned relative to the roll so that as the loose end of the film slides past the arm it is driven radially outwardly and into engagement with the wheel whereby teeth on the wheel engage the loose end of the film through one of the perforations in the film while the film is still traveling in a takeup direction. The wheel is driven in a direction which

causes the loose end of the film to move in an unwinding direction for feeding the film end into self threading portions



of a cinematographic motion picture projector, camera or the like.

3,628,752

# DEVICE FOR STRIPPING AND FEEDING STRIP MATERIAL FROM A ROLL

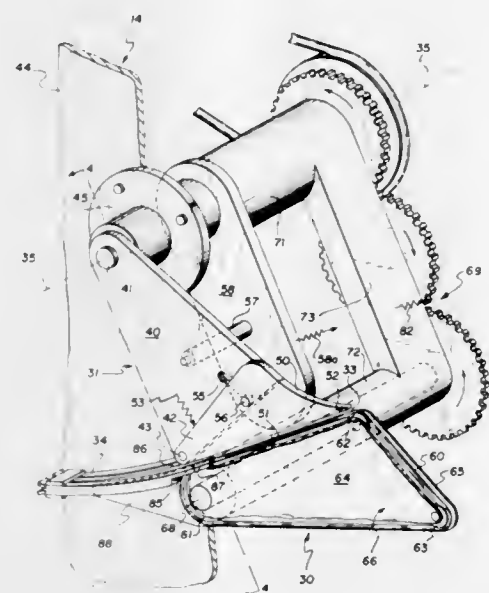
Evan A. Edwards, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,424

Int. Cl. G11b 15/32, 15/66

U.S. Cl. 242-192

10 Claims



A stripping mechanism for use in strip material handling devices, such as motion picture projectors, for unwinding strip material from a roll and guiding the unwound portion away from the roll periphery along a predetermined path. The mechanism includes a strip-feeding belt for rotating the roll in an unwinding direction and a stripper finger for deflecting the leading edge of the strip material away from the roll periphery and into a strip guiding channel formed by opposing substantially parallel surfaces of the drive belt and stripper finger. Both the drivebelt and stripper finger are mounted for pivotal movement about a common axis, thereby permitting the surfaces forming the strip-guiding channel to maintain a fixed relationship as the mechanism pivots into engagement with rolls of various diameters.

3,628,753

# FILM CARTRIDGE

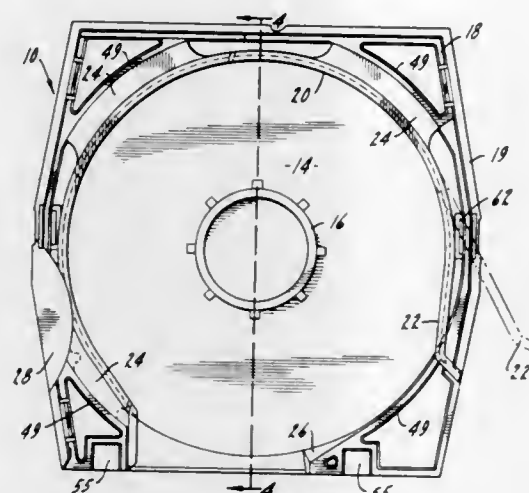
Gordon E. Bradt, Wilmette; Richard Frystak, Park Ridge; Nicholas Mischenko, Chicago, and Edward R. Prelletz, Chicago, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 21, 1969, Ser. No. 826,045

Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242-197

35 Claims



A cartridge for a strip of flexible material, preferably film, adapted for use with a projector having automatic feed-out means, basically comprising a reel receptacle and a cover. The receptacle has a flat back portion and a circular reel spacer ridge on the back portion. An arcuate guide member is spaced from the back portion and positioned to penetrate the space between the flanges of a reel in the receptacle along an upper portion of the reel. The cover fits over the receptacle to substantially enclose a reel, and has an internal reel spacer ridge and a central, internal reel-bearing projection located to penetrate the central opening in the hub of a reel positioned in the receptacle. The receptacle and cover are constructed and arranged to form a threading aperture on the bottom end of the assembled cartridge to permit a strip of flexible material to be drawn from the reel out of the cartridge.

The invention also provides a method and means for estimating the number of feet of film on a reel. In carrying out the method, a beam of light is projected between the flanges of the reel in a manner so that the beam is at least partially masked by the film on the reel. The light beam is collected as a collection surface, and the amount of film on the reel is estimated by reading a scale on the collection surface.

3,628,754

# TAPE MAGAZINE-LOADING DEVICE

Sukeyesi Fujikawa, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed Apr. 9, 1970, Ser. No. 27,044

Claims priority, application Japan, Apr. 14, 1969, 44/28486

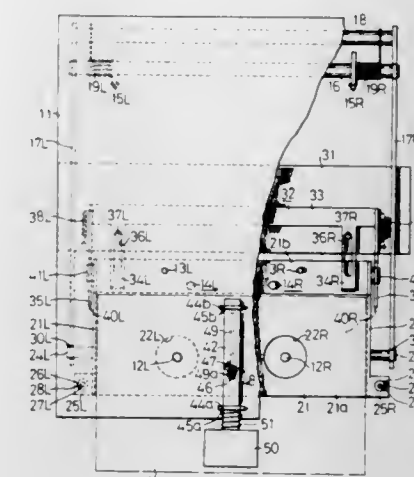
Int. Cl. G03b 1/04; G11b 15/32, 23/04

U.S. Cl. 242-198

4 Claims

A tape magazine-loading device, wherein a holder is rotatably attached to the free ends of left and right rotary arms, and it is normally maintained horizontal at a position spaced apart from the tape magazine-loading portion. Insertion of the tape magazine into the holder from the front will cause the left and right rotary arms to be rotated so that the tape magazine is automatically moved toward the loading portion to be loaded therein while being held in the holder. By operating the return lever with the tape magazine being

loaded in the loading portion, the holder will be depressed so as to be automatically returned to the horizontal position,



and the tape magazine will automatically be pushed out of the holder.

3,628,755

# HELICOPTER WITH SHROUDED ROTOR AND AIRSCOOP CONFINED WITHIN TEARDROP CONFIGURATION OF THE FUSELAGE

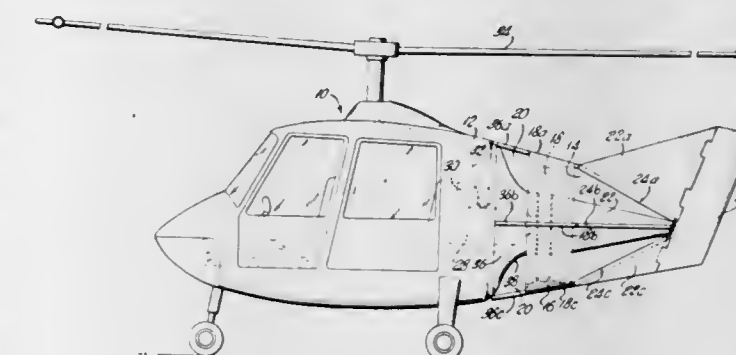
Bruno Nagler, New York, N.Y., assignor to Verti-Dynamics, New York, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,420

Int. Cl. B64c 27/22

U.S. Cl. 244-17.21

12 Claims



An aircraft with a shrouded rotor and air scoop confined within the classic teardrop configuration of the fuselage. The aircraft may be a helicopter and is therefore additionally provided with rotary wings. The aircraft, moreover, has an air-scoop channel, the entry of which is located in the fuselage at the place where the laminar flow of air breaks up into turbulent air. Thus, the air is drawn into the confined air channel, and propelled or pushed out by the rotor facing the rear of the fuselage. The fuselage is furthermore constituted of two interconnected sections. The shrouded rotor forms the connection between the front and rear sections of the fuselage. In addition, the rotor is provided with an elongated hub having spaced ribs thereon, the ribs forming a support for the tail structure of the aircraft. Thus, the outer configuration of the fuselage is maintained and, at the same time, a shrouded rotor is provided which functions effectively due to the location of the air scoop.



3,628,756

**AIRFOIL MEMBER**

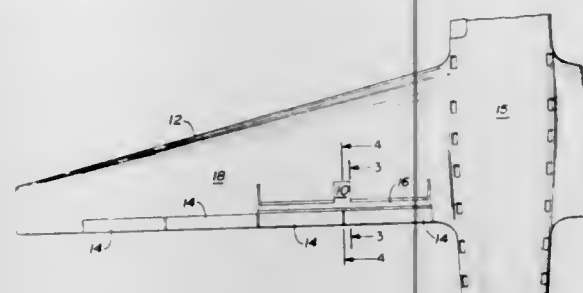
Richard M. Johnson, Dallas, Tex., assignor to LTV Electronics, Inc., Greenville, Tex.

Filed Mar. 5, 1970, Ser. No. 16,866

Int. Cl. B64c 9/14

U.S. Cl. 244-42 C

14 Claims



A disturbance of the airstream around an airfoil is created by extending a plurality of curved, elongated segments from a stacked position into the airstream. When in a stacked position, the curved segments present a contour that matches that of the airfoil to which they are pivoted. Each of the individual segments is restrained from being extended from a stacked position until the preceding segment has nearly reached its fully extended position. The curvature and pivot location of each segment is such that the force produced by an airflow impinging thereon will tend to move the segment into an extended position.

3,628,757

**DEVICE FOR THE ARRESTING OF AIRCRAFT BY EITHER A NET OR A CABLE**

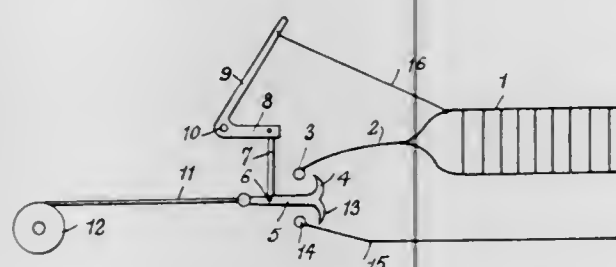
Sixten E. Carlsson, Braviksvägen 35, Norrköping, Sweden

Filed Jan. 19, 1970, Ser. No. 3,766

Int. Cl. B64f 1/02

U.S. Cl. 244-110 C

3 Claims



An arresting device for aircraft consisting in a net and an arresting cable to be selectively stretched across a runway to intercept a landing aircraft, and to means by which either the cable or the net may be raised to aircraft-arresting position and also coupled to brakes that provide energy absorption to either the net or the cable. The operative position of either the net or the cable and the coupling of either of them to the brakes is selectively obtained by means of the raising or elevation of masts to which the net is connected.

3,628,758

**FUEL TANK INERTING SYSTEM**

Richard A. Nichols, Santa Monica, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed July 22, 1969, Ser. No. 843,667

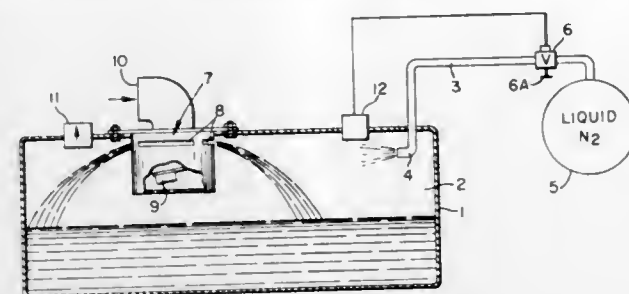
Int. Cl. B64d 37/18

U.S. Cl. 244-135

7 Claims

An inerting system to prevent fire and explosion within an aircraft fuel tank by maintaining in the vapor space thereof an oxygen concentration which is insufficient to support combustion. This low oxygen concentration (10 percent by volume or less) is accomplished by spraying or cascading fuel

into the vapor space of the fuel tank during the fueling operation, said vapor space being filled with inert gas such as nitrogen thereby decreasing the oxygen content of the fuel.



Thereafter, during flight, inert gas is employed to pressurize the fuel in the tank and to prevent entry of air into the tank when tank pressure decreases relative to ambient pressure as during descent of the aircraft.

3,628,759

**FISHING ROD HOLDER**

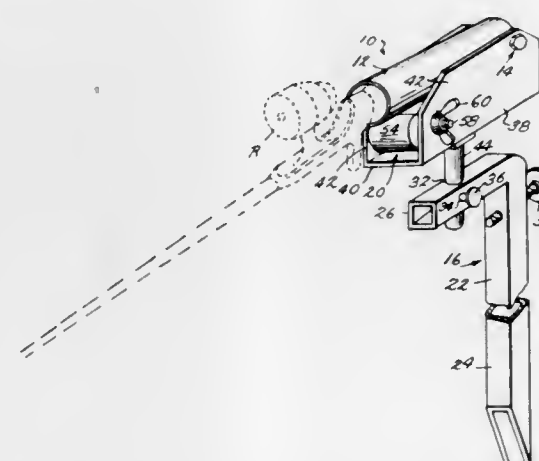
Omar S. Knedlik, 2203 Prairie Lane, Coffeyville, Kans., and Virgil Stouder, Box 635, Independence, Kans.

Filed Apr. 28, 1970, Ser. No. 32,622

Int. Cl. A01k 97/10

U.S. Cl. 248-42

1 Claim



A tubular fishing rod holder is pivotally secured near its rear to a base for pivotal movement about a horizontal axis. The fore end of the holder is propped up by resting on an eccentric cam which may be rotated about a horizontal axis and fixed to determine the normal angle of inclination of the holder. The holder is of greater diameter than the fishing rod handle to be received so the latter cocks in the former to enhance securement.

3,628,760

**HANGER FOR SUPPORTING INSULATED PIPE**

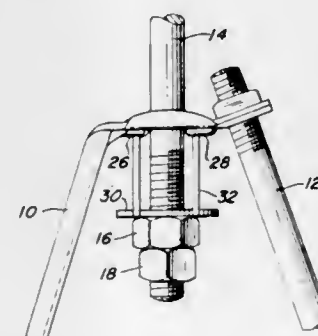
Robert D. Kindorf, 448 Scenic Ave., Piedmont, and David O. Kindorf, 6257 Girvin Drive, Oakland, both of Calif.

Filed Jan. 12, 1970, Ser. No. 2,129

Int. Cl. F16l 3/18

U.S. Cl. 248-59

7 Claims



A hanger for insulated pipe with a device for temporarily holding the pipe at its proper elevation and grade prior to the

3,628,763

**AIR-SPRUNG SEAT FOR VEHICLES**

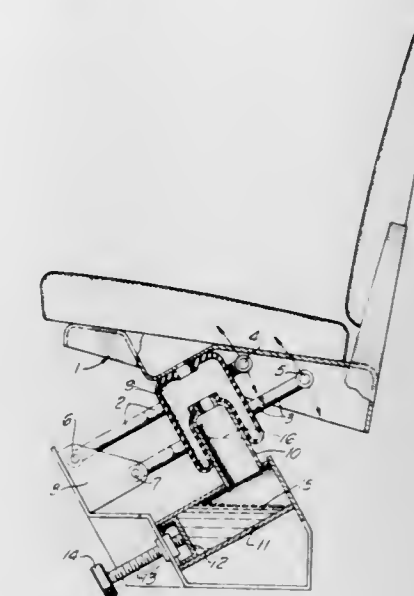
Adolf Auer, Munich, Germany, assignor to Bremshey Aktiengesellschaft, Solingen, Germany

Filed Apr. 21, 1969, Ser. No. 817,676

Int. Cl. A47c 3/30

U.S. Cl. 248-400

5 Claims



A novel air-sprung vehicle seat, characterized by a piston arranged in slidable form in the air spring piston or in an auxiliary chamber, for altering the volume of air in the air spring, and therewith the inherent frequency of the seat.

3,628,764

**CONCRETE FORM**

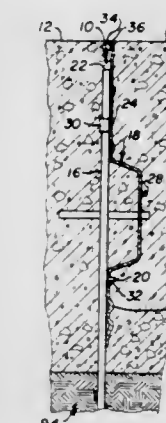
Duane C. Burton, 145 Mohawk Drive, Boulder, Colo.

Filed Oct. 31, 1968, Ser. No. 772,185

Int. Cl. E01c 11/08

U.S. Cl. 249-9

12 Claims



A concrete form used in forming a contraction joint between adjacent concrete slabs and a sheet member therefor. The concrete form comprises a plurality of aligned stakes and an elongated relatively rigid sheet member. Each of the stakes includes a ledge means. The sheet member has upper and lower longitudinally extending, generally planar portions and a longitudinally extending key deformation portion interposed between and connected to said planar portions. The sheet member has a plurality of longitudinally spaced strap means formed within one of the planar portions. Each of the strap means is disposed at least in partial encompassing engagement around a portion of a corresponding one of the stakes. The sheet member also includes a ledge engaging means for engaging the ledge means of the stake. The sheet member also has one of the planar portions, prior to installation upon the stakes, convergently disposed toward the

3,628,761

**GONIOMETER HEAD FOR X-RAY DIFFRACTION APPARATUS WITH IMPROVED X- OR Y-MOTION MECHANISM**

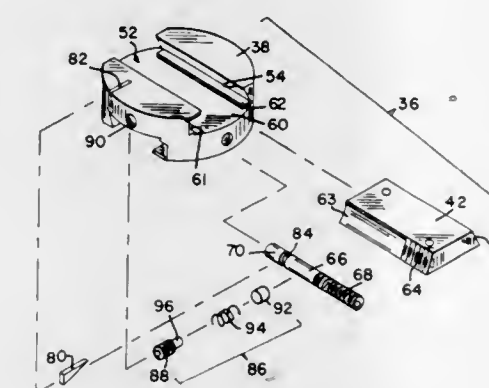
Roy L. Thomas, Jr., Medway, Mass., assignor to Charles Supper Co., Inc., Natick, Mass.

Filed Oct. 1, 1969, Ser. No. 862,896

Int. Cl. F16m 11/12

U.S. Cl. 248-184

3 Claims



A goniometer head for securing and positioning a crystal specimen in X-ray diffraction apparatus—more particularly, an X- or Y-motion mechanism comprising a frame defining a channel within which is received a dovetailed carriage side-driven by a manually rotatable screw disposed parallel to and contiguous with the carriage. A carriage loading structure biases the screw transversely against the carriage and also functions to lock the carriage in the channel.

3,628,762

**MOUNTING HOOK**

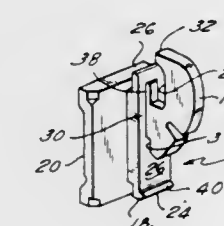
Donald F. Williams, Somerville, and Gerald H. Cox, Flemington, both of N.J., assignors to Fedders Corporation, Edison, N.J.

Continuation-in-part of application Ser. No. 865,611, Oct. 13, 1969, now abandoned. This application June 19, 1970, Ser. No. 47,772

Int. Cl. A47g 29/02

U.S. Cl. 248-235

10 Claims



An improved hook for mounting a structure to a relatively thin wall is provided. The hook comprises a base member having an inner surface adapted to be coupled to the structure to be mounted and a generally flat outer surface. An elongated arcuate member is coupled to the outer surface of the base and extends outwardly and upwardly therefrom beyond the top edge of the base. A plurality of slots and ridges are provided on the base outer surface and arcuate member which cooperate with suitable cutouts in the associated wall in securing the hook to the wall.

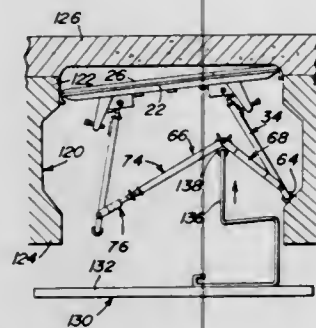


other planar portion, taken in a direction preceding from the stakes to the key deformation portion. The strap means, ledge means, ledge-engaging means and planar portions cooperate to hold said member against said stakes to prevent vertical movement of the member relative to the stakes.

**3,628,765**  
**ADJUSTABLE CONCRETE DECK FORMING PLATFORM**  
Jack Sanders, Route #1, Box 30, Rockport, Tex.  
Filed July 16, 1969, Ser. No. 842,246  
Int. Cl. E04g 11/54

U.S. Cl. 249—19

20 Claims



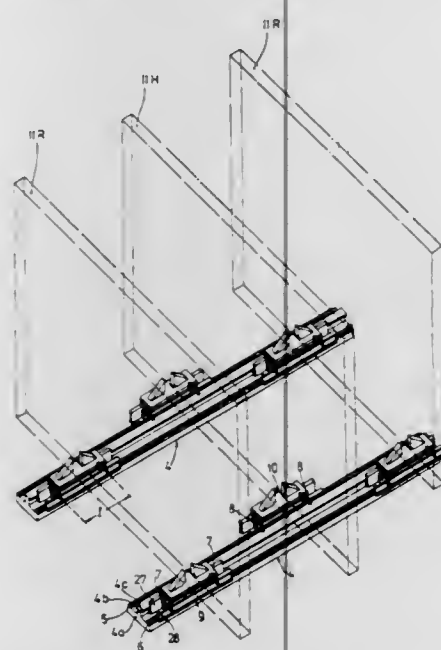
An adjustable and collapsible forming platform including an elongated forming surface or forming deck having at least two pairs of legs mounted for swinging movement between an inwardly moved collapsed position and an outwardly moved girder-engaged platform-orientating position. The legs of each pair are interconnected by a collapsible spreader bar which locks the legs open. In addition, each of the legs is longitudinally adjustable, as are the spreader bars, so as to vary and adjust the final orientation of the forming deck itself. A wrecking platform is also incorporated in the invention and operates so as to automatically collapse and remove the forming platform subsequent to the formation of the concrete deck through an engagement with the spreader bars in a manner so as to cause a folding thereof and the legs therewith, the forming platform collapsing and dropping out to the wrecking platform.

**3,628,766**  
**VERTICAL MOLD ASSEMBLY**  
Klaus Hartmann, Hamburg, Germany, assignor to Maschinenfabrik Augsburg-Nürnberg AG, Augsburg, Germany  
Continuation of application Ser. No. 863,728, June 2, 1969, now abandoned. This application July 23, 1969, Ser. No. 844,076

Int. Cl. B28b 7/26

U.S. Cl. 249—129

10 Claims



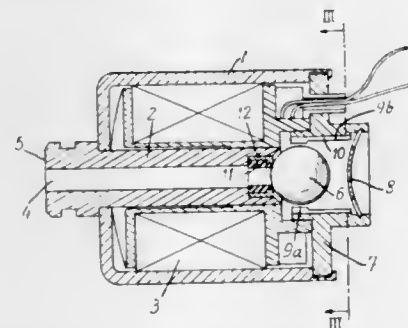
The present invention provides an assembly of vertical slab-casting molds in which each of a plurality of vertical

molds in said assembly may be removed therefrom. The vertical molds are positioned over at least two sets of rails. Each of said molds is moved on at least two wheel assemblies. One of said wheel assemblies is on one set of rails and the other wheel assembly is on the other set of rails. Each set of rails contains at least two parallel tracks. Each wheel assembly moves on one track and the wheel assemblies of adjacent molds are positioned on adjacent tracks forming a staggered relationship relative to each other. Each wheel assembly moves on one track and is sufficiently low so that it may move under the vertical molds.

**3,628,767**  
**ELECTROMAGNET BALL VALVES**  
Claude Lombard, Billancourt, France, assignor to Regie Nationale Des Usines, Renault Billancourt (Hauts de Seine), France and Automobiles Peugeot, Paris, France  
Continuation-in-part of application Ser. No. 862,295, Sept. 30, 1969, now abandoned. This application Dec. 29, 1969, Ser. No. 888,509  
Claims priority, application France, Oct. 11, 1968, Mar. 18, 1969, 169721; 6907781  
Int. Cl. F16k 31/06

U.S. Cl. 251—139

7 Claims

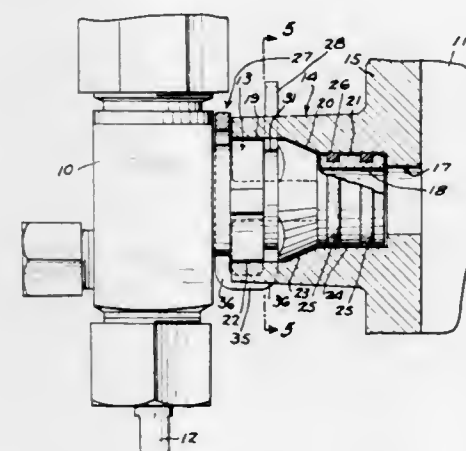


Electromagnetic valve comprising a ball valve adapted to coact by magnetic attraction with the core of an electromagnet forming a passage for the fluid to be controlled and comprising a valve seat formed at the end of said passage, characterized in that said seat consists of an inner conduit of flexible material and of a rigid outer collar adapted to be secured to said core, said inner conduit being retained in said collar on the ball side by the engagement of registering shoulders, and adapted to undergo a certain elastic distortion when said ball is attracted to its seated position.

**3,628,768**  
**QUICK CONNECTING COUPLING**  
Richard Stuart Hott, Adrian, Mich., assignor to Primore Sales, Inc., Adrian, Mich.  
Filed Oct. 16, 1970, Ser. No. 81,455  
Int. Cl. F16k 37/28

U.S. Cl. 251—148

13 Claims



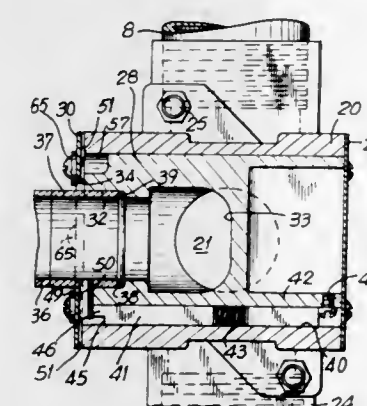
A quick connecting coupling comprising a first member having an opening therethrough providing a fluid passage.

The first member has a noncircular recess at one end of said opening. A second member having a projection with a non-circular external configuration extends into the recess of the first member and sealing means are provided between the first member and said projection of the second member. The first member has spaced peripheral grooves a portion of which communicate with the opening therethrough. The second member has an annular peripheral groove therein aligned with the spaced peripheral grooves and a retaining ring having spaced legs is positioned in said spaced grooves of said first member and has portions thereof extending into said peripheral groove of the second member. The retaining ring has an encircling portion surrounding the projection and interposed between the first member and the second member. The retaining ring includes connecting portions extending from the ends of said encircling portion to the ends of the legs respectively.

**3,628,769**  
**ROTARY VALVED VACUUM CLEANING SYSTEM OUTLET**  
Wilfred J. Lee, East Syracuse, N.Y., assignor to Clarkson Industries, Inc., Syracuse, N.Y.  
Filed June 19, 1970, Ser. No. 47,837  
Int. Cl. F16l 37/28

U.S. Cl. 251—149.9

9 Claims



The disclosure is directed to improvements in the outlets of a built-in vacuum system to which a cleaning hose may be detachably connected. Each outlet has a rotatable valve plug to eliminate air noise, which is provided with a sliding key that interlocks with the exposed end wall of the valve housing and a key actuator on the hose nipple which releases the valve plug for turning only when the hose nipple is seated in the outlet. The improved construction permits the valve plug to be removed from the exposed side of the valve housing for repair or replacement, and also permits adjustment of the end wall of the housing relative to the valve plug and insures alignment of the key and port opening in the valve plug with the keyhole and port opening in the valve housing, respectively, at the end of a turning movement of the valve plug.

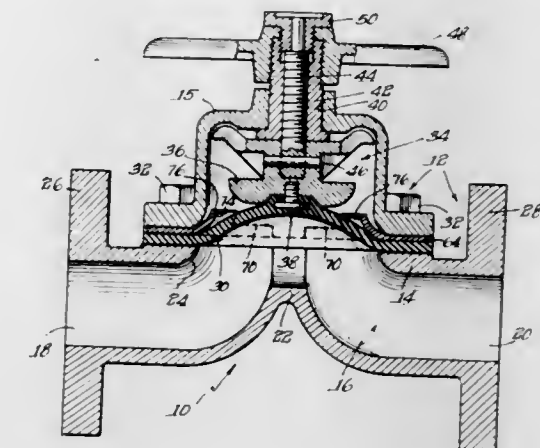
**3,628,770**  
**DIAPHRAGM VALVE CONSTRUCTION**  
Thomas E. Rost, Crystal Lake, Ill., assignor to Hills-McCanna Company, Carpentersville, Ill.  
Filed May 4, 1970, Ser. No. 34,107  
Int. Cl. F16k 7/16

U.S. Cl. 251—331

4 Claims

A diaphragm valve of the general type defined by a valve body having an internal through passage intersected by a weir with a control opening positioned directly above said weir, and a bonnet attached to said body in surrounding relation to said weir with a reciprocal actuator member carried by said bonnet and connected with a flexible diaphragm mounted in overlying relation to said opening. The valve further includes a plate member disposed intermediate said diaphragm and said bonnet, and having a central opening

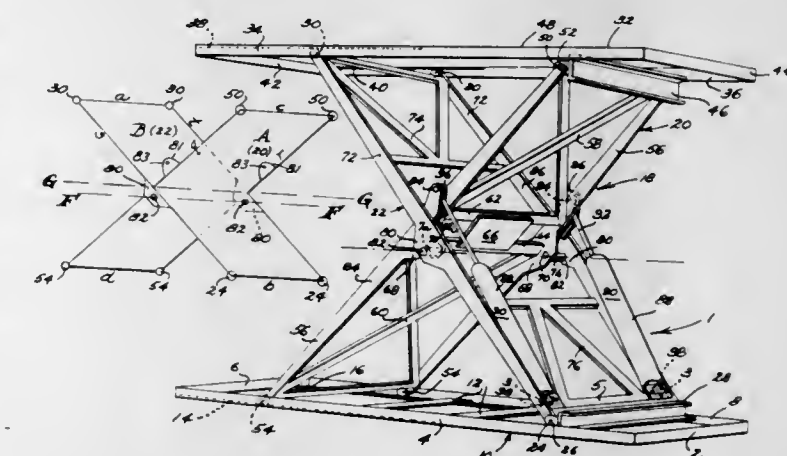
defined by a rigid, outwardly flared edge configuration which provides at least one outwardly facing shoulder. Abutment means cooperable with said shoulder are provided on the actuator, such that upon engagement thereof, inward movement of said actuator precludes overcompression of the



diaphragm against the weir. The flared rigid edge configuration permits the diaphragm to flex outwardly to the open condition and further thereafter under the influence of line pressure without the danger of said diaphragm engaging sharp corners, or the like, capable of damaging same.

**3,628,771**  
**SCISSORS-TYPE LIFTING LINKAGE ELEVATOR**  
Haakon G. Egeland, 7 Seabrook Lane, Stoneybrook, N.Y., and John Dioguardi, 16 Sandy Court, Port Washington, N.Y.  
Continuation-in-part of application Ser. No. 646,393, June 15, 1967, now abandoned. This application July 28, 1969, Ser. No. 20,443  
Int. Cl. B66f 3/22; B66b 11/04  
U.S. Cl. 254—122

5 Claims



An elevator, for example, a commercial aircraft cargo loading elevator, utilizing a scissors-type lifting linkage, wherein the variation of the lifting force required by the lifting actuator means is minimized during the entire lifting cycle by utilizing scissors-type linkage pivot means offset below the planes formed by the two frames and attaching the lifting means above the plane of one of said frames. The use of such offset center pivot means in combination with said scissors-type linkage permits a scissors linkage geometry with minimum variation in lifting actuator force during the entire lifting cycle, and with such a structure a controlled platform translation in the direction transverse to the lifting direction is accomplished.



3,628,772

**LOAD-CARRYING AND POSITIONING HEAD**

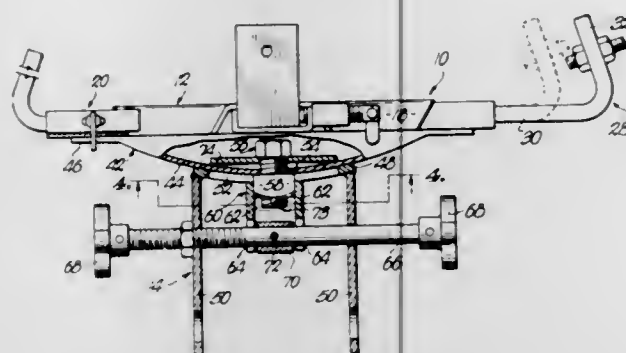
Gilbert W. Gaarder, and Elmont E. Hollingsworth, both of Saint Joseph, Mo., assignors to Gray Manufacturing Company, Inc., Saint Joseph, Mo.

Filed May 1, 1969, Ser. No. 828,071

Int. Cl. B66f 3/00

U.S. Cl. 254-134

4 Claims



A load-carrying and positioning head for use in connection with jacks for handling vehicle transmissions or similar load lifting and handling devices, the head having a platform upon which the load rests, there being a plurality of arms carried by the platform and shiftable with respect thereto and into clamping engagement with the load when it is on the platform, there being chains cooperable with the platform for retaining the load thereon when the platform is tilted. The platform is carried by a mount which is coupled to the jack or the like, and is shiftable into plurality positions, there being a vertical axis coupling the mount and the platform whereby the platform may be rotated about a vertical axis with respect to the mount; there being a leveling link coupled with the mount, the mount having a transverse axis whereby the platform may be rotated about a horizontal axis; and there being a plate having a spherical surface carried by the platform and mating with a dished member, there being means for shifting the plate whereby the platform may be tilted from side to side.

3,628,773  
**CARBURETOR**

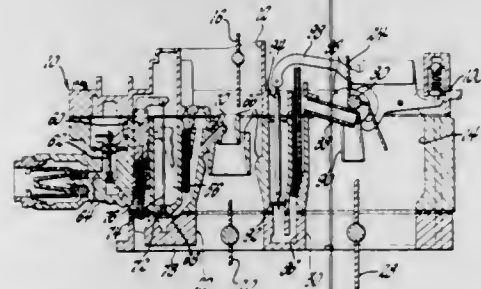
Ellsworth A. Kehoe, Rochester, and Donald D. Stoltman, Henrietta, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Continuation of application Ser. No. 504,961, Oct. 24, 1965, now abandoned. This application Oct. 3, 1968, Ser. No. 784,973

Int. Cl. F02m 7/16

U.S. Cl. 261-23 A

4 Claims



A four barrel, multiple stage carburetor has a pair of small plain tube primary mixture conduits transversely spaced on opposite sides of a small, centrally located fuel bowl and a pair of large air valve secondary mixture conduits transversely spaced across the rear of the fuel bowl.

3,628,774

**FLUIDIC FLUID-METERING SYSTEM**

Janusz S. Sulich, Sothfield, Mich., assignor to The Bendix Corporation

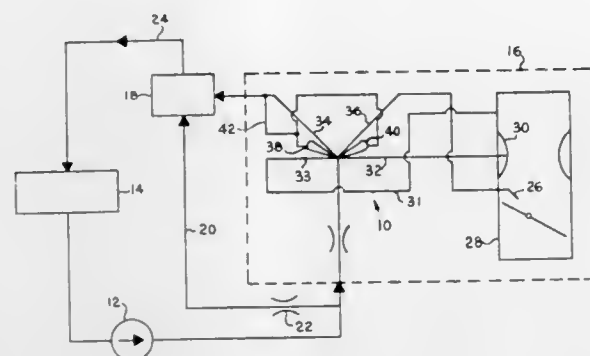
Original application Sept. 15, 1969, Ser. No. 858,021.

Divided and this application Mar. 17, 1971, Ser. No. 125,096

Int. Cl. F02m 7/10

U.S. Cl. 261-36 A

2 Claims



In a fluidic fluid-metering system having a return line, a means is provided of reducing or completely eliminating the back pressure effects of the fluid in the return line of the fluidic portion of the system. The means comprise a jet pump operative to draw excess or unmetered fluid away from the fluidic portion of the system and to provide the fluidic portion of the system with a stable back pressure.

3,628,775

**SEWAGE-TREATING SYSTEM**

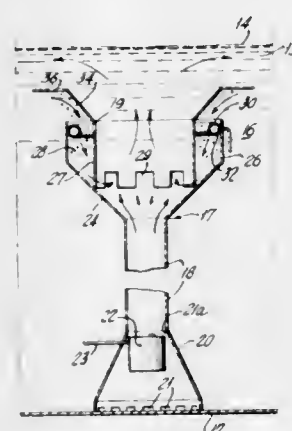
Christopher W. McConnell, Westmount, Quebec, and Robert W. Slater, Nun's Island, Montreal, both of Canada, assignors to Atara Corporation, Montreal, Quebec, Canada

Filed Feb. 14, 1969, Ser. No. 799,434

Int. Cl. B01f 3/04

U.S. Cl. 261-77

10 Claims



A sewage digestion system includes a liquid-submerged vertical stack with top discharge and bottom inlet openings and an upper section of larger cross section than the lower section and provided with peripherally spaced inlet ports. A generator for bubbles preferably of approximately the cross section of the stack lower section registers with the inlet opening. A torus pipe connected to a low-pressure blower surrounds the stack above the inlet ports and an annular wall surrounds the pipe and extends to the stack below the ports, the pipe being between 1 foot and 3 feet below the liquid level. In the alternative the torus is at about the level of the stack discharge opening and the inlet ports are omitted.

3,628,776

**COOLING TOWER FILL ASSEMBLY**

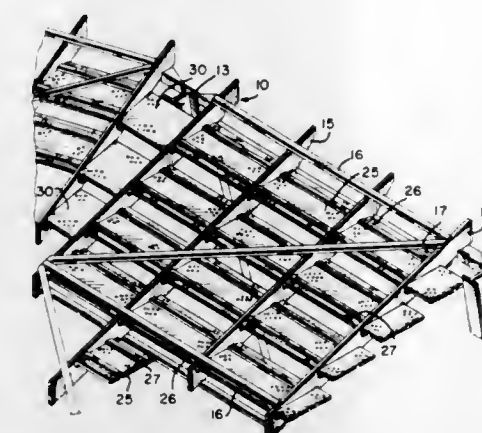
LeRoy J. Raseley, Saylorsburg, Pa., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,680

Int. Cl. B01f 3/04

U.S. Cl. 261-113

10 Claims



A fill assembly for a cooling tower which includes a plurality of parallel, spaced-apart, superimposed support members on which are mounted a plurality of trays. The support members are at an angle but each of the trays are mounted so that they are generally horizontal. The trays are provided with holes therethrough to permit water to gravitate through the fill assembly. Air flows through the fill assembly between the trays to cool the water.

3,628,777

**SAMPLING DEVICE FOR MULTIPLE HEARTH FURNACE**

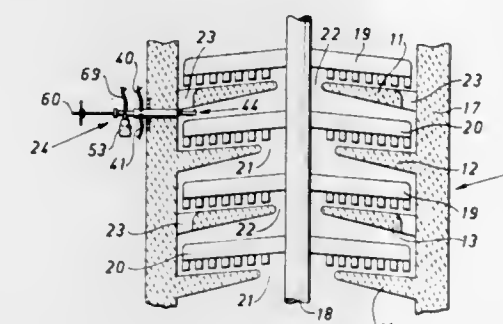
William J. Lavender, Edmonton, Alberta, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Aug. 4, 1970, Ser. No. 60,784

Int. Cl. F27b 1/10

U.S. Cl. 263-26

9 Claims



A sampling device for removing a sample of a particulate solid material falling within a vessel and especially suited for use in obtaining a sample of a particulate material falling between the hearths of a multiple-hearth furnace includes an elongated cylindrical tubular member which extends through a wall of the vessel or furnace. The inner end of the tubular member is formed as an upwardly open and open-ended section disposed within the vessel or furnace to collect particulate solid material falling therein. A ram plate can be moved through the tubular member by means of a connecting rod projecting from the outer end of the sampling device and, on inward movement of the ram plate, material collected in a channel section of the device is pushed out of the open inner end of that section. On outward movement of the ram plate, the particulate material collected in the channel section is pushed outwardly by the ram plate through the tubular member for discharge therefrom into a sample-receiving container.

893 O.G.—36

3,628,778

**INNER COVER AND METHOD OF MAKING THE SAME**

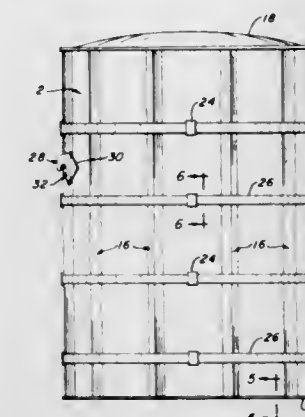
Frank Kennedy, Johnstown, Pa., assignor to United States Steel Corporation

Filed Apr. 2, 1970, Ser. No. 25,059

Int. Cl. F27d 5/00

U.S. Cl. 263-49 R

8 Claims



An annealing inner cover is formed of a plurality of arcuate plates having outwardly flared flanges along their vertical edges. The plates are connected by welds along adjacent vertical edges to form a circular shell having a plurality of spaced triangular projections formed by the flanges. A plurality of steel bands encircle the shell at several locations and bear against the apices of the projections. The bands are held in place by U-shaped clips having the ends of their legs welded to the shell. A dome or roof is welded to the top of the shell. All welds are gastight.

3,628,779

**FURNACE FOR HEAT-TREATING OBJECTS UNDER HIGH PRESSURE**

Hans Lundstrom, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

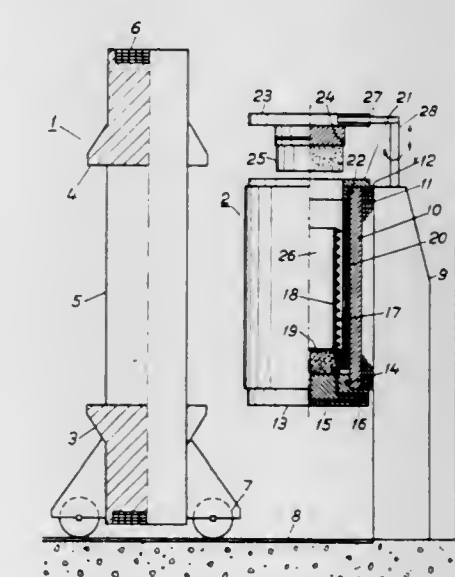
Filed Oct. 16, 1969, Ser. No. 866,887

Claims priority, application Sweden, Oct. 24, 1968, 14367/68

Int. Cl. C21d 1/00

U.S. Cl. 266-5 E

3 Claims



A vertical furnace includes a press stand and a cylindrical pressure chamber suspended in the press stand. The pressure chamber includes a high-pressure cylinder and end members. The high-pressure cylinder includes a furnace chamber provided with insulation between the pressure cylinder and the walls of the pressure chamber. This insulation is a cylindrical sheath which depends from an end member fixed in one end of the high-pressure cylinder. The end closures include insulating bodies which extend into the furnace member.



3,628,780

## SEAT FRAME STRUCTURE

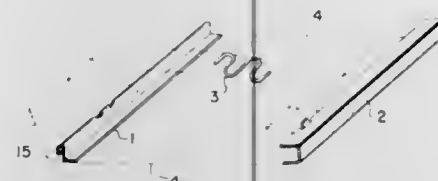
Nobuyoshi Saito, 1975 Haijima-cho, Akishima-shi, Tokyo, Japan

Filed July 17, 1969, Ser. No. 842,614

Claims priority, application Japan, July 30, 1968, Nov. 9, 1968, 43/64718, 43/81620  
Int. Cl. F16f 3/00

U.S. Cl. 267-110

5 Claims



A seat frame structure composed of sinuous spring and a frame therefor comprising at least two opposed frame members. One of said frame members is of generally L-shaped cross section, one arm of the L having a turned over part with at least two openings for restraining an end of a sinuous spring. The other opposing frame member has at least one formation for stopping the other end of the sinuous spring the one end of which has been already fixed.

3,628,781

## COMPOUND TINE FOR TUNING FORK OR THE LIKE

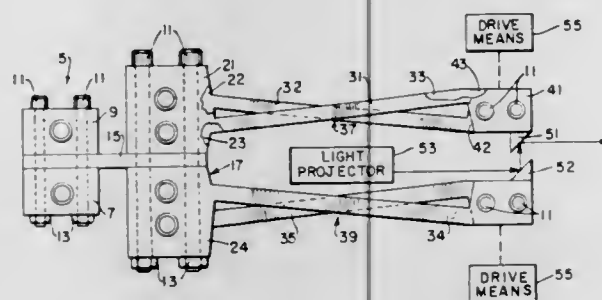
Boris F. Grib, Huntington, N.Y., assignor to Philamon Incorporated, Westbury, N.Y.

Filed Oct. 3, 1969, Ser. No. 863,647

Int. Cl. F16f 1/16

U.S. Cl. 267-154

6 Claims



A light modulator structure employs a cross compound tine tuning fork structure arranged to produce the effect that the ends of the tines have exaggerated rotational motion with respect to each other and this motion is exploited by mirrors secured to the ends of tines to scan over a relatively wide angle a light beam projected to reflect successively from the two mirrors. A similar compound structure is incorporated in a simple scale having no frictionally moving parts. The scale compound cantilever is parallel rather than crossed and substantially eliminates scale pan rotation.

3,628,782

## ADJUSTING AND CALIBRATING OF PRESSURE SWITCHES

Erich Kothe, Schiller Park, Ill., assignor to Controls Company of America, Melrose Park, Ill.

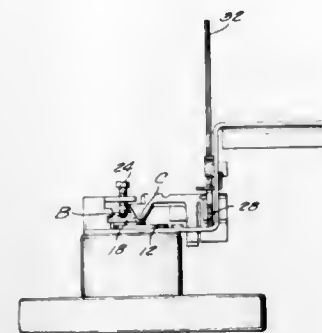
Filed Dec. 1, 1969, Ser. No. 881,207

Int. Cl. F16f 1/18

U.S. Cl. 267-158

5 Claims

The force or degree of compression of the spring is adjusted by rocking the lever about its axis A-B by means of the manually operated cam acting on the lever at D. Calibration is effected by adjusting the screw at B to rock the lever about axis A-D. Any tool forces applied to the adjusting



screw during adjustment cannot be transmitted to the spring to adversely affect calibration.

3,628,783

## CLAMPS

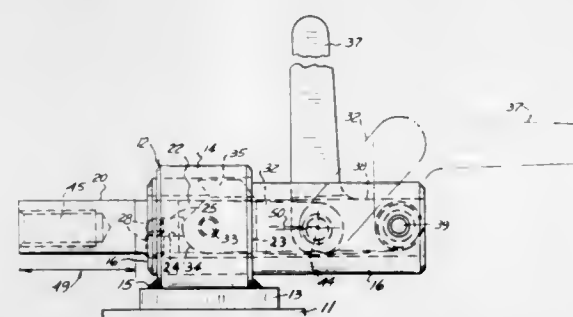
Leland F. Blatt, Grosse Pointe, and William R. Schreiber, Detroit, both of Mich., assignors to Leland F. Blatt, Warren, Mich.

Filed Oct. 29, 1969, Ser. No. 872,212

Int. Cl. B23q 3/00; B25b 1/14

U.S. Cl. 269-91

6 Claims



A push clamp for anchoring a workpiece against a support which includes a slotted body having a bore secured within a base assembly on said support, a plunger reciprocal in said body, a cantilever handle pivoted on the body and a link pivotally interconnecting the handle and plunger, pivotal connections being such that the handle may lock in both forward and retracted positions. The disclosure also includes a frictional lock movably mounted on said plunger operatively engageable by a cam on said link for locking the plunger in forward thrust or retracted positions and for preventing wobble of the plunger.

3,628,784

## FLEXIBLE FEED MEMBER FOR CARD-FOLDING APPARATUS

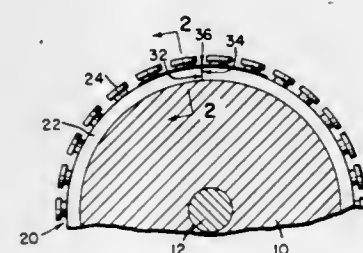
Francis E. Kohus, Cincinnati, Ohio, assignor to Clarence S. Betz, Cincinnati, Ohio, a part interest

Filed Sept. 22, 1969, Ser. No. 859,745

Int. Cl. B65h 3/06

U.S. Cl. 270-61

14 Claims



A flexible feed member is formed with suction cups thereon along its entire outer surface for engaging paper

3,628,787

## STACKING DEVICE

Gerard J. C. Boeve, Edegem, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 6, 1970, Ser. No. 17,090

Claims priority, application Netherlands, Mar. 6, 1969, 6903502

Int. Cl. B65h 29/14

U.S. Cl. 271-68

14 Claims



A stacking device is described for stacking articles diverted from a first conveyor in a predetermined location into a parallel stacking position. The device includes a second conveyor mounted between the predetermined location and the input of the stacking position. The second conveyor is pivoted about its input and near the predetermined location, such that the second conveyor is angularly displaced as a function of the thickness of a stack of articles accumulated in the stacking position. The effective path length of the second conveyor is also varied as a function of the angle it makes with the first conveyor.

3,628,785

## GRIP FORCE DETECTION APPARATUS

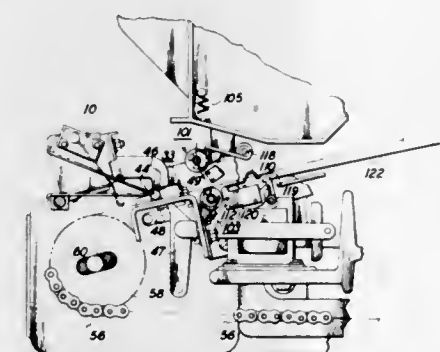
Edward J. Lavander, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,456

Int. Cl. B65h 5/08, 29/04

U.S. Cl. 271-46

4 Claims



A grip force detection apparatus for a sheet transport having a gripping mechanism for transporting sheet material past xerographic processing stations. The grip force detection apparatus is arranged to pull sheet material away from the moving gripping mechanism if not properly gripped to effect safe delivery of the sheet material at a feed out station.

3,628,786

## DOCUMENT HANDLING APPARATUS

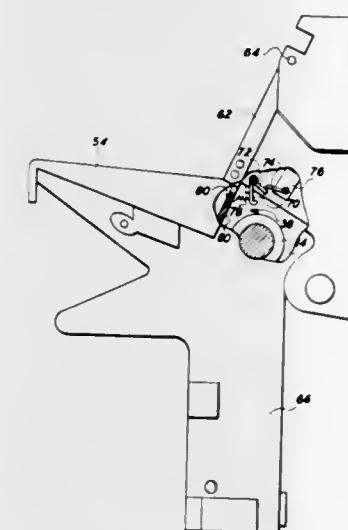
Thomas O. Maloney, Webster, and Donald L. Pease, Marion, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,458

Int. Cl. B65h 7/06

U.S. Cl. 271-57

2 Claims



Xerographic-reproducing apparatus including a front face having a fixed housing portion and a pivotal housing portion. The pivotal portion has an aperture for receiving the leading edge of a document to be copied. Adjacent the aperture is a bar extending the length thereof, whereby objects other than a flat document will pivot the bar to inactivate the machine. Movement of the pivotal portion gives an operator access to the document-handling apparatus interior of the machine for the clearing of jams.

3,628,788

## JAM DETECTION DEVICE FOR DOCUMENT STACKING

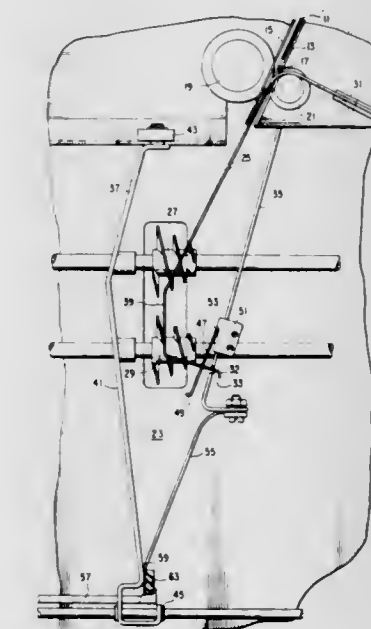
William L. Simmons, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 19, 1970, Ser. No. 3,936

Int. Cl. B65h 31/06

U.S. Cl. 271-87

7 Claims



A stacking device capable of receiving documents, such as checks or standard data processing cards, and more specifically a sensor for detecting a jam of documents during a stacking operation. The sensor, which may be a leaf spring, extends outwardly from behind a kicker spring for propelling documents broadside on the fly onto a stack, into an area ad-



jacent the normally stable position of the face of the accumulating stack. A crumpled document or an advance in the face of the stack will activate the sensor.

3,628,789

# ULTRASONIC OBJECT-SUPPORTING SYSTEM IN A SKI-SLOPE OR THE LIKE

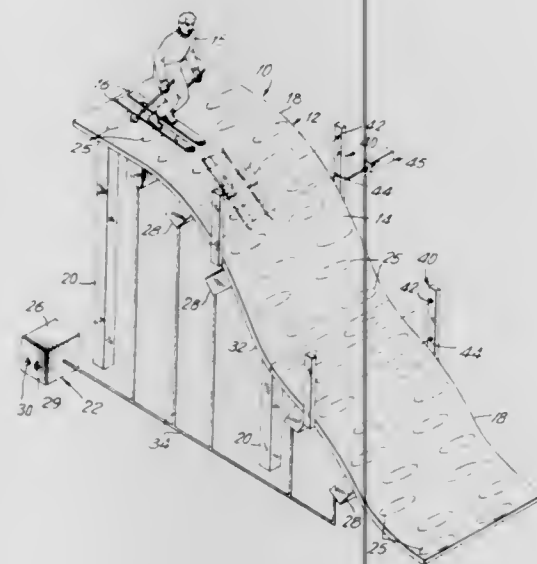
Leonard W. Suroff, Jericho, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,451

Int. Cl. A63g 21/14

U.S. Cl. 272—56.5 SS

11 Claims



An object-supporting system in the form of a ski support surface adapted to transmit ultrasonic mechanical vibrations so as to quantitatively reduce the frictional sliding engagement between the skis of the skier and the ski support surface.

3,628,790

# GYMNAST TRAINER CUSHIONS

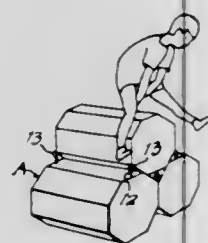
Donald W. Gordon, 10323 E. Rush St., Villa Park, Calif.

Filed Nov. 10, 1969, Ser. No. 875,199

Int. Cl. A63b 5/18

U.S. Cl. 272—64

7 Claims



A set of polyhedral cushioning bodies including several of regular polygonal cross section having means for attaching them together in stacked relation, and one of wedge shape, cooperable with the others as a landing mat for training dive rolls. The individual units of regular cross section are useful for training in dive-rolls, handsprings, hand-vaulting, log-rolling and the like.

## 3,628,791 PIVOTED JOGGING PLATFORM WITH ADJUSTABLE SPRING-RESISTANCE

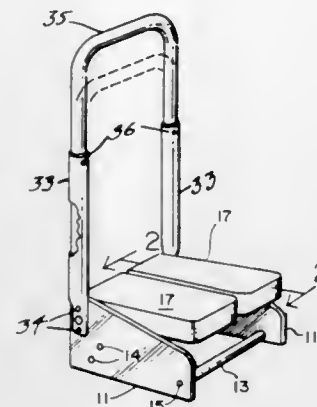
Ricardo Garcia, 1045 W. 27th St., Hialeah, Fla.

Filed Aug. 3, 1970, Ser. No. 60,440

Int. Cl. A63b 23/04

U.S. Cl. 272—83 R

3 Claims



A jogging device having a pair of foot pedals or platforms pivoted at one end and each of whose other ends is supported by coil spring mechanism consisting of a compression spring mounted about a tubular member and a pin telescopically mounted to permit relative slidable movement of the tubular member and pin when a person is jogging on the device. The spring mechanism is pivoted at its upper portion to the foot pedals and the lower portion is received in one of a plurality of notches formed in an arcuate rack. The rack is so positioned with relation to the spring mechanism that mere selection of the notch to receive and support the lower end portion of the spring mechanism permits persons of different weights to use my jogging device without changing the horizontal position of the platforms.

3,628,792

# GAME APPARATUS INVOLVING MAGNETIZED SELECTION OF GAME PIECES

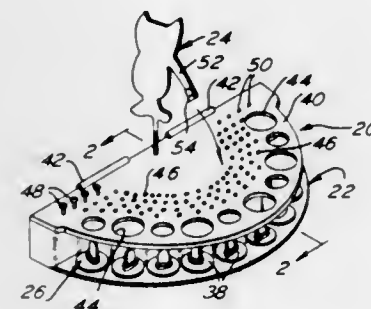
Phyllis Frederick, Plainfield, N.J., and Charles R. Zimmerman, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 26, 1970, Ser. No. 14,602

Int. Cl. A63f 9/00

U.S. Cl. 273—1 M

7 Claims



A game apparatus which comprises a support member which simulates a large slab of Swiss cheese, a body which simulates the figure of a cat which is resiliently and pivotably mounted to the support member and a plurality of game pieces, each of which is representative of either a mouse or a mouse trap. The game apparatus is used as a guessing game between two, three or four players. The apparatus includes a magnet in the arm of the cat simulated body and magnetizable playing pieces which enable a novel interaction between

the cat and the mice which are hidden in openings provided within the cheese-simulating support member.

3,628,793

# SANDBAG AND TARGET APPARATUS IN WHICH THE TARGET ALSO SERVES AS A CARRYING CASE

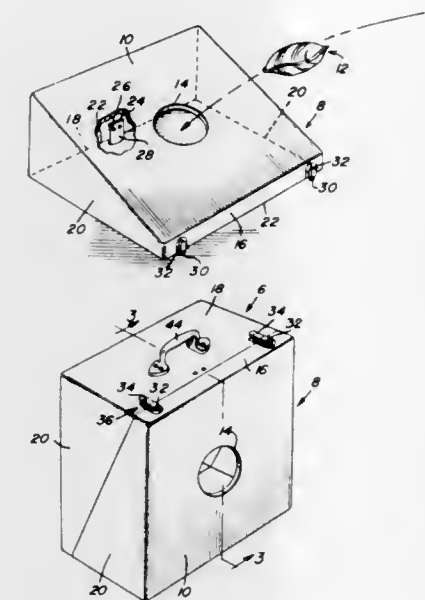
Richard M. Mudloff, 6921 Vaughan St., Detroit, Mich.

Filed Mar. 11, 1970, Ser. No. 18,559

Int. Cl. A63b 63/00

U.S. Cl. 273—105 R

3 Claims



An indoors or outdoors sandbag tossing and point-scoring game device characterized by a pair of like wedge-shaped half-sections which when assembled and latched, provide a carrying and transporting case. When unfastened and parted these sections can be used, individually or collectively, as sandbag-trapping targets. In use, each half-section provides an inclined surface and has a centralized sandbag-receiving hole.

3,628,794

# SPORTING EQUIPMENT FOR PLAYING GAME CALLED TOE TOSS

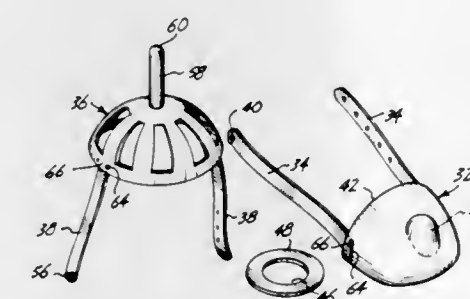
Richard P. Conture, 1715 S. Washington St., Tacoma, Wash.

Filed Aug. 5, 1968, Ser. No. 750,336

Int. Cl. A63b 67/06

U.S. Cl. 273—100

1 Claim



Sporting equipment is provided for the skilled aerial transfer of a formed object from a confinement overlay adapted to securement on one's foot, to a receiving overlay adapted to securement on one's head, as one's foot is swung in a kicking motion.

3,628,795

# INTELLIGIBLE INFORMATION FORMING OR SUGGESTING DEVICE

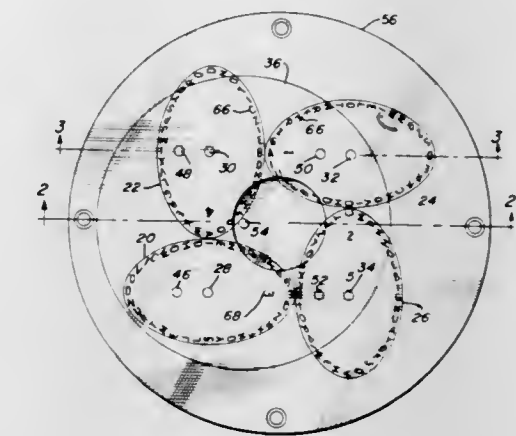
Milton S. Hopkins, Newhall, Calif., assignor to Walter Milton Hopkins; Eileen Carlock Hopkins; Lorin Roy Gillogly and Gwendolyn Maybeth Gillogly, part interest to each

Filed Apr. 30, 1970, Ser. No. 33,285

Int. Cl. A63f 9/00

U.S. Cl. 273—161

4 Claims



A game device having four adjacently positioned coplanar modified elliptical rotors with indicia imprinted around the edges of each rotor. Linked crank means are provided for simultaneously rotating the rotors in a manner resulting in relative rolling. In any stationary position, the edgewise proximate indicia on adjacent rotors are combined to suggest intelligible information and/or to arouse related associated mental ideas, thoughts and memories.

3,628,796

# APPARATUS FOR SHIFTING MAGNETIC HEAD IN MULTITRACK TAPE PLAYER

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

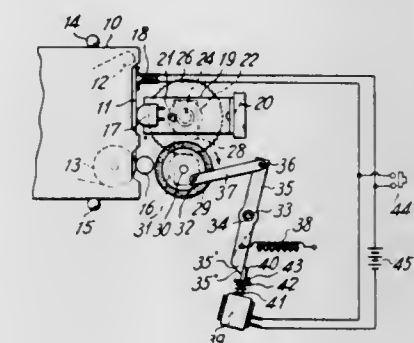
Filed Feb. 17, 1970, Ser. No. 12,018

Claims priority, application Japan, Feb. 20, 1969, 44/14295

Int. Cl. G11b 5/00, 15/00

U.S. Cl. 274—4 A

6 Claims



An apparatus for shifting magnetic head in multitrack tape player comprising a displaceable support member coupled to the magnetic head for positioning it with respect to a plurality of discrete and separate record tracks on the tape, cam means coactable with the support member for controlling displacement of the magnetic head to play the record tracks, driving means for rotating the cam means in single steps to position the magnetic head to successive record track positions, and control means for controlling operation of the driving means. The driving means includes a frictional idler wheel which is provided on a swingable swing lever and is



caused to be rotatably driven by a capstan for drivingly feeding the tape, and a mechanism rotating the cam means gradually at a predetermined angle when the wheel rotates around its axis. The control means causes the swing lever to automatically swing, upon one rotation of the frictional idler wheel, to a position where the wheel does not receive the rotational force of the capstan. And, in response to the record track switching signal, the control means allows the swing lever to swing to a position where the wheel is rotatably driven by the capstan.

3,628,797

## TAPE-CARTRIDGE-POSITIONING APPARATUS

Itsuki Ban, 829, Higashi-Oizumachi, Nerima-ku, Tokyo, Japan

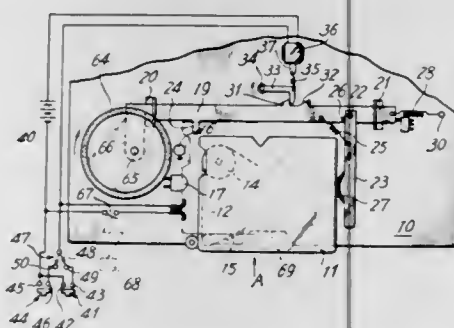
Filed May 19, 1970, Ser. No. 38,704

Claims priority, application Japan, May 21, 1969, May 21, 1968, 44/38718; 44/38719

Int. Cl. G11b 5/00

U.S. Cl. 274-4 B

9 Claims



A tape-cartridge-positioning apparatus for an endless magnetic tape cartridge player, comprising a cartridge moving lever engageable with a tape cartridge laterally insertable into a player housing for moving the cartridge from a non-play position into a play position and back into the nonplay position, a tension spring biasing the cartridge moving lever in the direction where the cartridge is moved from the play position to the nonplay position, a stopper means retaining the cartridge moving lever in a predetermined first position or second position against the bias of the tension spring, a control means for controlling operation of the stopper means, and a lever moving means for moving the lever into the second position against the bias of the tension spring by use of rotational force of a capstan for running the tape in response to disengagement of the stopper means from the cartridge moving lever in the first position whereby the cartridge is moved from the nonplay position to the play position when the cartridge moving lever is moved to the second position whereas the cartridge is held in the play position and played during the time that the lever is retained by the stopper means in the second position.

3,628,798

## RADIALLY COMPRESSED SHAFT SEALING DEVICE

John F. Mehlhope, Detroit, Mich., assignor to M P Pumps, Inc., Detroit, Mich.

Filed May 8, 1969, Ser. No. 823,039

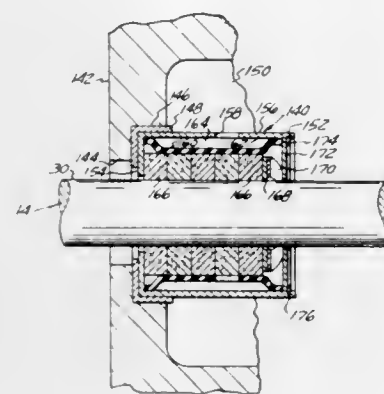
Int. Cl. F16j 15/46

U.S. Cl. 277-34

1 Claim

This shaft seal is adapted to be installed in the shaft bore of the housing or frame of the machine, such as a pump, of which the shaft is to be sealed. In its simplest form (FIG. 1) it consists of an annular elastomeric diaphragm sleeve disposed coaxial with but spaced radially away from the shaft to be sealed and having its opposite ends bonded or otherwise secured to the bore wall with pressure-tight connections, the annular compartment between the diaphragm sleeve and the shaft being occupied by a packing consisting of compressible packing rings or gaskets. The bore wall has ports which, in the case of a pump, communicate with the discharge side thereof to receive pressure fluid therefrom. In a second form

(FIG. 2), the port is connected to a conduit leading to an external source of pressure fluid. In a third form (FIG. 3), the bore contains a hollow annular expansible member, such as an elastomeric bladder, connected by a conduit to an external source of pressure fluid. In a fourth form (FIG. 4), the diaphragm sleeve is secured at its opposite ends to the shaft bore by expansible snap rings engaging axially spaced annular grooves in the shaft bore wall. In a fifth form (FIG. 5), the diaphragm sleeve is bonded or otherwise secured at its op-



posite ends to the inside of the opposite ends of a flanged cylindrical cartridge whereby to constitute a replaceable shaft seal. In any of the five forms of the invention, the pressure fluid acting on the annular diaphragm sleeve (FIGS. 1, 2, 4 and 5) of on the inner wall of the bladder (FIG. 3) acting as a diaphragm sleeve produces a direct radial force which directly compresses the packing rings in a purely radial direction against the shaft without substantially compressing them in an axial direction.

3,628,799

## MECHANICAL SEAL ASSEMBLY WITH LEAKAGE CONTROL

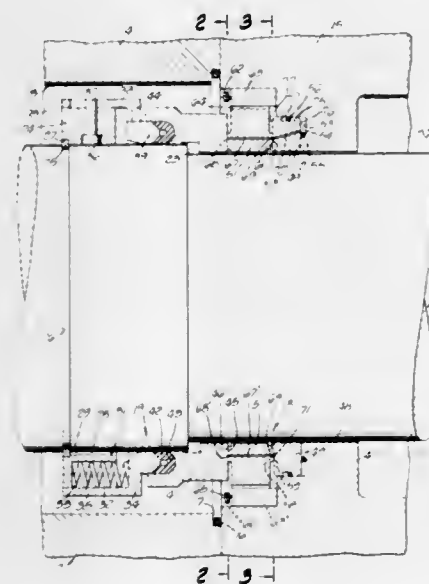
Winfred J. Wiese, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 19, 1970, Ser. No. 3,836

Int. Cl. F16j 15/40, 15/44

U.S. Cl. 277-27

5 Claims



A mechanical seal assembly having a rotary sealing ring and a nonrotatable sealing ring carried by a housing flange, including fluid-pressure-responsive means for compensating for flange distortion to thereby control warpage of the sealing surface of the nonrotatable sealing ring to regulate leakage between the cooperating sealing surfaces of the sealing rings.

3,628,800

## COMBINATION CIRCUMFERENTIAL EXPANSION AND SPRING FINGER OIL CONTROL PISTON RING

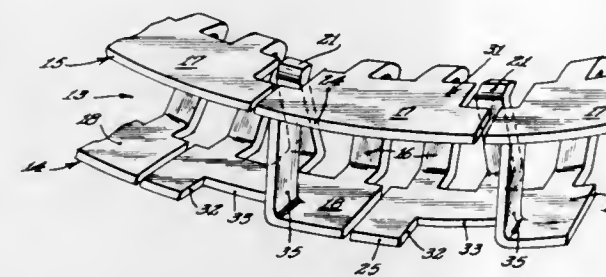
Herbert F. Prasse, Town and Country, Mo., assignor to Ramsey Corporation, St. Louis, Mo.

Filed May 6, 1970, Ser. No. 35,000

Int. Cl. F16j 9/20

U.S. Cl. 277-140

12 Claims



A two component oil control piston ring accommodating wide tolerances in the dimensions of the components and having three-ring contact with the piston cylinder preventing cocking or tilting while increasing sealing efficiency. One of the components is a conventional thin rail ring and the other component is a spacer-expander ring carrying the rail ring and having two axially spaced cylinder-wall-engaging rings or scraping edges and upstanding spring fingers engaging the inner periphery of the rail ring. The spring fingers act independently of the contraction and expansion of the spacer-expander so that the peripheries of both rings may sealingly engage the cylinder wall regardless of radial depth variations of the rail ring.

3,628,801

## TOY ANIMAL TRICYCLE

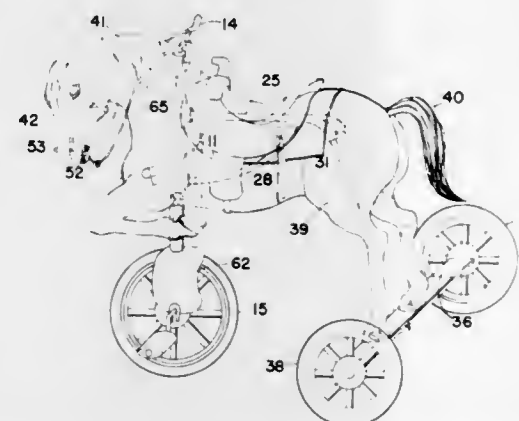
Anne Lambrecht, Box 88, Ceylon, Saskatchewan, Canada

Filed Apr. 20, 1970, Ser. No. 29,952

Int. Cl. A63g 17/00

U.S. Cl. 280-1.202

4 Claims



An animal such as a horse is moulded over a frame which has a pair of rear wheels and a steerable front wheel. Turning the handle bars pulls on the reins and turns the head together with the front wheel.

3,628,802

## FIBER REINFORCED PLASTIC SKI AND METHOD OF MAKING THE SAME

Osamu Hashimoto, and Nobuyuki Kawai, both of Hamamatsu-shi, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Nov. 17, 1969, Ser. No. 877,284

Claims priority, application Japan, Nov. 21, 1968, 43/85489

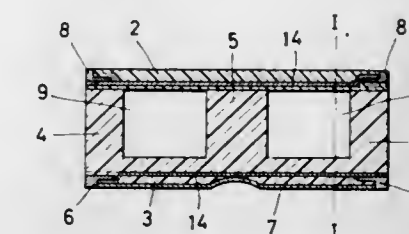
Int. Cl. A63c 5/12

U.S. Cl. 280-11.13 L

6 Claims

A fiber-reinforced plastic ski comprising a body and an upper plate joined to form inside cavities, said body being

constructed by integrally molding a baseplate of laminated FRP materials, right and left side members of the same material, at least one reinforcing rib of the same materials



rising from the baseplate and having the same height as said side members, running edges located on the lower surface of the baseplate at both sides thereof and a running surface member interposed between running edges on the lower surface of the baseplate, and said upper plate consisting of laminated FRP materials and having top edges embedded in its upper surface at both sides thereof.

3,628,803

## RESILIENT LOCKING DEVICE FOR SECURITY SKI BINDINGS

Georges P. J. Salomon, 34, Avenue de Larery, Annecy, Haute-Savoie, France

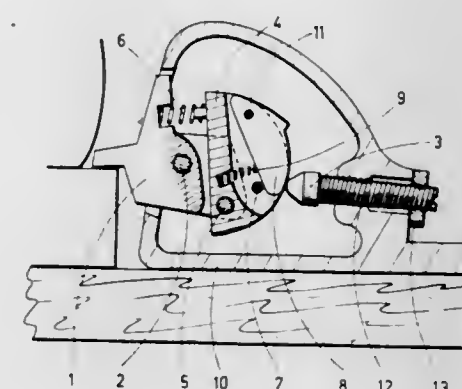
Filed Sept. 2, 1969, Ser. No. 854,367

Claims priority, application France, Sept. 6, 1968, 1068-74

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

9 Claims



Resilient locking device front or rear security ski bindings in which means are provided to retain the sole of the boot against the force produced by an inclined position of the skier during the resilient cycle preceding releasing of the security bindings, which comprises means for decreasing said force while increasing a possible vertical stroke of the sole of the boot.

3,628,804

## SNOW SURFBOARD

Ronald Carreiro, 173 Bay St., Taunton, Mass.

Filed Oct. 9, 1969, Ser. No. 865,064

Int. Cl. B62b 13/00

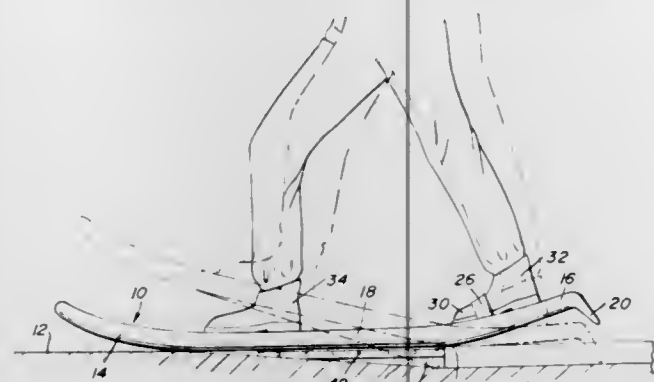
U.S. Cl. 280-18

7 Claims

An elongated horizontal board for standing upon with both feet and of a length approximately five to six times the length of the average shoe and of a width approximately two to three times the length of an average shoe. The forward end of the board is rounded in plan shape and slightly upwardly curved and the rear opposite side marginal edge portions of the board are slightly rearwardly convergent. The rear end quarter of the board is inclined approximately 20° rearwardly and includes at least one depending brake member engageable with a surface over which the board is moving when the board is excessively rocked backward over a fulcrum area thereof defined at the juncture of the rear end



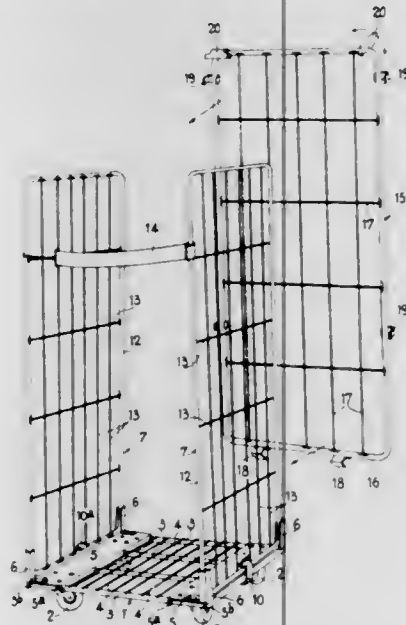
quarter and forward portion of the board. When the board is rocked moderately rearwardly over the fulcrum area lateral foot pressure in opposite directions in opposite sides of the



fulcrum area may be utilized to angularly displace the board about an upstanding axis passing through the fulcrum area for steering purposes.

### 3,628,805 HANDLING TRUCK

Jean Archer, Valentigney, France, assignor to Cycles Peugeot, Beaulieu-Valentigney, France  
Filed Apr. 22, 1970, Ser. No. 30,718  
Claims priority, application France, Apr. 30, 1969, 6913855  
Int. Cl. B60p 9/00  
U.S. Cl. 280—33.99 T 6 Claims



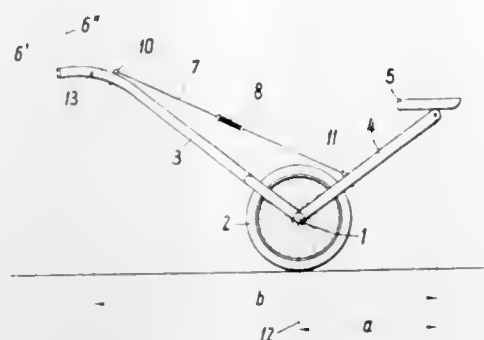
Handling truck having a platform including two U-section side members constituting two sides of the platform. Two U-section supports are mounted on each side member and arranged in facing relation to each other so as to receive vertical grills in the recesses defined by the flanges of the U-section supports. Several similar truck platforms can be stacked on each other by engagement of outer flanges of their U-section side members in the recesses of the U-section supports of another handling truck platform.

### 3,628,806 SULKY

Walter Weber, 25/11 Clemensstrasse, Munich, and Herbert Templin, Heiligendorf near Wolfsburg, both of Germany  
Original application May 19, 1967, Ser. No. 639,894, now Patent No. 3,503,624, dated Mar. 31, 1970. Divided and this application Oct. 29, 1969, Ser. No. 871,338  
Int. Cl. B62d 27/04  
U.S. Cl. 280—63 8 Claims

A sulky normally does not provide for variations in weight between different riders, and this is achieved in the invention

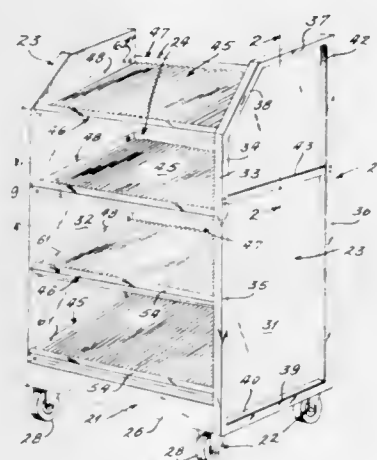
by using struts between the frame and the axles which are pivotably adjustable so as to vary the angle between them.



A modification of the invention provides for a single strut between the frame and each axle, the said strut being pivotable and held in position by bracing members. Shock-absorbing means are also provided.

### 3,628,807 MOBILE MERCHANDISER CART

William H. Fullington, Ballwin, and Melvin O. Maisak, Florissant, both of Mo., assignors to Pet Incorporated, St. Louis, Mo.  
Filed June 23, 1969, Ser. No. 835,455  
Int. Cl. B62b 5/00  
U.S. Cl. 280—79.3 13 Claims



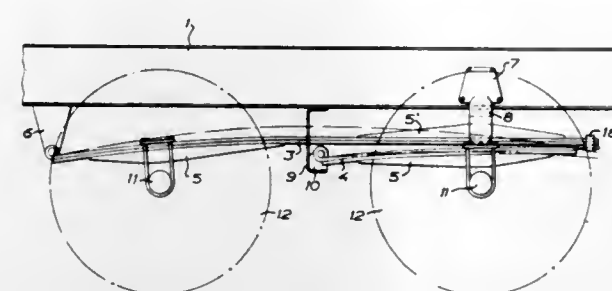
A mobile merchandiser cart for the transportation, storage and display of food and beverage products from the production source to the retail consumer, the cart having a plurality of sloping shelves provided with antifriction surfaces. In addition, the cart may have offset wheel means and cantilevered shelves on supporting end panels constructed and arranged to provide nesting of the carts when empty.

### 3,628,808 BOGIE STRUCTURES, PARTICULARLY FOR LAND VEHICLES

Steffen Mohl, Skodsborg Park 58, Skodsborg, Denmark  
Filed May 1, 1969, Ser. No. 820,821  
Claims priority, application Sweden, May 8, 1968, 6169/68  
Int. Cl. B01g 19/00  
U.S. Cl. 280—104.5 1 Claim

In a bogie structure the wheel axles are carried by leaf springs secured to the bogie frame, and one or more leaf springs extend throughout the length of the bogie and have

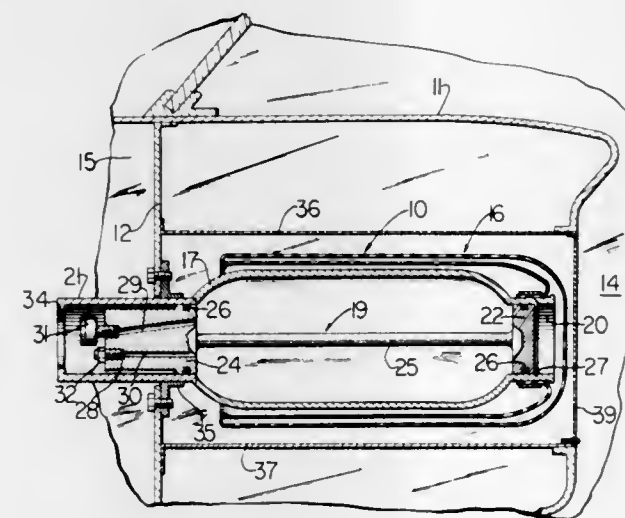
their end portions laterally nonrotatably mounted in supports engages one end of the coil spring and is slidable on the provided on the bogie frame, while the end portion of one shock absorber. The seat also forms a part of an expansible



leaf spring is movable in its support longitudinally of the bogie.

### 3,628,809 PASSENGER SAFETY APPARATUS FOR VEHICLES

John Cirillo, Nutley, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.  
Filed Oct. 1, 1969, Ser. No. 862,687  
Int. Cl. B60r 21/08  
U.S. Cl. 280—150 AB 13 Claims

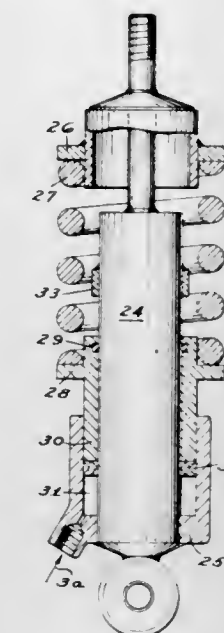


Apparatus for protecting an occupant of a vehicle during a collision by inflating a bag to cushion and restrain the occupant. The pressure vessel for inflating the bag is provided with an outlet opening connected to the bag and an open-ended tubular section aligned with the outlet opening. A valve member is positioned in the outlet opening and a piston positioned in the tubular section is connected to the valve member to balance the greater portion of the pressure force acting on the valve member. The piston carries a mass to move the valve member and open the outlet in response to a predetermined rate of change of speed. The tubular section of the container is adapted to extend into the engine compartment of the vehicle and the piston carries a pressure gauge and a valved fill port so that the container can be serviced from the engine compartment.

### 3,628,810 LEVEL ADJUSTMENT FOR MOTOR VEHICLES

Kurt Graef, Cologne, Germany, assignor to Ford Motor Company, Dearborn, Mich.  
Continuation of application Ser. No. 762,002, Sept. 24, 1968, now abandoned. This application July 29, 1970, Ser. No. 64,108  
Int. Cl. B60g 3/00  
U.S. Cl. 280—124 13 Claims

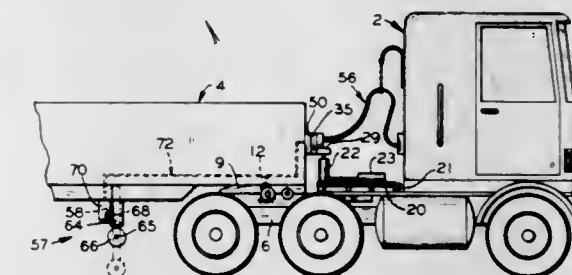
A leveling system for maintaining a motor vehicle body at an established height above the ground including a shock absorber with a concentric coil spring. An annular spring seat



chamber that may be pressurized to increase the load on the coil spring and compensate for a change in vehicle loading.

### 3,628,811 AUTOMATIC COUPLING DEVICE

Melvin Rivers, Toledo, Ohio, assignor to Magnatronic Controls, Inc., Toledo, Ohio  
Filed Oct. 22, 1969, Ser. No. 868,307  
Int. Cl. B60d 1/08  
U.S. Cl. 280—421 9 Claims



A mechanism for use on a tractor-trailer rig for automatically connecting and disconnecting the tractor-trailer service lines and the kingpin of a trailer to and from the fifth wheel of a tractor, and specifically the invention incorporates a system based on mutually attracting magnetic plates for automatically connecting and disconnecting the auxiliary service line connections, and incorporated therewith is a rotatable plate member serving to hold one of the magnetic plate members and also serving as a rotatable base for such magnetic plate member so that it can be aligned with the other magnetic plate member whenever the tractor and trailer are not aligned properly; and further included in this invention is an automatic system for raising and lowering the dolly wheels on the trailer as an integral part of the operation of the system.

### 3,628,812 REMOVABLE PIPE CONNECTOR

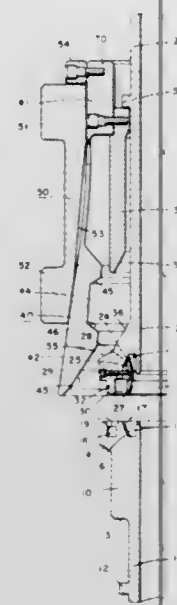
Edward Larralde, Santa Barbara; Ronald A. Weber, Ojai; James W. E. Hanes, Ventura, and Thomas W. Childers, Woodland Hills, all of Calif., assignors to Esso Production Research Company  
Filed Dec. 1, 1969, Ser. No. 881,022  
Int. Cl. F16l 35/00  
U.S. Cl. 285—24 23 Claims

A connector for joining the ends of two pipes or flow lines. A hub member is connected to the end of each pipe.



Each hub member has sealing surfaces which effect a closure between the mated hub members. A plurality of expandable contractible hub-locking fingers are slidably arranged on one

device utilizing only one hand and replaced by a similar member providing inlet and outlet connections for the hemodialysis operation.



of the pipes to engage the hub members and lock them together. A slidable sleeve is arranged about the locking fingers to engage and collapse them in such a manner as to cause the hubs to mate to effect a closure for fluids contained under pressure in the pipes without leakage. The locking fingers hold the hub members in a sealed position until the locking fingers are driven to an unlocked position. The locking fingers act as a guide to align the hubs when drawn together so as to readily effect a sealed closure between the pipes. Means is provided for supplying a test fluid under pressure to the closure to allow testing thereof for pressure integrity prior to applying flowline pressures.

3,628,813

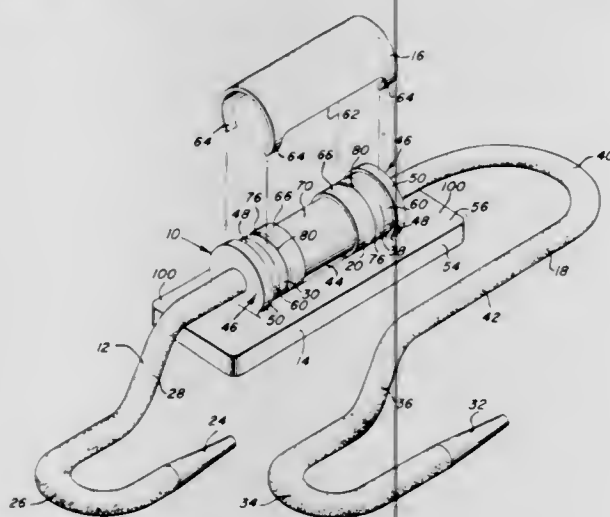
## FLUID CONNECTING DEVICE

Henry L. Lee, Jr., 745 Sierra Madre Blvd., San Marino, Calif., and Gordon W. Culp, 12802 Collins St., North Hollywood, Calif.

Filed June 9, 1970, Ser. No. 44,849  
Int. Cl. F161 31/00; A61m 05/00

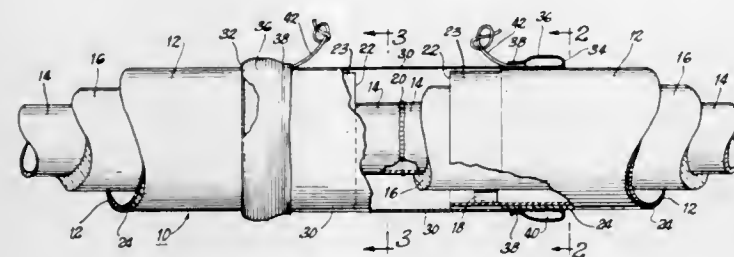
U.S. Cl. 285—31

11 Claims



A fluid connecting device particularly adapted for use in connection with hemodialysis operations to permit repeated access to the blood system of chronic hemodialysis patients. The device comprises a pair of tube elements and a base structure adapted for rigidly mounting the tube elements in spaced relationship. A compressible, resilient, elongated conduit member is compressed between the tube elements, to normally intercommunicate the same. When hemodialysis is required, the conduit member can be removed from the

3,628,814  
INFLATABLE TEMPORARY FIELD JOINT  
Harry Hallwood, Arlington Heights, Ill., assignor to Midwesco-Enterprise, Inc., Chicago, Ill.  
Filed Apr. 24, 1970, Ser. No. 31,537  
Int. Cl. F161 11/12  
U.S. Cl. 285—45 3 Claims

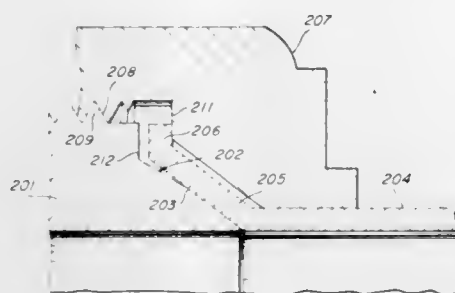


A joint for temporary bridging and sealing spaced ends of conduit to prevent entry of moisture under field conditions is provided by a flexible elongated plastic sleeve having inflatable circumferential collars at the ends of the sleeve.

3,628,815

## CONDUIT CONNECTION MEANS

Louis T. King, 2901 E. Pierson, Phoenix, Ariz.  
Continuation-in-part of application Ser. No. 729,046, May 14, 1968. This application May 4, 1970, Ser. No. 34,407  
Int. Cl. F161 19/02  
U.S. Cl. 285—334.4 1 Claim



A conduit connection means comprising a pair of hollow structures having opposed conical bore portions, at least one of the hollow structures being a thin wall tubular member having a clamping flange surrounding the same and conforming to an outer wall of the conduit which is conical and substantially conically parallel to said conical bore portion; and a seal ring disposed between said opposed conical bore portions and having a pair of generally conical portions adapted to provide an annular seal ridge serving as a seal pressure concentration area adapted to bear between a respective one of said conical bore portions and conical seal ring portions.

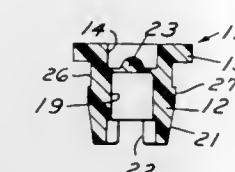
3,628,816

## SLEEVE NUT CONNECTOR

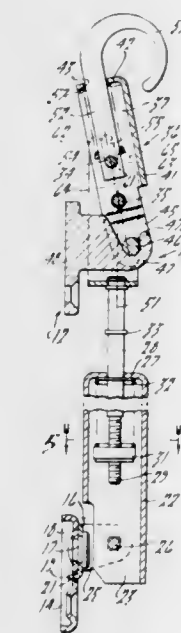
Peter M. Ross, Jr., Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.  
Filed Feb. 2, 1970, Ser. No. 7,493  
Int. Cl. F16b 9/02  
U.S. Cl. 287—23 8 Claims

A connecting means adapted to retain a rodlike element within an aperture of a lever or the like. The connecting means has a rodlike element receiving bore, passage through which is blocked by an obstruction. A force applied to the rodlike element sufficient to cause the latter to displace or

shear the obstruction is also sufficient to assure that the rodlike element will be completely received within the bore

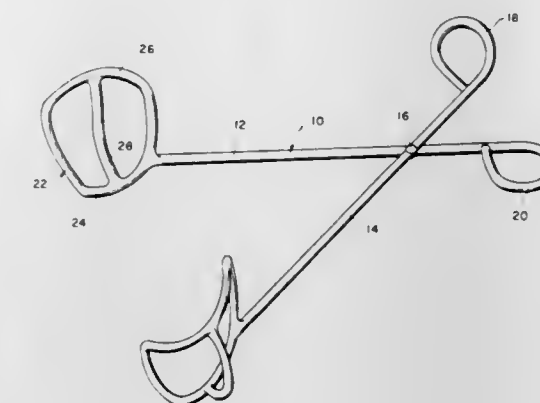


3,628,817  
HOOD LATCH ASSEMBLY  
Edward J. Sheahan, Dearborn Heights, and Donald F. Staisil, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.  
Filed Oct. 13, 1970, Ser. No. 80,421  
Int. Cl. E05c 5/00, 19/14  
U.S. Cl. 292—247 8 Claims



A spring-loaded overcenter latch assembly for latching a vehicle body closure, such as a hood, to a vehicle body structure. An auxiliary latch device maintains the primary latch element of the latch assembly in its overcenter relationship even under severe vehicle jounce conditions that could tend to cause disengagement of the primary latch element from its coacting keeper device.

3,628,818  
EGG-HANDLING DEVICE  
Maurice B. Pittman, 1786 Oakwood Drive, Memphis, Tenn.  
Filed June 26, 1969, Ser. No. 836,805  
Int. Cl. A47j 29/06  
U.S. Cl. 294—16 1 Claim



An egg-handling device comprising a pair of levers or arm members pivotally secured in scissor-type relationship for facilitating opening and closing thereof. Each arm member is provided with a finger-receiving eye at one end thereof and complementary egg receiving and retaining half sections on the opposite end thereof. Each half section comprises an arcuate cage-type member of a configuration generally similar to the outer configuration of a portion of an egg whereby an egg may be easily retained within the combined half sections in the closed position of the arm member. The longitudinal axis of each half-section cage member is substantially perpendicular to the respective arm member for facilitating manipulation of the device in the retrieving and handling of an egg.

3,628,819

## CULINARY UTENSIL

Wanda L. Fowler, 910 N. Oaks Ave., Ontario, Calif.  
Filed Apr. 2, 1970, Ser. No. 25,187  
Int. Cl. A01d 9/06  
U.S. Cl. 294—50 2 Claims



An ejector-type culinary utensil has a plurality of tines and an ejector bar slidable on said tines. A lever arrangement connected to the ejector bar has an ejector tab adjacent the main handle, whereby the user may operate the tab to automatically eject a food product from the tines.



3,628,820

**SWIVEL-TYPE HOIST RING**

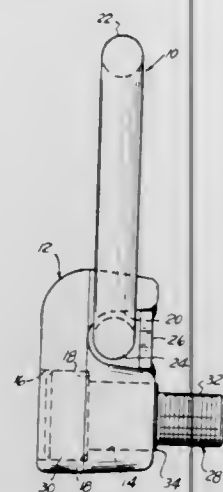
Leland F. Blatt, 24121 Mound Road, Warren, Mich.

Filed Dec. 18, 1969, Ser. No. 886,256

Int. Cl. B66c 1/10, 1/24

U.S. Cl. 294—82 R

1 Claim



A hoist ring assembly which includes a base block having a bore therein, extending from the front to the back thereof, a screw seated in the bore having a threaded portion which extends beyond the block, the block being adapted to revolve around that portion of the screw seated in the bore, and a hoist ring mounted in the block above the bore and adapted for swiveling movement on an axis transverse to that of the bore.

3,628,821

**OCEAN BOTTOM RELEASE DEVICE**

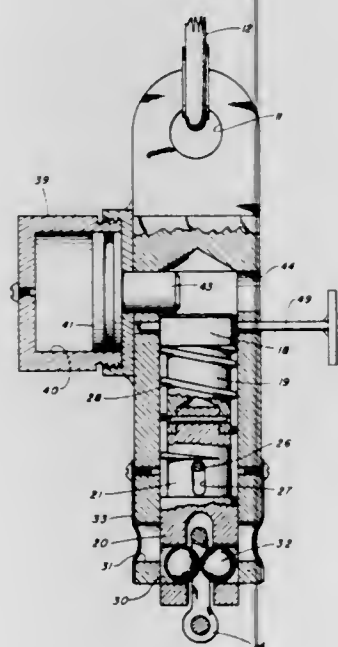
Asa M. Reece, Plantation, Fla., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 8, 1970, Ser. No. 1,476

Int. Cl. B66c 1/36

U.S. Cl. 294—83 AA

7 Claims



A bottom release device for placing a load on the ocean floor in a desired position from a shipboard crane or winch. The device combines a spring-operated release for releasing a shackle-supported load whenever the load comes off the spring such as occurs when the load comes to rest on the ocean bottom and a hydrostatic plunger for preventing operation of such spring release until the ambient pressure thereon is equal to the pressure at a predetermined water depth.

3,628,822

**WELL TOOLS**

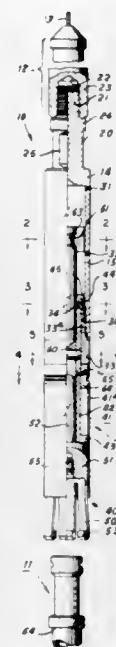
James H. Bostock, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sept. 15, 1969, Ser. No. 857,857

Int. Cl. E21b 31/02

U.S. Cl. 294—86.18

15 Claims



A pulling tool for retrieving devices from well bores including a tool housing supportable from a wire line tool string, a pulling collet for releasably engaging a fishing neck on a well device, a locking sleeve movable over the collet for locking the collet on the fishing neck responsive to a downward force on the tool housing, and supporting structure for the collet and sleeve including one shear pin holding the locking sleeve in nonlocking position until a predetermined downward force is applied to the tool housing and another shear pin for releasing the locking sleeve to release the tool from a stuck well device.

3,628,823

**MULTIPACK CARRIERS**

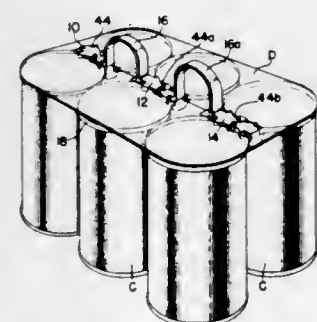
Ougljesa Jules Poupitch, Itasca, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 14, 1968, Ser. No. 767,387

Int. Cl. B66c 1/10

U.S. Cl. 294—87.2

3 Claims



A multiunit package of containers, such as cans, with outward end beads or rims and a carrier for the package in the form of a strip of suitable material, preferably plastic, carrying clips, either integral with the strip or separately attached thereto, and appropriately spaced to engage adjacent and abutting container rims in the package; and when the strip is assembled to one end of the package, the strip may be looped intermediate adjacent clips to provide finger gripping means for carrying the package or separate handle means

may be provided; or when the strip is applied to opposite ends of the packaged containers, the strip may have included handle means for carrying the package with the containers in horizontal position.

3,628,824

**IMPLEMENT FOR GRASPING SMALL OBJECTS**

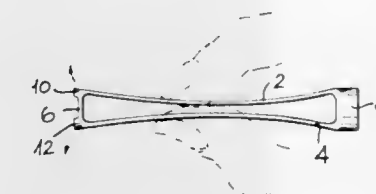
David Leuw, Haifa, and Meir Dror, Kiryat Bialik, both of Israel, assignors to The State of Israel

Filed Aug. 4, 1969, Ser. No. 847,130

Int. Cl. B25b 9/00

U.S. Cl. 294—99

5 Claims



An implement for grasping small objects comprising a pair of spaced manipulatable strips, a flat transverse wall joined to and extending across one end of the strips, and a pair of jaws formed on the outer face of the transverse wall, the latter being resilient, and the jaws being spaced from each other a distance slightly less than the dimensions of the object to be grasped but being movable sufficiently apart to permit reception of the object therebetween when the strips are pressed toward each other to flex the transverse wall.

3,628,825

**AUTOMOBILE CAMPER**

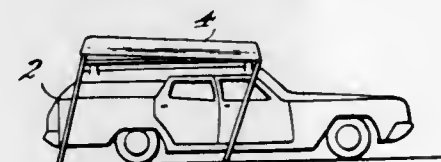
Mitchell Hanoosh, c/o Poly Slides, Inc. Box 132, Wakefield, Mass.

Filed Jan. 26, 1970, Ser. No. 5,624

Int. Cl. B60p 3/34

U.S. Cl. 296—23

5 Claims



A camper for mounting on the roof of an automobile, the camper comprising a rectangular frame slightly wider than the roof with a leg at each corner, pivots for connecting the legs to the frame to swing from horizontal positions at the sides of the frame to depending positions, the legs being longer than the height of the automobile so as to hold the frame above the roof when in said depending positions, and a hardtop covering said frame, pivots and legs when the legs are in said horizontal positions.

3,628,826

**UNIVERSAL MOUNTING FOR TRUCK COVERS**

Louis F. Sibley, RFD #1, Hardwick, Mass.

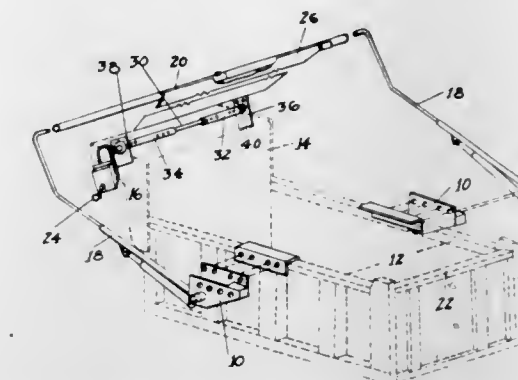
Filed Oct. 9, 1969, Ser. No. 865,034

Int. Cl. B60p 7/04

U.S. Cl. 296—98

1 Claim

A rolled cover for the headboard or cab of a truck wherein the cover can be pulled out as by a bail to the rear of a truck



necessity of providing rollers of different lengths for the purpose.

3,628,827

**VEHICLE COVER**

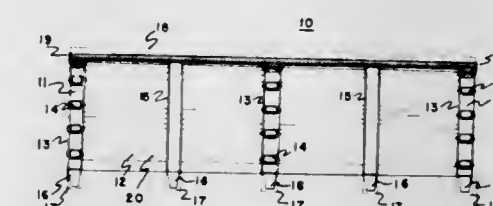
James A. Bailey, Idaho City, Idaho, and Harry E. Turner, 1509 North 18th, Boise, Idaho

Filed Feb. 13, 1970, Ser. No. 11,242

Int. Cl. B60j 7/06

U.S. Cl. 296—137

2 Claims



The vehicle cover of this invention comprises a framework assembly carried in stake pockets provided in truck body beds and a canopy slidably carried thereby. The canopy includes latching means operable to engage the opposite sides of the truck body to hold the canopy under tension over the framework assembly to the truck body bed. The canopy is operable to slide over the framework assembly much like a roll top desk to provide access to a truck body bed at respective sides thereof.

3,628,828

**VEHICLE BOX COVER**

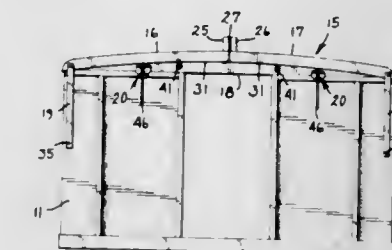
Gerald A. Page, and James E. Page, both of Westhope, N. Dak.

Filed May 14, 1970, Ser. No. 37,101

Int. Cl. B60j 7/10

U.S. Cl. 296—137 B

17 Claims



A pair of rigid cover sections cooperating to close the upwardly directed opening of a vehicle box in a first position and having a single elongated link pivotally attached between



the box and each end of each section to limit the movement of the sections and rollers attached to an end section positioned adjacent and in parallel with the upper edge of each end of the box, said rollers being positioned to engage the cover sections for limiting and directing the movement thereof between the first position and a second position wherein the cover sections are positioned adjacent an in generally parallel with the outer surfaces of upstanding sidewalls of the box.

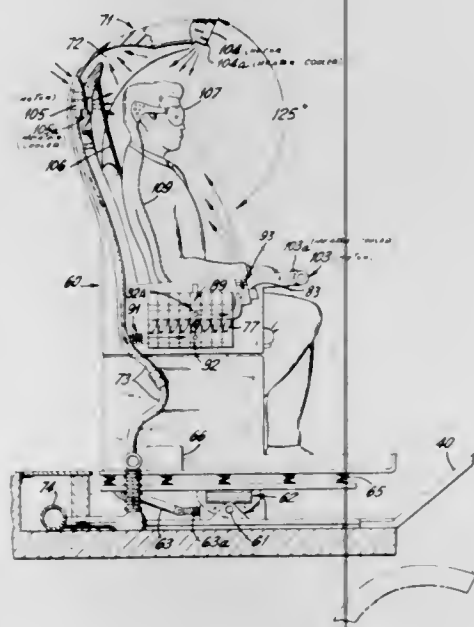
3,628,829

## EXPERIENCE THEATER

Morton L. Heilig, 60 Riverside Drive, New York, N.Y.  
Original application Mar. 9, 1966, Ser. No. 533,017, now  
Patent No. 3,469,837. Divided and this application July 8,  
1969, Ser. No. 870,852  
Int. Cl. A47c 1/12

U.S. Cl. 297-217

6 Claims



The combination of a viewing chair and sense-stimulating means for use in motion picture or television theaters is provided comprising a seat with armrests and having a back which terminates into a hood over the chair, support means for the chair including means adapted to rock the chair in various directions, means for vibrating said chair, odor-producing means associated with said chair, odor-conducting conduits associated with said odor-producing means, means for moving air through the odor-producing means and the odor-conducting conduits towards the face of a spectator seated in said chair, air passageways associated with the chair having exit ports for directing air towards various portions of the spectator's body, means for feeding air to the air passageways, exhaust means associated with the hood of the chair for removing said fed air and odors, and a loudspeaker associated with the hood of said chair.

3,628,830  
CHAIR

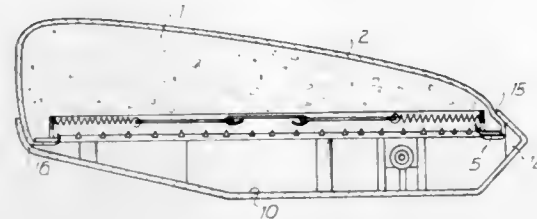
Jose Figueras Mitjans, Calle Muntaner, 515 Barcelona, Spain  
Filed Jan. 10, 1969, Ser. No. 790,410  
Claims priority, application Spain, Jan. 15, 1968, 349,780  
Int. Cl. A47c 27/00

U.S. Cl. 297-219

9 Claims

The specification describes the construction of a seat and a backrest for a tip-up type theater chair. A resilient body is covered on one face and four edges by a removable fabric cover. The cover has a hem containing a reinforcing cord. There are a number of eyelets formed in the fabric cover adjacent the hem. The resilient body is supported on a rectangular frame which has a number of hooks projecting into the rectangular space inside the frame and towards the resilient

body. The hem of the cover is taken around the frame, underneath it and into the rectangular space within the frame where the apertures along the hem are hooked onto the



hooks on the frame. The cover is thus held tightly over the resilient body. The frame is held in a casing and the casing together with the frame and upholstery forms a unit (backrest, armrest or seat) for a chair. The construction of the casing is discussed in detail.

3,628,831

## SEAT BACK POSITION CONTROL MECHANISM

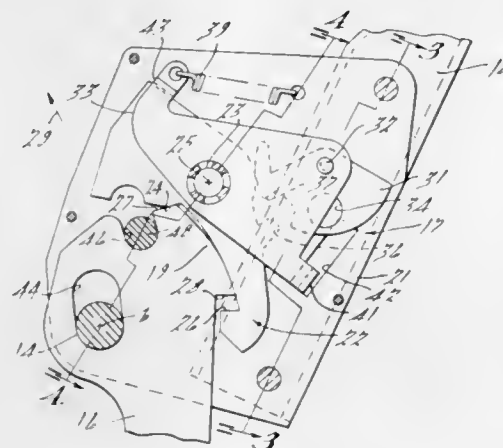
Albert R. Close, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 5, 1970, Ser. No. 43,889

Int. Cl. A47c 3/00; B60n 1/02

U.S. Cl. 297-379

15 Claims



A seat back position control mechanism for a vehicle seat assembly that has a generally horizontal seat structure and an upstanding backrest structure pivotally supported on support arms for tiltable movement forwardly over the seat structure. A latch pawl normally is maintained in latching attitude and its inertia is a factor in preventing backrest movement upon the occurrence of a predetermined maximum vehicle deceleration. Following such a deceleration, a secondary inertia means in the form of free-swinging pendulum means maintains the latch pawl in latching attitude and acts as a time delay release. Manual activation means are also provided to permit movement of the latch pawl from its latching attitude. Further, a shiftable pivot means cooperates with the pendulum means to prevent undesired forward tilting movement of the backrest and an attached occupied child seat upon normal braking of the vehicle.

3,628,832

## CHAIR CONSTRUCTION

Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.

Filed Feb. 10, 1969, Ser. No. 797,949

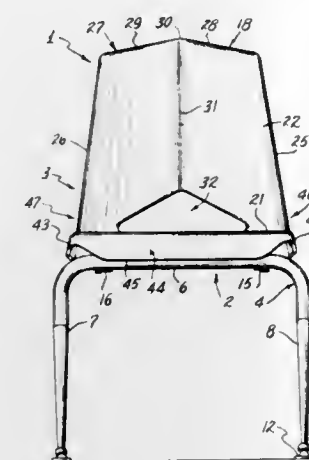
Int. Cl. F16m 11/20; A47c 7/00

U.S. Cl. 297-451

22 Claims

The chair includes a base structure and a seat structure secured to the base. The base structure has pairs of downwardly extending legs connected by a horizontal portion. The horizontal portions are secured to each other by spaced apart pairs of angle bracket assemblies, with each

angle of a pair separated from the other to facilitate assembly. The seat structure includes an integrally molded seat-back shell mounted on a tubular frame having brackets which slip over and are secured to one of the angles of each



of the angle bracket assemblies. The seat structure is held to the base structure by machine screws so that the chair assembly can be shipped in a knocked-down condition and readily assembled after shipment. A tablet arm or desk arm can be secured to the chair if required. While the seat-back shell is molded from an essentially rigid plastic material, the construction is such that the back can deflect slightly relative to the seat to enhance comfort. The comfort of the shell is further enhanced by the upwardly curved seat, the buttocks relief opening in the back of the shell, and the shallow V-shaped spine relief along the back of the shell.

3,628,833

## RIPPING MACHINE

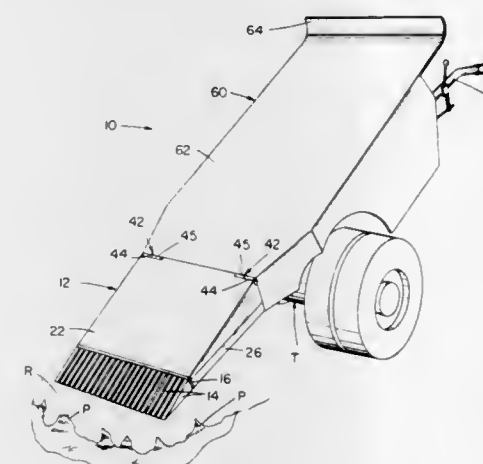
Daniel P. Crispino, 451 Fawcett St., Baltimore, Md.

Filed June 4, 1970, Ser. No. 43,387

Int. Cl. E04d 15/00

U.S. Cl. 299-36

6 Claims



An improved roof-ripping machine having a tractor is provided which is used to thrust along the surface of a roof deck to break loose and remove old roofing paper from a roof. The machine, in addition to the tractor, consists of a ripping head having a fork assembly and a hinged shield. The fork assembly is provided with a plurality of tapered teeth to break loose and remove the roofing paper when driven forward by the tractor.

3,628,834

## LINK MEMBERS AND ENDLESS CHAINS ESPECIALLY FOR TRACKED VEHICLES

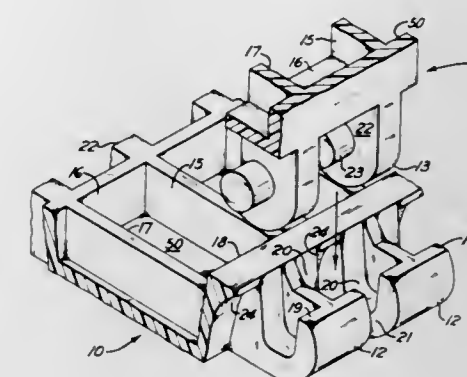
Howard A. Anderson, Pittsburgh, Pa., assignor to Baychem Corporation, New York, N.Y.

Filed Sept. 3, 1969, Ser. No. 855,009

Int. Cl. B62d 55/28

U.S. Cl. 305-35 R

6 Claims



One-piece molded plastic link members which are easily assembled and disassembled into endless chains or treads of easily replaceable link members and in which disassembly can occur only at a time that adjacent linked members are placed in a relationship not occurring during normal operation of the endless chain or tread is disclosed. The one-piece molded link members of this invention are particularly suitable and adaptable for forming endless chains or treads to be used on tracked vehicles such as snowmobiles or the like. The molded link members are characterized by being adapted for coupling with an identical link member without distortion of either member by engaging a male portion of one link member in an oppositely placed female portion of an adjoining link member.

3,628,835

## HIGH-SPEED TAPERED ROLLER BEARING

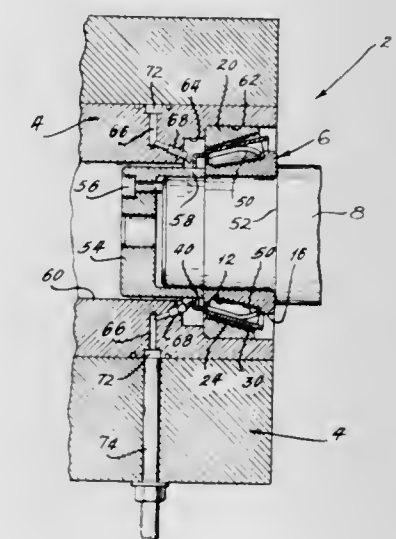
Robert Franklin Cornish, 722 Edgewood St. S.E., North Canton, Ohio, and Robert Lee Leibensperger, 4731 Woodside Ave. N.W., Canton, Ohio

Filed Oct. 5, 1970, Ser. No. 78,078

Int. Cl. F16c 33/66, 19/14

U.S. Cl. 308-187

17 Claims



A tapered roller bearing has an annular lubricant collector trough connected to the small diameter end of the cage in which the tapered rollers are contained. The open side of the trough is presented toward the axes of rotation, while the op-



posite side communicates with the inner ends of distribution tubes which extend between adjacent rollers. The opposite or outer ends of the distribution tubes are directed toward the cone thrust rib against which the large diameter ends of the rollers bear for axially positioning the rollers. When a lubricating oil is introduced into the open side of the collector trough, the lubricant is scooped up and forced to flow into the distribution tubes and from there the lubricating medium issues from the outer ends of the tubes and flows against the cone thrust rib, thereby lubricating this critical surface even during extremely high-speed operation.

3,628,836

## ROLLER BEARING

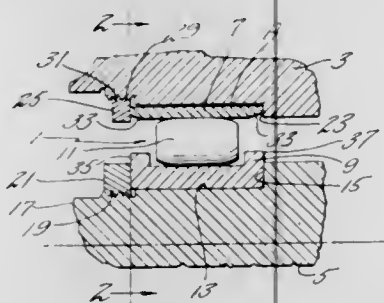
Richard C. Mulready, Jupiter, and William E. Creslein, III, Juno, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 17, 1969, Ser. No. 4,499

Int. Cl. F16c 17/00

U.S. Cl. 308—184

5 Claims



A shaft is mounted in a housing by a roller bearing assembly. This assembly comprises an inner race, rollers, and an outer race. A tight or negative fit exists between the inner race, rollers, and outer race around the entire circumference of the assembly. The inner race is fixed to the shaft and includes side rails extending therefrom which are spaced from the ends of the rollers. The outer race is thin and mounted in the housing so that it can flex under roller load and provide damping. A nut provides for varying the compressive force on the outer race if desired.

3,628,837

## BEARING ASSEMBLY HAVING FLEXIBLE LABYRINTH ENCLOSURES

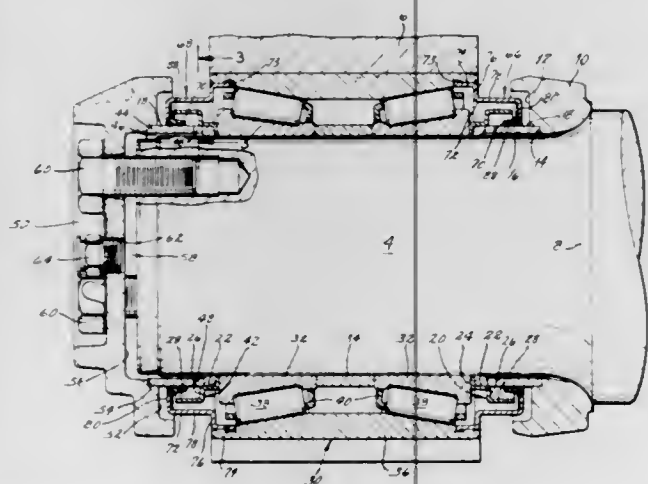
Dennis L. Otto, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Nov. 21, 1969, Ser. No. 878,700

Int. Cl. F16c 1/24

U.S. Cl. 308—187

5 Claims



A bearing assembly includes a tapered roller bearing having a cup from which labyrinth type enclosures extend. The

enclosures include cases attached to the cup and flexible labyrinth elements which are bonded to and project into the interiors of the cases where they encircle enclosure rings positioned adjacent to the cones of the bearing. The enclosures normally do not engage the rings, but when a pressurized lubricant is introduced into the cases and surrounds the inwardly projecting portions of the elements, those portions of the elements will flex inwardly and bear against the rings, forming seals therewith. Thus, the bearing assembly can be relubricated without leakage of the lubricant past the labyrinth enclosures.

3,628,838

## ROLLING BEARING

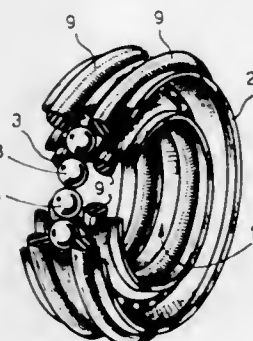
Domenico Camosso, Turin, and Benito Lescio, Rivoli, both of Italy, assignors to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed Nov. 20, 1970, Ser. No. 91,245

Int. Cl. F16c 33/58, 33/76

U.S. Cl. 308—188

12 Claims



A rolling bearing such as a ball bearing has inner and outer imperforate races each of which is W-shaped in cross section so as to provide a pair of grooves on whose confronting faces the balls roll. The balls completely fill the races, and rubber sealing rings may be positioned in the radially outwardly opening grooves of the outer race and/or the radially inwardly opening grooves of the inner race and/or between the races adjacent their edges.

3,628,839

## ROLLER BEARING RETAINER

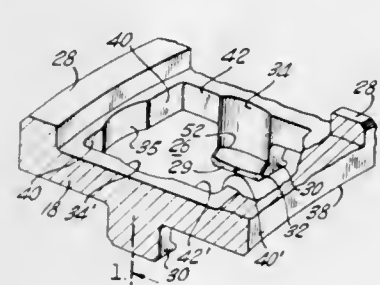
James L. Vannest, New Britain, Conn., assignor to Textron Inc., Providence, R.I.

Filed Nov. 25, 1968, Ser. No. 778,684

Int. Cl. F16c 33/46

U.S. Cl. 308—217

6 Claims



Roller-bearing retainer rings are described wherein lubricating concavities are formed in the sides rimming roller element pockets. An economical machining method of manufacturing such retainer rings is described wherein the roller pockets and lubrication concavities are conveniently machine formed simultaneously with radially recessed roller supports.

3,628,840

## AUTOMATIC DISPENSER AND STORAGE DEVICE FOR SHEET FILM

Stephen J. Wenthe, and Charles F. Shute, both of Rochester, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,031

Int. Cl. A47f 4/00

U.S. Cl. 312—35

13 Claims

## 3,628,842 SHIPPING AND DELIVERY SHELVED CONTAINERS FOR FOOD

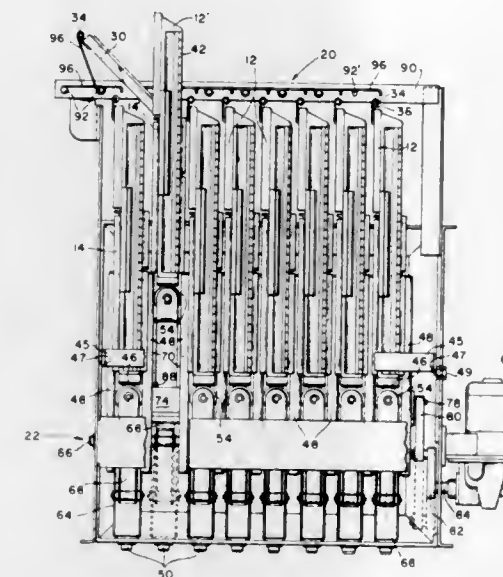
Ernest C. Wright, Princeton, N.J., assignor to Union Camp Corporation, Township of Wayne, N.J.

Filed Apr. 21, 1970, Ser. No. 30,437

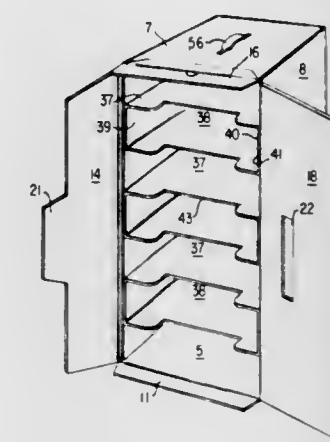
Int. Cl. A47b 43/02

U.S. Cl. 312—259

3 Claims



An automatic dispenser for sheet material includes a magazine having a plurality of carriers, each carrier being adapted to receive a cartridge-containing sheet material. The magazine further includes a lifting device for raising a selected carrier and its associated cartridge and means responsive to upward movement of a carrier for opening an access door on the associating cartridge to permit withdrawal of a sheet carried therein.



A container is erected from a prescored blank to form a carton having a top, sides, a bottom and closure panels for the front and rear thereof. A removable separable shelving assembly is formed by securing a shelf or shelves to side rails. The shelving assembly is inserted as a unit into the erected carton whereby a shelved container is formed. The top of the container is provided with handle means, and the front and rear closure panels are provided with locking tab means, whereby a closed, shelved container is provided for shipping, storage and delivery services.

3,628,841

## REFUSE COMPACTOR CABINET STRUCTURE

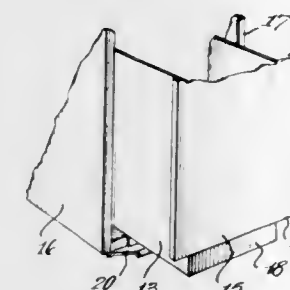
Charles E. Sulcek, Stevensville, Mich., assignor to Whirlpool Corporation

Filed Oct. 31, 1969, Ser. No. 872,896

Int. Cl. A47b 17/04, 97/00, 88/00

U.S. Cl. 312—204

8 Claims



A refuse compactor having a drawer which is movable through a front wall of a cabinet selectively between an inner compacting position and an outer loading position. The cabinet is provided with a toe plate defining the lowermost portion of the front wall. The toe plate remains connected at the front of the cabinet at all times but is movable to permit a lowermost portion of the drawer to move through the space occupied by the upper portion of the toe plate in its normal upright position, thereby permitting the drawer to include usable compaction space below the level of the top of the toe plate.

3,628,843

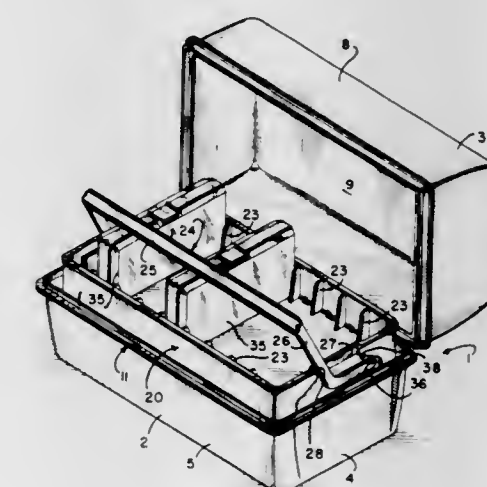
CONTAINER FOR FISHING TACKLE OR THE LIKE  
Donald T. Wynne, Cleveland, Ohio; David E. Workman, Los Angeles, Calif., and Joseph W. Kneier, Chesterland, Ohio, assignors to Pendleton Tool Industries, Inc., Los Angeles, Calif.

Filed Nov. 7, 1969, Ser. No. 874,774

Int. Cl. A47b 57/24

U.S. Cl. 312—294

8 Claims



A container for carrying fishing or hunting supplies or for use as a tool box, sewing chest or various industrial uses. A



large container or case is provided with supports on which a tray is removably mounted. The tray is provided with divider ribs which are adapted to hold small articles containers. A handle is pivotally mounted on the tray and serves to assist in the removal of the tray from the container and to prevent the small article containers from becoming jumbled when the container is closed. The supports for the tray are spaced from the bottom of the box so that large articles may be carried in the box below the tray.

3,628,844

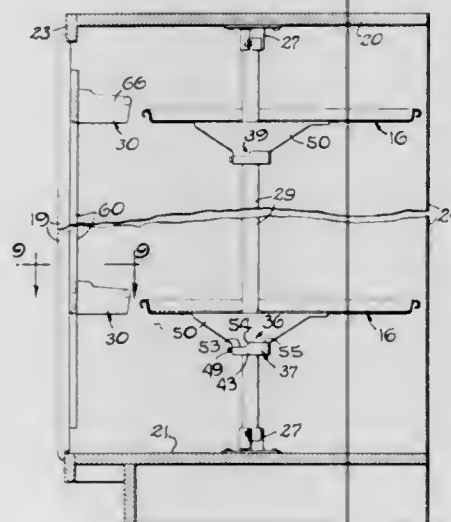
**STORAGE CABINET WITH REVOLVING SHELVES**  
Bruce A. Preston, c/o Amerock Corp., 4000 Auburn St., Rockford, Ill.

Original application Mar. 18, 1968, Ser. No. 713,820, now abandoned. Divided and this application Feb. 9, 1970, Ser. No. 10,011

Int. Cl. A47b 88/00, 95/00, 11/00

U.S. Cl. 312—305

3 Claims



Mounted within a square storage cabinet is a tier of revolving shelves each shaped generally as a three-quarters circle having a diameter approximately equal to the square dimension of the cabinet to avoid wasted space in the cabinet. Each shelf is formed with one straight edge located to enable tiers of trays attached to two swinging cabinet doors to be made of an optimum depth permitting the trays to fill the space between the shelves and the doors when the latter are closed. Detent mechanisms hold the shelves in centered positions within the cabinet and resist any tendency of the shelves to spin uncontrollably when turned out of the centered positions. The door trays are hooked detachably onto standards fastened to the inner sides of the doors and are constructed to avoid leaving objectionable gaps between the doors and the trays.

3,628,845

**REFRIGERATOR CABINET WITH SELF-CLOSING DOOR**

Bernard J. Grimm, Louisville, Ky., assignor to General Electric Company

Filed May 11, 1970, Ser. No. 36,283

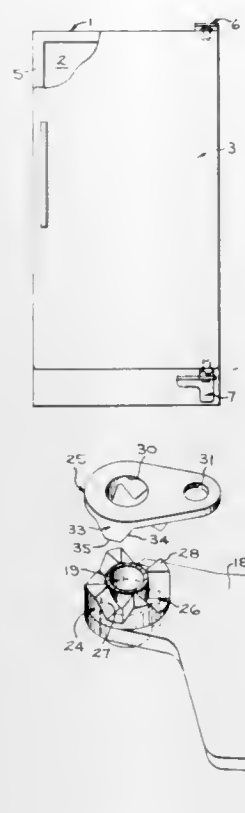
Int. Cl. E05f 1/02

U.S. Cl. 312—319

1 Claim

A refrigerator cabinet having an access opening and a door for closing the access opening is provided with a hinge construction assuring the self closing of the door from a substantially open position and the positive sealing of the door gasket with the cabinet base as the door approaches its closed position. In accordance with the preferred embodiment

ment of the invention, the hinge construction also includes means for positioning the door in a predetermined open position



tion as for example at an angle of 90° with the face of the cabinet.

3,628,846

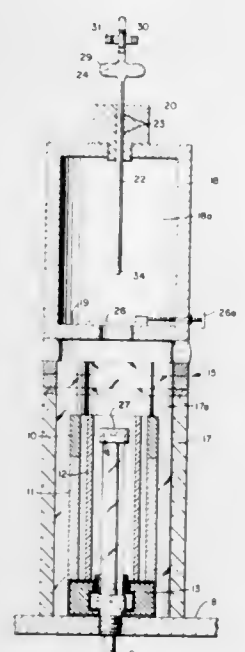
**METHOD OF MAKING A VAPOR DISCHARGE LAMP**  
Salvatore Cortorillo, West New York, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Original application July 11, 1967, Ser. No. 652,556, now abandoned. Divided and this application Mar. 1, 1970, Ser. No. 23,116

Int. Cl. H01j 9/18

U.S. Cl. 316—19

9 Claims



A metal vapor discharge lamp and method of making the same in which the lamp comprises a partially evacuated translucent ceramic tube containing a charge of metal and a starter gas and hermetically sealed at either end by means of a suitable end cap and electrode assembly which does not have an exhaust tubulation. According to the method of

manufacture the evacuation of impurities and residual gases from the lamp and the introduction of the starter gas into the lamp is carried out in the same environment as the sealing of the end cap and electrode assemblies to the ends of the translucent ceramic tube.

3,628,847

**HOLOGRAM MEMORY**

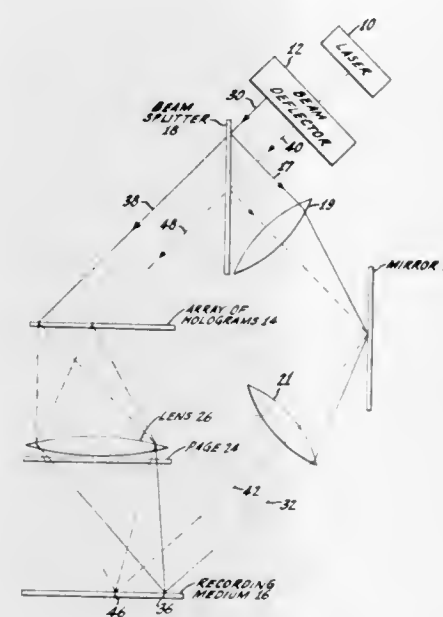
David Ira Bostwick, Mercer, N.J., assignor to RCA Corporation

Filed Sept. 5, 1969, Ser. No. 855,676

Int. Cl. G02b 27/22

U.S. Cl. 350—3.5

4 Claims



An array of holograms, each representing many light sources, is employed during the write operation. When one of these holograms is illuminated by a laser beam, the reconstructed light sources of that hologram illuminate a corresponding number of memory locations of a "page" of data. The light from the page then is focused onto a small area of a recording medium. A reference beam from the same laser concurrently is directed at this same small area to cause to be "written" there a hologram of the page.

3,628,848

**VARIABLE PHASE CONTRAST MICROSCOPY**

Georges Nomarski, Bourg la Reine, France, assignor to Etablissement Public: Agence Nationale de Valorisation de la Recherche "ANVAR", Hauts-de-Seine, France

Filed Dec. 23, 1969, Ser. No. 887,621

Int. Cl. G02b 27/28

U.S. Cl. 350—13

8 Claims



In phase contrast microscopy, the phase plate is broken down into two zones, the conjugate and complementary zones, the light beam is polarized in two directions inclined relatively at 45°. One polarization affects the conjugate zone; the other polarization affects the complementary zone, without optical path delay. The apparatus employs a polarizer, a phase plate, a birefringent compensator, and an analyzer having a phase plate with two polarizers turned 45° and respectively occupying the conjugate zone and the complementary zone of the plate. One polarizer is positioned in

front of the plate so it covers the two zones and is parallel to the polarizer at the conjugate zone. The birefringent compensator and analyzer are mounted behind the plate, in the direction of light propagation, so that the transmissions of complex amplitudes of the conjugate zone will be 1-e' and that of the complementary zone will be 1.

ERRATA

For Classes 350—96 WG and 350—289 see:  
Patent Nos. 3,628,861 and 3,628,862

3,628,849

**DIFFRACTION GRATINGS**

Jean Flamand, Chateaufort Malabry; Antoine Labeyrie, Gif sur Yvette, and Guy Pieuchard, St-Cyr-l'Ecole, all of France, assignors to A. Jobin & G. Yvon Instruments De Precision, Arcueil (Val de Marne) rue Berthollet, France

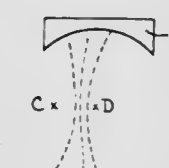
Filed June 13, 1969, Ser. No. 833,122

Claims priority, application France, Mar. 26, 1969, 6908883

Int. Cl. G01j 3/18; G02b 5/18

U.S. Cl. 350—162

3 Claims



The invention relates to new gratings constituted by a support bearing on a sensitive face the grooves of the gratings which are located at the intersection of the said face of the support by a family of surfaces geometrically such as the equiphase surfaces obtained as loci of the maxima of luminous intensity upon the interference of two beams originating from two point sources. These gratings may be realized by holography, by using as sensitive layer a layer of a photopolymerizable resin, the best results being obtained with a layer of thickness smaller than approximately 2 microns. These gratings are useful for the realization of new or improved spectrographic devices.

3,628,850

**CORRECTING LENS**

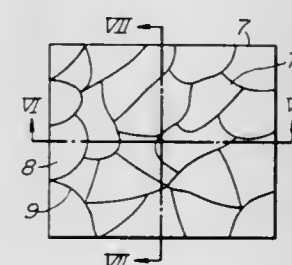
Eiichi Yamazaki, Ichihara; Koolchi Maruyama, Mobara, and Iwao Ogura, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1970, Ser. No. 13,640

Int. Cl. G02b 3/00

U.S. Cl. 350—175 R

10 Claims



A correcting lens for use in the formation of fluorescent dots on a color picture tube, which has its effective surface divided into a plurality of sections each of which consists of a flat or curved surface as designated and at least one of which has borderlines of discontinuity in at least two directions.



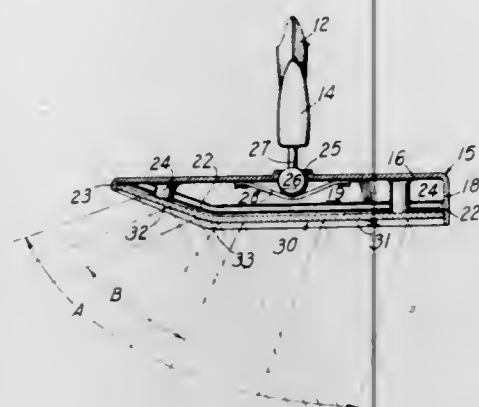
3,628,851

**WIDE ANGLE REAR VIEW MIRROR**

Harry J. Robertson, Woodland Road, Salisbury, Md.  
Filed Aug. 22, 1969, Ser. No. 852,194  
Int. Cl. G02b 5/10

U.S. Cl. 350—293

1 Claim



A rear view mirror for mounting on a vehicle, the mirror having two planar mirror sections joined by an arcuate section so that a vehicle approaching the rear of the driven vehicle on which the mirror is mounted can be observed continuously as the approaching vehicle approaches the driven vehicle with the mirror until it is abreast of the driven vehicle.

3,628,852

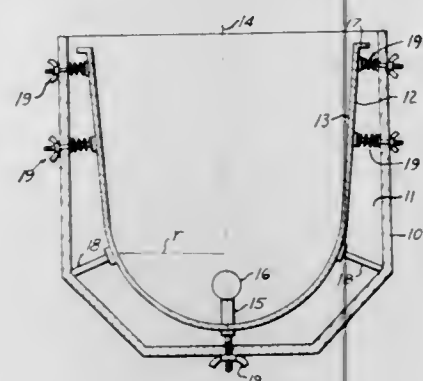
**ADJUSTABLY POSITIONABLE REFLECTORS**

Alvin A. Snaper, Las Vegas, Nev., and Frank C. Farrell, Los Angeles, Calif., assignors to Advanced Patent Technology, Inc., Las Vegas, Nev.

Filed Mar. 23, 1970, Ser. No. 21,590  
Int. Cl. G02b 5/10

U.S. Cl. 350—295

4 Claims



A reflector assembly in accordance with the present disclosure comprises a deformable reflector mounted within a housing by an adjustable mounting means. The adjusting mounting means is capable of selectively adjusting the configuration and position of the reflector in the housing. Preferably, at least one region of the reflector is fixedly positioned with the housing and other regions of the reflector are independently selectively positioned in the housing so thereby selectively alter the configuration of the reflector.

3,628,853

**INTEGRALLY FORMED UNDERWATER VIEWING DEVICE WITH PERIPHERAL SKIRT**

Gordon W. Stoscup, 7854 Five Mile Road, Northville, Mich.  
Filed July 30, 1970, Ser. No. 59,527

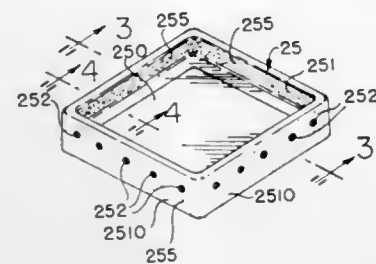
Int. Cl. G02b 5/00

U.S. Cl. 350—319

5 Claims

A clear view device for use when vacuuming the bottom or walls of a swimming pool when filled with water which eliminates glare and provides a clear view of the particular area of the swimming pool being cleaned. The said clear view

device comprises a flat transparent central portion floating substantially on the surface of the water in the swimming pool provided with an elevated flotation chamber



therearound terminating at its outer periphery in a continuous underwater skirt which prevents rapid floating of the device away from the user when vacuuming the bottom and walls of the swimming pool. The said flotation chamber has a plurality of air-bleed apertures through the outer periphery thereof preferably located at the level of the top of the said flat transparent central portion of the clear view device and spaced at intervals therearound permitting the said clear view device to float with its flat transparent central portion disposed on or slightly below the surface of the water in the swimming pool with the flotation chamber disposed thereabove. The outer surfaces of the flotation chamber are preferably but not necessarily provided with a nonglare surface.

3,628,854

**FLEXIBLE FRESNEL REFRACTING MEMBRANE ADHERED TO OPHTHALMIC LENS**

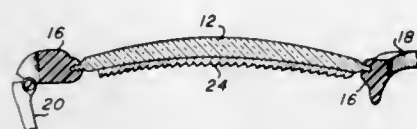
Arthur Jampolsky, Mill Valley, Calif., assignor to Optical Sciences Group, Incorporated, San Francisco, Calif.

Continuation of application Ser. No. 647,533, June 20, 1967, now abandoned. This application Dec. 8, 1969, Ser. No. 878,975

Int. Cl. G02c 7/08, 7/14, 7/16

U.S. Cl. 351—175

7 Claims



A thin, fully conformable, plastic membrane which can be applied, and made to adhere with finger pressure, to spectacle lenses for quickly and impermanently changing one or more optical characteristics of the spectacle lenses. The membrane may be embossed on one of its surfaces to form a Fresnel-type lens or prism structure to introduce a deviation of the light ray, may be partially or entirely tinted to pass only certain wavelengths of light, may be diffused, or blurred uniformly or differentially, may have selective opaqued or transmitting areas or a combination thereof.

3,628,855

**MOTION PICTURE PROJECTOR WITH APPARATUS FOR EDITING AND SPLICING MOTION PICTURE FILM**

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,194

Int. Cl. G03c 11/00

U.S. Cl. 352—130

31 Claims

A motion picture projector is provided which includes editing and splicing apparatus located between the projector film gate and the film takeup reel. Upon a first operation of the apparatus, a frame counter activates the film transport claw to advance a predetermined number of frames from the film gate to a cutting member, which makes a first cut of the

3,628,857

**FULLY AUTOMATIC FOCUSING PROJECTOR**

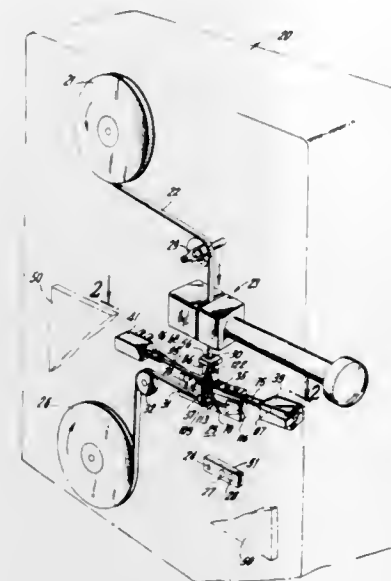
Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,695

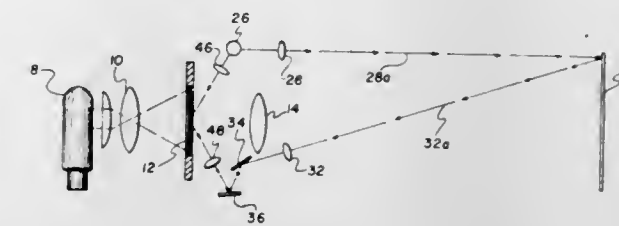
Int. Cl. G01b 3/00, 21/14

U.S. Cl. 353—101

10 Claims



film and directs the leading end of the portion of the film to be removed toward a festoon chamber. Upon a second operation of the apparatus, the frame counter again activates the film transport claw to advance the predetermined number of frames from the film gate to the cutting member,



A projector having an optical ranging system for automatically optically sensing the screen-to-lens distance and in response thereto establishing the proper film-to-lens distance for placing a film image in focus. The projector further has an optical focusing system which may include parts of the optical ranging system for maintaining the established film-to-lens distance in the projector and the film image in focus. Initially, the optical ranging system is enabled to sense the screen-to-lens distance and in response thereto to establish the proper film-to-lens distance for proper focus while the optical focusing system is disabled. The positioning of a film in the projection position disables the optical ranging system and enables the optical focusing system to maintain the established film-to-lens distance. Additional zoom mechanism may be provided to automatically maintain an illuminated viewing area on the screen of a predetermined size regardless of the size of the film area being projected.

**ERRATUM**

For Class 353—101 see:  
Patent No. 3,628,862

3,628,858

**COMBINED PACKING AND PARTIALLY PRINTING OF PACKING MATERIAL**

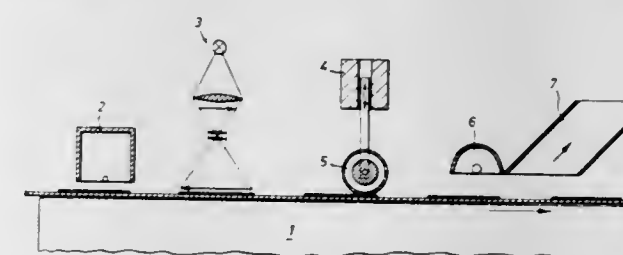
Hans Hermann Dittner, Auf der Hardt 7, 5161 Obermaubach, Germany

Filed July 22, 1969, Ser. No. 843,359

Int. Cl. G03g 15/00

U.S. Cl. 355—3

11 Claims



3,628,856

**FILMSTRIP ADAPTER FOR SLIDE PROJECTORS**

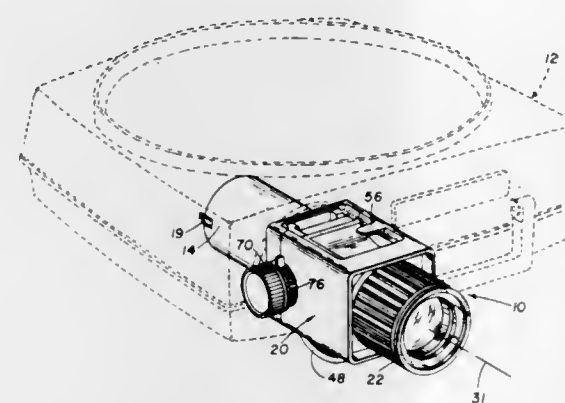
Vernon H. Jungjohann; Henry S. Adamski, both of Rochester, N.Y., and Stephen M. Richardson, Acton, Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,909

Int. Cl. G03b 21/00, 23/00

U.S. Cl. 353—68

5 Claims



A slide projector adapter for showing still pictures from a filmstrip includes a film gate and a drive sprocket adjacent the film gate. The adapter may be used to show long or short films, with or without leaders. The filmstrip is fed from a molded supply spool to a spring-biased takeup spool. A condenser tube is aligned with the film gate for insertion into the light projecting tube of the projector. The adapter is held in such a manner that it can be rotated to accommodate either horizontal or vertical film formats. A film advance mechanism includes a device for precisely framing the initial projected image.

A combined packing and partially printing system is utilized to produce a desired individually varying print on any packing unit without interrupting the packing process by which a blank of packing material is formed to any desired shape of a packing unit, on a packing device and then filled with goods. The surface of the packing material is at least partially print-coated with a layer of a photoconducting substance or blend of substances prior to being introduced into the packing device for being folded and set into the desired shape. The packing device is combined with a charging unit including means for variably adjusting the length and width of the area to be charged of the photoconducting layer on the packing material. A photographic unit is present for exposing the charged photoconducting layer by light allowed to



pass through any desired character of a matrix, and a developing unit in combination with a fixing unit serve to produce the desired images of said characters at the desired partial sections of the surface of said packing material under processing. In this manner variable imprints can be applied to any desired quantity of packing units without the packing process being interrupted.

3,628,859

## IMAGING MACHINE IMPROVEMENT

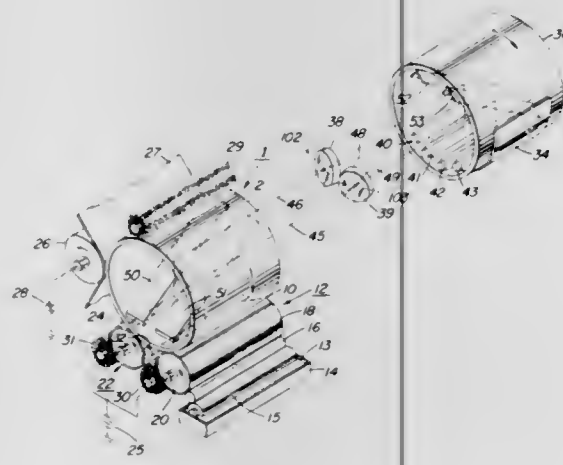
Edwin Zucker, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,452

Int. Cl. G03g 15/00; G03b 27/50, 27/70

U.S. Cl. 355-8

8 Claims



Method and apparatus for forming registration errors in multiple slit scanning optical systems by repositioning the lens of the system in a plane perpendicular to its axis to shift the projection in the image plane. By shifting the optical systems to eliminate or bias a registration error between multiple slit scan optical systems, a minimization of slit errors are accomplished.

3,628,860

## HEAT-FUSING APPARATUS IN ELECTROSTATIC COPIER

Masaya Ogawa, Osaka, Japan, assignor to Minoltacamera Kabushiki Kaisha, Osaka, Japan

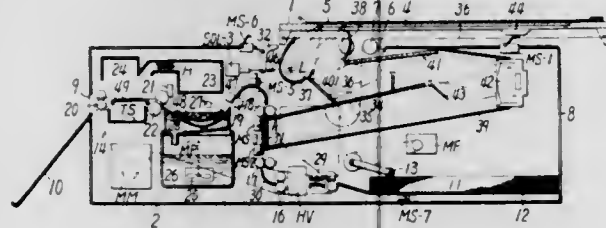
Filed Jan. 10, 1969, Ser. No. 790,311

Claims priority, application Japan, Jan. 31, 1968, 43/6460

Int. Cl. G03g 9/04

U.S. Cl. 355-10

3 Claims



A copying apparatus is provided in which an image-fixing hot air blower normally has a heating unit maintained at a lower temperature by thermostatic means in the image-fixing area with an overriding control circuit bypassing the thermostat means in response to initiation of a copying cycle to increase the temperature of the heating element to its operating range.

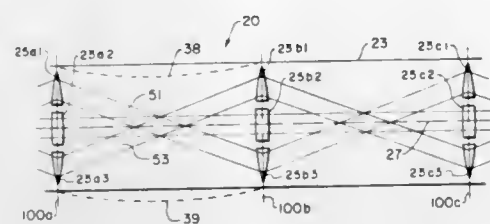
3,628,861  
MULTIBEAM OPTICAL WAVE TRANSMISSION  
Georg J. E. Goubau, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 4, 1969, Ser. No. 855,064

Int. Cl. G02b 27/00

U.S. Cl. 350-96 WG

7 Claims



A system including an optical beam wave guide for simultaneous propagation of a plurality of independent spatially coherent optical beams with minimal mutual interference; the optical beam wave guide includes either (1) a series of spaced lenses or other beam iterating means, one at each of a plurality of distinct positions for beam iteration (reconstitution) along the length of the guide for transmitting simultaneously all of the optical beams, (2) an array of separate optical elements at each iteration position, each element of a given array passing only one of said optical beams, or (3) a combination of the aforesaid arrangements wherein a set of M optical elements is used at each iteration position and each of the M optical elements is designed to transmit a group of N beams so that the total number of transmitted beams is MN.

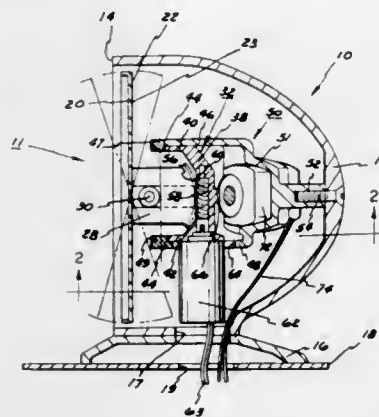
3,628,862  
POWER ACTUATED REARVIEW MIRROR  
Robert L. Stephenson, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,779

Int. Cl. G02b 5/08

U.S. Cl. 350-289

6 Claims



A power actuated outside rearview mirror assembly, particularly for a motor vehicle, comprising a mirror housing in which is mounted a stationary yoke member which supports a motor having an output shaft to which is fixed a worm gear adapted to mesh with a sector gear formed on the rear of a second yoke member, pivotally supported within the stationary yoke member and attached to the rear of a mirror for angular movement of the mirror in one direction. The second yoke member supports another motor having an output shaft to which is fixed a worm gear adapted to mesh with another sector gear disposed within the second yoke member which is similarly connected to the rear of the mirror for angular movement of the mirror in another direction. The last named motor extends through an elongated opening in the stationary yoke member for relative movement therein upon adjustment of the mirror in a first angular direction.

3,628,863  
REMOTE FOCUSING OVERRIDE MECHANISM FOR AN AUTOMATIC FOCUSING PHOTOGRAPHIC PROJECTOR  
Franklin D. Kottler, and Frederick K. Leutung, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

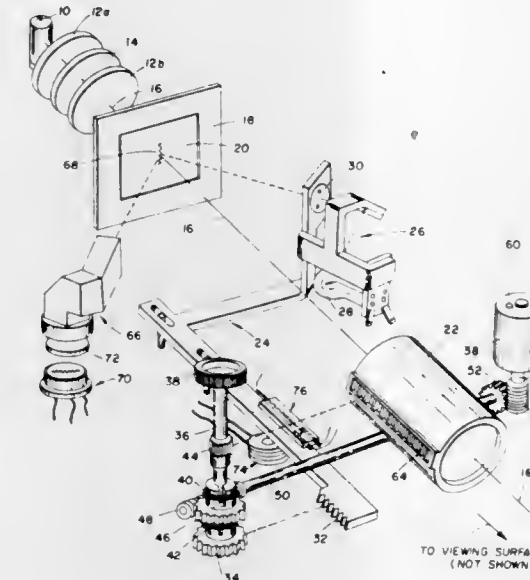
Continuation-in-part of application Ser. No. 648,264, June 23, 1967, now abandoned. This application July 28, 1969,

Ser. No. 845,350

Int. Cl. G03b 3/10

U.S. Cl. 353-101

9 Claims



A remote focusing mechanism for a projector for overriding the automatic focusing system which automatically maintains a projected slide image in focus by maintaining a constant focal or spatial distance between a film and a film image projection lens regardless of shifting or displacement of the film along the optical path. In the event the automatic focusing system does not achieve an optimum focused film image, such optimum focused image is achieved by the remote focusing mechanism by disabling the automatic focusing system, arresting movement of the radiation focusing lens, and moving the film image projection lens alone relative to the radiation focusing lens.

3,628,864  
APPARATUS FOR FORMING A DEVELOPABLE PATTERN ON LIGHT-SENSITIVE FILM CARRIED IN A CASSETTE

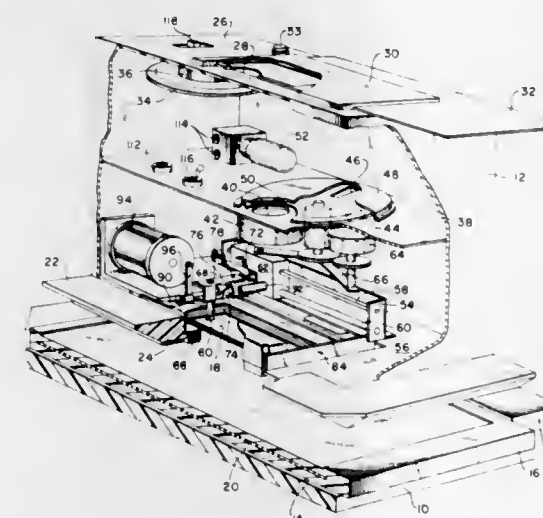
John R. Fessenden, and Stephen J. Wenthe, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1969, Ser. No. 821,401

Int. Cl. G03b 27/32

U.S. Cl. 355-18

10 Claims



Apparatus for forming a developable pattern on a light-sensitive film carried in a cassette having an openable win-

dow, the marking apparatus including a mechanism for holding the cassette in a predetermined position, a device for opening the window, a support for prepared data, and means for optically projecting an image of the data through the window onto the film in the cassette. The apparatus may also be provided with electrical switch means for preventing its operation if the cassette is not properly received therein.

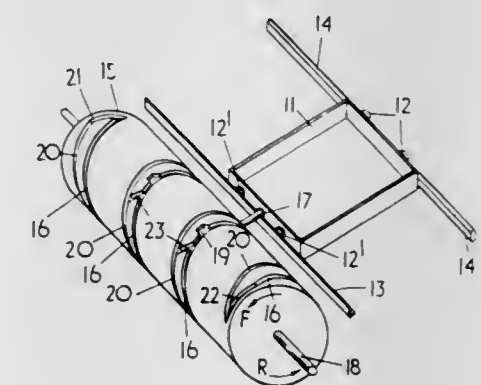
3,628,865  
POSITIONING MECHANISM  
Harry Arthur Hele Spence-Bate, Stanmore, Middlesex, and John Michael Jones, Wembley, Middlesex, both of England, assignors to Harry Arthur Hele Spence-Bate, Kenton, Harrow, Middlesex, England

Filed June 16, 1969, Ser. No. 833,640

Int. Cl. G03b 27/42

U.S. Cl. 355-53

9 Claims



A positioning mechanism primarily for aligning a photographic film held in a movable frame, particularly applicable to microphotography where a high degree of accuracy is required, comprising a notched camway wherein the notches provide fine alignment for a coarser aligning means, these notches may be in a camway formed helically around a roller, a cam follower is provided linked to the frame and cooperating with the notches, the cam follower can be driven by the camway so that by turning the roller one way the frame is moved forward and turning the frame the other way the frame can be positioned, methods of reversing the travel of the frame at a preselected stage can be provided.

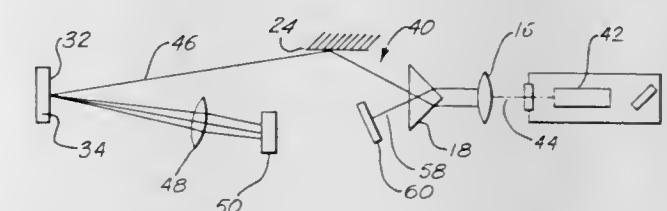
3,628,866  
NONCONTACTING METHOD OF MEASURING STRAIN  
Rolf K. Mueller, Brighton, Mich., assignor to The Bendix Corporation

Filed Jan. 24, 1969, Ser. No. 793,779

Int. Cl. G01b 11/16; G02b 5/10

U.S. Cl. 356-32

4 Claims



A noncontacting method for measuring strain in a workpiece wherein strain measurements are based on an optical diffraction grating produced by interfering beams from a giant-pulse laser thereby enabling the thermal engraving of diffraction gratings on irregularly shaped surfaces.



3,628,867

**REFRACTOMETER**

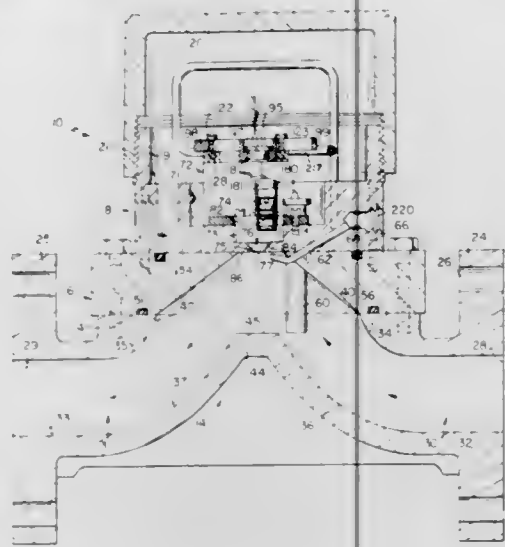
Tyson H. Brady, Bellingham, Mass., assignor to Anacon, Inc., Ashland, Mass.

Filed Aug. 20, 1969, Ser. No. 851,638

Int. Cl. G01n 21/46

U.S. Cl. 356-136

20 Claims



A critical angle refractometer for measuring the refractive index of a liquid of the type having a light source arranged to direct a light beam through a prism to a prism-liquid interface, and a detector for receiving light reflected from the interface and producing a signal indicative of the position of the critical angle, is improved by having mounting structure providing linear guides spaced from the prism and extending substantially parallel to the outer surface of the prism, a carrier member for the detector, and adjusting means for moving the carrier member along the guides, thereby moving the detector in a path substantially perpendicular to the mean reflected light path from the prism. Where moving streams are being monitored, structure is provided for directing the stream at and away from the prism face at acute angles thereto and establishing a continuously moving liquid stream across the prism face therebetween. A novel sample-type refractometer is also described.

3,628,868

**LASER BORESIGHTING METHOD AND APPARATUS**

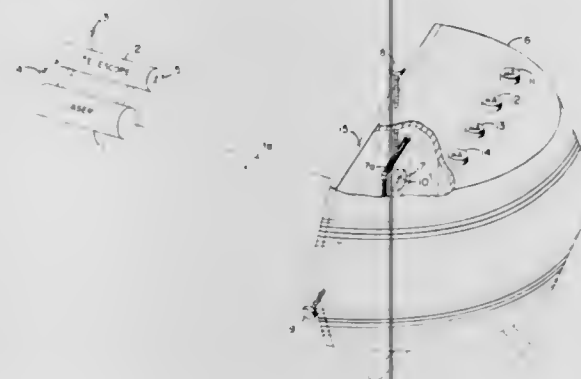
George W. Starkey, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 9, 1969, Ser. No. 856,410

Int. Cl. G01b 11/26

U.S. Cl. 356-152

3 Claims



A telescope having crosshairs is mounted on the housing of a laser. In order to boresight this telescope to the laser, a parabolic reflector with a four-quadrant photodetector mounted at its focus is provided. The detector has its quadrants defined by surface crosshairs, and is physically adjustable about the axis of the reflector. Microammeters are

connected to show the current provided by each quadrant of the photodetector. In use, the reflector is placed in the beam of a laser, and the photodetector is physically adjusted until all microammeters show the same reading. The laser telescope is then adjusted to have its crosshairs align with the image of the crosshairs of the photodetector.

3,628,869

**AUTOCOLLIMATOR INCLUDING A RETROREFLECTOR ELEMENT**

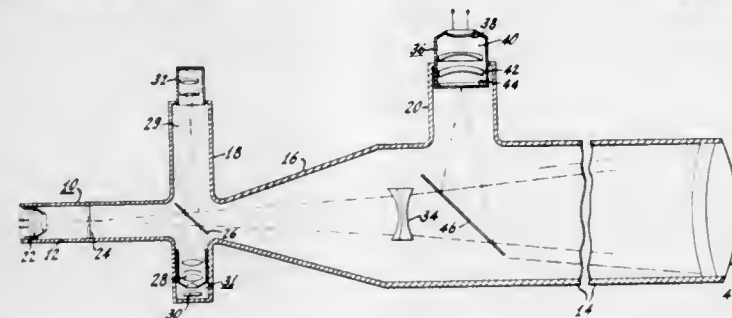
Burton R. Clay, 55 Sedgemeadow Road, Wayland, Mass., and Wilfred A. Strickland, 84 Francis Wyman Road, Burlington, Mass.

Filed Mar. 6, 1969, Ser. No. 804,836

Int. Cl. G01b 11/26

U.S. Cl. 356-153

5 Claims



A collimator is disclosed which may be energized by a light source such as a laser and which includes means having a large field of view for expediting the finding of the light reflected from a reflecting surface to be oriented. The collimator includes means having a small field of view for making final adjustments in orienting the reflector, there being no moving parts in or between these two means. A built-in, sturdy reference device is provided which is independent of small errors in adjustment of parts of the collimator.

3,628,870

**DEVICE FOR MEASURING AMOUNT OF DISPLACEMENTS WITH AID OF GRATINGS**

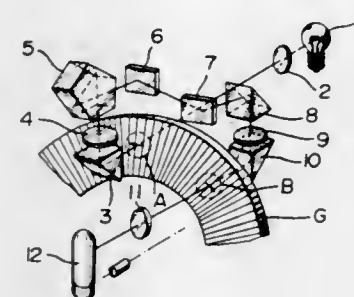
Yoshisada Hayamizu, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Continuation of application Ser. No. 697,175, Jan. 11, 1968, now abandoned. This application July 2, 1970, Ser. No. 56,114

Int. Cl. G01b 11/26

U.S. Cl. 356-170

5 Claims



A device for measuring the magnitude of displacements with the aid of gratings having a real image optical system whose magnification is one with a reflection optical system adapted to reflect a light incident on a grating plane and project the light again on the same grating plane in a direction which is the same as that of the incident light to produce a moire fringe whose strength varies in response to the displacement of the grating. The moire fringe thus produced is observed to measure the amount of displacement of the grating. An elongated grating is used in case of measuring a

linear displacement of the grating, while a radial grating is used in case of measuring an angular displacement of the grating.

3,628,871

**OPTICAL COLOR PRINTING ANALYSIS DEVICE AND METHOD**

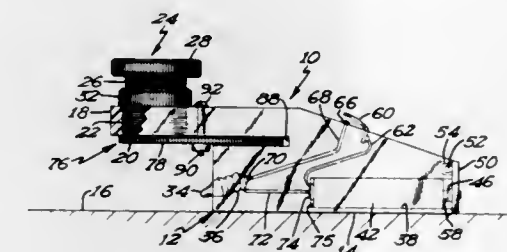
Anders B. Himmelstrup, 2368 Bourne Ave., St. Paul, Minn.

Filed Oct. 6, 1969, Ser. No. 863,859

Int. Cl. G01j 3/48; B41f 15/00

U.S. Cl. 356-189

14 Claims



An optical magnifying lens is mounted as part of a manually portable color printing analysis device which has support means adapted to position the lens properly above a color print surface to be inspected. A light on the device illuminates the surface, and a color filter is mounted for selective movement into the field between the lens and surface. The filter color is complementary to the color of that part of the surface to be checked. For example, a blue filter is provided for inspection of yellow printed surfaces. Preferably one or more such color filters are mounted on a filter plate movably supported on a body portion of the device, which body portion also serves as a handle and battery case. Inspection of the surface through the magnifying lens and filter provides an enlarged dark contrast image of the desired color printed areas, such as the colored dot portion of a colored halftone sheet, even though some of the colors to be inspected are partially overprinted by other colors.

3,628,872

**SPECTROPHOTOMETRIC TEST APPARATUS AND METHOD EMPLOYING RETROREFLECTIVE MEANS**

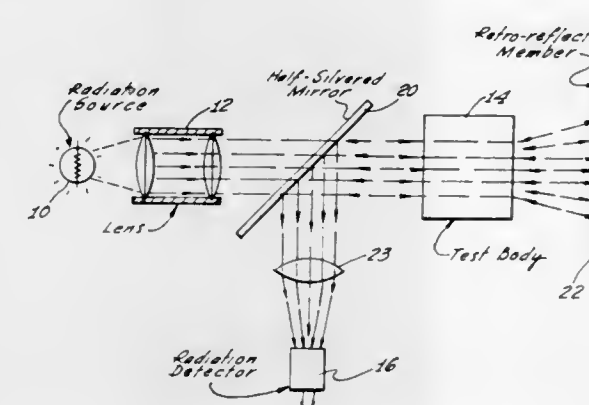
Victor Eduardo Vasquez Miranda, Huntington Beach, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Nov. 6, 1969, Ser. No. 874,557 The portion of the term of the patent subsequent to July 20, 1988, has been disclaimed.

Int. Cl. G01n 21/06

U.S. Cl. 356-201

8 Claims



An improved method and apparatus are provided by which a selected radiation is passed through a test body and is subsequently measured, so as to determine the amount of the radiation absorbed by the body, and which involves the redirection of the radiation by retroreflective means through the test body directly back along its original path, prior to its detection by an appropriate radiation detector. In this way

refraction effects due to flaws in the test body, which normally would direct random portions of the radiation away from the detector are cancelled, and the entire radiant beam is incident on the radiation detector despite such flaws.

3,628,873

**METHOD OF CONTINUOUSLY DETERMINING THE DEGREE OF POLLUTION OF TRANSLUCENT LIQUIDS AND APPARATUS THEREFOR**

Ernst Leltz, Wetzlar, Germany, assignor to Ernst Leltz GmbH, Wetzlar, Germany

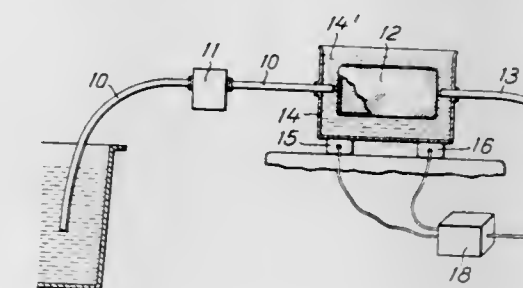
Filed Feb. 20, 1970, Ser. No. 13,058

Claims priority, application Germany, Feb. 22, 1969, P 19 08 904.4

Int. Cl. G01n 21/26

U.S. Cl. 356-208

5 Claims



A method of and apparatus for determining the degree of pollution of a liquid by causing the liquid to flow through a transparent vessel. A light beam is directed on the vessel and the intensity of the light is measured after the beam has passed through or is reflected from the liquid. Ultrasonic pressure waves are applied to the vessel and the liquid therein for keeping the walls of the vessel clean from dirt particles which otherwise may accumulate thereon.

3,628,874

**COMPACT OPTICAL SIGHTING LEVEL WITH INTERNAL FINE SETTING OF THE HORIZONTALITY OF THE LINE OF SIGHT**

Luc A. Tagnon, Saint-Mande, France, assignor to Societe Des Lunetiers, Paris, France

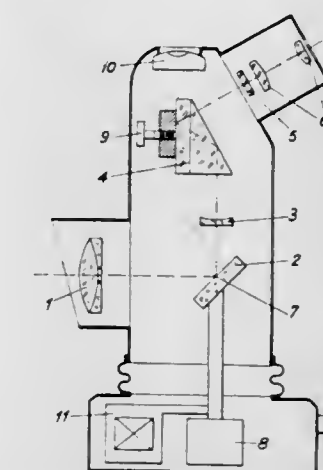
Filed Mar. 5, 1970, Ser. No. 16,872

Claims priority, application France, Mar. 12, 1969, 6906971

Int. Cl. G01c 9/12, 9/24

U.S. Cl. 356-249

4 Claims



An automatic optical sighting level comprising a lens system, a mirror controlled by the vertical and disposed at a distance F/2 from said lens system, for reflecting the incoming light beam in a vertical direction, a conventional-type divergent vehicle movable along the vertical, a cross-wire and an observation eyepiece, characterized in that a fixed Abbe prism from which the last 60° reflection has been cut off is interposed between said vehicle and said cross-wire, so that it will eventually reflect the light beam along an axis



inclined by 30° above the horizontal. The mirror is controlled for vertical alignment by adjusting same with the assistance of an air-bubble or spirit-level rigid with the support of said mirror, whereby a relatively rapid level measurement can be effected by simply bringing the instrument rapidly into an approach or rough sighting position by centering the bubble of a spherical level.

3,628,875

# **SPRAYING DEVICE WITH HAND-HELD SPRAYING HEAD**

Walter J. Wild, Zahringer Platz 21, 775 Constance (Bodensee), Germany

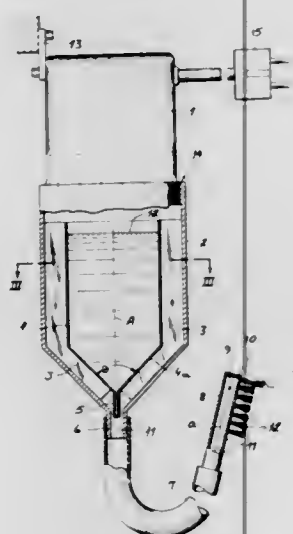
Filed Oct. 16, 1969, Ser. No. 866,824

Claims priority, application Japan, Oct. 17, 1968, P 18 03 541.1

Int. Cl. A46b 11/04

U.S. Cl. 401—137

7 Claims



An axial blower is mounted on a wall, and a housing having a frustoconical end portion with a tubular extension is removably threaded onto it. This extension carries a flexible tube whose free end is a spraying tip or head in the form of a blind tube with a lateral orifice. Spaced coaxially within the housing by several axially extending vanes is a cylindrical liquid receptacle having a frustoconical end portion with a tubular extension of small fluid-flow cross section extending into the housing extension. The blower exerts pressure on the liquid in the receptacle to drive it through the constriction at the bottom of the receptacle, an airstream flowing around the receptacle entrains these droplets toward an impact (impingement) surface formed at the end of the handpiece to atomize the larger droplets and form a mist which is ejected through the orifice of the endpiece.

3,628,876

# **WRITING IMPLEMENT**

Robert S. Casey, and Lynn P. Martin, both of Fort Madison, Iowa, assignors to Textron, Inc., Providence, R.I.

Continuation-in-part of application Ser. No. 244,196, Dec. 12, 1962, now abandoned. This application June 21, 1968, Ser. No. 754,161

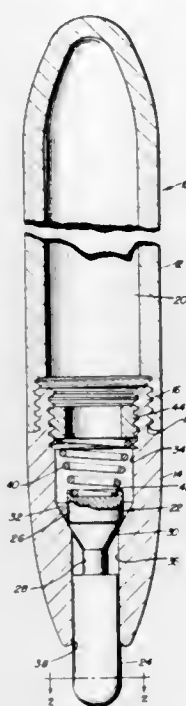
Int. Cl. B43k 1/00, 5/18

U.S. Cl. 401—198

6 Claims

The writing implement has a fluid reservoir, a rodlike applicator for conducting fluid from the reservoir to a writing surface and means supporting the applicator against axial movement under normal writing pressure. The applicator comprises a substantially continuous matrix of a wear-resistant, resilient, synthetic polymer having therethroughout a plurality of randomly disposed interconnected voids providing tortuous passageways of a size sufficient to permit capillary movement of a writing fluid therethrough upon contact of the point with the writing surface, the matrix having sufficient flexibility to permit resilient deformation of the point in engagement with the writing surface under normal writing pressure and having sufficient stiffness to maintain the forward end thereof in substantial axial alignment with the rearward end under normal writing pressure applied angularly to the point.

cient flexibility to permit resilient deformation of the point in engagement with the writing surface under normal writing pressure and having sufficient stiffness to maintain the forward end thereof in substantial axial alignment with the rearward end under normal writing pressure applied angularly to the point.



3,628,877

# **COMPRESSION MECHANISM AND POST BINDER INCORPORATING THE SAME**

Frank Barnes, Jr., 59 Benson Ave., Sayville, N.Y.

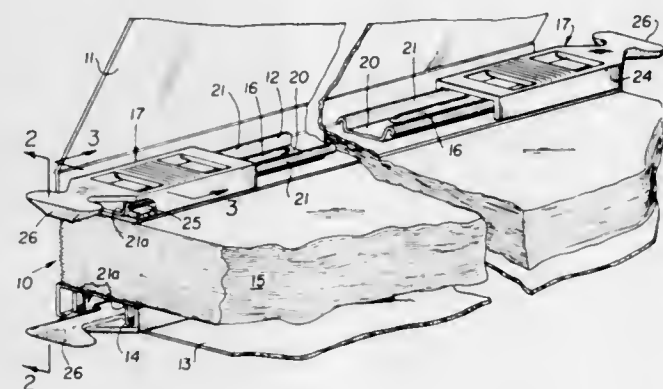
Continuation-in-part of application Ser. No. 857,184, Sept. 11, 1969, now abandoned, Continuation-in-part of application Ser. No. 724,391, Apr. 26, 1968, now abandoned.

This application Mar. 17, 1971, Ser. No. 125,074

Int. Cl. B42f 3/00

U.S. Cl. 402—17

1 Claim



The four retaining slides of a post binder having two parallel compression mechanisms are each provided with an outwardly extending hook so that the binder can be vertically suspended in a file drawer or the like between suitably spaced horizontal supports. When the binder is removed from the file drawer for use, the retaining slides can be readily shifted along the compression members to retracted positions within the binder. The position of the flexible posts and the length of the slides are such that the slides retain the posts in both their extended and retracted positions.

3,628,878

# **MULTISHELL AXIAL TURBINE, PREFERABLY STEAM TURBINE FOR HIGH PRESSURES AND TEMPERATURES**

Werner Trassel; Wilhelm Engelke, and Axel Remberg, all of Mulheim-Ruhr, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

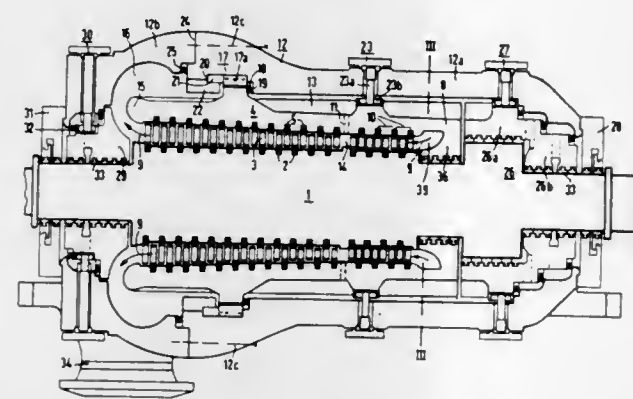
Filed Dec. 2, 1969, Ser. No. 881,445

Claims priority, application Germany, Dec. 3, 1968, P 18 12 493.1

Int. Cl. F04d 29/40; F01d 1/00

U.S. Cl. 415—108

13 Claims



Multishell axial turbine includes a guide vane carrier divided in an axial plane, an inner casing surrounding the guide vane carrier, and an outer casing surrounding the inner casing, the inner casing being also divided in an axial plane and being structurally joined with the guide vane carrier into a single inner shell.

3,628,879

# **JET PUMP**

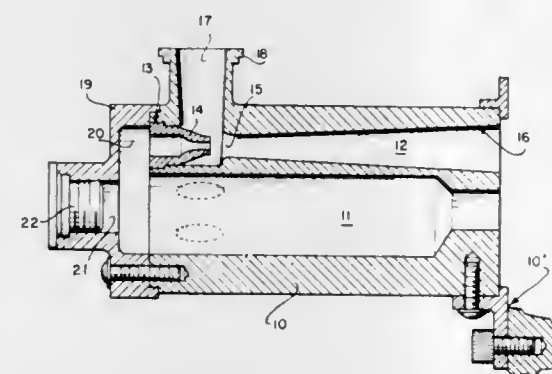
Frank E. Marmon, Marietta, and Alan B. Shimell, Atlanta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 23, 1970, Ser. No. 5,252

Int. Cl. F04f 5/00

U.S. Cl. 417—176

4 Claims



This jet pump comprises an ejector manifold adapted for connection between a single source of pressurized fluid and multiple scavenge lines from different fuel tanks or storage areas whereby all of the fuel is withdrawn from all such areas with the pressurized fluid for ultimate delivery to one or more engines. By using a common ejector manifold the duplication of parts, lines and fittings is held to a minimum and a more efficient scavenge system results.

3,628,880

# **VANE ASSEMBLY AND TEMPERATURE CONTROL ARRANGEMENT**

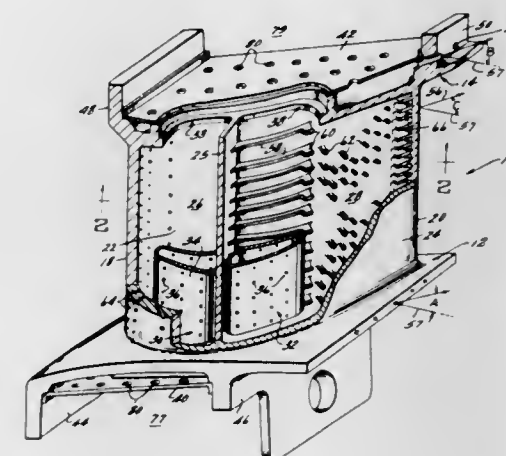
Robert J. Smuland, Cincinnati; Ned A. Hope, Loveland, and James E. Sidenstick, Cincinnati, all of Ohio, assignors to General Electric Company

Filed Dec. 1, 1969, Ser. No. 881,254

Int. Cl. F01d 25/12, 5/08

U.S. Cl. 415—115

8 Claims



A gas turbine engine vane assembly of the type adapted for use in an annular row of such assemblies and having spaced inner and outer platform portions for defining an annular hot gas stream flow path and a hollow airfoil extending therebetween. The airfoil is compartmentalized by a bridge member extending between the airfoil sidewalls and an impingement insert is provided for each compartment. Chordwise extending structural ribs are provided internally of the airfoil to strengthen the sidewalls and impingement baffles are provided outwardly of the platform portions for temperature control of these elements. Passageways are provided through the platforms to direct coolant to the downstream edges thereof and into the hot gas stream at an angle approximating the hot gas swirl angle.

3,628,881

# **LOW-NOISE IMPELLER FOR CENTRIFUGAL PUMP**

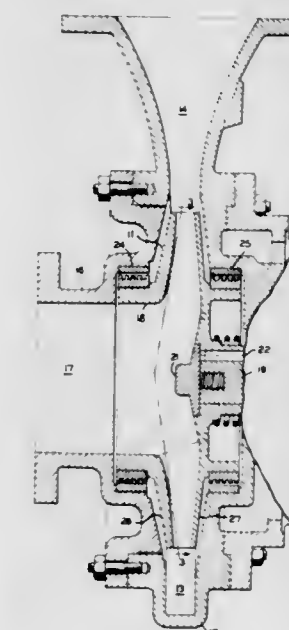
Arthur J. Herrmann, Jr., Batavia, Ill., assignor to General Signal Corporation

Filed Apr. 20, 1970, Ser. No. 29,842

Int. Cl. F04b 39/00; F04d 17/08, 29/26

U.S. Cl. 415—119

4 Claims



A practical scheme for reducing the amplitude of fluid-borne noise produced by a centrifugal pump which comprises



an improved impeller in which the vanes are arranged in a single row and are skewed with respect to the shrouds so that the tips of adjacent vanes overlap in the circumferential direction. The arrangement results in a substantially continuous interaction between the vanes and the cutwater.

3,628,882

**CENTRIFUGAL FAN STRUCTURE**

Arne Lennart Nilsson, Stockholm, Sweden, assignor to Aktienbolaget Electrolux, Stockholm, Sweden

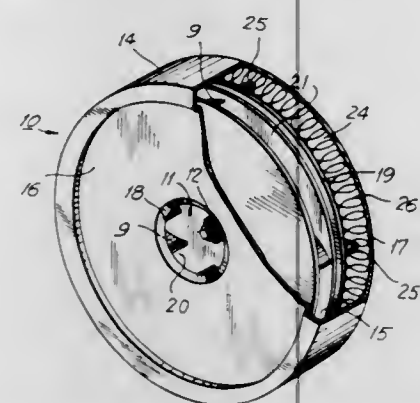
Filed Dec. 19, 1969, Ser. No. 886,627

Claims priority, application Sweden, Dec. 20, 1968, 17526/68

Int. Cl. F04b 39/00; F04d 17/12

U.S. Cl. 415-119

4 Claims



This invention relates to a centrifugal fan having a rotatable fan wheel and stationary diaphragm disposed within a housing having an air inlet and outlet as its opposite ends. The diaphragm is spaced from the end of the housing having the air outlet to form a diffuser chamber. The air inlet of the housing cooperates with an axially disposed inlet of the fan wheel through which air is discharged radially outward to an outlet at the periphery of the fan wheel. The outer periphery of the diaphragm is spaced from the housing to form an annular discharge opening through which air at a high velocity passes from the outlet of the fan wheel to the diffuser chamber. In order to reduce the velocity of the air discharged from the fan wheel to transform its dynamic pressure to static pressure, a helical spring of annular form is disposed in the outer peripheral portion of the diffuser chamber.

3,628,883

**ELASTIC SEALING CONNECTION**

Thorbjorn Hals, Vestfossen, Norway, assignor to A/S Kongsberg Vapenfabrik, Kirkegardsvien, Kongsberg, Norway

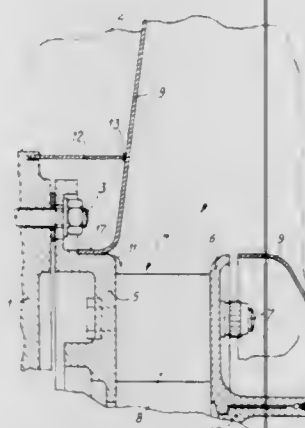
Filed Dec. 5, 1969, Ser. No. 882,565

Claims priority, application Norway, Dec. 6, 1968, 4898/68

Int. Cl. F01d 25/00

U.S. Cl. 415-204

2 Claims



The present specification discloses an elastic sealing connection between an elastic expanding scroll of a radial flow gas turbine and other stationary parts of the turbine, comprising an axially extending, annular, elastic flange which is normally a loose fit in an annular groove and is forced into

dual-line contact therewith when the scroll expands during the operation of the turbine.

3,628,884

**METHOD AND APPARATUS FOR SUPPORTING AN INNER CASING STRUCTURE**

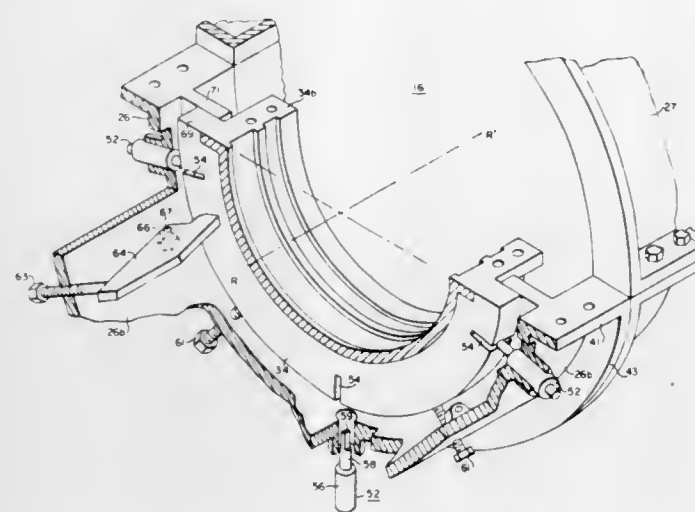
George M. Mierley, Sr., Wilmington, Del., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1970, Ser. No. 50,151

Int. Cl. F01d 25/28

U.S. Cl. 415-219

11 Claims



A rotary machine such as a turbine, having outer and inner tubular casings encompassing a rotor and divided along a horizontal plane into upper and lower semicylindrical halves. The improvement comprises an arrangement including an annular series of eccentric bushing structures inserted radially through apertures in the outer casing to adjustably fit axially through key slots on the periphery of the inner casing to support the inner casing concentrically relative to the axis of rotation of the rotor. Furthermore, external screw means are connected to internal levers to move the inner casing into sealing relation with the outer casing. The invention also involves the method of supporting the inner casing within the outer casing and moving the inner casing relative to the outer casing.

3,628,885

**FLUID-COOLED AIRFOIL**

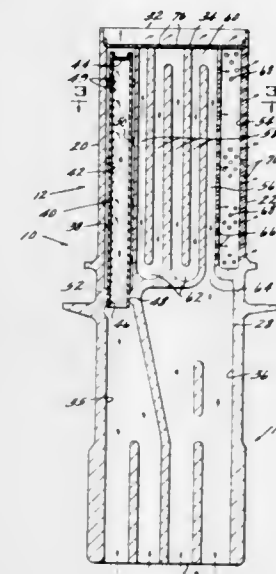
Sidenstick, James E.; Richard W. Brown; Herbert E. Nichols, and Frederick Burggraf, all of Cincinnati, Ohio, assignors to General Electric Company

Filed Oct. 1, 1969, Ser. No. 862,904

Int. Cl. F01d 5/08

U.S. Cl. 416-97

11 Claims



An improved fluid-cooled airfoil having spaced leading and trailing edge chambers and a serpentine passage

therebetween. Coolant is delivered to the leading and trailing edge chambers, respectively, by an impingement insert and the portion of the serpentine chamber adjacent the trailing edge chamber. Various features, such as turbulence promoters, inclined trailing edge passages and film-cooling passageways, are provided to enhance the heat-transfer properties of the airfoil.

3,628,886

**ARRANGEMENT FOR ENDWISE CLAMPING TOGETHER THE HUBS OF TWO SECTIONS OF A GAS TURBINE ROTOR**

Tore Anton Andvig, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrikk, Kongsberg, Norway

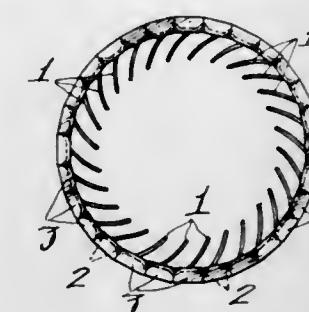
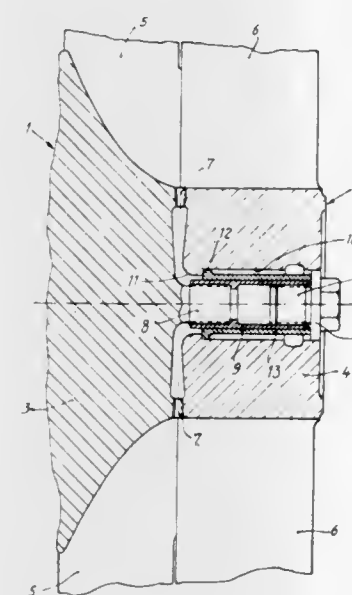
Filed Nov. 25, 1969, Ser. No. 879,818

Claims priority, application Norway, Nov. 15, 1968, 4692/68

Int. Cl. F01d 5/04

U.S. Cl. 416-183

2 Claims



ality of blade elements may be arranged in side-by-side relationship within a certain given diameter

3,628,888

**LIGHT WEIGHT FAN ASSEMBLY**

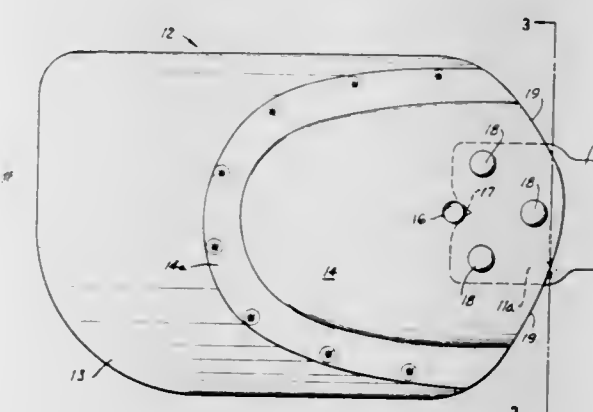
John A. Wooden, Indianapolis, Ind., assignor to Brookside Corporation, McCordsville, Ind.

Filed Feb. 24, 1970, Ser. No. 13,594

Int. Cl. F04d 29/34

U.S. Cl. 416-210

3 Claims



The invention comprises an improved clamping device for clamping the hub of a first section of a gas blade wheel or rotor to the hub of a second section of blade wheel or rotor. The latter hub has a protruding pin located within a bore in the first hub. Adjacent the second hub the bore of the first hub has a shoulder facing the opposite end. A tension sleeve is secured to the pin and a compression sleeve surrounding the tension sleeve abuts the shoulder with its inner end. Both sleeves are located within the bore. A tensioning bolt abuts with its head the opposite end of the compression sleeve and threadedly engages the tension sleeve. There is a considerable clearance between the compression sleeve and the walls of the bore and only very little clearance between the two sleeves.

Disclosed is a fan assembly in which each fan blade is formed by overlying, thin plates which receive, between them, the extending end portion of a fan spider arm, the laminated assembly thus formed being riveted together to provide a light weight, yet rigid, fan spider and blade assembly.

**ERRATUM**

For Class 416-230 see:  
Patent No. 3,628,890

3,628,889

**HYDRAULIC INJECTION TIME CONTROLLING DEVICE IN FUEL INJECTION PUMPS**

Masayoshi Kobayashi, Higashi-Matsuyama, and Shiro Kaneko, Ogawa-machi, Hiki-gun, both of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1970, Ser. No. 23,693

Int. Cl. F04b 1/06

U.S. Cl. 417-221

2 Claims

**3,628,887  
MULTIBLADE VENTILATOR**

Tsunehiko Jchisaka, No. 61, 1-chome, Tamagawa-Nakamachi Setagaya-ku, Tokyo, and Mineichi Akashi, No. 3148, 2-chome, Hirose-cho, Kiryu, both of Japan

Filed Dec. 24, 1969, Ser. No. 887,889

Int. Cl. F04d 29/26

U.S. Cl. 416-187

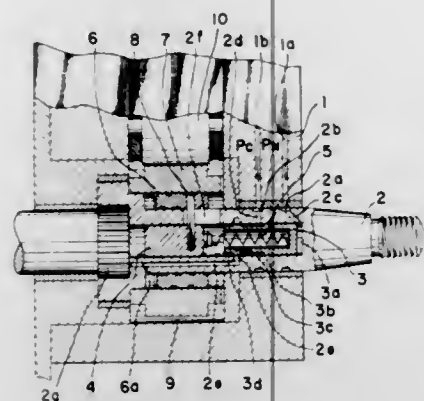
7 Claims

A multiblade ventilator in which a metal plate is stamped to provide a structure having blade elements in the center thereof, coupling portions at both sides of each blade element for coupling the blade elements and projected portions exteriorly of the coupling portions for securely supporting

A hydraulic injection time-controlling device comprising, a sleeve combined with drive and driven shafts, displacement of which sleeve changes phase between said shafts; a pilot valve in said drive shaft, which is moved in response to fluid pressure varied with speed of rotation, said sleeve being displaced by control of supply of pressure fluid acting on said



sleeve due to the displacement of said pilot valve, and a spring between a spring seat connected to said sleeve and pump roller occludes the compressible pump tube, and the minimization of the effects of the pulsation which occurs



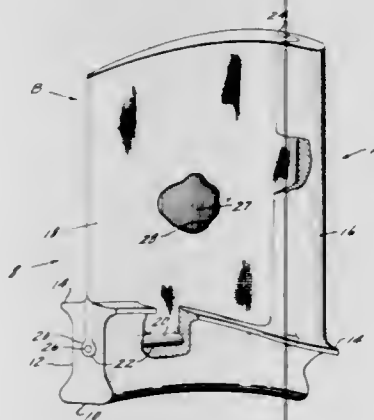
said pilot valve, the displacement of said sleeve being transmitted to said pilot valve through said spring.

### 3,628,890 COMPRESSOR BLADES

Edwin D. Sayre, and Lewis J. Stoffer, both of Cincinnati, Ohio, assignors to General Electric Company  
Filed Sept. 4, 1969, Ser. No. 855,334  
Int. Cl. F01d 5/14

U.S. Cl. 416—230

5 Claims



An axial flow compressor rotor blade is formed by two separable components. One component is fabricated of metal and forms the leading edge portion of the cambered airfoil and the mounting tang of the blade. The other component is formed of a fiber-composite material and forms the remainder of the cambered airfoil.

### 3,628,891 METHOD FOR THE MINIMIZATION OF THE EFFECTS OF PULSATIONS IN INTERMITTENT PUMPING SYSTEMS

Jack Isreeli, Mamaroneck; Aaron Kassel, Brooklyn, and Robert Dannewitz, Yonkers, all of N.Y., assignors to Technicon Corporation, Tarrytown, N.Y.

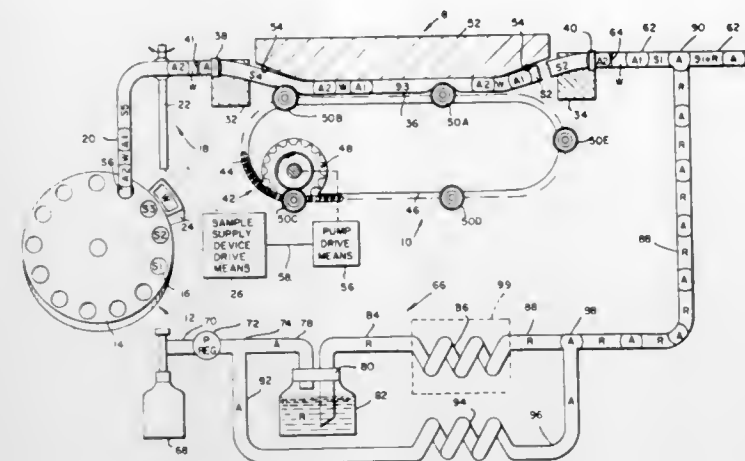
Filed Sept. 14, 1970, Ser. No. 71,777

Int. Cl. F04b 43/12, 45/08

U.S. Cl. 417—53

25 Claims

New and improved method for minimizing the effects of pulsations which occur during the operation of intermittent pumping systems is provided and, as disclosed, is applied to a peristaltic pump which is utilized in a fluid sample supply, treatment and analysis system and comprises the minimization of the effects of the pulsation which occurs each time a



each time a pump roller discontinues the occlusion of the compressible pump tube.

### 3,628,892 FUEL INJECTION PUMP FOR INTERNAL-COMBUSTION ENGINES

Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

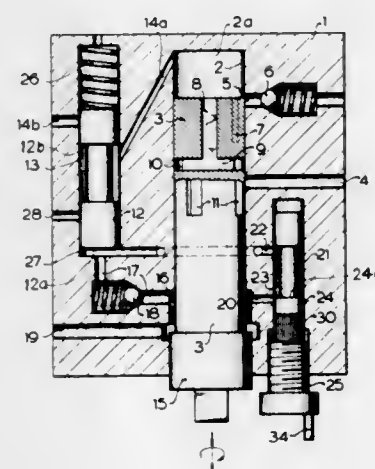
Filed Feb. 12, 1970, Ser. No. 10,887

Claims priority, application Germany, Feb. 28, 1969, P 19 10 090.4

Int. Cl. F04b 49/00

U.S. Cl. 417—292

5 Claims



In a fuel injection pump in which the fuel quantities delivered thereby to an internal-combustion engine are controlled by a throttle opening arbitrarily variable by means of a control plunger, there is associated with said plunger a heat expandable part which, independently of the arbitrary setting of said plunger, causes a displacement of the plunger in response to the changes in the temperature of the liquid passing through said throttle in order to compensate for the temperature-dependent changes in the viscosity of said liquid.

### 3,628,893 LIQUID AND AIR MIXING GEAR PUMP

Poerio Carpigiani, Via Cairoli 14, Bologna, Italy  
Continuation of application Ser. No. 747,300, July 24, 1968.

This application May 4, 1970, Ser. No. 31,877

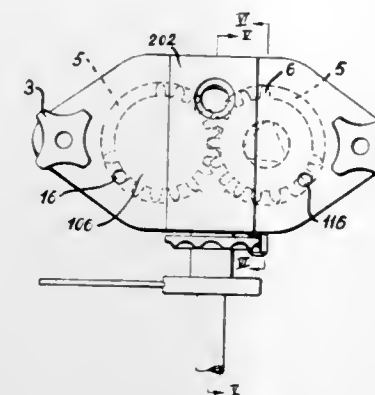
Int. Cl. F04b 49/11; F04c 15/02

U.S. Cl. 417—310

6 Claims

This invention relates to a two-gear pump for the formation of liquid and air emulsions, comprising a liquid intake at the point in which the gears begin to come out of mesh; a

liquid and air mixture delivery port at the point in which said valve member which is spring loaded to maintain the column of fuel intermediate the pressurizing valve and the delivery



path of the crown of teeth of each gear outside their meshing point.

### 3,628,894 HIGH-VACUUM MECHANICAL PUMP

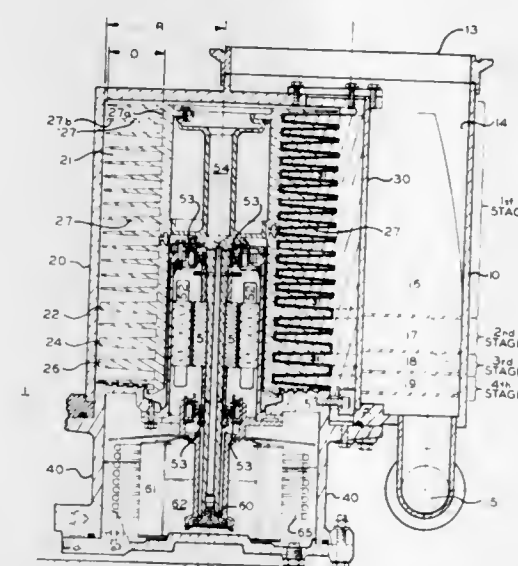
John H. Ferguson, Jr., Sauquoit, and Frank Woodruff, New Hartford, both of N.Y., assignors to The Bendix Corporation

Filed Sept. 15, 1970, Ser. No. 72,478

Int. Cl. F04b 17/00

U.S. Cl. 417—353

12 Claims



A new type multistage molecular drag pump wherein the pumping chamber contains rotating surfaces having an area much greater than the stationary surface area of the pumping chamber.

### 3,628,895 LIQUID FUEL PUMPING APPARATUS

Moshe Drori, East Twickenham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 4, 1969, Ser. No. 873,906

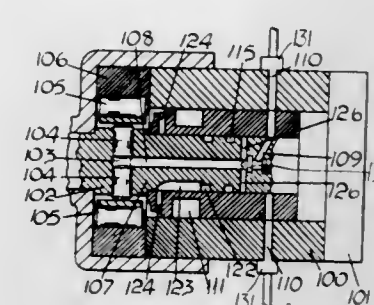
Claims priority, application Great Britain, Nov. 15, 1968, 54,304/68

Int. Cl. F04b 21/02, 39/08, 19/02

U.S. Cl. 417—458

3 Claims

A fuel injection pump of the rotary distributor type and which includes a distributor in which is provided a passage having a delivery valve which closes at the end of an injection stroke and after a predetermined quantity of fuel has flowed back towards the injection pump, and the pump also includes in each outlet, a pressurizing valve which includes a



valve under the pressure thereby to prevent the formation of cavities within the column of fuel.

### 3,628,896 HYDRAULIC PULSE GENERATOR

Holger Graffman, Villa Solimar, Benicasim de Castellon, Spain

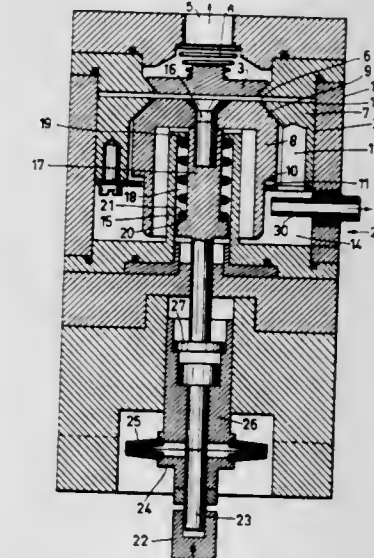
Filed Apr. 27, 1970, Ser. No. 32,138

Claims priority, application Sweden, Dec. 12, 1969, 17217/69

Int. Cl. F04b 7/00

U.S. Cl. 417—487

3 Claims



The pulse generator according to the invention comprises a piston pump with a suction space and a compression space, the piston comprising two movable portions, with limited movability relative one another and of concentric relationship, forming between themselves an overflow passageway from the suction space to the compression space, and coacting surfaces in both portions controlling the overflow through said passageway.

### 3,628,897 VALVE AND PUMP

Georg Stetter, Strigelstrasse 5, 894 Memmingen, Germany

Filed Oct. 21, 1969, Ser. No. 868,020

Claims priority, application Germany, Oct. 30, 1968, P 18 05 972.8

Int. Cl. F04b 7/00, 15/02

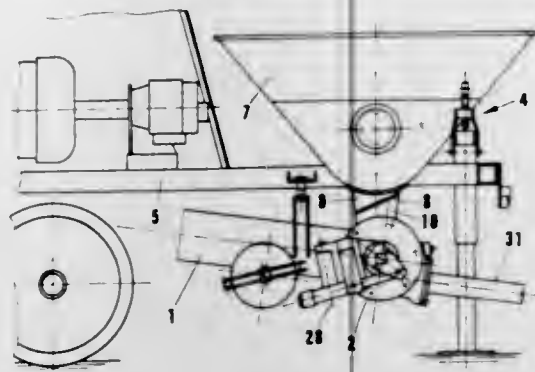
U.S. Cl. 417—519

10 Claims

A pump and a valve therefor, the valve having an inlet conduit, an outlet and an opening connected to the pump cylinder, and a rotary part rotatable selectively to connect



the opening to the inlet conduit and the outlet. The passage formed in the valve when the rotary part is in the position to the lobe surfaces to permit the apex portions of the rotor to sweep past the valves without breaking the seal between ad-



connect the inlet conduit to the opening has the form of a pipe bend.

3,628,898

**TWIN ELLIPSE PUMP**

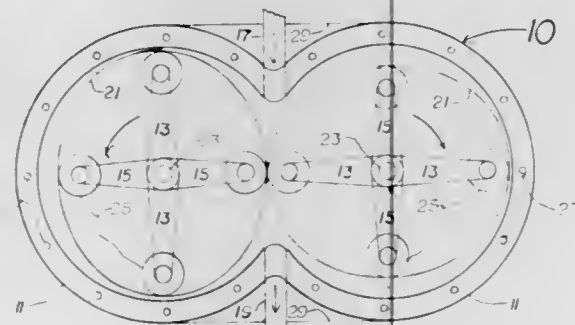
Edwin C. Bragdon, 2115 San Felipe Road, Houston, Tex.

Filed Apr. 20, 1970, Ser. No. 30,125

Int. Cl. F01c 5/00; F03c 3/00; F04c 5/00

U.S. Cl. 418-45

3 Claims



In the new and improved pump disclosed herein, a pair of counterrotating crossed arms of unequal lengths are respectively rotatably mounted in the center of a pair of semicylindrical overlapping chambers. Rollers on the outer ends of each of the arms are rollingly engaged within a resilient elliptically shaped band disposed around the walls of each chamber and resiliently coengaged with the other band at a point midway between the two chambers to separate a common fluid inlet and outlet. Each pair of the arms has one longer arm with an overall length substantially equal to the diameter of the chambers so that counterrotation of the arms will move the rollers on the longer arms around the bands to press successive portions of the bands against the adjacent cylinder walls for forming progressively advancing fluid displacement spaces around the perimeter of the cylinders to conduct fluids from the inlet to the outlet.

3,628,899

**EXPANSIBLE FLUID ROTARY ENGINE**

Leslie C. George, 1424 Milan St., New Orleans, La.

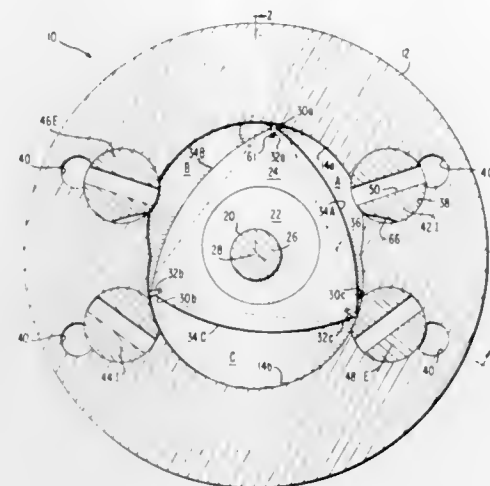
Filed July 3, 1969, Ser. No. 839,012

Int. Cl. F01c 1/02

U.S. Cl. 418-61

18 Claims

The engine comprises a two-lobed housing having an epitrochoidal inner surface in which is mounted a triangular rotor on an eccentric carried by a central driven shaft, the rotor and epitrochoidal surfaces forming variable-volume working chambers. Inlet and exhaust valves are disposed in the housing on opposite sides of the cusps of the epitrochoidal surfaces. A timing mechanism oscillates the valves between open and closed positions to respectively admit expansible fluid into the chambers to rotate the rotor and to exhaust the expanded fluid from the chambers. The valves in their closed positions have surfaces conforming to



acent chambers. The valves are timed by a plurality of camshafts coupled to the driven shaft. The rotor can be driven in the reverse direction.

3,628,900

**CIRCULAR PISTON COMBUSTION ENGINE**

Rolf Lechler, and Wulf Leiternann, both of Neckarsulm, Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Wurttemberg, Germany and Wankel GmbH, Lindau an Bodensee, Germany

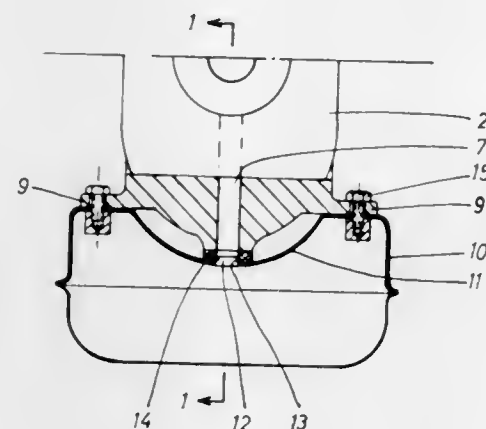
Filed Feb. 6, 1970, Ser. No. 9,198

Claims priority, application Germany, Feb. 8, 1969, P 19 06 433.6

Int. Cl. F01c 21/04; F04c 29/02, 29/04

U.S. Cl. 418-88

4 Claims



3,628,901

**MEANS FOR MONITORING PRODUCT QUALITY IN A PLASTICS INJECTION-MOLDING MACHINE**

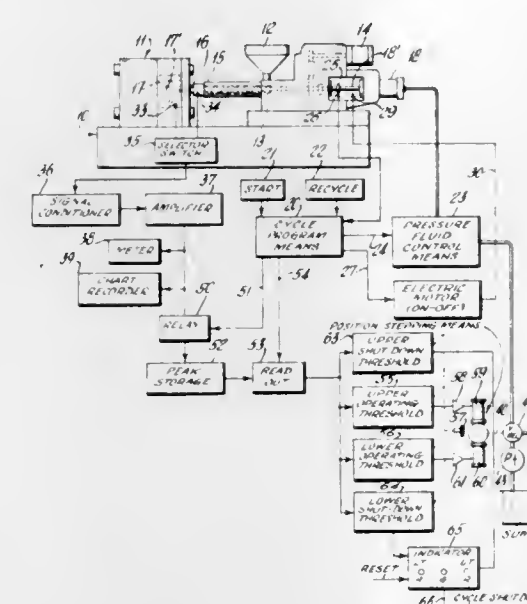
Donald C. Paulson, Southington, Conn., assignor to The New Britain Machine Company, New Britain, Conn.

Filed July 15, 1969, Ser. No. 841,719

Int. Cl. B29f 1/04, 1/06

U.S. Cl. 425-149

12 Claims



The invention contemplates control of quality and consistency in products of recycled operation of a plastics injection-molding machine by observing, for each cycle of operation, the peak pressure of plasticized melt and by comparing the observed value against a reference value. The polarity and magnitude of difference between observed and reference values are utilized to effect corrective adjustment of the feed force operative on plasticized melt on a succeeding cycle of the machine. If desired, means responsive to detected inability to effect adequate correction may automatically shut down the machine and indicate the polarity of the failure.

3,628,902

**SMOOTH TOP KITCHEN RANGE**

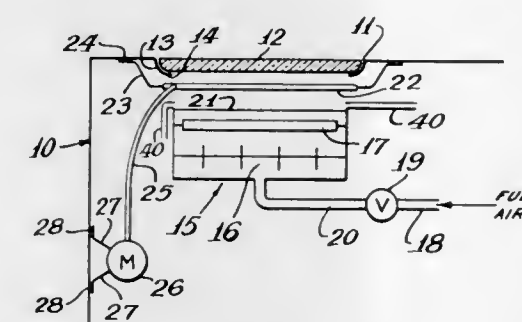
Jack Huebler, Deerfield; Robert B. Rosenberg, Evergreen Park, and Alan Kardas, Chicago, all of Ill., assignors to Institute of Gas Technology

Filed Oct. 10, 1969, Ser. No. 865,278

Int. Cl. F23c 7/00

U.S. Cl. 431-2

13 Claims



A method and apparatus for heating a load by radiant energy wherein the load is supported on a shield largely

transparent to said radiant energy, said shield being kept relatively cool by convective heat transfer which is preferably accomplished by directing a stream of cooling air to the undersurface of the shield.

3,628,903

**AFTERBURNER**

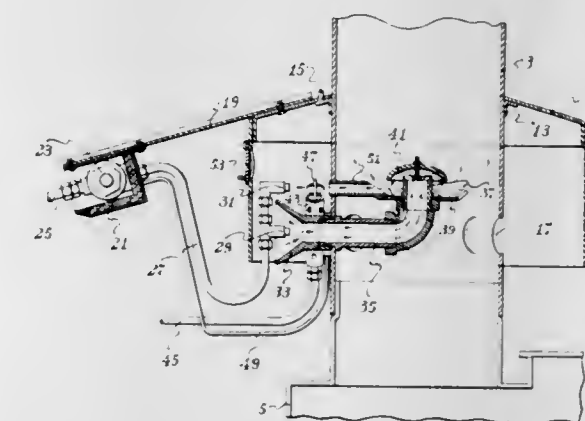
Kenneth C. Hoyt, P. O. Box #248, Rogers, Ark.

Filed May 11, 1970, Ser. No. 36,033

Int. Cl. F23d 13/20

U.S. Cl. 431-202

8 Claims



An afterburner for completing the combustion of stack gases and the like has a fuel supply to the interior of the stack and a mechanically controlled pilot which is blown by a jet of gas into the stack to ignite the fuel. The jet flows in parallel with the fuel supply. The pilot and fuel emerge centrally in the stack and are deflected by a downwardly concave deflector that cooperates with a larger upwardly concave deflector. An annular downwardly opening hood surrounds the stack and shields the pilot and the secondary air inlets.

3,628,904

**COMPUTER PROGRAMMING**

Jean Francois Canguilhem, 35 rue de la Rangee, 92 Garches, France

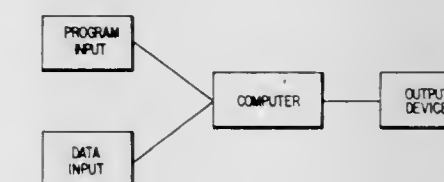
Filed Jan. 4, 1967, Ser. No. 607,301

Claims priority, application France, Jan. 1, 1966, 44961

Int. Cl. G06f 7/00

U.S. Cl. 444-1

8 Claims



A system of measurement known as dimensional synthesis to give quantitative measure to multidimensional subjective concepts.

**ERRATUM**

For Class 425-65 see:  
Patent No. 3,628,223



# CHEMICAL

3,628,905

## PROCESS FOR DYEING OR PRINTING FIBER MATERIALS CONTAINING NH-GROUPS

Helmut Kirschnek; Dietrich Hildebrand, both of Leverkusen; Udo-Winfried Hendricks, Cologne-Stemmheim; Gerhard Meier, Leverkusen-Rheindorf, and Mathieu Quaedvlieg, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1968, Ser. No. 734,537

Claims priority, application Germany, June 15, 1967, F

52695, Apr. 17, 1968, P 17 69 172.4

Int. Cl. C09b 12/00; D06p 3/14

U.S. Cl. 8-54

12 Claims

Process for dyeing or printing NH-containing fibers with reactive dyestuffs containing at least one group reactive to the NH-group and more than 1 sulfonic acid group comprising adding as surface active compounds aminoxides with at least eight carbon atoms in one and the same radical.

3,628,906

## AGENT FOR PROTECTING POLYAMIDE FIBERS OR THREADS AGAINST THE ATTACK OF BLEACHING AND WASHING BATHS

Karl Dithmar, Eschersheimer, Landstrasse 529, and Peter Koblischek, Parkstrasse 15, both of Frankfurt/Main, Germany, assignors Deutsche Gold-und Silber-Scheideanstalt Vormals Roessler

Filed Aug. 23, 1968, Ser. No. 754,760

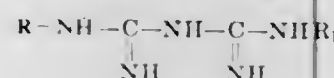
Claims priority, application Germany, Aug. 26, 1967, P 15 94 838.6

Int. Cl. D06f 3/02

U.S. Cl. 8-111

8 Claims

Polyamides may be protected during washing or bleaching by applying thereto a compound of the formula:



wherein R and R<sub>1</sub> are selected from hydrogen, alkyl groups having one to six carbon atoms, cyclohexyl, a substituted cyclohexyl group, a substituted alkyl group having one to six carbon atoms in the chain, and salts thereof.

3,628,907

## METHODS OF USING ACETAL-CONTAINING ORGANOSILICON COMPOSITIONS TO IMPROVE THE WATER-REPELLENCY OF CELLULOSE CONTAINING MATERIALS

John Gaylord Fish, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 31, 1968, Ser. No. 748,946

Int. Cl. D06m 13/18

U.S. Cl. 8-120

9 Claims

An acetal-containing organosilicon composition represented by the formula:

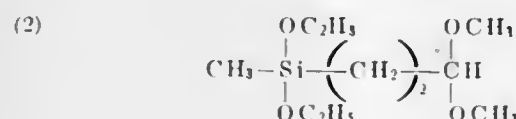


where R is selected from the group consisting of C<sub>1</sub>-C<sub>18</sub> alkyls, C<sub>4</sub>-C<sub>8</sub> cycloalkyls, aryls, arylalkyls and oxy and halo substituted derivatives thereof;

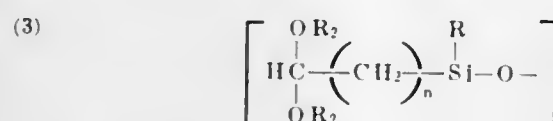
R<sub>1</sub> is selected from the class consisting of C<sub>1</sub>-C<sub>18</sub> alkyls and C<sub>4</sub>-C<sub>8</sub> cycloalkyls, aryls and arylalkyls;

R<sub>2</sub> is selected from the class consisting of C<sub>1</sub>-C<sub>18</sub> alkyls and C<sub>4</sub>-C<sub>8</sub> cycloalkyls, and n is an integer from two to 17.

One or such acetal-containing organosilicon compositions is, for example, methyl(diethoxy)(3,3-dimethoxypropyl)silane, which may be represented by the structural formula:

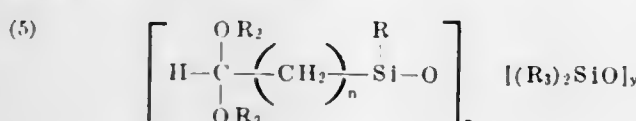


Homopolymers of such acetal-containing organosilicon compositions which have the general formula:



and copolymers of such acetal-containing organosilicon compositions and diorganodialkoxo silanes having the general formula:

4. (R<sub>3</sub>)<sub>2</sub>Si(OR<sub>4</sub>)<sub>2</sub>, the copolymer having the general formula:



where R<sub>3</sub> and R<sub>4</sub> are selected from the same groups as R<sub>1</sub> and R<sub>2</sub>, respectively, and x and y represent the mole fraction of each component and both x and y can vary up to one.

Also encompassed is a method for improving the water-repellency of a material containing substantial quantities of cellulose.

3,628,908

## SHRINKPROOFING WOOL WITH OXIDIZING AGENTS USING FOULARD LIQUID APPLICATION TECHNIQUE

Alan August Goldberg, and John A. Fullwood, both of Ambergate, England, assignors to Precision Processes (Textiles) Limited, London, England

Continuation of application Ser. No. 453,369, May 5, 1965, now abandoned. This application Apr. 30, 1970, Ser. No.

31,831

Claims priority, application Great Britain, May 7, 1964,

19,128/64

Int. Cl. D06m 03/08, 3/12, 13/38

U.S. Cl. 8-127.6

8 Claims

Shrinkproofing of continuous lengths of wool is effected by wetting out with an aqueous solution containing predetermined amounts of a wetting agent and two oxidizing agents for wool which react therewith at substantially different rates, immediately passing the wetted out wool through a precision nip and then allowing the thus-predetermined amount of solution to remain in contact with the wool while the desired oxidation takes place. The solution containing the two oxidizing agents is an unstable one and is freshly prepared from stable solutions as it is used up. The rate of admixture of the stable solutions is correlated with the rate of pickup of liquor by the wool so that the volume of prepared treating liquor remains constant and complete renewal thereof takes place in 1 to 15 minutes.

DECEMBER 21, 1971

CHEMICAL

999

3,628,909

## SHRINKPROOFING WOOL WITH OXIDIZING AGENTS USING FOULARD LIQUID APPLICATION TECHNIQUE

Alan August Goldberg, and John A. Fullwood, both of Ambergate, England, assignors to Precision Processes (Textiles) Limited, Ambergate, England

Continuation of application Ser. No. 463,419, May 5, 1965, now abandoned. This application Apr. 30, 1970, Ser. No.

31,832 Claims priority, application Great Britain, 19,129/64

Int. Cl. D06m 3/08, 3/12, 13/38

U.S. Cl. 8-127.6

9 Claims

Shrinkproofing of continuous lengths of wool is effected by wetting-out wool with an aqueous solution containing predetermined amounts of (a) a wetting agent, (b) a halogen-containing shrink-resistance-imparting oxidizing agent for wool, and (c) a source of hydrogen ion other than a per acid present in an amount sufficient to reduce the pH of the solution to below 5, immediately passing the wetted-out wool through a precision nip and then allowing the thus predetermined amount of solution to remain in contact with the wool while the desired oxidation takes place. The solution containing the acidified halogen-containing shrink-resistance-imparting oxidizing agent is an unstable one and is freshly prepared from stable solutions as it is used up. The rate of admixture of the stable solutions is correlated with the rate of pickup of liquor by the wool so that the volume of prepared treating liquor remains constant and complete renewal thereof takes place in 1 to 15 minutes.

3,628,910

## COMPOSITIONS FOR THE DEFORMATION OF KERATIN

Martin Grayson, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 2, 1966, Ser. No. 546,554

Int. Cl. A61k 7/10

U.S. Cl. 8-127.51

5 Claims

A method for deforming keratin is provided which comprises applying such compositions to keratin.

3,628,911

## TEXTILE CHEMICAL CLEANING PROCESSES

Werner Grunewald, Duesseldorf-Holthausen, Germany, assignor to Henkel & Cie GmbH, Duesseldorf-Holthausen, Germany

Filed Nov. 18, 1968, Ser. No. 776,753

Claims priority, application Germany, Dec. 8, 1967, P 16 17 136.1

Int. Cl. D06f 1/02

U.S. Cl. 8-142

2 Claims

In the chemical cleaning of textiles by subjecting the textiles to a chemical cleaning bath consisting of a major amount of an organic solvent, a minor amount of water and a surface-active cleaning intensifier, the improvement which comprises utilizing, as said cleaning intensifier, an addition product of 2 to 14 mols of propylene oxide to an alcohol selected from the group consisting of primary alkanols having from 10 to 20 carbon atoms, primary alkenols having from 10 to 20 carbon atoms and alkylphenols having from six to 12 carbon atoms in the alkyl. The invention also relates to the chemical cleaning bath and the preliminary emulsion containing the organic solvent, water and the propylene oxide adduct.

3,628,912

## PROCESS FOR INHIBITING HYDROGEN PERMEATION OF STEEL IN AMMONIA SERVICE

Donald H. Oertle, and Frederick J. Radd, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 25, 1968, Ser. No. 778,755

Int. Cl. C23f 7/04, 9/02

U.S. Cl. 21-2.5

2 Claims

A mixture of water and oxygen as an inhibitor for preventing hydrogen permeation of steel in ammonia service.

3,628,913

## PROCESS FOR RECOVERING TITANIUM TETRACHLORIDE FROM TITANIFEROUS ORE

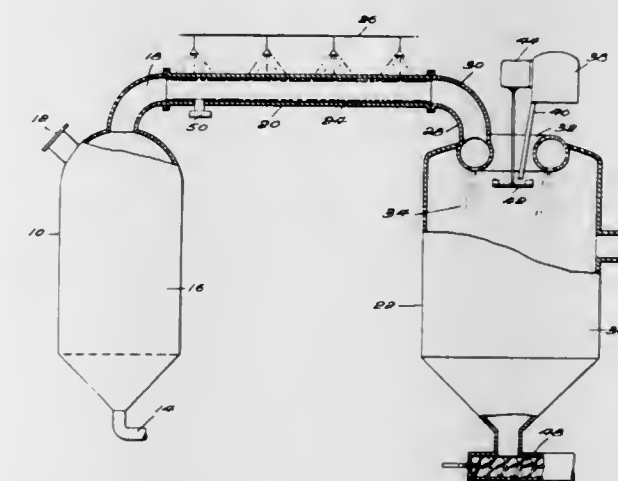
Keith L. Uhland, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 22, 1969, Ser. No. 868,341

Int. Cl. C01g 23/02, 49/10

U.S. Cl. 23-87 T

5 Claims



This invention relates to a process for transferring effluent containing ferrous chloride and titanium tetrachloride resulting from high-temperature chlorination of titaniferous materials from a chlorination furnace through a conduit to a spray condenser for separation of vaporous titanium chloride. During the transfer, the effluent is kept at least 20° C. above the ferrous chloride dew point by controlling heat loss from the conduit.

3,628,914

## PREPARATION OF ACTIVE ALUMINA

AGGLOMERATES OF HIGH-MECHANICAL STRENGTH  
Maxime Graulier, Paris, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Continuation-in-part of application Ser. No. 562,076, July 1, 1966, now Patent No. 3,480,389. This application Nov. 21, 1969, Ser. No. 878,882

Claims priority, application France, July 9, 1965, 24,121

Int. Cl. C01f 7/02; B01j 11/58

U.S. Cl. 23-143

3 Claims

The preparation of active alumina agglomerates of high-mechanical strength and low-active surface consisting of treating pellets of alumina in an autoclave in an acidic medium at a temperature above 100° to 250° C. for a time within the range of 1-20 hours, followed by drying the treated pellets and calcining the dried pellets at elevated temperature.

3,628,915

## CHEMICAL AGENT DETECTOR HOLDER AND METHOD OF TESTING AIR AND LIQUIDS FOR CHEMICAL AGENT CONTAMINATION

Louis A. Robertson, Edgewood, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed July 3, 1969, Ser. No. 838,806

Int. Cl. G01n 21/20, 31/22

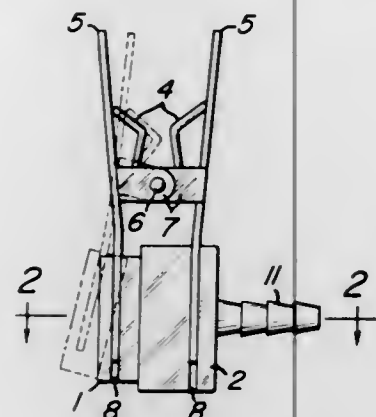
U.S. Cl. 23-230 R

6 Claims

An apparatus means and method for detecting any chemical agent contamination within an air or water sample; the apparatus comprising a detector means located between a pair of block members with each block member adapted to



move in respect to each other by means of arm members attached to each block member. One block member is held



within the other by spring means located between the arm members, and a means is provided to draw an air sample through the apparatus.

3,628,916

**DETERMINING THE FAT CONTENT OF MILK**

Hanne Werner, Helsingør, Denmark, assignor to N. Foss Electric A/S, Hillerød, Denmark

Filed Jan. 14, 1969, Ser. No. 790,931

Claims priority, application Denmark, Jan. 17, 1968, 154/68  
Int. Cl. G01n 33/04; A23c 3/08

U.S. Cl. 23—231

3 Claims

A batch of an oil-in-water emulsion such as milk or a milky substance is stabilized by the addition of a viscosity increasing agent, a portion of the batch is analyzed to determine the fatty content thereof and the remainder of the stabilized batch is then utilized as a reference standard for checking and calibrating apparatus which is used to determine the fatty content of such emulsions by the light transmission characteristics thereof.

3,628,917

**DEVICE FOR EVAPORATIVE CRYSTALLIZATION**

Larry George Nault, Warren, Pa., assignor to Struthers Scientific and International Corporation

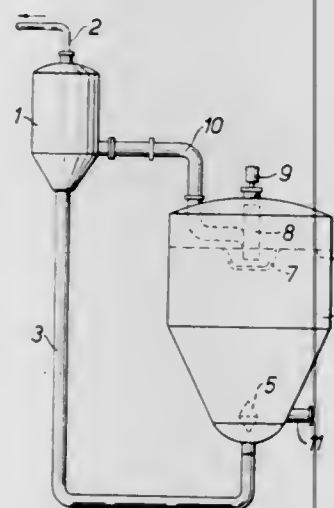
Filed June 11, 1968, Ser. No. 736,111

Claims priority, application Great Britain, July 26, 1967, 34,352/67

Int. Cl. B01d 9/02

U.S. Cl. 23—273 R

1 Claim



A large size crystallizer has a separate vacuum evaporation chamber and a crystallizer tank. The crystallizer tank has

fluid enter its bottom to flow upward past a flow distribution device and leave at its upper portion where a centrally located funnel collects fluid at a given fluid level.

3,628,918

**APPARATUS FOR PRODUCTION OF POLYETHYLENE**

Charles D. Beals; George I. Fitzpatrick, and Kim L. O'Hara, all of Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed May 15, 1970, Ser. No. 37,610

Int. Cl. C08f 1/98

U.S. Cl. 23—284

9 Claims



Polyethylene is produced by polymerization of ethylene along or with comonomers or telogens (modifiers) in an elongated tubular reactor having an inlet and outlet and at least one reaction zone and one cooling zone in the presence of free radical or free oxygen yielding initiator at elevated temperatures and pressures by passing the reaction mixture through each of the reaction zones of the tubular reactor having internal diameters between about 0.5 and 3 inches at bulk fluid velocities sufficient so that the Flow Number in each reaction zone is greater than 3.3 ft<sup>2</sup>/sec. Flow Number is defined as the bulk fluid velocity in ft./sec. times diameter in feet. With Flow Numbers in excess of 3.3 ft<sup>2</sup>/sec. in the reaction zones, it has been found that the effective reaction volume in the reaction zone has been increased and, accordingly, a more efficient process for producing a high quality polyethylene.

3,628,919

**CRYSTALLIZATION PROCEDURE FOR SODIUM CARBONATE PRECURSOR CRYSTALS**

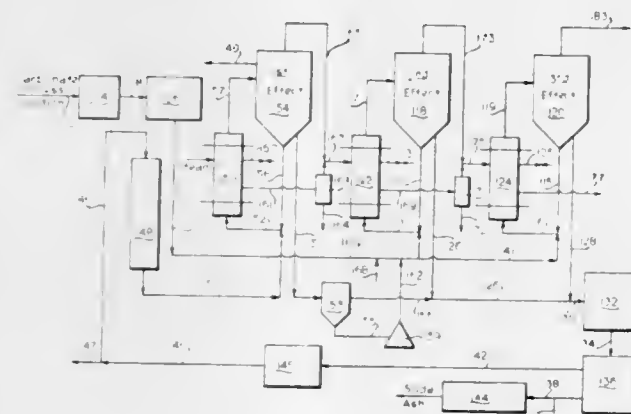
William D. Beauchamp, Syracuse; Eugene B. Port, Solvay, and Carlton J. Howard, Liverpool, all of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 29, 1968, Ser. No. 771,430

Int. Cl. B01d 9/02

U.S. Cl. 23—301 R

9 Claims



Invention relates to an improved crystallization procedure for the preparation of sodium carbonate precursor crystals such as sodium bicarbonate, sodium sesquicarbonate, anhydrous sodium carbonate, and sodium carbonate monohydrate by a crystallization procedure which involves providing in the crystallization system a sufficient amount of proper quality sodium carbonate precursor seed crystals of a particle size less than about 10 mesh to reduce the adverse modifying effect on crystal quality of organic carbon on sodium carbonate precursor crystals formed.

3,628,920  
**PREPARATION OF A CUPRIC HYDROXIDE-  
PHOSPHOROUS COMPLEX**

James E. Barker, Freehold, N.J., assignor to Cities Service Company

Filed Feb. 25, 1969, Ser. No. 802,273

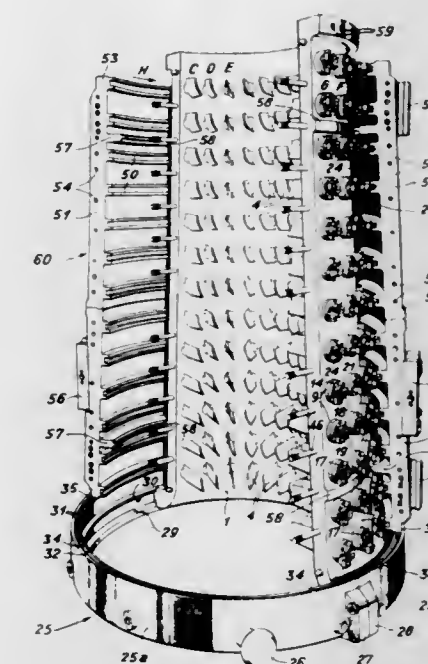
Int. Cl. C01g 3/00, 3/02

U.S. Cl. 23—315

13 Claims

Cupric hydroxide is prepared by mixing a copper sulfate solution, phosphoric acid and a solution of sodium hydroxide. The phosphoric acid is employed in an amount from about 0.05 to about 0.1 moles per mole of copper sulfate. The relative mixing rates are such that a pH of from about 10 to about 11.5 is maintained. The reaction temperature is maintained at less than 112° F., such as from about 85° F. to about 110° F. The retention time of the reaction mixture in the reaction zone at such temperatures will generally be from about ½ minute to about 10 minutes. The reactants may be added to the reactor as three separate streams or, alternately, the phosphoric acid and copper sulfate may be premixed prior to addition to the reaction zone. The precipitate formed comprises the cupric hydroxide product, which is recovered as a cupric hydroxide-phosphorous complex having a bound phosphorous content of at least about 2 percent by weight calculated as P<sub>2</sub>O<sub>5</sub>. This impure cupric hydroxide product, which has a very small particle size and a large surface area, is well suited for use as a fungicide.

for support of one sheath part, and two cylindrical surfaces coaxial with each other and with those annular surfaces, one



3,628,921

**CORROSION RESISTANT BINDER FOR TUNGSTEN CARBIDE MATERIALS AND TITANIUM CARBIDE MATERIALS**

Franklin J. Hill, Janesville, Wis., assignor to The Parker Pen Company, Janesville, Wis.

Filed Aug. 18, 1969, Ser. No. 851,038

Int. Cl. C22c 29/00

U.S. Cl. 29—182.7

4 Claims

Cemented carbide compositions and shaped bodies produced therefrom containing tungsten carbide or titanium carbide and a binder alloy containing cobalt and nickel and, by weight, about 18 to 20 percent chromium, 0.1 to 1 percent platinum and 0 to 3 percent iron.

for centering of the blade carrier part and the other for centering of the sheath part.

3,628,923

**METHOD OF MAKING HEADER JOINT FOR A CLAD TUBULATION**

Sheldon S. White, Brookline, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1968, Ser. No. 770,172

Int. Cl. B21d 53/00; B21k 29/00; B23p 15/26

U.S. Cl. 29—157.4

6 Claims

3,628,922

**METHOD OF ASSEMBLING A PLURALSTAGE AXIAL COMPRESSOR**

Walter Sprenger, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

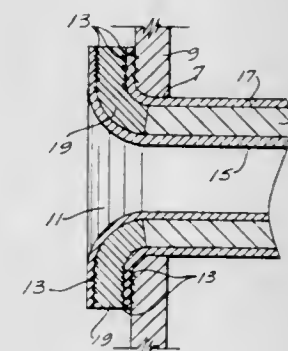
Original application Jan. 24, 1968, Ser. No. 700,191, now Patent No. 3,538,579. Divided and this application Jan. 21, 1970, Ser. No. 8,121

Int. Cl. B23p 15/00

U.S. Cl. 29—156.4 R

4 Claims

For assembly of a plural stage axial compressor in which a blade carrier divided into plural parts along an axial plane and provided with a plurality of variable pitch blades is to be assembled to a pitch adjusting sheath, likewise divided into plural parts along an axial plane, with pins on adjusting levers of the blades being engaged in grooves on the inside of the sheath, there is disclosed a method comprising the steps of supporting a separate part of the carrier and a separate part of the sheath coaxially, rotating those separate parts with respect to each other about their common axis to engage the pins on the separate carrier part in the grooves of the separate sheath part, and fastening the separate parts together. There is also disclosed a fixture for use in assembling together such a blade carrier and sheath, this fixture comprising a ring demountable along a diameter into two parts and having two plane, parallel and coaxial annular surfaces, one for support of one blade carrier part and the other



A ferrous core-forming tube is internally and externally clad with titanium. The ferrous core is chemically etched away from between the claddings for some distance from their ends so that these ends extend from the core. The tube thus prepared is inserted through an opening in a header with said ends adjacent one side of the header. These ends are then flared outwardly into engagement with the adjacent side of the header and sealingly welded thereto. In cases in which the cladding is not strong and/or is thin a cylindrical slug or thimble of titanium is inserted into the etched-out space prior to flaring and welding.



3,628,924

## TA OR TA ALLOY CLAD STEELS

Yasuhiro Nishio, Saeki-gun; Takashi Ohmae; Yasuyuki Yoshida, both of Hiroshima, and Tamotsu Oka, Saeki-gun, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1970, Ser. No. 17,189

Claims priority, application Japan, Mar. 7, 1969, 44/16822, Mar. 10, 1969, 44/17534

Int. Cl. B32b 15/00

U.S. Cl. 29—196

3 Claims



Clad steel plate is formed of a base layer of carbon steel, an intermediate layer formed of one of the group consisting of Ti, Zr, Mo, Nb and their alloys deposited on the base layer, and a surface layer formed of one of Ta and Ta deposited on the surface of the intermediate layer. In welding sections of such clad steel plates together, the base layers are welded together using a welding rod of a common metal with the base layer, the edges of the intermediate and surface layers are spaced apart forming a groove extending across the weld in the base layers, a metal plate formed of a material compatible with the intermediate and surface layers is positioned in the groove, and a bridge member of the same material as the surface layer is fillet welded to the surface layers of both plate sections and covers the metal plate located within the groove.

3,628,925

## COMBUSTION ADJUVANT

Maclin R. Milner, Clearwater, Fla., assignor to Trimex Corporation, Clearwater, Fla.

Filed Feb. 16, 1970, Ser. No. 11,827

Int. Cl. C10I 9/00, 1/32

U.S. Cl. 44—4

7 Claims

A method of promoting combustion is provided by including an adjuvant for hydrocarbon fuels comprising a calcium based montmorillonite clay. The adjuvant is combined with the hydrocarbon fuel or with combustion air in an effective amount of about  $2 \times 10^{-5}$  to about  $5 \times 10^{-1}$  weight percent, based on the weight of the hydrocarbon fuel. Combustion efficiency is substantially improved and oxidation is substantially more complete, so that combustion products are produced in less noxious forms. In addition, the nature of slag or other deposits upon surfaces in a furnace or combustion chamber are substantially altered, so that corrosive conditions do not occur and the deposition of slag is prevented or materially reduced, and the ash is produced in a soft, friable form.

3,628,926

## CYCLIC IMINES AS BIOCIDES IN PETROLEUM PRODUCTS

George W. Eckert, and Raymond Cadorette, both of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 19, 1968, Ser. No. 785,379

Int. Cl. C10I 1/14

U.S. Cl. 44—63

1 Claim

A method of preventing growth of micro-organisms in petroleum hydrocarbons in contact with water by incorporating from about 0.005 to 0.1 percent by volume of a cyclic

imine selected from the class comprising pyrrolidine, piperidine and hexamethylene imine into said petroleum hydrocarbon.

3,628,927

## INACTIVATION OF METAL DEACTIVATORS IN GASOLINE

Frederick N. Baumgartner, Plainfield, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 23, 1969, Ser. No. 788,690

Int. Cl. C10I 7/02

U.S. Cl. 44—7 A

7 Claims

A method of preparing a flame thrower fuel from a gasoline containing from one to three pounds per 1000 bbls. of a metal deactivator selected from the group consisting of N,N' disalicylidene 1, 2 diamino propane and N,N' disalicylidene 1, 2 diaminoethylene which comprises percolating said gasoline through a bed of nuclear sulfonated cross linked styrene-divinyl benzene copolymer and thereafter gelling said gasoline with about 2 percent of an aluminum soap selected from the class consisting of aluminum hydroxy di-2 ethyl hexoate and the aluminum hydroxy disoap of mixed branched chained octoic acids.

3,628,928

## MIDDLE DISTILLATE

Alexander Gaydasch, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 2, 1970, Ser. No. 7,973

Int. Cl. C10I 1/22

U.S. Cl. 44—66

6 Claims

Middle distillate of improved pour point containing a pour-point-depressant amount of a  $C_{14}$ — $C_{20}$  saturated carboxylic acid ester of alpha-methylglucoside.

3,628,929

## METHOD FOR RECOVERY OF COAL ENERGY

Eugene D. Glass, and Vaughan W. Rhoades, both of Tulsa, Okla., assignors to Cities Service Oil Company

Filed Dec. 8, 1969, Ser. No. 883,274

Int. Cl. E21c 43/00; C10j 5/00

U.S. Cl. 48—210

9 Claims

Two or more wells are drilled into a coal seam. Each well is completed to isolate all other strata from the coal seam. A radial horizontally directed fracture is induced so as to connect the wells communicatively. The coal seam is ignited through at least one injection well and the combustion front propagated from one or more injection wells through the horizontal fractures to subsequent production wells by injection of a combustion supporting gas. Injection pressures utilized are sufficiently high to raise the overburden at the fractured surfaces and permit continued air injection during the combustion process. Regulation of the width of the fracture network and corresponding gas and liquid flow is achieved by the control of the injection pressure. The continued production of a flammable gas and coal tar liquids is thereby afforded.

3,628,930

## METHOD AND APPARATUS FOR PREPARING MOLTEN MATERIAL INTO GLASS FIBERS

Walter William Harris, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed Oct. 28, 1969, Ser. No. 871,883

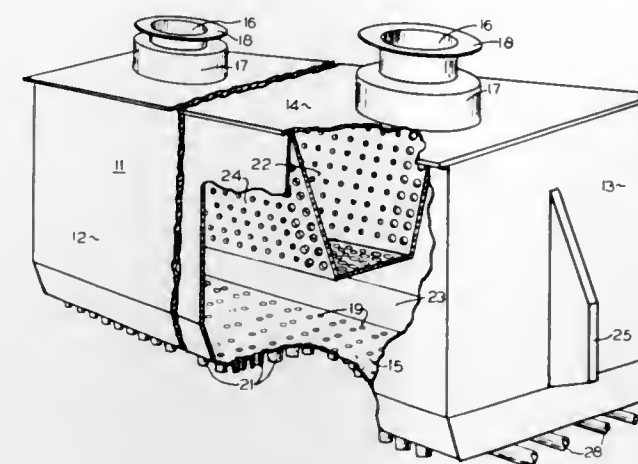
Int. Cl. C03b 37/00

U.S. Cl. 65—2

11 Claims

A bushing for rendering materials molten used for forming glass fibers wherein the flow pattern of material within the bushing is controlled. An internal baffle has an array of per-

forations in a pattern such that, when the material on one side of the baffle is cooler than that on the other side, the



percentage of open area is greater in the flow path to those regions of the bushing of highest temperature than the path to those regions of lower temperature.

3,628,931

## APPARATUS HAVING ROTATING BUSHING FOR FORMING FIBERS

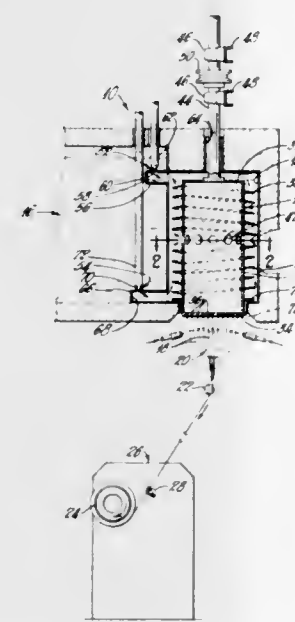
Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed June 2, 1969, Ser. No. 829,631

Int. Cl. C03b 37/02

U.S. Cl. 65—11 W

17 Claims



Apparatus is provided for forming fibers from a heat-softenable, filament-forming viscous liquid. A bushing is in the form of a hollow, cylindrical, rotating body having a spirally contoured outer surface, with a right-hand helix at one end and a left-hand helix at the other end, and with inlet openings spaced around an intermediate portion. Means are provided at one end to rotate the bushing and orifices are provided at the other end through which fibers are attenuated. The bushing is located in a liquid-filled chamber, the liquid being fed under pressure by the helixes to the inlet openings where it is forced inwardly and subsequently subdivided into fibers through the orifices. The orifices can be located in a circular pattern to form a hollow cone of fibers attenuated therefrom, with means located below the center of the circular pattern for supplying a coating material to the filaments or for feeding a filamentary core to the center of the collected filaments.

3,628,932

## PREPARATION OF GLASS CONTAINING SELENIUM

Touru Inoue, Nishinomiya-shi, and Masakiyo Tachibana, Takarazuka-shi, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Higashi-ku, Osaka, Japan

Filed Jan. 3, 1969, Ser. No. 788,966

Claims priority, application Japan, Jan. 10, 1968, 43/1231

Int. Cl. C03b 23/20

U.S. Cl. 65—18

5 Claims

Process for preparing a molten glass containing selenium as an additive material and an alkali metal oxide as one of the essential ingredients comprising the steps of mixing the source of selenium with a portion of a raw glass batch of which the content of the alkali metal oxide in percentage by weight is 1.5–10 times as large as that of the intended molten glass, sintering the resulting mixture at a temperature between 500° and 1,000° C., then mixing the sintered product and remaining portion of the raw glass batch, wherein the content of the alkali in the remaining portion of raw glass is reduced lower than that of the intended molten glass so as to balance the mean content of the alkali metal oxide in the above sintered product and the above remaining raw glass batch to that of the intended molten glass, and melting the latter mixture in a glass melting furnace.

3,628,933

## METHOD OF ACTIVATING LEAD GLASS MICROCHANNEL PLATES

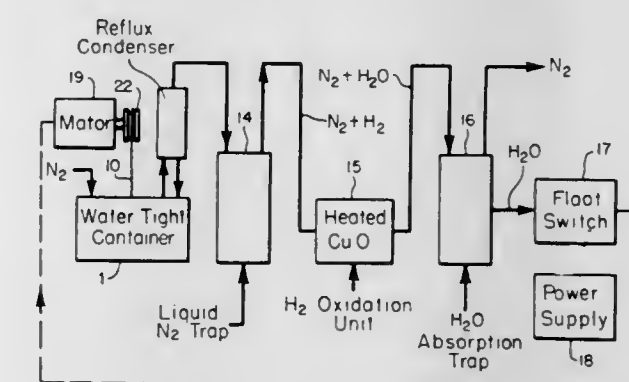
Walter E. Kramer, Niles, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 27, 1970, Ser. No. 40,982

Int. Cl. C03c 23/00; H01b 7/20; C03c 17/06

U.S. Cl. 65—30

7 Claims



A method of activating a microchannel plate formed of a stack of very small internal diameter channels constructed of lead glass, by reacting the microchannel plate with a solution of a simple or complex metal hydride reducing agent dissolved in an inert solvent, and an apparatus for use with such method provided with a means for controlling the reaction.

3,628,934

## TEMPERATURE CONTROL OF CHEMICAL TEMPERING OF SOLID GLASS OR VITROCRYSTALLINE BODIES

Jean Duthoit, Gilly, Belgium, assignor to Glaverbel S.A., Watermael, Boitsfort, Belgium

Filed Apr. 23, 1968, Ser. No. 723,380

Claims priority, application Luxembourg, Apr. 28, 1967,

53,555

Int. Cl. C03c 21/00

U.S. Cl. 65—30

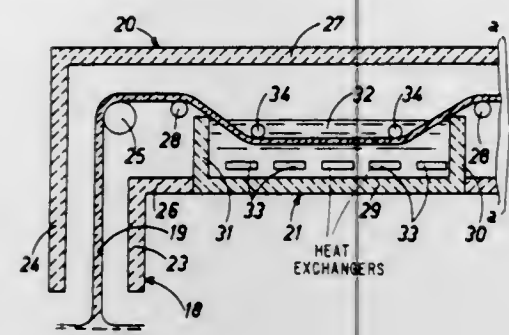
11 Claims

A process and apparatus for improving the properties of materials which are chemically tempered by means of an ion



diffusion process, the improvement being obtained by decreasing the temperature at which the process is carried

current of hot glass flows upon a return current of cooler glass flowing in the opposite direction by intercepting a portion of the forward current at a point directly downstream of



out during the course of the ion diffusion operation, by at least 40° C.

### 3,628,935 WELDING GLASS SETS

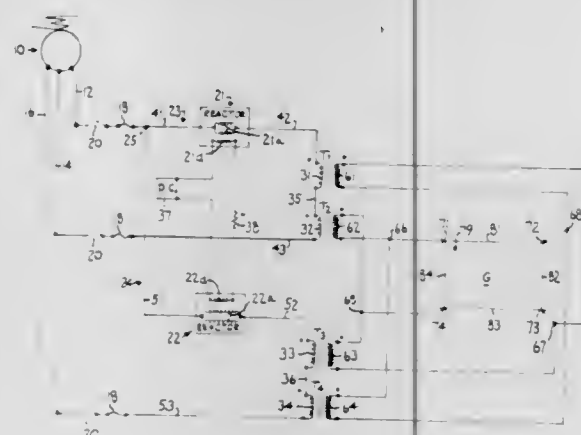
Robert A. Jansson, and Frank J. Rau, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,265

Int. Cl. C03b 23/24; B23k 11/24; H05b 3/02

U.S. Cl. 65—40

9 Claims



Electrically working glass to fuse the marginal portion of one glass sheet to that of another glass sheet to form a double glazed unit by heating the sheets to a temperature near the strain point of glass and intensifying the heating in the marginal portion of the one sheet to make its marginal portion more electroconductive than the remainder of the sheet. The electric circuit used in the welding process has a polyphase alternating current voltage source coupled to the marginal edge portion through saturable reactors and a transformer circuit. One phase of the power source is coupled through a saturable reactor across one pair of opposite marginal edge portions and another phase is coupled through a saturable reactor across the other pair of opposite marginal edge portions. An output current is thus produced in the marginal edge portion which is approximately equal along all of the four side edges.

### 3,628,936 METHOD AND APPARATUS FOR SHEET GLASS FABRICATION

Emile Plumet, Gilly, and Marcel Duperroy, Ransart, both of Belgium, assignors to Glaverbel S.A., Watermael-Bortfort, Belgium

Filed Sept. 25, 1968, Ser. No. 762,390

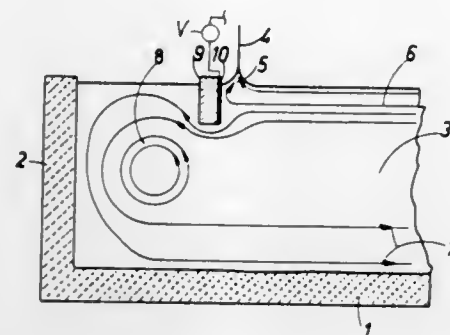
Claims priority, application Luxembourg, Sept. 25, 1967, 54526

Int. Cl. C03b 15/00

U.S. Cl. 65—90

24 Claims

A method and apparatus for producing sheet glass drawn from a molten glass bath in a drawing kiln in which a forward



the point where the glass is drawn from the bath for causing only glass from the intercepted portion of the forward current to be drawn.

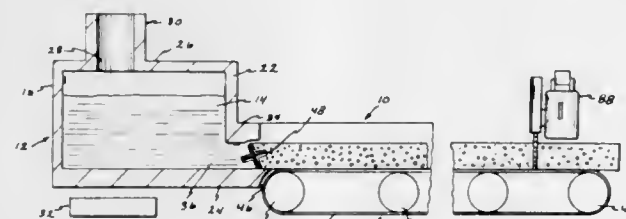
### 3,628,937 APPARATUS FOR MAKING FOAMED GLASS PANELS

Lawrence A. Schott, 15940 Warwick, Detroit, Mich. Continuation-in-part of application Ser. No. 770,245, Oct. 24, 1968, now abandoned. This application Aug. 5, 1970, Ser. No. 61,314

Int. Cl. C03b 19/08

U.S. Cl. 65—141

6 Claims



A method and apparatus for making cellular or foamed glass panels including heating glass to its molten state in a furnace and feeding the molten glass past an elongated rotating paddle wheel having a length substantially equal to the width of the panels desired. The rotating paddle wheel is submerged in the molten glass and is adapted to supply pressurized gas through apertures in the structure of the paddle wheel for forming bubbles. The rotation of the wheel thoroughly mixes the bubbles into the molten glass. The foamed glass is then conveyed away from the paddle wheel by means of a conveyor system and allowed to cool. The cooled foamed glass is then cut into panels of the desired length.

### 3,628,938 DEVICE FOR MANUFACTURING PIPES FROM GLASS METAL

Mikhail Ivanovich Kozmin, ul. Shmidta, 31, kv.6, Konstantinovka Donetskoi oblasti, U.S.S.R.

Filed Dec. 9, 1968, Ser. No. 782,331

Int. Cl. C03b 5/30, 5/00

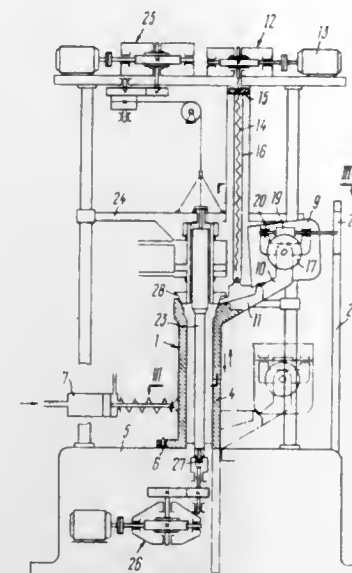
U.S. Cl. 65—207

5 Claims

A device for manufacturing pipes from glass metal comprises, a vertically extending mold which is laterally split into three portions and is supported for vertical reciprocation.

The device includes an assembly for laterally displacing the mold portions into operative engagement with one another,

produce an acidulation effluent comprising water-soluble products. The acidulation effluent is treated with a large excess of an ammonium carbonate material, the amount used



and out of engagement with one another. A tipping ladle feeder is fixed to one of the portions of the mold and is vertically displaceable together with that one portion of the mold.

### 3,628,939 GLASS TUBE-FORMING MACHINE

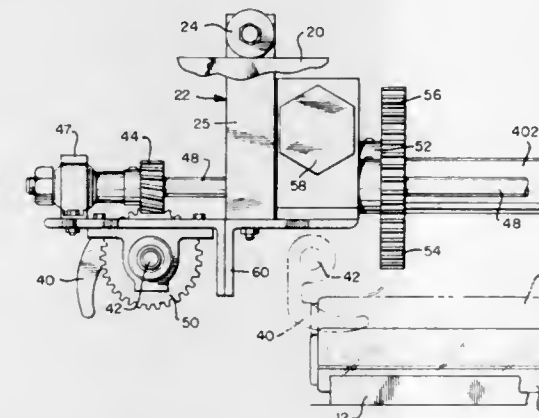
Donald G. Trutner, Chatham, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Filed Sept. 4, 1969, Ser. No. 855,089

Int. Cl. C03b 35/00

U.S. Cl. 65—276

11 Claims



An improved machine for forming one or more helical grooves in the walls of glass tubes in which the glass tubes are automatically transferred from one processing area of the machine to the adjacent processing area. Lifters for engaging the open ends of the glass tubes are attached to a movable carriage assembly which provides for the transfer of the tubes from one area of the machine to an adjacent area during its forward travel and provides for the grooving of the tubes during its reverse travel. A positioning mechanism insures that the lifters are properly aligned over the open ends of the tubes prior to engagement. An arrangement is also disclosed for transferring two tubes in tandem to increase the machine's processing speed.

### 3,628,940 METHOD FOR PRODUCING NITROPHOSPHATE FERTILIZER

Paul R. Geissler, Metuchen, and Ellington M. Magee, Scotch Plains, both of N.J., assignors to Esso Research and Engineering Company

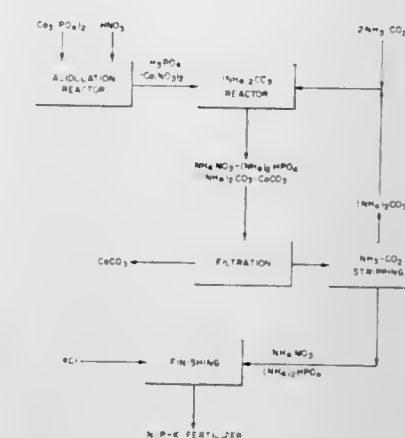
Filed Jan. 2, 1969, Ser. No. 788,401

Int. Cl. C05b 11/06

U.S. Cl. 71—35

8 Claims

Process for treating calcium phosphate rock having a low fluorine content, with an amount of nitric acid, sufficient to



being sufficient to produce water-soluble ammonium nitrate and phosphate in solution, and a precipitate of calcium carbonate, the solution from which the precipitate is removed being processed to obtain a nitrophosphate fertilizer.

### 3,628,941 ANTIMICROBIAL SOLUTIONS OF DODECYLGUANIDINE HYDROCHLORIDE HAVING LOW-TEMPERATURE STABILITY

Alfred Finlay Marks, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 604,164, Dec. 23, 1966, now abandoned. This application Aug. 8, 1969, Ser. No. 848,712

Int. Cl. A01n 9/00

U.S. Cl. 71—67

2 Claims

Antimicrobial compositions, typically a solution of dodecylguanidine hydrochloride in tetrahydrofurfuryl alcohol. The compositions are stable above or below 30° F. and are compatible and miscible with organophosphorus insecticides.

### 3,628,942 HERBICIDALLY ACTIVE COMPOSITIONS

Joseph F. Vartiak, Naperville, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 14, 1964, Ser. No. 418,343 The portion of the term of the patent subsequent to Aug. 26, 1986, has been disclaimed.

Int. Cl. A01n 9/22

U.S. Cl. 71—92

3 Claims

The invention is directed to concentrated hydrocarbon liquid solutions of herbicidally active 3,5,6-substituted uracils. These compositions are afforded by employing hydrocarbon oil which has a high aromatic content and uses as a cosolvent a fatty acid. This solvent system allows 5–20 percent by weight of the uracil to be dissolved therein.

### 3,628,943 HERBICIDAL COMPOSITION AND METHOD OF COMBATING UNDESIRABLE PLANT GROWTH

Bengt Hjalmar Gullfeldt, Selangergrand 3, Stockholm-Vallingby, Sweden

Filed Mar. 26, 1969, Ser. No. 810,796

Int. Cl. A01n 9/22, 9/12

U.S. Cl. 71—93

5 Claims

Total herbicidal composition comprising a mixture of a dehalogenated benzonitrile or a derivative thereof, a halogenated aliphatic carboxylic acid and a triazine or a halogenated phenoxy-alkyl-carboxylic acid.



3,628,944

**BENZYL-N-(N-BUTYL)-CHLOROPHENOXYTHIO-BUTYRIMIDATES AS HERBICIDES**

Edmund J. Rumanowski, Dover, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 863,011

Int. Cl. A01n 9/12

U.S. Cl. 71-98

6 Claims

Benzyl-N-(n-butyl)-chlorophenoxythiobutyrimidates are prepared by reacting N-(n-butyl)-di- or trichlorophenoxythiobutyramide with benzyl bromide in the presence of sodium alkylate. The compounds are useful as herbicides.

3,628,945

**SELECTIVELY HERBICIDAL 3-SUBSTITUTED-2-HALOPROPYL THIOLCARBAMATES AND METHOD OF COMBATING UNDESIRABLE VEGETATION**

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research &amp; Development Company, Pittsburgh, Pa.

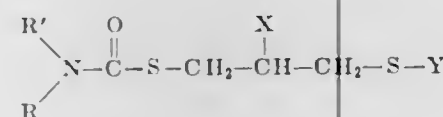
Continuation-in-part of application Ser. No. 625,603, Mar. 24, 1967, now Patent No. 3,510,290. This application Aug. 19, 1969, Ser. No. 851,432

Int. Cl. A01n 9/12

U.S. Cl. 71-100

8 Claims

Undesired vegetation, particularly noxious grasses in growing crops, are combated by pre-emergent application of selective herbicides made by reacting an organic compound having a reactive halogen substituent with a 2,3-epithiopropyl N,N-dialkylthiolcarbamate to yield a compound of the structural formula



in which R and R' represent hydrocarbon substituents containing less than 10 carbon atoms, X is halogen, preferably bromine or chlorine and Y may be alkanoyl, chloroalkanoyl, bromoalkanoyl, alkoxyalkanoyl, N,N-dialkylcarbonyl, carbalkoxycarbonyl, alkoxyethyl, alkoxyethyl, chlorobenzoyl, bromobenzoyl, chlorophenoxyacetyl, bromophenoxyacetyl, cyclopropylcarbonyl, cyano, methanesulfonyl, alkanoyl-methyl alkylmercaptomethyl, nitrobenzoyl, chlorocarbalkoxyl, bromocarbalkoxyl, ethynylmethyl, dialkylphosphono, dialkylthiophosphono or alkylmercaptocarbonyl, said alkanoyl, alkoxy, carbalkoxy and alkyl structures containing less than 10 carbon atoms.

3,628,946

**METHOD OF CONTROLLING THE GROWTH OF PLANTS**

Ching C. Tung, and Jack F. Powers, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

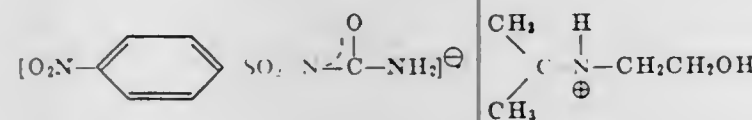
Filed Mar. 28, 1969, Ser. No. 811,629

Int. Cl. A01n 9/14

U.S. Cl. 71-103

2 Claims

A novel salt of p-nitrobenzenesulfonylurea having the formula



which is formed by the reaction of p-nitrobenzenesulfonylurea with ethanolamine and acetone.

This compound has herbicidal activity.

3,628,947

**AGGLOMERATE OF IRON ORE**

Fred D. DeVane, Duluth, Minn., assignor to The Shenango Furnace Company

Continuation-in-part of application Ser. No. 666,541, Aug. 24, 1968, now abandoned. This application Dec. 26, 1968, Ser. No. 787,209

Int. Cl. C21b 1/24

U.S. Cl. 75-3

1 Claim

A binder for use in agglomerating finely divided iron ore materials, e.g., concentrates, is prepared from an iron-bearing material known on the Mesabi Range of Minnesota as "paint rock." This is a red or orange, fairly soft and extremely sticky mineral consisting essentially of hematite, kaolinite and quartz, and having a high-ignition loss and high-moisture content. This naturally occurring material is dried—to a moisture content of about 6 percent or lower—at a temperature too low to drive off combined water; and ground to about 200 mesh. The ground dry paint rock is added to and thoroughly mixed with moist iron ore fines (e.g., to moist filtercake of iron ore concentrate), and the mixture is thereafter fed to any conventional balling device where it is rolled into small "pellets" preliminary to being indurated.

The present invention relates to the art of beneficiating ore materials, particularly iron ore materials, and is concerned with improvements in pelletizing ore material fines, particularly iron ore concentrates.

3,628,948

**ELECTRIC ARC VACUUM MELTING PROCESSES**

Armin M. Bruning, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application May 15, 1968, Ser. No. 729,146, now Patent No. 3,505,460, which is a division of Ser. No. 407,332, Oct. 29, 1964. Divided and this application Aug. 11, 1969, Ser. No. 848,976

Int. Cl. C22d 7/00; H05b 7/18; C22c 7/00

U.S. Cl. 75-10

4 Claims

A process for heating or treating metals without substantially contaminating the metal to be heated or treated comprises introducing the metal into an at least partially evacuated chamber and producing an electric arc therein from the arcing surface-forming tip of a nonconsumable electrode to a surface of opposite polarity while fluid cooling the tip to conduct heat flux therefrom and generating a magnetic field adjacent the tip which causes the arc therefrom to move substantially continuously over the arcing surface, thereby preventing the arc spot from dwelling at any point on the arcing surface a sufficient time to raise the temperature at said point to a value at which substantial sublimation or evaporation of material from the arcing surface takes place.

3,628,949

**THERMOCOUPLE EXTENSION WIRE**

Teh Po Wang, Cedar Grove, N.J., assignor to Wilbur B. Driver Company

Filed Dec. 16, 1969, Ser. No. 885,588

Int. Cl. C22c 9/06; H01v 1/14

U.S. Cl. 75-159

1 Claim

A thermocouple extension wire composition comprising, as expressed in percent by weight; nickel 16-20 percent; manganese 1.30-2.00 percent; cobalt 0.70-1.70 percent; balance copper.

A pair of thermocouple extension wires, one wire having the above composition, the other wire being composed essentially of iron, exhibit a differential electromotive force substantially equal to the electromotive force developed by Type K thermocouple between 32° to 400° F.

3,628,950

**IMPROVED METHOD OF REMOVING THE RESIDUAL TONER PARTICLES FROM A PHOTOCONDUCTIVE SURFACE**

John F. Wirley, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 10, 1969, Ser. No. 883,704

Int. Cl. G03g 13/14

U.S. Cl. 96-1.4 R

4 Claims



An improved method of producing xerographic copies which includes the steps of charging a photoconductor with an electrostatic charge, exposing the charged photoconductive surface to discharge portions of the charge in a configuration of image and nonimage areas corresponding to the copy to be reproduced, developing the photoconductive surface with developer material including carrier and electroscopic toner particles triboelectrically arranged and transferring the toner particles from the photoconductive surface to a backing material. The improvement comprises simultaneously cleaning residual toner images from the drum surface and reuse of these residual toner images during image development then transferring the toner particles as aforementioned, and then charging the residual toner particles with a corona having a polarity opposite to the charging polarity on the drum surface prior to drum exposure and recharge to convert positively charged residual toner particles to a negative charge thereby preparing the particles for cleaning by development in the development zone by the carrier.

3,628,951

**TRINUCLEAR METHINE DYES FOR USE IN ELECTROPHOTOGRAPHIC SYSTEM**

Shi-Kuang Yao, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 1, 1968, Ser. No. 717,986

Int. Cl. G03g 5/08

U.S. Cl. 96-1.7

5 Claims

Trinuclear methine dyes and intermediates therefor, prepared by quaternizing oxonols, converting the quaternary compound to an inner anhydride, and condensing the latter with a heterocyclic compound having a reactive methyl or methylene group to yield a trinuclear methine dye; and use of the resulting dye to sensitize photoconductive zinc oxide for electrophotography.

3,628,952

**PHOTOGRAPHIC DIFFUSION TRANSFER MATERIALS AND PROCESSES UTILIZING BALASTED HYDRAZONE COMPOUNDS TO RELEASE MOBILE ACID DYES FOR TRANSFER**

Walter Puschel, Leverkusen; Justus Danhauser; Karlheinz Kabitzke; Paul Marx; Arnfried Melzer, all of Cologne; Karl-Wilhelm Schranz, Opladen; Hans Vetter, and Wilibald Pelz, both of Cologne, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 27, 1970, Ser. No. 41,078

Claims priority, application Germany, June 13, 1969, P 19 30 215.9

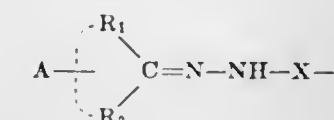
Int. Cl. G03c 7/00

U.S. Cl. 96-3

11 Claims

In a color photographic diffusion transfer process are used diffusion-resistant dye-giving compounds, capable of forming diffusible acid dyes on reaction with oxidation products of

black-and-white and color-forming developers and having the formula:



wherein  
R<sub>1</sub> represents hydrogen, alkyl, aralkyl or amino;  
R<sub>2</sub> represents alkyl, aralkyl, aryl, acyl or amino, or  
R<sub>1</sub> and R<sub>2</sub> together represent the ring members required to complete an isocyclic or heterocyclic ring;  
X represents sulfonyl, carbonyl or a single chemical bond;  
A represents a radical rendering resistant to diffusion, and  
B represents a dye radical; or  
A represents a dye radical and  
B represents a radical rendering resistant to diffusion.

3,628,953

**THERMORECORDING**

Eric Maria Brinckman, Mortsels, Belgium, assignor to Gevaert-Agfa N.V., Mortsels, Belgium

Filed Sept. 27, 1968, Ser. No. 763,354

Claims priority, application Great Britain, Sept. 27, 1967, 44,038/67

Int. Cl. G03c 5/00, 1/72

U.S. Cl. 96-36.3

21 Claims

Information is recorded by exposing to a heat image of such information a recording material carrying a recording layer consisting essentially of one or more of certain substantially solvent insoluble polymeric materials which, when exposed to heat, are rendered soluble in said solvent after which the image-wise heated layer is developed by contact with a liquid containing the solvent therefor so as to remove the heated areas from the layer. Preferably, the layer contains homogeneously distributed therethrough a dye or pigment which absorbs visible light or infrared radiation and converts the same to heat so that the exposure can be effected by exposing the layer to an image of such radiation.

3,628,954

**DIAZO MATERIAL AND VISIBLE LIGHT DEVELOPMENT PROCESS THEREFOR**

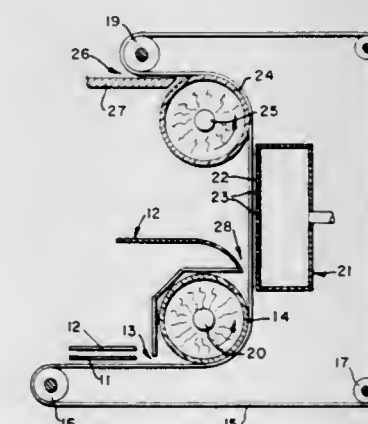
Jean J. A. Robillard, Zumikon, Zurich, Switzerland, assignor to Keuffel and Esser Company, Morristown, N.J.

Continuation of application Ser. No. 553,151, May 26, 1966, now abandoned. This application Mar. 24, 1970, Ser. No. 20,465

Int. Cl. G03c 5/34, 5/18, 1/62

U.S. Cl. 96-49

7 Claims



A dry diazo reproduction process for making positive diazo-type copies is described. The process comprises exposing an image pattern and a diazo sheet material containing a diazo compound, an azo coupler, a semiconductor pigment,



preferably sensitized with an organic dye, and a compound which causes upon reduction a shift in pH in the basic region in the diazo sheet material to a UV radiation source and thereafter developing the diazo sheet by exposure to radiation of a different wavelength than used in the exposure step. In addition, the diazo sheet material used in the process is also described.

3,628,955

# INHIBITION OF SILVERING IN PHOTOGRAPHIC SOLUTIONS

Grant M. Haist, and David A. Pupo, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
Filed Feb. 27, 1968, Ser. No. 708,529

Int. Cl. G03c 5/38

U.S. Cl. 96—61

16 Claims

Certain mercapto organic acids, such as mercaptoisobutyric acid, provide good antisludging action in photographic processing solutions.

3,628,956

# PROCESS FOR PREPARING DIRECT POSITIVE IMAGES BY PHOTOSOLUBILIZATION

Eugene Frederick Haugh, Liftwood, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 688,996, Dec. 18, 1967, now abandoned. This application Oct. 28, 1968, Ser. No. 771,347

Int. Cl. G03c 5/24

U.S. Cl. 96—64

8 Claims

Process for forming a positive silver halide image by treating an imagewise-exposed, light-sensitive silver halide layer with a photosolubilizing compound, e.g., 2-mercapto-4-phenylthiazole, and then removing the exposed silver halide with a silver halide solvent.

3,628,957

# GELATINO-SILVER HALIDE EMULSIONS CONTAINING WATER-SOLUBLE ACRYLAMIDE COPOLYMERS

Simone Franco, Casalgrasso, and Manlio Marini, Savona, both of Italy, assignors to Ferrania, S.p.A., Milan, Italy  
Continuation of application Ser. No. 615,923, Feb. 14, 1967, now abandoned. This application Mar. 23, 1970, Ser. No. 20,456

Claims priority application, Italy, Mar. 22, 1966, 31-888

Int. Cl. G03c 1/04

U.S. Cl. 96—87 R

9 Claims

Silver halide gelatin emulsions useful in preparing photographic films having improved covering power using a water-soluble acrylamide copolymer in an amount from 2 to 75 weight percent, based on total weight of gelatin.

3,628,958

# BIPYRIDINIUM COMPOUND/NITROSUBSTITUTED N-HETEROCYCLIC COMPOUND DESENSITIZED SILVER HALIDE EMULSION

John A. Haefner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1970, Ser. No. 15,823

Int. Cl. G03c 1/36

U.S. Cl. 96—101

9 Claims

A negative silver halide emulsion is desensitized with a desensitizing combination of a bipyridinium salt and an organic nitrosubstituted N-heterocyclic desensitizer. The emulsion is effectively desensitized for handling in roomlight and the sensitometric properties of the desensitized emulsion are improved with respect to emulsions desensitized with, for example, known organic nitrosubstituted N-heterocyclic desensitizers.

## 3,628,959 PROCESS FOR THE PREPARATION OF PHOTOGRAPHIC EMULSION

Horst Theilemann, Rudesheimerstrasse 1, 8 Munich 12, Germany

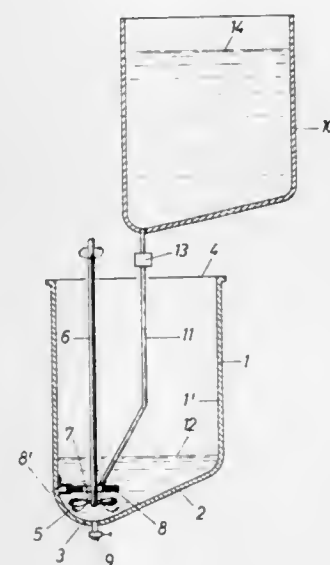
Filed Oct. 16, 1968, Ser. No. 768,021

Claims priority, application Germany, Oct. 23, 1967, P 15 97 643.9

Int. Cl. G03c 1/02

U.S. Cl. 96—94

9 Claims



More sensitive emulsions, improved fineness of grain and improved utilization of silver are obtained in the preparation of photographic emulsions by a procedure which comprises adding a silver nitrate solution to a relatively small portion of a halogen salt solution, to which gelatin has been added and which has been heated to an appropriate temperature for the desired emulsion sensitivity, that is moved or agitated at a relatively high speed with respect to the rest of the halogen salt solution while the solution is in motion.

3,628,960

# LIGHT SENSITIVE HALIDE MATERIAL WITH VARIABLE CONTRAST

Herman Adelbert Philippaerts, Mortsel; Hans Josephus Corluy, Berchem, both of Belgium; Herbert Gernert, Munich, and Guenther E. W. Schulz, Holzkirchen, both of Germany, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed Mar. 13, 1968, Ser. No. 712,646

Claims priority, application Great Britain, Apr. 21, 1967, 18,542/67

Int. Cl. G03c 1/12

U.S. Cl. 96—124

21 Claims

A composite light-sensitive photographic silver halide emulsion layer having the characteristic of gamma wavelength variability is obtained by means of a mixture of a plurality of differently constituted light-sensitive silver halide emulsion; each of said emulsions having a spectral region to which it is inherently sensitive; said light-sensitive emulsions containing at least one sensitizing dye, each such dye being incorporated in all of the emulsions, to spectrally sensitize the same to a further spectral region outside the inherent region; the emulsions having in the presence of such sensitizing dye spectral responses in the spectral region of inherent sensitivity which vary from one another and also spectral responses in the further spectral region which vary from one another and also spectral responses in the further spectral region which vary from one another, the extent of the variations in the two spectral regions being sufficiently different as to produce a gradation difference of at least 20 percent in the contrast of photographic images obtained by exposing identical samples of the material in the respective spectral regions and developing under identical conditions; the propor-

tions of emulsions in the mixture being so selected in relation to the extent of said differences in sensitivity that gray wedge prints produced by exposure in each of the inherent and further spectral regions and development under identical conditions show different gradations; and the amount of such sensitizing dye being so selected that minor variations in such amount produces no significant change in the ratio of the gradations in the gray wedge prints.

Preferred emulsions are a silver bromide emulsion wherein the silver halide grains contain about 1-9 mol percent iodide and the other being a silver chloride-bromide emulsion wherein the silver halide grains contain about 15-85 mol percent bromide and up to about 5 mol percent iodide, and preferred sensitizing dyes are diffusible methine dyes.

3,628,961

# GELATIN COMPOSITIONS CONTAINING A TRIAZINE TYPE HARDENER AND AN ALIPHATIC MONO- OR DICARBOXYLIC ACID

Alexander Riebel, Bombay, India; Wolfgang Himmelmann, Opladen-Luetzenkirchen; Karl-Otto Meyer, Leverkusen, both of Germany, and George Frans Van Veelen, Mortsel, Belgium, assignors to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 29, 1970, Ser. No. 33,076

Claims priority, application Germany, May 14, 1969, P 19 24 533.1

Int. Cl. G03c 1/30

U.S. Cl. 96—111

2 Claims

Photographic gelatin layers are hardened by trisacryloyl or sulfonyl hydroxyltriazine compounds. The hardening reaction is accelerated by the addition of aliphatic carboxylic acids.

3,628,962

# PHOTOSENSITIVE POLYAMIDE COMPOSITIONS

Margaret H. Murray, Stamford, Conn., and Robert M. Leekley, Appleton, Wis., assignors to Time, Incorporated, New York, N.Y.

Continuation-in-part of application Ser. No. 633,731, Apr. 26, 1967, now abandoned. This application June 17, 1970, Ser. No. 47,106

Int. Cl. G03c 1/70

U.S. Cl. 96—115 R

9 Claims

Photosensitive compositions and printing plates formed therefrom wherein nylon is rendered photosensitive by the admixture therewith of a difunctional photoinitiator containing two nonadjacent or nonvicinal keto groups.

3,628,963

# PHOTOSENSITIVE COMPOSITIONS

Kiyoshi Akamatsu; Takeaki Hagihara, and Teruhisa Ishido, all of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 30, 1968, Ser. No. 772,036

Claims priority, application Japan, Nov. 9, 1967, 42/71704

Int. Cl. G03c 1/68, 1/70

U.S. Cl. 96—115 R

7 Claims

The photosensitive compositions comprising (A) an unsaturated polyester, (B) acrylic acid and (C) a photopolymerization initiator, said unsaturated polyester being produced from an alcoholic component comprising at least one etherdiol having one to four ether-oxygen groups in the main chain and an acidic component comprising at least one unsaturated dicarboxylic acid, anhydride or dimethyl or diethyl ester thereof and having an average molecular weight of 1,500 to 50,000 and a double bond concentration of  $1 \times 10^{-2}$  to  $2 \times 10^{-4}$  mole/g., the amount of (B) acrylic acid being 10 to 80 percent by weight of the total amount of the photosensitive composition and the amount of the photopolymerization initiator being 0.001 to 10 percent by weight of the total amount of the photosensitive composition.

## ERRATUM

For Class 96—124 see:  
Patent No. 3,628,960

3,628,964

# PHOTOGRAPHIC SUPERSENSITIZED SILVER HALIDE EMULSIONS

Keisuke Shiba, and Akira Sato, both of Minami-Ashigara Machi, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

Filed July 17, 1968, Ser. No. 745,360

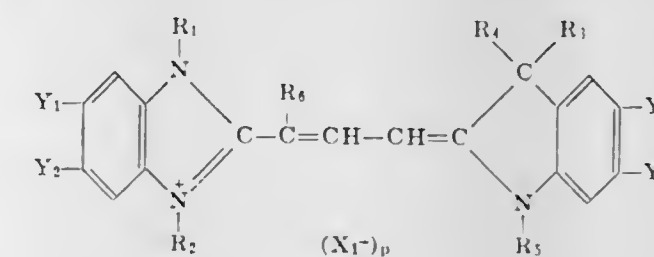
Claims priority, application Japan, July 17, 1967, 42/46738

Int. Cl. G03c 1/28

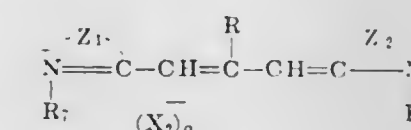
U.S. Cl. 96—124

3 Claims

A photographic silver halide emulsion containing at least one carbocyanine dye represented by the general formula:



and at least one carbocyanine dye represented by the general formula:



The various individual moieties indicated in the above identified structures are defined in the specification.

3,628,965

# PROCESS AND APPARATUS FOR PRODUCING CHOCOLATE

Adolf Maurits Nijkerk, Bussum, Netherlands, assignor to Wiener & Co. N.V., Amsterdam, Netherlands

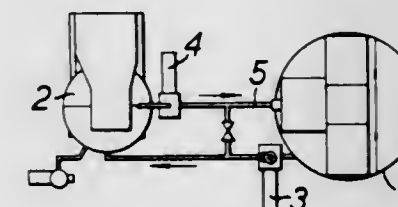
Filed Jan. 27, 1969, Ser. No. 794,066

Claims priority, application Great Britain, Jan. 26, 1968, 4,275/68

Int. Cl. A23g 1/00

U.S. Cl. 99—23

12 Claims



Process and apparatus for mixing material and diminishing components thereof. The process is a cyclical one in which in each of the recurring cycles the material is passed consecutively through mixing and diminishing means and during cycling is spread into film or sheet form and at least one fluid is incorporated into the filmed or sheeted material. The fluid may be a gaseous medium. The introduction of the gaseous medium causes the removal of unwanted volatile constituents and in edible materials has a taste-changing effect.



3,628,966

**PROCESS FOR PRODUCING ENRICHED ARTIFICIAL RICE**

Noboru Katsuya; Takaaki Sagara; Reiji Takahashi; Teruo Yoshida, and Takashi Ojima, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 20, 1969, Ser. No. 826,270

Claims priority, application Japan, May 28, 1968, 43/36299  
Int. Cl. A23I 1/10

U.S. Cl. 99—80 R

8 Claims

An enriched artificial rice having grains of good mechanical strength and resistant to washing, soaking, and cooking without losing their similarity to natural rice grains is prepared by heating a mixture of amino acids, starch and enough water to make the water content of the mixture 20 percent to 50 percent at 90° to 120° C. for 45 minutes to 1 minute, whereby the starch is semigelatinized. Starch or gluten is thereafter added as a binder to produce a second mixture which is granulated to the shape of rice grains, and the artificial grains are dried and coated with a waterproofing material.

3,628,967

**TWO-STAGE SOLVENT DRYING OF FOODS**

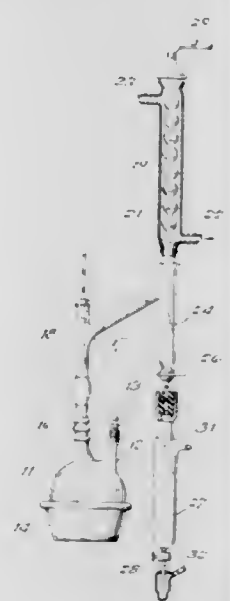
Norbert Francis Toussaint, Skokie, Ill., assignor to Florasynth, Inc.

Filed July 7, 1969, Ser. No. 839,336

Int. Cl. A23I 1/00; A23b 7/02

U.S. Cl. 99—103

8 Claims



Solid food products, for example, onions, apples, strawberries and the like are dehydrated by immersion in a hydrocarbon liquid having a normal boiling point between about 60° C. and 140° C. distilling the liquid together with moisture in the food at a temperature between about 20° C. and about 75° C. while leaving said food wet with said hydrocarbon liquid and thereafter extracting said wet food with a second highly volatile water-immiscible organic liquid having a boiling point between about -50° C. and about 30° C. and volatilizing said second liquid off until all traces of said hydrocarbon liquid are removed.

3,628,968

**SPRAY-DRIED WHIPPABLE FOOD COMPOSITION**

Peter P. Noznick, Evanston, and Charles W. Tatter, Homewood, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.

Continuation-in-part of application Ser. No. 344,825, Feb. 14, 1964, now abandoned, Continuation of application Ser. No. 356,058, Mar. 31, 1964, now abandoned. This application Apr. 8, 1968, Ser. No. 719,766

Int. Cl. A23c 21/00

U.S. Cl. 99—139

8 Claims

A spray-dried whippable food composition prepared of (1) a polyglycerol partial ester of a higher fatty acid, (2) a car-

bohydrate from the group of starch, dextrin, gums, and sugars and/or a fat and (3) acid whey.

3,628,969

**STARCH-MILK SYSTEMS STABILIZED WITH A BLEND OF HYDROXYALKYL STARCH AND CARRAGEENAN**

Robert P. Vilim, Piscataway, and Harvey Bell, North Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 886,047

Int. Cl. A23g 3/00

U.S. Cl. 99—139

4 Claims

Starch and milk containing food products which are stable to high-temperature processing are prepared by admixing hydroxyalkyl starch and carrageenan to the components of the food product.

3,628,970

**FLAVORING AGENT CONTAINING Z-HYDROXY-3-ETHYLCYCLOPENT-Z-EN-1-ONE**

Charles R. Stephens, Jr., East Lyme, and Anibal Torres, New London, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 798,113

Int. Cl. A23I 1/22; C07c 49/46

U.S. Cl. 99—140 R

12 Claims

The use of z-hydroxy-3-ethylcyclopent-z-en-1-one in edible food compositions represses undesirable flavor notes and enhances desirable flavor notes.

3,628,971

**CEDAR POLYPHENOLS AND THIODIPROPIONIC ACID AS ANTIOXIDANTS FOR USE IN ANIMAL FATS AND VEGETABLE OILS**

Arthur Karchmar, Clifton, N.J., assignor to International Telephone and Telegraph Corp., New York, N.Y.

Continuation-in-part of application Ser. No. 690,755, Dec. 15, 1967. This application Feb. 2, 1970, Ser. No. 8,054

Int. Cl. A61k 7/00; A61I 23/00

U.S. Cl. 99—163

5 Claims

Mixtures of cedar polyphenols and thiodipropionic acid exhibit synergistic antioxidant effects when added to animal fats and vegetable oils and foodstuffs containing these materials. The amount of the polyphenol component of the mixture should be at least equal to the amount of thiodipropionic acid therein. These cedar polyphenol-thiodipropionic acid additives greatly increase the storage life of fats and oils when added thereto in amounts of at least about 50 per million.

3,628,972

**STERILIZATION OF MILK PRODUCTS CONTAINING FAT**

Aubrey P. Stewart, Jr., Corning, and Joseph F. Stecker, Creston, both of Iowa, assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 30, 1970, Ser. No. 23,960

Int. Cl. A23c 3/00

U.S. Cl. 99—212

7 Claims

An improved process for sterilizing milk and milk products containing fat is provided which comprises continuous injection of fat to milk or milk product which has been continuously preheated and has exited a batch or storage tank followed by sterilization. The process results in a product having smaller fat globules which are dispersed throughout said milk product and permits the elimination of homogenization.

3,628,973

**MODIFIED PORTLAND CEMENT AND PROCESS**

Nathan R. Greening, Glenview; Llewellyn E. Copeland, Des Plaines, and George J. Verbeck, Deerfield, all of Ill., assignors to Portland Cement Association, Skokie, Ill.

Continuation-in-part of application Ser. No. 735,963, June 11, 1968, now abandoned. This application Nov. 20, 1970, Ser. No. 91,518

Int. Cl. C04b 7/54, 13/22

U.S. Cl. 106—89

12 Claims

A modified Portland cement having a high early set strength containing one to thirty percent  $11\text{CaO} \cdot 7\text{Al}_2\text{O}_3 \cdot \text{CaX}_2$

3,628,974

**MICROCRYSTALLINE COLLAGEN, AN IONIZABLE PARTIAL SALT OF COLLAGEN AND FOODS, PHARMACEUTICALS AND COSMETICS CONTAINING SAME**

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 436,371, Mar. 1, 1965, now abandoned, Continuation of application Ser. No. 586,969, Oct. 17, 1966, now abandoned. This application Feb. 9, 1970, Ser. No. 14,709

Int. Cl. C09h 7/00

U.S. Cl. 106—125

9 Claims

A new physical form of collagen termed microcrystalline collagen is a water-insoluble but water-dispersible ionizable, partial salt of collagen and is formed by treating undenatured collagen with dilute acid solutions having a pH between about 1.6 and 2.6. Mechanically disintegrating the treated collagen in aqueous liquids until at least 10 percent by weight has been reduced to a submicron size produces dispersions in the aqueous liquids which have an essentially constant viscosity. This new form of collagen may be used in a wide variety of food, pharmaceutical and cosmetic preparations.

3,628,975

**POLYMERIZED DECANT OIL AND ASPHALT PRODUCT CONTAINING THE SAME**

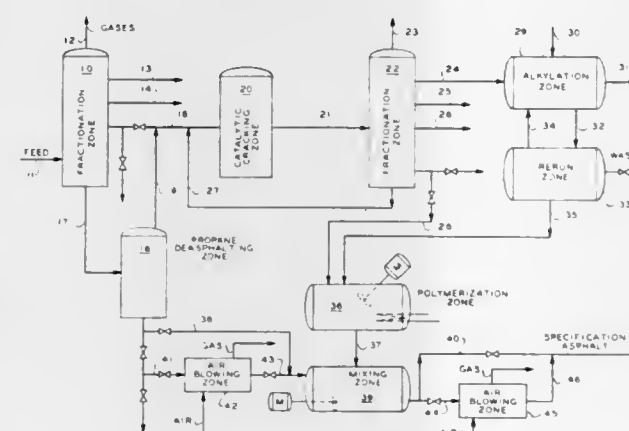
Joe Van Pool, Bartlesville, Okla., assignor to Philips Petroleum Company

Continuation-in-part of application Ser. No. 528,915, Feb. 21, 1966, now abandoned. This application Aug. 25, 1969, Ser. No. 857,278

Int. Cl. C08h 13/00, 17/22; C08j 1/46

U.S. Cl. 106—279

9 Claims



Decant oil produced in a catalytic cracking operation is combined with an HF acid soluble oil and polymerized to produce an additive for low-resin asphalts.

3,628,976

**PROCESS OF MAKING PERYLENE PIGMENTS**

Emil Stocker, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 28, 1968, Ser. No. 771,357

Claims priority, application Switzerland, Nov. 3, 1967, 15447/67

Int. Cl. C09c 3/02

U.S. Cl. 106—288 Q

13 Claims

A process of making a strongly colored, pure and transparent perylene-3,4,9,10-tetracarboxylic acid pigments, comprising precipitating raw perylene pigment from the aqueous solution of a salt thereof in the presence of a dispersing agent, especially rosin soap, in amounts of 10 to 20 percent by weight calculated on the weight of the perylene pigment at a temperature of about 70°–100° C. by the addition of a mineral acid or an organic acid is described. Dependent on the nature of the acid there is obtained a red pigment (mineral acid) or a brown pigment (organic acid).

Thus conditioned perylene pigments are useful for pigmentation of raw materials for lacquers, of stoving lacquers, and for synthetic thermoplastic materials, especially polyvinyl chloride.

3,628,977

**MULTILAYER TAPE FOR COATING INTAGLIO DEPRESSIONS AND PROCESS FOR USING SAME**

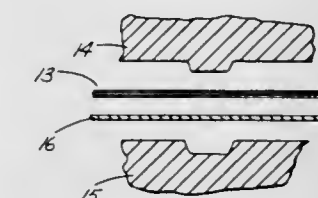
James E. Deegan, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Oct. 2, 1969, Ser. No. 863,071

Int. Cl. B32b 27/08; B41c 7/02

U.S. Cl. 117—11

10 Claims



An improved multilayer tape is provided for coating or cavity tipping the intaglio depressions of a printing plate or the like as they are formed from a punch and die embossing operation. The sandwich tape construction combines the best properties of strength, hardness, elasticity, resistance to heat and rupture, and the like, by judiciously combining different resins as layers, each resinous layer furnishing certain of the desirable properties to a degree desired while, however, inherently lacking others. The tape as an overall, complete unit satisfactorily meets all physical demands during use.

The carrier layer has a tensile strength of at least 10,000 p.s.i., the intermediate layer is a polyolefin having a tensile strength less than 10,000 p.s.i. and the outer layer is a fragmentable organic resin matrix containing a coloring pigment.

3,628,978

**METHOD OF NUCLEATING ALUMINUM**

Edward C. Yackel, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 23, 1968, Ser. No. 761,852

Int. Cl. B44d 1/092, 1/02

U.S. Cl. 117—34

7 Claims

Silver precipitating nuclei are deposited on a grained aluminum support such that said support can be used as a photolithographic receiving surface in a silver salt diffusion process by contacting the support with an alkaline bath and then contacting with an aqueous silver salt solution. In an alternative one-step treatment, an alkaline solution containing the silver salt is used.



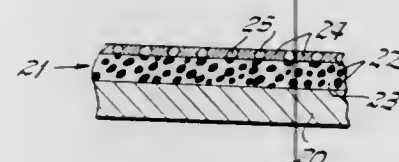
3,628,979

## TRANSFER ELEMENTS AND METHOD OF MAKING SAME

Douglas A. Newman, Glen Cove, and Allan T. Schlottzauer, Locust Valley, both of N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co. Inc., Glen Cove, N.Y.  
Filed June 20, 1968, Ser. No. 738,497  
Int. Cl. B41m 5/10

U.S. Cl. 117—36.4

8 Claims



The manufacture of novel pressure-sensitive transfer elements of the squeezeout type which are cleaner to the touch and resistant to producing typewriter roller marks on the copy sheet. The ink-releasing surface of a squeezeout-type ink layer is printed with a very thin layer of a composition comprising a dilute volatile solvent solution of a synthetic thermoplastic resin and a minor amount of a liquid oily material which is incompatible with said resin but which is compatible with the ink vehicle in the squeezeout layer. The volatile solvent is also at least a partial solvent for the resin binder of the squeezeout layer.

3,628,980

## HEAT-SENSITIVE COPY SHEET

Joseph A. Wiese, Jr., Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
Filed Oct. 30, 1969, Ser. No. 870,536  
Int. Cl. B41m 5/18

U.S. Cl. 117—36.8

10 Claims

The reaction temperature of a copy sheet containing bis(triphenylphosphine)borohydridocopper(I) as heat-decomposable image-forming component is significantly reduced by incorporating certain nonnitrogenous nickel compounds as catalysts.

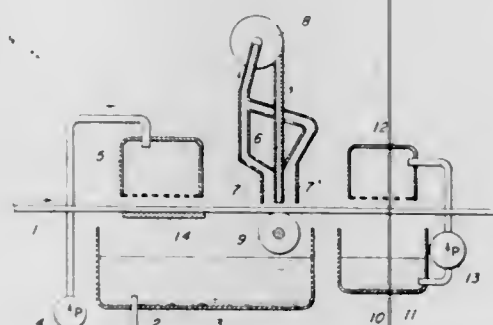
3,628,981

## LIQUID TONER DEVELOPMENT

Seiji Matsumoto, c/o Fuji Photo Film Co., Ltd. No. 105, Oaza Mizonuma, Asaka-shi Saitama-ken, Asaka, Japan  
Filed June 4, 1970, Ser. No. 43,466  
Claims priority, application Japan, June 9, 1969, 44/45269  
Int. Cl. B05c 1/16; G03g 9/00

U.S. Cl. 117—37 LX

6 Claims



In developing an electrostatic latent image-bearing surface with a liquid developer containing a highly volatile liquid component, a thin layer of residual liquid developer is formed on the surface. This thin residual developer layer is substantially removed by subjecting the layer to a stream of gas containing a relatively large quantity of the vapor of the

highly volatile liquid component. Toner background deposit and image quality is improved with this technique.

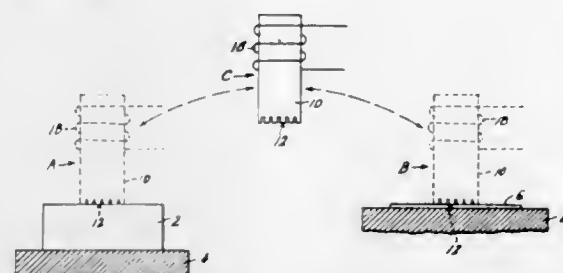
3,628,982

## METHOD OF APPLYING HOT-MELT GLUE

Charles C. Krug, 607 East 5th St., Summit, Mo.  
Filed Dec. 5, 1968, Ser. No. 781,545  
Int. Cl. B44d 1/20, 1/02

U.S. Cl. 117—38

7 Claims



A method of applying hot-melt glue to an object consisting of the steps of heating a transfer bar to a temperature high enough to melt the glue, pressing said bar against solid hot-melt glue to coat said bar with a film of liquid glue, and pressing said bar against said object to transfer said glue thereto.

3,628,983

## COATING METHOD FOR STRENGTHENING VITREOUS AND VITROCRYSTALLINE BODIES

Lucien F. Leger, Montigny-le-Tilleul, and Jose Lelong, Fleurus, both of Belgium, assignors to Glaverbel S.A., Watermael, Baitsfort, Belgium  
Filed Apr. 23, 1968, Ser. No. 723,626  
Claims priority, application Luxembourg, Apr. 27, 1967, 53,535; Great Britain, Mar. 19, 1968, 13,246/68  
Int. Cl. C03c 21/00

U.S. Cl. 117—40

29 Claims

A process for physically strengthening vitreous and vitrocrystalline bodies by applying to at least portions of the surface thereof coatings in which compressive stresses can be produced by appropriate chemical modifications thereof, and by carrying out such chemical modifications and subsequently cooling the coatings.

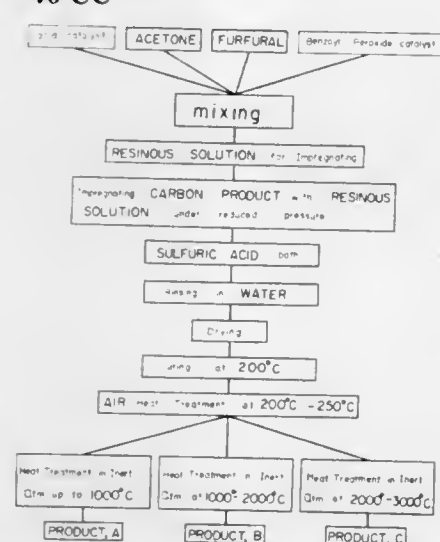
3,628,984

## METHOD FOR THE MANUFACTURE OF HEAT-RESISTANT CARBONACEOUS PRODUCTS HAVING LOW PERMEABILITY

Toshikatsu Ishikawa, and Haruo Teranishi, both of Tokyo, Japan, assignors to Nippon Carbon Company, Limited, Tokyo, Japan  
Filed Mar. 10, 1969, Ser. No. 805,653  
Claims priority, application Japan, May 27, 1968, 43/35440, May 28, 1968, 43/35666  
Int. Cl. B44d 1/46

U.S. Cl. 117—46 CC

5 Claims



Two catalytic additives are added to a mixed solution of acetone and furfural to produce a resinous solution for use in

impregnating a carbonaceous product. A carbonaceous article is impregnated with the solution at a reduced pressure, and the article is immersed in a concentrated sulfuric acid bath. Then, it is withdrawn from the acid bath, rinsed, and dried. Finally, it is subjected to a heat treatment at elevated temperatures to carbonize or graphitize the carbon product impregnated with the resinous solution.

3,628,985

## ORGANOPOLYSILOXANE IMPREGNATED FIBROUS SHEET AND METHOD OF PRODUCING SAME

Shibley A. Hider, Walter Kitaj, and Robert E. Martin, all of Toledo, Ohio, assignors to Owens-Illinois, Inc.  
Continuation of application Ser. No. 503,760, Oct. 23, 1965, now abandoned. This application June 10, 1969, Ser. No. 834,606  
Int. Cl. C03c 25/02

U.S. Cl. 117—46

7 Claims



A fibrous web impregnated with an organopolysiloxane which is cured thereon, wherein the web has superior dielectric and heat-resistant properties and is useful as an insulating medium and, optionally, a rigid fibrous web having its resin and/or fiber portion carbonized. A process of impregnating the fibrous web with the organopolysiloxane in liquid or powder form and curing the siloxane thereon, and, optionally, carbonizing the resin and/or fiber portion of the web whereby the resulting carbonized structure retains its rigidity.

3,628,986

## WATER-REPELLENT REDUCED IRON ORE

Marnell A. Segura, Henry R. Savage, and John L. Burroughs, all of Baton Rouge, La., assignors to Esso Research and Engineering Company  
Continuation-in-part of application Ser. No. 845,936, July 23, 1969, which is a continuation-in-part of application Ser. No. 591,124, Nov. 1, 1966. This application Aug. 22, 1969, Ser. No. 852,461  
Int. Cl. C23f 9/02; B32b 15/02

U.S. Cl. 117—49

15 Claims

Reduced iron ore, which is water absorbent, is rendered substantially water repellent by treating with a liquid mixture comprising polymerizable silicones, a hydrophobic organic compound containing a polar carbon to oxygen bond and, optionally, polymerizable olefins; the treated iron being suitable for use in steel making processes.

3,628,987

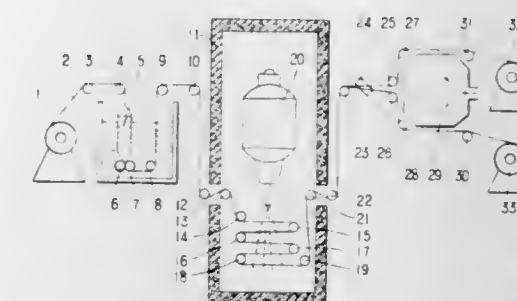
## PRESSURE SENSITIVE ADHESIVE FILM

Shinsaku Nakata, Toyonaka-shi; Hitoshi Hori, Kyoto-shi; Kohei Tagami, Toyonaka-shi, and Masaru Suzuki, Osaka-shi, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan  
Filed July 8, 1968, Ser. No. 747,764  
Claims priority, application Japan, July 12, 1967, 42/45159  
Sept. 16, 1967, 42/59814  
Int. Cl. C09j 7/02

U.S. Cl. 117—47 A

8 Claims

This invention relates to pressure sensitive adhesive films wherein the film surface has graft polymerized thereto a vinyl monomer or a diene monomer and wherein an adhesive material overlays the graft polymerized surface. The adhesive material has a solubility parameter near that of polymers of the vinyl or diene monomer.



the vinyl or diene monomer.

3,628,988

## METHOD FOR PROVIDING ARTIFICIAL DENTURES WITH A SOFT HYDROGEL LAYER

Miroslav Stoj, Vladimir Stoj, Karel Kliment, all of Prague; Milan Prokes, Olomouc, and Jaromir Mares, Cernosice, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia  
Filed Aug. 1, 1968, Ser. No. 749,343  
Claims priority, application Czechoslovakia, Aug. 16, 1967, 5891/67  
Int. Cl. B32b 27/08; A61c 13/00

U.S. Cl. 117—63

6 Claims

Mixture for providing a hydrogel layer on a hard denture consisting of a soluble glycol methacrylate or glycol acrylate polymer, a glycol methacrylate or glycol acrylate monomer consisting of 98 to 99.95 percent of the monoester and 0.05 to 2 percent of the diester, a polymerization initiator and a water-soluble solvent capable of dissolving in anhydrous condition the soluble glycol methacrylate or glycol acrylate polymer as well as the polymer of the hard denture. The solvent is used in an amount which causes an approximately equal swelling as water in equilibrium with the resulting hydrogel, from which it is entirely removed by washing the denture in water. The method is also suitable for rebasing old dentures.

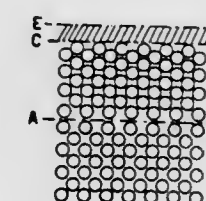
3,628,989

## PROCESS FOR THE MANUFACTURE OF GLAZED CERAMIC BODIES, IN PARTICULAR TILES, WITH ONLY ONE FIRING

Ferruccio Solmi, Via Baraldi 29, Modena, Italy  
Filed Oct. 1, 1968, Ser. No. 764,260  
Int. Cl. C03c 9/00

U.S. Cl. 117—70

13 Claims



In this process of glazing ceramic bodies, especially tiles, the latter are coated in raw, predried condition with a vitreous glaze admixed with about 25-35 percent of refractory clays and/or kaolin having a grain size of one micron or less, and, after drying the glaze, the bodies are fired only once.



3,628,990

**ELECTROLESS PLATING PRETREATMENT METHOD**  
Hatohiko Kamada, and Kouich Tashiro, both of Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 20, 1968, Ser. No. 753,896

Claims priority, application Japan, Aug. 22, 1967, 42/53876  
Int. Cl. B44d 1/14

U.S. Cl. 117—71 R

10 Claims

An electroless plating pretreatment method which comprises coating an insulating basic substrate with a first layer which comprises a soluble polyester, coating the polyester layer with a gelatin, and then treating the coated substrate with a mixed solution of bichromate and sulfuric acid or chromic anhydride and sulfuric acid. Any standard electroless process may then be used, including standard activation and sensitization steps.

3,628,991

**METHOD OF BONDING EPOXY RESINS TO POLYVINYL CHLORIDE**

William C. Thiele, Somerville; Charles H. Barger, Nixon; Joseph J. Thomas, and Robert T. Hucks, Jr., both of Somerville, all of N.J., assignors to Johns-Manville Corporation, New York, N.Y.

Filed Jan. 21, 1969, Ser. No. 792,821

Int. Cl. B44c 3/02, 3/00

U.S. Cl. 117—72

12 Claims

In a preferred embodiment, a polyvinyl chloride surface attached through an intermediate thermoplastic to a thermosetting resin, accomplished by a preferred process in which solvated acrylonitrile butadiene styrene copolymer in a methyl ethyl ketone solvent is sufficiently applied to a polyvinyl chloride surface to solvate the surface and to form a surface solution of the polyvinyl chloride and the acrylonitrile butadiene styrene copolymer, drying the surface solution, placing a substantially uncured liquid epoxy resin in contact with the dried surface solution and/or coating of the solvated acrylonitrile butadiene styrene, and curing sufficiently to form a bond between said copolymer and said epoxy resin. Preferably, the epoxy resin is carried on glass fibers, i.e., glass fibers impregnated with the resin, and preferably the polyvinyl chloride surface is cylindrical in shape, in the form of a pipe. Accordingly, a preferred product is a glass fiber-reinforced polyvinyl chloride pipe.

3,628,992

**BONDING OF RUBBER TO FIBROUS REINFORCERS**

William J. McKillip, Minneapolis, and Clarence N. Impola, Prior Lake, both of Minn., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Dec. 3, 1969, Ser. No. 881,879

Int. Cl. C09j 7/02

U.S. Cl. 117—76 A

12 Claims

Aromatic and aliphatic polyaminimides are disclosed as constituting a class of polyisocyanate precursors which can be effectively utilized in isocyanate-based adhesive systems for bonding rubber to fibrous polyester and like substrates.

3,628,993

**THERMALLY STABILIZED POLYAMIDE BY COATING PARTICLES WITH A CUPRIC SALT OF A COPOLYMER OF ETHYLENE WITH AN UNSATURATED MONOCARBOXYLIC ACID AND ESTER**

Ronald E. Gilbert, Shawnee Mission, and Bert H. Clampitt, Overland Park, both of Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 6, 1969, Ser. No. 831,198

Int. Cl. B32h 27/08; C08q 1/62

U.S. Cl. 117—100 C

5 Claims

Discrete solid particles of polyamide are coated with a cupric salt of a carboxy-substituted olefin polymer in

amounts of from about 0.1 percent to about 3.7 percent by weight to protect the polyamides from degradation during melt forming into manufactured articles.

3,628,994

**METHOD OF COATING A PLURALITY OF SUBSTRATES BY VAPOR DEPOSITION**

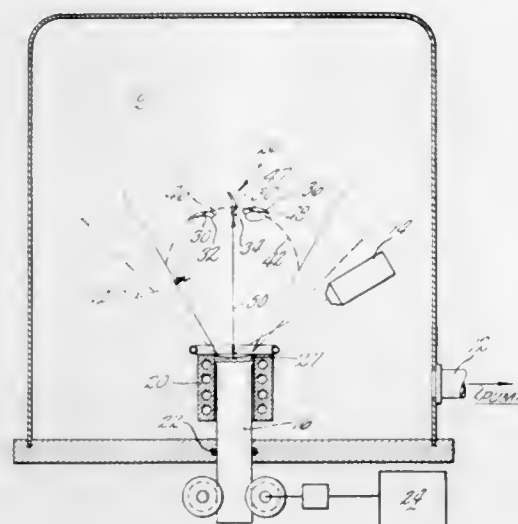
Sol S. Blecherman, Newington, and Nicholas E. Ulion, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 13, 1969, Ser. No. 806,870

Int. Cl. C23c 13/00, 11/00

U.S. Cl. 117—107.1

4 Claims



In the processes and method for forming protective coatings on metals, particularly the nickel-base and cobalt-base superalloys, by deposition or vacuum, the positioning of a plurality of substrates of complex geometry in the chamber in a predetermined region of vapor isodensity.

3,628,995

**FLAME RESISTANT CLOTH**

James Economy, Eggertsville; Francis J. Frechette, Tonawanda, and Luis C. Wohrer, Lewiston, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 3, 1968, Ser. No. 764,935

Int. Cl. B32h 27/08; B32b 27/42

U.S. Cl. 117—138.8 G

4 Claims

A flame resistant cloth or fabric comprising synthetic fibers prepared from resin condensation products of phenols and aldehydes which can be fiberized and cured. These fabrics may include blends of phenolic resin fibers with other fire-resistant fibers such as wool, silk, polyamide fibers, polyacrylonitrile fibers, mineral and glass fibers, among others.

3,628,996

**POLYDIMETHYLSILOXANE RELEASE AGENT**

Carl D. Weber, Brecksville, Ohio, assignor to Dow Corning Corporation, Midland, Mich.

Filed June 27, 1969, Ser. No. 837,335

Int. Cl. C08g 47/02; D21h 1/34

U.S. Cl. 117—138.8 A

5 Claims

Release agents which give superior release against aggressive adhesives are made by mixing (1) a hydroxyl endblocked polydimethylsiloxane having a viscosity of at least 350 cs. and (2) either from 25 to 75 percent by weight of a triorganosiloxy endblocked dimethylpolysiloxane or from 10 to 75 percent by weight of a polydimethylsiloxane having a triorganosiloxy group on one end and a hydroxyl on the other, (2) having a viscosity of at least 4000 cs. at 25° C. and (3) a cross-linker for (1).

3,628,997

**METHOD AND MEANS FOR TREATING FIBROUS MATERIALS AND ARTICLES PRODUCED THEREBY**  
Vincent Theodore Elkind, Metuchen, and Robert Tweedy Hunter, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 30, 1967, Ser. No. 679,221

Int. Cl. D06m 15/00; B44d 1/06

U.S. Cl. 117—121

8 Claims

This invention relates to a method and means for achieving a degree of oil and/or water repellency by fibrous materials by exhausting on such materials as textiles and the like acidic nonionic emulsion system containing fluorocarbon polymer, then achieving the desired oil and/or water repellency with subsequent heat curing.

3,628,998

**METHOD FOR GROWTH OF A MIXED CRYSTAL WITH CONTROLLED COMPOSITION**

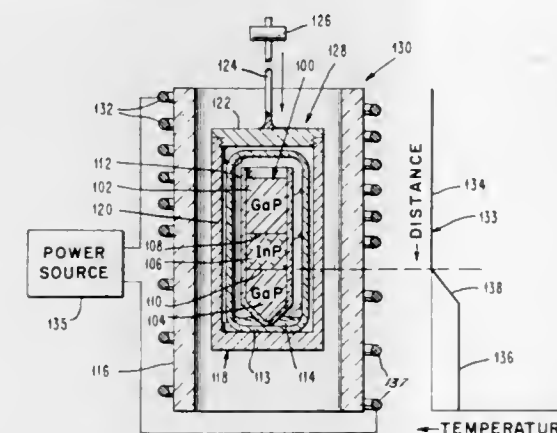
Samuel E. Blum, Bronx, and Richard J. Chicotka, Jefferson Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 23, 1969, Ser. No. 860,316

Int. Cl. B01j 7/08, 7/16

U.S. Cl. 117—201

17 Claims



A mixed crystal e.g.,  $Ga_{1-x}In_xP$ , of controlled composition in the growth direction, either of substantially homogeneous composition or of variable composition, is prepared from the melt or liquid solution by the method of this disclosure. Illustratively, the starting materials are two different pure III-V compounds with different melting points, e.g., GaP and InP, which are to be the components from which the mixed crystal is to be grown. A three-layered composite or charge is fabricated consisting of a layer of the lower melting compound flanked on both top and bottom by layers of the higher melting compound. The composite is established in a crucible which is sealed in a quartz ampul in vacuum to form an assembly. When an overpressure of either an inert or a reactive gas is required, the quartz ampul is sealed inside a stronger container, e.g., of graphite. The assembly is allowed to equilibrate isothermally in a furnace of a given temperature to yield a liquid solution from which the desired solid solution of mixed crystal can crystallize. For crystal growth with homogeneous composition the assembly is lowered slowly into a slightly cooler temperature zone of the furnace and crystallization of the mixed crystal occurs at the lower one of the two liquid-solid interfaces. A single crystal is obtained by epitaxial growth when the substrate is a single-crystal seed. As the liquid becomes depleted in the higher melting component at the growth interface, the dissolution of the higher melting component at the upper liquid-solid interface replenishes the composition of the liquid. This physical process is incrementally small, i.e., it occurs slowly, and results in the composition of the liquid remaining essentially in a steady state of constant composition. Illustratively,  $Ga_{1-x}In_xP$  cylindrical ingots of approximately 1 cm. length  $\times$  1.5 cm. diameter are readily produced from the components of GaP and InP by the practice of this disclosure.

3,628,999

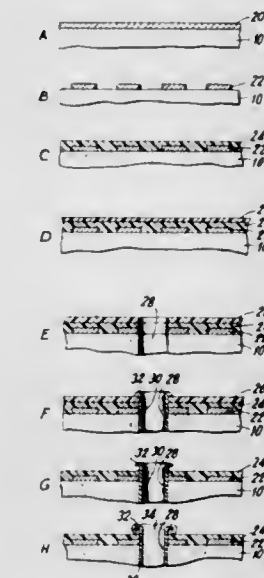
**PLATED THROUGH HOLE PRINTED CIRCUIT BOARDS**  
Frederick W. Schneble, Jr., Oyster Bay; John F. McCormack, Roslyn Heights; Rudolph J. Zeblicky, Hauppauge; John Duff Williamson, Miller Place, and Joseph Polichette, Farmingdale, all of N.Y.

Continuation-in-part of application Ser. No. 561,123, June 28, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 598,444, Dec. 1, 1966, now abandoned, and a continuation-in-part of 701,817, Jan. 29, 1968, now abandoned, and a continuation-in-part of 811,142, Mar. 27, 1969, now abandoned. This application Mar. 5, 1970, Ser. No. 16,847

Int. Cl. B44d 1/18

U.S. Cl. 117—212

10 Claims



This invention relates to new and useful plated through hole printed circuit boards and more particularly to plated through hole printed circuit boards having highly reliable solder joints, and improved methods for producing, such boards which include the application of a temporary, strippable solder mask together with a permanent solder mask.

3,629,000

**ELECTROGRAPHIC PRINTING ELEMENT**

Sangho E. Back, and Gordon A. Murdock, both of Camas, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Feb. 12, 1965, Ser. No. 432,246

Int. Cl. G03g 5/02

U.S. Cl. 117—218

3 Claims

A copy sheet for electrographic printing comprising a paper base sheet, a layer of photoconductive material extending over one side of the sheet, and a dielectric coating extending over the photoconductive layer adapted to receive an image-defining electrostatic charge. The photoconductive layer is sensitized by exposure to light to render it conductive, and after such sensitizing an image-defining electrostatic charge is deposited on the dielectric layer which is developed to form a visible image.

3,629,001

**METHOD AND APPARATUS FOR THE CONTINUOUS COUNTERCURRENT EXTRACTION OF SUGAR FROM BAGASSE**

Willy Kaether, Braunschweig-Melverode; Walter Dietzel, and Hans-Dieter Backofen, both of Braunschweig, all of Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Dec. 30, 1968, Ser. No. 787,950

Claims priority, application Germany, Jan. 2, 1968, P 16 42 532.4

Int. Cl. C13d 1/12, 1/04; B01d 11/02

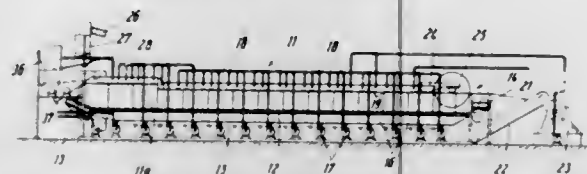
U.S. Cl. 127—5

5 Claims

Method and apparatus for the continuous countercurrent extraction of sugar from bagasse or comminuted sugar cane.



In extracting sugar from bagasse the bagasse is subject to the action of extraction liquid in a diffusion trough through which a layer of bagasse is passed by conveyor means, the bagasse being supported on a screen in the bottom of the trough and through which the extraction liquid percolates and is collected in containers beneath the trough, the extraction liquor in the trough being recirculated.



The method of this invention consists in subjecting the layer of bagasse to pressure such as by means of a roller prior to discharge of the bagasse from the trough in order to extract liquid therefrom, movement of the bagasse, when undergoing liquid extraction, being retarded while the rate of travel of the conveyor means remains constant.

In apparatus for carrying out the invention a roller is positioned in the discharge end of the trough for maintaining pressure on the layer of bagasse, the rate of rotation of the roller being controlled by a suitable braking device.

3,629,002

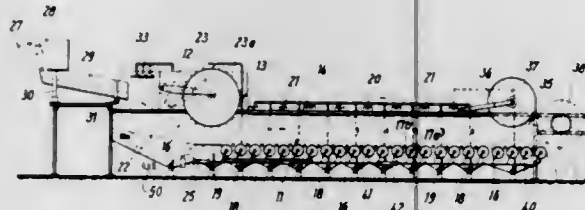
# METHOD AND APPARATUS FOR EXTRACTING SUGAR FROM BAGASSE

Willy Kaether, Braunschweig-Melverode, and Hans-Dieter Backofen, Braunschweig, both of Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

Filed Dec. 11, 1968, Ser. No. 782,815  
Int. Cl. C13d 1/12, 1/08

U.S. Cl. 127-5

13 Claims



A method and apparatus for extracting sugar from bagasse in which extraction is effected by an aqueous liquid, the crude bagasse being fed into one end of a diffusion trough and discharged at its other end. The layer of bagasse is treated in two stages for which purpose the diffusion trough is divided into two zones, an entry zone and a diffusion zone. When in the entry zone the bagasse receives a thermal treatment and before leaving the same is subjected to pressure by passage beneath a pressure and a conveyor roller. In order to facilitate passage of the bagasse layer through the diffusion zone the bottom comprises a series of rollers, certain, preferably alternate, rollers being driven. The roller bed may be made up of large diameter (driven) rollers and relatively small (nondriven) rollers consisting of a perforated drum and serving to collect the extraction liquor so that it can be directly pumped back into the recirculation line to the sprays.

3,629,003

# SUGAR PRODUCTS HAVING A COAGULATION PREVENTIVE PROPERTY AND SUPERIOR FLUIDITY

Kiyoshi Suzuki, Tokyo, Japan, assignor to Toyoseito Kabushiki-Kaisha, Tokyo, Japan

Filed Dec. 17, 1969, Ser. No. 885,674

Claims priority, application Japan, Dec. 18, 1968, 43/92779  
Int. Cl. C13f 3/00, 5/00

U.S. Cl. 127-30

3 Claims

An intimate admixture of sugar and anhydrous calcium lactate with the anhydrous calcium lactate being mixed with the sugar at the end of the production of the sugar to prevent coagulation of the sugar and to improve its fluidity.

3,629,004

# PAINT-REMOVING METHOD

Joseph Cooper, and William James Corbett, both of Cincinnati, Ohio, assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 17, 1969, Ser. No. 817,160  
Int. Cl. B08b 7/00; C23g 5/02

U.S. Cl. 134-31

4 Claims

A method for removing paint from metal surfaces by boiling a solvent or solvent mixture and contacting the painted metal surface with the vapors of the solvent or solvent mixture. The solvent may include chlorinated liquid hydrocarbons, hydrogenated aromatic solvents, saturated heterocyclic compounds, surface active agents, imidazole derivatives, alkynyl alcohols, glycol ethers, carboxylic acids, ethanolated alkyl guanidine amine complexes, and aliphatic alcohols.

3,629,005

# MILKING UNIT SANITIZER

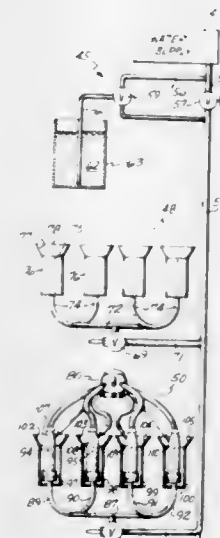
Dallas J. B. Belden, Route 1, Box 311, Rochester, Wash.

Filed Aug. 19, 1968, Ser. No. 753,514

Int. Cl. B08b 3/02

U.S. Cl. 134-171

1 Claim



Each individual treat cup of a suction milking unit can be easily sanitized using the disclosed sanitizing system for injecting a sanitizing solution into the milking chamber thereof. The sanitizing unit includes elongated supply conduits having nozzles positioned at one end for spraying the sanitizing solution into the milking chambers as the nozzles are inserted into the teat cups. In between milkings the sanitizing unit can be used for storing the milking unit. Guide cups adjacent the nozzle end of the conduits provide guiding surfaces for engaging the exterior shell surfaces of the treat cups such that the nozzles will be properly positioned within the milking chamber. A fresh supply of sanitizing solution is used for each sanitation flush of each teat cup.

3,629,006

# METHOD TO PROVIDE POSITIVE PLATE FOR LEAD-ACID STORAGE BATTERY CELLS

Stanley Hill, Cherry Hill, N.J., assignor to ESB Incorporated

Filed Apr. 16, 1970, Ser. No. 29,293

Int. Cl. H01m 35/18, 35/30

U.S. Cl. 136-27

3 Claims

Conventionally made, unformed storage battery plates comprised of a die-cast lead grid and a paste of lead oxide are preformed in a weakly acid or weakly alkaline electrolyte solution to provide a surface layer of lead peroxide high in alpha content on the active material of the plates. The formation of the plates is thereafter completed in a strongly alkaline electrolyte solution to provide plates having a formed active material of substantially all alpha lead peroxide.

3,629,007

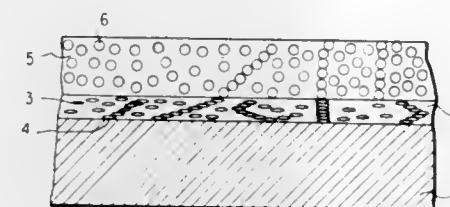
# RESERVE BATTERY ELECTRODES USING BONDED ACTIVE MATERIALS

Timothy J. Kilduff, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 6, 1969, Ser. No. 847,906  
Int. Cl. H01m 39/00

U.S. Cl. 136-27

11 Claims



Reserve battery electrodes and a method for preparing said electrodes wherein a metal support body is coated with a substantially noncorrodible electrically conductive material and then overcoated with an active material, for example, lead dioxide, dispersed in a resinous binder. The noncorrodible electrically conductive under layer is applied in an amount sufficient to prevent corroding of the metal support body and sufficient to prevent formation of an interfacial resistance barrier between the metal support body and the subsequently applied coating. The electrically conductive material is applied to the support in admixture with a thermosetting resin. Alternatively, the metal support body is flash plated with a metal which is either inert to oxidation when in contact with the active material or forms a conductive oxide in contact with the active material. In the first embodiment, the active material is applied to the first layer in admixture with a thermosetting resin.

3,629,008

# COMPOSITE ELECTRODE AND ELECTROCHEMICAL CELL WITH AT LEAST ONE GAS DIFFUSION ELECTRODE

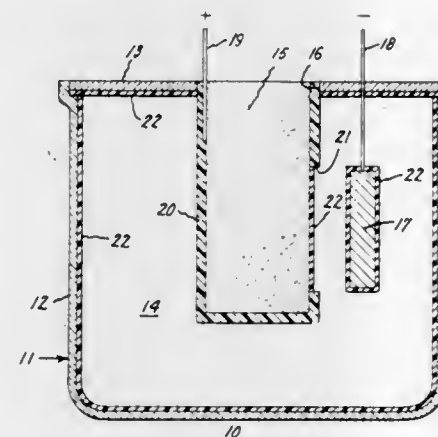
Willard T. Grubb, Schenectady, N.Y., and Carl E. Cliche, Peabody, Mass., assignors to General Electric Company

Filed May 2, 1968, Ser. No. 725,989

Int. Cl. H01m 27/04, 13/02, 1/02

U.S. Cl. 136-86

6 Claims



A composite gas diffusion electrode has an electrode body, at least one water-soluble polymeric thickening or gelling agent swellable in an aqueous electrolyte, and a layer of the thickening agent adhering to and covering at least a portion of one of the surfaces of the electrode body. Upon subsequent use in contact with an aqueous electrolyte, the thickening agent swells on the covered surface of the electrode body preventing electrolyte leakage therethrough, preventing drowning of the electrode, reducing loss of any dissolved fuel in the electrolyte, and immobilizing at least

partially the electrolyte. Additionally, an electrochemical cell with at least one gas diffusion electrode has the above type of thickening agent covering various portions of the interior structure of the cell. Upon subsequent use in contact with an aqueous electrolyte, the thickening agent swells on covered portions of the interior structure preventing electrolyte leakage therethrough, and immobilizing at least partially the electrolyte.

3,629,009

# AUXILIARY COMPONENT PACKAGE FOR OXYGEN-METAL BATTERIES

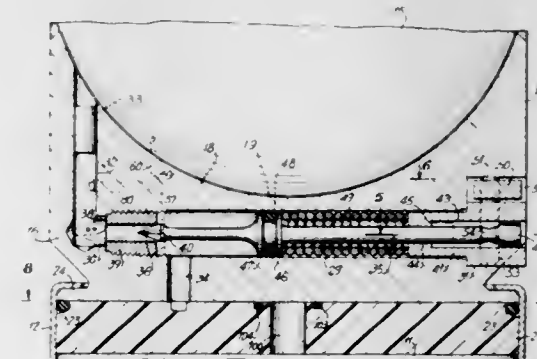
Roswell J. Bennett, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed May 7, 1969, Ser. No. 822,553

Int. Cl. H01m 27/00, 17/06

U.S. Cl. 136-86 A

8 Claims



A high-rate oxygen-metal battery is provided with an auxiliary component package for the storage, release and pressure regulation of the oxygen gas. The package includes an oxygen storage tank supported on a basal member which also serves as a housing for all the remaining auxiliary components, i.e., an oxygen-release mechanism, a gas-pressure regulator and a circuit switch.

3,629,010

# BATTERY TOP SEALER

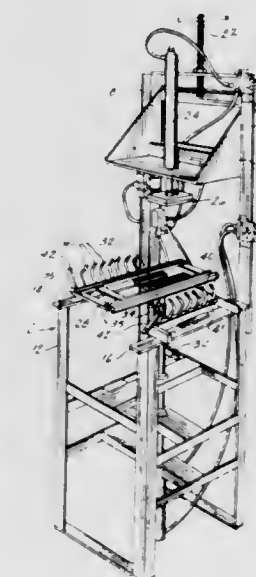
Laurence W. Hahn, Tampa, Fla., assignor to The Connex Corporation, Tampa, Fla.

Filed Dec. 17, 1968, Ser. No. 784,316

Int. Cl. H01m 1/02

U.S. Cl. 136-176

7 Claims



An apparatus and method for sealing a battery cover to an assembled battery comprising the steps of inverting the bat-



tery on a platform, separately gripping the cover and container of the battery with vacuum pads, exposing the inside of the cover by simultaneously lowering the platform and vacuum pads attached to the cover, coating the cover with a sealant material by dispensing the sealant through nozzles which pivot into communication with the cover, reuniting the cover to the container, and curing the sealant.

3,629,011

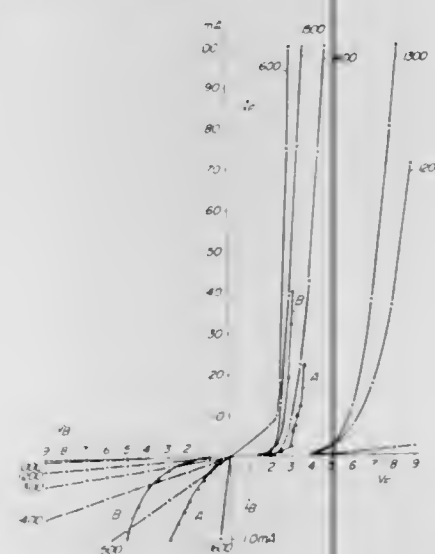
# METHOD FOR DIFFUSING AN IMPURITY SUBSTANCE INTO SILICON CARBIDE

Atsutomo Tohi, Hirakata-shi; Kunio Sakai, Kadoma-shi; Masakazu Fukai, Osaka, and Yoshinobu Tsujimoto, Kashiwara-shi, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Sept. 6, 1968, Ser. No. 758,058

Claims priority, application Japan, Sept. 11, 1967, 42/58877  
Int. Cl. H01L 7/54

U.S. Cl. 148—1.5



Impurity ions are accelerated under an irradiation condition of ordinary temperature or relatively low temperature and injected into silicon carbide from its surface.

The injected silicon carbide is annealed in a temperature range from 1,600° to 1,200° C. to obtain a PN junction and a luminescent diode based on the PN junction is thereby prepared.

3,629,012

# LUBRICATION IMPROVEMENTS VIA DIFFUSION

Edward M. Kohn, Haverford Township, Delaware County, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Sept. 5, 1968, Ser. No. 757,783

Int. Cl. C23F 7/24

U.S. Cl. 148—6.14

8 Claims

The extreme pressure properties of ferrous metals can be increased by coating the metal with iron sulfide or chloride or mixtures thereof then heat treating the coated metal at a temperature in the range of 900°–2,000° F. for ½ to 24 hours. When metal Falex pins and jaws are treated in the above fashion they have longer running times, i.e., up to 11 times, than untreated pins and jaws under the same conditions in a standard Falex testing apparatus.

3,629,013

# NITROCELLULOSE COATINGS IMPROVED BY CERTAIN POLYISOCYANATES AND ALDIME OR KETIMINE BLOCKED POLYAMINES

Kenneth B. Stokes, Minneapolis, Minn., assignor to General Mills, Inc.

Filed Mar. 3, 1969, Ser. No. 804,005

Int. Cl. B44d 1/36; C23F 17/00

U.S. Cl. 148—6.15

11 Claims

Coatings are prepared from compositions comprising nitrocellulose, polyisocyanates derived from polymeric fat acids and aldimine or ketimine blocked aliphatic polyamines having no unreacted secondary amine groups.

3,629,014

# HARD SURFACING OF STEELS

Howard C. Fiedler, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 31, 1969, Ser. No. 889,730

Int. Cl. C23b 5/00; C22c 39/14

U.S. Cl. 148—31.5

3 Claims

It has been found that when certain steels, such as the hot work die steels which contain relatively high amounts of silicon, are surface hardened by the diffusion of boron into their surfaces, an undesirable soft layer is formed immediately subjacent thereto. When the silicon content is reduced to a value less than about 0.5 percent, the soft layer is reduced in thickness and at about 0.05 percent it no longer is formed.

3,629,015

# METHOD FOR COOLING THICK STEEL PLATES

Toshiya Yonezawa, and Hirokazu Sumitomo, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

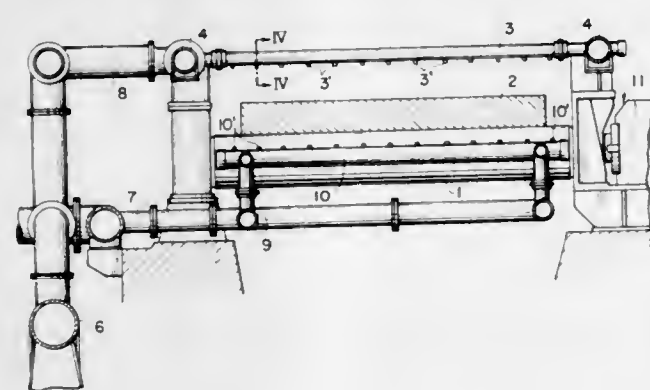
Filed Mar. 17, 1969, Ser. No. 807,723

Claims priority, application Japan, Mar. 19, 1968, 43/17873

Int. Cl. B21b 27/06

U.S. Cl. 148—143

6 Claims



Method for cooling thick steel plates such as slabs and thick plates, while they are not on the rolling lane just after being hot rolled, by showers of cooling water supplied at a rate of 0.1 to 0.6 m.<sup>3</sup> per m.<sup>2</sup> of the plate per minute simultaneously over the top and bottom surfaces thereof.

3,629,016

# METHOD OF MAKING AN INSULATED GATE FIELD EFFECT DEVICE

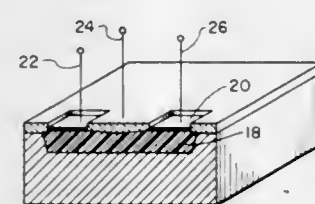
William B. Glendinning, Belford, and Albert Mark, Toms River, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Mar. 5, 1970, Ser. No. 16,888

Int. Cl. H01L 7/36, 11/00, 11/14

U.S. Cl. 148—175

8 Claims



An insulated gate field effect device is made by a vapor etch and epitaxial refill technique. The vapor etch into a first-type conductivity silicon substrate results in an undercutting between windows such that a cavity is developed completely beneath the insulator separating the window regions. The cavity is then refilled epitaxially with silicon of a second conductivity type; a shallow layer of heavily doped silicon of said first-type conductivity epitaxially regrown in the window area; the gate insulator oxide thinned by etching; and gate, source, and drain contacts made.

3,629,017

# METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

Fritz Stork, Grobgartach, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm am Danube, Germany

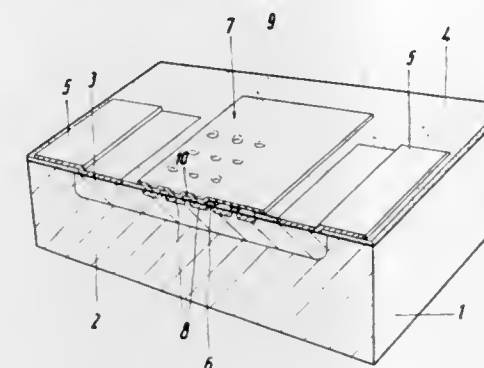
Filed Oct. 1, 1969, Ser. No. 862,776

Claims priority, application Germany, Oct. 1, 1968, P 18 00 212.5

Int. Cl. H01L 7/46

U.S. Cl. 148—179

10 Claims



A method of producing a semiconductor device, in which a region of a first conductivity type contains a plurality of regions of a second conductivity type, includes, after formation of the first conductivity type region, masking the semiconductor body to provide a plurality of uncovered areas and alloying into these areas a part of a foil placed on the semiconductor body by means of a specially controlled electron beam and leaving the nonalloyed part of the foil to provide electrical connection between the areas.

3,629,018

# PROCESS FOR THE FABRICATION OF LIGHT-EMITTING SEMICONDUCTOR DIODES

George A. Henderson, Richardson, and Gary E. Pittman, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 23, 1969, Ser. No. 793,291

Int. Cl. H01L 7/44

U.S. Cl. 148—187

13 Claims

A light-emitting semiconductor diode is made from an N-type crystal of GaAsP or GaP by the selective diffusion of zinc therein to form a PN junction. A special diffusion mask system is employed, to obtain a combination of direct diffusion into an unmasked region, and lateral diffusion beneath a selected portion of the mask. The major, active portion of the junction is formed by lateral diffusion, whereas that portion of the P-region formed by direct diffusion serves primarily as a preferred location for contact metallization.

3,629,019

# SOLID PROPELLANT COMPOSITION CONTAINING POLYESTERS AND AN INORGANIC OXIDE BURNING RATE CATALYST

Ralph W. Lawrence, Glendora, Calif., assignor to Aerojet-General Corporation, Azusa, Calif.

Filed Aug. 11, 1964, Ser. No. 388,944

Int. Cl. C06d 5/06

U.S. Cl. 149—19

2 Claims

2. A solid propellant composition comprising a cured intimate mixture of a solid inorganic oxidizing salt, said inorganic oxidizing salt being present in an amount of from about 45 percent to about 90 percent by weight of the total propellant composition; an unsaturated polyester resin consisting of the condensation product of a saturated polyhydric alcohol and polycarboxylic acid, said polyester resin being the condensation product of an alkylene glycol, maleic anhydride and sebacic acid heteropolymerized with an unsaturated compound selected from the group consisting of lower alkenes, lower alkynes, phenyl substituted lower alkenes, lower alkyl dienes, lower alkenyl esters of lower alkanolic acids,

lower alkyl esters of lower alkanolic acids, lower alkenyl esters of lower alkanolic acids, allyl diglycol carbonate, diallyl diglycolate, and mixtures thereof; and a burning rate catalyst comprising an inorganic oxide selected from the group consisting of the oxides of vanadium, cobalt, iron, chromium, manganese, copper, silver, and mixtures thereof.

3,629,020

# CASTABLE FLUOROCARBON COMPOSITE PROPELLANTS

Martin H. Kaufman, and John D. O'Drobinak, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 9, 1964, Ser. No. 403,450

Int. Cl. C06d 5/06

U.S. Cl. 149—19

8 Claims

1. A propellant composition comprising a fluorocarbon binder; a metal fuel; and an inorganic oxidizer; said binder comprising a fluorocarbon monomer selected from the group consisting of 1H, 1H, 9H-Hexadecafluoro-1-nonanomethacrylate, 1H, 1H, 7H-Dodecafluoro-1-heptanoacrylate, 1H, 1H, 5H-Octafluoro-1-pentanoacrylate, and mixtures thereof; a plasticizer selected from the group consisting of triethylene glycol dinitrate, pentaerythritol trinitrate, trimethylol ethane trinitrate, diethylene glycol dinitrate, butanediol dinitrate, a copolymer of vinylidene fluoride and perfluoropropylene, bis(2-fluoro-2,2-dinitroethyl)formal and mixtures thereof; a cross-linking agent selected from the group consisting of triallylcyanurate and divinyl benzene; and a free radical catalyst selected from the group consisting of azo-bisisobutyronitrile, benzoyl peroxide, dichlorobenzoyl peroxide, and methylethylketone peroxide; said fuel being a member selected from the group consisting of aluminum, beryllium, and zirconium; and said oxidizer selected from a group consisting of ammonium perchlorate, sodium perchlorate, potassium perchlorate, sodium nitrate, potassium nitrate and barium nitrate.

3,629,021

# SLURRY EXPLOSIVE COMPOSITION CONTAINING NITROGEN-BASE SALT AND TNT, SMOKELESS POWDER OR COMPOSITION B

William M. Lyerly, Hagerstown, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 21, 1969, Ser. No. 792,814

Int. Cl. C06b 1/04

U.S. Cl. 149—50

17 Claims

A thickened water-bearing explosive comprising inorganic oxidizing salt, fuel, TNT, smokeless powder or Composition B and nitrogen-base salt.

3,629,022

# USE OF PLATINUM THIN FILMS AS MASK IN SEMICONDUCTOR PROCESSING

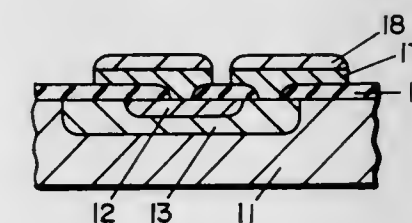
Lewis Terry, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 20, 1968, Ser. No. 714,714

Int. Cl. H01L 7/50

U.S. Cl. 156—17

6 Claims



Platinum thin films are selectively etched by a method that begins with the deposition of an aluminum film on the



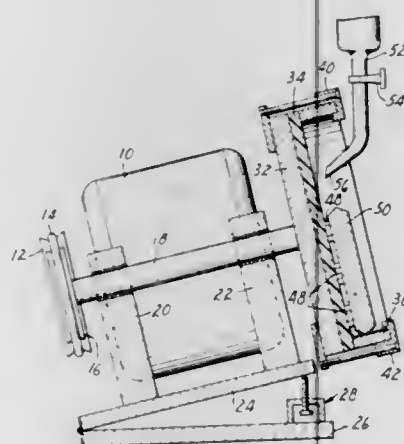
platinum film. The reverse image of that desired in the platinum film is then patterned in the aluminum. The combination is heated to 400° to 500° C. for a time sufficient to form a platinum-aluminum intermetallic compound. The intermetallic compound is then readily removed by etching whereby the remaining platinum is delineated in the reverse of the aluminum pattern.

### 3,629,023 METHOD OF CHEMICALLY POLISHING CRYSTALS OF II(B)-VI(A) SYSTEM

Wolfgang H. Strehlow, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
Filed July 17, 1968, Ser. No. 745,618  
Int. Cl. H01I 7/00

U.S. Cl. 156-17

13 Claims



A method and apparatus for chemically polishing crystals of the group II(B)-VI(A) system for the periodic table using a mixture consisting essentially of bromine and methanol with the bromine being present in the amount within the range of about 0.05 to about 10 percent by volume of the total solution of the mixture and forming a moving fluid film of the mixture to polish the crystal surface is shown. The apparatus includes a polishing dish and crystal support disk which supports the crystal to be polished and positions the crystal surface to be polished adjacent a plate which forms part of the polishing dish and a dispensing means which supplies a polishing solution between the plate and crystal surface for establishing a fluid film therebetween to chemically polish the crystal surface.

### 3,629,024 METHOD OF INSULATING ARMATURE COILS

Yoshiaki Kimura; Yoshiharu Sano; Ryoji Kumazawa, and Hisayasu Mitsui, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Horikawa-cho, Kawasaki-shi, Kanagawa-ken, Japan

Filed Feb. 17, 1970, Ser. No. 11,984  
Claims priority, application Japan, Feb. 25, 1969, 44/13591  
Int. Cl. H01b 3/40, 17/66

U.S. Cl. 156-56

6 Claims

Straight side portions of an armature coil adapted to be received in armature slots are insulated with insulating tapes containing a relatively hard and nonpliable epoxide resinous composition, while looped end portions are insulated with insulating tapes containing a relatively pliable long chain epoxide resinous composition to avoid damage to the insulation structure due to mechanical stress created during insertion of the coil into armature slots. Not only the interlayer insulation but also the ground insulation is formed by the above described two types of insulation tapes.

### 3,629,025 PROCESS FOR SEALING POLYOLEFIN CONTAINERS

Wilhelm E. Walles, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 3, 1968, Ser. No. 764,915  
Int. Cl. B65h 7/00

U.S. Cl. 156-69

5 Claims

Process for the sealing of polyolefin containers with an epoxy resin formulation in which the containers are sulfonated prior to the application of the epoxy resin.

### 3,629,026 METHOD FOR REINFORCING A THERMOPLASTIC ARTICLE

Allan B. Isham, Newark, and Wilbur Shenk, III, Granville, both of Ohio, assignors to Owens-Corning Fiberglass Corporation

Filed July 25, 1968, Ser. No. 747,645  
Int. Cl. C09j 5/00

U.S. Cl. 156-161

7 Claims



A method of reinforcing thermoplastic structures by controllably overwrapping the structures with continuous glass strands impregnated with a solvent solution of a thermoplastic resin whereby the outside surface of the structure is attacked by the solvent to fuse the impregnated strands to the thermoplastic structure, thereby creating an integrally reinforced structure having no interface between the thermoplastic structure and the thermoplastic resin impregnant and having the strands locked in the structure.

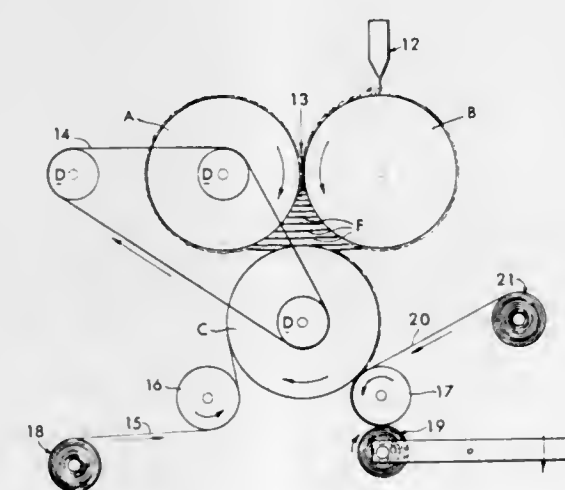
### 3,629,027 LAMINATION OF FLEXIBLE WEBS WITH FILAMENTARY ADHESIVE MATERIAL

Leo M. Germain, Shawinigan, Quebec, Canada, assignor to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Filed Oct. 21, 1968, Ser. No. 769,243  
Int. Cl. D04h 3/16

U.S. Cl. 156-167

5 Claims



The invention provides method and apparatus for applying molten adhesive, especially the "hot melt" type, to a flexible substrate with subsequent adhesive lamination of the substrate, by generating tacky fine filaments of the molten adhesive between a pair of moving surfaces, depositing the tacky filaments onto the flexible substrate while precluding contact between the substrate and the moving surfaces, then adhesively securing the substrate as a lamina to another lamina by means of the deposited tacky filaments.

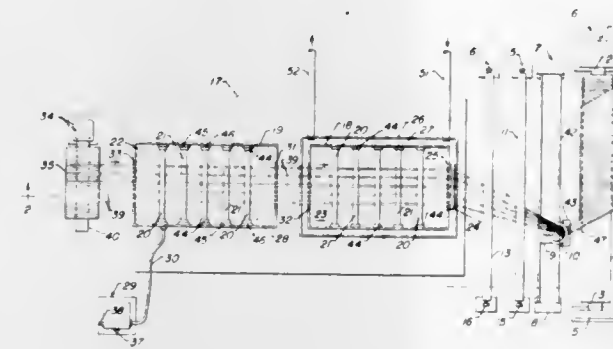
### 3,629,028 METHOD OF MAKING SELF-LUBRICATING FILAMENT WOUND TUBE

Jack Lowrie McLarty, Milwaukee, Wis.; Charles M. Hayes, Hoffman Estates, and Edwin J. Latos, Chicago, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 29, 1969, Ser. No. 845,684  
Int. Cl. B65h 81/00; B31c 13/00

U.S. Cl. 156-175

19 Claims



A method of making a filament wound tube having smooth surfaces. Fiber glass filaments are passed through successive resin baths containing particles of a wear resistant additive. These resin baths are deaerated to reduce the existence of voids and pits in the resin in the finished tube. The filaments are flattened and are slowly helically wound in a first layer onto a mandrel. Subsequent layers are overwound about the first layer, the resin is cured, and the filament wound tube formed thereby is removed from the mandrel.

### 3,629,029 METHOD OF MAKING SECTIONAL RODS

Joseph M. Holahan, Anderson, S.C., assignor to True Temper Corporation, Cleveland, Ohio

Filed Jan. 23, 1970, Ser. No. 5,240  
Int. Cl. B31c

U.S. Cl. 156-189

13 Claims



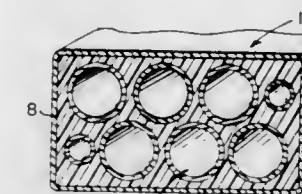
Single piece hollow rod blanks of fiber glass reinforced plastic are formed upon mandrels having stepdown portions intermediate the ends thereof. Mandrels are wrapped in resin impregnated fiber glass cloth having the majority of the fibers disposed parallel with the axes of the mandrels. Upon curing of the plastic, the mandrels are withdrawn and the stepdown portions are cut out of the blanks leaving a plurality of individual sections of hollow sectional rods. The diameters on either side of the stepdown portions of the mandrels are such that a smaller diameter section of each rod is provided with a shank, and a larger diameter section is provided with a socket adapted to receive the shank. Modifications comprise tapering the mandrel on either side of the stepdown portion to provide a tapered shank and socket fit, and providing a reinforcing ply in the area of the shank, socket, and stepdown portions or other area of the rod.

### 3,629,030 METHOD FOR FORMING A MANDREL AND FABRICATING A DUCT THEREABOUT

Alvin G. Ash, P.O. Box 5893, Gig Harbor, Wash.  
Filed June 12, 1968, Ser. No. 736,331  
Int. Cl. B29c 1/02, 1/12; B65h 81/06

U.S. Cl. 156-189

3 Claims



A method of forming a plastic duct of irregular configuration employing an elastic mandrel that is used repeatedly in the manufacture of a plurality of similarly shaped ducts. The mandrel is contracted for separating it from a finished duct and is expanded for fabricating a subsequent duct. The mandrel is formed by placing an inflatable tube or plurality of tubes in a mold with a quantity of uncured elastic material, inflating the tube or tubes, and curing the elastic material to form the composite inflatable mandrel. The tube or tubes have a limited expanded cross section and the mandrel can be inflated to the same size and shape at any time by fully inflating the tube or tubes.

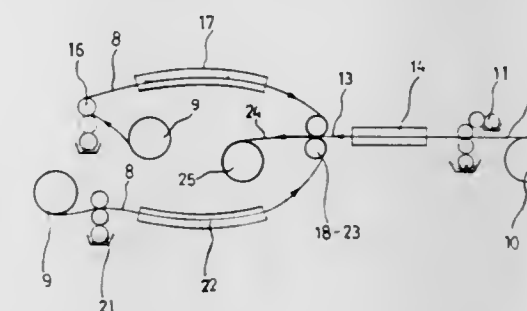
### 3,629,031 METHOD OF MANUFACTURING A COMPOUND LAMINAR MATERIAL

Jose Guarro Tapis, Avda. Jose Antonio 575, Barcelona, Spain  
Filed Dec. 24, 1969, Ser. No. 887,865

Claims priority, application Spain, Dec. 28, 1968, 362,317  
Int. Cl. B32b

U.S. Cl. 156-190

4 Claims



A method of manufacturing a compound laminar material is obtained by separately treating with resins, two webs of paper, covering with an adhesive resin both surfaces of a web of synthetic resin, applying the two webs of paper to the web of synthetic resin, one on each side thereof, pressing the resulting triple web and varnishing it, thus obtaining an imitation of parchment obtained from goatskin.

### 3,629,032 METHOD FOR MAKING FLEXIBLE STRIPS OF MATERIAL HAVING ON ONE SURFACE THEREOF A PILE OF UPSTANDING HOOKING ELEMENTS

George H. Erb, Rutland, Vt., assignor to American Velcro Inc.

Filed July 15, 1969, Ser. No. 841,944  
Int. Cl. B32b 3/06, 7/06

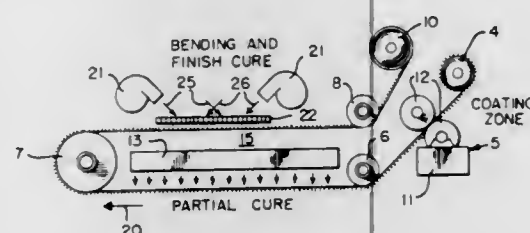
U.S. Cl. 156-196

5 Claims

A method is disclosed for producing the hooked surface of a hook- and loop-type fastener by treating a starting fabric material having a pile of upstanding threads. The treatment comprises impregnating the threads and pile with a liquid



plastic monomer having the capability of being converted by the application thereto of a suitable form of energy to a flexible solid, applying heat or other suitable form of energy to the underside of the starting material to set the lower portion



of the threads into a relatively permanent and stiffened shape and then subjecting the other side of said starting material simultaneously to a pressure and heat or other suitable form of energy to bend and set the upper portions of the threads into the form of hooking elements.

3,629,033

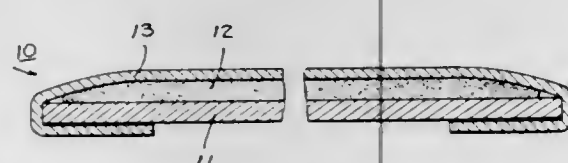
# METHOD OF MAKING PADDED COVER BOARD STRUCTURE

Leewood C. Carter, Warren Township, and Edward K. Mullen, Westfield, both of N.J., assignors to Book Covers, Inc., Newark, N.J.

Filed Apr. 24, 1969, Ser. No. 818,921  
Int. Cl. B32b 3/04; B31f 1/00

U.S. Cl. 156—204

7 Claims



The cover board structure is made with a single or multiply cover board, an overlying strip of paper secured to the cover board and a strip of padding disposed between the paper and the cover board. The cover board is cut from a stream of cover board structure to predetermined sizes.

3,629,034

# METHOD OF MAKING AN ADHESIVE APPLIQUE ARTICLE

Minoru Kuroda, Amagasaki, Japan, assignor to Nishizawa Shoji Co., Ltd., Osaka, Japan and Pilgrim Industries, Inc., New York, N.Y.

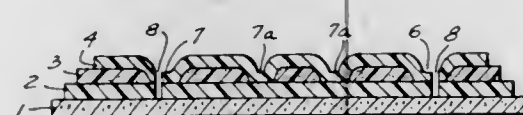
Original application Jan. 21, 1969, Ser. No. 792,719, Continuation-in-part of application Ser. No. 662,962, Aug. 24, 1967. Divided and this application Jan. 20, 1970, Ser. No. 8,103

Claims priority, application Japan, Dec. 19, 1966, Dec. 19, 1966, Dec. 19, 1966; 41/115532; 41/5533; 41/115535; 41/83085

Int. Cl. B32b 31/12, 31/20

U.S. Cl. 156—219

8 Claims



A method of making adhesive applique article wherein one surface of a base layer of sheet material is provided with an adhesive backing a filler layer of resiliently compressible padding material, advantageously but not necessarily a layer of synthetic plastic foam material is interposed between the other surface of one one layer and a cover layer of sheet material. At least these layers are severed along a borderline

which is inwardly spaced from their edges and coincides with the outline of the finished applique article, and selected portions of the top and base layers are bonded to one another within the confines of the borderline across the corresponding interposed portions of the foam layer while the selected portions are simultaneously pressed together with concomitant reduction in the thickness of the interposed portions of the foam layer. The remaining portions of the cover layer thus constitute at the exposed side of the latter a raised resilient design filled with the remaining portions of the foam layer and the result is a three-dimensional applique article which can be adhesively affixed to any desired surface.

3,629,035

# METHOD OF FORMING APPLIQUE DESIGNS

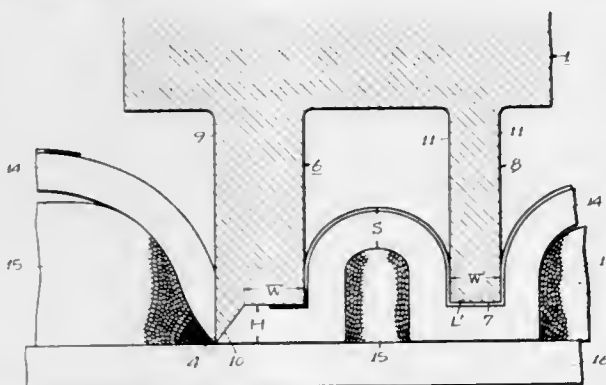
Minoru Kuroda, Amagasaki, Japan, assignor to Nishizawa Shoji Co., Ltd., Osaka, Japan and Pilgrim Industries, Inc., New York, N.Y., part interest to each  
Original application Aug. 24, 1971, Ser. No. 662,962, now abandoned. Divided and this application Jan. 20, 1970, Ser. No. 8,104

Claims priority, application Japan, Dec. 19, 1966; Dec. 19, 1966; Dec. 19, 1966; 41/115532; 41/115533; 41/115535; 41/83085

Int. Cl. B31f 1/00; B32b 31/16

U.S. Cl. 156—219

9 Claims



An applique design having its inner and outer contour lines secured to a substrate. The securing is made with a foaming plastic material which is used as an intermediate layer. This material also serves to present stereoscopic and perspective features of the applique design.

3,629,036

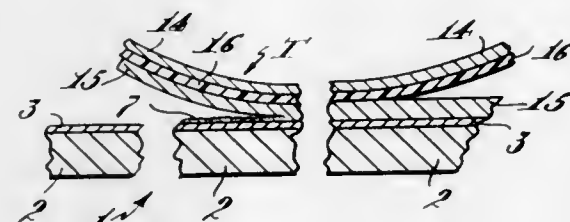
# METHOD COATING OF PHOTORESIST ON CIRCUIT BOARDS

Calvin Isaacson, Beverley, Mass., assignor to Shipley Company, Inc., Newton, Mass.

Filed Feb. 14, 1969, Ser. No. 799,259  
Int. Cl. B29c 27/00; B32b 31/12, 31/28

U.S. Cl. 156—241

12 Claims



Circuit board base materials, either with or without a layer of copper, have photoresist applied thereto by means which transport said base material past a transfer station. Means in advance of said station apply a liquid solvent for said photoresist to a surface of base material, and means at said transfer station bring into contact with said solvent-coated base surface, a transfer sheet having a layer of photoresist and a backing layer releasably secured thereto whereby said

photoresist layer becomes adhered to said surface. Following the transfer station, means are provided for withdrawing said backing layer from said resist layer, which remains secured to the surface of said base.

3,629,037

# PROCESS FOR PRODUCTION OF LAMINATED FILM HAVING REDUCED NECK-IN-FORMING PROPERTY

Kohel Masuda; Taku Uchigaki, and Masakazu Arai, all of Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

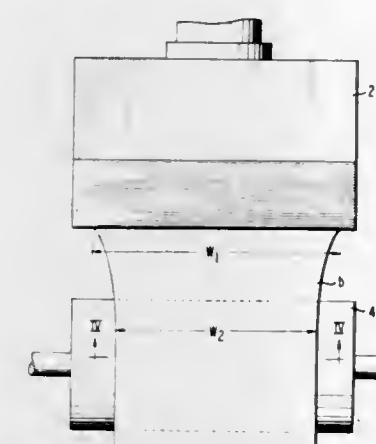
Filed Jan. 31, 1968, Ser. No. 702,087

Claims priority, application Japan, Jan. 31, 1967, 42/5968

Int. Cl. B29c 19/00

U.S. Cl. 156—244

6 Claims



A process for the production of laminated film which comprises extruding from an extruder die a melted resin having a high neck-in-forming property together with another melted resin having a lower neck-in-forming property, then laminating the extruded resin in the form of a melted compounded film with a base material.

3,629,038

# METHOD FOR BONDING RUBBER COMPOSITION TO METAL

Kunio Satake, Kawasaki-shi; Tomiho Sone, Yokohama, and Minoru Hamada, Kawasaki-shi, all of Japan, assignors to Asahi Kasei Kagyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 29, 1969, Ser. No. 795,032

Claims priority, application Japan, Feb. 2, 1968, 43/7166

Int. Cl. B29c 19/00

U.S. Cl. 156—245

10 Claims

An adhesive rubber composition comprising a rubber composition consisting essentially of ethylene-propylene terpolymer, sulfur, vulcanization accelerators, a halogenated alkylphenol-formaldehyde resin or alkylphenol-formaldehyde resin together with a metal chloride is shaped into a desired form, placed upon a metal and bonded to the metal by vulcanization; or the adhesive rubber composition is placed between a rubber composition consisting essentially of said terpolymer and a metal, both being shaped in desired forms in advance as an intermediate layer, and the rubber composition and the metal are bonded together by vulcanization. The present bonding method is applicable to the manufacture of car tires, shock absorbers, cables, belts and other industrial articles.

3,629,039

# METHOD FOR FORMING DISPOSABLE DIAPERS

Richard H. Frick, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 18, 1968, Ser. No. 776,580

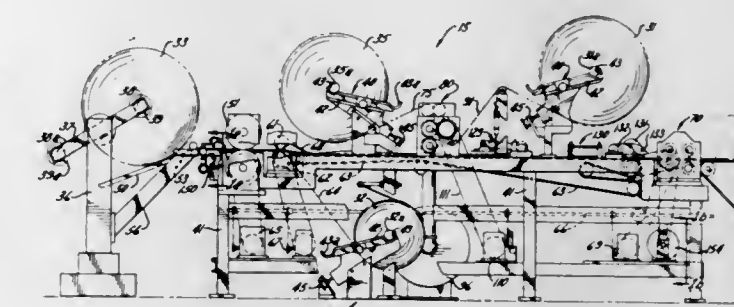
Int. Cl. B32b 5/18

U.S. Cl. 156—269

10 Claims

A method for inserting a leak-preventing barrier of thin impervious material between the fluid pervious cover sheet

and the absorbent core of a disposable diaper is disclosed. The barrier, which preferably comprises a narrow strip of thin plastic film affixed between the cover sheet and the backing sheet along a transverse heat seal line at each end of the diaper, is first drawn from a continuous supply roll and cut into lengths twice as long as desired. Each cut length is then placed across the ends of two adjacent core pads moving along a conveyor path in end-to-end relation prior to applying a continuous cover sheet over the pads. When the material between pads is heat sealed and cut transversely to form the individual diapers, the strip is also cut in half so that



one half forms the barrier for the rear end of the leading diaper, while the other half forms the barrier for the front end of the next following diaper. In its preferred form the barrier supply, cutting and placing apparatus includes a pair of vacuum rolls with valving driven in timed relation to movement of the core pads. Also disclosed is a method and apparatus for preliminarily applying limited quantities of perfume to discrete locations on the core pads before application of the barrier strip such that the perfumed portion of the pad is sandwiched between the impervious backing sheet and the impervious barrier strip.

3,629,040

# METHOD OF MAKING LAMINATED PANELS INCORPORATING HEATING WIRES

Brian J. Hinton, Alvechurch, and Kenneth F. Kite, Birmingham, both of England, assignors to Triplex Safety Glass Co., Ltd., London, England

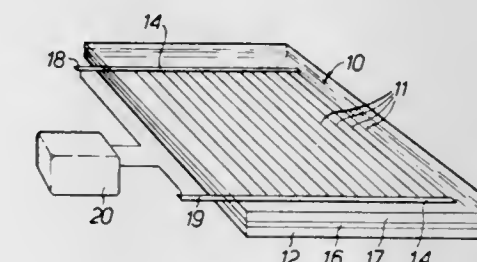
Filed June 10, 1968, Ser. No. 735,638

Claims priority, application Great Britain, June 9, 1967, 26,707/67

Int. Cl. H05b 3/18; B29c 19/06

U.S. Cl. 156—275

9 Claims



Method of making laminated panels incorporating heating wires including the steps of placing the heating wires on a first sheet, locating the wires in place with a layer of adhesive, placing two feed conductors across the heating wires and laminating the first sheet and a second sheet and the intermediate layer together, then applying electricity at high frequency between the two feed conductors so as to cause a good electrical connection to be formed between at least some of the heating wires and the feed conductors where a good electrical connection did not previously exist.



3,629,041

**METHOD FOR MAKING A TOBOGGAN**

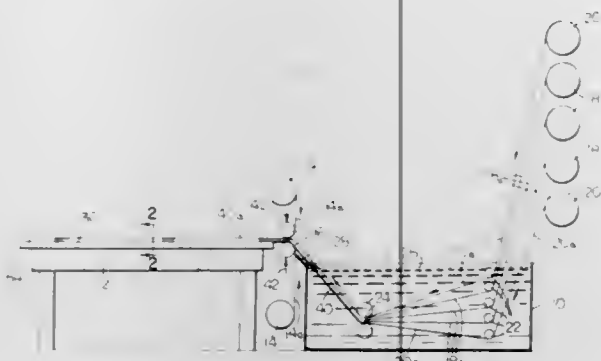
Samuel M. Shobert, 17760 Dragoon Trail, Mishawaka, Ind.

Filed Aug. 30, 1968, Ser. No. 756,675

Int. Cl. B32b 31/20, 31/18

U.S. Cl. 156—289

8 Claims



A toboggan having a self-supporting, elongated sheetlike member of hardened and cured resin material reinforced with a plurality of sheetlike layers of porous and flexible cloth material of woven fibers. In a specific embodiment, five such layers are used. The outer two layers are of duck material and the inner three layers are of woven glass fiber material. This member is clamped between two pairs of elongated strips which are positioned adjacent to the longitudinally extending peripheral boundaries of said member. The method of the invention comprises the steps of wetting a predetermined number of strands of reinforcing material with the resin, urging the strands together and the resin into the interstitial spaces of said sheets and to control the quantity of resin on the strands, molding the strands to a desired shape, partially curing the resin, cutting the article in the partially cured state to the desired shape, and completely curing the resin. The molding partially curing steps in one specific embodiment includes placing of the strands between two sheets of flexible material which are impervious to the resin so as to enclose the article in this impervious material. One such material is polyethylene terephthalate. The article is then partially cured by simultaneously applying heat and pressure to the article. This application of heat and pressure to the article can be done by pressing the article with a conventional iron or pressing machine. The apparatus of the invention comprises a mold member of rigid material having a mold surface and a peripheral surface on opposite sides of the mold surface. A flexible mold member is placed over the rigid mold member so as to overlie both the mold surface and the peripheral surfaces. The rigid mold member includes means for holding the flexible mold member to its peripheral surface.

3,629,042

**METHOD OF EMBOSSING A THREE DIMENSIONAL MEDALLION INTO A THERMOPLASTIC RESIN SUBSTRATE**

John D. Cranfill, Frankfort, Ill., assignor to W. R. Frank Packaging Engineers, Inc.

Filed June 20, 1968, Ser. No. 738,452

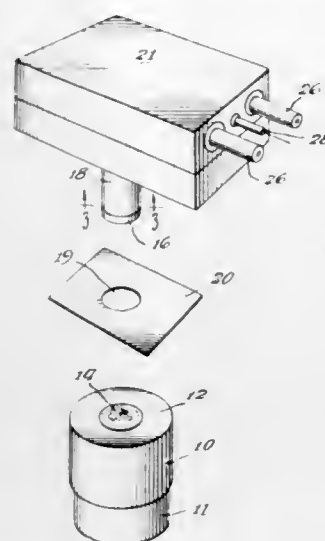
Int. Cl. B29c 3/00; B31f 3/00

U.S. Cl. 156—303.1

5 Claims

A method for embossing a piece of metal foil or the like into a thermoplastic resin substrate such as a cap or container to form a three-dimensionally shaped medallion in the substrate. A piece of foil, generally backed with an adhesive, is pressed into the substrate by means of a die having a shape complementary to the desired shape of the medallion. The die, which is maintained at a temperature of from about 375° to 435° F., presses the foil into the substrate at a pressure of at least about 500 p.s.i. for a period of from 0.25 to 3 seconds. The die has a sharp cutting ridge about its periphery to inhibit outward flow of plastic during pressing. The large,

flat surfaces of the die are generally stippled to prevent the formation of air-containing blisters between the plastic substrate and the foil medallion. The peripheral cutting ridge of the die can also be used to cut the foil medallion from a larger sheet of foil before it is embossed into the plastic sub-



3,629,043

**PAPER-BINDING APPARATUS**

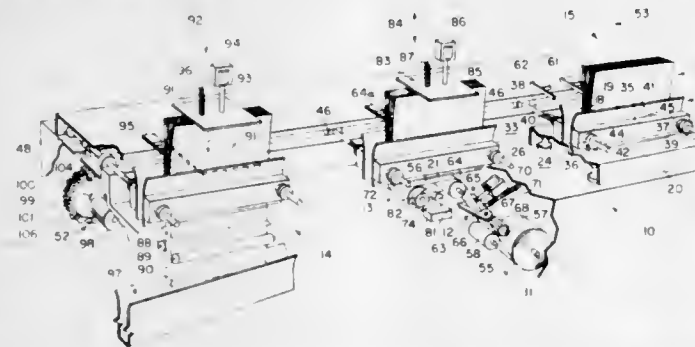
Charles Nicholas Hoff, Willowdale, Ontario, Canada, assignor to General Binding Corporation (Canada) Limited

Filed Dec. 30, 1968, Ser. No. 787,831

Int. Cl. B41f 13/64

U.S. Cl. 156—358

9 Claims



An apparatus for bonding a stack of papers into pads having a frame, a holder with spaced apart plates to receive the stack of papers therebetween, conveyor means on the frame for supporting the holder and advancing the holder at a constant speed along a predetermined path between a loading station and a discharge station of the path through the following stations, a jogger station for aligning the bottom edges of the stack of papers at the loading station, a tape-applying station for applying a length of tape in contact with the aligned bottom edges of the stack of papers, heat and pressure station to heat the tape and bind the bottom edges of the stack of papers to the tape, and means for bonding portions of the tape to the adjacent outer surfaces of the stack of papers to form the pad which is discharged at the discharge station.

3,629,044

**VEHICLE WINDSHIELD CARRYING VEHICLE SERIAL NUMBER**

Albert J. Sanger, 105 South Lake Ave., Blackwood, N.J.

Filed Dec. 22, 1969, Ser. No. 887,446

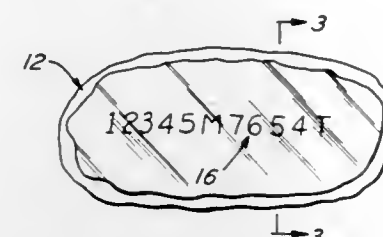
Int. Cl. B32b 17/10

U.S. Cl. 161—5

10 Claims

One or both of the front and rear windshields of a vehicle are constructed so as to carry the vehicle serial number.

Theft of vehicles will be substantially reduced due to the



vehicle's serial number being embedded between the layers of safety glass and thereby inaccessible.

3,629,045

**DECORATIVE DEVICE FOR USE AS A DECORATIVE INLAY IN SURFACE**

Rudolph Dopera, 18906 Normandie Ave., Gardena, Calif.

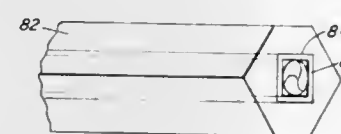
Continuation-in-part of application Ser. No. 776,918, Nov. 19, 1968, now abandoned. This application Jan. 15, 1970,

Ser. No. 3,107

Int. Cl. B44f 1/04, 7/00

U.S. Cl. 161—5

10 Claims



A decorative device is disclosed which is comprised of an extruded conduit having at least one inner bore adapted to receive decorative material. The decorative device may be placed in a groove or the like to form a decorative inlay. The bore may be of any suitable shape, and is adapted to receive braided material, twisted fiber, metallic cords, ribbons or other such materials of any selected colors or color combinations. The conduit may be transparent or translucent and is of a suitable damage-resistant material to permit its use on tables, bars, and the like, on musical instruments, and in other applications where inlays may be desired. Other than as part of a decorative inlay, the decorative device is applicable, for example, as an ornamental shade pull and the like.

3,629,046

**FOAMED PLASTIC CORE DOOR**

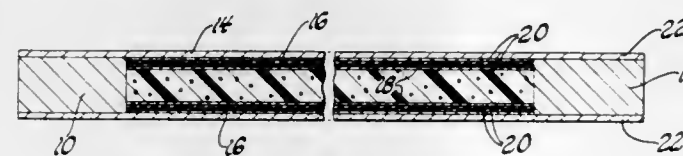
William B. Gilbert, 32511 Scottsdale, Franklin, Mich.

Filed Dec. 22, 1969, Ser. No. 886,814

Int. Cl. B32b 3/28, 3/26

U.S. Cl. 161—43

5 Claims



A door having a rectangular wooden frame and a core consisting of a slab of foamed polystyrene sandwiched thick between two sheets of corrugated cardboard. The uncompressed thickness of the core is greater than that of the frame and a pair of facing sheets of aluminum having dimensions similar to the frame are retained to the outer surfaces of the corrugated board with a water-soluble glue and to compress the core to the same thickness as the frame.

3,629,047

**NONWOVEN FABRIC**

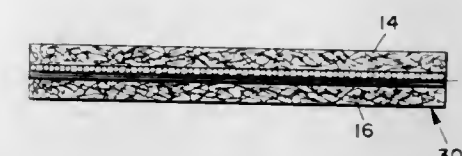
Robert W. Davison, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 2, 1970, Ser. No. 7,932

Int. Cl. A47i 17/00; B32b 5/12, 5/26

U.S. Cl. 161—57

9 Claims



Disclosed is a nonwoven fabric having high-strength properties. The nonwoven fabric is comprised of a nonwoven scrim sandwiched between at least two outer layers of nonwoven staple fibers such as cellulosic fibers. The outer layers are adhesively bonded to one another through openings in the scrim. The scrim is comprised of at least two webs, each web being comprised of a plurality of essentially parallel, continuous monofilament strands of a synthetic hydrophobic polymer. The strands of the scrim are either unbonded or only lightly bonded to one another and to the outer layers whereby they have a substantial degree of movement when stress is applied.

3,629,048

**REINFORCED PAPER SHEETING**

Robert W. Davison, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 27, 1970, Ser. No. 15,104

Int. Cl. A47i 17/00; B32b 5/12, 5/26

U.S. Cl. 161—57

4 Claims



Disclosed is reinforced paper sheeting having high resistance to tear. An assembly is prepared by sandwiching a nonwoven scrim between at least two plies of undried water-laid woodpulp fibers. The assembly is then subjected to moderate pressure and subsequently dried.

3,629,049

**SHAPED PYROLYTIC GRAPHITE ARTICLES**

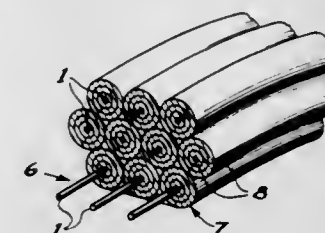
Eugene L. Olcott, Falls Church, Va., assignor to The Susquehanna Corporation

Filed Nov. 8, 1966, Ser. No. 592,846

Int. Cl. B29h 17/28; B32b 3/14

U.S. Cl. 161—60

9 Claims



A shaped pyrolytic graphite article comprising a pyrolytic graphite matrix containing embedded therein at least one reinforcing carbon strand layer. The carbon strand layer comprises a plurality of unidirectional and substantially parallel, laterally spaced, individual, continuous carbon strands. The matrix comprises crystallite layers of pyrolytic



graphite nucleated from each of the individual carbon strands and interconnected to form a continuous phase surrounding and interconnecting the individual strands comprising the embedded strand layer.

3,629,050

# SHOE STIFFENER BLANKS COMPRISING POLYVINYL CHLORIDE, AN IMPACT MODIFIER AND A LAYER OF HEAT ACTIVATABLE ADHESIVE

Aaron Weinstein, Marblehead, and Frank Scourtas, Newbury, both of Mass., assignors to Pacesetter Products Inc., Salem, Mass.

Filed May 29, 1968, Ser. No. 732,833  
Int. Cl. D03d 27/00; B32b 27/08, 27/30

U.S. Cl. 161—64 15 Claims

A thermoplastic shoe stiffener and stiffener blank comprising a nonfabric-containing sheet of thermoplastic polyvinyl chloride having a molding temperature of between 140° F. and 350° F. and containing an impact modifier, preferably linear polyethylene or linear-chlorinated polyethylene, in an amount between 3 and 18 percent by weight of the resin and a heat stabilizer in an amount equal to at least 1 percent by weight of the resin. The polyvinyl chloride contains a lubricant and may contain a plasticizer and filler. The stiffener is hard and tough and highly crush resistant but not brittle. It has excellent molding properties at the aforesaid temperatures, is water and mold proof, has a high flexure and tensile strength, an excellent memory for its molded shape upon deformation and an excellent recovery of its crush resistance after being crushed and then returned to its original shape. Unlike resin-impregnated fabrics, strength is not affected by the direction in which it is cut and it is equally stretchable in all directions. It is coated on one side with a layer of heat activatable adhesive and on the other side with a layer of flock or a layer of heat activatable adhesive.

3,629,051

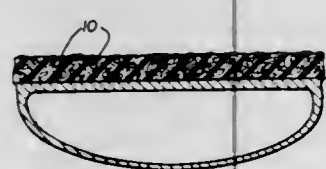
# NONSLIP ARTICLE OF MANUFACTURE AND PROCESS FOR MAKING SAME

Wilbur A. E. Mitchell, Greeley, Colo., assignor to Mitchell Tackle, Inc., Greeley, Colo.

Filed June 3, 1969, Ser. No. 829,869 The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed.

Int. Cl. A43b 13/22; B32b 5/16; C09k 3/14

U.S. Cl. 161—162 15 Claims



A nonslip surface article and the method of forming the same of an uncured elastomeric matrix impregnated with waste aluminum particles interlocked therein.

3,629,052

# PROCESS FOR IMPARTING FLAME-RETARDANCY TO RESIN-TREATED COTTON BATTING

Nestor B. Knoepfler, and Paul A. Koenig, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture

Continuation of application Ser. No. 728,162, May 10, 1968, now abandoned. This application June 26, 1970, Ser. No. 50,306

Int. Cl. D04h 1/58

U.S. Cl. 161—170 18 Claims  
Flame retardancy, resiliency, dimensional stability, coherence, and moldability are imparted to fibrous cellulosic

batting upon treatment wherein the batting is impregnated with an aqueous mixture containing a certain combination of thermoplastic and thermosetting resins selected for their compatibility with urea-phosphate complexes, or with borated urea formaldehyde; or alternately, the batting is impregnated with an aqueous mixture containing vinyl chloride-type thermoplastic polymer mixture with certain salts, such as diammonium phosphate or boron-containing compounds.

3,629,053

# NOVEL POLYAMIDE AND FIBER THEREOF

Isao Kimura, Suita, and Fumimaro Ogata, Osaka, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

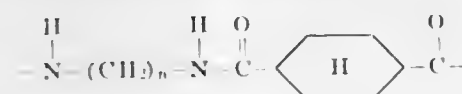
Filed Oct. 15, 1969, Ser. No. 866,745

Claims priority, application Japan, Oct. 23, 1968, 43/77157; Jan. 27, 1969, 44/6173; Jan. 27, 1969, 44/6174; Feb. 18, 1969, 44/12097; Feb. 18, 1969, 44/12098; Feb. 18, 1969, 44/12099

Int. Cl. D02g 3/02; C08g 20/00, 41/04

U.S. Cl. 161—173 43 Claims

A novel polyamide containing in its main molecular chain a recurring structural unit of  $\alpha,\omega$ -alkylene hexahydroterephthalamide having the general formula,



wherein  $n$  is an integer of 11–13, is melt-spinnable and drawable to form fibers superior in strength, Young's modulus and dye receptivity and which possess special luster and hand. The content of the said unit in the polyamide is preferably at least 3 percent by mole. Polymers of this invention include a homopolyamide and copolyamides comprising the said unit and at least one different polyamide unit. In particular, poly ( $\alpha,\omega$ -alkylene hexahydroterephthalamide/ $\alpha,\omega$ -alkylene terephthalamide) wherein either of its alkylene group has 11–13 carbon atoms, is excellent in spinnability as well as in drawability. Polymer blend comprising the homopolyamide or copolyamide and at least one aliphatic polyamide can provide fibers with superior properties as well. Furthermore a conjugate filament consisting of the copolyamide and nylon-6, nylon-66 or a polyester is superior in elasticity, recoverability after extension, heat resistance and antistatic property.

3,629,054

# COMPOSITE FILM SUPPORT

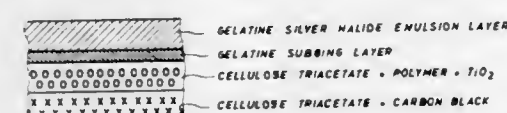
Lodewijk Felix De Keyser, Mortsel; Joseph Antoine Herbots, Edgem, and Robrecht Julius Thiers, Brasschaat, all of Belgium, assignors to Gavert-Agfa NV, Mortsel, Belgium

Filed Aug. 16, 1968, Ser. No. 753,055

Claims priority, application Great Britain, Aug. 16, 1967, 37,763/67

Int. Cl. B32h 23/20

U.S. Cl. 161—182 4 Claims



A composite film support for photographic material and the like consists of two hydrophobic layers, one of which is comprised of at least 1% by dry weight of black pigment dispersed in a cellulose ester binder and the other is comprised of at least about 10% by dry weight of white pigment dispersed in a cellulose ester binder plasticized with an isocyanate modified low-molecular-weight polyester. The two layers are in strongly adhering intimate contact at their interface due to the use of low boiling solvents for forming the coating compositions from which both are cast together with the sequence of application in which the second layer is cast

upon the first while the first still contains a substantial amount of low boiling solvent and is thus in a relatively soft but nonflowable condition. The resultant film support can carry a light-sensitive silver halide emulsion layer, an image-receiving layer for use in known silver complex diffusion transfer process, a combination of two such layers, or other photographic layers.

3,629,055

# PROCESS FOR MAKING FIRE RETARDANT HARDBOARD CONTAINING AMMONIUM BORATE

Roland Hendrik Riem, Oakville, Ontario, and Wilhelmus Theodorus Albertus Dwars, Clarkson, Ontario, both of Canada, assignors to Abitibi Paper Company Ltd., Toronto, Ontario, Canada

Filed Jan. 16, 1969, Ser. No. 791,768

Claims priority, application Canada, Nov. 15, 1968, 35,278  
Int. Cl. D21d 3/00

U.S. Cl. 162—159 6 Claims

A fire retardant hardboard is produced by adding a water-soluble hydrolyzable ammonium borate composition, in a quantity which will provide 1.3 percent to 7.0 percent by weight of boron in the hardboard, to a partially dewatered mat or to a fibrous slurry where the mole ratio of ammonium to borate expressed as the ratio of ammonium hydroxide to boric acid is from 0.3 to 1 to 0.4 to 1 and subsequently applying heat and pressure to form the hardboard.

3,629,056

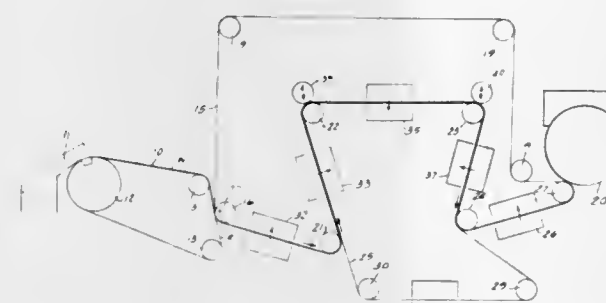
# APPARATUS FOR FORMING HIGH BULK TISSUE HAVING A PATTERN IMPRINTED THEREON

George Forrest, Sorel, Quebec, Canada, assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 3, 1969, Ser. No. 813,082

Int. Cl. D21h 5/06

U.S. Cl. 162—305 4 Claims



Apparatus for forming high bulk tissue with a mesh pattern. A formed uncompact web is picked up by a felt and is carried by the felt to a fabric mesh. The web is then carried between the felt and mesh about a series of direction changing rollers and along through air driers between the rollers. The mesh imprint is imparted to the web at the bends around the direction changing rollers. A through air drier directs the flow of drying air through the web and toward the felt as the web is picked up and brought into contact with the mesh. A series of additional through air driers direct the flow of air through the felt and toward the mesh between the direction changing rollers. The felt then transfers the web from the mesh through an additional drying stage and then places it on a yankee drier.

3,629,057

# CURVED FOIL ABOVE THE FOURDRINIER WIRE

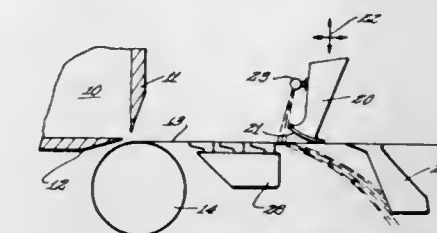
Thomas G. McKie, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Feb. 13, 1969, Ser. No. 798,889

Int. Cl. D21f 7/00

U.S. Cl. 162—312 6 Claims  
A curved foil member is positioned above the paper web extending transversely across the width of the web and is ad-

justably supported. A shower head is mounted on the foil support to clean the leading edge of the foil member. The foil



member squeezes the web from above and forces air which has been entrained immediately above the path of the moving web down through the web to create a dewatering force.

3,629,058

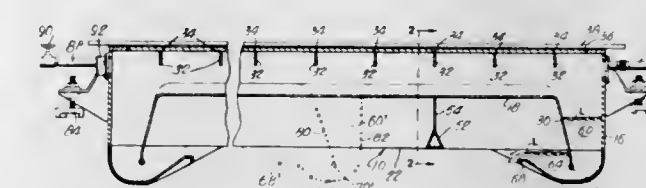
# SUCTION BOX FOR A PAPERMAKING MACHINE

Derrick R. Woodward, Pointe Claire, Quebec, and Daniel Stucki, Lachine, Quebec, both of Canada, assignors to JWI Ltd., Montreal, Quebec, Canada

Filed Jan. 19, 1970, Ser. No. 3,723

Int. Cl. D21f 1/52

U.S. Cl. 162—363 10 Claims



A suction box formed from rigid front and back walls interconnected by a top and bottom set of spaced reinforcing members, a bottom wall interconnecting the front and backwalls and located between and spaced from said bottom and top reinforcing members and an outlet channel formed at at least one end of the box by an end wall of the box, the front and backwalls of the box and a downwardly extending wall projecting from the bottom wall thereby to form a substantially rigid suction box.

3,629,059

# FLUID CONTROL AND SAFETY RODS FOR NUCLEAR REACTORS

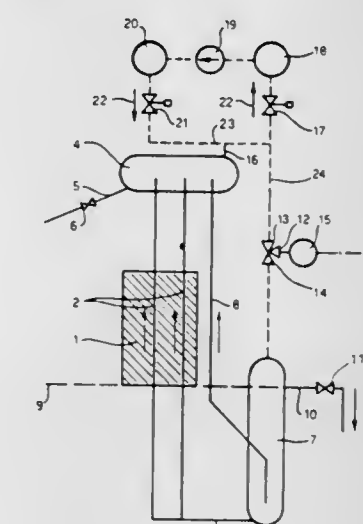
Alberto Agazzi, Ispra, Varese; Armando Broggi, Induno Olona, Varese; Sergio Galli de Paratesi, Varese, and Luciano Ghiurghi, Varese, all of Italy, assignors to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed Jan. 21, 1969, Ser. No. 793,928

Claims priority, application Belgium, Apr. 5, 1968, 56807

Int. Cl. G21c 7/02

U.S. Cl. 176—22 12 Claims



A combined safety and control system for a nuclear reactor, comprising tubes passing upwardly through the core of the reactor, a neutron absorbing gaseous atmosphere in the



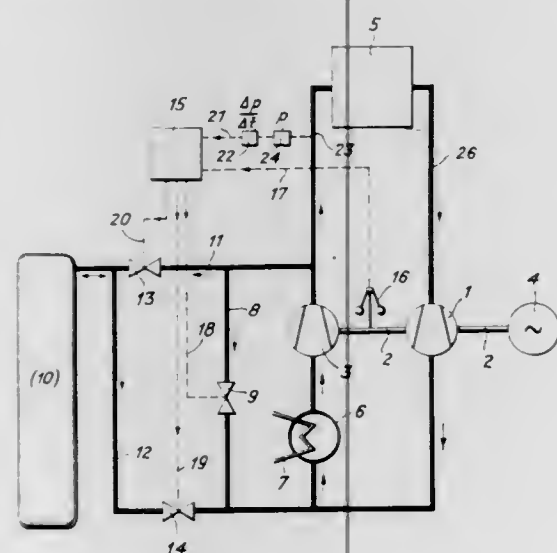
tubes, and means for introducing a liquid neutron poison solution into the tubes in an emergency. The pressure of the gaseous atmosphere is varied to control the power of the reactor.

### 3,629,060 CLOSED-CYCLE GAS TURBINE NUCLEAR POWERPLANT

David Schmidt, Erlenbach, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland  
Filed Nov. 4, 1968, Ser. No. 773,260  
Claims priority, application Switzerland, Nov. 8, 1967, 15612/67  
Int. Cl. G21c 7/00

U.S. Cl. 176—20

1 Claim



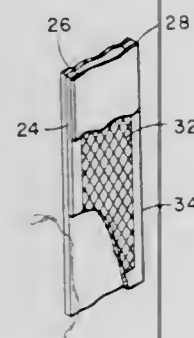
A gas turbine powerplant includes a nuclear source of heat, a gas turbine, a cooler, and a compressor connected into a closed cycle. A bypass is connected around the compressor, and a reservoir for the working substance is connected into the cycle through separately valved lines upstream and downstream of the compressor. A load or speed responsive regulator controls these lines, and also a valve in the bypass. Means are provided to generate a signal representative of the time rate of change of pressure in the cycle in the vicinity of the reactor, and this signal, when it exceeds a threshold value, controls operation of the regulator to limit the pressure variations of the working substance in the reactor.

**3,629,061  
FUEL SUBASSEMBLY FOR NUCLEAR REACTOR**  
Richard C. Noyes, Hartford, and Mena G. Andrews, Newington, both of Conn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 15, 1969, Ser. No. 824,926  
Int. Cl. G21c 3/32, 5/14

U.S. Cl. 176—78

3 Claims



A nuclear fuel subassembly comprising a shroud for enclosing fuel, the walls of the shroud containing spaces for

carrying neutron moderating material. A honeycomb for lending structural rigidity is sandwiched in the walls of the shroud, the spaces in the honeycomb containing the neutron moderating material.

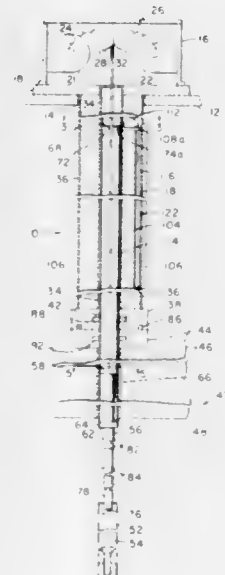
**3,629,062  
TRANSFER MACHINE FOR NUCLEAR REACTOR**  
Herbert O. Muenchow, Avon, Conn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed May 12, 1969, Ser. No. 823,704

Int. Cl. G21c 19/24

U.S. Cl. 176—31

3 Claims



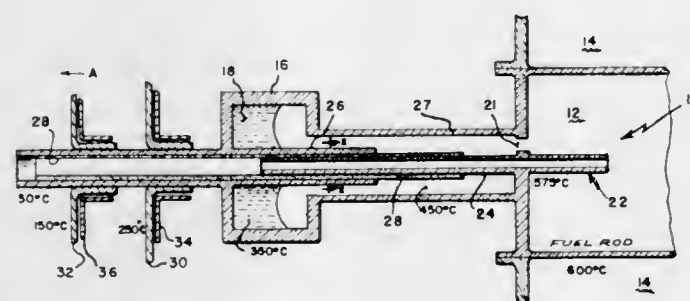
A fuel transfer machine for a liquid metal cooled nuclear reactor in which a retractable guide tube and telescoping lifting arm are utilized to reach down into the reactor to lift out a transfer pot containing a fuel assembly immersed in liquid metal. The machine has an independent cooling system consisting of outer fins and a closed coolant system with an immersed heat exchanger. This cooling system is intended to remove heat generated by radioactive decay in the fuel assembly during its time in the transfer machine.

**3,629,063  
VENT FOR NUCLEAR-THERMIONIC FUEL ROD**  
John M. Houston, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 23, 1968, Ser. No. 761,453  
Int. Cl. G21c 19/30

U.S. Cl. 176—37

2 Claims



Cesium vapor, ordinarily lost to space, is carried through a venting tube to an area where a lowered temperature causes it to condense onto a wick and to be carried by capillary action back to an area sufficiently high to vaporize it and return it to the Cs vapor region of the fuel rod. The condensing, wicking and evaporation are effected by telescoping sections of a hollow tube. The vapor is conveyed through the tube to

a cooler area, is condensed on a wick inside the outer tube and is vaporized from the wick on the outside of the inner tube.

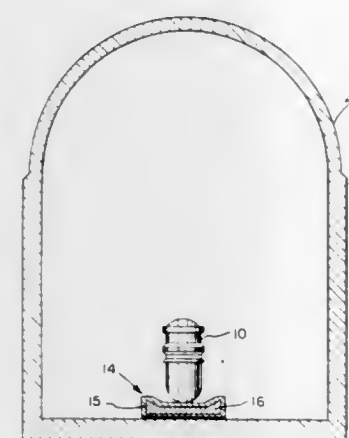
**3,629,064  
SAFETY APPARATUS FOR NUCLEAR REACTORS**  
Samuel M. Zivi, Sherman Oaks, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sept. 9, 1968, Ser. No. 758,454

Int. Cl. G21c 9/00

U.S. Cl. 176—38

4 Claims



The method of the present invention consists of placing a layer of dense, high-melting temperature material such as unenriched uranium dioxide (UO<sub>2</sub>), under a nuclear reactor to support by flotation large masses of molten reactor fuel which might otherwise melt through the floor and the containment shell. The apparatus of the invention is comprised of a dish-shaped layer of unenriched UO<sub>2</sub> or similar material which is encased in a steel housing. The diameter of the dish-shaped layer is greater than the diameter of the reactor core and if located external to the reactor pressure vessel, the diameter of the layer is at least as great as that of the vessel.

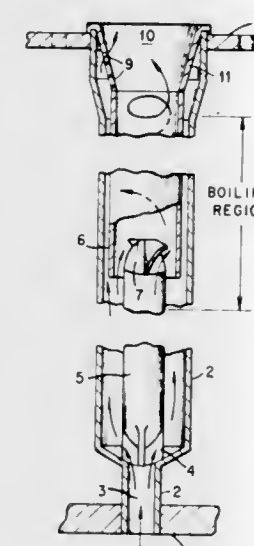
**3,629,065  
APPARATUS FOR INCREASING POWER DENSITY IN A BOILING LIQUID NUCLEAR REACTOR**  
William M. Knox, Schenectady, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed July 23, 1969, Ser. No. 844,041

Int. Cl. G21c 3/04, 15/06

U.S. Cl. 176—54

2 Claims



The power output of a boiling liquid reactor is increased by providing means for forming a vortex within the boiling zone of coolant channels.

893 O.G.—38

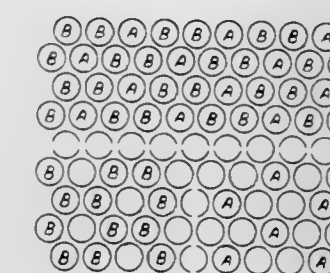
**3,629,066  
FUEL ASSEMBLY FOR NUCLEAR REACTORS AND HELICAL SPACERS HAVE BUNDLES OF FUEL PINS**  
Herbert Olof Andersson, and Per Anders Ekvall, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Aug. 9, 1968, Ser. No. 751,407

Claims priority, application Sweden, Sept. 4, 1967, 12212/67  
Int. Cl. G21c 3/32

U.S. Cl. 176—76

8 Claims



A fuel assembly for nuclear reactors is formed of a polygonal sheathing tube and a bundle of fuel pins inside the tube. The pins are provided with helically wound spacer elements of equal pitch. The fuel pins are of two different types, pins of type B having one more spacer element than those of type A. Each pin of type A is surrounded by six pins of type B, and each fuel pin of type B, except those at the sides of the bundle, is surrounded by alternate pins of types A and B.

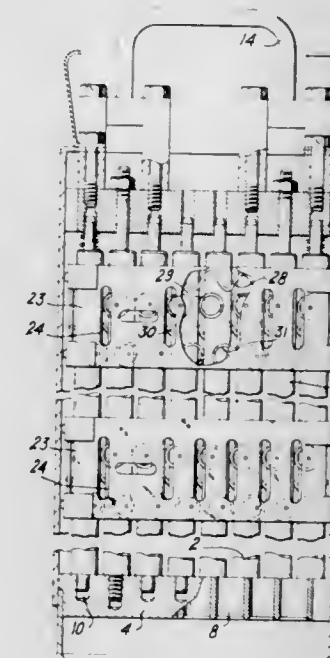
**3,629,067  
SPACER GRID FOR NUCLEAR REACTOR FUEL ASSEMBLY**  
Paul Demaison; Pierre Menissier, both of Grenoble, and Jean Sionnet, Saint-Egreve, all of France, assignors to Societe Industrielle De Combustible Nucleaire, Paris, France

Filed Nov. 8, 1968, Ser. No. 774,317

Claims priority, application France, May 6, 1968, 150751  
Int. Cl. G21c 3/34

U.S. Cl. 176—78

10 Claims



In a nuclear reactor fuel assembly comprising a bundle of rods of fissile or fertile material placed within a casing and supported by two rigid end grids, the rods are maintained at different points between the two end support grids by a spacer grid constituted in accordance with the invention by a frame which surrounds the rods inside the casing and supports at least one layer of parallel helical springs, the turns of said springs being tangent to the rods. Preferably, the layers of springs are four in number, the successive layers being



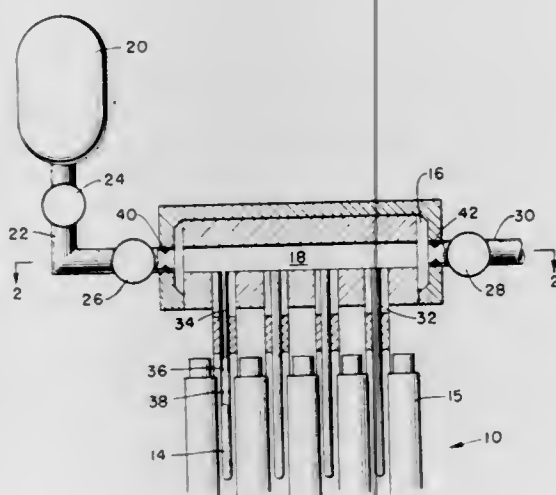
disposed alternately in two directions at right angles to each other whilst the helices of layers having the same direction are relatively displaced by one-half pitch.

### 3,629,068 GASEOUS CONTROL SYSTEM FOR NUCLEAR REACTORS

Edward Lantz, Strongsville, and Harry W. Davison, Cleveland, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration  
Filed Aug. 8, 1968, Ser. No. 751,215  
Int. Cl. G21c 7/22

U.S. Cl. 176—86 G

5 Claims



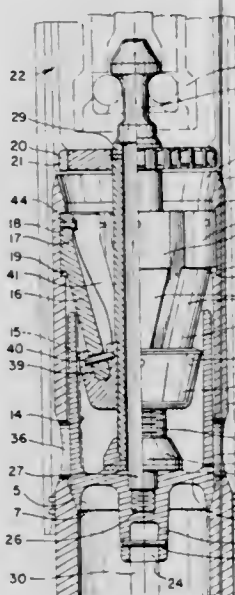
Controlling the reactivity of a nuclear reactor by varying the amount of a neutron-absorbing gas located inside the reactor.

### 3,629,069 REACTOR TUBE END CLOSURE

James R. Wright, Pinawa, Manitoba, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada  
Filed Sept. 22, 1969, Ser. No. 859,964  
Int. Cl. G21b 3/10

U.S. Cl. 176—87

4 Claims



A reactor tube end closure, comprising a cup-shaped closure body having a chamfered edge for engagement with a tapered surface on the inside of a reactor tube. A rotatable threaded spindle secured in the body has an internally threaded collar on it which carries a plurality of outwardly

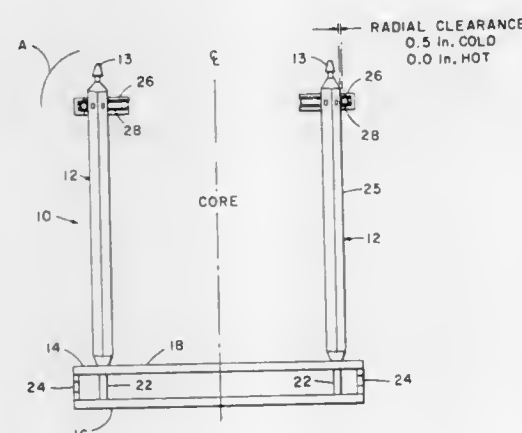
urged, spring-loaded struts. The struts form a collet assembly with each strut having a pad on its outer end for engagement in a recess in the reactor tube. By rotating a serrated wheel on the spindle in one direction the struts can be retracted to disengage the closure from the reactor tube, or by rotating in the other direction urge the seal faces into contact to form a leaktight seal.

### 3,629,070 TEMPERATURE-ACTIVATED REACTOR CORE CLAMP

Raymond S. Stankiewicz, Ellington, Conn., assignor to The United States Atomic Energy Commission  
Filed June 9, 1969, Ser. No. 831,689  
Int. Cl. G21c 13/04

U.S. Cl. 176—87

2 Claims



A nuclear reactor core locking device which holds the fuel assembly loosely for refueling and less loosely against vibration under operating conditions. A U-shaped core retainer band surrounds and is spaced from the core. Contacting boxes are mounted in the channel attached by one or more bimetallic springs to the band. As heating up occurs the boxes are forced into contact with the core and the contact force increases with increasing temperature.

### 3,629,071 STORAGE-STABLE HEMOSTATIC TRANSFUSION SUSPENSIONS OF BLOOD PLATELETS, GLUCOSE, MAGNESIUM CHLORIDE AND CERTAIN PROSTAGLANDINS

Neelkant C. Sekhar, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.  
Filed Feb. 10, 1970, Ser. No. 10,318  
Int. Cl. A61k 23/00

U.S. Cl. 195—1.8

1 Claim

The invention provides storage-stable aqueous isotonic saline suspensions containing mammalian blood platelets glucose, magnesium chloride, and certain prostaglandins. The hemostatic function of the platelets is preserved in these suspensions.

### 3,629,072 MICROBIOLOGICAL PROCESS FOR PREPARATION OF INTERNAL MONOALKENES

Lester E. Casida, Jr., State College, Pa., and Bernard J. Abbott, Edison, N.J., assignors to Texaco Inc., New York, N.Y.  
Continuation-in-part of application Ser. No. 736,563, June 13, 1968, now abandoned. This application Nov. 9, 1970, Ser. No. 88,192  
Int. Cl. C12d 13/00

U.S. Cl. 195—28

13 Claims

A resting-cell suspension of glucose-grown *Nocardia salmonicida* cells will oxidize C<sub>14</sub>—C<sub>20</sub> alkanes to internal monoalkenes having a cis configuration. Dehydrogenating an individual alkane produces a mixture of monoalkenes with one alkene predominating. Dehydrogenation is limited to the

internal carbon atoms of long chain alkanes, predominantly the carbon atoms near the middle of the molecules. The oxidation of hexadecane by *Nocardia salmonicida* produces a mixture of olefins comprising cis-7-hexadecene, 80 percent; cis-8-hexadecene, 18 percent; and cis-6-hexadecene, 2 percent.

### 3,629,073 ACID-ACTIVE LACTOSE

Theodore Cayle, Morganville, N.J., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.  
Filed Apr. 1, 1969, Ser. No. 812,348  
Int. Cl. C12k 1/00

U.S. Cl. 195—62

2 Claims

An acid-active, acid-stable lactose enzyme preparation derived from the growth of a culture of *Aspergillus niger* and suitable for the hydrolysis of lactose in acid media.

### 3,629,074 EVALUATION OF STERILIZING POWER OF DISINFECTANTS AGAINST HOG CHOLERA VIRUS

Teruo Okubo, Tokyo, Japan, assignor to Eisai Kabushiki Kaisha, Tokyo, Japan  
Filed Oct. 4, 1968, Ser. No. 764,993  
Int. Cl. C12k 1/06; C12b 3/16

U.S. Cl. 195—103.5 R

1 Claim

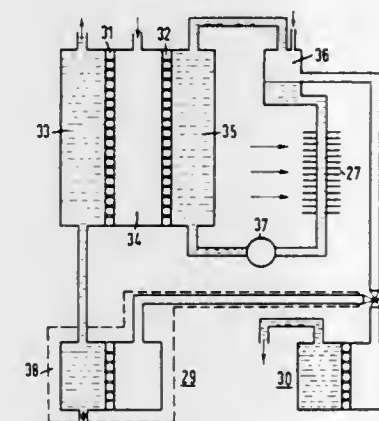
This invention is concerned with a method for the accurate estimation of sterilizing power of antiseptics against hog cholera virus. The method of the present invention is effected by determining of the critical and least concentration of a given disinfectant in its sterilizing liquor at which the disinfectant still shows sterilization power sufficient to kill the active hog cholera virus. The absence of the active hog cholera virus after the treatment with such diluted liquor may be confirmed by observing when no more metamorphic destruction of the tissue of hog occurs when the tissue is exposed to the treated hog cholera virus in the presence of the virus of Newcastle disease. The method of the present invention may also be applied for comparison of relative sterilizing powers of the various disinfectants available on the market.

### 3,629,075 METHOD AND APPARATUS FOR ELIMINATING WASTE HEAT AND REACTION WATER TOGETHER FROM FUEL CELLS

Heinrich Gutbier, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany  
Filed Mar. 20, 1968, Ser. No. 714,527  
Claims priority, application Germany, Mar. 21, 1967, S 108938

Int. Cl. B01d 3/42  
U.S. Cl. 203—1

19 Claims



Method of eliminating waste heat and reaction water together from a fuel cell or battery includes bringing the fuel cell electrolyte into contact with a porous diaphragm through the pores of which water necessary for removing waste heat

diffuses only in vapor form, passing separated water vapor diffusing through the diaphragm to a cooled condensation surface lying opposite and closely adjacent the diaphragm, and depositing thereon condensation water produced from the water vapor, and alternatively returning the condensation water thus formed to the fuel cell electrolyte and removing the condensation water from the fuel cell through a pressure lock.

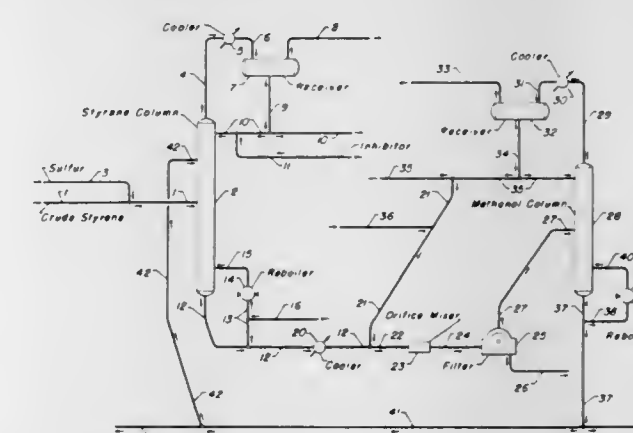
Apparatus for carrying out the foregoing method includes a chamber traversable by the electrolyte, the chamber being defined on at least one side by a porous diaphragm, and a condensation surface communicating with said porous diaphragm through a closed gas chamber therebetween and defined thereby.

### 3,629,076 DISTILLATION OF STYRENE CONTAINING A POLYMERIZATION INHIBITOR AND CONTACTING THE BOTTOMS STREAM WITH AN ALCOHOL

Edwin K. Jones, Kenilworth, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Filed Sept. 8, 1970, Ser. No. 70,258  
Int. Cl. B01d 3/34

U.S. Cl. 203—9

10 Claims



Recovering polymerization inhibitor, including sulfur, cut-back oil, when employed, and undistilled styrene from the bottoms product of a styrene distillation column by treating the bottoms product with alcohol to precipitate polystyrene and part of the sulfur. The remaining liquid, including the remaining portion of the sulfur, is recycled back in the system. This improved method reduces the sulfur disposal problem and also recovers valuable materials.

### 3,629,077 PROCESS FOR PLATING OF STRIPES ON LONGITUDINAL ELECTRICALLY CONDUCTIVE MATERIAL

Thomas Earl Gannoe, Warren, Pa., assignor to Sylvania Electric Products Inc.

Original application Nov. 28, 1967, Ser. No. 686,185, now Patent No. 3,539,490. Divided and this application June 10, 1970, Ser. No. 45,070  
No. 45,070

Int. Cl. C23b 5/48, 5/58; B01k 3/00

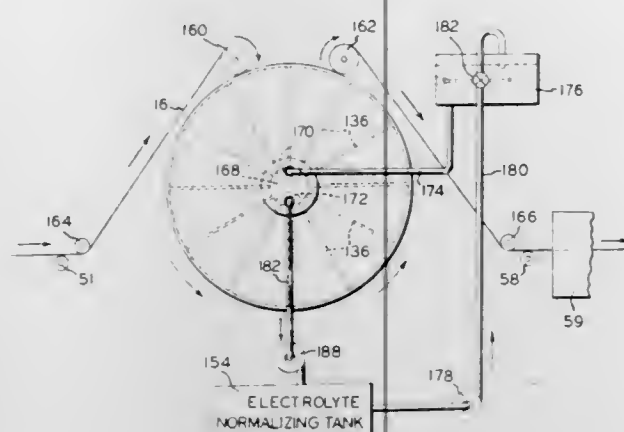
U.S. Cl. 204—28

4 Claims

A process for plating a flexible electrically conductive material such as metallic tape with a thin stripe of metal by passing the moving tape around a groove in the periphery of a disc which is rotated at the same speed in the direction of travel of the tape. Plating solution is supplied to the



peripheral groove of the disc to contact the underside of the tape therein, the solution being confined in a narrow channel



in the groove so as to plate only that area of the tape immediately above the channel.

3,629,078

### METHOD FOR SURFACE TREATMENT OF ZINC-PLATED SHEET STEEL

Hideya Okada; Shozo Matsuda, both of Kawasaki, and Misao Ohbu, Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed June 27, 1969, Ser. No. 837,331

Claims priority, application Japan, June 30, 1967, 42/42140

Int. Cl. C23F 13/00

U.S. Cl. 204—35 R

7 Claims

Method of the surface treatment of zinc-plated sheet steel, wherein cathodic electrolysis of the surface of zinc-plated sheet steel is provided as a pretreatment of the surface treatment with chromic acid of said zinc-plated sheet steel, for the prevention of white rust.

3,629,079

### ALUMINA FEED CONTROL

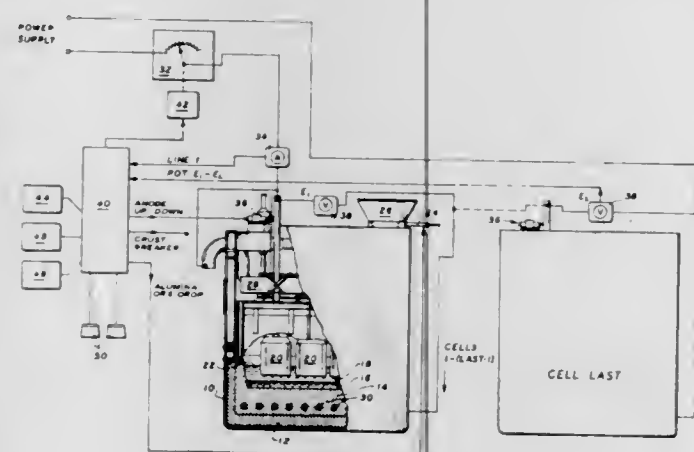
Donald R. Bristol, Orinda, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Feb. 23, 1968, Ser. No. 707,747

Int. Cl. C22d 3/12, 3/02

U.S. Cl. 204—67

6 Claims



A method of controlling the feeding of alumina to a reduction cell and apparatus therefor. The method comprises the steps of producing a gradient variation in the supply current fed to the cells and obtaining at least one measurement of the voltage and the current across the cell for a first value of the current gradient and obtaining at least a second measurement of the voltage and current across the cell for a different value of the current gradient. An indication of the alumina concentration is derived from the first and second current and voltage current measurements. An amount of alumina

which is related to the determined value of alumina concentration and which will restore the desired operating alumina concentration is then added to the cell.

3,629,080

### ELECTROCHEMICAL MERCURATION OR ORGANIC COMPOUNDS

Norman Louis Weinberg, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 13, 1969, Ser. No. 865,951

Int. Cl. C07b 29/08

U.S. Cl. 204—72

14 Claims

Electrosynthesis of compounds from olefins having useful functions such as hydroxy, amido, alkoxy, etc., and containing the readily replaceable organo-mercury function. Aromatics react also to give organomercurials.

3,629,081

### METHOD OF PRODUCING METASTABLE GASEOUS CHLORINE OXYGEN COMPOUNDS WITH NUCLEAR FISSION FRAGMENTS

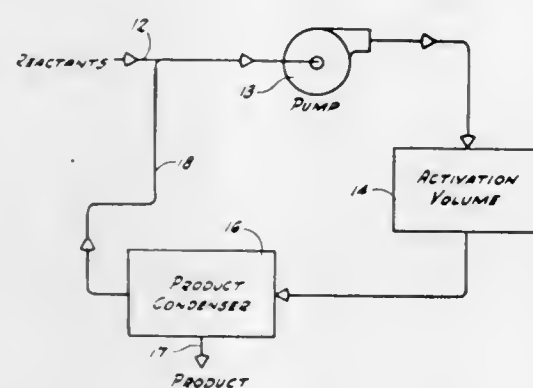
Ray W. Carpenter, Danville, Calif., assignor to General Tire and Rubber Company, Akron, Ohio

Filed Aug. 24, 1965, Ser. No. 482,233

Int. Cl. B01j 1/10

U.S. Cl. 204—157.1

7 Claims



1. A method of synthesizing metastable oxygen-chlorine compounds comprising the steps of passing nuclear fission fragments through at least one of the reactants gaseous chlorine and gaseous oxygen to activate at least one thereof, mixing the activated reactant with the other reactant to form the product compound, and condensing the product compound from the gaseous mixture by cooling.

3,629,082

### PROCESS FOR PRODUCING HOMOGENEOUS POLYMERIC CATION-EXCHANGE MATERIALS

Valentin Alexeevich Kargin, ulitsa Gaidara, 7, kv. 4; Elena Pavlovna Chernova, ulitsa B. Dorogomilovskaya, 58, korpus 1, kv. 21; Tatyana Danilovna Ignatovich, Prospekt Mira, 124, korpus 15, kv. 71; Nikolai Nikolaevich Tunitsky, ulitsa Chaplygina, 1/12, kv. 8, and Tatyana Nikolaevna Toroptseva, 3 Mytischenskaya, 14-a, kv. 109, all of Moscow, U.S.S.R.

Filed Apr. 22, 1969, Ser. No. 818,388

Int. Cl. C08f 15/02, 27/04, 27/00

U.S. Cl. 204—159.14

3 Claims

A process for producing homogeneous polymeric cation-exchange materials from a solution or a melt of a copolymer of 2.8 moles of sodium ethylenesulfonate and 2.4 moles of acrylic acid, followed by treatment with fast electrons at a dose rate of 0.2 to 0.7 Mrad per second for a period of 2 to 5 minutes.

3,629,083

### PROCESS OF POLYMERIZATION IN AN ELECTRIC FIELD AND NEW PRODUCTS OBTAINED THEREBY

Marcel Brendle, Wittenheim, France, assignor to Centre National De La Recherche Scientifique, Paris, France

Filed Aug. 30, 1968, Ser. No. 756,571

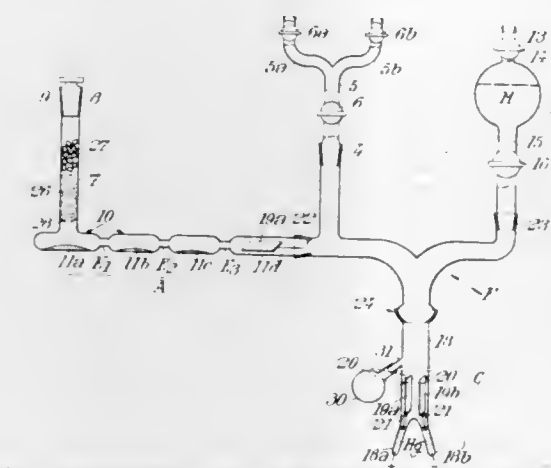
Claims priority, application France, Aug. 31, 1967, June 11,

1968; 119564, 154610

Int. Cl. B01k 1/00

U.S. Cl. 204—165

10 Claims



Organic compounds are polymerized by establishing an electric field within the monomer between electrodes the surfaces of which are composed of substances which can form  $\pi$ -complexes with the organic compounds. Such substances include metals, notably alkali and alkaline earth metals, iron, copper, titanium or brass, or oxides such as copper oxide. Metals employed as electrode surfaces are preferably of imperfect crystalline structure, being for example, amalgamated. Polymers produced from benzene, toluene, tetrahydrofuran, styrene and pyridine are described, as well as their infra-red spectra.

3,629,084

### METHOD OF IMPROVING THE TACK OF RUBBERS

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 718,225, Apr. 2, 1968. This application June 19, 1969, Ser. No. 834,910

Int. Cl. B01k 1/00

U.S. Cl. 204—168

8 Claims

This invention relates to a method of improving the tack of rubbers, such as ethylene-propylene polymers, in a relatively short period of time by adding thereto a tackifier and subjecting the resultant compositions to an electric discharge.

3,629,085

### PHOTOCHEMICAL PURIFICATION OF 1,2-DICHLOROETHANE

Guillaume Coppens, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Dec. 13, 1968, Ser. No. 783,595

Claims priority, application Belgium, Dec. 19, 1967, 52302

Int. Cl. B01j 1/10

U.S. Cl. 204—163 R

10 Claims

Trichlorethylene, a contaminant of 1,2-dichloroethane, is removed from the latter so that higher rates of conversion to vinyl chloride can be effected.

3,629,086

### ANODIC DEPOSITION OF CERAMIC FRIT WITH CATIONIC ENVELOPE

George E. F. Brewer, Novi, and Robert A. Swider, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of application Ser. No. 825,589, May 19, 1969. This application Dec. 12, 1969, Ser. No. 884,445

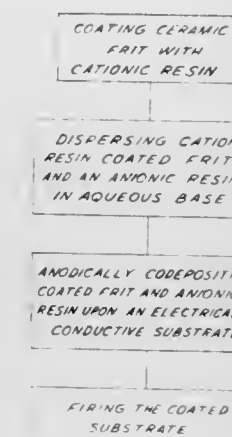
Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—181

1 Claim

An improved method is provided for electrodepositing particulate ceramic frit upon an electrically conductive substrate

which comprises enveloping the frit particles with a cationic resin, forming an aqueous dispersion of the thus coated frit and an anionic binder resin, and anodically depositing the



coated frit and the anionic binder resin upon the substrate. The coated substrate can then be fired to volatilize and drive off all resinous material and convert the electrodeposited frit particles to a continuous film.

3,629,087

### PROCESS OF ELECTRODEPOSITION USING COMPOSITE MEMBRANE MEANS

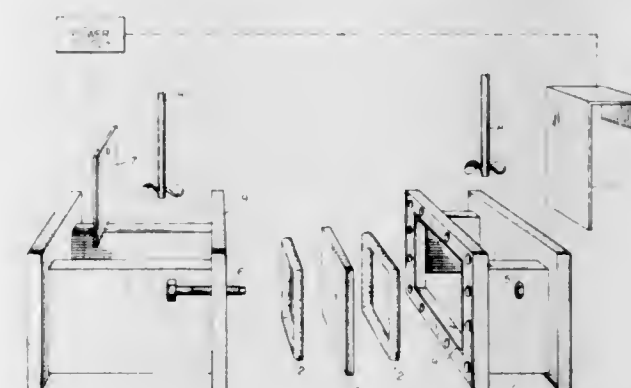
Herbert Rubin, Livingston, N.J., assignor to Inmont Corporation, New York, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,707

Int. Cl. B01k 5/02, 3/10

U.S. Cl. 204—181

5 Claims



A composite membrane means and process for its use in electrodeposition of solubilized resins. The membrane means comprises a relatively inert nonconducting porous supporting matrix, preferably polyethylene, and a gel, preferably agar or agarose having a high water content, in the matrix and forming therewith a relatively strong substantially continuous membrane. The gel is substantially inert and has a low resistance to permeation by water and low molecular weight ions formed by ionization of the resins and is substantially impervious to high molecular weight ions formed by ionization of said resins.



### 3,629,088 SPUTTERING METHOD FOR DEPOSITION OF SILICON OXYNITRIDE

Robert I. Frank, Cambridge, and William L. Moberg, Chelmsford, both of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed July 11, 1968, Ser. No. 744,186  
Int. Cl. C23c 15/00

U.S. Cl. 204—192

6 Claims

Low temperature deposition of silicon oxynitride on an integrated circuit device is accomplished by the reactive sputtering of high-purity silicon source material in the presence of nitrous oxide and nitrogen. The deposited silicon oxynitride is characterized by an etch rate, breakdown strength and yield higher than those of silicon nitride and a dielectric constant higher than that of silicon oxide.

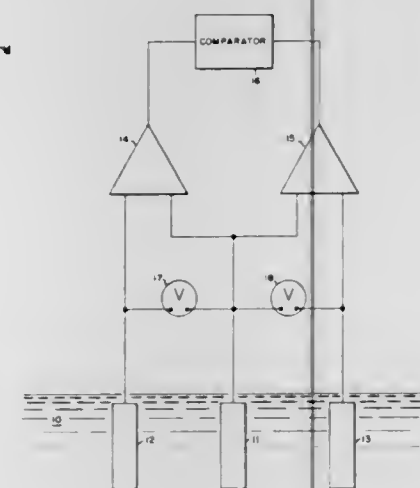
### 3,629,089 FREE AND COMBINED CYANIDE MEASURING APPARATUS

James R. Luck, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 22, 1970, Ser. No. 4,838  
Int. Cl. G01n 27/46

U.S. Cl. 204—195

4 Claims



There is disclosed an apparatus for measuring both free and combined cyanide in a solution. The invention also provides for means of distinguishing the quantities of various types of cyanide complexes contained in a solution.

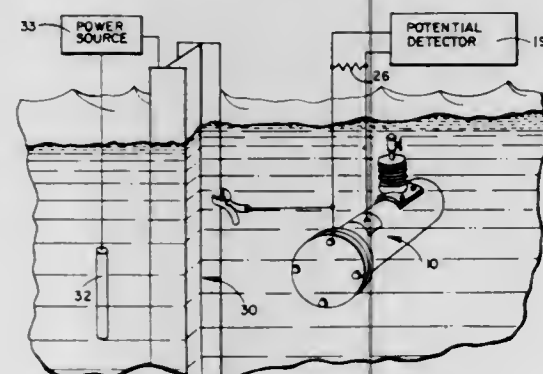
### 3,629,090 APPARATUS FOR MEASURING HYDROGEN ABSORPTION

Edward L. Ghormley, Woodland Hills, Calif., assignor to North American Rockwell Corporation

Filed Sept. 9, 1968, Ser. No. 758,538  
Int. Cl. G01n 27/46

U.S. Cl. 204—195

4 Claims



The apparatus of the invention is designed to measure the amount of hydrogen that is absorbed by a metal structure.

The apparatus is comprised of a receptacle having a wall section which is made of metal similar to the metal of the structure under observation. The receptacle is filled with a neutral or caustic solution. A cathode which may be a rod of lead oxide is inserted into the caustic solution. The wall section, also in contact with the solution, operates an anode in the caustic solution. Means are provided for measuring the electrical potential between the anode and the cathode, which potential will be a function of the amount of hydrogen absorbed through the anode into the solution.

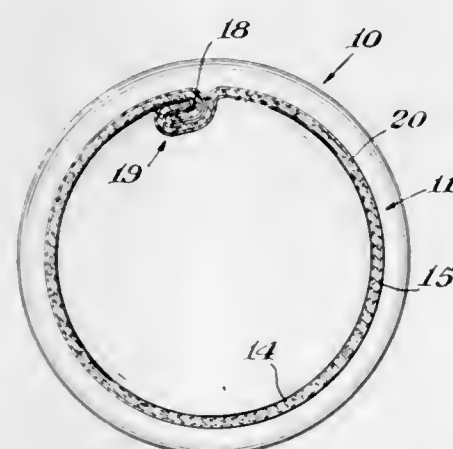
### 3,629,091 SELF-DESTRUCTING METAL STRUCTURES

Percy F. George, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 21, 1970, Ser. No. 4,613  
Int. Cl. B65d 25/14, 7/42

U.S. Cl. 204—197

12 Claims



A metal laminate is provided which will deteriorate after the interior of the laminate is contacted by moisture. Self-destructing containers are fabricated of this structural laminate. The laminate includes at least two layers of dissimilar metals which are electronically connected. One of the metal layers is an aluminum-based metal and the other layer is a metal anodic to the aluminum-based metal, such as a magnesium-based metal. Positioned between the metal layers is at least one layer of an electrolyte-forming composition capable of establishing ionic communication between the metal layers when the composition is contacted with moisture. A preferred electrolyte-forming composition is an inorganic salt containing an alkali metal or an alkaline earth metal, such as sodium chloride. When the electrolyte-forming composition is contacted by sufficient moisture to provide ionic conduction between the metal layers, a galvanic cell is formed having the unique property of simultaneously deteriorating at both the anode and cathode.

### 3,629,092 GALVANICALLY DESTRUCTING METAL STRUCTURES

Percy F. George, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

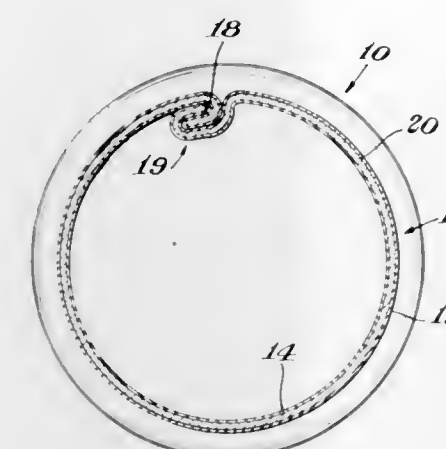
Filed Jan. 21, 1970, Ser. No. 4,614  
Int. Cl. B65d 25/14, 7/42

U.S. Cl. 204—197

11 Claims

A metal laminate is provided which will deteriorate at least in part after the interior of the laminate is contacted by

moisture. Selfdestructing containers are fabricated of this structural laminate. The laminate includes at least two layers of dissimilar metals, the layers being electronically connected and one layer being anodic to the other layer. Positioned between the metal layers is at least one layer of an electrolyte-forming composition capable of establishing ionic communication between the metal layers when the composi-



tion is contacted with moisture. A preferred electrolyte-forming composition is an inorganic salt, such as ammonium chloride or sodium chloride. When the electrolyte-forming composition is contacted by sufficient moisture to provide ionic conduction between the metal layers, a galvanic cell is formed in which the anodic metal layer deteriorates by galvanic corrosion.

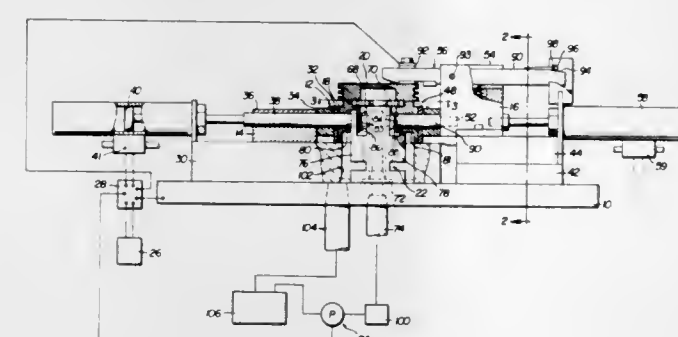
### 3,629,093 PISTON DEBURRING APPARATUS

David W. Sickels, Plymouth, Mich., assignor to Electrogenics, Inc., Wayne County, Mich.

Filed Oct. 13, 1969, Ser. No. 865,696  
Int. Cl. B23p 1/02; B01k 3/04

U.S. Cl. 204—224

6 Claims U.S. Cl. 204—298



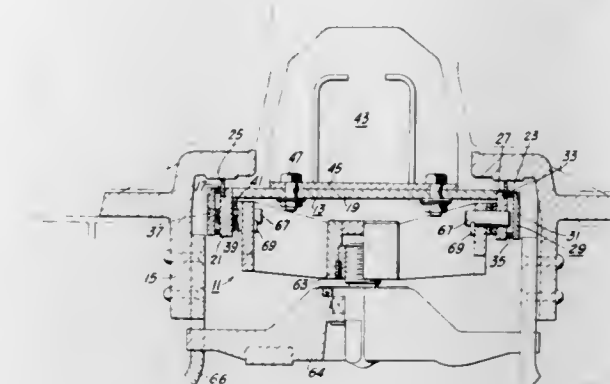
Electrochemical machining apparatus for deburring cylindrical workpieces incorporating a two-part workpiece holder with one part retractable to permit loading and unloading. The electrode fits within the workpiece and delivers both electrolyte and machining current to the areas to be deburred. Also a movable contact for the machining circuit is actuated by the workpiece holder to facilitate loading and unloading.

### 3,629,094 COKE OVEN DOOR

Leo Silverblatt, Pittsburgh, Pa.  
Filed June 30, 1969, Ser. No. 837,703  
Int. Cl. C10b 25/06

U.S. Cl. 202—248

3 Claims



A coke oven door comprises a flexible door frame and panel that supports the knife edge sealing ring and a pair of latch yoke frames. The latch yoke frames are pin connected to the door frame and the sealing ring is clamped to the door frame.

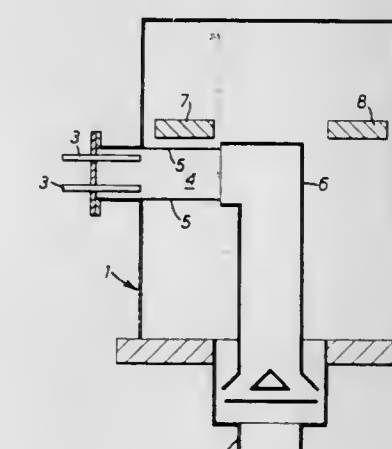
### 3,629,095 IN OR RELATING TO VACUUM APPARATUS

Geoffrey Norman Jackson, Uckfield, Sussex, and Colin Richard Douglas Priestland, Horsham, Sussex, both of England, assignors to Edwards High Vacuum International Limited, Crawley, Sussex, England

Filed June 21, 1968, Ser. No. 738,873  
Claims priority, application Great Britain, June 29, 1967, 30011/67

Int. Cl. C23c 15/00

5 Claims



Vacuum apparatus for carrying out a vacuum process within a given region of the chamber, in which gas is introduced to and removed from the region continuously so that the process can be carried out at a selected pressure within the region notwithstanding the fact that the remaining part of the chamber is at a lower pressure.



3,629,096

**PRODUCTION OF TECHNICAL WHITE MINERAL OIL**

Joseph M. Divijak, Jr., Griffith, Ind., assignor to Atlantic Richfield Company

Filed June 21, 1967, Ser. No. 647,628

Int. Cl. C10g 31/14, 13/02

U.S. Cl. 208—89

8 Claims

Technical grade white mineral oil is produced by a series of steps including treating a mineral lubricating oil distillate with hydrogen in the presence of a sulfur-resistant catalyst (e.g., nickel molybdate on alumina) under hydrorefining conditions. The hydrogenated oil is hydroisomerized and hydrocracked by contact with hydrogen in the presence of a silica-alumina and crystalline-aluminosilicate-containing catalyst having about 0.1 to 5 weight percent of a platinum group metal. The resulting product is further contacted with hydrogen under aromatic saturation conditions in the presence of a platinum group metal-containing hydrogenation catalyst (e.g., platinum on alumina).

3,629,097

**CONTROL SYSTEM FOR FLUID CATALYTIC CRACKING PROCESS**

John H. Smith, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of application Ser. No. 756,659, Aug. 30, 1968, now Patent No. 3,513,087, which is a continuation-in-part of application Ser. No. 702,047, Jan. 31, 1968, now abandoned. This application Jan. 6, 1970, Ser. No. 1,002

Int. Cl. C10g 13/18

U.S. Cl. 208—159

4 Claims

Coke deposition rate in the reactor of a fluid cat cracker is controlled by varying the severity and conversion level in the reactor, while maintaining maximum air rate to the regenerator. The temperature at the outlet of the regenerator, which is an indication of afterburning and amount of coke buildup, is used to control reactor temperature and catalyst-to-oil ratio in the reactor (by resetting the reactor temperature recorder control, which in turn controls the flow of hot regenerated catalyst from the regenerator to the reactor), thus controlling coke deposition to make it commensurate



with air supply by controlling the severity and conversion level in the reactor. The temperature in the regenerator catalyst bed is held constant by varying the recycle feed rate to the reactor in response to variations in such temperature.

**CONTINUOUS FLOW, PREPARATIVE THIN-LAYER CHROMATOGRAPH**

Shoji Hara, Saitama, Japan, assignor to Toyo Roshi Company, Limited, Tokyo, Japan

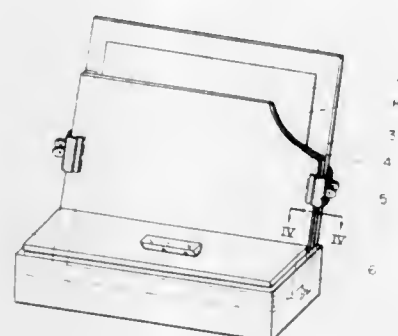
Filed Sept. 10, 1969, Ser. No. 856,777

Claims priority, application Japan, Sept. 27, 1968, 43/70078

Int. Cl. B01d 15/00

U.S. Cl. 210—31

8 Claims



An apparatus for thin-layer chromatography which comprises a support-coated glass plate, cover plates which are same in width as said glass plate and shorter in length than said glass plate and have spacers with same length on their both sides, clips for fitting said glass plate with said cover plate so that the latter plate can be moved up and down, and a solvent container with a lid into which the lower ends of both said glass and cover plates can be immersed.

3,629,099

**DISCHARGE DEVICE FOR A VACUUM SEWERAGE SYSTEM**

Gustaf Gahmberg, and Reijo Olavi Peltonen, both of Helsinki, Finland, assignors to Oy Wartsila Ab., Helsinki, Finland

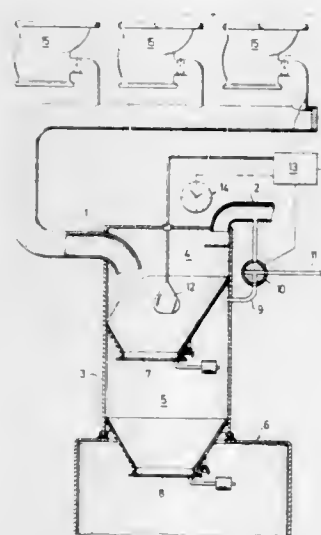
Filed Aug. 19, 1970, Ser. No. 64,999

Claims priority, application Finland, Aug. 20, 1969, 2424/69

Int. Cl. B01d 21/24

U.S. Cl. 210—104

6 Claims



A discharge device situated at the outlet end of a vacuum sewerage system and having an upper chamber and a lower chamber. The upper chamber is directly connected to a sewer and through a nonreturn valve to the lower chamber. The lower chamber has valve controlled passages leading to a vacuum source and to the open air and is further connected through a nonreturn valve to a sewage collecting tank.

3,629,100

**OPTICAL SHUTTER COMPOSITION AND METHOD OF PRODUCING SAME**

Herbert N. Hersh, Skokie, Ill., assignor to The United States of America as represented by the Secretary of the Army

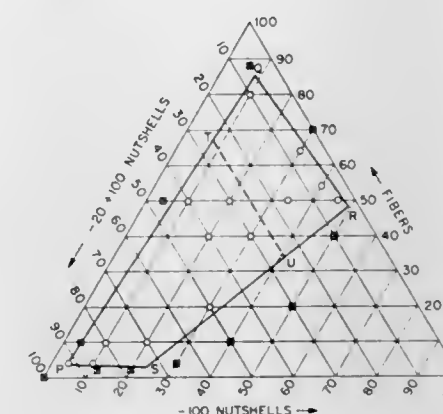
Continuation-in-part of application Ser. No. 615,025, Feb. 9, 1967, now abandoned. This application Oct. 10, 1969, Ser. No. 871,427

Int. Cl. F21v 9/06; G02b 5/24; G02c 7/10

U.S. Cl. 252—300

4 Claims

A crystalline doped alkali halide optical shutter composition comprising a crystalline alkali halide doped with an impurity selected from the group consisting of alkali hydroxides and alkali sulfides and a method for producing same are disclosed. The presence of the alkali hydroxide and/or sulfide impurities gives rise to an increased number of ion vacancies in the crystal lattice structure of the crystalline alkali halide, thereby enhancing the tendency of the material to form color producing F-Centers when the crystalline doped alkali halide is exposed to relatively low energy radiation.



Sugar cane fibers, preferably waterproofed, ground fine enough to pass the shale shaker screen but coarse enough to

seal a bed of BB shot when combined within certain limits with the larger granular particles and the flour.

3,629,101

**WATER-BASE CLAYEY DRILLING FLUIDS**

Martin Hille, Bad Soden, Taunus, and Dieter Ulmschneider, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius &amp; Bruning, Frankfurt am Main, Germany

Filed Feb. 25, 1969, Ser. No. 802,199

Claims priority, application Germany, Mar. 2, 1968, P 16 08 267.0

Int. Cl. C10m 7/00; E21b 21/04

U.S. Cl. 252—8.5 C

6 Claims

Water-base, clayey drilling fluids are made suitable for the drilling of deep wells by addition thereto of a copolymer of vinyl-sulfonic acid and an N-vinyl-carboxylic acid amide or N-vinylpyrrolidone and, optionally, a small proportion of an anion-active vinyl compound that is polymerizable under the action of free radicals.

3,629,103

**PLASTIC ANTIFRICTION MATERIAL**

Vasily Vladimirovich Korshak, ulitsa Gubkina, 4, kv. 81; Irina Alexandrovna Gribova, ulitsa Vavilova, 12, kv. 31; Alexandr Petrovich Krasnov, prospekt Kalinina, 31, kv. 28; Alla Nikolaevna Chumakovskaya, Leninsky prospekt, 101, korpus 163, kv. 86; Olga Svyatoslavovna Natsarens, ulitsa Grima, 13, korpus 2, kv. 15; Svetlana Vasilievna Vinogradova, Belyaev-Bogorodskoe, Kvartal 48-a, korpus 6a, kv. 63; Yakov Semenovich Vygodsky, Leninsky prospekt, 101, korpus 135, kv. 38; Vyacheslav Alexandrovich Pankratov, ulitsa Usievicha, 25, kv. 135, and Grigory Lvovich Slonimsky, ulitsa Chkalova, 1/4, kv. 16, all of Moscow, U.S.S.R.

Filed June 23, 1969, Ser. No. 835,785

Int. Cl. C10m 7/34

U.S. Cl. 252—12

8 Claims

A plastic antifriction material containing a polyimide resin, powdered solid lubricants as fillers, and also polyarylates or aromatic polyamides.

3,629,102

**PREVENTING LOSS OF DRILLING FLUID TO DRILLED FORMATIONS**

James L. Lummus, and John N. Ryals, both of Tulsa, Okla., assignors to Pan American Petroleum Corporation, Tulsa, Okla.

Filed June 29, 1967, Ser. No. 650,056

Int. Cl. C10m 3/08, 1/14

U.S. Cl. 252—8.5 LC

11 Claims

In well drilling operations, loss of whole drilling fluid to drilled formations is decreased by maintaining in the drilling fluid a three-component mix. The three components are (1) Ground nutshells or equivalent passing the shale shaker screen but retained on a No. 100 U.S. standard sieve; (2) Nutshell flour or equivalent passing a No. 100 sieve; (3)

3,629,104

**WATER SOLUBLE CORROSION INHIBITORS FOR WELL FLUIDS**

Jim Maddox, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 29, 1967, Ser. No. 649,823

Int. Cl. C23f 11/14; C07f 19/34

U.S. Cl. 252—8.55 E

2 Claims

Normal and acid salts of substituted imidazolines and saturated aliphatic mono- and dicarboxylic acids for use in compositions of water soluble corrosion inhibitors. Continuous or intermittent application of liquid coatings of these inhibitors on metals, particularly ferrous metals in contact with sweet and sour petroliferous well fluids, form persistent films which afford protection against corrosion, even at elevated temperature.



3,629,105

**INHIBITING SCALE FORMATION**Walter J. Weiss, Sugar Land, Tex., assignor to  
Texaco Inc., New York, N.Y.No Drawing. Filed Oct. 11, 1968, Ser. No. 766,953  
Int. Cl. C02b 5/06

U.S. Cl. 252—8.55 B

6 Claims

Inhibiting the scale forming action of water containing mineral constituents and particularly ground waters by incorporating minute concentrations of sulfonated lignite.

3,629,106

**METHOD OF IMPROVING OXIDATIVE STABILITY OF FLUOROSILICONE FLUIDS**George J. Quaal, Midland, Mich., William L. Schaefer, Palatine, Ill., and Robert J. Kelly, Bridgeport, Mich., assignors to Dow Corning Corporation, Midland, Mich.  
No Drawing. Filed May 21, 1969, Ser. No. 826,725  
Int. Cl. C10m 3/46, 3/02

U.S. Cl. 252—25

2 Claims

The invention described herein is a lubricating composition containing antimony trioxide in a liquid carrier and is especially suitable for the lubrication of titanium-steel and Monel-steel interfaces. Additionally, it has been found that the addition of antimony trioxide to fluorosilicone fluids tends to stabilize such fluids against oxidation.

3,629,107

**METAL-GRAPHITE COMPOSITIONS**Aleksander Jerzy Groszek and Rodney Ernest Witheridge, London, and Charles John Geach, Shepperton, England, assignors to The British Petroleum Company Limited, London, England  
No Drawing. Filed Mar. 17, 1970, Ser. No. 20,399  
Claims priority, application Great Britain, Mar. 31, 1969, 16,707/69

Int. Cl. C10m 7/04

U.S. Cl. 252—12

14 Claims

Intimate mixtures of oleophilic graphite and a metal are prepared by grinding graphite and the metal together in an organic liquid. The mixtures are useful as solid lubricants and grease-thickeners.

3,629,108

**LUBRICANT INHIBITOR**Gerard P. Caruso, New Orleans, La., assignor to  
Shell Oil Company, New York, N.Y.No Drawing. Filed Sept. 12, 1968, Ser. No. 759,519  
Int. Cl. C10m 3/32, 7/36

U.S. Cl. 252—28

11 Claims

A grease inhibited against oxidation and against inhibitor recrystallization containing a lubricant gelled to grease consistency, an amount of a phenothiazine-type inhibitor sufficient to inhibit oxidation, and a pyrrolidone compound that is liquid phase and in an amount sufficient to prevent large crystals of phenothiazine-type inhibitor from forming. Typically the grease will contain up to one percent by weight of phenothiazine and about the same amount of N-methyl pyrrolidone.

3,629,109

**BASIC MAGNESIUM SALTS, PROCESSES, AND LUBRICANTS AND FUELS CONTAINING THE SAME**William C. Gergel, Mayfield Heights, Jack L. Karn, Cleveland Heights, and Laurence E. King, Painesville, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio  
No Drawing. Continuation-in-part of application Ser. No. 785,343, Dec. 19, 1968. This application Sept. 17, 1969, Ser. No. 858,875  
Int. Cl. C10m 1/40, 3/34

U.S. Cl. 252—33

50 Claims

Processes for preparing basic magnesium salts of oil soluble organic acids by contacting an inorganic acidic

material with a mixture of the acids, or their alkali or alkaline earth metal salts, magnesium oxide, and water or alcohol-water promoter system. Carbon dioxide is an exemplary acidic material. Lower alkanols, particularly methanol, are useful co-promoters for use with the water. Mixtures of oil-soluble sulfonic acids and oil-soluble carboxylic acids, or their alkali or alkaline earth metal salts, are useful starting materials for preparing basic magnesium salts. With alcohol-water co-promoters, the inorganic acidic material is contacted with the reaction mixture in two stages, first in the presence of both promoters and then in the presence of water only. The products are useful as additives in lubricants and fuels and as intermediates in preparing other useful products.

3,629,110

**SOLID DIELECTRIC POLYOLEFIN COMPOSITIONS CONTAINING VOLTAGE STABILIZERS**George H. Hunt, West Newton, Mass., assignor to Simplex Wire and Cable Company, Cambridge, Mass.  
No Drawing. Filed Oct. 2, 1968, Ser. No. 764,603The portion of the term of the patent subsequent to May 19, 1986, has been disclaimed  
Int. Cl. H01b 3/22

U.S. Cl. 252—63.2

13 Claims

A solid dielectric composition is disclosed comprising a major amount of solid-phase polyolefin, e.g., polyethylene, polypropylene or polyisobutylene having dispersed therein a small, soluble voltage stabilizing amount from about 0.1 to about 10 percent of a voltage stabilizing additive. The voltage stabilizing additives include phthalic anhydride; benzoguanamine; triphenyl formazan; quinoline; isoquinoline; indene; indol and quinaldine, and mixtures thereof with other known voltage stabilizing additives to polyethylene, e.g., chlorinated aromatic hydrocarbons and other substituted aromatic hydrocarbons characterized by having an electron donor group and an electron acceptor group potentially hydrogen bonded together by a reversible proton, and mixtures thereof with m-dinitrobenzene; m-nitroaniline; p-nitroaniline; m-nitrotoluene; p-nitrotoluene; o-nitrochlorobenzene or p-nitrochlorobenzene.

3,629,111

**HYDRAULIC FLUIDS CONTAINING NOVEL INHIBITOR COMPOSITIONS**Henry R. Cramer, Naugatuck, Conn., assignor to  
Olin CorporationNo Drawing. Continuation-in-part of application Ser. No. 634,457, Apr. 28, 1967. This application Oct. 2, 1970, Ser. No. 77,753  
Int. Cl. C09k 3/00; C23f 11/14

U.S. Cl. 252—75

21 Claims

This invention relates to improved hydraulic fluids containing a novel inhibitor composition comprising a hydrazine compound and an organic acid compound.

3,629,112

**AQUEOUS LUBRICATING COMPOSITIONS CONTAINING SALTS OF STYRENE-MALEIC ANHYDRIDE COPOLYMERS AND AN INORGANIC BORON COMPOUND**

Howard D. Gower, Munster, Ind., and Bob G. Gower, Park Forest, and David Young, Homewood, Ill., assignors to Atlantic Richfield Company

No Drawing. Continuation-in-part of application Ser. No. 712,965, Mar. 14, 1968. This application Nov. 25, 1968, Ser. No. 778,804  
Int. Cl. C10m 3/22, 1/28

U.S. Cl. 252—34.7

5 Claims

Aqueous cooling compositions, suitable for use in metal working, are prepared which contain a minor amount of a water-soluble salt of a copolymer of styrene and maleic anhydride or a partial ester thereof, or a water-soluble partial ester of the copolymer, together with a

3,629,117

**LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY**

Zenjiro Okuno, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Filed Oct. 14, 1966, Ser. No. 586,674  
Claims priority, application Japan, Oct. 20, 1965, 40/63,940  
Int. Cl. G03g 9/00

U.S. Cl. 252—62.1

2 Claims

The invention relates to a developer for electrophotography of the type comprising a carrier liquid and pigment particles dispersed in said carrier, the invention residing in the chemical grafting of an organic material having unsaturated double bonds to the pigment to control the electrokinetic potential of the surface of the pigment.

3,629,113

**LUBRICATING COMPOSITION**

Robert A. Gerlicher, Baton Rouge, La., assignor to Copolymer Rubber &amp; Chemical Corporation, Baton Rouge, La.

No Drawing. Filed Apr. 24, 1969, Ser. No. 819,120  
Int. Cl. C10m 1/18, 1/22

U.S. Cl. 252—49.7

6 Claims

A lubricant to prevent fouling of equipment contacted by polymerizable ethylenically unsaturated hydrocarbons and/or ethylenically unsaturated esters in which the lubricating composition contains a soluble N-nitroso aryl hydroxyl amine and preferably an oil soluble salt thereof.

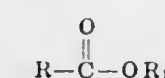
3,629,114

**FUNCTIONAL FLUID COMPOSITIONS**John D. Fairing, Ballwin, Mo., assignor to  
Monsanto Company, St. Louis, Mo.No Drawing. Continuation-in-part of abandoned application Ser. No. 550,163, May 16, 1966. This application Feb. 27, 1969, Ser. No. 803,071  
Int. Cl. C10m 1/48, 1/46, 1/36

U.S. Cl. 252—49.8

10 Claims

Compositions which inhibit and control damage to mechanical members in contact with said compositions which comprise certain hydrocarbyl phosphate ester base stocks which contain a damage inhibiting amount of an ester of the structure



3,629,115

**FLUOROSILICONE LUBRICANTS CONTAINING TRIS (PENTAFLUOROPHENYL) PHOSPHINE**

Yung Ki Kim and Ogden R. Pierce, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,934  
Int. Cl. C10m 1/44, 1/50

U.S. Cl. 252—49.9

2 Claims

Small amounts of tris(pentafluorophenyl)phosphine are added to fluoroalkylpolysiloxane lubricants as antioxidants and anti-wear additives.

3,629,116

**STRUCTURED INSULATING MATERIALS**

William J. Gartner, Schaumburg, and Charles T. Clark, Des Plaines, Ill., assignors to Desoto, Inc.

No Drawing. Filed May 1, 1969, Ser. No. 821,065  
Int. Cl. C04b 43/04; F16l 59/00

U.S. Cl. 252—62

11 Claims

A structured insulating material of high infrared reflectivity, low thermal conductivity and good physical properties is prepared by vacuum forming an aqueous slurry comprising from about 10 to about 75 wt. percent of pigmentary potassium titanate, from about 1 to about 35 wt. percent of binder material of which from about 1 to about 25 wt. percent is colloidal silica, and from about 15 to about 89 wt. percent of inorganic fibrous material selected from the group consisting of ceramic fibers, mineral wool and mixtures thereof, all of said percentages being based on solids content.

The slurry deposit on the vacuum formed filter is removed from the filter and dried.

3,629,121

**CARBOXYLATED STARCHES AS DETERGENT BUILDERS**

Ibrahim A. Eldib, 22 Beekman Terrace, Summit, N.J. 07901

No Drawing. Continuation-in-part of application Ser. No. 698,107, Jan. 16, 1968. This application Dec. 15, 1969, Ser. No. 885,348  
Int. Cl. C11d 1/04

U.S. Cl. 252—89

17 Claims

Certain carboxy-containing derivatives of starches in salt form with an average of more than one carboxy group per repeating monomer unit, particularly those with more than one carboxyl group per repeating glucose



unit are extremely effective detergent builders in both solid and liquid laundry detergents. Detergents formulated with these builders exhibit excellent chelating ability for heavy metal ions, and excellent general detergency. These starch derivative builders, unlike the commonly used phosphates and nitrates, do not accelerate eutrophication, since they are not algae growth stimulants. Alkali metal salts of carboxymethyl cellulose are also useful is builders.

3,629,122

#### LOW-FOAMING RINSING AND WASHING AGENTS FOR DISH WASHERS

Günter Jakobi, Hilden, Rhineland, Germany, assignor to Henkel & Cie G.m.b.H., Düsseldorf, Germany  
No Drawing. Filed Feb. 17, 1969, Ser. No. 799,932  
Claims priority, application Germany, May 4, 1968, P 17 67 384.6  
Int. Cl. C11d 1/00

U.S. Cl. 252—89

8 Claims

Low-foaming rinsing and washing compositions adapted for dish washers consisting essentially of (A) from 70% to 98% by weight of water-soluble polyvinyl alcohols having a molecular weight of between 1000 and 4000, and (B) from 2% to 30% by weight of foam-inhibiting compounds selected from the group consisting of aliphatic alcohols, aliphatic carboxylic acids and alkali metal salts thereof, aliphatic carboxylic acid amides and aliphatic amines, said compounds having at least one aliphatic or aliphatic-cycloaliphatic radical with from 8 to 22 carbon atoms, as well as aqueous solutions containing said low-foaming rinsing and washing compositions.

3,629,123

#### STABILIZED AMYLASE COMPOSITIONS

Anthony E. O'Reilly and Charles A. Hong, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Filed Dec. 8, 1969, Ser. No. 883,356  
Int. Cl. C11d 7/42

U.S. Cl. 252—89

15 Claims

A stabilized amylase complex consisting essentially of amylase and hydrolysis products of chemically-modified cross-linked pregelatinized amylopectin is described, together with a process for preparing said complex which comprises mixing amylase and cross-linked pregelatinized amylopectin in an aqueous slurry having a temperature in the range of 35° F. to 110° F. and a pH of 4.5 to 8.5, the ratio by weight of amylase to cross-linked pregelatinized amylopectin being in the range of 1:1 to 1:200.

A laundry detergent composition is also described which consists essentially of from .001% to 3% by weight of a stabilized amylase complex mechanically mixed with a granular detergent composition which consists of a detergent and a builder.

Granular amylase containing detergent compositions are also described which contain a stabilized amylase complex attached to a water-soluble carrier granule.

3,629,124

#### BLEACHING, STERILIZING, DISINFECTING, AND DETERGING COMPOSITIONS

Thomas M. King, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.  
No Drawing. Filed Aug. 27, 1969, Ser. No. 853,512  
Int. Cl. C11d 7/56

U.S. Cl. 252—99

20 Claims

Compositions containing a chlorine-releasing agent such as sodium hypochlorite, an amino phosphonic acid (or water-soluble salt) such as amino tri(methylene phosphonic acid)— $N(CH_2PO_3H_2)_3$ , and a stabilizing mate-

rial for preventing chemical interaction between said agent and acid (or ionized form thereof) when both are in an aqueous solution, such as zinc sulfate. These compositions have a variety of utilities including scouring cleansers.

3,629,125

#### LIQUID DETERGENT COMPOSITIONS

Thomas Aquinas Payne, Jr., Teaneck, and Warren Eric Olson, Verona, N.J., assignors to Lever Brothers Company, New York, N.Y.  
No Drawing. Continuation of application Ser. No. 685,273, Nov. 24, 1967, which is a continuation-in-part of abandoned application Ser. No. 362,489, Apr. 24, 1964. This application Oct. 15, 1969, Ser. No. 866,772  
Int. Cl. C11d 3/04, 3/66

U.S. Cl. 252—135

14 Claims

A phase-stable, pourable, heavy-duty, liquid detergent emulsion composition which does not exhibit a substantial change in viscosity on standing comprising a nonionic synthetic detergent, an alkali metal pyrophosphate, a combination of a first stabilizer which is a hydrolyzed linear copolymer of ethylene and maleic anhydride and a second stabilizer which is a hydrolyzed cross-linked copolymer of ethylene and maleic anhydride, and the balance substantially water.

3,629,126

#### LIQUID DETERGENT COMPOSITION

Walter Fries and Rolf Nagel Puchta, Horstmar, and Wolfgang Gundel, deceased, late of Düsseldorf-Oberkassel, Germany, by Maria-Luise Elsa Gundel, heir and legal representative, Düsseldorf-Oberkassel, Germany, assignors to Henkel & Cie. G.m.b.H., Düsseldorf-Holthausen, Germany  
No Drawing. Continuation of application Ser. No. 535,660, Mar. 17, 1966. This application Oct. 20, 1969, Ser. No. 867,965  
Claims priority, application Germany, Mar. 30, 1965, H 55,644  
Int. Cl. C11d 3/08, 1/835, 1/86

U.S. Cl. 252—526

6 Claims

Liquid detergent compositions comprising 40 to 70% water and 30 to 60% dissolved and suspended materials consisting essentially of the following in percent by weight based upon the total weight of the suspended and dissolved material: 1 to 5% of at least one salt of a cellulose ether carboxylic acid, 5 to 20% of at least one member selected from the group consisting of surface active amine oxides and surface active ether sulfates, 0 to 40% conventional detergent additives, 0 to 30% of wash active substances other than the amine oxides and/or ether sulfates and 0.5 to 25% of a mixture of 40 to 60% of at least one  $C_{16}$  to  $C_{24}$  fatty alcohol sulfate and 60 to 40% of at least one sulfo betaine.

3,629,127

#### LOW FOAMING RINSE ADDITIVE

Frank W. Palmer, Detroit, and Otto T. Aepli, Southgate, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.  
No Drawing. Filed Aug. 5, 1968, Ser. No. 749,937  
Int. Cl. C11d 1/12

U.S. Cl. 252—55

6 Claims

Low foaming rins: additives are prepared from a blend of nonionic and anionic surfactants which are water-soluble or miscible at temperatures above 180° F. The nonionic surfactants which are used in the practice of this invention are modified oxyalkylated linear alcohols and the anionic surfactants which are used in the practice of this invention are sulfosuccinic acid esters or phosphate esters.

#### 3,629,128 STABILIZATION OF CHLORINATED HYDROCARBONS

John Henry Rains, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 681,019, Nov. 6, 1967. This application June 26, 1968, Ser. No. 740,039  
Int. Cl. C09d 9/00; C11d 7/50; C23g 5/02  
U.S. Cl. 252—171

20 Claims

Stabilized methyl chloroform and method for stabilizing methyl chloroform against the formation of acidic products therein by supplying thereto 1,4-dioxane, nitromethane, butylene oxide, N-methylpyrrole, and an amine selected from diisopropylamine, diallylamine, isobutylamine and n-butylamine.

3,629,129

#### CHEMILUMINESCENT SMOKES

Urho Albert Lehtikainen, Detroit, Mich., assignor to Ethyl Corporation, New York, N.Y.  
No Drawing. Filed June 29, 1967, Ser. No. 649,850  
Int. Cl. C09k 3/00, 3/30

U.S. Cl. 252—188.3

16 Claims

Chemiluminescent smoke, that is, a smoke visible both by day and night, is produced when a composition consisting essentially of (a) an aluminum alkyl, (b) an ether or an amine complexing agent, and (c) an alkyl or an aryl nitrile, is contacted with air and water.

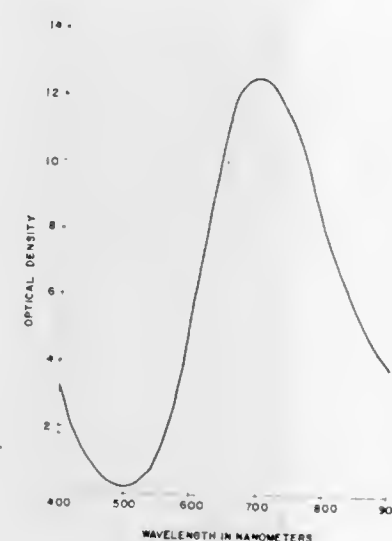
3,629,130

#### POLYESTER FILTER CONTAINING COPPER II SALTS

Richard J. Hovey, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.  
Filed Dec. 15, 1969, Ser. No. 885,053  
Int. Cl. F21v 9/04; G02b 2/20

U.S. Cl. 252—300

8 Claims



An optical filter for infrared and near infrared wavelengths, particularly useful for shielding against laser light, has a cast polyester matrix formed by polymerizing a monomer containing a dissolved copper (II) salt. The absorption spectra of the cast polyester are independent of the particular copper (II) salt.

3,629,131

#### PROCESS FOR PRODUCING EUROPIUM-ACTIVATED YTTRIUM VANADATE PHOSPHORS

James E. Mathers, Ulster, and Felix F. Mikus and Emil J. Mehalchick, Towanda, Pa., assignors to Sylvania Electric Products Inc.  
No Drawing. Filed Nov. 12, 1969, Ser. No. 876,051  
Int. Cl. C09k 1/44

U.S. Cl. 252—301.4 R

6 Claims

An improved process for manufacturing europium-activated yttrium vanadate phosphor containing a bismuth additive is disclosed that comprises forming a mixture of yttrium and europium sources that have low levels of cer-

tain rare earth impurities, a bismuth source at specific levels and ammonium metavanadate having a specific bulk density and a low level of metallic impurities and thereafter heating the mixture for at least two hours at specific temperatures to achieve a phosphor having an increased brightness and an acceptable color purity.

3,629,132

#### PROCESS FOR SEPARATING SPECIFIC RADIOELEMENTS, SINGLY OR MULTIPLY, FROM A MIXTURE OF RADIOACTIVE ELEMENTS

Constantine J. Maletskos, Gloucester, and Chung-Wai Tang, Cambridge, Mass., assignors to the United States of America as represented by the United States Atomic Energy Commission  
No Drawing. Filed Feb. 13, 1969, Ser. No. 799,118  
Int. Cl. C09k 3/00

U.S. Cl. 252—301.1 R

3 Claims

A process for selectively removing radioactive isotopes of Na, K, and/or Cl from acidic aqueous solutions wherein these solutions are admixed with organic solvents and passed over columns made up of inorganic salts having nonradioactive forms of the isotopes which are to be removed from the solution.

3,629,133

#### PRODUCTION OF PREDOMINANTLY CRYSTALLINE SOLS OR URANIA

John P. McBride, Oak Ridge, Kenneth H. McCorkle, Powell, and William L. Pattison, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission  
Filed Apr. 8, 1969, Ser. No. 814,311  
Int. Cl. C09k 3/00

U.S. Cl. 252—301.1 S

1 Claim

The present invention relates to a method for forming a stable, predominantly crystalline sol from an acid-deficient solution of a hydrous metal oxide in which the metal is in the +4 oxidation state which comprises heating said solution to a crystallizing temperature to cause an increase in conductivity of said solution, removing anion at the crystallizing temperature to a condition of further acid deficiency at a rate which approximates the rate of release of free acid to the aqueous phase of the resultant sol, and then adjusting the anion-to-metal ratio of the sol to a desired anion-to-metal ratio.

3,629,134

#### METHOD OF MAINTAINING VARIABLE DENSITY DISSOLVER SOLUTIONS CRITICALLY SAFE

Donald W. Rhodes, Idaho Falls, Idaho, assignor to the United States of America as represented by the United States Atomic Energy Commission  
No Drawing. Filed Apr. 7, 1969, Ser. No. 814,523  
Int. Cl. G21c 7/08

U.S. Cl. 252—301.1 R

2 Claims

A dissolver vessel can be made critically safe during the dissolution of nuclear fuel by adding insoluble particulate poisons to the dissolvent. The insoluble poison particles have a density range so that a sufficient amount of poison is always in suspension even though the dissolvent changes density during the dissolution process.

3,629,135

#### METHOD OF DISSOLVING RADIOACTIVE CONTAMINATED ORGANIC ION EXCHANGE RESINS

Malcolm W. Wilding, Idaho Falls, Idaho, assignor to the United States of America as represented by the United States Atomic Energy Commission  
No Drawing. Filed Oct. 10, 1968, Ser. No. 766,653  
Int. Cl. C09k 3/00

U.S. Cl. 252—301.1

4 Claims

A method of dissolving organic ion exchange resins without a residue by heating the resin in an aqueous solution of nitric acid and potassium permanganate.



3,629,136

**CALCIUM YTTRIUM SILICATE OXYAPATITE LASER MATERIAL CONTAINING HOLMIUM AND CHROMIUM IONS**

Nathan T. Melamed, Pittsburgh, and George W. Roland and Richard H. Hopkins, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Sept. 22, 1969, Ser. No. 859,754  
Int. Cl. C09k 1/54; H01s 3/16

U.S. Cl. 252—301.4 F

3 Claims

A composition of matter which can be used as a laser crystal and which can be doped with Cr sensitizer ions has the empirical chemical formula  $\text{CaY}_{4-x}(\text{SiO}_4)_3\text{O}:\text{Ho}_x$  where  $x$  has a value from .001 to 1.

3,629,137

**GLASS FOR LASER**

Isao Masuda, Tokyo, Japan, assignor to Hoya Glass Works, Limited, Tokyo, Japan  
No Drawing. Filed Oct. 8, 1969, Ser. No. 864,880  
Claims priority, application Japan, Oct. 12, 1969, 43/74,339

Int. Cl. C09k 1/54; C03c 3/10, 3/28

U.S. Cl. 252—301.4 F

4 Claims

A  $\text{SiO}_2\text{—R}_2\text{O—PbO}$  glass containing  $\text{Nd}^{3+}$  ion as fluorescent element can be improved in its fluorescent properties by having  $\text{V}^{5+}$  ion present in said glass, whereby the resulting glass is markedly useful when used as the material for laser having a higher quantum efficiency.

3,629,138

**METHOD FOR EXCHANGING COUNTERIONS IN ACTINIDE OXIDE SOLS**

Iran L. Thomas, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission  
No Drawing. Filed Oct. 16, 1969, Ser. No. 867,095  
Int. Cl. C09k 3/00

U.S. Cl. 252—301.1 S

4 Claims

There is provided a method for exchanging counterions, such as nitrates and chlorites, in acidic metal oxide sols comprising contacting a nitrate-stabilized metal oxide sol with carbon dioxide, removing the released nitrate and contacting the carbon dioxide-stabilized colloidal system with a chloride-containing solution to form a chloride-stabilized metal oxide sol.

3,629,139

**SILICA ORGANOOLS AND PROCESS FOR MAKING**

Peter H. Vossos, Berwyn, Ill., assignor to Nalco Chemical Company  
No Drawing. Filed Mar. 13, 1969, Ser. No. 807,107  
Int. Cl. B01j 13/00

U.S. Cl. 252—309

10 Claims

Silica organosols comprising an organic solvent having uniformly dispersed therein from 0.1% to 50% by weight of discrete, dense colloidal particles of amorphous silica have adsorbed upon their surfaces a quaternary ammonium salt or hydroxide. A method of preparing these silica organosols is disclosed.

3,629,140

**WATER-SOLUBILIZATION OF VANADYL-HARDENED POLY(VINYL ALCOHOL) FILMS USEFUL AS CAPSULE WALL MATERIAL**

Robert G. Bayless, Yellow Springs, Donald D. Emrick, Kettering, and Ronald L. Hart, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio  
No Drawing. Filed July 14, 1969, Ser. No. 841,596  
Int. Cl. B01j 13/02; B44d 1/02, 1/44

U.S. Cl. 252—316

15 Claims

A process is disclosed for manufacturing, en masse, minute capsules having walls which are cold water solu-

ble. More specifically disclosed is a process for treating already-formed capsule walls comprising water-insolubilized vanadyl(IV)-hardened poly(vinyl alcohol), wherein the vanadyl ions are oxidized to a valence number such that the vanadium no longer serves to render the poly(vinyl alcohol) water insoluble. In one disclosed embodiment, dry walled capsules which had previously been vanadyl(IV)-hardened are treated by oxidizing the vanadium so that the thus-treated capsule walls are soluble, on later contact, with cold water. In other embodiments, oxidizing materials are used in combination with the water-insolubilized capsule wall material to render the vanadyl(IV)-hardened capsule wall material water soluble upon first contact of water with the combination of materials. The polymeric capsule wall material which is disclosed in the present invention is poly(vinyl alcohol) polymeric material which has been initially insolubilized by complexing with hydrous vanadyl(IV) compounds.

3,629,141

**TRI(DIALKYLAMINOPHENYL THIOALKYLENE) PHOSPHITE STABILIZER COMBINATIONS**

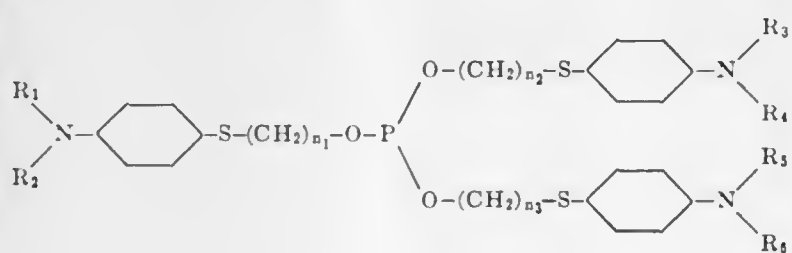
Hans Z. Lecher, Plainfield, N.J., and Harry Braus, Springdale, and Jay R. Woltermann, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Application Ser. No. 870,896, Oct. 16, 1969, which is a division of application Ser. No. 692,261, Dec. 21, 1967, now Patent No. 3,504,056. Divided and this application Oct. 16, 1969, Ser. No. 870,897  
Int. Cl. C07c 7/18; C07f 9/08, 45/58

U.S. Cl. 252—400

5 Claims

Stabilizer combinations are provided consisting essentially of tri(dialkylaminophenyl thioalkylene) phosphites having the formula:



in which  $n_1$ ,  $n_2$  and  $n_3$  are integers from two to about six; and  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$  and  $R_6$  are alkyl having from one about four carbon atoms, in combination with carbon black and/or a hindered phenol.

3,629,142

**REFERENCE STANDARD BLOOD SERUM FOR THE CALIBRATION OF AUTOMATIC BLOOD SERUM ANALYZING APPARATUS**

Edward P. Marbach, 4607 Marwood Drive, Los Angeles, Calif. 90065  
No Drawing. Filed Dec. 8, 1969, Ser. No. 883,286  
Int. Cl. G01n 31/22, 33/16

U.S. Cl. 252—408

5 Claims

A freeze-dried blood serum is provided for use as a reference standard in the calibration of automatic blood serum analyzing apparatus, comprising a human serum in which the levels of concentration of its constituents have been precisely adjusted, and which is specially processed for use in apparatus for the simultaneous analysis of the constituents of each of a succession of blood serum samples. The reference standard blood serum of the invention contains trihydroxymethylamine (Tris) carbonate so as to permit it to be reconstituted just prior to use with distilled water so as to restore a predetermined carbon

dioxide level in the reference serum. Alternately, the reference standard blood serum contains Tris, and is reconstituted with distilled water and carbon dioxide.

3,629,143

**REGENERATOR FOR METAL HALIDE SLUDGE CATALYST**

William S. Reveal, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.  
Filed Apr. 10, 1969, Ser. No. 815,128  
Int. Cl. B01j 11/02, 11/80

U.S. Cl. 252—411

1 Claim

Metal halide catalyst sludges can be restored to activity after a period of use by being introduced into a regenerator consisting of an outer vessel, a concentric draft tube within the vessel, means for supplying hydrogen and means for supplying heat to the space between the vessel and the draft tube, means for removing hydrogen above a liquid level maintained in the vessel, and means for introducing sludge and removing reactivated catalyst from the vessel.

3,629,144

**HEAVY METAL ACID SALT RECOVERY USING ANION EXCHANGE RESIN**

George A. Hahn, New Shrewsbury, N.J., and John H. La Rochelle, La Port, Tex., assignors to Shell Oil Company, New York, N.Y.  
No Drawing. Filed Aug. 8, 1969, Ser. No. 848,709  
Int. Cl. B01j 11/66

U.S. Cl. 252—412

2 Claims

Heavy metal acid salt epoxidation/hydroxylation catalysts, are recovered in a form suitable for direct recycle by contact of an aqueous solution of said catalysts with a bicarbonate-treated strongly basic anion exchange resin.

3,629,145

**METHOD FOR PREPARING CATALYSTS**

Kiyoshi Morikawa, Kanagawa, Etsuro Echigoya and Takayasu Shirasaki, Tokyo, and Itsuo Furuoya, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan  
No Drawing. Filed Aug. 15, 1968, Ser. No. 752,783  
Claims priority, application Japan, Aug. 16, 1967, 42/52,342; Aug. 19, 1967, 42/53,141; Sept. 8, 1967, 42/57,643

Int. Cl. B01j 11/82

U.S. Cl. 252—432

10 Claims

A supported palladium catalyst of high catalytic activity and excellent thermal stability is prepared by carrying out at least twice a series of process steps which consist of bringing an amorphous solid acid carrier (silica, alumina, etc.) containing acid sites into contact with a basic aqueous solution of a palladium amine or a palladium lower alkylamine complex—and, alternatively, also into contact with an aqueous solution of a water-soluble salt of a 3- or 4-valent metal (aluminum nitrate, titanium tetrachloride, etc.), and subjecting the thus-treated solid carrier to a thermal treatment (heating e.g. to 100 to 800° C.). If the starting solid carrier has no acid sites, as e.g. active carbon, acid sites are produced by treatment with oxyacid. The thus-obtained supported palladium catalyst is useful in inter alia the hydrogenation of a benzene nucleus.

3,629,146

**CATALYST IMPREGNATION METHOD**

Charles T. Adams, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.  
No Drawing. Filed Mar. 24, 1969, Ser. No. 810,029  
Int. Cl. B01j 11/82

U.S. Cl. 252—435

5 Claims

A method of preparing a supported hydrogenation metal catalyst containing high metal concentrations in a single

3,629,147

**OXIDATION CATALYST AND PROCESS**

Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.  
No Drawing. Application Feb. 16, 1966, Ser. No. 527,726, now Patent No. 3,530,176, which is a continuation-in-part of applications Ser. No. 483,802, Aug. 3, 1965, and Ser. No. 485,975, Aug. 13, 1965. This application Aug. 9, 1968, Ser. No. 847,747

The portion of the term of the patent subsequent to Jan. 11, 1983, has been disclaimed  
Int. Cl. B01j 11/82

U.S. Cl. 252—437

4 Claims

Catalysts containing manganese molybdate, tellurium oxide and a manganese phosphate are useful in converting propylene or isobutylene in the presence of oxygen to mixtures of acrolein and acrylic acid or methacrolein and methacrylic acid.

3,629,148

**IRON-MODIFIED BISMUTH PHOSPHOMOLYBDATE CATALYST**

Jurgen G. Dominik, Freeport, Tex., and Robert D. Preson, Bedford Heights, and Carl G. Wysocki, Fairview Park, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio  
No Drawing. Filed Sept. 24, 1969, Ser. No. 860,834  
Int. Cl. B01j 11/82

U.S. Cl. 252—437

2 Claims

The instant product is a remanufactured catalyst. Used or spent bismuth phosphomolybdate catalyst is reformulated with the addition of iron by comminuting said catalyst with sufficient water to form a paste, adding aqueous ammonium heptamolybdate solution to said paste to form a slurry, adding said slurry to a silica dispersion in water acidified with phosphoric acid, adding an iron salt in acidic solution to said slurry and homogeneously dispersing it therein to form a smooth mixture, spray-drying said mixture and calcining the spray-dried product.

3,629,149

**HYDROCARBON HYDROCONVERSION CATALYST**

Bernard F. Mulaskey, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
No Drawing. Filed Nov. 29, 1968, Ser. No. 780,233  
Int. Cl. B01j 11/74, 11/40

U.S. Cl. 252—439

5 Claims

A novel catalyst composition comprising a crystalline zeolitic aluminosilicate in association with from 2 to 15 weight percent nickel, or compounds thereof, and from 0.5 to 10 weight percent arsenic, or compounds thereof.

3,629,150

**PROCESS FOR MAKING ISOBUTENE POLYMERIZATION CATALYST FROM SILICA, ALUMINUM ALKYL AND A HALIDE**

Leslie Ernest Addy, Dollar, Scotland, assignor to BP Chemicals (U.K.) Limited, London, England  
No Drawing. Filed June 2, 1969, Ser. No. 829,762  
Claims priority, application Great Britain, May 31, 1968, 26,100/68

Int. Cl. B01j 11/78

U.S. Cl. 252—442

15 Claims

Catalysts suitable for polymerizing isobutene are made by reacting, under substantially anhydrous conditions, dehydrated silica having silanol groups with aluminium alkyl, and then with a hydrogen halide or an alkylhalide.



3,629,151

## OXYHALOGENATION CATALYSTS

Clarence O. Miller, Sulphur, La., and Charles G. McAlister, Linthicum Heights, Md., assignors to Cities Service Company, New York, N.Y.

No Drawing. Filed Oct. 18, 1968, Ser. No. 768,902

Int. Cl. B01j 11/82

U.S. Cl. 252—443

12 Claims

Processes are described for preparing thermally stable oxyhalogenation catalyst compositions having a copper silicide or copper-silicon alloy superstrate and a silicon carbide substrate. The unique stability of these catalysts under high temperature oxyhalogenation conditions is illustrated by the prolonged use of such material to catalyze the reaction of ethylene, oxygen and hydrogen chloride to produce 1,2-dichloroethane.

3,629,152

## PROCESS FOR PREPARING ALUMINA-COATED SILICA CATALYST MATERIAL AND THE MATERIAL SO PREPARED

John Francis Lindsley, Glenbrook, and William Eugene Sanborn, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 3, 1967, Ser. No. 672,442

Int. Cl. B01j 11/40

U.S. Cl. 252—455 R

10 Claims

A process for preparing alumina-coated silica catalyst materials is disclosed which comprises the homogenization of a mixture of silica gel containing aluminum salt in aqueous solution and subsequent precipitation of alumina on silica.

3,629,153

## PROCESS FOR PREPARING ALKALIZED ALUMINA

James N. Pryor, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 640,796, May 24, 1967. This application Feb. 12, 1969, Ser. No. 798,797

Int. Cl. B01j 11/06

U.S. Cl. 252—463

17 Claims

A process is provided for preparing an alkalized alumina solid adsorbent by reacting sodium aluminate with either ammonium carbonate or carbon dioxide to produce dawsonite  $[\text{NaAl}(\text{CO}_3)(\text{OH})_2]$  or  $\text{KAl}(\text{CO}_3)(\text{OH})_2$ , and optionally heating the dawsonite to convert it to an alkalized alumina comprising substantially  $\text{Al}_2\text{O}_3$  and an alkali metal.

3,629,154

## THIN, ELECTRICALLY CONDUCTIVE, NONPOROUS POLYMERIC FILM

Martin H. Johnson, Verona, Wis., assignor to ESB Incorporated

No Drawing. Continuation-in-part of application Ser. No. 504,198, Oct. 23, 1965. This application Oct. 30, 1969, Ser. No. 872,761

Int. Cl. H01b 1/02, 1/04

U.S. Cl. 252—511

5 Claims

A thin, electrically conductive, nonporous polymeric film containing from about 20 to about 40% by weight of an ethylene/vinyl acetate copolymer, up to about 10% by weight of polyisobutylene, and an electrically conductive ingredient. The film, which is unsupported, has a thickness of less than about 10 mils and is particularly adapted for use as an electrical connector in an electric

battery. When used as an electrical connector in a battery, the film should have a transverse electrical resistivity of less than about 5 ohm-cm. and a longitudinal electrical resistivity of less than about 2 ohm-cm.

3,629,155

## ELECTRONIC BISTABLE SEMICONDUCTOR SWITCHING ELEMENT AND METHOD OF MAKING SAME

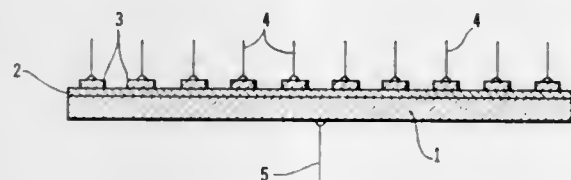
Knud Kristensen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation-in-part of applications, Ser. No. 593,404, and Ser. No. 593,478, both Nov. 10, 1966. This application Aug. 26, 1969, Ser. No. 865,544

Int. Cl. H01b 1/02; H01l 3/00; C22c 31/00

U.S. Cl. 252—512

5 Claims



It is found that as the semiconductor composition of an electronic bistable semiconductor switching element there may be employed sulfur or any other solid group VI element, preferably selenium, in admixture with antimony with less rigid control with respect to proportions than is conventional for stibnite switches provided that the composition is used in the form of a layer of a thickness no greater than 1 mm. It is found advantageous to provide the layer on an electrode which is of a highly thermally conductive material and has a cross-sectional area greater than the cross-sectional area of the layer in order to provide a heat sink to aid the dissipation of heat from the layer. A particular application of the invention is a thin-film store. A method is provided for making such a store by providing a film or layer of the semiconductor composition on a unitary electrode and heating the layer to crystallize it uniformly by the application of externally derived heat or by passing a current pulse through it, or by providing a plurality of individual electrodes on the exposed face of the layer and passing a current pulse through the layer between the unitary electrode and the individual electrodes to form crystalline channels in the composition along the paths of said pulses.

3,629,156

## ELECTRICAL RESISTORS COMPRISING RHOMBIC PLATINUM COBALT OXIDES

Robert D. Shannon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Aug. 16, 1968, Ser. No. 753,065, now Patent No. 3,514,414, which is a continuation-in-part of applications Ser. No. 561,336, and Ser. No. 612,775, both Jan. 31, 1967. Divided and this application Nov. 12, 1969, Ser. No. 876,031

Int. Cl. H01b 1/06

U.S. Cl. 252—518

9 Claims

Electrical resistors can be made by applying to a ceramic dielectric substrate, and firing, a composition of a rhombohedral platinum cobalt oxide having the space group  $R\bar{3}m$ . Usually, the oxide has the formula  $\text{Pt}_x\text{Co}_y\text{O}_z$ , in which each of  $x$  and  $y$  is about  $0.85 \pm 0.15$ , but it also can contain about 0.1–2.0% by weight of manganese in its

crystal lattice. In the latter case, the oxide has the formula  $\text{Pt}_x\text{Mn}_y\text{Co}_z\text{O}_2$ , in which  $x$  and  $y$  are as above, and  $z$  is a value from 0.004 to 0.11.

3,629,157

## FERRITE AND METHOD OF MANUFACTURING THE SAME

Marina Anatolievna Kharinskaya, Ul. Bukharestskaya 31, korp. 4, kv. 85, and Alexei Ivanovich Obratsov, prospekt Ju. Gagarina 85, kv. 35, both of Leningrad, U.S.S.R.

Filed July 23, 1969, Ser. No. 843,974

Int. Cl. C04b 35/00, 35/46

U.S. Cl. 252—62.59

2 Claims

Ferrite prepared from a stock mixture constituted of iron, calcium, vanadium and titanium oxides taken in the following proportions (mole percent):

Ferric oxide, $\text{Fe}_2\text{O}_3$	31.0–26.3
Calcium oxide, $\text{CaO}$	54.0–50.8
Vanadium pentoxide, $\text{V}_2\text{O}_5$	13.1–9.3
Titanium dioxide, $\text{TiO}_2$	13.6–1.8

and a method for the manufacture of said ferrite.

The ferrite thus prepared may find application for developing and manufacturing super-high frequency ferrite devices operating in the decimetric wave band under low-temperature conditions ( $77^\circ \text{K}$ ;  $4.2^\circ \text{K}$ ).

3,629,158

## PROCESS FOR CONTROLLING ELECTRICAL RESISTIVITY OF ORGANIC SEMICONDUCTORS

Evelio A. Perez-Albuera, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,837

U.S. Cl. H01l 3/24

U.S. Cl. 252—500

15 Claims

The electrical resistivity of certain organic semiconductors and semiconductor-containing elements is controlled by heating.

3,629,159

## REGENERATION OF SPENT ZINC HALIDE CATALYST USING PRELIMINARY HIGH PRESSURE HYDROGEN SOLVENT EXTRACTION

Everett Gorin, Robert T. Struck, and Metro D. Kulik, Pittsburgh, Pa., assignors of a fractional part interest to Consolidation Coal Company, Library, Pa., and to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,914

Int. Cl. B01j 11/80; C10g 1/06

U.S. Cl. 252—414

3 Claims

Spent zinc halide hydrocracking catalyst is contacted with a nonpolar hydrocarbon solvent in the presence of high pressure hydrogen to extract unconverted hydrocarbonaceous residue from the spent catalyst.

3,629,160

## NOVEL DIALKYL SULFOXIDE-ORGANO METALLIC CO-CATALYST SYSTEM AND THE POLYMERIZATION OF EPOXIDES THEREWITH

Leonard A. Tushaus, South Bloomington, Minn., assignor to Ashland Oil & Refining Company, Houston, Tex.

No Drawing. Filed Aug. 8, 1968, Ser. No. 751,050

Int. Cl. C08g 23/06, 23/14

U.S. Cl. 260—2

5 Claims

Epoxides, especially higher olefin oxides (e.g., dodecene oxide), are polymerized by heating in the presence of a co-catalyst system comprising (a) an organo-metallic compound of the formula  $\text{MeRR}'_x$ , in which Me is a Group II or III metal, R is hydrocarbyl, R' is hydrogen,

hydrocarbyl, alkoxy, or secondary amino, and  $x$  is the valency of Me minus one (e.g., triethylaluminum and diethyl zinc) and (b) a dialkyl sulfoxide (e.g., dimethylsulfoxide).

3,629,161

## IONENE MEMBRANE SEPARATOR

T. O. Paine, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Jovan Moacanin and Ho Yet Tom, both of Los Angeles, Calif.

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,781

Int. Cl. C08f 29/30, C08g 49/04

U.S. Cl. 260—2.1 E

11 Claims

A water-insoluble, cationic, permselective membrane comprising a hydrocarbon, quaternary nitrogen-containing ionene polymer cross-linked to a polyvinyl alcohol substrate.

3,629,162

## POLYURETHANE FOAMS AND PREPARATION OF SAME

Thomas Richardson and Gerald Orton Hustad, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed Feb. 3, 1970, Ser. No. 8,438

Int. Cl. C08g 22/44; C08h 1/00

U.S. Cl. 260—2.5

16 Claims

Polyurethane foams and method for their preparation wherein an organic polyisocyanate is reacted for foaming with a mixture of an organic polyol and whey.

3,629,163

## EPOXIDE RESIN CELLULAR PLASTICS AND THEIR MANUFACTURE

Ernst Nolken, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 5, 1969, Ser. No. 822,043

Claims priority, application Germany, May 13, 1968, P 17 70 400.6

Int. Cl. C08g 53/10

U.S. Cl. 260—2.5 EP

11 Claims

A process for producing cellular plastic materials by curing epoxide compounds having more than one epoxide group in the molecule which comprises carrying out the curing and foaming in the presence of mixtures of phosphorous acid with Lewis acids and in the presence of volatile expanding agents and optionally in the presence of pore regulating substances, reactive diluents and comonomers or mixtures of the last-mentioned substances, diluents and comonomers. The cellular plastics obtained may have either closed cells or open cells or simultaneously closed and open cells, the proportion of which is adjustable.

3,629,164

## FOAMED BLEND OF PROPANE-PRECIPITATED ASPHALT ETHYLENE-ACRYLATE/METHACRYLATE COPOLYMER AND POLYOL CROSS-LINKED IN-SITU

Wayne E. Smith, Overland Park, and Francis R. Galiano, Prairie Village, Kans., and Richard H. Havens, Kansas City, Mo., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed May 23, 1969, Ser. No. 827,147

Int. Cl. C08f 47/10, 45/52

U.S. Cl. 260—2.5 R

5 Claims

A tough, cohesive, non-tacky blend results when propane-precipitated asphalt is mixed with a copolymer of ethylene with a lower alkyl acrylate or methacrylate, such as methyl acrylate, and, optionally, a polyol, such as glycerine, which is cross-linked in situ to increase tensile strength. This blend is then foamed with conventional blowing agents.



3,629,165

**CONTROL OF POLYURETHANE FOAM PROCESS USING POLYSILOXANE POLYETHER COPOLYMER SURFACTANT**

Norman G. Holdstock, Scotia, N.Y., assignor to General Electric Company

No Drawing. Original application May 31, 1962, Ser. No. 198,710. Divided and this application Aug. 25, 1969, Ser. No. 870,259

Int. Cl. C08g 22/46, 53/08

U.S. Cl. 260—2.5 AH

2 Claims

A polysiloxane polyether copolymer, wherein the polysiloxane chain is joined to the polyether chain through carboxy alkyl radicals, is used as a polyurethane foam additive. The carboxy alkyl groups are attached to the silicon atoms through Si—C bonds which enhances the hydrolytic stability of the copolymer. The copolymers are produced by reacting carboxy alkyl containing polysiloxanes with hydroxy stopped polyethers.

3,629,166

**COATING COLOR, A COATED PAPER APPLIED WITH SAID COATING COLOR AND A PROCESS FOR PREPARING SAID COATED PAPER**

Shonosuke Takahashi, Yonago-shi, and Mitsuo Tanaka, Sakai-shi, Japan, assignors to Nippon Pulp Industry Co., Ltd., Tokyo, Japan, and Arakawa, Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

No Drawing. Filed Feb. 18, 1969, Ser. No. 800,293

Claims priority, application Japan, July 26, 1968, 43/52,424

Int. Cl. C08b 25/02; D21h 1/24, 1/28

U.S. Cl. 260—17.3

5 Claims

A water-insolubilized coated paper prepared by applying a coating color having pH over 8.0 to a paper, the coating color being prepared by subjecting an aqueous starch solution to cooking treatment together with amine modified urea formaldehyde resin in the presence of acid catalyst and mixing the water insolubilized starch solution thus obtained with pigment containing at least a part of alkaline pigment.

3,629,167

**TWO-PACKAGE EPOXY-URETHANE COATING COMPOSITION**

Roy A. Allen, Iselin, and George R. Somerville, Morris-town, N.J., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 31, 1969, Ser. No. 795,684

Int. Cl. C08g 45/12

U.S. Cl. 260—18

10 Claims

A two-package epoxy-urethane coating system having improved low temperature curing properties comprises: (1) a precondensate prepared by reacting a polymeric fatty acid, an amine and a polyepoxide having more than one vic-epoxy group and (2) an organic polyisocyanate (or polyisothiocyanate).

3,629,168

**DIAMINE-CURABLE POLYURETHANE COMPOSITIONS CONTAINING OLEIC ACID AS CATALYST**

William M. Ryan, Arcadia, Calif., assignor to The Dexter Corporation, Windsor Locks, Conn.

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,801

Int. Cl. C08g 22/34, 17/16, 22/16

U.S. Cl. 260—18 TN

8 Claims

Diamine cured polyurethane compositions having unusually long pot life while rapidly curing at elevated temperatures and having remarkable storage stability at —40° F. are prepared by combining a prepolymer of a di or poly isocyanate and a hydroxy terminated polyether or polyester having a molecular weight in the 150 to 3,000 range, said prepolymer containing about 2.5 to

10% by weight —NCO, with a lower alkylene bis anthranilic acid ester or a suspension of a lower alkylene bis anthranilic acid ester in an anhydrous diluent selected from the group consisting of plasticizers and co-curing glycols, the proportions of said prepolymer and hardener being such as to provide an NH<sub>2</sub>:NCO ratio of about 0.9:1 to 1.0:1, and oleic acid as a polyurethane catalyst. The prepolymer and hardener, if degassed to remove air and moisture, provide stable two-component resin systems having excellent shelf life. One component systems with exceptional storage stability are prepared by mixing the prepolymer and hardener, freezing the mixture at —40° F. and storing the resulting composition at —40° F.

3,629,169

**WATER-MODIFIED POLYESTER COMPOSITIONS**

Leon B. Bedighian, Los Angeles, Calif., assignor to Vistron Corporation, Cleveland, Ohio

No Drawing. Filed June 18, 1969, Ser. No. 834,497

Int. Cl. C08f 21/02, 21/04

U.S. Cl. 260—22 CB

9 Claims

Curable water-oil emulsions comprising a mixture of an unsaturated polyester, copolymerizable monomer, non-ionic emulsifier, water, a thixotropic thickener, a basic neutralizing agent and a polymerization initiator.

3,629,170

**THERMOPLASTIC RESIN COMPOSITION AND A METHOD FOR THE PRODUCTION THEREOF**

Saburo Yamanouchi, Kobe, Kiyoshi Yasuno, Ibaragi-shi, and Shuji Kitamura, Toyonaka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed May 5, 1969, Ser. No. 821,942

Claims priority, application Japan, Nov. 30, 1968, 43/87,956

Int. Cl. C08f 29/22

U.S. Cl. 260—23 XA

10 Claims

The thermoplastic resin composition of the present invention is a mixture of 99 to 10 parts by weight of a polyvinyl chloride resin and 1 to 90 parts by weight of an aromatic polysulfonic resin having superior heat resistance together with an improved impact strength, and is suitable for use as articles for chemical industries, construction materials, etc.

This thermoplastic resin composition is most advantageously produced by mixing polyvinyl chloride and aromatic polysulfone containing a stabilizing agent for polyvinyl chloride, such as dibutyl tin dilaurate, dibutyl tin maleate, tin mercaptide, lead oxide, tribasic lead sulfate, dibasic lead phosphite, dibasic lead stearate, cadmium stearate, barium stearate, alkaline earth silicates, hydroquinone or epoxide and a stabilizing agent for aromatic polysulfone, such as naphthalene thiol, benzimidazole, organic sulfides, imides, phosphates or organo tin compounds, adding a low molecular weight compound such as an aromatic hydrocarbon, a chlorinated hydrocarbon, a ketone, an ester or an ether to the mixture and thereafter removing the low molecular weight compound.

3,629,171

**WAX COMPOSITIONS CONTAINING AN ETHYLENE-VINYL ACETATE COPOLYMER, AND ORGANIC ACID AND A BUTYL RUBBER**

Charles J. Kremer, Brookhaven, Pa., and Dominic Apikos, Laurel Springs, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed May 9, 1969, Ser. No. 823,522

Int. Cl. C08d 9/08; C08f 15/00

U.S. Cl. 260—23.7 B

13 Claims

This invention relates to wax compositions containing a wax, an ethylene-vinyl acetate copolymer, an acid component and a solid butyl rubber. These compositions

have highly improved resistance to stress cracking and can be utilized as hot melt coatings for items such as paperboard and corrugated board for use in the food packaging industry.

3,629,172

**ELASTOMERS FROM HIGH-VINYL CONJUGATED DIENE POLYMERS**

Faber B. Jones, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 12, 1969, Ser. No. 823,973

Int. Cl. C08g 22/06

U.S. Cl. 260—23.7

13 Claims

Hydrogenation of high-vinyl telechelic polymers substantially reduces the number of olefinic double bonds and yet maintains a substantially liquid material. Terminating with isocyanate end groups and curing or coupling with polyfunctional agents results in novel products having high resistance to oxidation, weathering, and cracking.

3,629,173

**ACCELERATED CURING SYSTEM FOR DEPOLYMERIZED RUBBER**

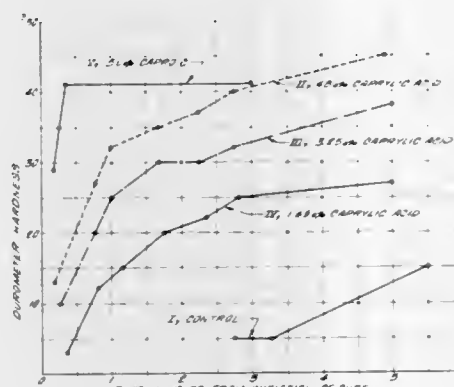
Albert R. Miller, Somerdale, N.J., Douglass E. Brooks, Ambler, Pa., assignors to E. F. Houghton &amp; Co., Philadelphia, Pa.

Filed Mar. 5, 1969, Ser. No. 804,492

Int. Cl. C08d 9/14; C08f 21/04; C08h 9/00

U.S. Cl. 260—23.7

8 Claims



The curing of depolymerized polyisoprene rubber can be accelerated by the addition of a saturated C<sub>4</sub>–C<sub>12</sub> monobasic aliphatic acid, or the amine or ammonium salts of such acids, to the p-quinonedioxime-lead dioxide curing system for depolymerized rubber.

3,629,174

**HEAT-STABILIZED AND LIGHTFAST POLYAMIDES**

Francesco Siclari, Cesano Maderno, Pierluigi Perazzoni, Palazzolo Milanese, and Pier Giorgio Silvestroni, Cesano Maderno, Italy, assignors to Snia Viscosa Società Nazionale Industria Applicazioni S.p.A., Milan, Italy

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,245

Claims priority, application Italy, Mar. 6, 1969, 13,744/69

Int. Cl. C08g 51/26, 51/58, 51/62

U.S. Cl. 260—29.1 R

8 Claims

In the manufacture of polyamides for industrial uses in general, such as for the production of fibers, yarns, moulded articles and the like, the improvement is herein disclosed, which consists in the concurrent addition of a stabilizing copper compound and of an allyl halide, in which the hydrogen atom of the double-bonded methylene grouping is possibly substituted by an aliphatic radi-

3,629,175

**METHOD OF PREPARING DISPERSIONS OF CARBOXYL-CONTAINING POLYMERS**

Carl Moore, Midland, Mich., and James B. Louch, North Hampton, Va., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 12, 1969, Ser. No. 832,869

Int. Cl. C08d 41/00

U.S. Cl. 260—29.6 E

12 Claims

Dispersions of carboxyl-containing polymers such as 1,2-polybutadiene having terminal carboxyl groups are prepared by dispersing the polymer in an at least partially water-miscible alcohol, such as ethanol, which is characterized by being incapable of solubilizing the polymer, and contacting the carboxyl-containing polymer with an alkaline compound in water such as sodium hydroxide to neutralize at least some of the carboxyl groups of the polymer and thereby form the dispersion. All or a part of the alcohol can be separated from the dispersion if desired such as by distillation under vacuum. The dispersions can be used to provide protective coatings on metal or non-metal substrates.

3,629,176

**NON-RESINOUS COMPOSITIONS CONTAINING A UREA-FORMALDEHYDE REACTION PRODUCT AND MELAMINE**

Donald S. Shriver, Hopewell, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 101,071, Apr. 6, 1961. This application Aug. 10, 1964, Ser. No. 388,692

Int. Cl. C08g 9/24, 37/30

U.S. Cl. 260—29.4

3 Claims

A stable slurry comprising a substantially unreacted mixture of (1) a preformed non-resinous urea-formaldehyde reaction product reacted to the polymethyl urea stage, having a mol ratio of from 4.0 to 7.3 mols of formaldehyde per mol of urea and a pH of at least 7.0 is mixed with melamine or urea and melamine in an amount sufficient to reduce the formaldehyde to NH<sub>2</sub> group ratio to 0.7 to 1.0 mol of formaldehyde for every mol of NH<sub>2</sub> group present. The amount of melamine present in the mixture is at least 0.5% by weight of the total urea plus formaldehyde present.

3,629,177

**PROCESS FOR PREPARING AN AQUEOUS SOLUTION OF A POLYVINYL ALCOHOL-FORMALDEHYDE-UREA POLYMER FOR USE IN WOOD FINISHING COMPOSITIONS**

Gilbert F. Hoffmann, Mukwonago, Wis., assignor to O'Neil Duro Company, Milwaukee, Wis.

No Drawing. Continuation-in-part of application Ser. No. 792,856, Jan. 21, 1969, which is a continuation-in-part of application Ser. No. 759,508, Sept. 12, 1968. This application Feb. 28, 1969, Ser. No. 803,440

Int. Cl. C08g 13/00; C09d 3/52

U.S. Cl. 260—29.4 UA

14 Claims

A water soluble surface finishing composition that produces a clear, plastic finish having high abrasion resistance, comprising an aqueous solution containing a stabilized water soluble urea-formaldehyde vinyl alcohol polymer, a water soluble surface tension reducing agent, and a silicone oil, the composition having a pH above 7; and a wood product coated with said finishing composition.



3,629,178

**PROCESS FOR INCREASING THE WET STRENGTH OF CELLULOSIC MATERIALS**

Donald E. Jefferson, Sykesville, and Nelson S. Marans, Silver Spring, Md., assignors to W. R. Grace &amp; Co., New York, N.Y.

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,366

Int. Cl. C08g 9/28, 37/30

U.S. Cl. 260—29.4 R

1 Claim

This invention is directed to a resin solution useful for increasing the wet strength of cellulosic material, said solution being prepared by: (a) admixing over a period of about 0.1–15 minutes dicyandiamide, nitrilotriacetone, and an alkali metal hydroxide in an inert liquid medium; (b) maintaining the resulting mixture at about 50–100° C. for about 10–600 minutes to form a solid condensation product; (c) separating the solid condensation product and reacting it with formaldehyde in a mixture of water and a monohydric alcohol having 1–4 carbon atoms to form the resin solution; and (d) recovering the resin solution.

This invention is also directed to the preparation and use of said resin solution and to a composition of matter comprising cellulosic material which has been treated with resin.

3,629,179

**VINYL ESTER POLYMER EMULSIONS FREE OF CARBOXYL GROUPS STABILIZED WITH A ZINC COMPOUND**

John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 552,696, May 25, 1966. This application May 22, 1969, Ser. No. 827,041

Int. Cl. C08f 45/54

U.S. Cl. 260—29.6

9 Claims

Aqueous emulsions of vinyl ester polymers which are free of carboxyl (COOH) groups, including the homopolymers of vinyl esters of 2 to 8 carbon monobasic alkanolic acids, and various copolymers thereof, which emulsions have a pH of 5 to 7 and contain from 0.05 to 1% by weight of zinc oxide, zinc hydroxide, zinc carbonate or a zinc salt of a 2 to 18 carbon aliphatic carboxylic acid having an ionization constant in water not higher than that of acetic acid. The zinc compound buffers the emulsion and stabilizes it against any substantial increase in viscosity during storage. The preferred emulsions are emulsions of polyvinyl acetate having a pH of 6 to 7 and containing 0.2 to 0.6% by weight zinc oxide.

3,629,180

**PROCESS FOR THE PRODUCTION OF A THERMALLY STABLE POLYMER**

Naoya Yoda, Masaru Kurihara, Noriaki Dogoshi, and Ryoji Nakanishi, Kamakura-shi, Kanagawa-ken, and Hirosuke Yumoto, Masaaki Itoga, Hiroshi Mochizuki, Toshiya Yoshii, and Saburo Fujita, Ohtsu-shi, Shiga-ken, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 23, 1969, Ser. No. 793,458

Claims priority, application Japan, Jan. 23, 1968, 43/3,492; May 27, 1968, 43/35,614; May 28, 1968, 43/35,696

Int. Cl. C08g 51/50

U.S. Cl. 260—30.6

4 Claims

A process for producing shapable polymeric compositions having improved mechanical properties is described which involves the heating of a polymer containing poly-

amide-acid recurring units in an organic polymerization solvent, which solvent also contains an amount of a phosphorous compound in the range of from about .01% by weight to about 30% by weight until imide ring closure is effected.

3,629,181

**NEW ADDUCT CURING AGENTS FROM POLY-EPOXIDES AND CYCLOALIPHATIC DIAMINES**

Alfred Heer, Basel, Wolfgang Schneider, Allschwil, and Bernd Dreher, Aesch, Basel-Land, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed July 28, 1969, Ser. No. 845,547

Claims priority, application Switzerland, Aug. 2, 1968, 11,639/68

Int. Cl. C08g 17/13, 51/40

U.S. Cl. 260—31.8 E

12 Claims

New adduct curing agents from a polyphenol-polyglycidyl ether (special liquid diomethane-diglycidyl ethers, such as Epi Z) and a cycloaliphatic di-primary diamine ("isophoronediamine", 4,4' - methylene-bis-(2-methyl-cyclohexylamine)) with an excess of 1.5 to 2.7 mols of diamine being used per 1 epoxide equivalent of the polyglycidyl ether. By addition of diluents of low volatility (dibutyl phthalate, polypropylene glycol or trimethylhexamethylenediamine) liquid curing agent formulations are obtained for "solvent-free" lacquers based on liquid epoxide resins. As a rule phenols (diomethane, "tris-Mannich") are further added as accelerators to the curing agent formulations. The lacquers formulated with the new adduct curing agents, in contrast to known lacquers based on cycloaliphatic diamines as such, do not tend to surface faults of the films when cured at room temperature.

3,629,182

**POLYURETHANE BONDING MATERIAL FOR PLASTIC LAMINATES**

Luther M. Roseland, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation of application Ser. No. 358,241, Apr. 8, 1964. This application Nov. 20, 1969, Ser. No. 871,705

Int. Cl. B44f 1/00; C08c 11/32, 45/34

U.S. Cl. 260—33.4

6 Claims

Adhesive formulation particularly adapted as a binding agent to bond together plastic films selected from the group consisting of polystyrene and polycarbonate, consisting essentially of a liquid urethane polymer, about 5 to about 30 parts by weight of a polypropylene glycol per 100 parts of the urethane polymer and from about 0.5 to about 60 parts by weight of a polyamine or polyol curing agent for the urethane polymer.

3,629,183

**COMPOSITIONS OF VINYL CONTAINING DI-ORGANOPOLYSILOXANE GUMS AND BORON CONTAINING ORGANO-POLYSILOXANES**

Jacques Proriot and Daniel Semanaz, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed May 2, 1969, Ser. No. 821,451

Int. Cl. C08g 51/04

U.S. Cl. 260—37

13 Claims

This invention discloses organopolysiloxane compositions which vulcanize to form adhesive elastomers on heating comprising a diorganopolysiloxane gum containing vinyl groups, an elastic boron-containing organopolysiloxane gum, a porogenic agent, a filler, an organic peroxide, and optionally a plasticiser.

3,629,184

**WHISKER REINFORCED BINDERS FOR LAMINATED COMPOSITES AND ADHESIVES**

Antoine Kawam, Washington, D.C., and Michael V. Ernest, Baltimore, Md., assignors to W. R. Grace &amp; Co., New York, N.Y.

Filed Sept. 23, 1968, Ser. No. 761,579

Int. Cl. C08g 51/04

U.S. Cl. 260—38

7 Claims

A method of preparing laminates, adhesives, and molding materials in which B-staging of resin is carried out before combination with the reinforcing fabric.

3,629,185

**METALLIZATION OF INSULATING SUBSTRATES**  
Frederick W. Schneble, Jr., and Edward John Leech, Oyster Bay, and John Francis McCormack, Roslyn Heights, N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

Original application Jan. 3, 1967, Ser. No. 606,918.

Divided and this application Oct. 17, 1969, Ser. No. 871,009

Int. Cl. C08g 51/04

U.S. Cl. 260—40 R

13 Claims

There are provided molding compositions comprising particles of resin having incorporated therewith fillers catalytic to the deposition of electroless metals. The catalytic fillers are made by replacing the cations in particulate base exchangeable materials with a cation of a metal selected from Groups 1 B and 8 of the Periodic Table of Elements. Articles molded from the compositions and the walls of holes drilled in them are metallized on being immersed in electroless metal deposition baths.

3,629,186

**POLYOLEFIN PIGMENT CONCENTRATES**

David C. Hull, Hugh J. Hagemeyer, Jr., and Raymond L. Etter, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation of application Ser. No. 314,874, Oct. 9, 1963. This application May 19, 1969, Ser. No. 827,120

Int. Cl. C08f 29/12

U.S. Cl. 260—41 R

4 Claims

A concentrate for dispersing particulate materials, such as pigment, in polymeric masses includes low molecular weight crystalline polypropylene having an inherent viscosity within the range of 0.2 to 1.1 and amorphous polypropylene having a viscosity at 150° F. of from 5,000 to 300,000 cps.

3,629,187

**DENTAL COMPOSITIONS CONTAINING ADDUCT OF 2,2' - PROPANE BIS 3-(4-PHENOXY)-1,2-HYDROXY PROPANE - 1 - METHACRYLATE AND ISOCYANATE**

Duncan E. Waller, Milford, Del., assignor to Dentsply International Inc., York, Pa.

No Drawing. Filed June 25, 1969, Ser. No. 836,650

Int. Cl. A61k 5/02; C08f 45/10

U.S. Cl. 260—41 R

29 Claims

Dental compositions are provided, including dental cements, dental cavity liners and composite restorative materials, wherein an adduct of 2,2-propane bis[3-(4-phenoxy)-1,2-hydroxy propane-1-methacrylate] and an isocyanate or diisocyanate is present in the liquid and or solid phase constituting such dental product.

Such adducts provide low polymerization shrinkage, good copolymerization and cross-linking capabilities, freedom from irritation in the oral environment and exceptional strength characteristics.

3,629,188

**POLY ( $\omega$ -AMINO CARBOXYLIC ACID) COMPOSITIONS STABILIZED WITH A COPPER SALT AND IODOFORM**

Alex Krieger, Emmenbrucke, Switzerland, assignor to Societe de la Viscose Suisse, Emmenbrucke, Switzerland

No Drawing. Filed July 1, 1965, Ser. No. 468,920

Claims priority, application Switzerland, July 15, 1964, 9,270/64

Int. Cl. C08g 51/58

U.S. Cl. 260—45.75

4 Claims

Polyamide compositions suitable for textile filament, fibers and yarns are stabilized against degradation by incorporating copper and iodine-containing compounds.

3,629,189

**ENHANCEMENT OF RESISTANCE OF OLEFIN POLYMERS TO COPPER-CATALYZED OXIDATIVE DEGRADATION**

Motonobu Minagawa, Koshigaya, and Kenichi Nakagawa, Tokyo, Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed May 27, 1969, Ser. No. 828,365

Claims priority, application Japan, May 30, 1968, 43/36,929

Int. Cl. C08f 45/60

U.S. Cl. 260—23

14 Claims

Heterocyclic hydrazines and lactams are provided which are useful in the enhancement of the resistance of olefin polymers to copper-catalyzed oxidative deterioration.

In addition, there are also provided stabilizer compositions consisting essentially of at least one olefin polymer stabilizer and heterocyclic hydrazines or lactams; olefin polymer compositions, such as propylene polymer compositions, containing heterocyclic hydrazines or lactams; and a process for enhancing the resistance of olefin polymers to copper-catalyzed degradation by incorporation of such compounds or of such stabilizer compositions.

3,629,190

**BENZODIAZOBOROLES AS STABILIZERS FOR HYDROCARBON POLYMERS**

Allen K. Sparks, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 623,805, Mar. 17, 1967. This application July 22, 1969, Ser. No. 843,852

Int. Cl. C08c 11/66; C08d 11/64; C08f 45/60

U.S. Cl. 260—45.8

8 Claims

Stabilizing organic substrates against deterioration during transportation, storage and/or use by incorporating therein a 2-hydrocarbyl-1,3-di-secalkyl or di-cycloalkyl-2H-1,3,2-benzodiazaborole.

3,629,191

**UV-ABSORBING HYDROXYPHENYL-BENZOTRIAZOLES**

Hansjorg Heller, Riehen, Jean Rody, Basel, and Ernst Keller, Binningen, Basel-Land, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 544,834, Apr. 25, 1966, which is a continuation-in-part of applications Ser. No. 202,664, Ser. No. 202,665, Ser. No. 202,666, Ser. No. 202,667, and Ser. No. 202,668, all June 15, 1962, Ser. No. 328,480, Dec. 6, 1963, and Ser. No. 535,740, Mar. 21, 1966. This application Dec. 11 1969, Ser. No. 884,363

Claims priority, application Switzerland, June 16, 1961, 7,099/61

Int. Cl. C08f 45/60; C08g 51/60

U.S. Cl. 260—45.8

12 Claims

Light-stabilizers for polymeric light-sensitive products and materials are provided which pertain to the class of



2-(2'-hydroxyphenyl)-benzotriazoles. Compositions of the compounds and the light-sensitive materials are also provided.

3,629,192

# POLYMERS STABILIZED WITH SUBSTITUTED HYDROXYPHENYL BENZOTRIAZOLES

Hansjorg Heller, Riehen, Jean Rody, Basel, and Ernst Keller, Binningen, Basel-Land, Switzerland, assignors to J. R. Geigy AG, Basel, Switzerland

No Drawing. Division of application Ser. No. 544,834, Apr. 25, 1966, which is a continuation-in-part of applications Ser. Nos. 202,664 through 202,668, all June 15, 1962, Ser. No. 328,480, Dec. 6, 1963, and Ser. No. 535,740, Mar. 21, 1966. Divided and this application Dec. 11, 1969, Ser. No. 884,304

Claims priority, application Switzerland, June 16, 1961, 7,097/61

Int. Cl. C08b 27/68; C08f 45/60; C08g 51/60  
U.S. Cl. 260—45.8 14 Claims

Light-stabilizers for polymeric light-sensitive products and materials are provided which pertain to the class of 2-(2'-hydroxyphenyl)-benzotriazoles. Compositions of the compounds and the light-sensitive materials are also provided.

3,629,193

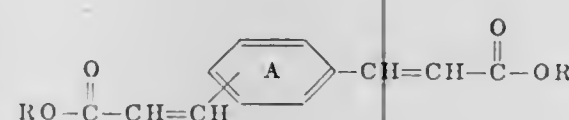
# ULTRAVIOLET-ABSORPTION AGENTS FOR POLYCARBONATES

Wolfgang Metzner, Krefeld, and Gunter Peilstocker, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 13, 1970, Ser. No. 11,313  
Claims priority, application Germany, Feb. 25, 1969, P 19 09 380.4

Int. Cl. C08g 51/58  
U.S. Cl. 260—45.85 2 Claims

Polycarbonate materials are protected against the effect of ultraviolet rays by incorporation of materials of the formula



in which

R stands for an optionally substituted alkyl, cycloalkyl, aralkyl or aryl radical, and the ring A may contain further substituents.

3,629,194

# POLYOLEFINS STABILIZED WITH MERCAPTO ACID ESTERS

Akiyoshi Onishi, Yokkaichi, and Naohiko Fukuoka, Kobe, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, and Shiro Kasei Kaisha Limited, Osaka-shi, Osaka-fu, Japan

No Drawing. Filed June 8, 1970, Ser. No. 44,656  
Claims priority, application Japan, June 11, 1969, 44/45,912; Nov. 15, 1969, 44/91,184; Dec. 27, 1969, 45/104,890, 45/104,891, 45/104,892; Mar. 31, 1970, 45/27,132, 45/27,133

Int. Cl. C08f 45/58  
U.S. Cl. 260—45.85 7 Claims

Polyolefin resin compositions each stabilized against thermal aging, which compositions each contains a stabilizing amount of an ester of alkylthio-propionic or alkylthio-butyric acid with a polyol, the polyol being limited to five groups, singly or in combination with a phenolic antioxidant.

3,629,195

# ANACARDIC ACID REACTED WITH TRIS (HYDROXYETHYL) ISOCYANURATE

Manuel A. Jordan, Schenectady, and Kenneth C. Petersen, Scotia, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,842  
Int. Cl. C08g 5/12

U.S. Cl. 260—46 14 Claims

Anacardic acid, preferably in the form of cashew nut shell liquid, is reacted with tris (hydroxyethyl) isocyanurate. The product is useful as a brake lining binder or can be reacted with an aldehyde to form friction modifier particles.

3,629,196

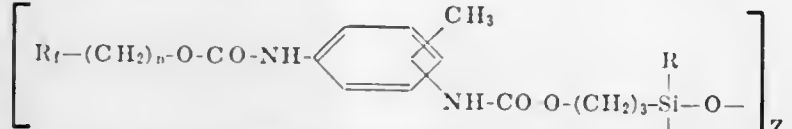
# FLUORINE AND SILICON CONTAINING POLYCONDENSATES

Helmut Hahn, Burghausen (Salzach), Siegfried Rebsdat, Altötting, Kasimir Ruchlak, Burghausen (Alz), and Erich Schuierer, Burghausen (Salzach), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 21, 1969, Ser. No. 852,087  
Claims priority, application Germany, Aug. 30, 1968, P 17 95 262.4

Int. Cl. C08f 11/04  
U.S. Cl. 260—46.5 E 4 Claims

Polycondensates of the formula



in which R<sub>1</sub> is perfluoroalkyl of 6 to 12 carbon atoms, R is a group of the formula —O— or lower alkyl, n is an integer of 1 to 4 and Z is a number of from about 10 to about 100, are useful as oleo- and hydrophobic agents for textile materials, especially for wool and cotton.

3,629,197

# MONOMERS AND POLYMERS OF ACRYLOYLOXY-PHENOL AND DERIVATIVES THEREOF

Roy Thomas Stiehl, Jr., Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 642,735, June 1, 1967. This application Apr. 1, 1969, Ser. No. 812,392

Int. Cl. C08f 19/00; C07c 69/52  
U.S. Cl. 260—47 U 7 Claims

Acryloyloxyphenol and derivatives thereof containing chloro or hydrocarbyl substituents, and homopolymers and copolymers thereof with other unsaturated monomers, are provided which are useful as antioxidants in shaped or extruded articles, especially textiles.

3,629,198

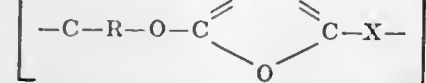
# POLYOXADIAZOLES

Henry W. Steinmann, Sparta, N.J., assignor to Celanese Corporation, New York, N.Y.

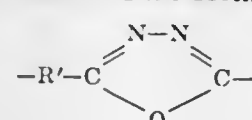
No Drawing. Filed Oct. 6, 1969, Ser. No. 864,214  
Int. Cl. C08g 33/04

U.S. Cl. 260—47 CP 14 Claims

Polymers represented by the formula:



wherein R is alkylene or arylene, n is an integer, X is an oxadiazolyl radical attached through a ring carbon, or a covalent bond or a radical of the formula:



wherein R' is alkylene or arylene. Polymers of this class are characterized by good high temperature properties and they are thus of particular utility in polymer applications where heat stability is required. The invention provides new precursors which can be converted to the aforescribed polymers.

3,629,199

# BENZALDEHYDE CROSSLINKED ALKYL ARYL PHOSPHITE

Kenneth C. Petersen and Charles A. Blowers, Scotia, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y.

No Drawing. Filed July 14, 1969, Ser. No. 841,595  
Int. Cl. C08g 11/12, 5/00, 13/00

U.S. Cl. 260—53 R 6 Claims

Resinous products are prepared by reacting benzaldehyde with a triaryl phosphite or a mixture of a triaryl phosphite with mono or diaryl phosphites and free phenol. The products are useful as antioxidants for polymers.

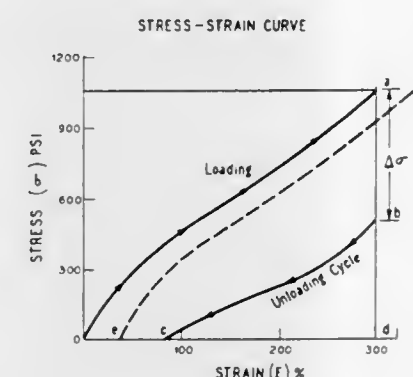
3,629,200

# REACTION PRODUCTS OF OLEFINICALLY UNSATURATED DIISOCYANATES (II)

Thomas K. Brotherton and John W. Lynn, Charleston, W. Va., assignors to Union Carbide Corporation

Continuation of application Ser. No. 718,031, Apr. 2, 1968, which is a division of application Ser. No. 409,921, Nov. 9, 1964, now Patent No. 3,247,346, which in turn is a continuation-in-part of application Ser. No. 212,480, July 25, 1962. This application Aug. 7, 1969, Ser. No. 849,596

Int. Cl. C08g 22/18  
U.S. Cl. 260—75 8 Claims



Process which involves reacting unsaturated diester diisocyanates as exemplified by bis(2-isocyanatoethyl) fumarate with active hydrogen compounds, e.g., polyols, polyamines, etc. The resulting products are useful in the preparation of "blocked" diisocyanates, prepolymers, cast and thermoplastic polyurethane resins, urethane foams, reinforced plastic products, elastic fibers, and others.

3,629,201

# POLYESTERIMIDES FROM DICYANO DIAMIDE-HYDRAZINE REACTION PRODUCTS

Arnold Döbelstein and Hans-Dieter Hille, Wuppertal-Elberfeld, and Horst Holfort, Wuppertal-Langerfeld, Germany, assignors to Dr. Kurt Herberts & Co. vorm Otto Lous Herberts, Christbusch, Wuppertal-Barman, Germany

No Drawing. Filed Sept. 3, 1969, Ser. No. 855,039  
Claims priority, application Germany, July 23, 1969, P 19 37 311.6

Int. Cl. C08g 20/32  
U.S. Cl. 260—75 N 8 Claims

A process for the production of polyester resins containing 5-membered imide rings formed when heated to temperatures above 250° C. from polyhydric alcohols,

polyvalent aromatic carboxylic acids and polyvalent amino compounds, optionally in admixture with other aliphatic and/or aromatic polyvalent carboxylic acids, or from reactive derivatives of these compounds. A portion of the polyvalent amino compounds is the reaction product of dicyano diamide with hydrazine.

3,629,202

# TREATING POLYESTERS WITH ORGANIC ACIDS FOR IMPROVED STABILITY

Russell Gilkey and Thomas Hamilton Wicker, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 12, 1969, Ser. No. 857,589  
Int. Cl. C08g 17/003

U.S. Cl. 260—75 T 14 Claims

Polyesters of improved thermal and hydrolytic stability obtained by treating the polymers containing residues of metal condensation catalysts employed in their preparation with an acidic organic compound having an ionization constant of about  $2 \times 10^{-1}$  to  $2.5 \times 10^{-6}$  to remove the residues.

3,629,203

# PROCESS FOR THE MANUFACTURE OF POLY-β-ALANINE COMPRISING REACTING ACRYLONITRILE WITH FORMIC ACID

Theodor Volker and Hanspeter Hugener, Fribourg, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

No Drawing. Filed Feb. 18, 1970, Ser. No. 12,463  
Claims priority, application Switzerland, Feb. 19, 1969, 2,491/69

Int. Cl. C08g 20/06  
U.S. Cl. 260—78 A 11 Claims

Poly-β-alanine is produced by reacting acrylonitrile with formic acid at a temperature of 150°–300° C. (preferably 200°–240° C.) under pressure.

3,629,204

# EPOXY RESIN COMPOSITION AND ITS PRODUCTION

Mitsuo Yoshihara, Takatsuki, and Kazunori Mizutani, Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

No Drawing. Filed Aug. 29, 1969, Ser. No. 854,318  
Claims priority, application Japan, Sept. 3, 1968, 43/63,231

Int. Cl. C08g 23/08  
U.S. Cl. 260—78.4 EP 9 Claims

Novel curable epoxy resin compositions with high arc and tracking resistance are provided by the present invention. The novel resins are prepared by reaction of a dicarboxylic acid diglycidyl ester with an aliphatic or alicyclic carboxylic acid ester which is then reacted with an aliphatic or alicyclic dicarboxylic acid anhydride. The product is then cured to obtain a viscous composition which may be further cured and molded.

3,629,205

# THIOL DERIVATIVES OF OLEFIN-MALEIC ANHYDRIDE COPOLYMERS

Walter Stamm, Tarrytown, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 25, 1968, Ser. No. 770,798  
Int. Cl. C08f 27/06, 45/58

U.S. Cl. 260—78.5 12 Claims

Olefin-maleic anhydride copolymers are provided wherein a portion of the anhydride moieties are converted to thio anhydride moieties. Other thio derivatives are also provided including the thio acids. These compounds are effective as stabilizers in vinyl type resins, particularly vinyl chloride polymers and can also serve as chelating agents.



3,629,206

**CURING OF LIQUID POLYTHIOPOLYMERCAPTAN POLYMERS**

Harry B. Stephenson and William J. Clapson, Joplin, Mo., and Edwin L. Wolkar, Baxter Springs, Kans., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio  
No Drawing. Filed July 16, 1969, Ser. No. 842,328  
Int. Cl. C08g 25/00

U.S. Cl. 260—79

12 Claims

Curing of liquid organic polythiopolymercaptan polymers with curing systems which are capable of affecting rapid cures at room temperatures and which will produce white or light-colored elastomeric or plastic products amenable to tinting or coloring. The curing system consists essentially of an alkyl thiuram polysulfide and at least one lead salt selected from the group consisting of a basic lead salt, a normal lead salt and mixtures thereof.

3,629,207

**PHOSPHORUS-CONTAINING POLYMERS**

Denis Coleman, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.  
No Drawing. Original application May 5, 1966, Ser. No. 547,768, now Patent No. 3,517,087. Divided and this application Sept. 12, 1969, Ser. No. 857,550  
Int. Cl. C08g 33/02, 33/16

U.S. Cl. 260—79.3 R

6 Claims

In an inert neutral organic solvent substantially free from water, tris-aziridinyl phosphine oxide and sulfide react with phosphoric acid and with sulfuric acid to form a precipitate of a 1:1 addition polymer which is insoluble, stable at elevated temperatures, and finely divided. Such novel polymers are useful as fire-retardant in fibers in which they can be dispersed by incorporation in the spin dope prior to extrusion.

3,629,208

**N-AMINOALKYL THIAZOLESULFENAMIDES AS VULCANIZATION ACCELERATORS**

John Joseph D'Amico, Akron, and Darrell Dexter Mullins, Norton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

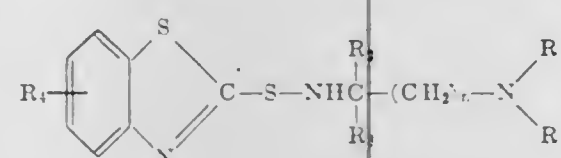
No Drawing. Filed June 18, 1969, Ser. No. 834,513

Int. Cl. C08f 27/06, 45/60

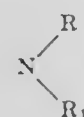
U.S. Cl. 260—79.5 B

9 Claims

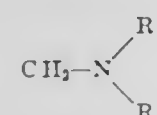
Benzothiazolyl sulfenamides having the formula



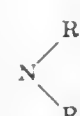
wherein R is hydrogen or lower alkyl, R<sub>1</sub> is lower alkyl, cycloalkyl, aralkyl, unsubstituted aryl, aryl substituted by alkyl, hydroxy, arylamino, alkoxy, chloro, fluoro, bromo or iodo or



together form a heterocyclic ring or substituted heterocyclic ring where the substituent is alkyl or benzothiazolylthio, R<sub>2</sub> is hydrogen, lower alkyl,



where



is the same as above, R<sub>3</sub> is hydrogen, lower alkyl or taken together with the carbon to which they are attached R<sub>2</sub> and R<sub>3</sub> represent lower cycloalkyl of four to eight carbon atoms, R<sub>4</sub> is hydrogen, lower alkyl, alkoxy, nitro, phenyl, chloro, fluoro, bromo, iodo, and n is one or two, which sulfenamides accelerate the vulcanization of rubber.

3,629,209

**INTERPOLYMERS OF ETHYLENE AND ACRYLAMIDES**

David W. McDonald, Ladue, Mo., and George A. Mortimer, La Marque, Tex., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 458,365, May 24, 1965, which is a continuation-in-part of application Ser. No. 390,177, Aug. 17, 1964, both now abandoned. This application Aug. 28, 1968, Ser. No. 755,836

Int. Cl. C08f 15/04

U.S. Cl. 260—80.73

3 Claims

Hard, tough, transparent interpolymers of ethylene consisting essentially of 99.5 to 75 mol percent of ethylene and from about 0.5 to about 25.0 mol percent of a compound selected from the group consisting of N-isopropylacrylamide, N-tert-butylacrylamide and mixtures thereof.

3,629,210

**THIOPEROXYDIPHOSPHATES AND COPPER SALTS AS VULCANIZATION ACCELERATORS**

David Apotheker and Sylvain M. Hirsty, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 11, 1969, Ser. No. 815,489

Int. Cl. C08f 27/06; C08c 11/34, 11/66

U.S. Cl. 260—79.5

6 Claims

A new class of vulcanization promoters for vulcanizing sulfur-curable hydrocarbon backbone elastomers in the presence of sulfur and a thioperoxydiphosphate accelerator. The promoters are cupric salts of organic acids and especially of the thioacids: 2-mercaptobenzothiazole, O,O-diester of phosphorodithioic acid, O-esters of arylphosphonodithioic acids, arylthiocarboxylic acids, and certain carboxylic acids. A new vulcanization process using organic cupric salts as promoters.

3,629,211

**COPOLYMERS OF STYRENE AND PROCESS FOR PREPARATION THEREOF**

Meguma Nozaki, Niihama-shi, Japan, assignor to Sumitomo Chemical Co., Ltd., Osaka-shi, Osaka, Japan  
No Drawing. Filed June 30, 1970, Ser. No. 51,386

Claims priority, application Japan, June 30, 1969,

44/51,941

Int. Cl. C08f 17/00

U.S. Cl. 260—80.78

16 Claims

Copolymers of styrene having improved heat resistance and mechanical properties are provided by copolymerizing a styrene monomer with an m-alkyl-α-alkylstyrene and a p-alkyl-α-alkylstyrene. A mixture of a predominantly styrene monomer and another copolymerizable vinyl monomer can also be used in place of the styrene monomer alone. The combined amount of the nuclear-substituted alkyl-α-alkylstyrenes is 100–10, preferably 70–25, parts by weight per 100 parts by weight of the styrene monomer or mixture. The weight ratio of the m-alkyl-α-alkylstyrene to the p-alkyl-α-alkylstyrene ranges from 35:65 to 85:15, preferably from 45:55 to 75:25.

3,629,212

**REACTIVATION OF ZIEGLER-TYPE CATALYSTS**  
Kurt Benedikter, Karl Otto Hagel, and Klaus Kiepert, Marl, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany

No Drawing. Continuation of abandoned application Ser. No. 548,051, May 6, 1966. This application Aug. 26, 1969, Ser. No. 853,627

Claims priority, application Germany, May 8, 1965,

P 15 70 352.3

Int. Cl. C08f 1/56, 15/04

U.S. Cl. 260—80.78

6 Claims

Ziegler catalysts are reactivated after the catalysts are either partially or preferably completely inactive by the addition of a variety of reactivators, notably sulfur compounds, such as thionyl chloride. The preferred process comprises at least three serially connected reactors wherein the reactivators are continuously added to all but the first reactor.

3,629,213

**METHOD OF PREPARING CONJUGATED DIENE POLYMERS BY USING ORGANOLITHIUM BARIUM-CONTAINING COMPOUND CATALYST SYSTEM**

Akira Onishi, Ryota Fujio, Minoru Kojima, and Hiroshi Kawamoto, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed June 3, 1969, Ser. No. 830,136

Claims priority, application Japan, June 8, 1968,

43/38,979; Aug. 21, 1968, 43/59,220

Int. Cl. C08d 3/08

U.S. Cl. 260—82.1

24 Claims

Conjugated diene polymers having a desirable microstructure for a rubbery elastomer is produced by contacting at least one conjugated diene or a mixture of a conjugated diene with a vinyl-substituted aromatic hydrocarbon with a catalyst consisting of an organolithium compound and a barium compound. In the polymers of at least one conjugated diene, the polymers having a low content of 1,2- or 3,4-structure and a high trans-1,4-structure in conjugated diene unit can be obtained by adjusting the ratio of the catalyst components and in the copolymers of a conjugated diene and a vinyl-substituted aromatic hydrocarbon, the copolymers having a microstructure of a low vinyl content and a high randomness can be formed.

3,629,214

**PROCESS FOR THE COPOLYMERIZATION OF VINYLTRIALKOXYSILANES**

Robert Buning, Oberlar, and Hans-Joachim Kotzsch, Rheinfelden, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Sept. 5, 1968, Ser. No. 758,194

Claims priority, application Germany, Sept. 8, 1967,

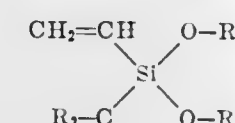
D 54,067

Int. Cl. C08f 15/02

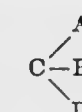
U.S. Cl. 260—85.5

12 Claims

Process for the preparation of copolymers of vinyltrialkoxysilanes with other suitable monomers comprising contacting a vinyltri-tert-alkoxy silane having the formula:



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> each represent tertiary alkyl of the formula:



wherein A, B and D are each alkyl, with another monomer copolymerizable therewith under polymerization conditions.

The resultant novel copolymers are free of crosslinking, are characterized by Si—C bonds which are interconnected by C—C bonds. They are thermoplastic and can be easily worked in extruders, deep drawing machines, rolling mills, etc.

3,629,215

**1:1 ALTERNATING COPOLYMERS OF SUBSTITUTED CONJUGATED VINYL COMPOUNDS AND OLEFINIC COMPOUNDS AND PROCESS FOR PRODUCING THE SAME**

Kohei Nakaguchi, Osaka, Shohachi Kawasumi, Kobe, Masaaki Hirooka, Ibaraki-shi, Hiroshi Yabuuchi, Takatsuki-shi, and Hiroyoshi Takao, Ashiya-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Continuation of application Ser. No. 567,353, July 25, 1966. This application Oct. 31, 1969, Ser. No. 871,781

Claims priority, application Japan, July 30, 1965,

40/46,495

Int. Cl. C08f 3/40, 3/62, 3/74

U.S. Cl. 260—85.5 HC

41 Claims

An alternating copolymer consists of [A] a terminally unsaturated olefinic compound, for example, an α-olefin, an isoolefin, or a halogenated olefinic compound (vinyl chloride, vinylidene chloride, allyl chloride or the like) and [B] a substituted conjugated vinyl compound, such as a substituted acrylonitrile or a substituted acrylic acid derivative (esters, amides, acids, acid halides, ketones, acrolein and the like) which has a substituent, such as a hydrocarbon, halogenated hydrocarbon or halogen substituent on the α- or β-position. Said alternating copolymer can be prepared by subjecting said monomers to copolymerization with an organoaluminum halide or an organoboron halide or a product of reaction between an organic compound of a metal of Groups IIb, IIIb and IVb of the Periodic Table and a halide of a metal of Groups IIIb and IVb of the Periodic Table in the presence of at least said substituted conjugated vinyl compound, at least one of said organic compound and halide being aluminum or boron-containing compound.

3,629,216

**PROCESS FOR THE POLYMERIZATION OF OLEFINS**

Koichiro Iwasaki and Kazuo Yamaguchi, Tokyo, Junichi Matsuura, Kanagawa-ken, Masayoshi Hasuo, Tokyo, and Kazuhisa Kojima, Kanagawa-ken, Japan, assignors to Mitsubishi Chemical Industries Limited

No Drawing. Filed May 7, 1969, Ser. No. 822,741

Claims priority, application Japan, May 14, 1968,

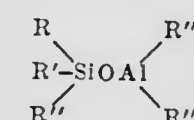
43/32,072

Int. Cl. C08f 1/66, 15/40, 3/06

U.S. Cl. 260—88.2

10 Claims

The catalyst of the invention comprises a first and a second catalyst component. The first catalyst component is prepared by immersing at least one of a heat-resistant metal oxide selected from the group consisting of silica and silica-alumina into an aqueous solution of chromium trioxide, drying the immersed metal oxide and then calcining it in a gaseous oxygen atmosphere at a temperature ranging from 500° to 1000° C. The second catalyst component comprises a pentaalkylsiloxalane having the formula:



wherein R, R', R'', R''' and R'''' are each an alkyl group having 1–10 carbon atoms, and the atomic ratio of silicon in the pentaalkylsiloxalane to chromium in the chromium oxide is in the range of 0.01–500 in terms of Si/Cr.



3,629,217

**PROCESS AND APPARATUS FOR THE CONTINUOUS PREPARATION OF A SPINNABLE SOLUTION OF ACRYLONITRILE POLYMERS**  
Georges Balitrand, Caluire, and Andre Mison, Jean Roget, and Philippe Tarbouriech, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed July 28, 1969, Ser. No. 845,297

Claims priority, application France, July 30, 1968, 161,208

Int. Cl. C08f 3/76; B01j 1/00

U.S. Cl. 260—88.7

6 Claims



Polyacrylonitrile solutions suitable for spinning are advantageously produced by solution polymerisation in a reactor having an axial shaft carrying discs separating the reactor into separate reaction zones, turbines for stirring the zones separately, and scrapers for the upper part of the reactor.

3,629,218

**PROCESS FOR THE PREPARATION OF POLYVINYL FLUORIDE HAVING LOW K-VALUES**

Gerhard Bier, Troisdorf, Werner Trautvetter, Spich, and Gregor Weisgerber, Ittenbach, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany  
No Drawing. Filed Mar. 24, 1969, Ser. No. 810,445  
Claims priority, application Germany, Mar. 28, 1968, P 17 70 071.9

Int. Cl. C08f 3/22

U.S. Cl. 260—92.1

7 Claims

Process for the preparation of polyvinyl fluoride which comprises polymerizing vinyl fluoride in aqueous phase at a temperature above the critical temperature of vinyl fluoride, in the presence of a water soluble polymerization catalyst and 0.05 to 0.5 wt. percent of trans-1,2-dichloroethylene based on the vinyl fluoride.

3,629,219

**PROCESS FOR INCREASING THE SURFACE AREA OF GRANULAR POLYTETRAFLUOROETHYLENE RESIN**

Richard B. Esker, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed Oct. 9, 1968, Ser. No. 766,314

Int. Cl. C08f 3/24

U.S. Cl. 260—92.1

8 Claims

Tetrafluoroethylene is polymerized to granular polymer in an aqueous polymerization system containing free radical initiator and dispersing agent which produces polymer of increased specific surface area. Titration of the buffer into the system during polymerization or elimination of the buffer entirely further increases the specific surface area of the granular polymer produced.

3,629,220

**HOMOPOLYMERIZATION OF VINYL CHLORIDE WITH ACYL SULFONYL PEROXIDE INITIATOR**  
Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation

No Drawing. Filed June 9, 1969, Ser. No. 831,740

Int. Cl. C08f 1/62, 3/30

U.S. Cl. 260—92.8

21 Claims

Vinyl chloride is polymerized at a temperature below about +20° C. to solid homopolymer, using an initiator system of acyl sulfonyl peroxide, certain amines and, optionally, reducing agent. Example: Suspension polymerization of vinyl chloride at 0° C. for 16 hours gave 95% conversion using acetyl t-butylsulfonyl peroxide, ascorbic acid, and N,N-dimethylaniline, in weight parts of 1/0.44/0.06 per 100 parts by weight of monomer. In the absence of ascorbic acid, an 82% conversion is obtained. The sulfonyl peroxide alone gives 30% conversion.

3,629,221

**PROCESS FOR MANUFACTURING POLYMERS OF DICYCLOPENTADIENE DERIVATIVES**

Morimasa Arakawa, Ashiya, Akisato Katanosaka, Osaka, and Masafumi Chikazawa, Kyoto, Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka-shi, Japan

No Drawing. Filed June 2, 1970, Ser. No. 42,866

Claims priority, application Japan, June 5, 1969, 44/44,485

Int. Cl. C08f 5/00

U.S. Cl. 260—93.1

5 Claims

A process for manufacturing a polymer of dicyclopentadiene derivative comprises hydrogenating dicyclopentadiene to produce dihydrodicyclopentadiene and polymerizing the resultant dihydrodicyclopentadiene in the presence of a metal halide catalyst.

3,629,222

**OLEFIN POLYMERIZATION CATALYSTS**

Harry W. Coover, Jr., and Frederick B. Joyner, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 23, 1961, Ser. No. 90,961

Int. Cl. C08f 3/02

U.S. Cl. 260—93.7

2 Claims

Catalyst for the production of solid, crystalline  $\alpha$ -monoolefinic hydrocarbon polymers comprising (1) a compound selected from the group consisting of halides and lower alkoxides of a transition metal selected from the group consisting of titanium, zirconium, vanadium, chromium and molybdenum, (2) at least one component selected from the following: (a) a metal from Groups Ia, II and IIIa of the Periodic Table, alkyl and hydride derivatives of the metals in Groups Ia, II and IIIa of the Periodic Table and complex metal hydrides of aluminum and alkali metal; (b) organo-aluminum halides having the formula  $R_mAlX_n$  and  $R_3Al_2X_3$  wherein R is a hydrocarbon radical selected from the group consisting of lower alkyl, cycloalkyl, phenyl and tolyl, X is a halogen selected from the group consisting of chlorine and bromine and m and n are integers whose sum is equivalent to the valence of aluminum; and (c) a polymeric reaction product of aluminum and a methylene halide and (3) a third component which is N,N-dimethylthioacetamide, ethyl thiocyanate, tribenzylphosphine oxide, pyridine-N-oxide, 2,3-octadione, diphenyl disulfide, N,N'-diphenylformamidine, dithioamide,  $\beta$ -chloroethyl ether, tetramethylthiourea, o-tolyl isocyanate, nitrosobenzene, trimethylsulfonium iodide, tetramethylphosphonium bromide, pyrazine, malononitrile, phenylantimony oxide, phenylarsenic oxide, tetramethyldiarsine, nitrobenzene, 2-nitropropane, diphenyl disulfide, azoxybenzene, azobenzene, phosphazobenzene, ethyl thiolacetate, phenyl isothiocyanate, arsenobenzene, acetone phenylhydrazone, triphenylstibine sulfide, tetramethyldistibine and arsenophosphobenzene.

3,629,223

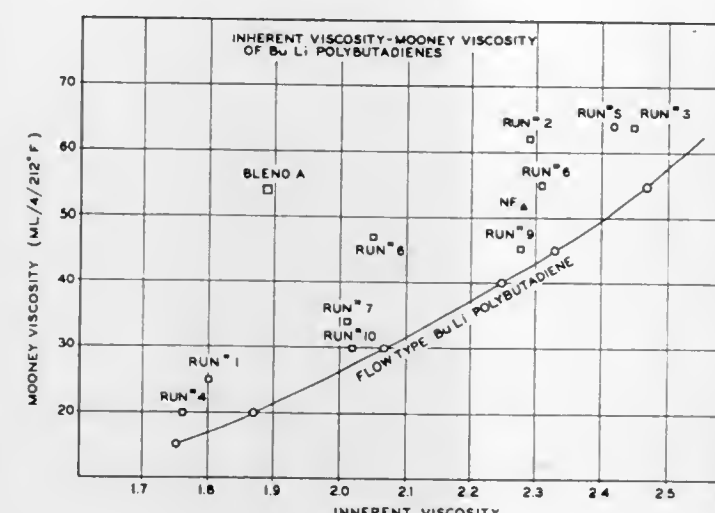
**POLYMER AND PROCESS**

Norman F. Keckler, Stow, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio  
Continuation of abandoned application Ser. No. 601,159, Dec. 12, 1966. This application Sept. 29, 1969, Ser. No. 863,019

Int. Cl. C08d 3/06, 3/08; C08f 3/16

U.S. Cl. 260—94.2

1 Claim



1,3-butadiene which contains at least 400 p.p.m. of 1,2-butadiene (or its equivalent in alpha-acetylenes, carbonyls or propadiene) is polymerized at a temperature of 315° F. or higher with a lithium catalyst.

3,629,224

**AQUEOUS PHASE POLYMERIZATION OF ETHYLENE**

Enrico Cernia and Arturo Rio, Colleferro, Rome, and Natale Ercoli Malacari and Corrado Mancini, Milan, Italy, assignors to Societa Asfalti Bitumi Cementi e Derivati, S.p.A., Rome, Italy

No Drawing. Continuation-in-part of application Ser. No. 436,645, Mar. 2, 1965. This application June 3, 1969, Ser. No. 830,111

Claims priority, application Italy, Mar. 10, 1964, 5,195/64

Int. Cl. C08f 1/60, 3/06

U.S. Cl. 260—94.9 A

7 Claims

Ethylene is polymerized by contacting and agitating gaseous ethylene with an aqueous solution containing a low concentration of a free radical initiator and a nonionic surfactant in a concentration below its critical micelle concentration, at a temperature below 100° C. and under a pressure of about 10 to 100 atmospheres for a period of time of about 1/2 to about 8 hours. The molecular weight of the product increases with increasing periods of polymerization. Polyethylene having a high degree of linearity, high purity and a narrow distribution of molecular weight over the range of about 50,000 to 350,000 is obtained by the process.

3,629,225

**REDUCTION OF SULFUR ACTIVITY OF SULFURIZED ALKYL PHENOLS**

Nylen L. Allphin, Jr., Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,497

Int. Cl. C07g 17/00; C10m 1/38

U.S. Cl. 260—137

2 Claims

The sulfur activity of sulfurized alkyl phenol lubricating oil additives towards silver is reduced without reduction in the activity of the additive by treatment of the sulfurized alkyl phenol lubricating oil additive with a trivalent phosphorous compound.

3,629,226

**CURABLE COMPOSITIONS OF MATTER**

Friedrich Lohse, Allschwil, Rolf Schmid, Munchenstein, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland

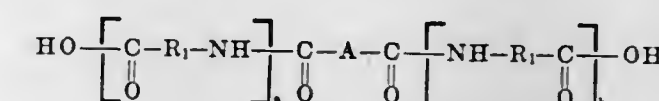
No Drawing. Filed Jan. 27, 1969, Ser. No. 794,382  
Claims priority, application Switzerland, Jan. 31, 1968, 1,470/68; Sept. 5, 1968, 13,325/68

Int. Cl. C08g 45/14, 45/12

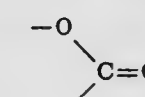
U.S. Cl. 260—835

17 Claims

Compositions which can be converted to rubber-elastic plastic products on warming, characterised in that they contain long-chain polyester-polyamide-dicarboxylic acids of formula



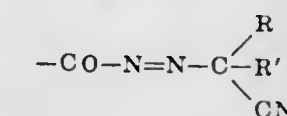
wherein R<sub>1</sub> represents a branched or unbranched alkylene residue having 2 to 11 carbon atoms in the linear chain, preferably the pentamethylene residue, and a and b denote zero or an integer, with the sum (a+b) being at least 1 and at most 8, and wherein A denotes a branched or unbranched hydrocarbon chain interrupted by at least two ester groups



wherein, in the structural unit of the polyester residue A, the number of carbon atoms in hydrocarbon residues divided by the number of oxygen bridges is 3 to 32, wherein furthermore the total number of carbon atoms present in hydrocarbon residues in the residue A is at least 10, and wherein at least 1.0 and at most 7.0 equivalents of amide groups per kg. are present in the polyester-polyamide-dicarboxylic acid mentioned, and also diperoxide compounds, with 0.6 to 1.2, preferably 0.8 to 1.0, equivalents of carboxyl groups being present per 1 equivalent of epoxide groups.

3,629,227

**AZOACYL COMPOUNDS CONTAINING A**



GROUP

Walter Meckel, Dusseldorf, and Erwin Muller, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,212  
Claims priority, application Germany, Sept. 28, 1967, F 53,613

Int. Cl. C07c 107/00; C09b 27/00

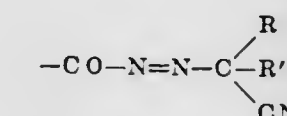
U.S. Cl. 260—174

6 Claims

Azoacyl compounds having the formula



wherein Y represents a group of the formula



in which R and R' each individually is alkyl, with the proviso that R and R' when taken together with the carbon atom to which they are attached, represent a cycloaliphatic radical, and X is selected from the group consisting of alkyl, aryl, substituted aryl which is substituted with 1–2 substituents selected from the group consisting of alkyl, halo and a Y group, aliphatic, such aliphatic which is interrupted by a hetero atom, and such aliphatic which is substituted with a Y group. The azoacyl com-



pounds are useful as blowing agents for foaming plastic materials such as crepe rubber, polyvinyl chloride, and the like.

### 3,629,228 NON-CORROSIVE SILOXANE VULCANIZABLE AT ROOM TEMPERATURE

Robert C. Hartlein, Midland, and Carl R. Olson, Freeland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,290

Int. Cl. C08k 1/66

U.S. Cl. 260—185 6 Claims  
A room temperature vulcanizable alkoxy siloxane block copolymer of a polydiorganosiloxane block and a monoorganosiloxane block being endblocked with monoorganodialkoxysiloxy units is non-corrosive toward metals and is useful when cured as a direct resistant coating.

### 3,629,229 WATER SOLUBLE BASIC ALUMINUM POLY- HYDROXYL HYDROCARBON COMPLEXES

Horst W. Schmank, Ringgold, Ga., assignor to Chatterm Chemicals, Division of Chatterm Drug & Chemical Company, Chattanooga, Tenn.

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,119

Int. Cl. C07c 47/18

U.S. Cl. 260—209 R 7 Claims  
This invention relates to water soluble aluminum-polyhydroxyl hydrocarbon complexes in which a cationic moiety is loosely bonded to the reaction product between aluminum hydroxide and a polyhydroxyl hydrocarbon such as a sugar.

The compositions of the present invention are particularly useful as soluble antacids, as textile treating agents, as intermediates for the preparation of other aluminum compounds, as gelling agents, water purifiers and paint and ink additives.

### 3,629,230 QUATERNIZATION WITH ALKYLENE OXIDES

Bjorn Gunnar Folke Soderqvist, Uppsala, Sweden, assignor to Pharmacia Fine Chemicals AB, Uppsala, Sweden

No Drawing. Continuation-in-part of abandoned application Ser. No. 539,572, Apr. 1, 1966. This application Sept. 10, 1969, Ser. No. 856,815

Claims priority, application Sweden, Apr. 2, 1965, 4,254/65

Int. Cl. C08b 19/08, 29/28

U.S. Cl. 260—209 D 7 Claims

Novel method for producing quaternization products of amino group-substituted cellulose and of amino group-substituted hydrophilic, water-swellaable and water-insoluble copolymerizates of polyhydroxy compounds with bifunctional substances. These quaternization products have a high degree of quaternization, preferably amounting to at least about 80 percent. The novel products are preferably, but not solely, intended for use in grain form for ion-exchange chromatography.

### 3,629,231 DERIVATIVES OF GLYCRRHETINIC ACID

Leslie Hough, Wimbledon, London, John Cameron Turner, West Wickham, Kent, and Anthony William Lewis, London, England, assignors to Biorex Laboratories Limited, London, England

No Drawing. Filed May 5, 1969, Ser. No. 821,988

Claims priority, application Great Britain, May 23, 1968, 24,705/68; Nov. 11, 1968, 53,327/68; Mar. 3, 1969, 11,169/69

Int. Cl. C07c 47/18

U.S. Cl. 260—210 R 7 Claims  
The present invention is concerned with new derivatives of glycyrrhetic acid and with the preparation there-

of. The new derivatives according to the present invention have been found to possess extremely good anti-inflammatory properties, while having very low toxicities.

### 3,629,232 2'-O-ALKANOYL-4'-ALKANOYLOXY DERIVATIVES OF ERYTHROMYCIN

Peter Hadley Jones, Lake Forest, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Aug. 19, 1969, Ser. No. 854,807

Int. Cl. C07c 47/18

U.S. Cl. 260—210 E 3 Claims  
The 2'-O-alkanoyl-4'-alkanoyloxy derivatives of erythromycin A and B are prepared by reacting 4'-hydroxy-erythromycin A or B with an appropriate acid anhydride. The resulting products have antibiotic activity against *Staphylococcus aureus* Smith.

### 3,629,233 PROCESS FOR PURIFYING ERYTHROMYCIN

Shigeo Fujita and Akihiko Takatsu, Tokyo, and Kunitoyo Shibuya, Minami-Saitama-gun, Japan, assignors to Kaken Kagaku Kabushiku Kaisha, Tokyo, Japan

No Drawing. Filed Aug. 26, 1969, Ser. No. 853,209

Claims priority, application Japan, Oct. 15, 1968, 43/74,691

Int. Cl. C07c 47/18

U.S. Cl. 260—210 E 5 Claims

Erythromycin-containing broth filtrate, or other crude aqueous solutions containing erythromycin, is passed over a porous type cation-exchange resin, the resin is washed with a dilute aqueous solution of a water-soluble alcohol, and the erythromycin is eluted from the resin with an alkaline-concentrated aqueous solution of a water-soluble alcohol. Crystals of erythromycin are obtained in high yield.

### 3,629,234 ESTRADIOL-17 $\beta$ -RHAMNOSIDES

Wolfgang Eberlein, Biberach (Riss), Joachim Heider, Warthausen-Oberhofen, and Hans Machleidt and Gunther Engelhardt, Biberach (Riss), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

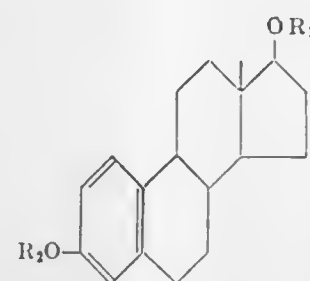
No Drawing. Filed May 1, 1969, Ser. No. 821,558

Claims priority, application Germany, May 3, 1968, P 17 68 350.0-42

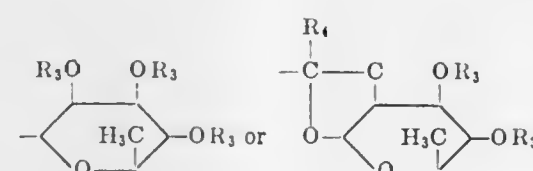
Int. Cl. C07c 173/00

U.S. Cl. 260—210.5 9 Claims

Estrogenic estradiol-17 $\beta$ -rhamnosides of the formula



wherein R<sub>1</sub> is



where

R<sub>3</sub> is hydrogen or lower alkanoyl, preferably acetyl, and R<sub>4</sub> is lower alkyl, preferably methyl, and R<sub>2</sub> is hydrogen, lower alkyl, lower alkanoyl, benzyl, tetrahydropyranyl or MeO<sub>3</sub>S—, where Me is an alkali metal; the compounds are useful for the treatment of the menopausal syndrome, amenorrhea, endometritis and colpitis.

### 3,629,235 PROCESS FOR ISOLATING AN INTERFERON INDUCER AND THE PRODUCT PER SE

George P. Lampson, Hatfield, Arthur K. Field, North Wales, and Alfred A. Tytell, Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 632,240, Apr. 20, 1967. This application Feb. 12, 1969, Ser. No. 798,800

Int. Cl. C12d 13/06

U.S. Cl. 260—211.5 9 Claims

Process for isolating a nucleic acid from the mycelium of *Penicillium funiculosum* which has grown in a synthetic culture media. The nucleic acid per se is claimed. This nucleic acid acts as an inducer to stimulate the production of interferon when administered to living animals, including humans, or when added to living animal cells growing in a nutrient media.

### 3,629,236 METHOD FOR THE PRODUCTION OF 2-MERCAPTOINOSINE

Mikio Honjo, Kinichi Imai, and Kunio Kobayashi, Osaka-fu, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Aug. 14, 1969, Ser. No. 850,246

Claims priority, application Japan, Aug. 21, 1968, 43/59,690

Int. Cl. C07d 51/54

U.S. Cl. 260—211.5 R 4 Claims

2-mercaptinosine is obtained in a high yield by reacting under mild reaction conditions 5-amino-1- $\beta$ -D-ribofuranosyl-4-imidazolecarboxamide with an isothiocyanate having the formula:



wherein R stands for phenyl or halophenyl.

### 3,629,237 COMPOSITIONS USEFUL AS ENTERIC COATINGS AND METHOD FOR PREPARING ACID PHTHAL- ATES OF CELLULOSE ETHERS FOR THEM

Shunichi Koyanagi, Kinya Ogawa, and Akira Yamamoto, Niigata-ken, Japan, assignors to Shinetsu Chemical Company, Chiyoda-ku, Tokyo, Japan

No Drawing. Filed Sept. 2, 1969, Ser. No. 854,789

Claims priority, application Japan, Sept. 12, 1968, 43/65,949, 43/65,950; Mar. 10, 1969, 44/18,152

Int. Cl. C08b 11/00

U.S. Cl. 260—226 5 Claims

Acid phthalate of cellulose ethers represented by the general formula:



where R<sup>1</sup> is a hydroxyalkyl group of 3 or 4 carbon atoms, R<sup>2</sup>, hydrogen or an alkyl group of 1 or 2 carbon atoms, m and n are positive integers, and A is residual cellulose structure which ethers are readily soluble in weak alkaline solution, besides possessing high solubility in organic solvents and excellent resistance to water; they are useful as enteric coatings, and drugs coated with them can stand long storage and are readily soluble upon passing into the intestines, thereby enhancing the effect of the drugs.

### 3,629,238 NOVEL GLUCURONIDES OF 3-INDOLYLALIPHATIC ACID DERIVATIVES

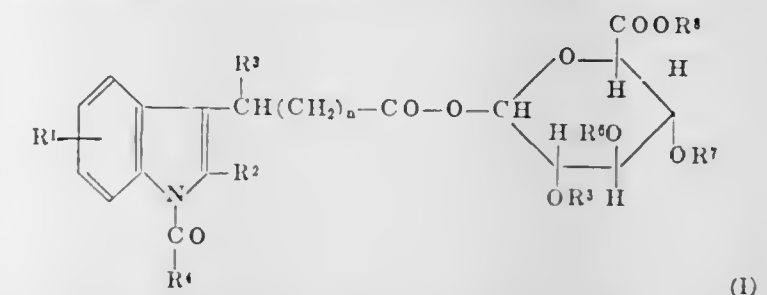
Seitetsu Arasaki, Minoo-shi, Atsushi Wakimura, Takarazuka-shi, Hisao Yamamoto, Nishinomiya-shi, and Shigeo Inaba, Takarazuka-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,327

Int. Cl. C07c 69/32

U.S. Cl. 260—234 6 Claims

Glucuronides of 3-indolylaliphatic acid derivatives represented by the formula,



wherein R<sup>1</sup> is hydrogen, lower alkyl, lower alkoxy, lower alkylthio or halogen, R<sup>2</sup> and R<sup>3</sup> are individually hydrogen, phenyl or lower alkyl, R<sup>4</sup> is pyridyl or styryl, R<sup>5</sup>, R<sup>6</sup> and R<sup>7</sup> are individually hydrogen or acetyl, R<sup>8</sup> is hydrogen or lower alkyl, and n is 0, 1 or 2. The novel glucuronides of 3-indolylaliphatic acid derivatives have prominent anti-inflammatory action.

### 3,629,239 PROCESS FOR PREPARING AZIRIDINE DERIVATIVES

Keizo Kitahonoki, Ikoma-gun, and Katsumi Kotera, Michima-gun, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 510,046, Nov. 26, 1965. This application Sept. 3, 1969, Ser. No. 855,019

Claims priority, application Japan, Nov. 26, 1964, 39/66,755; Aug. 13, 1965, 40/49,466

Int. Cl. C07d 23/02, 23/06, 31/42

U.S. Cl. 260—239 E 6 Claims

Novel process for preparing aziridine derivatives which comprises reducing an oxime compound with a metallic hydride complex in an inert solvent.

### 3,629,240 17 $\beta$ -(1-CYCLOALKENYL) OXY-2 $\alpha$ ,3 $\alpha$ -EPITHIO- 5 $\alpha$ -ANDROSTANES

Taichiro Komeno, Osaka-shi, Japan, assignor to Shinogi & Co., Ltd., Osaka, Japan

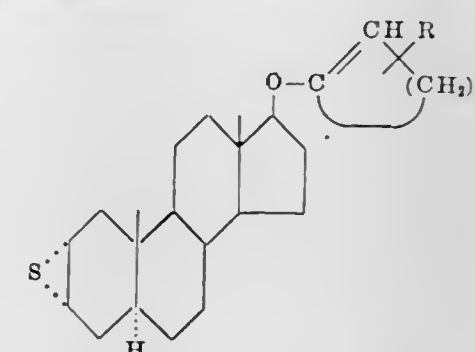
No Drawing. Filed July 22, 1969, Ser. No. 843,759

Claims priority, application Japan, Aug. 26, 1968, 43/53,254

Int. Cl. C07c 173/00

U.S. Cl. 260—239.5 10 Claims

Hormonal (strong myogenic, anti-estrogenic, etc.) 17 $\beta$ -(1-cycloalkenyl)oxy-2 $\alpha$ ,3 $\alpha$ -epithio-5 $\alpha$ -androstane compounds of the formula:



wherein R represents a hydrogen atom or a lower alkyl group and n is an integer of from 3 to 5, the medicine containing them and processes for preparation thereof.



3,629,241

## TEXTILE OPTICAL BRIGHTENERS

Horst-Jürgen Krause and Manfred Dohr, Düsseldorf-Holt-hausen, Germany, assignors to Henkel & Cie G.m.b.H., Düsseldorf, Germany

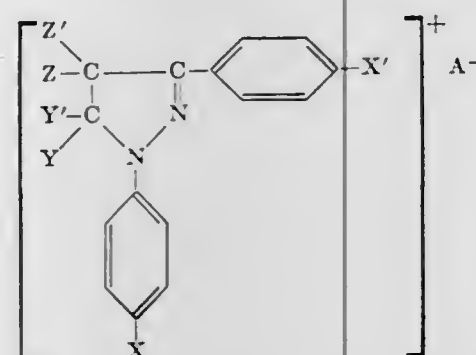
No Drawing. Filed June 26, 1969, Ser. No. 836,959  
Claims priority, application Germany, July 2, 1968,  
P 17 70 773.2

Int. Cl. C07d 49/10

U.S. Cl. 260—239.9

4 Claims

An optical brightener for textiles having the formula

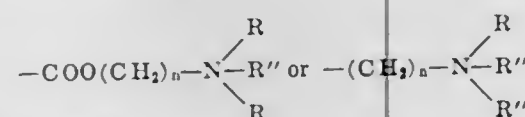


wherein

X is  $-\text{SO}_2\text{NH}_2$ ,  $-\text{SO}_2\text{R}$ ,  $-\text{SO}_2\text{OR}$ ,  $-\text{COOR}$ ,  
 $-\text{CONH}_2$ ,  $-\text{CN}$ ,  $-\text{CF}_3$ , halogen,  $-\text{OR}$ , or  $-\text{R}$ ;

X' is halogen,  $-\text{OR}$  or  $-\text{R}$ ;

Y is



Y' is H,  $-\text{R}$  or phenyl;

Z is H or Y;

Z' is H or R;

R is alkyl having 1 to 4 carbon atoms;

R' is H or R;

R'' is R or  $-(\text{CH}_2)_n-\text{CH}_2\text{OH}$ ;

n is an integer from 2 to 4; and

A- is an anion of an acid.

3,629,242

## 6-GEM-DIFLUORO STEROIDS

John H. Fried, Palo Alto, Calif., assignor to  
Syntex Corporation, Panama, Panama

No Drawing. Continuation-in-part of application Ser. No.  
763,918, Sept. 30, 1968, which is a continuation-in-part  
of application Ser. No. 676,060, Oct. 18, 1967. This  
application Mar. 3, 1969, Ser. No. 803,953

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55

20 Claims

6 $\alpha$ ,6 $\beta$ -difluoropregn-4-en-3-ones (substituted at C-21  
with fluoro or chloro thereof, optionally substituted at C-  
16 with hydroxy or methyl, at C-17 with hydroxy or the  
esters thereof, optionally, C-16 and C-17 are bridged by  
a cyclic acetal or ketal, optionally there is a double bond  
between C-1,2), exhibit progestational activity.

3,629,243

14 $\alpha$ ,17 $\alpha$ -METHYLENEDIOXYPREGNANE  
DERIVATIVES

Arthur F. Marx and Hermanus J. Kooreman, Delft,  
Netherlands, assignors to Koninklijke Nederlandsche  
Gist-En Spiritusfabriek N.V., Delft, Netherlands  
No Drawing. Filed June 5, 1969, Ser. No. 831,824  
Claims priority, application Netherlands, June 7, 1968,  
6808047

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55 D

41 Claims

14 $\alpha$ ,17 $\alpha$ -methylene dioxy pregnane derivatives which  
have anti-inflammatory activity are provided. In the new

pregnane compounds, positions 14 and 17 of the steroid  
nucleus are bridged by a carbon atom and two oxygen  
atoms, forming a 1,3-dioxane ring with carbon atoms 14,  
13 and 17 of the steroid nucleus.

3,629,244

17 $\beta$ -ETHERS OF  $\Delta^{4,9,11}$ -GONATRIENES AND  
COMPOSITIONS CONTAINING THEM

Germain Costerousse, Montrouge, and Jean-Claude Gasc,  
Bondy, France, assignors to Roussel-UCLAF, Paris,  
France

No Drawing. Continuation-in-part of application Ser. No.  
628,273, Apr. 4, 1967. This application Aug. 13, 1969,  
Ser. No. 850,346

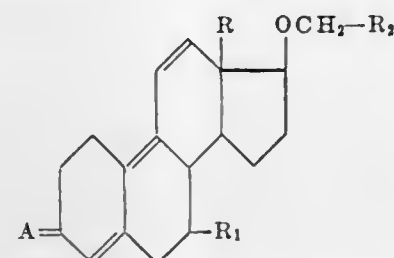
Claims priority, application France, July 8, 1966,  
68,751; Feb. 15, 1967, 95,053

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55

16 Claims

This invention relates to 17 $\beta$ -ethers of  $\Delta^{4,9,11}$ -gonatri-  
enes of the formula



wherein

A represents a member selected from the group consist-  
ing of oxygen, di-lower-alkoxy and lower alkyl-  
ene dioxy;

R represents alkyl having from 1 to 4 carbon atoms;  
R1 represents a member selected from the group con-  
sisting of hydrogen and lower alkyl; and

R2 represents a member selected from the group con-  
sisting of substituted and unsubstituted phenyl, cy-  
clohexyl, cyclohexenyl and cyclohexadienyl. These  
compounds have a particularly long-lasting and per-  
sistent anabolisant and androgenic activity, on sub-  
cutaneous administration.

3,629,245

16,17-ISOXAZOLINO- $\Delta^{1,3,5(10)}$ -GONATRIENES

Daniel Bertin, Montrouge, and Lucien Nedelec, Clichy-  
sous-Bois, France, assignor to Roussel-UCLAF, Paris,  
France

No Drawing. Continuation-in-part of application Ser. No.  
556,796, May 9, 1966. This application July 7, 1969,  
Ser. No. 839,660

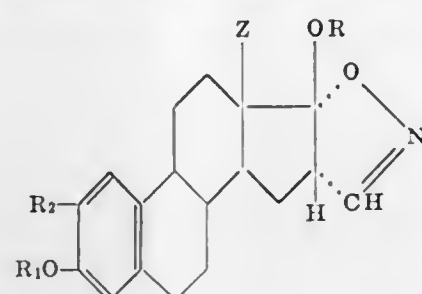
Claims priority, application Japan, May 14, 1965,  
40/17,103; Aug. 11, 1965, 40/28,020

Int. Cl. C07c 173/10

U.S. Cl. 260—239.55

7 Claims

16 $\alpha$ ,17 $\alpha$ -isoxazoline steroids of the formula



wherein R and R1 are selected from the group consisting  
of hydrogen, alkyl of 1 to 7 carbon atoms and acyl of an  
organic carboxylic acids of 1 to 18 carbon atoms, R2 is  
selected from the group consisting of hydrogen and halo-  
gen and Z is alkyl of 1 to 4 carbon atoms and their prepa-  
ration and novel intermediates. The invention also in-  
cludes hypocholesterolemic compositions having no sub-  
stantial estrogenic activity.

3,629,246

NOVEL DIARYLENE AZOLYL-STYRENE COM-  
POUNDS AND THE PREPARATION AND USE  
THEREOF

Toshiki Tanaka, Wakayama, Japan, assignor to Nippon  
Chemical Works Co., Ltd., Wakayama, Japan

No Drawing. Continuation of application Ser. No.  
265,365, Mar. 15, 1963. This application Dec. 4,  
1968, Ser. No. 800,785

Claims priority, application Japan, July 4, 1962,  
37/28,133; July 10, 1962, 37/28,326; July 24,  
1962, 37/31,222; Sept. 4, 1962, 37/37,932, 37/  
37,933, 37/37,934; Nov. 5, 1962, 37/49,544; Nov.  
29, 1962, 37/53,406; Dec. 19, 1962, 37/57,634,  
37/57,635; Jan. 5, 1963, 38/649; Feb. 11, 1963,  
38/6,829

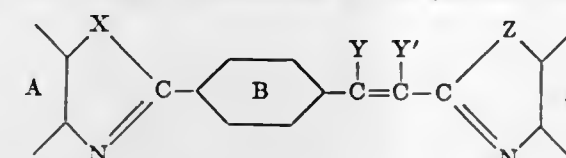
The portion of the term of the patent subsequent to  
Feb. 23, 1988, has been disclaimed

Int. Cl. C09b 23/14

U.S. Cl. 260—240 D

6 Claims

Optical brightening agents consist of a diarylene azolyl-  
styrene compound which is free from water-solubilizing  
groups and groups capable of imparting dye character  
thereto and which corresponds to the general formula:



wherein A and A' individually represents a benzene or  
naphthalene radical fused with the adjacent azole ring,  
B represents a benzene nucleus, X and Z individually  
represents a member selected from the group consisting  
of oxygen, sulfur and a radical N—R (in which R is hy-  
drogen or methyl), and at least one of said X and Z be-  
ing selected from oxygen and sulfur and Y and Y' individ-  
ually represents one member selected from the group  
consisting of hydrogen, halogen and lower alkyl.

3,629,247

THIAZOLINE AND 5,6-DIHYDRO-4H-1,3-  
THIAZINE ANTIVIRAL AGENTS

James W. McFarland, Lyme, and Verne A. Ray, Groton,  
Conn., assignors to Pfizer & Co., Inc., New York, N.Y.

No Drawing. Filed June 6, 1969, Ser. No. 831,245

Int. Cl. C07d 91/14

U.S. Cl. 260—240 D

4 Claims

Aryl vinyl derivatives of thiazoline and 5,6-dihydro-4H-  
1,3-thiazine which exhibit antiviral activity particularly in  
the combating of plant viral diseases.

3,629,248

PROCESS FOR THE PREPARATION OF  
OXAZINE DYESTUFFS

Gustav Schäfer, Frankfurt am Main, and Adam Trom-  
betta, Niederjosbach, Taunus, Germany, assignors to  
Farbwerke Hoechst Aktiengesellschaft vormals, Meister  
Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No.  
655,756, July 25, 1967. This application July 24, 1969,  
Ser. No. 844,664

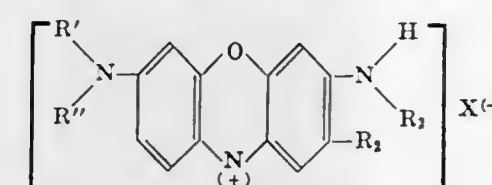
Claims priority, application Germany, Aug. 4, 1966,  
F 49,871

Int. Cl. C07d 87/50

U.S. Cl. 260—242

2 Claims

A process for the manufacture of crystalline, pure and  
brilliant basic oxazine dyestuffs of the general formula



in which R' and R'' represent lower alkyl groups, R2  
represents a hydrogen atom or a methyl group, R3 stands

for a hydrogen atom or a lower alkyl group or the  
phenyl group which may be substituted by methyl,  
methoxy or ethoxy groups, and X(-) represents the anion  
ZnCl3- or ZnBrCl2-, said dyestuffs yielding on tanned  
cotton and on polyacrylonitrile fibres brilliant blue dye-  
ings, showing good to very good fastness to light and an  
excellent fastness to wet processing on polyacrylonitrile  
fibres.

3,629,249

## DIAMINOALKYL-S-DIHYDROTETRAZINES

Masatomi Otsuka, Naruto-shi, Seizo Komura, Tokushima-  
shi, and Hideo Yamaguchi, Naruto-shi, Japan, assignors  
to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka-  
shi, Japan

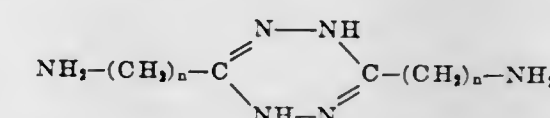
No Drawing. Filed Oct. 1, 1969, Ser. No. 862,956

Int. Cl. C07d 55/58

U.S. Cl. 260—241

10 Claims

A diamine having a structural formula of



wherein n is an integer of 3 to 16.

Said diamines are useful as the starting material for  
manufacturing polyamides and manufactured from lac-  
tams or amino acids.

3,629,250

FUNGICIDAL BENZOTHIADIAZINE-  
2,3-DIOXIDES

Edward L. Mutsch, Woodbury Township, Washington  
County, Minn., assignor to Minnesota Mining and  
Manufacturing Company, St. Paul, Minn.

No Drawing. Filed July 14, 1969, Ser. No. 841,537

Int. Cl. C07d 93/30

U.S. Cl. 260—243

4 Claims

1-trihalomethylthio-3-alkyl-3,4-dihydro-1H-2,1,3 - ben-  
zothiadiazine-2,2-dioxides which are active fungicides,  
insecticides and antimicrobial agents, and processes for  
their production and use are described.

3,629,251

DERIVATIVES OF 9-AMINOALKYL-  
1,2,8,9-TETRAAZAPHENALENES

John E. Francis, Pleasantville, N.Y., assignor to Geigy  
Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Aug. 12, 1968, Ser. No. 751,730

Int. Cl. C07d 51/06

U.S. Cl. 260—247.1

24 Claims

9-aminoalkyl-1,2,8,9-tetraazaphenalenenes, optionally sub-  
stituted in the 3-position by hydroxy or mercapto and in  
the 7-position by phenyl, are hypotensive agents.

3,629,252

3-ARYLIMINO-4-CHLORO-5-AMINO-  
1,2-DITHIOLS

Jörg Bader, Arlesheim, and Karl Gatz, Basel, Switzer-  
land, assignors to Ciba-Geigy Corporation, Ardsley,  
N.Y.

No Drawing. Filed May 28, 1969, Ser. No. 828,779

Claims priority, application Switzerland, June 7, 1968,  
8,517/68

Int. Cl. C07d 71/00, 87/38

U.S. Cl. 260—247.1

4 Claims

3-arylimino-4-chloro-5-amino - 1,2-dithiols are disclosed  
as antifungal and bactericidal agents. They are particu-  
larly useful for the protection of plants against phytopath-  
ogenic fungi. Antifungal compositions containing them as  
active ingredients are also described.



**3,629,253**  
**FLUORINATED 1,2-DIHYDRO-1,2,4-BENZOTRIAZINES**

Theodor Wagner-Jauregg, Zofingen, Switzerland, and Egon Fitz, Dornbirn, Austria, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland  
 No Drawing. Filed Sept. 27, 1968, Ser. No. 763,349  
 Claims priority, application Switzerland, Sept. 27, 1967, 13,517/67

Int. Cl. C07d 55/10

**U.S. Cl. 260—247.2 A** **5 Claims**  
 This invention is directed to fluorinated 3-amino substituted 1,2-dihydro-1,2,4-benzotriazine derivatives having pharmaceutical and particularly antiphlogistic activity, and to the method of producing same by reducing the corresponding fluorinated 3-amino substituted 1,2,4-benzotriazine-1-oxide derivatives.

**3,629,254**  
**PRODUCTION OF 2,4-DISUBSTITUTED TRIAZINES**

Heinz Eilingsfeld, Frankenthal, and Horst Scheuermann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
 No Drawing. Filed Apr. 4, 1969, Ser. No. 813,704  
 Claims priority, application Germany, Apr. 6, 1968, P 17 70 147.2

Int. Cl. C07d 55/50

**U.S. Cl. 260—248 CS** **8 Claims**  
 The production of 2,4-disubstituted triazines by reaction of substituted thioburets with esters of formimide acid. The products of the process are valuable starting materials for the production of dyes and pesticides.

**3,629,255**  
**FLUOROCARBON ESTERS OF ISOCYANURATE**

Wilhelm M. Beyleveld, Whippany, Bryce C. Oxenrider, Flerham Park, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 19, 1969, Ser. No. 808,681

Int. Cl. C07d 55/38

**U.S. Cl. 260—248 NS** **8 Claims**  
 This invention relates to a novel class of fluorine containing isocyanurate esters derived from reacting tris(2-hydroxyethyl)isocyanurate with hereinafter defined fluoro acids, and tris(2-carboxyethyl)isocyanurate with hereinafter defined fluoro alcohols.

**3,629,256**  
**HERBICIDAL 2-ALKYLTHIO-4,6-DIAMINO-S-TRIAZINES**

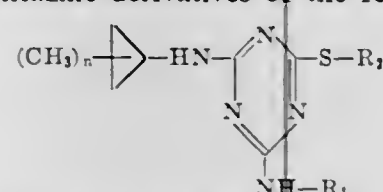
Dagmar Berrer, Riehen, and Christian Vogel, Binningen, near Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,429

Claims priority, application Switzerland, Mar. 20, 1968, 4,150/68

Int. Cl. C07d 55/20

**U.S. Cl. 260—249.8** **5 Claims**  
 2-alkylthio-triazine derivatives of the formula



wherein  $n$  means 0 or 1,  $R_1$  represents certain unsubstituted or substituted alkyl or cycloalkyl groups and  $R_2$  represents methyl or ethyl are disclosed as herbicidally active compounds of enhanced toxicity to undesirable plant growth and improved selectivity. A method of controlling undesirable plant growth with the aid of such compounds and compositions containing them are also described.

**3,629,257**  
**2-CHLORO-4-TERT-BUTYLAMINO-6-CYCLOPROPYLAMINO-S-TRIAZINE**

Dagmar Berrer, Riehen, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Filed Mar. 17, 1969, Ser. No. 807,915

Int. Cl. C07d 55/20, 55/46

**U.S. Cl. 260—249.8** **1 Claim**  
 2-chloro-4-tert. butylamino-6-cyclopropylamino-s-triazine is disclosed as a novel compound useful for controlling aquatic weeds and also weeds and wild grasses in cotton plantations. Compositions containing the same as active ingredient and processes for the control of aquatic weeds and also weeds and wild grasses in cotton plantations are also described.

**3,629,258**  
**HERBICIDAL 4-METHOXY-2,6-DIAMINO-S-TRIAZINES**

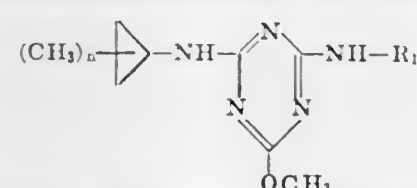
Dagmar Berrer, Riehen, and Christian Vogel, Binningen, near Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 14, 1969, Ser. No. 807,430

Claims priority, application Switzerland, Mar. 20, 1968, 4,149/68

Int. Cl. C07d 55/20

**U.S. Cl. 260—249.8** **5 Claims**  
 Methoxy-triazine derivatives of the formula



wherein  $n$  means 0 or 1, and  $R_1$  represents certain unsubstituted or substituted alkyl or cycloalkyl groups are disclosed as herbicidally active compounds of enhanced toxicity to undesirable plant growth and improved selectivity. A method of controlling undesirable plant growth with the aid of such compounds and compositions containing them are also described.

**3,629,259**  
**CYANOALKYLAMINOTRIAZINES**

Werner Schwarze, Frankfurt am Main, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 652,036, July 10, 1967. This application Mar. 5, 1969, Ser. No. 804,718

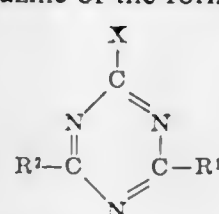
Claims priority, application Germany, July 16, 1966, D 50,605; Nov. 22, 1966, P 16 70 541.2; Mar. 7, 1968, P 16 70 594.5

The portion of the term of the patent subsequent to Apr. 7, 1987, has been disclaimed

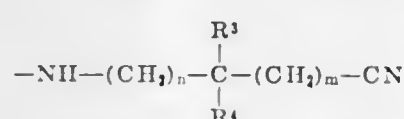
Int. Cl. C07d 55/20, 55/22

**U.S. Cl. 260—249.8** **26 Claims**

A substituted s-triazine of the formula:

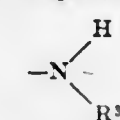


wherein  $X$  is halogen, alkoxy, or alkylmercapto, alkyl in alkoxy and alkylmercapto having 1 to 6 carbon atoms;  $R^1$  is



wherein  $n$  and  $m$  are zero or 1 with the provision that only one of  $n$  and  $m$  may be zero;  $R^3$  and  $R^4$  are the same

or different and are straight-chain or branched-chain alkyl having from 1 to 4 carbon atoms and wherein either  $R^3$  or  $R^4$  may also be hydrogen; and  $R^2$  is



wherein  $R^5$  is hydrogen or straight-chain or branched-chain lower alkyl.

The compounds are useful as plant growth modifiers and are distinguished by a high selectivity and a rapid decomposition in the ground.

**3,629,260**  
**S-TRIAZOLO[4,3-a]PYRAZINE DERIVATIVES**

John Anthony Maguire and Francis Leslie Rose, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,816

Claims priority, application Great Britain, Feb. 3, 1967, 5,356/67

Int. Cl. C07d 51/76

**U.S. Cl. 260—250** **4 Claims**  
 Novel s-triazolo[4,3-a]pyrazine derivatives bearing alkyl substituents in the pyrazine ring and an amino, hydroxy, acetamido or formamido substituent in the triazole ring, which prevent bronchospasm and are useful in the treatment of asthma.

**3,629,261**  
**CHLOROPYRIMIDINE DERIVATIVES**

Gunther Beck and Hans Holtschmidt, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

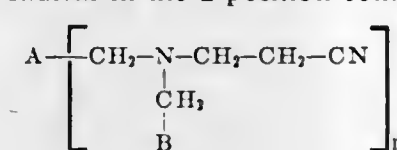
No Drawing. Filed Jan. 3, 1969, Ser. No. 788,934

Claims priority, application Germany, Jan. 12, 1968, P 16 70 971.0

The portion of the term of the patent subsequent to Apr. 28, 1987, has been disclaimed

Int. Cl. C07d 51/36

**U.S. Cl. 260—251 R** **8 Claims**  
 A process for preparing 4,5,6-trichloropyrimidines and analogous compounds containing a further chlorine substituent or a radical in the 2-position comprising reacting



in which

A is lower alkyl, a carbocyclic or heterocyclic aromatic radical;

B—CH<sub>2</sub>— is a radical which can be split off under the reaction conditions e.g. methyl; and  $n$  is 1 or 2;

with an excess of chlorine at a temperature of 0 to 250° C., optionally under UV irradiation. The resulting chloropyrimidines are fungicides and sporicides and are useful, as such, or as their fluoro analogs in preparing reactive dyestuffs.

**3,629,262**  
**PROCESS FOR PREPARING 4-PHENYL-QUINAZOLINES**

Stanley C. Bell, Penn Valley, and Peter H. L. Wei, Springfield, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 729,838, Feb. 23, 1968, which is a division of application Ser. No. 447,545, Apr. 12, 1965. This application Sept. 5, 1969, Ser. No. 855,734

Int. Cl. C07d 51/48

**U.S. Cl. 260—251** **4 Claims**  
 4-phenylquinazolines are prepared by reacting a 2-aminodiphenylmethylenimineacetic acid N-oxide with a re-

actant selected from the group of lower alkanoyl anhydrides and halo-(lower)alkanoyl anhydrides to form the corresponding 2'-[α-(hydroxymethylimino)benzyl]-(lower)alkanoyl anilide, alkanolate which is then cyclized to form the 4-phenylquinazolines. The products have known pharmaceutical properties which render them useful as muscle relaxants and vasodilators.

**3,629,263**  
**DIGLYCIDYL ETHERS**

Hans Batzer, Arlesheim, Basel-Land, Juergen Habermeier, Allschwil, Basel-Land, and Daniel Porret, Binningen, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed Nov. 4, 1969, Ser. No. 870,547

Claims priority, application Switzerland, Nov. 11, 1968, 16,803/68

Int. Cl. C07d 49/32, 51/20, 51/30

**U.S. Cl. 260—257** **14 Claims**  
 New diglycidyl ethers of mononuclear, five-membered or six-membered, unsubstituted or substituted, oxyalkylated N-heterocyclic compounds which contain two NH— groups in the molecule, by reaction of mononuclear, five-membered or six-membered, unsubstituted or substituted N-heterocyclic compounds, for example hydantoin, barbituric acid, uracil, dihydrouracil, parabanic acid and the corresponding derivatives, with alkylene oxide, for example ethylene oxide or propylene oxide, to give monoalcohols or dialcohols, and subsequent glycidylation of the OH— groups or of the OH— and NH— group to give the corresponding glycidyl ethers. The compounds are resin precursors.

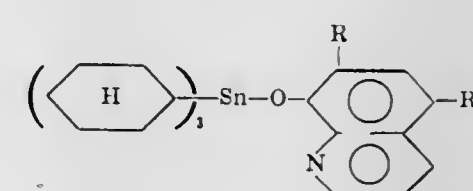
**3,629,264**  
**TRICYCLOHEXYLTIN 8-QUINOLINOLATES**

Kailash C. Pande, Parkersburg, W. Va., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 5, 1969, Ser. No. 804,690

Int. Cl. C07d 33/44

**U.S. Cl. 260—270** **3 Claims**  
 Tricyclohexyltin 8-quinolinolates corresponding to the formula:



wherein each R independently represents hydrogen, a lower alkyl, a lower alkoxy, a chloro or a bromo group. The compounds are useful as insecticides and microbicides.

**3,629,265**  
**7-HALO-4-ISOQUINOLONES**

Guenther Grethe, North Caldwell, Hsi Lin Lee, West Paterson, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 571,406, Aug. 10, 1966. This application Oct. 30, 1969, Ser. No. 872,767

Int. Cl. C07d 35/30, 35/32

**U.S. Cl. 260—287** **3 Claims**  
 4-isoquinolones bearing a halogen or hydroxy substituent on the phenyl ring are disclosed. The compounds are useful as blood pressure lowering agent and as intermediates for 1,2,3,4-tetrahydroisoquinolines useful as antihypertensive agents.



**3,629,266**  
**(PHENYL PIPERIDINO ALKYL)3,4-DIHYDROCARBOSTYRILS**

Herbert John Haver, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.  
No Drawing. Filed Mar. 3, 1969, Ser. No. 803,950  
Int. Cl. C07d 33/52

**U.S. Cl. 260—288** **2 Claims**  
1-substituted derivatives of 3,4-dihydrocarbostyril that are useful as analgesic agents. These compounds are prepared by reacting a 3,4-dihydrocarbostyril or substituted 3,4-dihydrocarbostyril with a suitable haloalkylamine.

**3,629,267**  
**BENZOHETEROCYCLICALKYL DERIVATIVES OF 4-(2-KETO-1-BENZIMIDAZOLINYL)-PIPERIDINE, 4-(2-KETO-1-BENZIMIDAZOLINYL)-1,2,3,6-TETRAHYDROPYRIDINE, 1-PHENYL-1,3,8-TRIAZASPIRO[4,5]DECAN-4-ONE AND 2,4,9-TRIAZASPIRO[5,5]UNDECAN-1,3,5-TRIONE**

Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Philadelphia, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.  
No Drawing. Filed Oct. 28, 1968, Ser. No. 771,320  
Int. Cl. C07d 5/10, 6/18

**U.S. Cl. 260—294.8 C** **7 Claims**  
Benzoheterocyclalkyl derivatives of 4-(2-keto-1-benzimidazolinyl)-piperidine, 4-(2-keto-1-benzimidazolinyl)-1,2,3,6-tetrahydropyridine, 1-phenyl-1,3,8-triazaspiro[4,5]decan-4-one and 2,4,9-triazaspiro[5,5]undecan-1,3,5-trione in which the benzoheterocyclic moiety is thianaphenyl or benzofuranyl, optionally substituted by chloro, bromo, fluoro, methyl, methoxy or trifluoromethyl, have neuroleptic activity. The compounds are generally prepared from either the benzoheterocyclalkyl halide by reaction with the appropriate amine or the benzoheterocyclic amine by condensation with a 5,5-bis(β-haloethyl)-barbituric acid.

**3,629,268**  
**SALTS OF N-PHENYL-N-(2-PYRIDYLMETHYL)-2-(N-PIPERIDINO)-ETHYLAMINE**

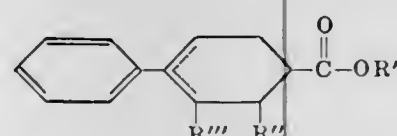
Toru Masuda, Nishinomiya, Yoichi Sawa, Suita, Yoshiyuki Kawakami, Nara, and Seiji Miyano, Fukuoka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan  
No Drawing. Filed July 17, 1969, Ser. No. 842,706  
Claims priority, application Japan, July 17, 1968, 43/50,305; Mar. 1, 1969, 44/15,555  
Int. Cl. C07d 29/28

**U.S. Cl. 260—293.69** **6 Claims**  
Salts of N-phenyl-N-(2-pyridylmethyl)-2-(N-piperidino)-ethylamine with a saturated fatty acid having 14 to 22 carbon atoms or with hydroxyphenyl-benzoylbenzoic acid are antitussive agents.

**3,629,269**  
**DERIVATIVES OF THE 2-(LOWER ALKYL)-3-(LOWER ALKYL)-4-PHENYL-3- OR 4-CYCLOHEXENECARBOXYLIC ACIDS**

George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation  
No Drawing. Filed Sept. 26, 1968, Ser. No. 763,026  
Int. Cl. C07c 69/76

**U.S. Cl. 260—293.81** **7 Claims**  
Compounds of the general formula

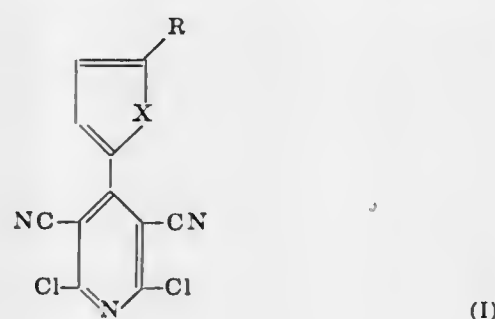


are disclosed wherein R'' and R''' are selected from the group consisting of lower alkyl of up to 3 carbon atoms; and R' is selected from the group consisting of alkyl of from 9 to 20 carbon atoms, alkenyl of up to 20 carbon atoms, monohydroxy lower alkyl, dihydroxy lower alkyl, adamantyl, adamantyl lower alkyl, phenyl, phenyl lower alkyl, diphenyl lower alkyl, cycloalkyl, cycloalkyl lower alkyl, carbo lower alkoxy lower alkyl, lower alkoxy lower alkyl, furyl, furyl lower alkyl, carbo lower alkoxy phenyl, piperidyl, piperidyl lower alkyl, phenyl-cyclohexenylmethyl in which the cyclohexenyl group contains substituents selected from the group consisting of hydrogen and lower alkyl of up to 3 carbon atoms and the dotted lines represent a double bond at either the 3- or the 4-position. These compounds exhibit estrogenic properties and when given in a single subcutaneous dose have long acting effects in the suppression of animal reproduction.

**3,629,270**  
**CERTAIN 2,6-DICHLORO-3,5-PYRIDINEDICARBONITRILES**

Joachim Gante and Sigmund Lust, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany  
No Drawing. Filed Feb. 20, 1970, Ser. No. 13,190  
Claims priority, application Germany, Feb. 22, 1969, P 19 08 947.5  
Int. Cl. C07d 31/46

**U.S. Cl. 260—294.8 F** **12 Claims**  
Compounds of the formula

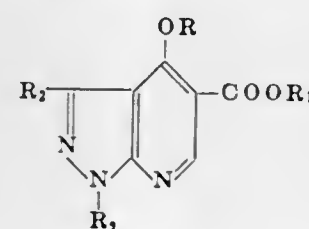


wherein X is O, S or NH and R is H, halogen, NO<sub>2</sub>, SO<sub>3</sub>H, the acyl group of a carboxylic acid containing up to eight carbon atoms or NR<sub>1</sub>R<sub>2</sub> in which R<sub>1</sub> and R<sub>2</sub> are H, alkyl containing 1-8 carbon atoms or acyl as defined herein, possess anti-fungal activity and are pest control agents generally.

**3,629,271**  
**PYRAZOLOPYRIDINE CARBOXYLIC ACID COMPOUNDS AND DERIVATIVES**

Hans Hoehn, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.  
No Drawing. Filed June 16, 1969, Ser. No. 833,673  
Int. Cl. C07d 31/36

**U.S. Cl. 260—295.5 B** **7 Claims**  
New pyrazolopyridine carboxylic acid compounds and derivatives of the general formula



which are antimicrobial agents and central depressants, as well as intermediates therefor, are the subject of this invention.

**3,629,272**  
**PROCESS FOR PRODUCING 6-HALO-4-AZABENZIMIDAZOLES AND INTERMEDIATES THEREFOR**

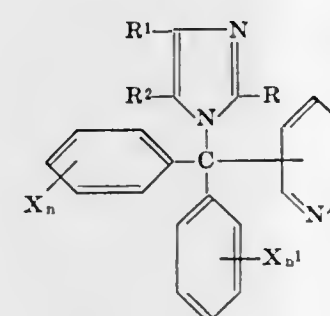
Henry Bader, Newton Centre, and John L. Ferrari, Framingham, Mass., assignors to Polaroid Corporation, Cambridge, Mass.  
No Drawing. Filed May 1, 1969, Ser. No. 821,113  
Int. Cl. C07d 31/42

**U.S. Cl. 260—296 H** **9 Claims**  
Halo-substituted-4-azabenzimidazoles are prepared in two steps: (1) by the selective hydrogenation of a 2-amino-3-nitro-5-halopyridine in a solution of a high boiling alkanol using Raney nickel catalyst to yield the corresponding 2,3-diamine and (2) refluxing the alkanol solution of diamine intermediate with formic acid while continuously and simultaneously removing water of condensation.

**3,629,273**  
**N-DIARYL-PYRIDYL-METHYL-IMIDAZOLES, SALTS THEREOF**

Wilfried Draber, Karlheinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed July 3, 1969, Ser. No. 839,089  
Claims priority, application Germany, July 20, 1968, P 17 17 939.6  
Int. Cl. C07d 31/42

**U.S. Cl. 260—296 R** **14 Claims**  
N-diaryl-pyridyl-methyl-imidazoles of the formula:

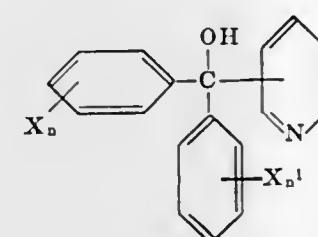


wherein

R, R<sup>1</sup> and R<sup>2</sup> are each hydrogen, straight or branched chain lower alkyl or straight or branched chain lower alkenyl,

X is straight or branched chain alkyl of 1 to 12 carbon atoms, straight or branched chain alkenyl of 1 to 12 carbon atoms or an electronegative moiety, and n and n<sup>1</sup> are each integers from 0 to 2,

or pharmaceutically acceptable non-toxic salts thereof are produced by reacting diaryl-pyridyl carbinols of the formula:



wherein X, n and n<sup>1</sup> are as above defined, in an inert organic solvent with a reagent suitable for chlorination of tertiary alcohols and reacting the diaryl-pyridyl-methyl chloride thus produced with an acid-binding agent and imidazole or lower alkyl imidazole. The salts are obtained by reaction of the compounds with the corresponding acid.

These compounds are useful as antimycotics and should generally be administered in the range of about 20 to 100 mg./kg.

**3,629,274**  
**MEROCYANINE DYES AND PHOTOGRAPHIC MATERIALS PREPARED THEREWITH**

Gene L. Oliver, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
No Drawing. Original application July 22, 1966, Ser. No. 567,070, now Patent No. 3,486,897, dated Dec. 30, 1969. Divided and this application June 11, 1969, Ser. No. 832,415  
Int. Cl. C09b 23/10

**U.S. Cl. 260—304** **11 Claims**  
Certain merocyanine dyes derived from cyanomethyl sulfones are useful as filter dyes and as spectral sensitizers in light-sensitive photographic silver halide emulsions. 2-(3-cyano-3-dodecylsulfonylallylidene)-3-ethylthiazolidine and 2-(3-cyano-3-dodecylsulfonylallylidene)-3-(3-sulfoethyl)thiazolidine, potassium salt are illustrative of the new merocyanine dyes.

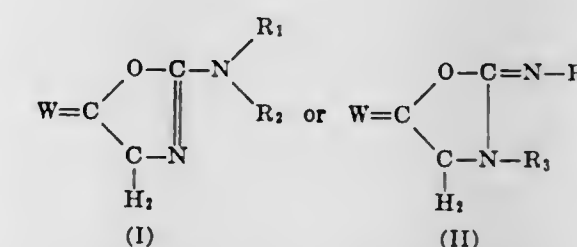
**3,629,275**  
**CARBOXYLIC ACID (1,2,4-THIAZOL-5-YL)-AMIDES**

Carl Metzger and Dieter Borrmann, Wuppertal-Elberfeld, Richard Wegler, Leverkusen, Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Aug. 29, 1968, Ser. No. 756,310  
U.S. Cl. 260—306.8 **4 Claims**  
[(Alkyl, haloalkyl, alkoxy and phenoxy)-carbonyl]-N-(3-alkyl and phenyl-1,2,4-thiazol-5-yl)-amides, i.e. (alkanoyl, haloalkanoyl, carboalkoxy and carboxyphenoxy)-N-(3-alkyl and phenyl-1,2,4-thiazol-5-yl)-amides or (alkanoic, haloalkanoic, monoalkyl carbonic and monophenyl carbonic acid)-N-(3-alkyl and phenyl-1,2,4-thiazol-5-yl)-amides, which possess herbicidal properties, and which may be produced by conventional methods.

**3,629,276**  
**2-AMINO-5-SPIRO-SUBSTITUTED-OXAZO COMPOUNDS**

Michael Raymond Harnden, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.  
No Drawing. Filed July 16, 1969, Ser. No. 842,365  
Int. Cl. C07d 85/26

**U.S. Cl. 260—307** **2 Claims**  
Novel 2-amino-5-spiro-substituted-2-oxazolines (I) and 2-imino-5-spiro-substituted-2-oxazolines (II) of the formulae



wherein R<sub>1</sub> and R<sub>2</sub> are hydrogen, loweralkyl, phenyl or phenyl-loweralkyl; R<sub>3</sub> is loweralkyl; and W is a cyclic moiety selected from the group consisting of cycloalkyl, loweralkyl-substituted cycloalkyl, loweralkyl-polysubstituted cycloalkyl wherein said cycloalkyl group has 4 to 8 carbon atoms, piperidinyl, loweralkyl-substituted piperidinyl, decalyl and norbornyl. The compounds are useful as anti-depressant agents.







guanidines having anti-hypertensive activity, prepared by the reaction of the corresponding 1,3-dioxolan-4-yl-lower-alkyl halide with a metallo salt of phthalimide followed by hydrolysis.

3,629,288

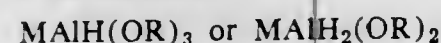
## PURIFICATION OF APROTIC SOLVENTS

Jaroslav Vit, New York, N.Y., assignor to National Patent Development Corporation, New York, N.Y.  
No Drawing. Filed Nov. 6, 1969, Ser. No. 874,711  
Int. Cl. C07d 7/04, 5/04

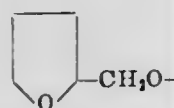
U.S. Cl. 260—345.1

10 Claims

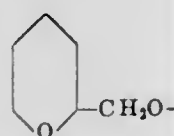
Aprotic solvents are purified by being treated with a compound of the formula:



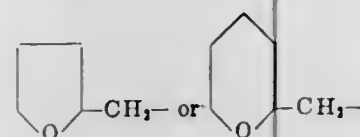
wherein M is Na and R is  $\text{R}'\text{O}(\text{CH}_2)_2$ ,  $\text{R}'\text{O}(\text{CH}_2)_3$ , or  $\text{R}'\text{O}(\text{CH}_2)_4$ , in which  $\text{R}'$  is  $\text{CH}_3$ ,  $\text{C}_2\text{H}_5$  or  $\text{A}(\text{CH}_2)_n$ ; n being 2, 3 or 4 and A being  $\text{CH}_3\text{O}$ ,  $\text{C}_2\text{H}_5\text{O}$ ,



$(\text{CH}_3)_2\text{N}$ ,  $(\text{C}_2\text{H}_5)_2\text{N}$  or



or R is  $\text{R}''_2\text{N}(\text{CH}_2)_2$ ,  $\text{R}''_2\text{N}(\text{CH}_2)_3$  or  $\text{R}''_2\text{N}(\text{CH}_2)_4$  in which  $\text{R}''$  is  $\text{CH}_3$  or  $\text{C}_2\text{H}_5$ ; or R is



3,629,289

## CHROMANAMINES

Ian Moyle Lockhart, Egham, Surrey, England, assignor to Parke, Davis & Company, Detroit, Mich.  
No Drawing. Filed Apr. 24, 1969, Ser. No. 819,102  
Int. Cl. C07d 7/20

U.S. Cl. 260—345.2

3 Claims

An isomer of 2-methyl-3-chromanamine, and its acid-addition salts (such as the hydrochloride, M.P. 260–261° C.), having distinctive physicochemical and pharmacological properties. The compounds are produced by reacting 2-methyl-3-nitro-2H-1-benzopyran or the appropriate isomer of 2-methyl-3-nitrochroman with an alkali metal hydride reducing agent, followed by hydrolyzing the product.

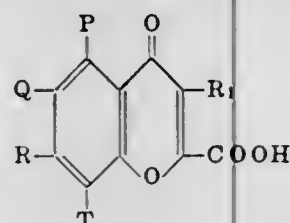
3,629,290

## DERIVATIVES OF CHROMONE-2-CARBOXYLIC ACID

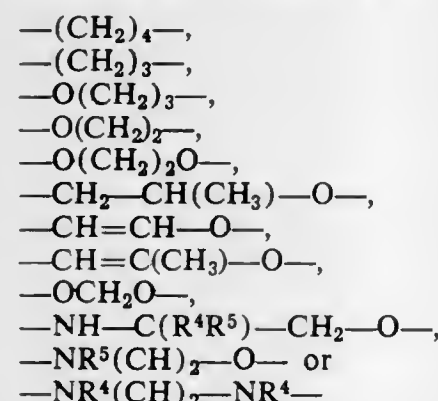
Hugh Cairns, Sandbach, Richard Hazard, Knutsford, and John King, Loughborough, England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England  
No Drawing. Filed Oct. 14, 1968, Ser. No. 767,470  
Claims priority, application Great Britain, Oct. 17, 1967, 47,211/67  
Int. Cl. C07d 7/34

U.S. Cl. 260—345.2

Chromone derivatives of the formula



in which at least one of Q, R or T represents —OY wherein Y is selected from the group consisting of hydroxy-alkyl, alkoxy-alkyl, carboxyl-alkyl, dihydroxyalkyl, alkoxy-alkoxy-alkyl, alkoxy-hydroxy-alkyl, phenoxy-alkyl, furfuryl, tetrahydrofurfural, dioxolanyl, alkyl substituted dioxolanyl, glucosyl and ribosyl in which groups the alkyl and alkoxy portions are lower alkyl or lower alkoxy, P and those of Q, R and T which do not form a —OY group are selected from hydrogen, halogen, alkyl containing from 1 to 10 carbon atoms, alkyl containing from 1 to 10 carbon atoms and substituted by halogen, hydroxy or lower alkoxy; hydroxy, alkoxy containing from 1 to 10 carbon atoms, carboxy, nitro, lower alkylamino, di-lower alkyl amino or anilino, or an adjacent pair of P and those of Q, R, and T which do not represent a —OY group, together with the adjacent carbon atoms on the benzene ring, form a pyridine or benzene ring, or an adjacent pair of P and those of Q, R and T which do not represent a —OY group form the chains



wherein  $\text{R}^4$  is hydrogen or a lower alkyl or a lower alkoxy group and  $\text{R}^5$  is hydrogen, or  $\text{R}^4$  and  $\text{R}^5$  together form an =O group,  $\text{R}_1$  is selected from the hydrogen, alkyl, aryl and alkoxy containing from 1 to 10 carbon atoms, and pharmaceutically acceptable derivatives thereof, are valuable in the treatment of diseases due to antigen reactions such as asthma.

3,629,291

## CYCLOHEXANE-1,2,3,4,5-PENTACARBOXYLIC ACID AND ITS DIANHYDRIDE

Heinz Nohe, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Filed June 18, 1969, Ser. No. 834,490  
Claims priority, application Germany, June 25, 1968, P 17 68 744.4

Int. Cl. C07c 61/08; C07d 5/32

U.S. Cl. 260—346.3

3 Claims

Cyclohexane-1,2,3,4,5-pentacarboxylic acid and its dianhydride are obtained by oxidation of bicyclo-[2,2,2]-oct-7-ene-2,3,5-tricarboxylic acid and/or its anhydride with 10 to 100% by weight nitric acid in the presence of an oxidation catalyst at a temperature of from 30° to 300° C.

3,629,292

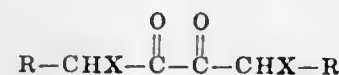
## PROCESS FOR THE PREPARATION OF 2,5-DI-ALKYL-4-HYDROXY-(2H)-FURAN-3-ONES

William J. Evers, Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.  
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,275  
Int. Cl. C07d 5/16

U.S. Cl. 260—347.8

12 Claims

Processes for the preparation of dialkylhydroxyfuran-3-ones which comprise reacting dihalodiketones having the structure



wherein each X is a halogen atom and R is lower alkyl, with aqueous alkali at 75° to 125° C.

3,629,293

## SYNTHESIS OF 5-METHYL-4-HYDROXY-2,3-DIHYDROFURAN-3-ONE

Hendricus Gerardus Peer and Godefridus Antonius Maria van den Ouweland, Zevenaar, Netherlands, assignors to Lever Brothers Company, New York, N.Y.  
No Drawing. Filed Sept. 17, 1968, Ser. No. 760,351  
Claims priority, application Netherlands, Sept. 18, 1967, 6712748

Int. Cl. C07d 5/10

U.S. Cl. 260—347.8

7 Claims

This invention provides a process for the preparation of 5-methyl-4-hydroxy-2,3-dihydrofuran-3-one from a glycosylamine prepared from a secondary aliphatic or aromatic amine and an aldopentose. The N,N-disubstituted glycosylamine is heated in the presence of a polar solvent and a specific proportion of carboxylic acid.

3,629,294

## EPOXIDATION PROCESS

Jui-Yuan Sun, Riverdale, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,947

Int. Cl. C07d 1/08, 1/12

U.S. Cl. 260—348.5 V

8 Claims

A process for the liquid phase epoxidation of olefinic compounds to their corresponding epoxides which comprises reacting an olefinic compound with molecular oxygen in the presence of catalytic amounts of a copper compound and molybdenum under mild conditions to produce substantial yields of the corresponding epoxide and substantial yields of highly reactive and valuable corresponding co-products of alcohols and ketones.

3,629,295

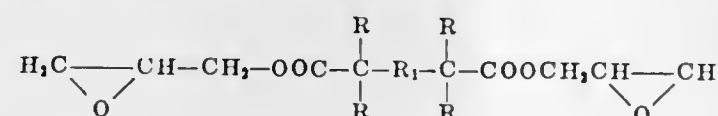
## GLYCIDYL ESTERS OF STERICALLY HINDERED ORGANIC ACIDS

Robert W. Stackman, Morristown, and Anthony B. Conciatori, Chatham, N.J., assignors to Celanese Corporation, New York, N.Y.  
No Drawing. Filed May 8, 1969, Ser. No. 823,139  
Int. Cl. C07d 1/18

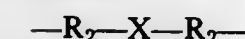
U.S. Cl. 260—348 A

6 Claims

Glycidyl esters of the formula:



wherein R is selected from the group consisting of alkyl, halogen and aryl and  $\text{R}_1$  is a single bond, alkylene, arylene or a radical of the formula:



wherein  $\text{R}_2$  is alkylene, arylene or diarylene and X is a single bond, oxygen, sulfonyl, carbonyl or amino, or substituted derivatives of the alkylene, arylene and diarylene groups, the compounds being useful in the preparation of epoxy resins.

3,629,296

## BIS(AZIDOPHOSPHORANES)

Roger A. Baldwin, La Mirada, and Ming T. Cheng, Buena Park, Calif., assignors to Kerr McGee Chemical Corp.  
No Drawing. Original application Nov. 15, 1965, Ser. No. 507,699. Divided and this application Nov. 12, 1968, Ser. No. 793,630

Int. Cl. C07c 117/00; C09d 5/18

U.S. Cl. 260—349

6 Claims

New class of high molecular weight phosphorus and nitrogen-containing compounds having two or more phos-

phorane linkages per molecule. These compounds are intermediates to fire-retardant polymer phosphoranes.

3,629,297

## SOLVENT-FREE LIQUID ORGANOSILICON RESINS

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.  
No Drawing. Filed Feb. 12, 1970, Ser. No. 11,032  
Int. Cl. C08g 51/04, 31/02

U.S. Cl. 260—37 SB

9 Claims

A liquid resin consisting essentially of 55–80 mol percent of  $\text{CH}_3\text{SiO}_{3/2}$  units, 10 to 30 mol percent of units selected from the group consisting of  $\text{CH}_2=\text{CHSiO}_{3/2}$  and  $\text{CH}_2=\text{CH}(\text{CH}_3)\text{SiO}$  and 10–35 mol percent of units selected from the groups consisting of  $(\text{C}_6\text{H}_5)_2\text{SiO}$ ,



and having a silicon-bonded alkoxy content of from 5–20 weight percent, the alkoxy substituents having from 1 to 3 inclusive carbon atoms, are utilized as binders for ceramic formulations.

3,629,298

STEROIDAL 3-KETO- $\Delta^{1,4}$ -DIENE-3-ENAMINES

Verlan H. Van Rhee, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.  
No Drawing. Continuation-in-part of application Ser. No. 643,825, June 6, 1967. This application Feb. 24, 1969, Ser. No. 801,859

Int. Cl. C07c 169/24

U.S. Cl. 260—397.1

6 Claims

This invention relates to the synthesis of steroidal 3-keto- $\Delta^{1,4}$ -diene 3-enamines using titanium tetrachloride as an assistant to the reaction.

3,629,299

1 $\alpha$ ,3-DI LOWER ALKOXY - 21 - CARBIO-LOWER ALKOXY-PREGNA - 3,5 - DIENE AND PROCESS FOR THE PRODUCTION THEREOF

Joel E. Huber, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.  
No Drawing. Filed Mar. 5, 1969, Ser. No. 804,702  
Int. Cl. C07c 169/52

U.S. Cl. 260—397.1

6 Claims

This invention relates to the synthesis of steroidal 1 $\alpha$ -alkoxy- $\Delta^{3,5}$ -3-ol ethers and the synthesis of steroidal  $\Delta^{1,3,5}$  trienol-3-alkyl ethers by reaction of  $\Delta^{1,4}$ -3-keto-steroids with trialkylorthoformate esters in the presence of an alkane and an acid catalyst.

3,629,300

## FUSIDO STEROL AND THE C-3 ACYLATES THEREOF

Wagn Ole Godtfredsen, Vaerlose, Denmark, assignor to Løvens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark  
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,795  
Claims priority, application Great Britain, Sept. 6, 1968, 42,645/68

Int. Cl. C07c 169/48

U.S. Cl. 260—397.2

2 Claims

The invention relates to a new triterpene, fusidosterol, of hypocholesterolemic effect, to esters thereof with mono- and dibasic lower aliphatic carboxylic acids, and to a method of obtaining the triterpene from the mycelium of fusidic acid-producing fungi.



3,629,301

**3,3-DIFLUORO-2-SUBSTITUTED STEROIDS AND THEIR PREPARATION**

William C. Ripka, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

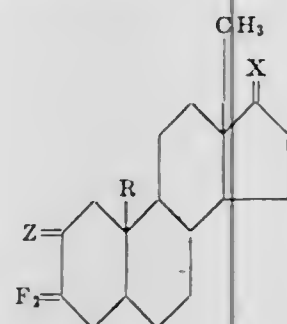
No Drawing. Filed Oct. 24, 1969, Ser. No. 869,352

Int. Cl. C07c 169/20

U.S. Cl. 260—397.3

10 Claims

New steroids of the formula



wherein Z is oxygen or



R is hydrogen or methyl; and X is oxygen or



where R<sup>1</sup> is hydrogen, methyl or ethynyl, and R<sup>2</sup> is hydrogen or an alkanoyl of no more than 8 carbon atoms can be made in two steps from 3-fluoro-Δ<sup>2</sup>-steroids. These hormone-active 3,3-difluoro steroids primarily have antiandrogenic activity, although some exhibit androgenic properties.

3,629,302

**6-CHLORO-20-SUBSTITUTED-PREGNANES**

Andor Fürst, Basel, and Marcel Muller, Frenkendorf, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed May 14, 1969, Ser. No. 824,694

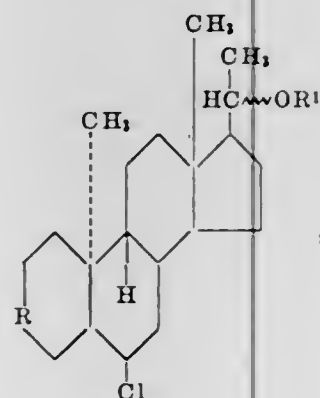
Claims priority, application Switzerland, May 20, 1968, 7,484/68

Int. Cl. C07c 169/30

U.S. Cl. 260—397.4

14 Claims

6-halo compounds of the formula



wherein R is a 3-keto-Δ<sup>4</sup>, a 3-keto-Δ<sup>4,6</sup>, a 3-keto-Δ<sup>1,4</sup>, a 3-keto-Δ<sup>1,4,6</sup>, a 3-alkoxy-Δ<sup>3,5</sup>, a 3-alkoxy-Δ<sup>4,6</sup>, a 3-

acyloxy-Δ<sup>3,5</sup>, a 3-acyloxy-Δ<sup>4,6</sup>, a 3-acyloxy-Δ<sup>2,4,6</sup>, or a 3-hydroxy-Δ<sup>4,6</sup>-system; and R<sup>1</sup> is hydrogen or acyl. These compounds are useful as progestational agents.

3,629,303

**6-ALKOXY - 16 - ALKYLIDENE - 17α - LOWER ALKANOLYLOXY-21-DESOXY - 4,6 - PREGNADIENES, METHODS FOR THEIR MANUFACTURE AND INTERMEDIATES PRODUCED THEREBY**

Richard Rausser, Union, and Robert Tiberi, Englishtown, N.J., assignors to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed June 9, 1969, Ser. No. 831,739

Int. Cl. C07c 169/34

U.S. Cl. 260—397.4

26 Claims

6 - alkoxy-16-lower alkylidene-17α-lower alkanolyloxy-4,6 - pregnadiene - 3,20-diones and 1α,2α-cyclomethylene derivatives thereof having progestational and anti-androgenic activity are prepared by treating a 6-keto-16-lower alkylidene - 17α-lower alkanolyloxy-4-pregnane-3,20-dione with boron trifluoride is a lower alkanol.

Preferred compounds are 6-methoxy-16-lower alkylidene - 17α-lower alkanolyloxy-4,6-pregnadiene-3,20-diones (particularly 6-methoxy-16 - methylene-17α-acetoxy-4,6-pregnadiene-3,20-dione) and their 1α,2α-cyclomethylene derivatives, which are valuable in the treatment of benign prostatic hypertrophy. These 6-methoxy compounds are also prepared by reaction of a 16-lower alkylidene-17α-lower alkanolyloxy-4-pregnane-3,20-dione or a 3-enol ether or 3-enol ester derivative thereof with a cupric halide in methanol.

The 1α,2α - cyclomethylene-6-alkoxy-16-lower alkylidene - 17α-lower alkanolyloxy-4,6-pregnadiene-3,20-diones are also prepared from a 6-alkoxy-16-lower alkylidene-17α-lower alkanolyloxy-1,4,6-pregnatriene-3,20-dione by reaction with dimethylsulfoxonium methylide.

3,629,304

**17α-ALKYNYL - 11β,13β - DIALKYLGONA-1,3,5(10)-TRIENE - 3,17β-DIOL 3-CYCLOALKYL ETHERS, COMPOSITIONS AND METHOD**

John S. Baran, Morton Grove, and Ivar Laos, Skokie, Ill., assignors to G. D. Searle &amp; Co., Chicago, Ill.

No Drawing. Filed June 16, 1969, Ser. No. 833,810

Int. Cl. C07c 169/08

U.S. Cl. 260—397.5

4 Claims

3 - hydroxy - 11β,13β - dialkylgona - 1,3,5(10) - triene-17-ones are allowed to react with a cycloalkyl halide and the resulting 3-cycloalkyl ethers are contacted with a lower alkyne to afford the resulting 17α-alkynyl-11β,13β-dialkylgona - 1,3,5(10) - triene - 3,17β - diol 3-cycloalkyl ethers, which compounds are potent estrogens.

3,629,305

**STABILIZED COMPOSITIONS OF ALKALINE METAL SALTS OF ESTROGEN SULPHATES**

Luigi Bernardi and Ugo Pallini, Milan, Italy, assignors to Società Farmaceutici Italia, Milan, Italy

No Drawing. Filed July 23, 1969, Ser. No. 844,155

Claims priority, application Italy, July 24, 1968, 19,351/68

Int. Cl. C07c 169/08

U.S. Cl. 260—397.4

13 Claims

A process for the preparation of a stable composition of alkaline salt of synthetic estrogen sulphate. An alkaline

salt of a synthetic estrogen sulphate selected from the group consisting of estrone sulphate and equiline sulphate, is mixed with an amino acid selected from the group consisting of glycine, L-lysine, L-arginine, L-ornithine and their salts.

3,629,306

**PROCESS FOR THE PREPARATION OF B-FORM MICROCRYSTALLINE CHLORAMPHENICOL PALMITATE**

Shigeo Kawamura, Saitama, and Takayoshi Hirano, Shuichi Takamura and Masahiko Okazaki, Tokyo, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

No Drawing. Filed July 24, 1969, Ser. No. 844,667

Claims priority, application Japan, July 24, 1968, 43/52,367

Int. Cl. C07c 103/40; A61k 21/00

U.S. Cl. 260—404.5

8 Claims

Process for the preparation of B-form microcrystalline chloramphenicol palmitate which is easily absorbed from the intestinal tract and is suitable for making the palmitate suspension, characterized by adding chloramphenicol palmitate and an ionic surface active agent to water or an aqueous sugar solution, heating and stirring the mixture to form an emulsion, and then adding an inorganic salt to the emulsion.

3,629,307

**REFINING PROCESS FOR CRUDE GLYCERIDE OIL**

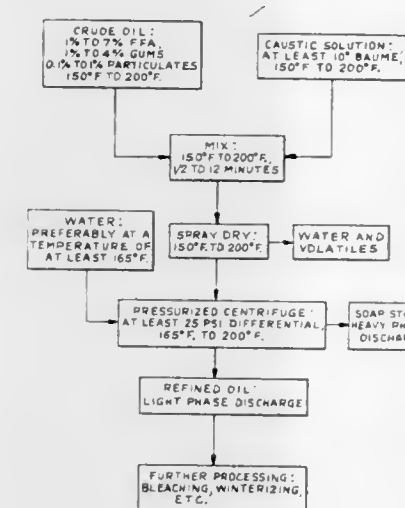
Morris Anthony Marino, Westchester, Frederic John Birkhaug, La Grange, and George Edward Sadek, Oak Lawn, Ill., assignors to CPC International Inc.

Filed May 29, 1969, Ser. No. 828,926

Int. Cl. C11b 3/06

U.S. Cl. 260—425

11 Claims



Covers an improved process for refining a crude glyceride oil containing free fatty acid impurities which comprises: mixing the crude oil with an aqueous sodium hydroxide solution to form an oil-water mixture; allowing the mixture to react until the free fatty acid impurities are converted into a soap stock, to form an oil-water-soap stock composition; dehydrating the composition to provide a dehydrated oil-soap stock mixture; rehydrating the mixture in a pressurized centrifuge and centrifugally separating the soap stock (foots) from the refined oil. The process permits the single step refining of a crude glyceride oil, without the need for a separate degumming step.

**3,629,308 SILOXANE-OXYALKYLENE BLOCK COPOLYMERS**

Donald L. Bailey, Sistersville, W. Va., and Anton S. Pater, Williamsville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application July 25, 1966, Ser. No. 567,376, now Patent No. 3,507,815, dated Apr. 21, 1970, which is a division of application Ser. No. 431,194, Feb. 8, 1965, the later application is a continuation-in-part of application Ser. No. 116,265, June 21, 1961. Divided and this application Sept. 2, 1969, Ser. No. 854,766

Int. Cl. C07f 7/02; C08c 9/08

U.S. Cl. 260—448.2

1 Claim

This invention relates to novel hydrolytically stable siloxane-oxyalkylene block copolymers characterized by a hydroxy end-blocking group on each oxyalkylene block. These block copolymers form exceptionally stable pre-mixtures with the polyethers and blowing agents conventionally employed in producing polyurethane foams.

3,629,309

**ORGANOSILICON COMPOUNDS AND PROCESSES FOR PRODUCING THE SAME**

Donald L. Bailey, Sistersville, W. Va., and Victor B. Jex, Scarsdale, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

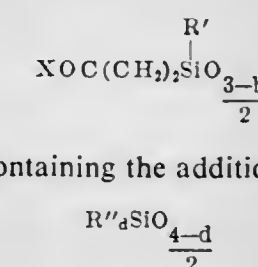
No Drawing. Continuation-in-part of application Ser. No. 615,492, Oct. 12, 1956. This application Nov. 13, 1969, Ser. No. 876,567

Int. Cl. C07b 7/08, 7/10; C07h 7/18

U.S. Cl. 260—448.2 B

12 Claims

Homopolymers of the formula



and copolymers containing the additional unit

useful to combine with alkyl resins to make heat resistant coatings for glass cloth, aluminum and sheet steel, where X is Cl, ZHN, or MO; Z is R', NH<sub>2</sub> substituted monovalent hydrocarbon, or COOH substituted monovalent hydrocarbon; M is alkali metal, and R' is monovalent hydrocarbon radical, are disclosed.

3,629,310

**ORGANO-SILOXANE-OXYALKYLENE BLOCK COPOLYMERS**

Donald L. Bailey, Sistersville, W. Va., and Francis M. O'Connor, Akron, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 162,980, Dec. 28, 1961, which is a continuation-in-part of applications Ser. No. 660,997, May 23, 1957, and Ser. No. 661,009, May 23, 1957. Ser. No. 660,997 is a continuation-in-part of application Ser. No. 417,935, Mar. 22, 1954, and Ser. No. 661,009 is a continuation-in-part of application Ser. No. 435,938, June 10, 1959. This application Aug. 28, 1969, Ser. No. 853,931

Int. Cl. C07f 7/04, 7/18

U.S. Cl. 260—448.8 R

8 Claims

Organosiloxane-oxyalkylene block copolymers where the siloxane blocks are composed of difunctional and/or trifunctional Si atoms and the oxyalkylene blocks contain at least five oxyalkylene units and are derived from a triol are disclosed. The copolymers are useful as mold release agents, hydraulic fluids, lubricants, emulsifier, and surfactants.



3,629,311

## AMINO THIOCARBONATE ADDUCTS AND METHOD OF MAKING SAME

John E. Anderson, Clyde E. Parish, and George H. Ross, Houston, Tex., assignors to The Signal Companies, Inc., Los Angeles, Calif.

No Drawing. Original application May 12, 1964, Ser. No. 366,892, now Patent No. 3,384,555, dated May 21, 1968. Divided and this application Feb. 27, 1968, Ser. No. 765,710

The portion of the term of the patent subsequent to Mar. 24, 1987, has been disclaimed

Int. Cl. C07c 154/00

U.S. Cl. 260—455 B

2 Claims

Adducts which are useful intermediate in the preparation of urethanes are those having the structural formula



where R''' is hydrogen or an alkyl, cycloalkyl or benzyl radical, R' and R'' are each alkyl, cycloalkyl or benzyl radicals, and R is an aliphatic or cycloaliphatic radical.

3,629,312

## CARBONATES AND THIO CARBONATES OF POLYHALODISULFIDE ALCOHOLS

Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Chemagro Corporation, New York, N.Y.

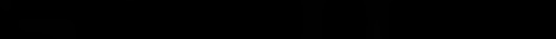
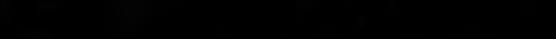
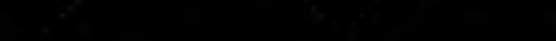
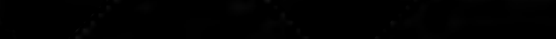
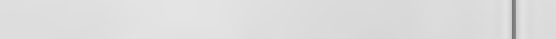
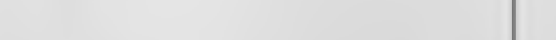
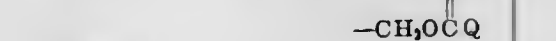
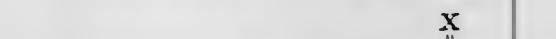
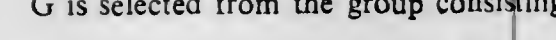
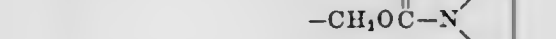
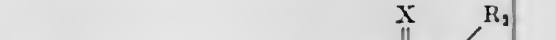
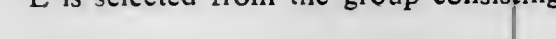
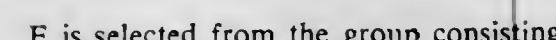
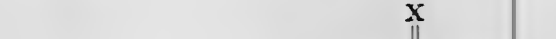
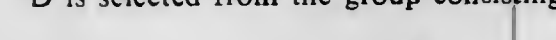
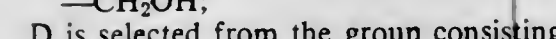
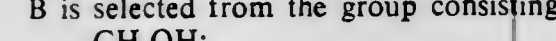
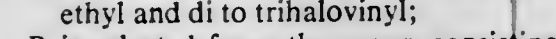
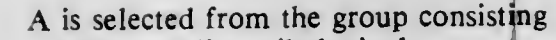
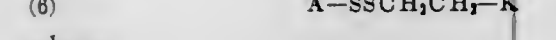
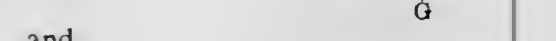
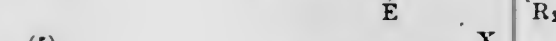
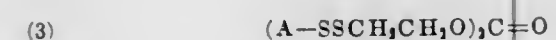
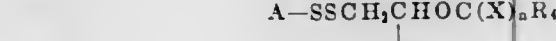
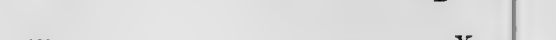
No Drawing. Application Sept. 4, 1968, Ser. No. 757,487, which is a continuation-in-part of application Ser. No. 560,125, June 24, 1966. Divided and this application Mar. 27, 1969, Ser. No. 811,234

Int. Cl. C07c 154/00, 69/00; A01n 9/12

U.S. Cl. 260—455 B

14 Claims

Compounds are prepared having one of the formulae



X is selected from the group consisting of oxygen and sulfur except that when n is 0 in Formula 2 X must be oxygen;

Q is halogen;

R<sub>1</sub> is selected from the group consisting of alkyl, phenyl, lower alkyl phenyl, halo lower alkyl, halophenyl, naphthyl, lower alkyl naphthyl and lower alkyl halophenyl;

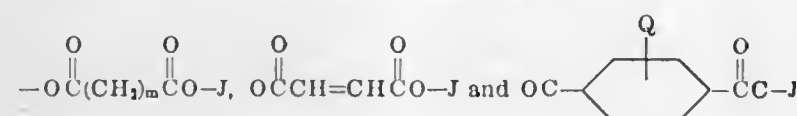
R<sub>2</sub> and R<sub>3</sub> individually are the same as R<sub>1</sub> or hydrogen with the proviso that not more than one of R<sub>2</sub> and R<sub>3</sub> is hydrogen and collectively together with the adjacent nitrogen atom form a 5 to 6 membered heterocyclic ring having up to 1 oxygen atom therein;

R<sub>4</sub> is R<sub>1</sub> or



or phenyl ethylene or halophenoxymethyl having up to 3 halogens and up to 1 methyl group on the aromatic ring;

K is selected from the group consisting of



J is selected from the group consisting of hydrogen and ASSCH<sub>2</sub>CH<sub>2</sub>—;

m is an integer from 0 to 2 inclusive, and all halogen atoms in the compounds have an atomic weight of 35 to 80.

The compounds are useful as herbicides, fungicides, nematocides, defoliants and desiccants. 1,2,2-trichloroethylthioethyl-2'-methyl-4'-chlorophenoxy acetate is a particularly effective herbicide.

3,629,313

## SULFUR CONTAINING CARBOXYLIC ACID THIOESTERS AS PESTICIDES

Carl D. Emerson, Kansas City, Mo., and Paul C. Aichenegg, Prairie Village, Kans., assignors to Chemagro Corporation, Kansas City, Mo.

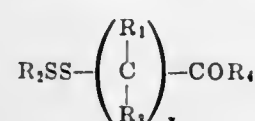
No Drawing. Original application Feb. 5, 1969, Ser. No. 841,162, which is a division of application Ser. No. 401,253, Oct. 2, 1964, now Patent No. 3,442,941, dated May 6, 1969. Divided and this application June 20, 1969, Ser. No. 835,229

Int. Cl. C07c 153/07

U.S. Cl. 260—455 C

7 Claims

Compounds are prepared having the formula

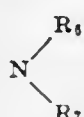


where

R<sub>1</sub> and R<sub>3</sub> are selected from the group consisting of hydrogen, lower alkyl, carboxyl lower alkyl, carbocyclic aryl, carbocyclic haloaryl, haloalkyl, and ester of carboxy lower alkyl;

R<sub>2</sub> is selected from the group consisting of polyhaloethyl and polyhalovinyl;

R<sub>4</sub> is selected from the group consisting of OH, SH, OR<sub>5</sub> where R<sub>5</sub> is selected from the group consisting of alkyl, carbocyclic aryl, halocarbocyclic aryl, haloalkyl, and alkylthioalkyl, SR<sub>5</sub>,



where R<sub>6</sub> and R<sub>7</sub> are selected from the group hydrogen, alkyl and carbocyclic alkyl and R<sub>6</sub> and R<sub>7</sub> together with N complete a heterocyclic ring, and OMe

where Me is selected from the group consisting of the metals of Groups I, II, VI, VII and VIII of the Periodic Table; and x is an integer from 1 to 2 inclusive. Such materials have been found useful to kill nematodes, fungi and undesirable plants. They are also useful as defoliating agents.

3,629,314

## CHLOROFORMATE AND CARBONATE DERIVATIVES OF SUBSTITUTED AND UNSUBSTITUTED 1-PHENYL-2,2-DIALKYL-1,3-DIHYDROXYPROPANES

Kurt Kulka, New York, N.Y., assignor to Fritzsche Dodge & Scott Inc., New York, N.Y.

No Drawing. Original application Jan. 4, 1965, Ser. No. 423,327, now Patent No. 3,415,844, dated Dec. 10, 1968. Divided and this application Sept. 23, 1968, Ser. No. 761,875

Int. Cl. C07c 69/00, 69/64; A61k 27/00

U.S. Cl. 260—463

4 Claims

Monochloroformate, monochloroformate-carboxylic acid monoester and monochloroformate-carboxylic acid monoester derivatives of substituted and unsubstituted 1-phenyl-2,2-dialkyl-1,3-dihydroxypropanes are produced. Such monocarbamates manifest tranquilizing effects in animals. When administered to animals they produce narcosis that emphasizes relaxation. The monocarbamates may be primary or secondary monocarbamates or mixtures of them, depending upon the method employed to produce them.

3,629,315

## ADDUCTS OF TETRABROMODIALKOXY CYCLOPENTADIENES AND ACRYLONITRILE

Richard Garth Pews, Midland, Clare R. Hand, Sanford, and Carleton W. Roberts, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Apr. 12, 1968, Ser. No. 721,106, now Patent No. 3,489,814, dated Jan. 13, 1970. Divided and this application June 16, 1969, Ser. No. 833,679

Int. Cl. C07c 121/48

U.S. Cl. 260—464

1 Claim

Compositions of matter that are the Diels-Alder adducts of tetrabromodialkoxy cyclopentadienes having the general formula C<sub>5</sub>Br<sub>4</sub>(OR)<sub>2</sub> wherein R is an alkyl radical having from 1 to 8 carbon atoms and acrylonitrile. Said adducts have utility in pig weed control agents.

3,629,316

## PROCESS FOR THE MANUFACTURE OF ADIPONITRILE

Jimmy L. Hatten and Kurt Rudolph Nauck, Jr., Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed Jan. 22, 1969, Ser. No. 793,044

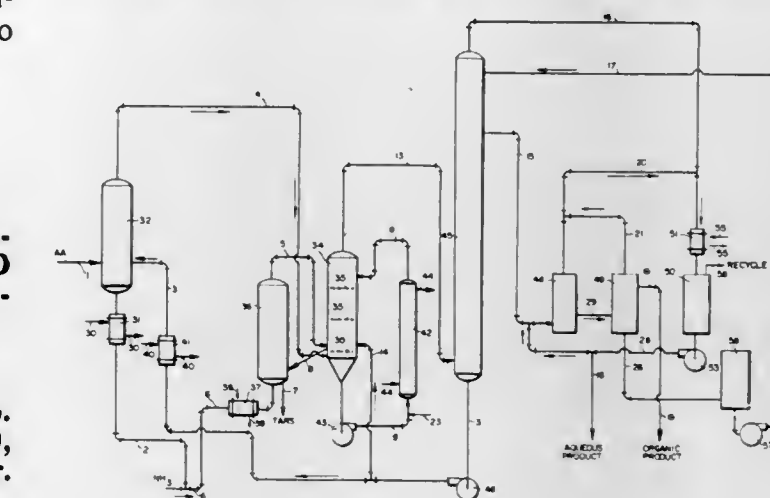
Int. Cl. C07c 121/10

U.S. Cl. 260—465.2

12 Claims

Continuous process for the production of adiponitrile comprising reacting a mixture of adipic acid and an excess of ammonia in a first stage reactor at a temperature of about 320° to 420° F. in the absence of catalyst, passing the resulting mixture to a perforated tray reactor maintained at a temperature of about 475° to 600° F., in the presence of a dehydration catalyst to form a mixture containing adiponitrile, intermediates, water, ammonia and tars, passing a portion of the mixture from the tray reactor to a purge reactor where it is purged with ammonia at a temperature of about 425° to 525° F. to remove tars with adiponitrile and intermediates being returned to the tray reactor; passing the mixture from the

tray reactor to a purification column for removal of adiponitrile product, contacting the product with ammonia and water to convert all adipimide to adipamide,



separating the latter from the adiponitrile, recovering the adiponitrile and recycling intermediates, water and ammonia to the system.

3,629,317

## PROCESS FOR MANUFACTURING ACRYLONITRILE TRILE FROM PROPYLENE

Keisho Yamada, Shigeki Nagai, Kyoji Odan, and Mikio Hidaka, Ube-shi, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,192

Claims priority, application Japan, Sept. 17, 1968,

43/66,626

Int. Cl. C07c 121/02

U.S. Cl. 260—465.3

1 Claim

In the process of manufacturing acrylonitrile wherein propylene, ammonia and oxygen are contacted with a solid oxidizing catalyst in the vapor phase at a temperature in the range of 400–600° C., the improved method which comprises using as said solid catalyst that which consists essentially of

- (A) a bismuth antimonate in which the atomic ratio of bismuth to antimony is 1:1,
- (B) stannic oxide, and
- (C) a bismuth molybdate in which the atomic ratio of bismuth to molybdenum is 2:3;

the weight ratio of said bismuth antimonate to said stannic oxide being in the range of 95:5–60:40, the weight ratio of bismuth antimonate plus stannic oxide to bismuth molybdate being in the range of 95:5–60:40.

3,629,318

## SYNTHESIS OF DIAMINOMALEONITRILE FROM HYDROGEN CYANIDE AS CATALYZED BY CYANOGEN OR DIIMINOSUCCINONITRILE

Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 707,459, Feb. 23, 1968, now Patent No. 3,564,039, which is a continuation-in-part of application Ser. No. 670,763, Sept. 26, 1967. This application Mar. 18, 1970, Ser. No. 20,821

Int. Cl. C07c 121/20

U.S. Cl. 260—465.5

10 Claims

Base-catalyzed tetramerization of hydrogen cyanide to diaminomaleonitrile achieved by catalyzing the same with a basic catalyst and a cocatalyst, cyanogen and/or diiminosuccinonitrile.



3,629,319

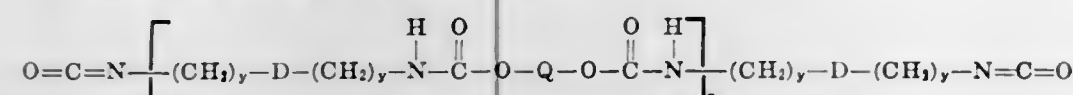
## URETHANE DIISOCYANATES

Charles W. Jonaitis, New Hope, and Lyle E. Elmquist, North St. Paul, Minn., assignors to General Mills, Inc.  
No Drawing. Filed Sept. 11, 1968, Ser. No. 759,196  
Int. Cl. C07c 125/04; C10m 3/20

U.S. Cl. 260—468 C

4 Claims

Compounds having the general formula



where  $y$  is 0 or 1,  $x$  is 1 to about 10, D is the divalent hydrocarbon group of dimerized fat acids and Q is the divalent group of a diol containing ether linkages. Compounds as above where the  $-\text{N}=\text{C}=\text{O}$  groups are blocked, preferably by reaction with certain oximes. Treatment of fibrous materials with such compounds.

3,629,320

## 2-(4-HALO- AND 4-TRIFLUOROMETHYLPHENYL-SULFONAMIDO)PHENYLACETIC ACIDS AND ESTERS THEREOF

Jan W. F. Wasley, Ossining, N.Y., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,798

Int. Cl. C07c 143/78

U.S. Cl. 260—470

19 Claims

2-(4-halo- and 4-trifluoromethylphenylsulfonamido)phenylacetic acids and the (lower)alkyl esters thereof are anti-inflammatory agents. A typical embodiment is 2-(4-chlorophenylsulfonamido)phenylacetic acid.

3,629,321

## INTEGRATION OF PARA-XYLENE OXIDATION TO TEREPHTHALIC ACID AND ITS ESTERIFICATION TO DIMETHYL TEREPHTHALATE

George M. Longland, Jr., Highland, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed May 26, 1969, Ser. No. 827,648

Int. Cl. C07c 69/82

U.S. Cl. 260—475 R

2 Claims

Liquid phase oxidation of p-xylene with molecular oxygen-containing gas (e.g., air or commercial oxygen) in presence of acetic acid produces fluid oxidation effluent which is subjected first to simultaneous terephthalic acid crystallization and acetic acid displacement by contact with a countercurrent flow of water and second to simultaneous water displacement by and terephthalic slurry formation in methanol by its countercurrent contact with the first formed slurry of terephthalic acid in water from acetic acid displacement. This provides a slurry of terephthalic acid in methanol as feed to esterification from which a liquid esterification effluent is subjected to simultaneous DMT crystallization and methanol mother liquor displacement by countercurrent contact with cooler fresh methanol thereby producing a slurry of precipitated DMT in fresh methanol.

3,629,322

## ORGANIC ESTERS AND THEIR USE AS ULTRAVIOLET LIGHT ABSORBERS AND AS HEAT STABILIZERS

Stanley J. Buckman, Kenneth J. Flanagan, John D. Pera, and Lester A. Wienert, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Filed Feb. 17, 1969, Ser. No. 800,007

Int. Cl. C07c 69/78; C08f 45/58

U.S. Cl. 260—476 C

3 Claims

Betabenzoyloxy-2'-hydroxychalcones which are useful as ultraviolet light absorbers and heat stabilizers are produced by slowly adding benzoyl chloride to a solution

comprising an alkali-metal hydroxide, a 1-(o-hydroxyphenyl)-3-phenyl-1,3-propanedione or a halo substituted compound thereof, and dimethylformamide at a temperature varying from room to about 30° C. Upon completion of the reaction, the mixture is poured into ice water to obtain the chalcone as a colorless solid.

3,629,323

## ALKYL ESTERS OF 2-HYDROXY-2-ALKOXY 3,3,3-TRIFLUOROPROPANOIC ACID

Stanley Selman, Wilmington, Del., and Edward N. Squire, Glen Mills, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

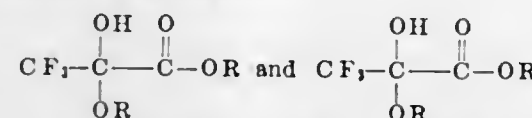
No Drawing. Original application Mar. 12, 1968, Ser. No. 724,308, now Patent No. 3,502,732, dated Mar. 24, 1970, which is a division of application Ser. No. 488,247, Sept. 17, 1965. Divided and this application Apr. 23, 1969, Ser. No. 840,880

Int. Cl. C07c 69/66

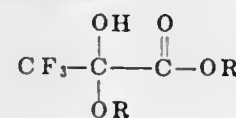
U.S. Cl. 260—484 R

2 Claims

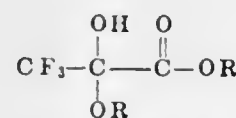
Compounds of the formulas



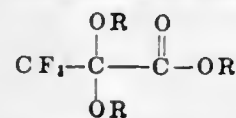
wherein R is alkyl containing up to 30 carbon atoms, can be prepared by reacting perfluoropyruvyl fluoride with a saturated hydrocarbon alcohol and an HF scavenger to neutralize HF and isolating



then reacting the



with an alkali metal alkoxide and a dialkyl sulfate containing up to 30 carbon atoms and isolating



3,629,324

## PERFLUORO ALIPHATIC ESTERS

Milton B. Frankel, Tarzana, and Naomi N. Ogimachi, Canoga Park, Calif., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed May 8, 1969, Ser. No. 826,056

Int. Cl. C07c 69/34

U.S. Cl. 260—485 F

3 Claims

Esters produced by the condensation of 2,2-dinitro-2-fluoroethanol with perfluoro aliphatic dibasic acids in the presence of an inert organic solvent and an acid catalyst. The novel group of esters prepared by the above reaction find utility as plasticizers for explosive compositions of matter. Also, the esters of this invention are useful as explosives per se.

3,629,325

## CLEAVING POLY(ALKYLENE OXIDES) WITH ACID ANHYDRIDES

Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,446

Int. Cl. C07c 41/02, 67/00

U.S. Cl. 260—496

10 Claims

Poly(alkylene oxide) diacetates are obtained by cleaving poly(alkylene oxides) with acetic anhydride in the

3,629,328

## PURIFICATION OF ORGANIC ACIDS

Adin L. Stautzenberger, Corpus Christi, Tex., and Alexander F. MacLean, Durham, N.H., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 564,541, July 12, 1966. This application May 20, 1969, Ser. No. 826,255

Int. Cl. C07c 51/42, 61/02

U.S. Cl. 260—525

11 Claims

Process for purifying relatively insoluble carboxylic acids such as terephthalic acid by treating the insoluble acid dissolved in aqueous solutions of weak acid salts, the weak acid salts being of lithium, magnesium, tertiary amines or being tetraalkyl quaternary ammonium salts. The insoluble acid is recovered in the free acid form by merely cooling the solution to recrystallize the insoluble acid.

3,629,329

## PROCESS FOR PRODUCING GRANULAR ALKALI METAL NITRILOTRIACETATE

Chung Yu Shen, St. Louis, Mo., and Norman Earl Stahlheber, Columbia, Ill., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 4, 1968, Ser. No. 709,875

Int. Cl. C07c 101/20

U.S. Cl. 260—534 E

6 Claims

Caking-resistant granular alkali metal nitrilotriacetate products are prepared by forming a reaction mixture of nitrilotriacetic acid and alkali metal carbonate and water; the molar ratio of nitrilotriacetic acid to the alkali metal content of said carbonate being from about 1:2 to about 1:20, said water comprising from about 5% to about 35% by weight based upon the weight of the total reaction medium and drying the resulting mixture to obtain a detergent additive containing dialkali metal nitrilotriacetate and having a bulk density of from about 0.4 to about 0.8 g./cc. and having about 60% of its particles smaller than the openings in a U.S. Standard 10 mesh screen and about 60% larger than the openings in a U.S. Standard 60 mesh screen and less than about 8% by weight of water.

3,629,330

## COMPONENTS FOR HAIR DYEING COMPOSITIONS

Frederick Brody, New York, N.Y., Alexander Halasz, Norwalk, Conn., and Milos S. Bil, Forest Hills, N.Y., assignors to Clairol Incorporated, New York, N.Y.

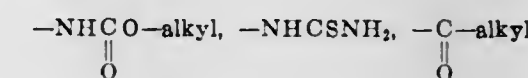
No Drawing. Filed May 24, 1965, Ser. No. 458,443

Int. Cl. C07c 103/33, 127/14, 143/78

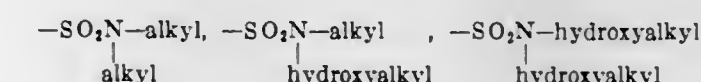
U.S. Cl. 260—553 A

33 Claims

A group of N-substituted alkyl derivatives of nitro-aminobenzenes which are characterized by the fact that the alkyl group carry further substituents such as  $-\text{O}-\text{alkyl}$ ,  $-\text{NH}-\text{CO}-\text{alkyl}$ ,  $-\text{NH}-\text{CO}-\text{hydroxyalkyl}$ ,  $-\text{NHCO}-\text{aryl}$ ,  $-\text{NHSO}_2-\text{alkyl}$ ,  $-\text{NHSO}_2-\text{aryl}$ ,  $-\text{NHCONH}_2$ ,



$-\text{CN}$ ,  $-\text{SO}_2\text{NH}_2$ ,  $-\text{SO}_2\text{NH}-\text{alkyl}$ ,  $-\text{SO}_2\text{NH}-\text{hydroxyalkyl}$ ,



and  $-\text{SO}_2-\text{alkyl}$ ; these are useful as dyes or dye intermediates that are particularly suitable for dyeing hair.

presence of acetic acid or aluminum chloride. The poly(alkylene oxide) diacetates are alcholyzed to poly(alkylene oxide) diols. Isotactic poly(alkylene oxide) diols are particularly useful reactants in the synthesis of polyurethanes. Polyurethanes are prepared by reacting a poly(alkylene oxide) diol with an organic polyisocyanate or polyisothiocyanate. Such polyurethanes are especially useful as surface coatings.

3,629,326

## PERFLUORO - 1 - CYCLOALKEN-1,2-YLENE-DIPHOSPHORYL COMPOUNDS AND PROCESS FOR THE PREPARATION THEREOF

Arlen W. Frank, Grand Island, N.Y., and Charles F. Baranaukas, Memphis, Tenn., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

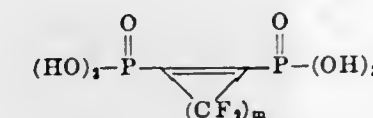
No Drawing. Original application Mar. 8, 1965, Ser. No. 438,105, now Patent No. 3,501,555, dated Mar. 17, 1970. Divided and this application Sept. 8, 1969, Ser. No. 870,803

Int. Cl. C07f 9/38; C11d 1/34

U.S. Cl. 260—502.4 P

2 Claims

A perfluoro - 1 - cycloalken - 1,2 - ylenediphosphoric acid of the formula



wherein  $m$  is from 2 to 4.

3,629,327

## LITHIUM SALT OF HYDROQUINONE SULFONIC ACID

Antonio Esteve-Subirana, Barcelona, Spain, assignor to Laboratories Om S.A., Geneva, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 600,721, Dec. 12, 1966, which is a continuation-in-part of application Ser. No. 202,981, June 18, 1962, now Patent No. 3,354,201, which in turn is a continuation-in-part of application Ser. No. 2, Jan. 4, 1960. This application Oct. 30, 1968, Ser. No. 771,977

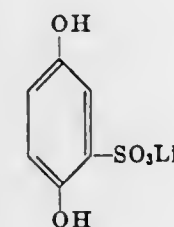
Claims priority, application Switzerland, Nov. 9, 1967, 15,692/67, 15,693/67

Int. Cl. C07c 143/42

U.S. Cl. 260—512

5 Claims

The lithium salt of hydroquinone sulfonic acid of the formula



has therapeutic value for normalizing or reducing the abnormal permeability of the capillary wall of blood vessels of a person or animal having capillar fragility, and also for treating infections relative to blood coagulation. This novel salt can be prepared by reacting p-benzoquinone with lithium bisulfite in a solvent, or by reacting the potassium salt of hydroquinone sulfonic acid with a lithium salt of an inorganic or organic acid in a solvent wherein the lithium salt of hydroquinone sulfonic acid is soluble and wherein the potassium salt formed as a by-product is slightly or not soluble.



3,629,331

**STABILIZATION OF UREA PEROXIDE**

Bernard L. Kabacoff, Norwalk, and Charles M. Fairchild, Old Greenwich, Conn., assignors to Revlon, Inc.  
No Drawing. Filed Sept. 9, 1969, Ser. No. 856,460  
Int. Cl. C07c 127/00

U.S. Cl. 260—555 R

3 Claims

Urea peroxide is stabilized against decomposition by incorporating therewith from about at least 0.02% each by weight of urea peroxide ethylenediaminetetraacetic acid and sodium dihydrogen pyrophosphate.

3,629,332

**N-(ARALKYL)FLUOROALKANESULFONAMIDES**

Joseph Kenneth Harrington, Edina, and Robert D. Trepka, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.  
No Drawing. Filed Jan. 29, 1969, Ser. No. 795,050  
Int. Cl. C07c 143/74

U.S. Cl. 260—556 F

13 Claims

N-(aralkyl)fluoroalkanesulfonamides wherein the alkyl group is substituted by one or more optionally substituted phenyl, naphthyl, or heterocyclic radicals and salts thereof and processes for their preparation are disclosed. These compounds and their compositions are plant growth modifiers, i.e. they modify and/or terminate the growth of plants.

3,629,333

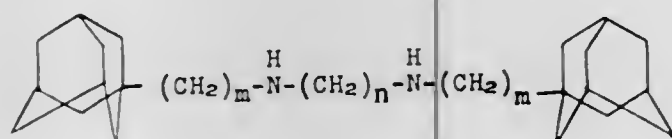
**POLYMETHYLENEBIS ADAMANTANE AMINES**

Donald Clarke Boughton, Kennett Square, Pa., and Walter E. Meier, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed Aug. 28, 1969, Ser. No. 853,969  
Int. Cl. C07c 87/40

U.S. Cl. 260—563 P

2 Claims

This application refers to polymethylene-bis(1-amino-adamantanes) and polymethylenebis(1-adamantanemethylamines) of the formula



where  $m$  is 0 or 1 and  $n$  is 2 to 14 which are useful in pharmaceutical compositions thereof, and methods of pounds of the above formula where  $n$  is 10 such as N,N'-decamethylenebis (adamantane-1-amine), or (adamantane-1-methylamine) are preferred.

3,629,334

**SUBSTITUTED GUANYL-FORMAMIDINES**

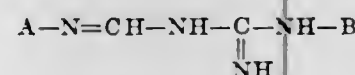
Pál Benko and László Pallos, Budapest, Lajos Vácz, Debrecen, and Endre Komlós and Ferenc Ördögh, Budapest, Hungary, assignors to Egységt Gyógyszer-Es Tapszergyár, Budapest, Hungary  
No Drawing. Filed Apr. 2, 1968, Ser. No. 718,205  
Claims priority, application Hungary, Apr. 8, 1967, EE/1377

Int. Cl. C07c 129/00

U.S. Cl. 260—565

6 Claims

Substituted guanyl-formamidines of the formula



wherein A is a nitrile or carboethoxy group, an aryl or aralkyl group or a substituted aryl or aralkyl group or a pyridyl group or a substituted pyridyl group, and B is

hydrogen or an aryl group or a substituted aryl group are disclosed to be useful as hypertensive agents, virostatic agents as well as being effective against bacteria and fungi.

3,629,335

**N-BENZYLIDENE CYCLOOCTYLAMINE**

Jean-Claude Richer, B.P. 6128, Montreal, Quebec, Canada  
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,138  
Int. Cl. C07c 119/00

U.S. Cl. 260—566 F

1 Claim

Benzylidene cyclooctylamine is a compound medicinally useful for the treatment of central nervous system depression. The compound is prepared by azeotropically refluxing cyclooctylamine with benzaldehyde in a solvent such as toluene.

3,629,336

**LIGANDS WHICH ARE ALSO SILVER HALIDE DEVELOPING AGENTS**

Elbert M. Idelson, Newton Lower Falls, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Continuation-in-part of application Ser. No. 487,054, Sept. 13, 1965. This application Dec. 1, 1969, Ser. No. 881,323

Int. Cl. C07c 49/82

U.S. Cl. 260—590

9 Claims

Ligands or co-ordinating agents which will form a co-ordination complex with a metal and which also include a silver halide developing function particularly a paradihydroxyphenyl silver halide developing function or a substituted derivative thereof, thereby making them additionally useful in photography.

3,629,337

**PROCESS FOR PREPARING 5,8-DIMETHYL-5,6,7,8-TETRAHYDRO-1-NAPHTHOLS**

Edward R. Degginger, Convent Station, and James M. Balquist, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 8, 1970, Ser. No. 1,566

Int. Cl. C07c 43/22, 39/12

U.S. Cl. 260—613

9 Claims

5,8-dimethyl-5,6,7,8-tetrahydro-1-naphthols are prepared by reacting 1,5-hexadiene with a substituted or unsubstituted phenol in the presence of a triphenoxy aluminum catalyst. The naphthols can be converted to the corresponding N-substituted carbamates by reaction with an isocyanate. The carbamates are useful as insecticides, miticides, and nematocides.

3,629,338

**CERTAIN FLUORO-CONTAINING NITRO-ACETAL COMPOUNDS**

Fred E. Martin, Azusa, Calif., assignor to Aerojet-General Corporation, Azusa, Calif.

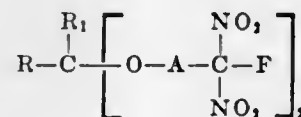
No Drawing. Filed July 6, 1964, Ser. No. 381,293

Int. Cl. C07c 43/30

U.S. Cl. 260—615 A

8 Claims

1. As compositions of matter, the compounds having the formula:



wherein R is a radical selected from the group consisting of hydrogen and lower alkyl;  $R_1$  is a radical selected from the group consisting of hydrogen and lower alkyl; and A is a lower alkylene radical.

3,629,339

**STABILIZATION OF PHENOLS**

Hans L. Schlichting, Spartanburg, S.C., and Ellis I. Lichtblau, Kenmore, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 510,681, Nov. 30, 1965. This application Mar. 28, 1969, Ser. No. 811,674

Int. Cl. C07c 39/00

U.S. Cl. 260—621 A

20 Claims

An inorganic trivalent arsenic compound, present in a stabilizing proportion, can be used to stabilize phenol, unsubstituted polyhydric monocyclic phenols, unsubstituted fused ring phenols, unsubstituted alkylidene linked bisphenols, their lower alkyl derivatives, and their halogenated derivatives, against deterioration in color and odor with age, provided it is substantially soluble, does not discolor the phenol and must not create a visibly turbid appearance in the concentrations used. It can be used in combination with other stabilizers.

3,629,340

**SYNTHESIS OF PERFLUOROPARACRESOL, POLYOXYPERFLUOROBENZYLENE AND RELATED MONOMERS AND POLYMERS**

Leo A. Wall, Washington, D.C., and Joseph M. Antonucci, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy

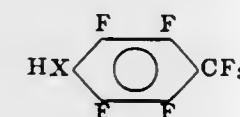
No Drawing. Original application Dec. 29, 1964, Ser. No. 422,089, now Patent No. 3,394,190, dated July 23, 1968. Divided and this application June 25, 1968, Ser. No. 767,863

Int. Cl. C07c 39/24

U.S. Cl. 260—623 R

1 Claim

A method for preparing the monomers



where X may be S, O, NH or NR (where R may be either alkyl or aryl) which comprises treating octafluorotoluene with a tertiary thiobutoxy or butoxy lithium nucleophilic reagent in an ether diluent to produce an intermediate and heating the intermediate between 150° and 850° C.

3,629,341

**PRODUCTION OF EPOXIDIZED ALKOXY ALKADIENES AND OF ALKANETRIOLS, PARTICULARLY 1,2,4-BUTANETRIOL**

Adin L. Stautzenberger and Charles C. Hobbs, Jr., Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Aug. 15, 1968, Ser. No. 752,745

Int. Cl. C07c 31/18, 77/02

U.S. Cl. 260—635 A

1 Claim

1,2,4-butanetriol, which is useful in manufacturing explosives, is produced by reacting a 1-alkoxy-1,3-butadiene, particularly 1-methoxy-1,3-butadiene, with an organic peroxide such as peracetic acid to form the monoepoxide derivative, which is then hydrolyzed to form 3,4-dihydroxybutyraldehyde which is then hydrogenated to form 1,2,4-butanetriol. In its broader aspects the invention embraces the conversion of any  $\alpha,\beta$ -internally unsaturated aldehyde to a 1-alkoxy-1,3-alkadiene by reacting the aldehyde with an alcohol and pyrolyzing the re-

sulting product to form the 1-alkoxy-1,3-alkadiene which may then be epoxidized and, if desired, converted to the corresponding alkanetriol.

3,629,342

**SYNTHESIS OF FLUORODINITROMETHANE**

Kurt Baum, Pasadena, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

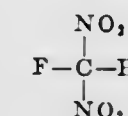
No Drawing. Filed May 28, 1969, Ser. No. 828,752

Int. Cl. C07c 79/02

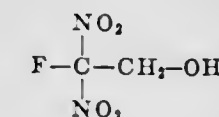
U.S. Cl. 260—644

5 Claims

This patent describes a novel method of making the compound fluorodinitromethane having the formula:



by the reaction of dinitrofluoroethanol having the formula:



with an oxidizing agent under acidic conditions.

3,629,343

**PROCESS FOR THE PRODUCTION OF ALKYLENE GLYCOLS**

Semen Zakharovich Levin and Aron Leibovich Shapiro, Leningrad, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatel'skiy Institut Neftekhimicheskikh Protsessov, Leningrad, U.S.S.R.

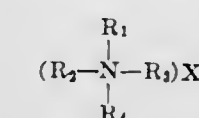
No Drawing. Filed Oct. 11, 1968, Ser. No. 766,995

Int. Cl. C07c 31/20

U.S. Cl. 260—635 E

8 Claims

A process for the production of alkylene glycols by the catalytic hydration of alkylene oxides in the presence of carbon dioxide under a pressure of 10–180 atm. and at a temperature of 80–220° C., employing as catalyst alkali metal halides and compounds of the formula



wherein  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are hydrogen or alkyl, and X is chlorine, bromine or iodine.

3,629,344

**OXIDATIVE DEMETHYLATION OF METHYL GROUPS ORTHO TO A STRONGLY ELECTRONEGATIVE GROUP ON AN AROMATIC RING**

Leo R. Morris, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 17, 1968, Ser. No. 768,491

Int. Cl. C07c 79/10, 79/12, 121/52

U.S. Cl. 260—645

7 Claims

Methyl groups ortho to a strongly electronegative group on an aromatic ring are removed by reacting the substituted aromatic compound with a strong base dissolved in a secondary or tertiary alcohol in the presence of oxygen.



3,629,345

**REACTION PRODUCTS OF LITHIUM ALKYL AND CERTAIN NITRO COMPOUNDS**

Gary A. Harpell, Brecksville, Ohio, assignor to Goodrich-Gulf Chemicals, Inc., Cleveland, Ohio

Filed Apr. 10, 1969, Ser. No. 815,147

Int. Cl. C07c 79/10, 79/12

U.S. Cl. 260—645

2 Claims

The reaction product of organoalkali metal compounds, such as lithium alkyls, and aromatic nitrocompounds or 1-chloro-2,6-dinitrocyclohexane, provides a composition, useful as stabilizing agents for elastomers.

3,629,346

**REACTIONS OF ALKALI METAL TETRAALKYL-ALUMINUM COMPOUNDS WITH DIATOMIC HALOGENS**

David L. Skinner, Arlington Heights, Ill., assignor to The Procter &amp; Gamble Company, Cincinnati, Ohio

No Drawing. Original application Dec. 20, 1966, Ser. No. 603,099, now Patent No. 3,468,971, dated Sept. 23, 1969. Divided and this application Apr. 14, 1969, Ser. No. 832,875

Int. Cl. C07c 19/00

U.S. Cl. 260—652 R

7 Claims

A process for alkylating active halogen compounds, such as halogens, by reacting the active halogens with alkali metal tetraalkylaluminum compounds at a temperature of from 0° C. to 200° C.

3,629,347

**CYCLOCO-OLIGOMERIZATION TO FORM MULTI-CYCLIC OLEFINIC RINGS**

Gunther Wilke and Paul Heimbach, Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

No Drawing. Continuation-in-part of abandoned applications, Ser. No. 532,900, Mar. 9, 1966, Ser. No. 76,520, Dec. 19, 1960, Ser. No. 203,753, June 20, 1962, and Ser. No. 582,775, Sept. 27, 1966. This application July 29, 1969, Ser. No. 845,901

Claims priority, application Germany, Sept. 29, 1965, St 24,439

Int. Cl. C07c 3/10

U.S. Cl. 260—666

6 Claims

Process of cycloco-oligomerization of a conjugated diolefin, such as butadiene or a substituted butadiene, with a different cyclic unsaturated hydrocarbon, which is an acetylene and/or a non-conjugated olefin, preferably a monoolefin, to produce multicyclic products having olefinic unsaturation in at least one of the rings. These products are made by reacting the above-mentioned reactants together in contact with a carbonyl-free, 0-valent nickel compound catalyst. Many of the new products formed by this process are described, characterized and claimed.

3,629,348

**PROCESS FOR PRODUCING 5-ALKYLIDENE-2-NORBORNENES**

Constantine I. Courduvelis, New Haven, and Thomas J. Brett, Jr., Cheshire, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,720

Int. Cl. C07c 5/24

U.S. Cl. 260—666

8 Claims

5-alkenyl-2-norbornenes (such as 5-vinyl-2-norbornene) are isomerized to corresponding 5-alkylidene-2-nor-

bornenes (e.g., 5-ethylidene-2-norbornene, a monomer useful as the diene in making EPDM rubber) with the aid of various one-component or two-component catalysts. One-component catalysts include alkali metal amides or hydrazides such as lithiumdimethylamide. Two-component catalysts include combinations of (I) alkali metal or alkali metal compound such as alkali metal-amide, -hydrazide, -hydride, -alkyl, -hydroxide, or alkoxide, with (II) certain carbonamides (e.g., tetramethylurea) sulfinamides (e.g., tetramethylsulfinamide), sulfonamides, or silicic diamides.

3,629,349

**PROCESS FOR PRODUCING CYCLODODECATRIENE**

Jo Itakura, Hisao Tanaka, and Hiroo Ito, Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Nov. 13, 1969, Ser. No. 876,606

Claims priority, application Japan, Nov. 20, 1968, 43/84,540

Int. Cl. C07c 3/10

U.S. Cl. 260—666 B

3 Claims

1,5,9-cyclododecatriene is prepared by cyclotrimerizing conjugated diolefines in the presence of a relatively moisture-stable catalyst composition obtained by mixing alkoxytitanium-acetoacetate complex compound with alkyl-aluminum chloride.

3,629,350

**PROCESS FOR OBTAINING DIETHYLBENZENE**

Vladimir Mocearov, Bucharest, and Georgeta Osomontanyi and Mihail Mihailescu, Ploesti, Rumania, assignors to Ministerul Industrial Chlmice, Bucharest, Rumania

No Drawing. Continuation-in-part of application Ser. No. 871,594, Nov. 6, 1969, which is a continuation of application Ser. No. 633,713, Apr. 26, 1967. This application Sept. 8, 1970, Ser. No. 70,481

Int. Cl. C07c 3/62

U.S. Cl. 260—672 T

6 Claims

A process for obtaining diethylbenzene from ethylbenzene which results from the catalytic reforming of gasolines. The ethylbenzene is disproportionated in the presence of a catalytic complex based on aluminum chloride and polyalkylbenzenes in the amount of 3-10% relative to ethylbenzene, at a temperature of 80-100° C. in the absence of hydrogen. There is obtained a mixture of diethylbenzene, benzene, and ethylbenzene containing at most 1.5% of ortho-diethylbenzene and at most 2.9% of polyalkylbenzenes.

3,629,351

**CATALYTIC REARRANGEMENT OF ALKYL AROMATICS**

Martin Frederick Olive, Lightwater, and Geoffrey Dovey, Shepperton, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,627

Claims priority, application Great Britain, Jan. 15, 1969, 2,405/69

Int. Cl. C07c 3/00, 15/08

U.S. Cl. 260—672 T

8 Claims

In the catalytic rearrangement of alkyl aromatics over a catalyst of a hydrogenating component or an alkalination deficient zeolite, the feedstock contains less than

0.5% wt., preferably less than 0.1% wt. of non-aromatic hydrocarbons so that the catalyst activity is increased. The preferred zeolite is decationized mordenite and the preferred hydrogenating component a Group VIII metal e.g. nickel added by ion-exchange. The operating conditions may be 300-525° C., 0-1500 p.s.i.g., 0.1-10 v./v./hr. 1,000-15,000 s.c.f. H<sub>2</sub>/B. Paraffins were found to be a permanent and naphthenes a temporary poison for the catalyst.

3,629,352

**REDUCTION OF HYDROPEROXIDE CONTENT OF CUMENE**

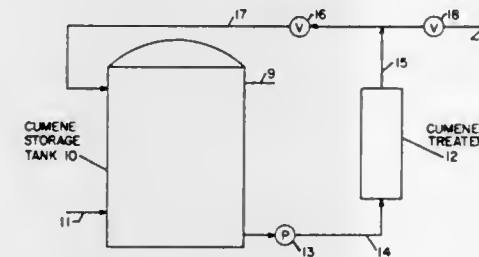
Theodore S. Hoover, Corpus Christi, Tex., assignor to Sun Oil Company, Philadelphia, Pa.

Filed June 27, 1969, Ser. No. 837,281

Int. Cl. C07c 7/18, 7/12

U.S. Cl. 260—674 A

5 Claims



Cumene containing a small percentage of hydroperoxide is treated in liquid phase with activated carbon to reduce the hydroperoxide content.

3,629,353

**HYDROCARBON PYROLYSIS PROCESS**

Robert H. Reitsema, 2766 S. Clayton, Denver, Colo. 80210, and Lynn P. Walker, 8261 Mehring Oed 77B, Germany

No Drawing. Continuation-in-part of application Ser. No. 694,432, Dec. 29, 1967. This application Oct. 8, 1969, Ser. No. 866,429

Int. Cl. C07c 11/24, 3/30; C10d 9/26

U.S. Cl. 260—679 R

7 Claims

The present invention comprises, in a process for the pyrolysis of naphtha, the improvement consisting essentially of feeding from about 1.5 to about 2.2 pounds of steam per pound of naphtha fed to the pyrolysis furnace while feeding about 4.0 to about 6.5 pounds per minute of hydrocarbons per square foot of cross sectional area of said furnace.

3,629,354

**HALOGENATED HYDROCARBONS**

William Q. Beard, Jr., Wichita, Kans., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed July 14, 1969, Ser. No. 841,621

Int. Cl. C07c 11/04; B01j 11/22

U.S. Cl. 260—683.3

11 Claims

Process for the preparation of vinyl chloride and the co-production of ethylene from ethane in the presence of oxygen and hydrogen chloride. A preferred catalyst includes copper or iron chloride, rare earth chloride, alkali metal chloride, and manganese chloride on a chromia-alumina support.

3,629,355

**PREPARATION OF LINEAR OLEFIN PRODUCTS**

Arthur W. Langer, Jr., Watchung, and Herschel T. White, Montclair, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 562,132, July 1, 1966, now Patent No. 3,441,630, which is a continuation-in-part of application Ser. No. 428,236, Jan. 28, 1965, which in turn is a continuation-in-part of application Ser. No. 55,845, Sept. 8, 1960, now Patent No. 3,168,588. This application Mar. 4, 1969, Ser. No. 804,289

The portion of the term of the patent subsequent to Apr. 29, 1986, has been disclaimed

Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D

7 Claims

A linear alpha olefin product comprising at least 90 mole percent linear alpha olefins is prepared by polymerizing ethylene in the presence of a catalyst containing the reaction product of a transition metal halide and an aluminum alkyl, the reaction being effected in a polar solvent at ethylene pressures in excess of 50 p.s.i.a. and a mole ratio of ethylene to product olefin of at least about 0.8.

3,629,356

**MOLECULAR SIEVE ADSORPTION AND ALKYLATION OF ETHYLENE AND PROPYLENE**

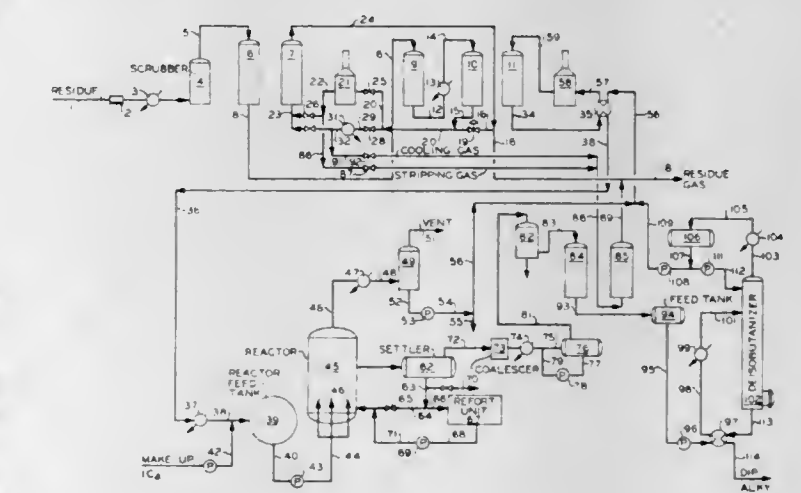
Eddie U. Nakayama, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 12, 1969, Ser. No. 875,795

Int. Cl. C07c 3/52, 3/56

U.S. Cl. 260—683.53

10 Claims



A process for the production of alkylate from a refinery residue gas stream. Molecular sieves adsorb ethylene and propylene from the stream, and these in turn are desorbed with an alkylatable hydrocarbon. The mixture is catalytically converted to alkylate in a reactor cooled by evaporation of excess alkylatable hydrocarbon and the latter is recirculated for stripping of additional adsorbed ethylene and propylene.

3,629,357

**PRODUCTION OF MALEIC ACID COPOLYMERS AND HYDROXY DERIVATIVES THEREOF**

Kazys Sekmakas, Chicago, Ill., assignor to De Soto, Inc., Des Plaines, Ill.

No Drawing. Filed Apr. 16, 1969, Ser. No. 816,805

Int. Cl. C08f 1/00, 15/02, 27/14

U.S. Cl. 260—78.5 R

8 Claims

Styrene or like monomer is copolymerized with maleic anhydride in the presence of water and water-miscible organic solvent to simultaneously effect copolymerization



and hydrolysis and directly provide an acid copolymer which can be reacted with monoepoxide to provide derivatives having increased hydroxy functionality.

3,629,358

# TOUGH UNSUPPORTED FILMS FORMED FROM ORGANOPOLYSILOXANES

Harry F. Lamoreaux, Schenectady, and Frank J. Modic, Scotia, N.Y.; said Lamoreaux assignor to General Electric Company

No Drawing. Continuation of application Ser. No. 514,371, Dec. 16, 1965. This application July 2, 1969, Ser. No. 845,606

Int. Cl. C08g 47/04, 47/06

U.S. Cl. 260—825

3 Claims

Silicone films having a tensile strength in excess of 900 p.s.i. contain polydiorganosiloxane chains having at least 2500 diorganosiloxy units cross-linked through cross-linking polysiloxane blocks consisting of  $R_3SiO_{0.5}$  units and  $SiO_2$  units. The film is formed by condensing a resinous copolymer of  $R_3SiO_{0.5}$  units and  $SiO_2$  units with a silanol-terminated polydiorganosiloxane containing at least 2500 diorganosiloxane units. The films of the present invention are particularly useful in the manufacture of surgical gloves.

3,629,359

# METHOD FOR PREPARING ORGANOPOLYSILOXANE ELASTOMERS

Siegfried Nitzsche, Jurgen Burkhardt, and Karl-Heinrich Wegehaupt, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

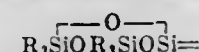
No Drawing. Filed Sept. 24, 1969, Ser. No. 860,788 Claims priority, application Germany, Sept. 25, 1968, P 17 94 219.7

Int. Cl. C07f 7/22

U.S. Cl. 260—825

16 Claims

Linear, liquid organopolysiloxanes are vulcanized and cured to form elastomers employing polycyclicdiorganopolysiloxanes containing at least one group of the formula



where R is a monovalent hydrocarbyl or substituted hydrocarbyl radical and an acid catalyst. The silicone rubber so produced adheres firmly to siliceous substrates and may be used to form laminates of glass.

3,629,360

# COPOLYESTER/PHENOL-MODIFIED COUMARONE-INDENE BLEND COMPOSITIONS

Dean C. Burkhardt, Swarthmore, Lee R. Conrad, Springfield, and John B. Stokes III, Philadelphia, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 25, 1969, Ser. No. 819,455

Int. Cl. C08g 31/04

U.S. Cl. 260—829

10 Claims

Blends of copolyester and phenol-modified coumarone-indene resins having about 20 to 85 percent by weight copolyester, based on total combined weight of copolyester and phenol-modified coumarone-indene, are provided for use as adhesive compositions, films, magnetic tape binders, staple cements and coatings.

3,629,361

# CURABLE POLYEPOXIDE COMPOSITIONS CONTAINING POLYMERS OF CYCLIC ESTERS

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,312

Int. Cl. C08g 45/06

U.S. Cl. 260—830 R

18 Claims

This invention relates to curable polyepoxide compositions, containing a polymer of a cyclic ester, which

exhibit excellent mold-release properties and excellent flow and when cured to infusible products are characterized by excellent heat distortion temperatures.

3,629,362

# THERMOSET POLYESTER RESINS

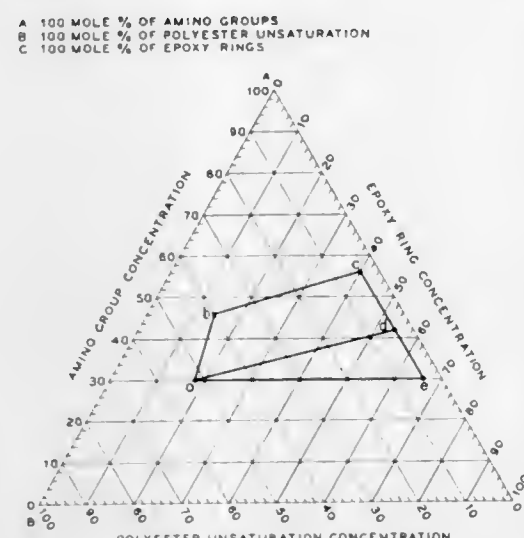
Earl F. Carlson, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 6, 1969, Ser. No. 796,982

Int. Cl. C08g 45/14, 51/28

U.S. Cl. 260—835

11 Claims



Novel thermoset resins comprise a reaction product mixture of an unsaturated polyester, a polyfunctional amine, a polybutene and, optionally, an epoxide resin.

3,629,363

# STABILIZED CHLOROSULFONATED POLYETHYLENE

Ernest John Breda, Beaumont, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 16, 1969, Ser. No. 842,350

Int. Cl. C08d 11/04

U.S. Cl. 260—837 R

3 Claims

A process for stabilizing chlorosulfonated polyethylene against heat degradation by incorporating therein 0.1–1.5 parts by weight of an epoxy compound, 0.1–1.5 parts by weight of a barium, strontium, calcium, or lead (II) salt, and 0.01–0.5 part of a rubber antioxidant. A heat stabilizing agent for chlorosulfonated polyethylene.

3,629,364

# PHENOLIC RESIN COMPOSITIONS CONTAINING POLYMERS OF CYCLIC ESTERS

Anthony C. Soldatos, Kendall Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,321

Int. Cl. C08g 37/16

U.S. Cl. 260—838

18 Claims

This invention relates to phenolic resin composition, containing polymers of cyclic esters, which have excellent mold-release properties and are excellently suited for use in molding applications to form shaped articles of desired configuration characterized by excellent physical properties such as excellent toughness and excellent high temperature rigidity.

3,629,365

# FLAME RETARDANT POLYESTERS CONTAINING POLYAMIDES AND PHOSPHINE OXIDES

James H. Gardner, Enka, N.C., assignor to Akzona Incorporated, Enka, N.C.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,225

Int. Cl. C08g 41/04

U.S. Cl. 260—857 PE

12 Claims

Flame retarded polyester containing a flame retarding amount of a thermally stable nitrogen containing poly-

meric flame retardant and a flame retarding amount of a thermally stable phosphine oxide flame retardant, the combined flame retardant effect of said flame retardants being synergistic.

3,629,366

# SHAPED ARTICLE FROM A MIXTURE OF POLYETHYLENE TEREPHTHALATES OF DIFFERENT REDUCED VISCOSITIES

Ludwig Brinkmann, Frankfurt am Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 11, 1968, Ser. No. 766,941

Claims priority, application Germany, Nov. 9, 1967, P 16 94 218.0

Int. Cl. C08g 39/10

U.S. Cl. 260—860

8 Claims

Process for the manufacture of a polyethylene terephthalate moulding composition of average reduced specific viscosity suitable for injection moulding consisting of at least two polyethylene terephthalates having very different viscosities.

3,629,367

# FIRE-RESISTANT POLYESTER COMPOSITIONS

Donald N. De Mott, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

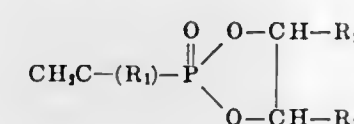
No Drawing. Filed July 22, 1969, Ser. No. 843,769

Int. Cl. C08f 21/00

U.S. Cl. 260—867

13 Claims

Fire-resistant, cross-linked polyester compositions are prepared by reacting a curable polyester resin with a vinylphosphonate of the formula



wherein  $R_1$ ,  $R_2$  and  $R_3$  are hydrogen or hydrocarbon groups.

3,629,368

# PROCESS FOR PRODUCING MODIFIED PROPYLENE POLYMER

Junichi Fukuda, Kijuro Tashiro, Mutsuo Sennari, and Kenjiro Nagashima, Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 433,487, Feb. 17, 1965. This application Aug. 18, 1969, Ser. No. 853,591

Claims priority, application Japan, Feb. 20, 1964, 39/8,785

Int. Cl. C08f 15/04, 1/42

U.S. Cl. 260—878 B

5 Claims

Modified propylene polymer is provided having improved impact resistance and toughness at low temperature as well as having a high softening point and stiffness. The modified propylene polymer is produced by a process of polymerizing a member of the group consisting of propylene and ethylene and subsequently polymerizing continuously in the same system the other member of said group, said polymerization being effected at a temperature of 30–100° C., at a pressure of from 1–10 atmospheres and utilizing as catalysts dialkylaluminum monohalide and titanium trichloride, the polymerization of ethylene being effected in the presence of an average amount of from 0–25% by volume of propylene and the amounts of ethylene and propylene fed to the reaction system being adjusted so that the resulting modified propylene polymer contains from 5 to 40% by weight ethylene.

3,629,369

# PROCESS FOR THE PREPARATION OF MODIFIED POLYVINYL CHLORIDE WITH HIGH IMPACT RESISTANCE

Philippe Lalet, Orthez, and Andre Miletto, Pau, France, assignors to Société Anonyme dite: Société Nationale des Petroles d'Aquitane, Courbevoie, France

No Drawing. Filed Dec. 30, 1969, Ser. No. 889,296 Claims priority, application France, Dec. 30, 1968, 181,996

Int. Cl. C08f 15/00, 19/00

U.S. Cl. 260—879

4 Claims

Polyvinyl chloride having high impact resistance is disclosed. This polyvinyl chloride is prepared by polymerizing an aqueous suspension of vinyl chloride in the presence of halogenated butyl rubber.

3,629,370

# PROCESS FOR THE PRODUCTION OF THERMOPLASTIC-ELASTIC MOULDING COMPOSITIONS OF HIGH IMPACT AND NOTCHED IMPACT STRENGTH

Karl-Heinz Ott, Leverkusen, Herbert Schuster, Cologne-Stammheim, Karl Dinges, Odenthal, and Harry Rohr, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 13, 1968, Ser. No. 759,801

Claims priority, application Germany, Oct. 4, 1967, F 53,670

Int. Cl. C08f 1/76, 15/04

U.S. Cl. 260—880

4 Claims

Graft copolymers of a diene polymer as a base and a styrene type and an acrylonitrile type monomer are produced with a water-soluble, aliphatic azo-compound as a catalyst.

3,629,371

# CHLOROALKYLATED BLOCK COPOLYMERS

De Luss E. Winkler, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 21, 1968, Ser. No. 769,379

Int. Cl. C08f 15/04

U.S. Cl. 260—880

6 Claims

Chloroalkylated block copolymers having a high retention or rheological properties comprise chloroalkylated monovinyl arene polymer blocks connected by alpha-olefin (e.g., hydrogenated polyisoprene) polymer blocks.

3,629,372

# STABILIZATION OF RADIAL TELEBLOCK COPOLYMERS

William O. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,827

Int. Cl. C08f 15/04

U.S. Cl. 260—880

8 Claims

Radial block copolymers of butadiene and styrene are rendered stable against degradation by the addition thereto of a stabilizer system which comprises (a) a hindered phenol (b) a substituted aromatic secondary amine (c) an organic phosphite and optionally (d) a thiodipropionate.

3,629,373

# MASTICATION OF 2-ALKYL BUTADIENE-1,3-ACRYLIC NITRILE COPOLYMER

William H. Embree, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Continuation of application Ser. No. 584,971, Oct. 7, 1966. This application Oct. 14, 1969, Ser. No. 871,737

Int. Cl. C08d 5/00

U.S. Cl. 260—894

9 Claims

Vulcanizable compositions of improved processability are obtained by masticating a high molecular weight



copolymer of an alkadiene and an acrylic nitrile at a temperature of from 50 to 200° C. to reduce the Mooney viscosity from at least 40 to a value below 20.

**3,629,374**  
**LACTONE/ALKYLENE OXIDE COPOLYMERS AS PLASTICIZERS FOR VINYL CHLORIDE RESINS**  
Robert Dean Lundberg, Somerville, N.J., and Frank Paul Del Giudice, Charleston, and Robert Gladden Kelso, St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed Apr. 1, 1969, Ser. No. 812,311  
Int. Cl. C08f 29/24

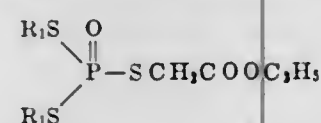
**U.S. Cl. 260—899** **6 Claims**  
Plasticized vinyl chloride resin containing as the plasticizer therefor, a lactone/alkylene oxide copolymer.

**3,629,375**  
**SULFINYL THIOL- AND DITHIO-PHOSPHATES**  
Paul C. Aichenegg, Prairie Village, Kans., and Richard A. Thornhill, Kansas City, Mo., assignors to Chemagro Corporation, Kansas City, Mo.  
No Drawing. Filed Mar. 4, 1969, Ser. No. 804,272  
Int. Cl. C07f 9/16; A01n 9/36

**U.S. Cl. 260—934** **12 Claims**  
Sulfinyl thiol- and dithio-phosphates, i.e. O,O-dialkyl-S-(trichloroethyl and dichlorovinyl sulfinyl)-thiol- and dithio-phosphates, or O,O-dialkyl-S-(trichloroethyl thionyl and dichlorovinyl thionyl) thiol- and thionothiol-phosphates, which possess strong fungicidal, nematocidal and insecticidal properties and which may be produced by conventional methods.

**3,629,376**  
**S-CARBOETHOXYMETHYL-S-S-DIALKYL-TRITHIOPHOSPHATES**  
Erik K. Regel, Mission, Kans., and Marion F. Botts, Independence, Mo., assignors to Chemagro Corporation, Kansas City, Mo.  
No Drawing. Original application May 26, 1967, Ser. No. 641,453, now Patent No. 3,502,771, dated Mar. 24, 1970. Divided and this application July 3, 1969, Ser. No. 870,974  
Int. Cl. A01n 9/36; C07f 9/08

**U.S. Cl. 260—941** **3 Claims**  
Compounds are prepared having the formula



where  $R_1$  and  $R_2$  are alkyl of 2 to 4 carbon atoms. The compounds are useful in killing fungi.

**3,629,377**  
**PROCESS FOR PREPARING PHOSPHATE ESTER SURFACE ACTIVE AGENTS IN THE PRESENCE OF A BIS(HYDROXYMETHYL) PHOSPHINIC ACID COLOR INHIBITOR**  
Leslie M. Schenck, Mountainside, and Leslie G. Nunn, Jr., Newark, N.J., assignors to GAF Corporation, New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 543,544, Apr. 19, 1966. This application Feb. 20, 1969, Ser. No. 801,173  
Int. Cl. C07f 9/08

**U.S. Cl. 260—980** **11 Claims**  
An improved process for producing phosphate ester surface active agents by the reaction of  $P_2O_5$  and an organic hydroxyl-containing compound, the improvement relating to conducting such reaction in the presence of a color inhibitor comprising bis(hydroxymethyl) phosphinic acid.

**3,629,378**  
**METHOD OF EXTRACTING TRI-SUBSTITUTED HYDROCARBYL PHOSPHATES**  
Yutaka Kodama and Tsutomu Kodama, Toyama-shi, and Masao Nakabayashi, Namerikawa-shi, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan  
No Drawing. Filed Sept. 11, 1968, Ser. No. 759,242  
Int. Cl. C07f 9/08; C101 1/26

**U.S. Cl. 260—990** **5 Claims**  
Selective separation of the tri-substituted hydrocarbyl phosphates only by extraction from an aqueous solution of water-soluble tri-substituted hydrocarbyl phosphates of the formula  $(RO)_2P(O)(OR')$  wherein R is an alkyl or alkenyl group having 1 to 3 carbon atoms or said groups substituted by chlorine and R' is an alkyl or alkenyl group having 1 to 4 carbon atoms or said groups substituted by chlorine. The compounds are useful as additives for gasoline, plasticizers for thermoplastic resins and flame retarding agents for rigid polyurethane foam, polyester resin, etc.

# ERRATA

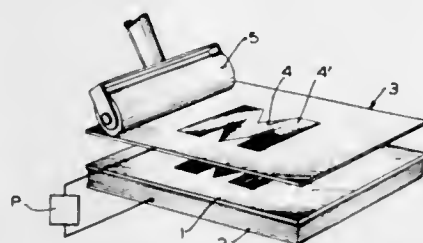
For Classes 260—677 A and 260—79.3 R see:  
Patent Nos. 3,629,478 and 3,629,479

**3,629,379**  
**PRODUCTION OF CARBON FILAMENTS FROM LOW-PRICED PITCHES**  
Sugio Otani, Kiryu-shi, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan  
Continuation-in-part of application Ser. No. 695,356, Jan. 3, 1968, which is a continuation-in-part of application Ser. No. 521,408, Jan. 18, 1966, both now abandoned. This application Nov. 6, 1969, Ser. No. 874,653  
The portion of the term of the patent subsequent to July 9, 1985, has been disclaimed  
Int. Cl. C01b 31/07; D06m 11/12, 11/04

**U.S. Cl. 264—29** **20 Claims**  
A low-priced pitch containing carbon and hydrogen and having a carbon content of from 91 to 96.5 percent by weight and a mean molecular weight of at least 400 is readily melt-spun into a filament, which is then rendered infusible and thereafter carbonized, whereupon a carbon filament of good properties is obtained. This carbon filament can be further graphitized to produce a graphite filament. Pitches which do not meet the aforementioned requirements can be treated in various ways to make them melt-spinnable. The infusibilization treatment includes heating in air, oxygen, or ozone or the use of a hardening agent either admixed with the pitch prior to spinning or applied as a coating to the filaments at the time of spinning.

**3,629,380**  
**FOAMED SURFACE PATTERNS**  
James W. Edwards, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.  
Filed Sept. 18, 1969, Ser. No. 859,063  
Int. Cl. B29d 27/08

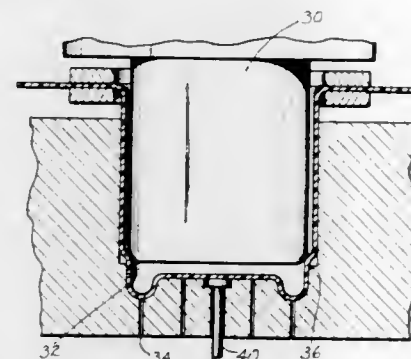
**U.S. Cl. 264—53** **4 Claims**



A method for producing a foamed image pattern on the surface of a substrate by electrostatically depositing foamable resin particles on the substrate in a desired pattern. The resin particles may preferably be incorporated with a suitable ink to provide the proper color.

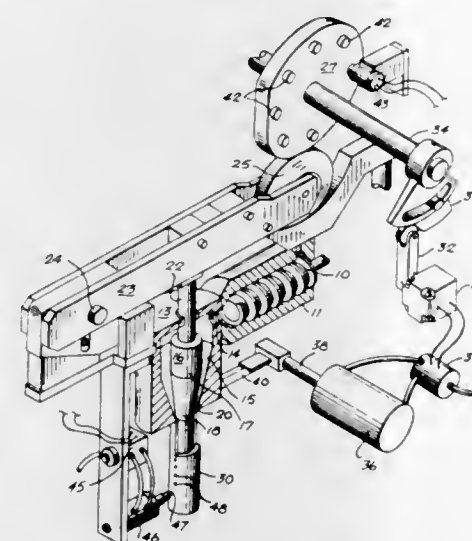
The substrate is then immersed into a blowing agent and heated in order to expand the resin particles thereby providing an image having a relief with respect to the surface of the substrate.

**3,629,381**  
**PROCESS FOR MANUFACTURING TOUGH PLASTIC ARTICLES OF MANUFACTURE**  
George E. Walker, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.  
Continuation of application Ser. No. 655,827, July 25, 1967. This application Oct. 22, 1969, Ser. No. 868,649  
Int. Cl. B29c 17/04, 17/08  
**U.S. Cl. 264—92** **5 Claims**



A method for forming plastic articles having improved structural properties. A portion of a thermoplastic sheet is clamped about its periphery and the clamped portion brought to a temperature at which it can be oriented. The sheet portion is then drawn axially into a mold cavity and radially outwardly against the surface of the cavity so as to stretch and orient the sheet. The drawn material is then severed below at least one-half the total draw between an edge peripherally surrounding the drawn material and the side of a plunger advancing in the direction of the axial draw so as to form an oriented article from the portion of the drawn material below the edge. The axial draw may be carried out using the same plunger used to sever the material. A differential pressure may also be used to effect the radial draw.

**3,629,382**  
**METHOD FOR PROGRAMMING PARISONS**  
Clement V. Fogelberg, Boulder, and Lowell H. Erickson, Denver, Colo., assignors to Ball Corporation  
Original application Dec. 29, 1966, Ser. No. 610,211, now Patent No. 3,466,704, dated Sept. 16, 1969. Divided and this application Dec. 30, 1968, Ser. No. 787,845  
Int. Cl. B29c 17/07  
**U.S. Cl. 264—98** **4 Claims**

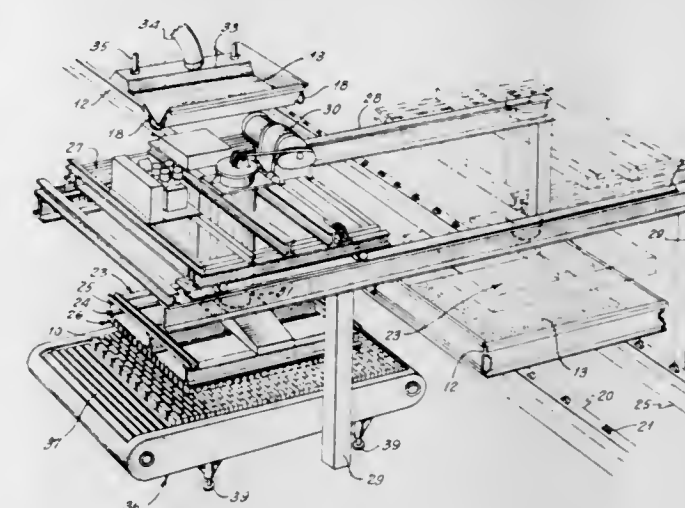


A method for marking parisons having axially variable wall thicknesses relative to the means for varying the wall

**3,629,383**  
**PROCESS FOR MAKING PAPER AND AIR-PERVIOUS CARDBOARD OR BOARDLIKE STRUCTURES PREDOMINANTLY OF POLYTETRAFLUOROETHYLENE**  
Yutaka Kometani, 7-7, 1-chome, Midorigaoka, Toyonaka-shi; Shun Koizumi, A22-104, 2-5 Shinsenri; Higashi-machi, Toyonaka-shi; Kazuo Kubota, C-59-305, 1-3 Aoyamadia, Suita-shi; and Takeaki Nakazima, B8-305, 2-41 Shinsenri, Kita-machi, Toyonaka-shi, all of Osaka-fu, Japan  
No Drawing. Continuation-in-part of application Ser. No. 403,367, Oct. 12, 1964. This application May 6, 1970, Ser. No. 35,285  
Int. Cl. B31d 1/00

**U.S. Cl. 264—112** **8 Claims**  
A process of making air-previous sheets of polytetrafluoroethylene and such sheets so produced in the form of thin paper, cardboard and boardlike structures, which comprises dispersing polytetrafluoroethylene fibrous powder in an aqueous medium having a surface tension at 25° C. of below 40 dynes per centimeter, forming a web therefrom, and thereafter sintering the web. The polytetrafluoroethylene fibrous powder is one having an average fiber length of 100 to 5,000 microns, an average shape factor of not less than 10 and an anisotropic expansion factor of 1.30 to 7.00. A thermographic powder may also be present in the dispersion.

**3,629,384**  
**METHOD FOR FORMING COMPOSITE BUILDING ELEMENTS**  
Reinhold Magnus Elgenstierna, Stockholm, Sweden, assignor to Tegelinindustriens Centralkontor Ab, Stockholm, Sweden  
Continuation-in-part of abandoned application Ser. No. 609,758, Jan. 17, 1967. This application Sept. 4, 1969, Ser. No. 855,345  
Int. Cl. B28b 23/00  
**U.S. Cl. 264—130** **5 Claims**



A method for the formation of building elements of the type having a plurality of bricks, tiles, or stones joined together by mortar. A mass of foamable plastics material is positioned in a mold and the bricks or stones are partially immersed therein, thus keeping them in position and preventing feathering of mortar on to the element face or other unwanted results in the forming process.

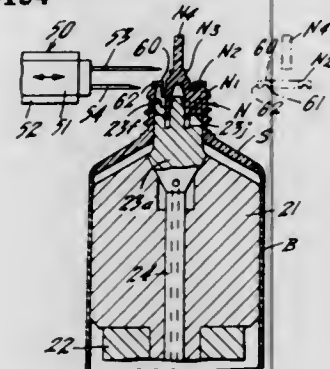


3,629,385

**METHOD OF FORMING A CONTAINER NECK**  
Charles Arthur Badavas, Allendale, N.J., Raymond William Landry, Hudson, Mass., and John William Piltzecker, Easton, Pa., assignors to American Can Company, New York, N.Y.  
Continuation-in-part of application Ser. No. 576,420, Aug. 31, 1966. This application Oct. 27, 1969, Ser. No. 869,675

Int. Cl. B29c 17/10

U.S. Cl. 264—154



6 Claims

The manufacture of the structurally complex molded neck element of a "center lock" captive closure, which neck element comprises a sealing plug centrally suspended within a hollow body on spaced radial webs, thereby to define dispensing apertures between the plug and body. The forming procedure includes the injection molding of the neck element including an inverted annular member surrounding the plug and bridging the annular space between the plug and body, and thereafter severing and entirely removing the annular member to open and form elongated dispensing apertures between the webs and surrounding the plug in a precisely shaped neck element.

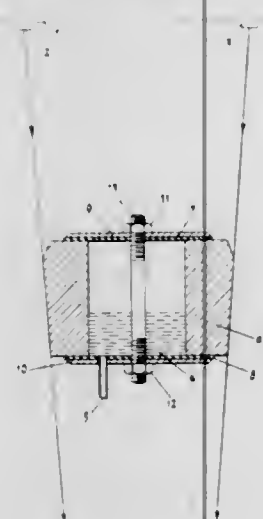
3,629,386

**PROCESS FOR CRIMPING FILAMENTS**  
Peter Edwin Knapp, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England  
Continuation of abandoned application Ser. No. 430,686, Feb. 5, 1965. This application Sept. 8, 1969, Ser. No. 856,922

Claims priority, application Great Britain, Feb. 5, 1964, 4,880/64

Int. Cl. D01d 5/22

U.S. Cl. 264—168



12 Claims

A process for making crimped polyester filaments having special properties comprises melt-spinning the filaments, liquid-quenching the hot filaments asymmetrically by contacting one side of the filaments with a continuously renewed thin film of liquid on a solid tapered body located below the spinneret, drawing the filaments, releasing the tension to develop crimp and then heat-setting the crimped filaments.

3,629,387

**PROCESS FOR PRODUCING IMPROVED IMPACT-RESISTANT POLYSTYRENE FILMS**  
Takeshi Watanabe, Kamakura, Masatsugu Yoshida and Takaichi Akutagawa, Yokohama, and Shiro Noguchi, Hiratsuka, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

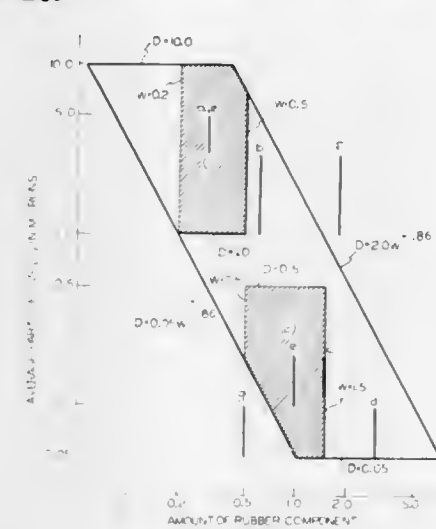
Filed Apr. 14, 1969, Ser. No. 815,900

Claims priority, application Japan, Apr. 16, 1968, 43/25,145; Oct. 12, 1968, 43/73,907

Int. Cl. B29c 17/07; B29d 23/04; C08f 19/04

U.S. Cl. 264—209

10 Claims



Process for producing continuously in a stable operation improved, rubber-modified polystyrene films which are high in tensile strength, impact strength, tearing strength, transparency and surface smoothness and which are very readily thermoformed comprising extruding a rubber-modified polystyrene in which the amount of contained rubber and the particle size of the rubber, a copolymer of this rubber and a vinyl aromatic compound or a mixture of the rubber and copolymer contained by the polystyrene are in a specified relationship, using special extrusion conditions in a tubular-film extrusion process which includes biaxially stretching under specified conditions.

3,629,388

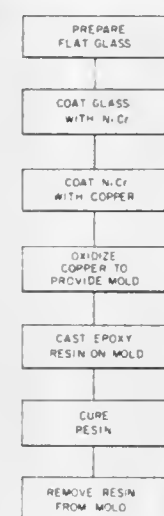
**CASTING PROCEDURE FOR HIGH QUALITY EPOXY LAYERS**  
Irving W. Wolf and Heinz Lienhard, Palo Alto, Calif., and Moses I. Levitsky, deceased, late of Palo Alto, Calif., by Rosanne A. Levitsky, administratrix, Palo Alto, Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jan. 12, 1970, Ser. No. 2,077

Int. Cl. B29c 1/04

U.S. Cl. 264—219

5 Claims



A precision epoxy resin structure is prepared by casting an epoxy resin on a mold of oxidized copper or silver. The method is particularly adapted for making flat epoxy substrates for closed flux storage elements.

3,629,389

**METHOD FOR FLARING THE UPPER ENDS OF PLASTIC BAGS**

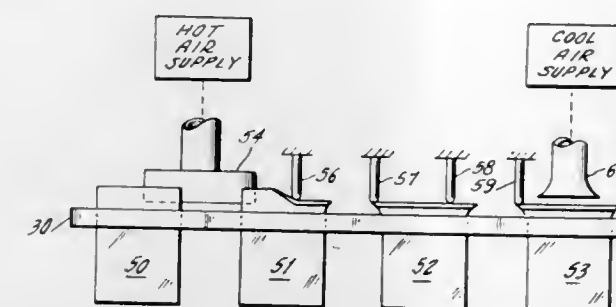
John J. Quackenbush, Monroe, Conn., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Apr. 7, 1967, Ser. No. 629,328

Int. Cl. B29c 17/02

U.S. Cl. 264—339

4 Claims



In order to cause the opposing panel ends of a plastic bag to curl outwardly, the bags are captured between moving belts with a portion of their upper surfaces extending above the belts. The outer surfaces of the bag panels are heated, and the panel edges are forced to flare open by passing through a stiff wire. The interior surfaces of the open panel lips are then rapidly cooled to introduce a permanent tendency for the bag panels at the bag opening to curl away from one another.

3,629,390

**AVIAN SPECIFIC, BIO-AFFECTING PREPARATION AND TREATMENT METHOD**

Bernard C. Wentworth, Amherst, Mass., assignor to the United States of America as represented by the Secretary of the Interior

Filed Dec. 18, 1969, Ser. No. 886,227

Int. Cl. A61k 27/12

U.S. Cl. 424—2

8 Claims

An avian specific, bio-affecting composition is prepared by dispersing a physiologically active compound within an abraidable matrix inert to mammalian digestive processes. Controlled release of the active compound occurs as the preparation is abraded in a bird's gizzard.

3,629,391

**METHOD FOR DIAGNOSING DIABETES**

Richard L. Fenichel, Wyncote, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Jan. 23, 1967, Ser. No. 610,739, now Patent No. 3,475,534, dated Oct. 28, 1969. Divided and this application Apr. 28, 1969, Ser. No. 847,749

Int. Cl. G01n 31/00

U.S. Cl. 424—9

1 Claim

Compositions containing reduced insulin B chains complexed with albumin have hyperglycemic activity and are useful in the treatment of hyperinsulinism, to screen substances which are useful in the treatment of diabetes and to diagnose diabetic and prediabetic states in animals.

3,629,392

**ENTRAPMENT COMPOSITIONS AND PROCESSES**  
Gilbert S. Banker, School of Pharmacy, Purdue University, Lafayette, Ind. 47907, and Harris Goodman, 3 Beauregard Terrace, Congers, N.Y. 10920

No Drawing. Continuation-in-part of abandoned application Ser. No. 757,143, Sept. 3, 1968. This application Aug. 15, 1969, Ser. No. 850,663

Int. Cl. A61k 27/12

U.S. Cl. 424—22

14 Claims

Pharmaceutical compositions are prepared by combining in the presence of water a polymer having acidic or

basic functionality with a pharmaceutically active material having respectively basic or acidic functionality, coagulating or otherwise separating the product produced and then formulating the product by conventional techniques into suitable dosage forms. The resulting products are characterized by possessing unique sustained release, enteric or delayed release properties.

3,629,393

**RELEASE-SUSTAINING-TABLET**

Atsushi Nakamoto, Kawasaki-shi, and Keizaburo Ogawa and Tadashi Ukigaya, Tokyo, Japan, assignors to Nikken Chemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 11, 1969, Ser. No. 857,222

Int. Cl. A61k 27/12

U.S. Cl. 424—22

8 Claims

Time-release tablets are provided by blending and compressing the following types of granules: (A) granules comprising a medically active ingredient, a hydrophobic salt of a fatty acid, and a non-toxic polymer compound which is insoluble in the digestive fluids, (B) granules comprising a water-swelling, high molecular weight compound and a pharmaceutical carrier, and, (C) granules comprising a pharmaceutical carrier and, if necessary, a medically active ingredient or a buffering agent.

3,629,394

**PLEASANT TASTING CHEWABLE TABLETS AND THEIR PRODUCTION**

William E. Gaunt and Marjorie Claire Gaunt, Hackensack, N.J. (both of P.O. Box 744, Stroudsburg, Pa. 18360)

No Drawing. Filed Oct. 13, 1969, Ser. No. 866,018

Int. Cl. A61k 15/00

U.S. Cl. 424—38

5 Claims

Water-soluble bad-tasting drugs and vitamins are put into chewable tablet form wherein the drugs and vitamins have a pleasant taste and are readily available upon ingestion. A water solution or water-alcohol solution of the bad-tasting substance is absorbed into rice endosperm using about enough solution for complete hydration or slightly less, followed by drying. Precooked rice endosperm can also be used. The drugs include phenothiazine tranquilizers and barbiturates and the vitamins include thiamin, niacinamide and pyridoxine. The water-soluble substance may constitute up to 60% of the finished product, with the rice endosperms, which may be previously comminuted, making up the balance. The pleasant tasting chewable tablets contain the bad tasting substance with the bad taste masked, conventional chewable tablet base constituents for the tableting of the rice endosperm-drug particles being combined with the treated rice endosperms.

3,629,395

**PHOSPHORUS-CONTAINING ANTI-CARIES CHEWING GUM COMPOSITIONS**

John H. Litchfield, Worthington, and Victor G. Vely, Columbus, Ohio, assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

No Drawing. Filed Sept. 5, 1969, Ser. No. 855,764

Int. Cl. A61r 7/16

U.S. Cl. 424—48

5 Claims

Unique chewing gum compositions possessing anti-carries activity characteristics comprising a chewing gum base having incorporated therein a phosphate, a phosphorylated  $\alpha$ -hydroxyaldehyde, or a phosphonic acid derivative. Specific phosphorous-containing compounds which, upon evaluation, exhibited the ability to inhibit the growth of oral microorganisms and/or the formation of



acids in the oral cavity are: 1 hydroxyethyl phosphonic acid, 1,2-dihydroxyethylphosphonic acid, 1-amino-ethylphosphonic acid, 2-aminoethylphosphonic acid, 1-amino-methylphosphonic acid, 2-amino, 4-phosphonobutyric acid, 2-amino, 3-phosphonopropionic acid, glyceraldehyde-3-phosphoric acid and glyceraldehyde diphosphate.

3,629,396

## AVIAN ENCEPHALOMYELITIS VACCINE

Vance J. Yates, Kingston, R.I., and Lawrence O. Mancini, White Plains, N.Y., assignors to University of Rhode Island, Kingston, R.I.

No Drawing. Filed Apr. 30, 1969, Ser. No. 820,653  
Int. Cl. C12k 5/00, 7/00

U.S. Cl. 424—89 15 Claims

Avian encephalomyelitis vaccine is a high titer suspension propagated in chicken embryo cell cultures.

3,629,397

## THERAPEUTIC AND DIAGNOSTIC ALLERGENIC EXTRACTS AND PROCESS FOR PREPARING SAME

Walter Edward Waterbury, Cheshire, and Alice Cheryl Barnes and Herman Henry Walchli, Jr., West Haven, Conn., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Jan. 24, 1969, Ser. No. 793,911  
Int. Cl. A61k 23/00

U.S. Cl. 424—91 18 Claims

A process for preparing therapeutic and diagnostic antigenic or allergenic extracts and the product obtained thereby comprising extracting substances known to contain physiologically active principles which elicit allergic responses with an aqueous extracting fluid, separating the aqueous extracting fluid containing the water-soluble active principles from the insoluble material therein, extracting the insoluble material with an aqueous-organic solvent or non-aqueous organic solvent extracting fluid, separating the organic solvent extracting fluid from the insoluble material therein, separating the active principles contained in the organic solvent from the organic solvent and finally preferably combining the initial aqueous extracting fluid containing the water-soluble active principles with the active principles obtained from the organic solvent extracting fluid.

3,629,398

## FOAMABLE TOOTHPASTES

William H. Schmitt, Elmhurst, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.

No Drawing. Filed Aug. 13, 1968, Ser. No. 752,185  
Int. Cl. A61k 7/16

U.S. Cl. 424—43 10 Claims

Foamable toothpaste, adapted to be packaged in conventional non-pressurized containers as, for example, metal or plastic collapsible or squeezable toothpaste tubes, comprising substantially anhydrous compositions containing a compressible water-insoluble gas, particularly in the form of an aliphatic hydrocarbon or halogenated hydrocarbon, dissolved in an organic solvent, such as a polyethylene glycol, which organic solvent is also water-soluble, and a surface active agent, with or without supplemental ingredients such as abrasive agents, flavoring agents, etc. When said toothpaste is wetted with water and brushed against teeth in the mouth, said dissolved compressible gas is displaced from said organic solvent and is released in the form of a gas to form a foam in the mouth.

3,629,399

## STABLE POLIOMYELITIS VACCINES

Rudolf Mauler, Cappel, near Marburg an der Lahn, and Horst Gruschkau, Marbach, near Marburg an der Lahn, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany

No Drawing. Filed Aug. 30, 1968, Ser. No. 756,387  
Claims priority, application Germany, Sept. 5, 1967, P 16 17 356.1

Int. Cl. A61r 27/00

U.S. Cl. 424—89 3 Claims

Orally administrable poliomyelitis vaccine containing attenuated poliomyelitis virus is stabilized by the addition of a phosphate buffer having a pH from 4.5 to 7.0 at a concentration from 0.001 M to 3.0 M.

3,629,400

## SLOW-RELEASE ADSORBED ALLERGENS

Edgar Relyveld and Emile Henoco, Paris, France, assignors to Institut Pasteur, Paris, France

No Drawing. Filed Sept. 20, 1968, Ser. No. 761,329  
Claims priority, application France, Sept. 26, 1967, 122,285

Int. Cl. A61k 27/00

U.S. Cl. 424—91 9 Claims

Slow-release adsorbed allergen compositions are prepared by extracting an allergen from a powder which contains it, and adding alumina gel to its aqueous extract. More particularly, the extraction is made by means of a dibasic sodium phosphate solution; the allergen is precipitated by the addition of ammonium sulfate to the solution, it is separated from the solution and then redissolved in water containing dibasic sodium phosphate preferably at a concentration of about 0.05 M to 0.1 M. To the solution thus obtained aluminum hydroxide gel is added and the mixture is thoroughly stirred to form the stable adsorbed allergen composition.

3,629,401

## ANTI-INFLAMMATORY MEDICINAL PREPARATION

David R. Foster, 1409 Gleffers St., Lake Charles, La. 70601

No Drawing. Filed Oct. 3, 1969, Ser. No. 863,703  
Int. Cl. A61k 27/00

U.S. Cl. 424—95 6 Claims

This disclosure relates to the discovery of a medicinal preparation extracted from invertebrates of the Annelida phylum by cooking a sealed, glass container of specimen in boiling water for approximately 30 minutes, cooling slightly, and separating the cooked liquid extract by straining. The preparation was found to have an excellent anti-inflammatory effect and is used topically to relieve the symptoms of arthritis and rheumatism and skin irritations such as poison ivy. In severe cases, arthritic symptoms have been alleviated for approximately three weeks while in cases treated prior to bone tissue damage the symptoms have been alleviated for longer periods of time. The preparation has also been used as a skin lotion and is applied drop wise to an affected area and massaged gently into the surface of the skin.

3,629,402

## LIPOXAMYCIN AND PROCESS FOR PREPARING SAME

Oldrich K. Sebek, Kalamazoo, and Howard A. Whaley, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 28, 1969, Ser. No. 819,673  
Int. Cl. A61k 21/00

U.S. Cl. 424—117 15 Claims

The lipoxamycin mixture of the subject invention is producible by culturing *Streptomyces virginiae* var. *lipoxae* var. *nova* in an aqueous nutrient medium. Lipoxa-

mycin is the major component of said mixture. The lipoxamycin mixture and lipoxamycin inhibit the growth of *Staphylococcus aureus* and other microorganisms, and can be used to inhibit such microorganisms in various environments.

3,629,403

## METHOD OF TREATING ACNE

Harry W. Gordon, Bronx, N.Y., and Carl P. Schaffner, Trenton, N.J., assignors to Julius Schmid Inc., New York, N.Y.

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,994  
Int. Cl. A61k 21/00

U.S. Cl. 424—117 6 Claims

A method of treating acne in a male host is described herein, which comprises orally administering an effective dose of a heptaene polyenic macrolide.

3,629,404

## ENZYME INHIBITORS 19,042 R.P., 21,052 R.P. AND 21,053 R.P.

Jean Edmond Marie Florent, Paris, Denise Mancy, Charenton, Val-de-Marne, and Jean Verrier, Boulogne-sur-Seine, Hauts-de-Seine, France, assignors to Rhone-Poulenc S.A.

Filed May 2, 1969, Ser. No. 821,277

Claims priority, application France, May 3, 1968, 150,509

Int. Cl. A61k 21/00

U.S. Cl. 424—117 9 Claims

The new enzyme inhibitor 19,042 R.P., and its principal constituents 21,052 R.P. and 21,053 R.P., are produced by aerobically cultivating the microorganism *Streptomyces hygroscopicus* DS 10,408 (NRRL 3286) in an aqueous nutrient medium. The said products also possess antifibrinolytic and anticoagulant activity.

3,629,405

## ANTIBIOTICS A4993A AND A4993B AND PROCESS FOR PRODUCING THE ANTIBIOTICS

Robert L. Hamill and Marvin M. Hoeft, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 28, 1969, Ser. No. 845,378

Int. Cl. A61k 21/00

U.S. Cl. 424—117 6 Claims

Antibiotics A-4993A and A-4993B, produced by *Streptomyces kentuckensis* strain NRRL 3552 under aerobic conditions in liquid culture medium, isolated from fermentation broth as antibiotic mixture via cationic exchange resin and separated via magnesium silicate or cellulose chromatography and separately purified over sulfuric acid washed alumina have, individually or as mixture, anthelmintic, antibacterial, antifungal and antitrypanosome activity.

3,629,406

## SPARSOGENIN AND SPARSOGENIN A AND METHODS OF PREPARATION

Alexander D. Argoudelis, Kalamazoo, Clarence De Boer, Kalamazoo Township, Kalamazoo County, and Thomas E. Eble and Ross R. Herr, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 26, 1961, Ser. No. 147,873

Int. Cl. A61k 21/00

U.S. Cl. 424—118 14 Claims

This invention deals with antibiotics and methods of recovering and purifying them. The substances are sparsogenin having a calculated empirical formula



and sparsogenin A having a calculated formula



3,629,407

## DEMETIC ACID AND METHOD OF PRODUCING SAME

Henry Schmitz, Syracuse, and Robert L. DeVault, North Syracuse, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 15, 1965, Ser. No. 496,501

Int. Cl. A61k 21/00

U.S. Cl. 424—122 6 Claims

Demetic acid is a new antibiotic and is produced by the cultivation of *Streptomyces umbrinus* var. *suragaoensis*. Demetic acid inhibits in vitro the growth of certain microorganisms, including bacteria, yeasts, fungi and protozoa.

3,629,408

## COMPOSITION OF CHLORINATED GLYCOLURILS AND METALLIC HYPOCHLORITES

Roland J. Horvath, South Euclid, and Charles G. Parsons, Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Aug. 28, 1969, Ser. No. 853,968  
Int. Cl. A61l 13/00

U.S. Cl. 424—149 10 Claims

Compositions of metallic hypochlorites and an additive of a chlorinated glycoluril are presented. These compositions are useful in treating sewage media as the compositions initially eliminate bacteria and prevent regrowth of bacteria in the treated media.

3,629,409

## PAIN REMOVING COMPOSITION AND PROCESS FOR PREPARING SAME

Roy Gregory, 1130 N. 14th St., Lafayette, Ind. 47904

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,311  
Int. Cl. A61k 27/00

U.S. Cl. 424—195 2 Claims

Pain removing composition for external use on warm blooded animals. The composition is made from critical proportions of acetic acid, urea, ammonium hydroxide, glycerol, plastoquinone A and water. A binder is used to tie the components together. The binder contains lanolin, stearic acid, water, triethanolamine and mineral oil. When rubbed on an external part of an affected area of a warm blooded animal, pain is removed in a short period of time.

3,629,410

## ALPHA ADRENERGIC BLOCKING AGENTS

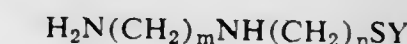
Melvin H. Heiffer, Rockville, Md., and David P. Jacobus, Washington, D.C., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed May 23, 1969, Ser. No. 827,162

Int. Cl. A61k 27/00

U.S. Cl. 424—211 4 Claims

The disclosure relates to compounds having the following formula:



wherein  $m$  may be the integers 4 through 10 and  $n$ , 2 through 10, and SY is a sulfur containing function which may be metabolically converted to an —SH group, such as salts of thiols, phosphorothioic acid, thiosulfuric acid, alkyl thioethers, aryl thioethers, aralkyl thioethers and heteryl thioethers. The compounds of this invention are useful agents in blocking alpha-adrenergic mediated responses in animals; and in management of conditions such as hemorrhagic hypotensions, pheochromocytoma, and Raynaud's disease.



### 3,629,411 FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI USING O-ALKYL-S,S-DI-ALKYL DITHIOPHOSPHATES

Gerhard Schrader, Wuppertal-Cronenberg, Karl Mannes, Cologne-Stammheim, and Hans Scheinpflug, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Original application Aug. 5, 1966, Ser. No. 570,436, now Patent No. 3,499,951, dated Mar. 10, 1970. Divided and this application July 16, 1969, Ser. No. 868,254  
Claims priority, application Germany, Aug. 26, 1965, F 46,992

Int. Cl. A01n 9/36

U.S. Cl. 424—217 5 Claims  
Fungicidal compositions of, and methods of combating fungi using O-(alkyl, alkenyl, alkynyl, and haloalkyl)-S, S-di(phenyl and mono and di-halo, nitro, alkyl and alkoxy substituted-phenyl)-dithiolphosphoric acid triesters.

### 3,629,412 TOPICAL ANTI-INFLAMMATORY AGENT

Robert H. Silber, Westfield, Kane L. Kelley, Roselle, and Idamae G. Trenner, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.  
No Drawing. Filed Sept. 19, 1969, Ser. No. 859,591  
Int. Cl. A61k 27/00

U.S. Cl. 424—232 4 Claims  
Methods and compositions for topical application of an indomethacin-methylsalicylate formulation for the treatment of inflammation.

### 3,629,413 POLYVALENT BOVINE VACCINES AND METHODS OF MAKING AND USING SAME

Isaac L. Shechmeister, Joseph R. Kolar, Jr., and William G. Kamlade, Jr., Carbondale, Ill., assignors to Southern Illinois University Foundation, Carbondale, Ill.  
Filed Feb. 4, 1970, Ser. No. 8,631  
Int. Cl. C12k 5/00

U.S. Cl. 424—89 18 Claims  
A polyvalent vaccine effective in immunization of bovines against infectious bovine rhinotracheitis virus (IBR), bovine viral diarrhea virus (BVD) and parainfluenza-3 virus (PI-3) is composed of a suspension, in a vehicle such as an aqueous solution of formaldehyde suitable for parenteral injection of the three viruses in killed form. The three viruses are separately propagated and separately suspended in aqueous solutions containing 0.4% by volume formalin, and the respective suspensions are maintained at a temperature of about 4° C. for one week. Portions, for example equal portions, of the three suspensions are combined to produce a polyvalent vaccine. An equal volume of an aqueous solution containing from one to five percent weight/volume of a soluble alginate, such as sodium alginate, having certain specified properties may be added to the vaccine as an adjuvant to enhance its effectiveness. Such polyvalent vaccines are adapted for parenteral administration in the vaccination of bovines.

### 3,629,414 ANTIBACTERIAL AND SYNERGISTIC ANTI-FUNGAL COMPOSITIONS

Assad S. Sawaya, West Haven, and Morris Emmanuel Stolar, Trumbull, Conn., assignors to Miles Laboratories, Inc., Elkhart, Ind.  
No Drawing. Continuation-in-part of application Ser. No. 700,006, Jan. 24, 1968, which is a continuation-in-part of application Ser. No. 526,384, Feb. 10, 1966. This application May 14, 1969, Ser. No. 824,665  
Int. Cl. A61k 21/00

U.S. Cl. 424—120 2 Claims  
Composition and process utilizing a combination of nystatin and an alkyl isoquinolinium salt which combina-

tion when used topically shows antibacterial and synergistic antifungal activity.

### 3,629,415 SUPPRESSION OF REPRODUCTION WITH 3-OXIME AND 3-OXIME ESTERS OF 19-NORTESTOSTERONE

Arvin P. Shroff, Piscataway, N.J., assignor to Ortho Pharmaceutical Corporation  
No Drawing. Application Apr. 20, 1967, Ser. No. 635,308, now Patent No. 3,532,689, which is a continuation-in-part of applications Ser. No. 502,384, Oct. 22, 1965, and Ser. No. 563,081, July 6, 1966, now Patent No. 3,437,674. Divided and this application July 18, 1969, Ser. No. 843,201

Int. Cl. A61r 27/00 12 Claims  
3-oximes and 3-oxime esters of 19-nortestosterones have post-coital activity for the suppression of reproduction.

### 3,629,416 METHOD OF TREATING OR PREVENTING COCCIDIOSIS WITH THIOSEMICARBAZONE DERIVATIVES

Paul Anthony Barrett, London, England, assignor to Burroughs Wellcome Co.  
No Drawing. Original application July 21, 1965, Ser. No. 473,867, now Patent No. 3,478,035, dated Nov. 11, 1969. Divided and this application Mar. 12, 1969, Ser. No. 806,676  
Int. Cl. A61k 27/00

U.S. Cl. 424—248 24 Claims  
A method of treating or preventing coccidiosis in an animal which comprises administering to the animal an effective amount of a compound

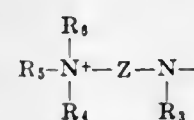


or a pharmaceutically acceptable acid addition salt thereof where R<sup>1</sup> is selected from the class consisting of hydrogen, lower alkyl, cyclohexyl, benzyl, lower alkoxy lower alkyl, acetoxymethyl and phenyl, R<sup>2</sup> is selected from the class consisting of hydrogen, lower alkyl, benzyl and phenyl, A is alkylene having 1 to 8 preferably 1 to 5 carbon atoms and NR<sup>2</sup> is selected from the class consisting of dialkylamino, pyrrolidino, piperidino and morpholino.

### 3,629,417 PROTECTION AGAINST THE GROWTH OF PENICILLIUM

Heinrich Hausermann, Riehen, and Eduard Troxler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
No Drawing. Original application July 23, 1968, Ser. No. 746,746, now Patent No. 3,518,266, dated July 30, 1970. Divided and this application Aug. 25, 1969, Ser. No. 870,846  
Int. Cl. A01n 3/00, 9/22

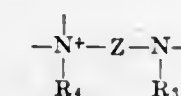
U.S. Cl. 424—249 6 Claims  
Quaternary 3-aryl-7-[triazinyl-(2)-amino] - coumarin salts are disclosed in which the carbon atom in 4-position in the triazinyl nucleus is substituted by a lower alkyl group, an optionally substituted lower alkoxy or lower alkylthio group, or an unsubstituted or organically substituted amino group, and the carbon atom in 6-position in the triazinyl nucleus is substituted by the grouping



wherein

Z represents an alkylene or oxa-alkylene bridge;  
R<sub>3</sub> represents hydrogen or a lower alkyl or alkenyl groups;

R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> represent certain organic substituents or  
R<sub>4</sub> and R<sub>5</sub> together with the nitrogen atom represent certain heterocyclic radicals; or the grouping

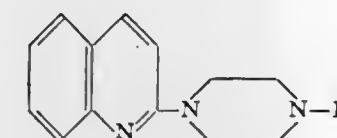


may represent a piperazinium radical, and which novel coumarin are useful for protecting foodstuffs and the like against the growth of Penicillium thereon.

### 3,629,418 PROCESS FOR PRODUCING AN ANTI-DEPRESSANT EFFECT WITH PIPERAZINE QUINOLINES

Rodolfo Rodriguez, Tlalpan County, Mexico, assignor to Miles Laboratories, Inc., Elkhart, Ind.  
No Drawing. Filed Feb. 14, 1969, Ser. No. 799,508  
Int. Cl. A61k 27/00

U.S. Cl. 424—250 3 Claims  
An anti-depressant effect is produced in an organism by administering an anti-depressant effective amount of a compound of the formula:



in which R is a member selected from the group consisting of H and CH<sub>3</sub> and nontoxic pharmacologically acceptable acid addition salts thereof. The compound may be combined with acceptable pharmaceutical vehicles to form compositions for administration.

### 3,629,419 BACTERICIDAL AND FUNGICIDAL N-[(HALO-ALKYL)THIO] - 1,2 - PYRIDAZINE-CARBOXIMIDE COMPOSITIONS AND METHODS OF USE

Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.  
No Drawing. Original application Apr. 14, 1967, Ser. No. 632,147, now Patent No. 3,528,978, dated Sept. 15, 1970. Divided and this application June 13, 1969, Ser. No. 834,934  
Int. Cl. A01n 9/22

U.S. Cl. 424—250 14 Claims  
Certain new N-[(haloalkyl)thio]-1,2-pyridazinedicarboximides are active against fungi, bacteria, algae, and protozoa. The pyridazine ring may be tetrahydro or 3,6-dihydro. The invention contemplates alkyl substituents of from 1 to 4 carbon atoms in the 3 and 6 positions of the pyridazine ring. The haloalkyl group may be methyl or ethyl with chlorine, bromine or fluorine substitution. The apple scab fungus, *Venturia inaequalis*, and the bean rust fungus, *Uromyces phaseoli*, have been controlled.

### 3,629,420 COMPOSITIONS AND METHODS FOR CIRCULATORY STIMULATION AND SALURETIC ACTIVITY WHICH EMPLOY 2-METHYL-4-HYDROXY-PYRIDO[2,3-d]-PYRIMIDINE

Wolfgang Schaumann and Karl Dietmann, Mannheim-Waldhof, and Klaus Hardebeck, Ludwigshafen (Rhine), Germany, assignors to Boehringer-Mannheim-GmbH, Mannheim-Waldhof, Germany  
No Drawing. Filed Mar. 11, 1969, Ser. No. 806,292  
Claims priority, application Germany, Apr. 13, 1968, P 17 67 229.6  
Int. Cl. A61k 27/00

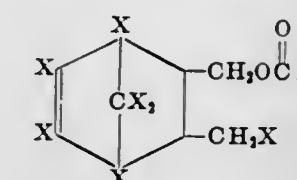
U.S. Cl. 424—251 19 Claims  
Pharmaceutical compositions characterized by circulatory stimulating and saluretic activity comprising 2-methyl-

4-hydroxy-pyrido-[2,3-d]-pyrimidine in admixture with a pharmaceutical carrier.

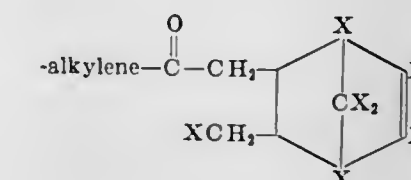
### 3,629,421 HALOGENATED BICYCLOHEPTENYL COMPOUNDS AS INSECTICIDES

Sheldon B. Greenbaum, Tonawanda, Samuel Gelfand, Niagara Falls, and Edward D. Weil, Yonkers, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.  
No Drawing. Division of application Ser. No. 533,847, Mar. 14, 1966. Continuation-in-part of application Ser. No. 142,514, Oct. 3, 1961. This application Jan. 1, 1969, Ser. No. 807,150  
Int. Cl. A01n 9/00, 9/22

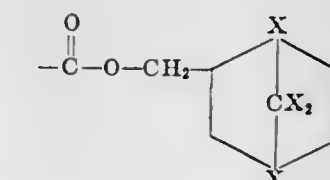
U.S. Cl. 424—263 2 Claims  
A method of controlling insects is described by applying to the locus of the insects to be treated an insecticidal amount of a composition of the structure



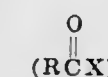
wherein R is selected from the group consisting of alkyl, aryl, heterocyclic



and



and X is a halogen selected from the group consisting of chlorine, fluorine and bromine.  
The compounds are prepared by reacting an acyl halide



with 4,5,6,7,8 - hexahalo - 3a,4,7,7a - tetrahydro-4,7-methanophthalan in the presence of a Friedel Crafts catalyst.

### 3,629,422 SOIL FUMIGATION METHOD

Jeffrey D. Griffith, Lafayette, Calif., assignor to The Dow Chemical Company, Midland, Mich.  
No Drawing. Continuation-in-part of application Ser. No. 843,219, July 18, 1969, which is a continuation-in-part of application Ser. No. 589,813, Oct. 27, 1966. This application Aug. 3, 1970, Ser. No. 60,653  
Int. Cl. A01n 9/22

U.S. Cl. 424—263 6 Claims  
The invention relates to agronomic practices and more particularly is concerned with a new method and composition for the fumigation of a plant growth medium which comprises impregnating soil or other growth media with a composition containing a pesticidally effective amount



of a 4-fluoropyridine having fluoro- or chloro- moieties in certain predetermined relationships on the other four carbon atoms of the ring structure.

3,629,423

## METHOD OF TREATING HELMINTHIASIS

James W. McFarland, Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 560,856, June 27, 1966. This application Oct. 16, 1967, Ser. No. 675,285

Int. Cl. A61k 27/00

U.S. Cl. 424-263

6 Claims

New 1-(2-arylvinyl) and 1-(2-arylacyl)-pyridinium and  $\alpha$ -picolinium salts and their use as anthelmintic agents.

3,629,424

## CYANOFLUOROPYRIDINES AND FUNGICIDAL COMPOSITIONS, AND METHODS FOR USING THE SAME

Florence E. Torba, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 26, 1967, Ser. No. 693,105

Int. Cl. A01n 9/22

U.S. Cl. 424-263

11 Claims

The present invention is directed to new and novel cyanofluoropyridine compounds and to methods employing and compositions containing those compounds as pesticidal constituents. Representative new compounds are 3,5-dichloro-4,6-difluoropicolinonitrile and tetrafluoropicolinonitrile, these and other compounds of the invention being particularly well adapted to be used as soil fumigants for the control of soil-infecting fungi.

3,629,425

## STABILIZED 2-PAM SOLUTIONS

Anwar A. Hussain, Plattsburg, N.Y., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Nov. 14, 1968, Ser. No. 775,911

Int. Cl. A61k 27/00

U.S. Cl. 424-263

11 Claims

There are disclosed herein concentrated aqueous solutions of 2-PAM salts with mineral acids optionally also containing up to 0.5 percent of atropine, stabilized by addition of mineral acid to a final pH of 1.0 to 3.0. Solutions of 2-PAM salts with or without atropine stabilized in this manner are many times more stable than solutions prepared in the conventional way.

3,629,426

## THERAPEUTICAL COMPOSITIONS CONTAINING PIPERIDINE DERIVATIVES

Hans Herbert Kuhn and Rolf Denss, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 652,040, July 10, 1967, now Patent No. 3,523,949. This application Nov. 25, 1968, Ser. No. 778,844

Claims priority, application Switzerland, July 13, 1966, 10,192/66

Int. Cl. A61k 27/00, 27/12

U.S. Cl. 424-267

4 Claims

Therapeutic compositions containing 1-substituted 4-allyl-isonipecotinic acid lower alkyl esters or pharmaceutically acceptable acid addition salts thereof, which have useful analgesic and antitussive properties and a method of treating pain as well as a method of producing an antitussive effect, in mammals. Illustrative embodi-

ments are therapeutic compositions containing 1-(3-phenylpropyl)-4-allyl-isonipecotinic acid ethyl ester and 1-n-octyl-4-allyl-isonipecotinic acid ethyl ester.

3,629,427

## ANTI-BACTERIAL AND ANTI-FUNGAL TREATMENT WITH SULFOXIDES

Herbert Q. Smith, Malvern, Pa., assignor to Pennwalt Chemicals Corporation, Philadelphia, Pa.

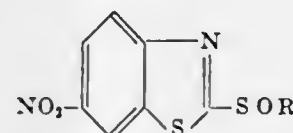
No Drawing. Filed Feb. 6, 1969, Ser. No. 797,244

Int. Cl. A01n 9/12

U.S. Cl. 424-270

10 Claims

Process of controlling bacteria and fungi with compounds of the structure



where R is an alkyl group containing from 1 to 4 carbon atoms.

3,629,428

## PESTICIDE FOR CONTROLLING BACTERIAL AND FUNGAL DISEASES OF RICE PLANT

Shigeo Seki and Yasuharu Sekizawa, Tokyo, Ken Nishibata, Yokosuka-shi, Tetsuro Watanabe and Takahiko Kikuchi, Yokohama-shi, and Hiroshi Igarashi, Chigasaki-shi, Japan, assignors to Meiji Selka Kaisha, Ltd., Tokyo, Japan

No Drawing. Filed Aug. 20, 1968, Ser. No. 753,872

Claims priority, application Japan, Sept. 7, 1967,

42/57,059, 42/57,060; Dec. 16, 1967, 42/80,272,

42/80,273

Int. Cl. A01n 9/12

U.S. Cl. 424-270

6 Claims

A method for controlling bacterial and fungal diseases of rice plants by applying 3-alkoxy-, 3-alkenyloxy- or 3-alkynloxy-1,2-benzisothiazole-1,1-dioxides to the rice plant.

3,629,429

## THIADIAZOLYL UREAS AS SYSTEMIC FUNGICIDES

Patrick R. Driscoll, Spotswood, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Aug. 1, 1969, Ser. No. 846,933

Int. Cl. A01n 9/12, 9/22

U.S. Cl. 424-270

5 Claims

(Substituted)thio-, such as alkylthio- and alkenylthio-substituted 1,3,4-thiadiazol-2-yl ureas are active systemic fungicides.

3,629,430

## ISOXAZOLE FUNGICIDAL COMPOSITIONS AND METHODS OF USE

Yukiyoshi Takahi, Shiga-ken, and Kazuo Tomita and Hidehiko Oka, Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,160

Claims priority, application Japan, Feb. 13, 1968,

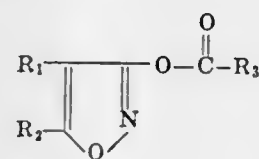
43/9,068

Int. Cl. A01n 9/22, 9/28

U.S. Cl. 424-272

4 Claims

Agricultural fungicidal compositions which comprise a fungicidally effective amount of an isoxazole derivative having the formula



wherein R<sup>1</sup> is hydrogen atom, a halogen atom or an alkyl group of 1 to 3 carbon atoms; R<sub>2</sub> is hydrogen atom or an alkyl group of 1 to 3 carbon atoms; and R<sub>3</sub> is an alkoxy group of 1 to 5 carbon atoms or an aryl group which contains 6 to 10 carbon atoms, the hydrogen atom on one of more ring carbons of which may be substituted with alkyl of 1 to 5 carbon atoms, alkoxy of 1 to 3 carbon atoms, nitro, halogen or methylenedioxy, and an agriculturally-acceptable carrier. The present fungicidal composition can be utilized for combatting a wide range of pathogenic fungi causing plant diseases, especially those caused by various pathogenic fungi belonging to the genera Fusarium, Pythium, Rhizoctonia, Phytophthora and the like.

3,629,431

## USE OF 1-ALKYLSULFONYLALKYL-2-ALKYL-5-NITROIMIDAZOLES IN CONTROLLING COCCIDIOSIS

Max W. Miller, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

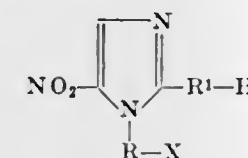
No Drawing. Filed June 16, 1969, Ser. No. 833,730

Int. Cl. A61k 27/00

U.S. Cl. 424-273

10 Claims

The use of compounds of the formula:



wherein R and R<sup>1</sup> are each alkylene having 1 to 7 carbon atoms and X is lower alkylsulfonyl, for the control of coccidiosis is described.

3,629,432

## ANTIULCEROGENIC COMPOSITION AND METHODS UTILIZING 2-AMINOETHANETHIOLSULFURIC ACID

Murray Weiner, White Plains, N.Y., assignor to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,754

Int. Cl. A61k 15/12

U.S. Cl. 424-273

5 Claims

2-aminoethanethiolsulfuric acid is antiulcerogenic.

3,629,433

## ANTIDEPRESSANT COMPOSITIONS OF CYCLOALKANO[C]PYRAZOLE ETHERS

Heinz Werner Gschwend, Millburn, and Neville Finch, West Orange, N.J., assignors to Ciba Corporation, Summit, N.J.

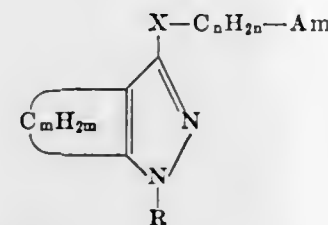
No Drawing. Filed Sept. 16, 1968, Ser. No. 762,338

Int. Cl. A61k 27/00

U.S. Cl. 424-273

2 Claims

Basic 3-ethers of cycloalkano[c]pyrazoles, e.g. those of the formula



R=aralkyl or aryl  
Am=an amino group  
X=O or S  
m=3-7  
n=2-7

actyl derivatives, quaternaries and salts thereof are antidepressants.

3,629,434

## USE OF 1-ALKYLSULFONYLALKYL-2-ALKYL-5-NITROIMIDAZOLES IN CONTROLLING AMEBIASIS

Max W. Miller, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

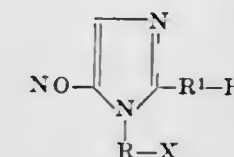
No Drawing. Filed June 16, 1969, Ser. No. 833,731

Int. Cl. A61k 27/00

U.S. Cl. 424-273

5 Claims

The use of compounds of the formula:



wherein R and R<sup>1</sup> are each alkylene having 1 to 7 carbon atoms and X is lower alkylsulfonyl, for the control of amebiasis is described.

3,629,435

## PHARMACEUTICAL COMPOSITIONS ACTING ON THE CENTRAL NERVOUS SYSTEM CONTAINING DISUBSTITUTED AMINOETHANOLS

Uberto Teotino, Davide Della Bella, and Vittorio Ferrari, Milan, Italy, assignors to Whitefin Holdings S.A., Lugano, Switzerland

Continuation-in-part of application Ser. No. 636,649,

May 8, 1967. This application Aug. 8, 1969, Ser.

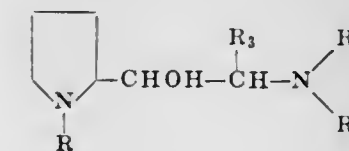
No. 848,677

Int. Cl. A61u 27/00

U.S. Cl. 424-274

5 Claims

Compounds acting on the central nervous system, having the formula:



wherein R is selected in the group comprising alkyl, aryl and arylalkyl groups which may be substituted by at least one radical selected in the group comprising halogen atoms, alkyl, hydroxy, alkoxy, trifluoromethyl, nitro, amino, mono- or di-alkylamino radicals; R<sub>1</sub> is selected in the group comprising alkyl and cycloalkyl radicals; R<sub>2</sub> is an alkyl, or taken together with R<sub>1</sub> and the nitrogen atom to which they are attached is a heterocyclic ring which may include a further hetero atom; R<sub>3</sub> is selected in the group comprising a hydrogen atom and alkyl radicals and their salts with organic and inorganic acids and alkyl halides.

3,629,436

## CONCENTRATED CARBAMATE PESTICIDE WETTABLE POWDER FORMULATIONS

David A. Pearce, Edison, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Oct. 4, 1968, Ser. No. 765,022

Int. Cl. A01n 9/12

U.S. Cl. 424-275

1 Claim

Wettable powders comprise at least 75 weight percent carbamate pesticide, carriers (talc, SiO<sub>2</sub>), and as necessary adjuvants a combination of (1) 1-3 weight percent sodium lignosulfonate and (2) 1-5 weight percent of a mixture of equal parts of an alkylphenol-ethylene oxide condensation product (20-40 moles ethylene oxide per mole phenol), and sucrose monolaurate. These powders are compatible with organophosphorus emulsifiable concentrates, such as Methyl Parathion.



3,629,437

**COCCIDIOSTATIC COMPOSITION CONTAINING THIOPHENE-1,1-DIOXIDES**

Melvin Harris Rosen, Madison, and Herbert Morton Blatter, Springfield, N.J., assignors to Ciba Corporation, Summit, N.J.

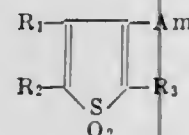
No Drawing. Filed Oct. 8, 1968, Ser. No. 765,974

Int. Cl. A61k 27/00

U.S. Cl. 424-275

3 Claims

3-amino-2,4-diaryl-thiophene-1,1-dioxides, e.g. those of the formula



Am=tert. amino

R1=H or alkyl

R2,3=iso- or heterocyclic aryl are antiparasitic agents.

3,629,438

**BENZOTHIOPHENE-1,1-DIOXIDE DERIVATIVES AS FUNGICIDES AND BACTERICIDES**

Bogislav von Schmeling, Hamden, and Robert A. Davis, Cheshire, Conn., and Douglas I. Relyea, Pompton Plains, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,562

Int. Cl. A01n 9/14

U.S. Cl. 424-275

6 Claims

Benzothiophene - 1,1 - dioxide derivatives have been found to be effective fungicidal and bactericidal compounds. Included in the scope of pathogens which are inhibited or destroyed by these compounds are fungi and bacteria which cause plant disease and textile rotting, and, as well, fungi and bacteria which exhibit mammalian pathogenicity.

3,629,439

**USE OF 2,5-DINITRO-1,1-(SUBSTITUTED)-DIOXY-2,3,4,5-TETRACHLORO-3-CYCLOPENTENES TO PROTECT PLANTS FROM SOIL FUNGI**

Richard M. Scribner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 536,989, Mar. 24, 1966. This application Jan. 13, 1970, Ser. No. 2,648

Int. Cl. A01n 9/20, 9/24, 9/28

U.S. Cl. 424-278

9 Claims

A method of controlling soil fungi with 2,5-dinitro-1,1-(substituted)-dioxy - 2,3,4,5 - tetrachloro - 3 - cyclopentenes and plant protectant compositions containing these cyclopentenes in combination with surfactants.

3,629,440

**PROCESS FOR CONTROLLING FUNGI**

Marvin H. Gold, Sacramento, and Henry J. Marcus, West Covina, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

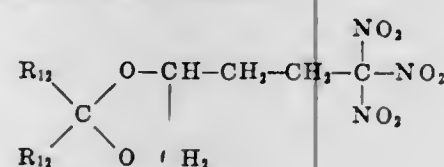
No Drawing. Continuation-in-part of application Ser. No. 487,942, May 20, 1965, which is a division of application Ser. No. 326,286, Nov. 26, 1963. This application Aug. 28, 1969, Ser. No. 853,930

Int. Cl. A01n 9/28

U.S. Cl. 424-278

2 Claims

A process for controlling the growth of fungus comprising treating the fungus with an effective amount of the compound of the formula:



wherein R12 is lower alkyl.

3,629,441

**COMPOSITIONS CONTAINING PHYSIOLOGICALLY ACTIVE KAWA COMPOUNDS, PROCESS OF MAKING SAME, AND METHOD OF USING SAME IN THERAPY**

Hans Brauer, Vaterstetten, near Munich, and Hans Brinkhoff, Munich, Germany, assignors to Spezialchemie Gesellschaft mit beschränkter Haftung und Co., Arzneimittelfabrik, Munich, Germany

No Drawing. Filed June 4, 1968, Ser. No. 734,218

Claims priority, application Germany, June 5, 1967, S 110,180

Int. Cl. A61k 27/14

U.S. Cl. 424-279

16 Claims

Compositions comprising solutions of at least two and preferably two or three physiologically active kawa compounds dissolved in solvents of the type of saturated and unsaturated vegetable and animal oils, polyglycols and their derivatives, 2,2-dimethyl-4-hydroxy methyl-1,3-dioxolane, dimethyl sulfoxide and other solvents which are compatible with said kawa compounds and are stable and do not decompose or polymerize even on prolonged storage. The preferred kawa compounds in said solutions are yangonin, kawain, dihydrokawain, dehydrokawain. Methysticin is excluded since it causes undesirable side effects. Highly concentrated solutions of said kawa compounds of a surprisingly high endo-anesthetic, muscle relaxant, sleep-inducing, and psychotropic-ataractic activity are obtained. The preferred procedure of producing such solutions comprises dissolving the mixture of the kawa compounds in the solvent while finely comminuting and heating the solvent and the mixture, preferably to a temperature above the melting point of the kawa compound with the highest melting point. Preferred mixtures are those of yangonin and kawain or of yangonin, kawain and dihydrokawain.

3,629,442

**SULFONAMIDES FOR TREATING HYPERTENSION**

Harald Horstmann, Wuppertal-Vohwinkel, and Hartmund Wollweber and Karl Meng, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application June 6, 1967, Ser. No. 643,822, now Patent No. 3,499,005, dated Mar. 3, 1970. Divided and this application May 29, 1969, Ser. No. 829,123

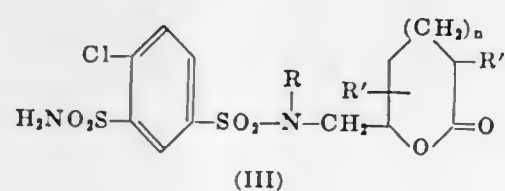
Claims priority, application Germany, June 16, 1966, F 49,487

Int. Cl. A61k 27/00

U.S. Cl. 424-279

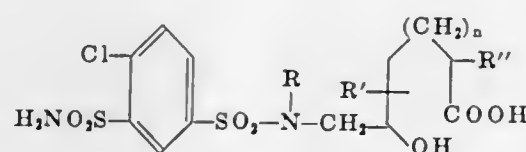
10 Claims

Pharmaceutical compositions are produced which comprise a compound of the formula:



(III)

or



(VII)

wherein:

R is hydrogen or methyl;

R' is hydrogen or lower alkyl.

R'' is hydrogen or lower alkyl; and

n is 0 or 1;

3,629,445

**METHOD OF PREVENTING EXCESSIVE SECRETION OF HYDROCHLORIC ACID**

Wilbur Lippmann, Montreal, Quebec, Canada, assignor to Ayerst, McKenna and Harrison Limited, Ville St. Laurent, Quebec, Canada

No Drawing. Filed May 21, 1969, Ser. No. 826,657

Int. Cl. A61k 27/00

U.S. Cl. 424-285

5 Claims

Compositions for preventing hyperchlorhydria containing N,3,3-trimethyl-1-phenyl-1-phthalanpropylamine hydrochloride as active ingredient, and method of treating said condition and associated conditions.

3,629,446

**METHOD OF COMBATING FUNGIC OF GENUS USTILAGO**

Paul-Ernst Frohberger, Leverkusen, Engelbert Kühle, Bergisch-Gladbach, Germany, and Otto Ewald Urbach, deceased, late of Cologne-Mulheim, by Gertrud Emma Marig Gerda Urbach, heiress, Cologne-Mulheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,889

Claims priority, application Germany, Jan. 15, 1968, P 16 67 975

Int. Cl. A01n 9/00

U.S. Cl. 424-289

4 Claims

Fungicidal compositions (especially seed dressings) of and methods of combating fungi using certain benzohydroxamic acid salts, i.e. benzohydroxamic acid alkali metal, alkaline earth metal, heavy metal, ammonium and alkylammonium salts, some of which are known, which possess fungicidal properties and which may be produced by conventional methods.

3,629,447

**SCAB FUNGUS CONTROL**

John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 13, 1969, Ser. No. 849,902

Int. Cl. A01n 9/00, 9/12

U.S. Cl. 424-300

5 Claims

Control of the scab fungus, *Venturia inaequalis*, employing a lower alkyl 3-(5-chlorosalicylidene)dithiocarbamate.

3,629,448

**NEMATOCIDES**

Joseph W. Baker, Kirkwood, and Robert K. Howe, Bridgeton, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 681,578, Nov. 8, 1967. This application Dec. 4, 1969, Ser. No. 882,328

Int. Cl. A01n 9/20

U.S. Cl. 424-304

7 Claims

Nematocidal usage of 3,5-di(trifluoromethyl)anilino-methylenemalononitriles

3,629,444

**ANTIDEPRESSANT COMPOSITIONS AND METHOD OF TREATING**

Povl V. Petersen, Virum, Niels Lassen, Gentofte, and Jes Hjortkjaer, Hvidovre, Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

No Drawing. Continuation-in-part of application Ser. No. 622,035, Mar. 10, 1967. This application Jan. 15, 1970, Ser. No. 3,222

Claims priority, application Great Britain, Mar. 17, 1966, 11,870/66

Int. Cl. A61k 27/00

U.S. Cl. 424-285

20 Claims

Amino alkyl-substituted 3-cyano phthalanes and the corresponding acid addition salts thereof are prepared by reacting the corresponding amino-alkyl-substituted 3-hydroxy-phthalane with an alkali metal cyanide. Additional derivatives of these compounds are prepared by further conversion of the 3-cyano group of the compound. The prepared compounds are useful for the treatment of endogenous depressions in living animals and are administered as compositions comprising the active ingredient and a suitable pharmaceutical carrier.

3,629,449

**PROCESS OF COMBATING HYPERCHOLESTEROLEMIA**

Majid Siddiqi and Zafarul Hasan Beg, % Aligarh Muslim University, Aligarh, Uttar Pradesh, India

No Drawing. Filed Apr. 22, 1968, Ser. No. 723,233

Int. Cl. A61k 27/00

U.S. Cl. 424-317

4 Claims

Hypercholesterolemic and hyperlipemic conditions in warm-blooded animals are prevented and/or corrected



by the administration of 3-hydroxy-3-methylglutaric acid. Various administrative routes are possible, but oral is preferred, and a dosage level within the range of 1 milligram to about 100 milligrams per day per kilogram of body weight, in divided portions. Administration in accordance with the invention has been found to reduce the level of liver cholesterol as well.

3,629,450

# O-(SUBSTITUTED BENZAMIDO) PHENYLACETIC ACIDS AS ANTI-INFLAMMATORY AGENTS

Norbert Gruenfeld, Bronx, and Jan W. F. Wasley, Ossining, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application May 27, 1969, Ser. No. 828,344, now Patent No. 3,536,753, which is a continuation-in-part of applications Ser. No. 612,310, Jan. 30, 1967, and Ser. No. 693,143, Dec. 26, 1967, application Ser. No. 693,143, being a continuation-in-part of application Ser. No. 612,310. Divided and this application Jan. 16, 1970, Ser. No. 8,147

Int. Cl. A01n 9/20; A61k 15/12, 27/00

U.S. Cl. 424—319

12 Claims

Phenylacetic acid derivatives having a p-substituted benzamido group in the o-position are anti-inflammatory agents. An illustrative embodiment in o-(p-chlorobenzamido)-phenylacetic acid.

3,629,451

# METHOD OF TREATING BACTERIAL INFECTIONS

Elton S. Cook and Kinji Tanaka, Cincinnati, Ohio, assignors to Stanley Drug Products, Inc., Portland, Oreg.

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,947

Int. Cl. A61k 27/00

U.S. Cl. 424—319

5 Claims

A variety of substances are reported which claim to induce host resistance to coccid infections, none have proven sufficiently effective to warrant their wide spread use. Anti-infectious agents have been found which are effective in inducing resistance to infections due to cocci.

3,629,452

# METHOD OF REDUCING EXCESSIVE SECRETIONS OF SEBUM BY ORAL ADMINISTRATION OF AMINO ACID DERIVATIVES

Gregoire Kalopissis and Georges Manoussos, Paris, France, assignors to L'Oreal, Paris, France

No Drawing. Filed Feb. 19, 1968, Ser. No. 706,652

Int. Cl. A61k 27/00

U.S. Cl. 424—319

2 Claims

A treatment for seborrhea in which certain cysteamine compounds, such as S-carboxymethyl cysteamine hydrochloride and S-benzyl cysteamine hydrochloride, are orally administered, preferably in the form of their acid salts.

3,629,453

# COMPOSITIONS AND METHODS FOR REDUCING SERUM CHOLESTEROL AND ESTERIFIED FATTY ACIDS

Wilson Shaw Waring, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England  
No Drawing. Original application Aug. 28, 1964, Ser. No. 392,945, now Patent No. 3,392,194, dated July 9, 1968. Divided and this application Feb. 23, 1968, Ser. No. 726,629

Claims priority, application Great Britain, Sept. 19, 1963, 36,911/63

Int. Cl. A61k 27/00; A01n 9/20

U.S. Cl. 424—320

16 Claims

A method of reducing abnormally high concentrations of serum cholesterol and esterified fatty acids, and a

method of producing sedation, which involve the administration of an effective amount of a pharmaceutical composition which contains as active ingredient at least one aryloxyisobutyric acid amide, for example  $\alpha$ -(4-chlorophenoxy)isobutyramide. Pharmaceutical compositions suitable for use in these methods are also disclosed.

3,629,454

# AN ANTIFUNGAL AND ANTIBACTERIAL COMPOSITION

Fred S. Barr and Charles F. Bullock, Bristol, Va., and Galen F. Collins, Bristol, Tenn., assignors to The S. E. Massengill Company, Bristol, Tenn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 296,359, July 19, 1963. This application June 4, 1968, Ser. No. 734,207

Int. Cl. A01n 9/02; A61k 27/00

U.S. Cl. 424—320

7 Claims

This invention relates to new and synergistic antimicrobial compositions which comprise the diethanolamide of a higher saturated fatty acid, e.g. lauric diethanolamide, which itself has substantially no antimicrobial activity, plus a known antimicrobial agent such as sodium bithionolate, a resulting composition being much more effective than either of the components alone or the expected additive effect of the components.

3,629,455

# METHOD OF TREATING HELMINTHIASIS AND IMIDOYLUREA COMPOSITIONS THEREFOR

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Mar. 7, 1968, Ser. No. 711,235

Int. Cl. A61k 27/00

U.S. Cl. 424—322

6 Claims

Hookworms and tapeworms are eliminated from warm blooded animals by the use of 1-phenyl-3-alkanimidoylureas.

3,629,456

# BENZOHYDROXAMIC ACID FUNGITOXIC AGENTS

Ewald Urbschat, Cologne-Mulheim, and Paul-Ernst Frohberger Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 438,369, Mar. 9, 1965. This application July 26, 1968, Ser. No. 749,915

Claims priority, application Germany, Mar. 12, 1964, F 42,283

Int. Cl. A01n 9/20

U.S. Cl. 424—324

6 Claims

Benzo-, bis-benzo-, and mono- and di-chloro benzo- and bis-benzo- hydroxamic acids, and compositions thereof with dispersible carrier vehicles, having fungitoxic activity and usable to combat fungi, especially Ustilago phytopathogenic fungi, in connection with seeds, plants and tillable agricultural soil.

3,629,457

# FUNGICIDAL COMPOSITIONS CONTAINING 2,2'-BIS(ALLYL-CARBAMYLPHENYL)-DISULFIDE

John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,957

Int. Cl. A01n 9/12

U.S. Cl. 424—324

3 Claims

Bis(allylcarbamyphenyl)-disulfide is found effective in controlling mildew fungi, especially *Pullularia pullulans* and can be incorporated in organic coating compositions. About 0.1 to 1% concentration in paint provides protection against mildew.

3,629,458

# FUNGICIDAL METHODS AND COMPOSITIONS COMPRISING TRICHLOROACETALDEHYDE AMINALS

Hugo Malz, Leverkusen, Ferdinand Grewe, Burscheid, August Dorken, Wuppertal-Sonnborn, and Helmut Kaspers, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application July 11, 1967, Ser. No. 652,410, now Patent No. 3,520,927, dated July 21, 1970. Divided and this application June 24, 1969, Ser. No. 845,118

Claims priority, application Germany, July 14, 1966, F 49,691

Int. Cl. A01n 9/00, 9/20

U.S. Cl. 424—324

11 Claims

N-(unsubstituted and halogen, alkoxy and/or alkylmercapto substituted-alkyl and -cycloalkyl as well as unsubstituted and halogen, alkyl, alkoxy, alkylmercapto, nitro, dialkylamino, cyano and/or aryloxy substituted-phenyl and -naphthyl)-N'-formyl - trichloroacetaldehyde aminals which possess fungicidal properties and which may be produced by reacting the corresponding isocyanates with N-(1-hydroxy-2,2,2-trichloro-ethyl)-formamide.

3,629,459

# N-(3,4-DICHLOROPHENYL)-3-(N'-3,4-DICHLOROPHENYL)CARBAMOYL METHYL-2,2-DIMETHYLCYCLOBUTANECARBOXAMIDE CHEMOSTERILANT

Theodore Largman, Morristown, N.J., and Peter Edward Newallis, Jackson, Kans., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 745,664, July 18, 1968. This application Dec. 3, 1969, Ser. No. 881,920

Int. Cl. A01n 9/20

U.S. Cl. 424—324

4 Claims

N-(3,4-dichlorophenyl) - 3 - [N'-3,4-dichlorophenyl] carbamoyl]methyl - 2,2 - dimethylcyclobutanecarboxamide is prepared by reaction of 3,4-dichloroaniline with pinic acid chloride in the presence of base. The product is useful as a chemosterilant for insects, birds, and mammals.

3,629,460

# METHOD OF COMBATING COTTON PESTS

Volker Dittrich, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Continuation of application Ser. No. 564,553, July 12, 1966. This application Sept. 24, 1969, Ser. No. 860,840

Int. Cl. A01n 9/20

U.S. Cl. 424—326

4 Claims

There is provided a novel process for protecting cotton plants from attack by insects harmful to cotton by applying to said plants an insecticidally effective amount of N-(2-methyl-4-chlorophenyl)-N'-dimethylformamidine.

3,629,461

# SPASMOLYTIC COMPOSITIONS AND THE USE THEREOF WITH N-(ALKANOYLPHENOXYALKYL)-N,N,N-TRIALKYL AMMONIUM SALTS

Pierre H. Payot, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 15, 1968, Ser. No. 776,245  
Claims priority, application Switzerland, Nov. 29, 1967, 16,787/67

Int. Cl. A61k 27/00

U.S. Cl. 424—329

11 Claims

N-(alkanoylphenoxyalkyl)-N,N,N-trialkyl ammonium salts are the active ingredients of pharmaceutical compositions; these compounds and compositions are useful for the treatment of cramps; an illustrative embodiment is N - [2 - (2 - acetylphenoxy) - ethyl] - N, N - dimethyl-N-dodecyl ammonium bromide.

3,629,462

# QUATERNARY AMMONIUM COMPOUNDS

Reginald L. Wakeman, Philadelphia, Pa., and Alfonso N. Petrocci, Glen Rock, and Kenneth W. Prodo, Westfield, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,506

Int. Cl. A161 13/00

U.S. Cl. 424—329

3 Claims

A synergistic mixture of higher alkyl dimethyl pseudocumyl ammonium chlorides wherein the alkyl group contains from 12 to 14 carbon atoms, and wherein the microbiocidal effectiveness of the mixture in hard water is that of the compound in the mixture which has the greatest hard water tolerance.

3,629,463

# PHARMACEUTICAL COMPOSITIONS CONTAINING N-CYCLOPROPYL-1-AMINO-1,2,3,4-TETRAHYDRONAPHTHALENES AND USE OF SUCH N-CYCLOPROPYL COMPOUNDS AS HYPOTENSIVES

Maurice Ward Gittos, Slough, John William James, Langley, and Leslie Frederick Wiggins, Wargrave, England, assignors to Aspro-Nicholas Limited, London, England

No Drawing. Application July 10, 1967, Ser. No. 652,029, which is a continuation-in-part of application Ser. No. 623,470, Mar. 15, 1967, which in turn is a continuation-in-part of application Ser. No. 385,761, July 28, 1964. Divided and this application Apr. 15, 1969, Ser. No. 835,841

Int. Cl. A61k 27/00

U.S. Cl. 424—330

9 Claims

A number of N-cyclopropyl-1-aminoindanes and -1-amino-1,2,3,4-tetrahydronaphthalenes are disclosed. They have useful pharmacological properties in that, when administered to hypertensive animals, including humans, they lower the blood pressure of these animals. Pharmaceutical compositions containing these compounds may be administered orally, rectally or parenterally in dosage unit form, each dosage unit containing from 1 to 150 mg. of active ingredient. Up to 2 or 3 dosage units may be administered 4 times daily. Reduced dosages may be used for maintenance therapy.

3,629,464

# SYNERGISTIC ANTIMICROBIAL COMPOSITIONS COMPRISING CERTAIN ALIPHATIC MONO OR DIALDEHYDES AND AN ALIPHATIC NITRO-ALCOHOL

Heinz Günter Nosler, Monheim, Rhineland, Horst Bellingier, Dusseldorf, and Richard Wessendorf, Hilden, Rhineland, Germany, assignors to Henkel & Cie, G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Mar. 1, 1968, Ser. No. 709,835

Claims priority, application Germany, Aug. 19, 1967, H 63,652

Int. Cl. A01n 9/24

U.S. Cl. 424—334

9 Claims

Synergistic antimicrobial compositions of lower aliphatic mono and polyaldehydes and an aliphatic alcohol having 2 to 5 carbon atoms in a straight chain and substituted with at least one nitro group and a method of killing fungi and bacteria.

3,629,465

# PRESERVATIVES FOR AQUEOUS SYSTEMS

Milton Manowitz, Fair Lawn, N.J., George R. Walter, Racine, Wis., and Stephen A. Foris, Toms River, N.J., assignors to Givaudan Corporation, Clifton, N.J.

No Drawing. Continuation-in-part of application 573,845, Aug. 22, 1966. This application Dec. 23, 1968, Ser. No. 786,453

Int. Cl. A01n 9/20; C02b 3/08; C09a 5/14

U.S. Cl. 424—349

6 Claims

The use of (1,2-dibromo-2-nitroethyl) benzene (I) and  $\beta$ -bromo- $\beta$ -nitrostyrene (II) as preservatives for



aqueous systems normally subject to spoilage is disclosed. Examples showing results obtained in preserving cutting oils, cosmetic lotions and creams, fuel oil, latex emulsions, paints, industrial cooling water, water used in pulp and paper manufacturing, flood water used in secondary oil recovery, and starch-base adhesives are given.

### 3,629,466 SYNERGISTIC MIXTURES CONTAINING PENTACHLOROPHENOL

Bruno Sander, Ludwigshafen, Ernst-Heinrich Pommer, Limburgerhof, and Werner Helmut Clad and Otto Wittmann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Filed Jan. 27, 1969, Ser. No. 794,366  
Claims priority, application Germany, Feb. 3, 1968, P 16 67 937.1  
Int. Cl. A01n 9/20

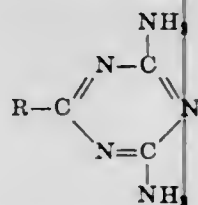
U.S. Cl. 424—325 4 Claims  
A new mixture of

- pentachlorophenol or its salt and
- the salt of an N-nitroso-N-organyldihydroxylamine which has valuable and new properties, and a process for controlling fungi with this mixture. The mixture has a strong fungicidal action and is particularly suited for the prevention of fungus infections.

3,629,467  
PHARMACEUTICAL PREPARATIONS CONTAINING A 2,4-DIAMINO-6-SUBSTITUTED-S-TRIAZINE AND METHODS OF USING SAME  
Charles D. Bossinger, Olympia Fields, and Takashi Enkoji, Park Forest, Ill., assignors to Armour Pharmaceutical Company, Chicago, Ill.  
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,364  
Int. Cl. A61u 27/00

U.S. Cl. 424—249 20 Claims  
Preparations containing 2,4-diamino-6-substituted-s-triazines and methods of using same whereby a host, including man, to whom such preparations are administered, preferably per os, is caused to secrete endogenous adrenocorticotrophic hormone which increases the blood levels of endogenous adrenocorticosteroids in the host to his benefit while avoiding the adverse effects of hyperadrenocorticosteroidism. The methods hereof also obtain anti-inflammatory relief in the host independently of adrenal axis stimulation.

The triazine compounds have the structure:



wherein R is a phenyl or substituted phenyl in which the substituted moiety is selected from the group consisting of halo, alkyl, alkoxy, and fluoroalkyl.

3,629,468  
HYGROSCOPICALLY CONTROLLED EFFERVESCENT MOUTHWASH TABLET  
Howard P. Andersen, 419 E. Summit Ave., Oconomowoc, Wis. 53066  
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,099  
Int. Cl. A61k 9/00, 11/02, 11/04  
U.S. Cl. 424—44 12 Claims  
An effervescent mouthwash tablet comprising a germicidal agent, chlorophyll, an alkali metal carbonate

salt, adipic acid, flavoring ingredients, and sweetening agents.

3,629,469  
METHOD FOR CONTROLLING BIRDS  
Philip H. Derse, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.  
No Drawing. Filed Mar. 8, 1968, Ser. No. 711,497  
Int. Cl. A01n 17/00

U.S. Cl. 424—17 1 Claim  
A method for controlling bird population by feeding birds in a locale with a food composition containing antimycin as the toxic agent.

3,629,470  
PROCESS FOR PURIFICATION OF  
ANIMAL RNA VIRUSES  
Alexander David Kanarek and George William Tribe, London, England, assignors to Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, N.Y.  
No Drawing. Filed Apr. 8, 1968, Ser. No. 719,675  
Int. Cl. A61k 27/00

U.S. Cl. 424—89 13 Claims  
A process for the purification or concentration of animal RNA viruses of the myxovirus or paramyxovirus group or the respiratory syncytial or rubella viruses which includes the steps of precipitating the virus from solution by means of a water soluble polyalkylene glycol in the presence of an electrolyte having a particular concentration in a substantially neutral medium and separating the precipitate containing the virus.

3,629,471  
TRANQUILIZING COMPOSITIONS AND METHODS  
Albert Fanchamps, Basel, and Max Taeschler, Reinach Basel Land, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland  
No Drawing. Filed Jan. 7, 1969, Ser. No. 789,621  
Claims priority, application Switzerland, Jan. 16, 1968, 647/68  
Int. Cl. A61k 27/00

U.S. Cl. 424—247 6 Claims  
The invention relates to a pharmaceutical composition incorporating as active ingredients:

- N-ethyl-nortropin-benzhydryl ether or a pharmaceutically acceptable acid addition salt thereof;
- dihydroergocristine or a pharmaceutically acceptable acid addition salt thereof; and
- 3-methylsulphonyl-10-[2-(1-methyl-2-piperidyl)ethyl]phenothiazine or a pharmaceutically acceptable acid addition salt thereof; in which the proportion, by weight, of ingredient (a):(b):(c) is from about 1:0.25:1.5 to about 1:20:125.

The composition is useful as a minor tranquilizer.

3,629,472  
BACTERICIDAL COMPOSITIONS CONTAINING  
SUBSTITUTED NITROPYRIDINES  
Patrick R. Driscoll, Fords, N.J., assignor to Mobil Oil Corporation  
No Drawing. Filed July 10, 1968, Ser. No. 743,608  
Int. Cl. A01n 9/22

U.S. Cl. 424—263 4 Claims  
Compositions of substituted 2-halo-5-nitropyridines on a carrier therefor are effective in combatting plant bacteria.

3,629,473  
ANTI-INFLAMMATORY AGENTS AND  
COMPOSITIONS  
Karl J. Doebel, Ossining, N.Y., and André R. Gagneux, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.  
No Drawing. Continuation-in-part of applications Ser. No. 721,928, and Ser. No. 721,929, both Apr. 17, 1968, which are continuations-in-part of application Ser. No. 500,245, Oct. 21, 1965. This application Nov. 7, 1969, Ser. No. 874,947  
Int. Cl. A61k 27/00

U.S. Cl. 424—263 12 Claims  
A method and compositions for producing anti-inflammatory effects in warm-blooded animals by administration of an effective amount of a derivative of pyridyl-2-mercaptoimidazole, such as, for example, 1-(2-pyridyl)-5-methyl-2-mercaptoimidazole.

3,629,474  
INSECTICIDAL AND FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI AND INSECTS USING ISOXAZOLYL CARBAMATES  
Ranjit Ghosh and Nigel Douglas Bishop, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England  
No Drawing. Filed Nov. 26, 1968, Ser. No. 779,223  
Claims priority, application Great Britain, Dec. 4, 1967, 55,058/67; Feb. 20, 1968, 8,259/68  
Int. Cl. A01n 9/22, 9/28

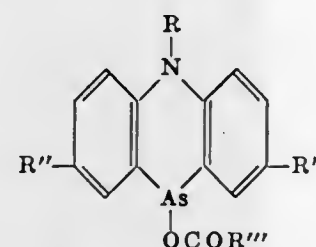
U.S. Cl. 424—272 5 Claims  
Isoxazolyl carbamates and pesticidal compositions containing them. A typical carbamate is 4,5-dimethyl-3-isoxazolyl dimethylcarbamate.

3,629,475  
METHOD OF INHIBITING PHENYLETHANOLAMINE-N-METHYLTRANSFERASE  
Lewis R. Mandel, Edison, N.J., and Curt C. Porter, Glenside, Pa., assignors to Merck & Co., Inc., Rahway, N.J.  
No Drawing. Continuation-in-part of application Ser. No. 8,698, Feb. 4, 1970. This application Aug. 3, 1970, Ser. No. 60,603  
Int. Cl. A61k 27/00

U.S. Cl. 424—273 1 Claim  
Method of inhibiting phenylethanolamine-N-methyl transferase by the administration to a host of 2-aminobenzimidazoles and pharmaceutical compositions containing the 2-aminobenzimidazoles of this invention as an active ingredient.

3,629,476  
CONTROLLING SOIL-DWELLING FUNGI WITH  
PHENARSAZINE COMPOUNDS  
John P. Pellegrini, Jr., O'Hara Township, Allegheny County, and Harold O. Strange, Penn Hills Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.  
No Drawing. Original application Dec. 30, 1965, Ser. No. 517,808, now Patent No. 3,481,958, dated Dec. 2, 1969. Divided and this application Apr. 1, 1969, Ser. No. 812,342  
Int. Cl. A01n 9/00

U.S. Cl. 424—297 8 Claims  
Soil-dwelling fungi are controlled by impregnating the soil with a phenarsazine compound represented by the general formula



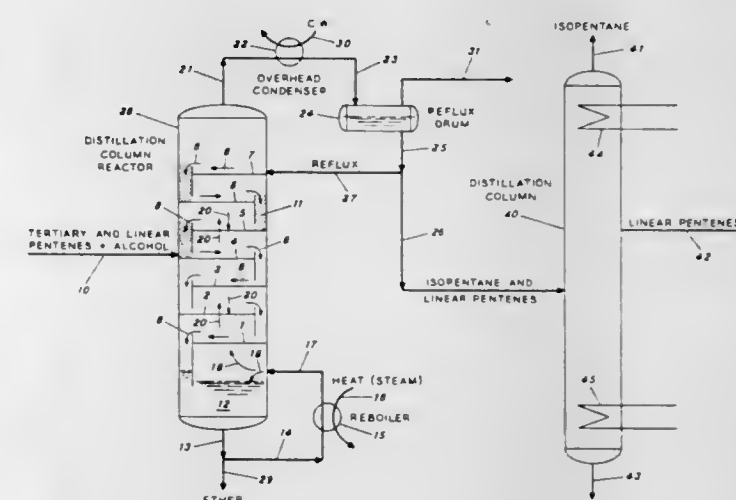
Preferred compounds are those wherein R and R' are hydrogen and R'' is selected from the group consisting of alkyl and alkenyl radicals containing 3 to 9 carbon atoms, phenyl, hydroxyphenyl, alkylphenyl and phenalkyl radicals the alkyl portions of said alkylphenyl and phenalkyl radicals containing 1 to 2 carbon atoms. Especially preferred is 5,10-dihydrophenarsazine-10-isooctanoate.

### 3,629,477 HALOGENATED DIPHENYLETHYLEN-CONTAINING COMPOSITIONS AND CONTROL OF PESTS THEREWITH

Ernst Model, Basel, and Jakob Bindler, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 570,742, Aug. 8, 1966, which is a continuation-in-part of application Ser. No. 345,080, Feb. 17, 1964. This application Apr. 3, 1967, Ser. No. 627,603  
Int. Cl. A01n 9/24; A61k 27/00

U.S. Cl. 424—340 16 Claims  
Halogenated 2-hydroxy or 2-acyloxy-diphenylether-containing compositions which inhibit microbial growth and are suitable for disinfection and the like purposes, and especially those containing 2-hydroxy-diphenylethers or 2-acyloxy-diphenylethers substituted at least in 4-position and preferably in 4- and 4'-position by halogen, which are particularly suitable for the protection of cellulosic materials against bacteria and fungi, for the treatment of infections of the intestinal system and the urinal tract of warm-blooded animals caused by pathogenic microorganisms, and the protection of polyamide fiber materials against attack by certain insects; furthermore processes of using the aforesaid compositions for the described purposes.

3,629,478  
SEPARATION OF LINEAR OLEFINS  
FROM TERTIARY OLEFINS  
Willard M. Haunschild, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
Filed Aug. 22, 1969, Ser. No. 852,227  
Int. Cl. C07c 11/12  
U.S. Cl. 260—677 A 7 Claims



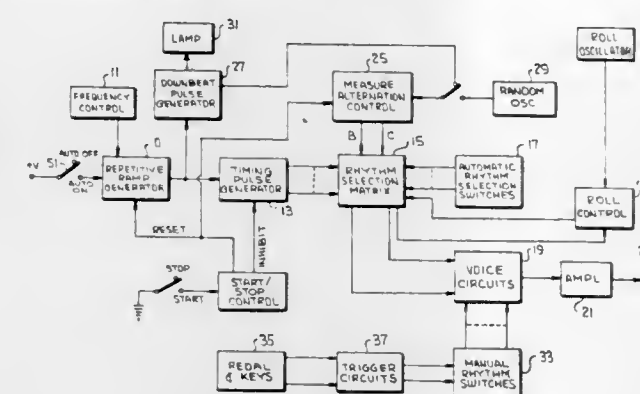
Linear pentenes are separated from tertiary pentenes by: (a) Feeding a mixture of alcohol, tertiary pentenes and linear pentenes to a distillation column reactor at a feed zone;



- (b) Catalytically reacting the tertiary pentenes with the alcohol by contacting them with heterogeneous catalyst located in a plurality of zones above the feed zone, thereby forming an ether;
- (c) Fractionating the ether from the linear pentene in the distillation column reactor;
- (d) Withdrawing the ether from the distillation column reactor at a position below the feed zone; and
- (e) Withdrawing the linear pentenes from the distillation column reactor at a position above the feed zone.

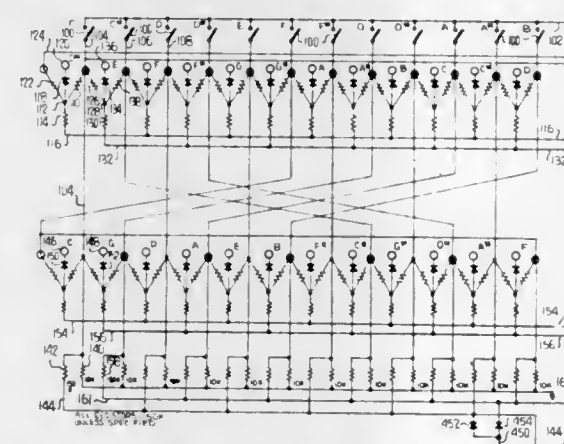
**3,629,479**  
**SULFOALKYLATED POLYBENZIMIDAZOLES**  
 Jenő C. Szita, Stamford, Conn., and Carl S. Marvel, Tucson, Ariz., assignors to Research Corporation, New York, N.Y.  
 No Drawing. Filed Nov. 28, 1969, Ser. No. 880,986  
 Int. Cl. C08g 33/02; D06p 5/00  
 U.S. Cl. 260—79.3 R **3 Claims**  
 Polybenzimidazoles are sulfoalkylated by reaction with propane- and butanesultones. The sulfoalkylated products, unlike the parent polymers, are receptive to dyeing with cationic dyestuffs.

**3,629,480**  
**RHYTHMIC ACCOMPANIMENT SYSTEM EMPLOYING RANDOMNESS IN RHYTHM GENERATION**  
 Michael R. Harris, Hayward, Calif., assignor to D. H. Baldwin Company, Cincinnati, Ohio  
 Filed Apr. 10, 1970, Ser. No. 27,258  
 Int. Cl. G10f 1/00  
 U.S. Cl. 84—1.03 **31 Claims**



A system is disclosed for developing rhythmic accompaniment sounds from a free running repetitive ramp waveform having a controllable repetition rate, there being a series of master timing pulses developed by triggering appropriate circuits at different ramp voltage levels during each ramp cycle. Certain of the master timing pulses are selected to form each required rhythmic pattern, the selected pulses being employed to trigger voice circuits to produce desired tones. In one embodiment a pattern selection circuit is employed to permit selective generation of any one of four pattern modes, namely: a first continuously repeated pattern; a second continuously repeated pattern; a pattern in which the first and second patterns are alternated; and a pattern in which the first and second patterns are randomly selected. In the preferred embodiment, 13 master timing pulses are provided during each measure and are separated by 1, 2, or 3 timing units in a 24 timing unit measure, an arrangement which permits of obtaining authentic accompaniment rhythms. A novel cowbell voicing circuit and a novel drum roll control circuit permit rhythmic generation of realistic cowbell and drum roll sounds in response to selected master timing pulses.

**3,629,481**  
**AUTOMATIC CHORD AND RHYTHM ELECTRONIC ORGANS**  
 David A. Bunger, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio  
 Filed Sept. 9, 1970, Ser. No. 70,677  
 Int. Cl. G10f 1/00  
 U.S. Cl. 84—1.03 **39 Claims**

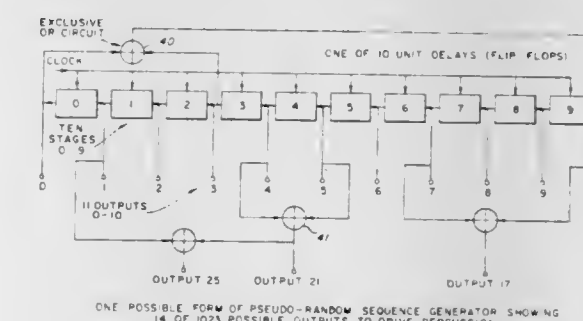


The system provides a conventional electronic organ with automatic chord accompaniment and/or an automatic

## ELECTRICAL

rhythm system. Playing of only one note in a selected octave of the lower manual produces proper distribution between pedal and manual root, third and fifth parts of a chord in any one of five rhythms with rhythmic percussive effects if desired. The pedal and/or manual notes may be rhythmically pulsed or selectively converted to continuous mode. A touch bar is provided to convert from major to minor chords. Playing of two notes defeats the chord accompaniment. Playing of three notes causes the organ to revert to conventional operation. Playing of a single note always produces a downbeat.

**3,629,482**  
**ELECTRONIC MUSICAL INSTRUMENT WITH A PSEUDORANDOM PULSE SEQUENCE GENERATOR**  
 James K. Pulfer, and Theodore H. Shepertsky, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada  
 Filed June 9, 1969, Ser. No. 831,641  
 Int. Cl. G10h 1/02  
 U.S. Cl. 84—1.03 **3 Claims**



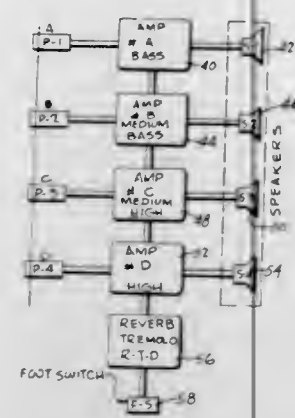
Apparatus for producing complex rhythm patterns (rhythm "breaks") involving operation of a plurality of percussion devices in a pseudorandom manner. A clock pulse generator drives a pseudorandom pulse sequence generator having a large number of outputs on which appear a large number of different combinations of output pulses. Each clock pulse effects a change in the combination of pulses appearing at the outputs. The outputs of the pseudorandom pulse sequence generator are combined in logic gates having outputs connected to a plurality of percussion devices which are operated in pseudorandom manner (depending on the output pulse combination) at a tempo determined by the source of clock pulses. The source of clock pulses may be a free-running clock pulse generator operating at any desired one of various rates or may be derived from a musical instrument, e.g. an organ, so that the clock pulse rate (rhythm) is set by the player of the instrument.

**3,629,483**  
**MULTIVOCAL MUSIC SYSTEM**  
 Ruel E. Welch, 4206 E. Delhi, Holt, Mich.  
 Filed Nov. 21, 1968, Ser. No. 785,845  
 Int. Cl. G10h 3/08, 3/00  
 U.S. Cl. 84—1.16 **4 Claims**

A musical instrument having a plurality of strings for producing sound vibrations and including a plurality of electrical pickup devices, each of which includes a coil form defining a tapered opening, a tapered permanent magnet disposed in the opening, and a voltage coil wound around the form and peripherally disposed about the magnet. Each pickup device spans all the strings and is disposed at a different location of string vibration whereby the amplitudes of



vibration have different values for each location. A plurality of amplifiers each having an input connected to a different



pickup device and an output connected to one of a plurality of speakers is also provided.

3,629,484

**TREMOLO EFFECT PRODUCING DEVICE**

Shoichi Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

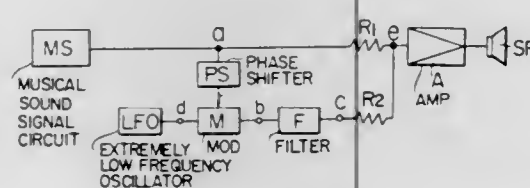
Filed Dec. 28, 1970, Ser. No. 101,781

Claims priority, application Japan, Dec. 28, 1969, Dec. 28, 1969; 44/123778, 44/123779

Int. Cl. G10h 1/04

U.S. Cl. 84—1.25

3 Claims



A carrier wave having a subaudible frequency is modulated in amplitude by a modulating wave of a tone signal having an audible frequency, which produces a resultant modulated output signal having first and second side band components respectively deviated above and below the tone signal frequency by a deviation equal to the carrier frequency. The frequency of the carrier wave is selected to be much lower than that of the modulating wave, contrary to the known conventional modulation technique. The frequency-deviated signal thus obtained is admixed with the original nonfrequency-deviated musical sound signal thereby to produce a tremolo or chorus effect. The carrier wave is given a distorted waveform in order to produce a richer and more complicated tremolo or chorus effect.

3,629,485

**DRIVEN COILED GROUND**

Hikoitsu Watanabe, No. 5-13, 1-chome, Ehara-cho, and Sanji Genma, No. 4-8, 1-chome, Ehara-cho, both of Nakano-ku, Tokyo, Japan

Filed Mar. 3, 1970, Ser. No. 16,079

Claims priority, application Japan, Apr. 8, 1969, 44/26588

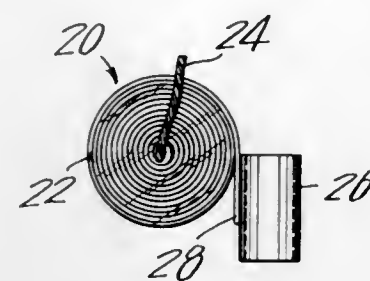
Int. Cl. H01r 3/06

U.S. Cl. 174—7

6 Claims

An electrically conductive strip-shaped metallic member or wire is wound into a coiled ground main body having an engaging member fixed to the outer end thereof so that the axis of the engaging member may be aligned with the direction in which the coiled main body is uncoiled. The engaging member is engaged with a ground driving rod so that when the driving rod is driven into the soil, the coiled ground main body is gradually uncoiled and driven straightly into the soil to a desired depth. Thereafter, the driving rod is pulled out of the soil, but the ground main body remains extended straight in intimate contact with the surrounding earth. The

coiled ground may be fabricated in a simple manner; the ground driving operation is much facilitated; and the intimate



contact of the driven ground with the surrounding earth may be ensured.

3,629,486

**GAS-INSULATED BUSBAR INSTALLATION**

Christy Edward Selvanayagam Swampillai, Tadworth, and Derek Reginald Edwards, Windsor, both of England, assignors to British Insulated Callander's Cables Limited, London, England

Filed Nov. 10, 1970, Ser. No. 88,414

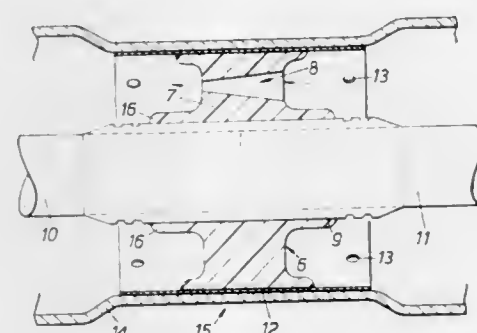
Claims priority, application Great Britain, Nov. 19, 1969,

56,713/69

Int. Cl. H01b 9/06

U.S. Cl. 174—16 B

2 Claims



In a gas-insulated isolated-phase bus bar installation suitable for transmitting electric power at a voltage of at least 22 kv. and a current of at least 1,000 A. comprising a tubular load-carrying conductor mounted coaxially within a tubular outer enclosure, a length of load-carrying conductor is mounted by a plurality of supports each comprising a control hub which adheres to the surface of the said tubular conductor, to a metal sleeve fitting into the said tubular conductor, or to a metal tube acting as a joint between lengths of the said tubular conductor. The shape of each spacer is such that the cross section of the hub in any plane at right angles to the conductor axis is substantially circular and its section in any plane passing through the conductor axis is substantially elliptical at each end of the hub, with the major axis of the ellipse lying on a radius of the conductor cross section and extending to substantially the maximum thickness of the end part of the hub. The ellipse may be a circle.

3,629,487

**PRESSURIZED MULTISTRAND CABLE AIR BYPASS AND TESTING DEVICE**

Phillip W. Cuthbert, and William R. Neill, both of Chatsworth, Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed May 1, 1970, Ser. No. 33,569

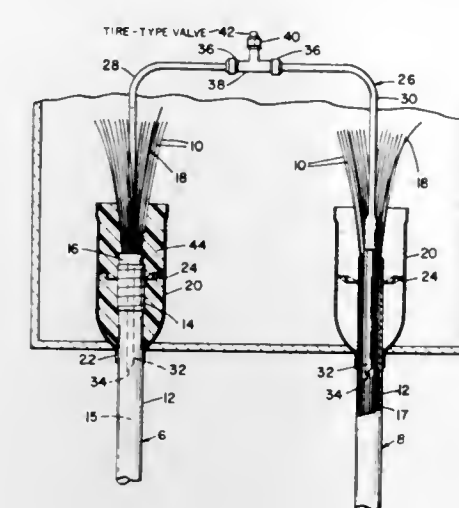
Int. Cl. H02g 15/28; G01m 3/28

U.S. Cl. 174—22 R

9 Claims

Sections of relatively soft, resilient tubes are inserted through a gas barrier into the pressurized portion of multistrand cables. The free ends of the tubes are connected to a self-closing valve communicating the tube interior with the exterior. The tube lengths are sufficient so that each tube

length can be pinched off to temporarily interrupt the fluid communication between the corresponding pressurized cable



and the valve and thus permit the independent testing of the pressure medium in the other one of the pressurized cables.

3,629,488

**CORONA-IMPEDING CONNECTOR DEVICE FOR HIGH VOLTAGE UTILITIES**

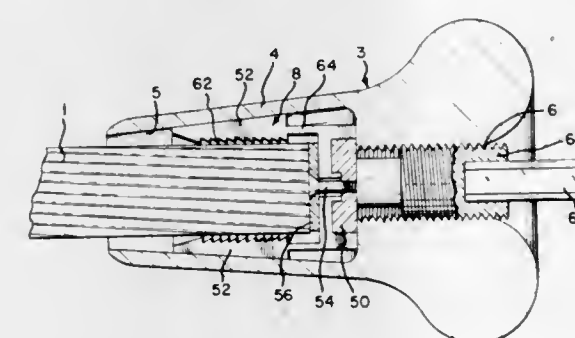
James Lenhart Mixon, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,150

Int. Cl. H02g 15/00

U.S. Cl. 174—73 R

6 Claims



The disclosure relates to a connector device for impeding corona discharges in high voltage utility lines in the region of 230 Kv. which can be installed by the use of a hot stick and a hot stick applicator for holding the corona-impeding connector during application thereof to the line, the corona-impeding connector including a set of gripping jaws which lockingly grips upon the cable due to compression thereof by means of an explosive tool or the like which forces the jaw member along an inwardly tapered portion of the corona-impeding connector to place same in compression against the cable and make a locking fit therewith. The disclosure also relates to a hot stick applicator of conductive material and coated with a nonabrasive substance, at least in the areas which come in contact with the corona-impeding connector, to prevent the formation of burrs or the like which may cause corona discharge from the corona impeding connector itself during operation thereof.

3,629,489

**CABLE SHEATHING**

Ludwik Jachimowicz, Elizabeth, and Joseph B. Masterson, Carteret, both of N.J., assignors to General Cable Corporation, New York, N.Y.

Filed May 13, 1968, Ser. No. 728,501

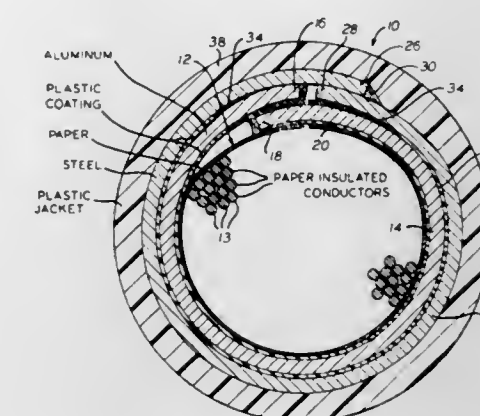
Int. Cl. H01b 7/18

U.S. Cl. 174—107

12 Claims

This improvement in Stalpeth (steel/aluminum/polyethylene) cable sheath has the aluminum strip coated with a

waterproof coating so that in the event of puncture of the soldered steel envelope, the water that gets between the steel and the aluminum cannot interrupt the continuity of the metallic shield by corrosion of the dissimilar metals in contact with the water. In the preferred construction, the coating



on the aluminum is fused to the steel around part of the circumference, and aluminum touches the steel along a protected longitudinally extending area to provide electrical continuity, and this is most conveniently located under the soldered seam of the steel jacket.

3,629,490

**METHOD FOR ELECTRONIC COLOR CORRECTION**

Hans Keller, Kiel, Germany, assignor to Rudolf Hell Kommanditgesellschaft, Kiel, Germany

Filed Apr. 9, 1969, Ser. No. 814,657

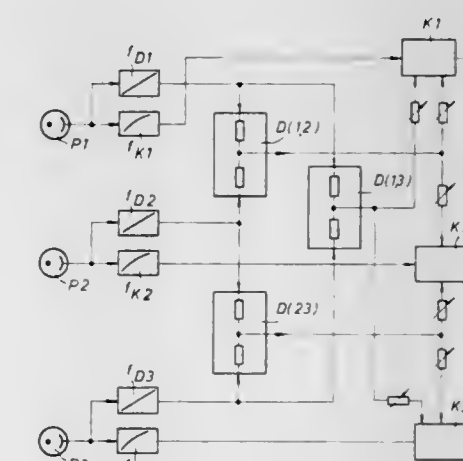
Claims priority, application Germany, Apr. 18, 1968, P 17 72

234.8

Int. Cl. G03b 27/78

U.S. Cl. 178—5.2 A

2 Claims



A method for the electronic color correction of an electrical signal representing a color record employing a secondary correction signal derived by difference formation from a primary color separation signal to be corrected and a primary color correction signal of the same grey gradation, wherein the secondary correction signal disappears for grey tones, and in which the color separation signal to be corrected and the signals to be used for the difference formation are transformed according to respective different preferably nonlinear functions lying between logarithmic and linear functions, with the curve of the color separation signal to be corrected more closely approaching a logarithmic function and the curve of the signals to be used for difference formation more closely approaching a linear function.



3,629,491

## SIGNAL-CORRECTING APPARATUS

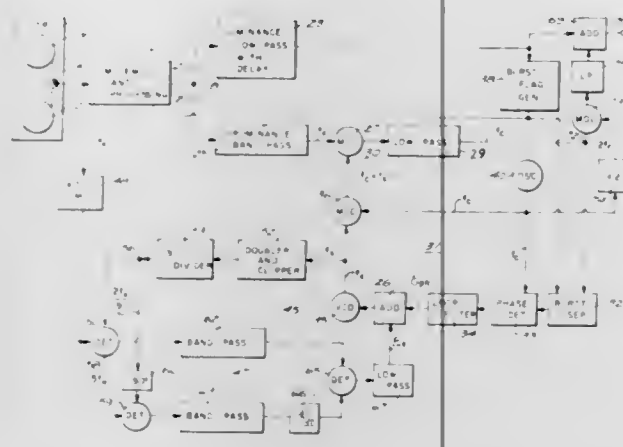
Bert H. Dann, Mountain View, and Floyd M. Gardner, Reseda, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 3, 1969, Ser. No. 873,416

Int. Cl. H04n 9/02, 5/78

U.S. Cl. 178—5.4 CD

7 Claims



Apparatus for providing a reference signal varying in phase in accordance with angular errors in a color video signal accompanied by a horizontal synchronization signal and by a color reference burst including a number of undesired sideband components stemming from a keying of the color reference burst at horizontal synchronization rate. The apparatus comprises a controlled oscillator for providing an output signal and for varying the phase of such output signal. The apparatus further includes a control loop for limiting frequency variations of this output signal to a range located between upper sideband components and lower sideband components of the number of undesired sideband components of the color reference burst, and a further control loop for causing the defined controlled oscillator to vary the phase of the above-mentioned output signal within the defined range in accordance with said angular errors, whereby such output signal provides the initially mentioned reference signal.

3,629,492

## COLOR TELEVISION CAMERA AND METHOD

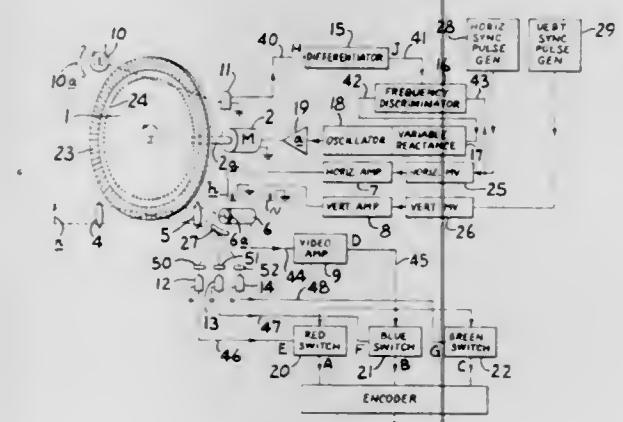
David S. McVoy, Gainesville, Fla., assignor to Coaxial Scientific Corporation

Filed Sept. 18, 1969, Ser. No. 859,081

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 R

7 Claims



A color television camera and method utilizes a standard black and white television camera with a vidicon tube. Light from the object having being viewed passes through a lens system which causes the light to pass through color filters located at the periphery of a rotating filter wheel, after which

the image is focused onto the light-sensitive surface of the vidicon tube. The filter wheel contains red, green and blue filters and is rotated by a motor, the speed of which is synchronized with the horizontal scanning rate of the tube such that successively scanned lines will contain successively different color information. The number and disposition of the filters are such that the phase of the color output is changed for every revolution of the wheel so that for every third frame substantially every scanned line will have been illuminated by each color. The color outputs are then separated for feeding to standard coding equipment or to a conventional color receiver.

3,629,493

## SCREENING PROCESS SIMULATION APPARATUS

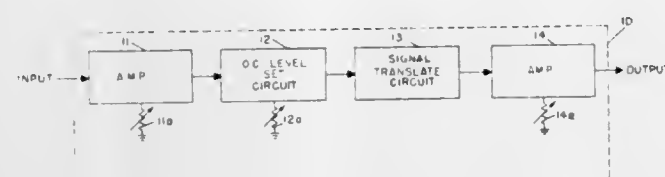
Rudolph A. Morgenfruh, Huntington Station, N.Y., assignor to Hazeltine Corporation

Filed Nov. 6, 1969, Ser. No. 874,549

Int. Cl. H04n 3/30

U.S. Cl. 178—6

10 Claims



Disclosed is apparatus useful for electronically simulating the variable graphic arts process step of photographically screening a continuous tone image to develop a corresponding halftone image. The apparatus is readily adjustable for operation over all or any selected portion of a basic non-linear signal translation characteristic, and thus is capable of simulating any of a plurality of different screening processes and variations in the adjustable parameters of any single screening process. Other embodiments are covered.

3,629,494

## SIGNAL PROCESSOR FOR DROPOUT CORRECTION BEFORE DEMODULATION

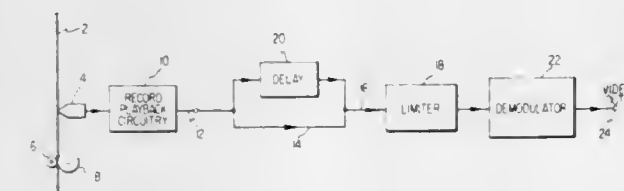
Robert Norman Hurst, Cherry Hill, N.J., assignor to RCA Corporation

Filed Aug. 18, 1969, Ser. No. 850,907

Int. Cl. H04n 5/21, 5/78

U.S. Cl. 178—6.6 DC

6 Claims



There is provided a circuit for compensating for defective or missing portions of an angle modulation information signal. The angle modulation signal is simultaneously applied directly and through an attenuating delay means to a limiter. The limiting level of the limiter is such as to provide a saturated output in response to the attenuated signal from the delay means. In this manner a missing portion of the information signal directly applied to the limiter is automatically compensated by a previous portion of the information signal from the delay means.

3,629,495

## SCANNER WITH ANALOG TO DIGITAL SIGNAL CONVERSION

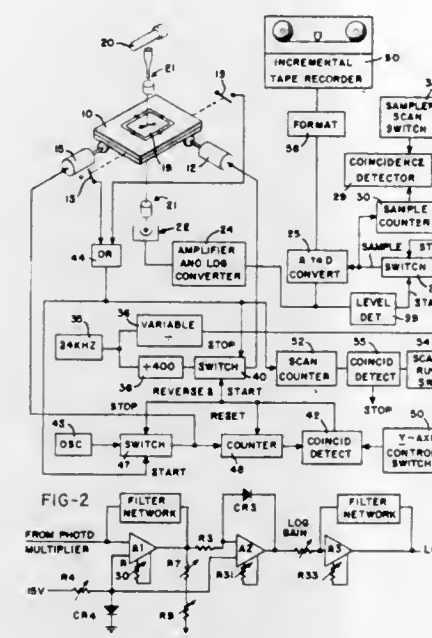
Lysle D. Cahill, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 3, 1969, Ser. No. 803,912

Int. Cl. H04n 1/04, 1/28

U.S. Cl. 178—6.6 A

5 Claims



A scanner focuses a beam of radiant energy, in the order of one micron diameter, and this beam is scanned over a graphic representation, such as a photographic negative or film positive. The amount of radiant energy passing through the graphic representation varies with the density of the image at any given spot and is sensed by a transducer. This variable signal is converted to a digital signal which is recorded at regular intervals. The scanning movement and the recording frequency are both clocked from a crystal controlled oscillator, resulting in a precisely controlled digital signal output which is recorded for subsequent reproduction of the image represented.

3,629,496

## ENCODING OF PICTURE SIGNALS IN PHOTOFACSIMILE

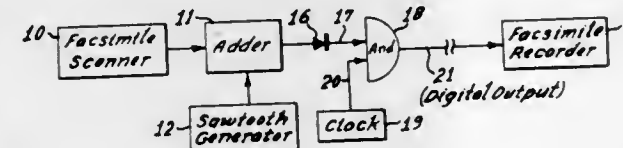
Kenneth R. McConnell, Northport, N.Y., assignor to Litton Systems, Inc.

Filed Dec. 30, 1969, Ser. No. 889,095

Int. Cl. H04n 1/40

U.S. Cl. 178—7.1

10 Claims



A method and apparatus for electrically transmitting subject copy such as continuous tone photographs by digitized signals of a character determined by the changes in tone density in different areas of the subject copy. The varying analog signal output of the facsimile scanner is converted into digital signals forming a sequence of short pulses for transmission to the recorder, the digital signals being varied in such a manner as to reproduce the black and the gray shaded areas of the subject copy.

3,629,497

## STABILIZED POWER SUPPLY WITH DC VOLTAGE STEP-DOWN FOR TRANSISTORIZED TELEVISION RECEIVERS AND THE LIKE

Italo Soardi, Pavia, and Giancarlo Pagani, Milan, both of Italy, assignors to Ates Componenti Elettronici S.p.A., Milan, Italy

Filed Dec. 4, 1969, Ser. No. 882,142

Claims priority, application Italy, Dec. 5, 1968, 24645 A/68

Int. Cl. H04n 5/44

U.S. Cl. 178—7.3 R



signal is applied to a first correction circuit wherein at least one delaying element gives the picture signal a first and a second time delay of one line period, and wherein by means of comparison a correction signal is derived from the undelayed picture signal and the picture signal delayed once and twice. This correction signal is applied to a second correction circuit which is provided with a delaying element having a time delay of approximately one field period, the second correction signal provided by the second correction circuit and a picture signal delayed by one line period being applied to an adder an output terminal of which forms the output terminal of the circuit arrangement.

3,629,499

## PATTERN NOISE REDUCTION SYSTEM

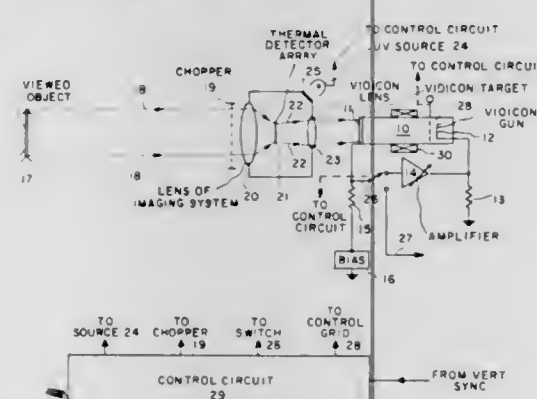
Allan Ivan Carlson, Ossining, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 2, 1969, Ser. No. 838,445

Int. Cl. H04n 5/38

U.S. Cl. 178—7.2 R

8 Claims



This invention relates to an apparatus and methods for reducing pattern noise in a vidicon type camera tube and particularly a vidicon camera tube system embodying a thermal detector array for viewing infrared radiation. A chopper is placed in front of the detector and switched open and shut. Thus, the vidicon target receives alternatively signal plus noise and noise alone. When receiving the noise alone, the target is overcharged above a bias level by an external source to an amount equal to the discharge due to the noise. Therefore, when the target receives signal plus noise, the noise components will subtract out.

3,629,500

## SYNCHRONIZING SIGNAL SEPARATOR WITH MEANS TO PREVENT DISCHARGE OF A THRESHOLD VOLTAGE CAPACITOR DURING NOISE PULSES

Wouter Smeulders, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

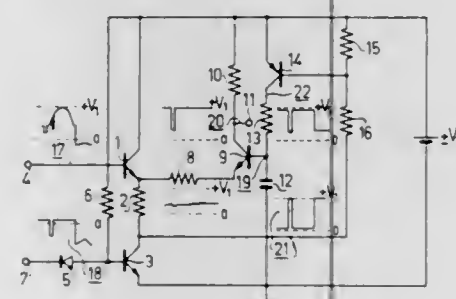
Filed Nov. 13, 1969, Ser. No. 876,398

Claims priority, application Netherlands, Nov. 19, 1968, 6816515

Int. Cl. H04n 5/08

U.S. Cl. 178—7.3 S

8 Claims



A synchronizing signal separator has an amplitude limiter which allows only synchronization signals to pass. A

threshold capacitor determines the clip level of the amplitude limiter. An interference signal suppression circuit cuts off the amplitude limiter during noise pulses. To prevent discharge of the capacitor during noise pulses, the suppression circuit is coupled to the capacitor. Therefore, the separator will not become blocked during long duration noise signals.

3,629,501

## SYNCHRONIZING SEPARATOR FOR SEPARATING SYNCHRONIZING PULSES FROM A COMPOSITE VIDEO SIGNAL

Adriaan Cense, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

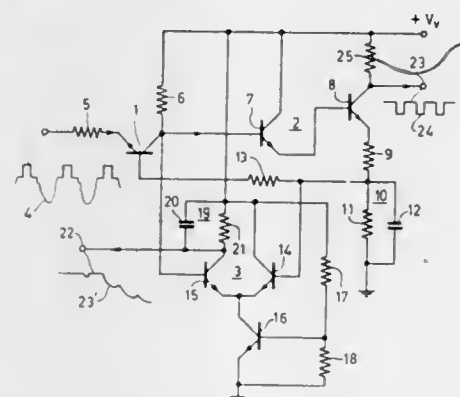
Filed Oct. 16, 1969, Ser. No. 866,946

Claims priority, application Netherlands, Oct. 16, 1969, 6815053

Int. Cl. H04n 5/10

U.S. Cl. 178—7.3 S

6 Claims



A synchronization signal separator has an amplitude limiter followed by a clipper stage. An RC network has a time constant longer than the line period, but shorter than the field period, and is coupled to the limiter and clipper by resistors. This causes feedback that prevents the circuit from operating on the vertical sync pulses.

3,629,502

## PRINTING SYSTEM USING A CONTINUOUSLY MOVING PLATEN

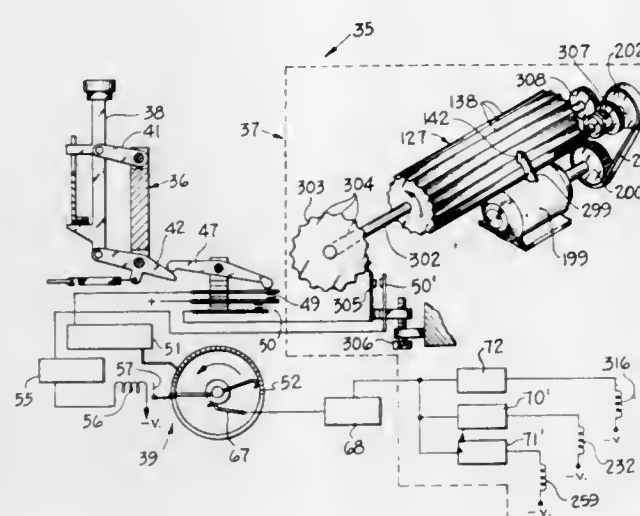
Wilburn F. Bradbury, Northbrook, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Dec. 5, 1968, Ser. No. 781,410

Int. Cl. H04i 13/34

U.S. Cl. 178—25

15 Claims



There is disclosed a dot matrix or telegraphic progressive printing system including an encoding device such as keyboard or reader, a code translator, and a printer for progressively printing a symbol on a record medium during each printing cycle. In the illustrated embodiments, a platen having platen edges rotates continuously, a carriage travels at

a constant rate relative to the platen during each printing cycle, and a print hammer mounted by the carriage cooperates with successive platen edges or elements of the platen in accordance with the symbol pulse units received from the code translator. The printing cycle for a selected symbol is initiated when a stored signal is ready to be applied to the printer and a platen element is in the proper position relative to the print hammer.

3,629,503

## DIGITAL SYNCHRONIZATION SYSTEM

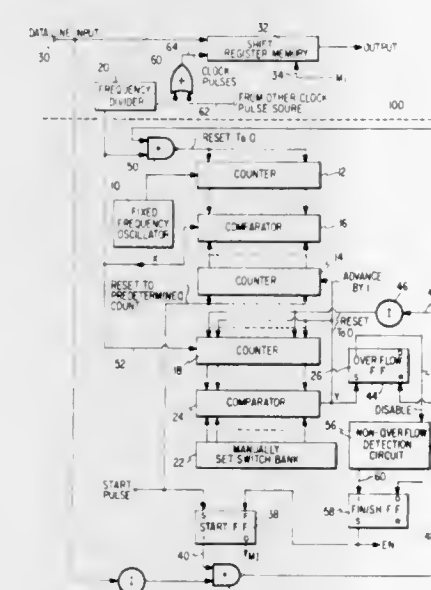
Lawrence A. Rempert, Cranbury, N.J., assignor to RCA Corporation

Filed Apr. 1, 1969, Ser. No. 811,913

Int. Cl. H04i 7/00

U.S. Cl. 178—69.5 R

8 Claims



A system for automatically adjusting a receiver to the "format" of received characters. The format refers to the number B of bit transmission intervals per character and the duration  $\Delta t$  of each such interval, where B is unknown and is in the range  $B_0$  to  $B_m$  and  $\Delta t$  is unknown and is in the range  $\Delta t_0$  to  $\Delta t_m$ . In response to the reception of timing signals of duration  $B_0 \Delta t$ , where only  $B_0$  is known in advance, the system generates clock pulses spaced intervals  $\Delta t$ . In the response to the reception of timing signals of duration  $B \Delta t$ , after  $\Delta t$  has been ascertained by the system, it generates B such clock pulses for each subsequently received character, each clock pulse concurrent with a character bit interval.

3,629,504

## PRINTING SYSTEM

Wilburn F. Bradbury, Northbrook, and George E. Misthos, Glenview, both of Ill., assignors to SCM Corporation, New York, N.Y.

Filed Dec. 5, 1968, Ser. No. 781,412

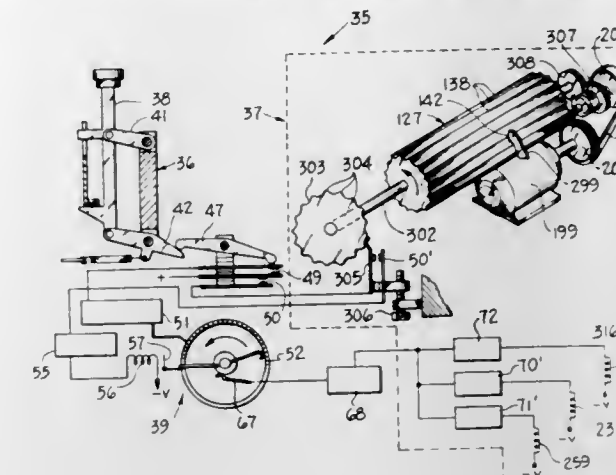
Int. Cl. H04i 15/34

U.S. Cl. 178—25

22 Claims

There is disclosed a dot matrix or telegraphic progressive printing system including an encoding device such as keyboard or reader, a code translator, and a printer for progressively printing a symbol on a record medium during each printing cycle. In the illustrated embodiments, a platen having platen edges rotates continuously, a carriage travels at a constant rate relative to the platen during each printing cycle, and a print hammer mounted by the carriage cooperates with successive platen edges or elements of the platen in accordance with the symbol pulse units received from the code

translator. The printing cycle for a selected symbol is initiated when a stored signal is ready to be applied to the



printer and a platen element is in the proper position relative to the print hammer.

3,629,505

## TRANSMISSION SYSTEM FOR THE TRANSMISSION OF INFORMATION IN A PRESCRIBED FREQUENCY BAND

Leo Eduard Zegers, Wilfred Andre Maria Snijders, and Jan Kuilman, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

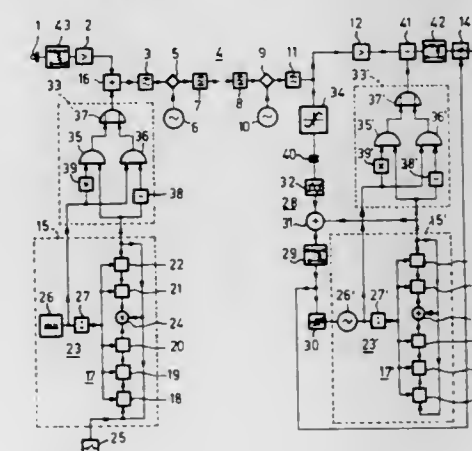
Filed Jan. 29, 1969, Ser. No. 795,109

Claims priority, application Netherlands, Feb. 1, 1968, 6801502

Int. Cl. H04j 3/06

U.S. Cl. 178—69.5 R

4 Claims



A transmission system where at the transmitter a source of information pulses is mixed with frequency modulated pseudorandom pulses, which can serve as synchronization, address signals, etc. At the receiver, the pseudorandom signals are frequency demodulated and used to synchronize a local pulse generator. Then they are frequency modulated and subtracted from the received signal.

3,629,506

## CONTROL DEVICE PARTICULARLY SUITABLE FOR SYNCHRONIZATION SIGNAL GENERATORS FOR TELEVISION

Roger Brun, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 12, 1968, Ser. No. 751,891

Claims priority, application France, Aug. 10, 1967, 117508

Int. Cl. H04i 7/00

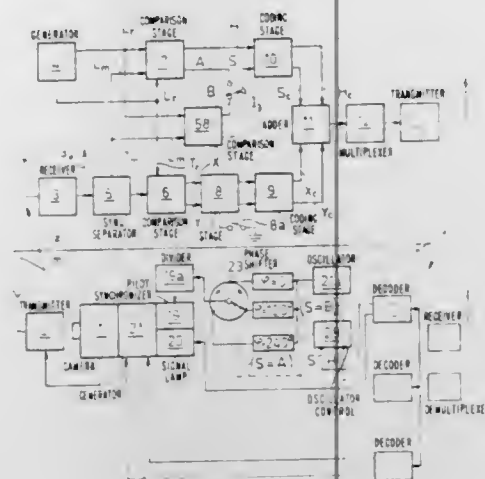
U.S. Cl. 178—69.5 DC

5 Claims

In a synchronization system for an oscillator, such as a deflection generator for a remote television camera, the oscillator is provided with N output terminals at which oscillations with different phases (N is an integer). The oscillations from the remote camera are compared with the oscilla-



tions of a local master oscillator in order to produce digital control signals indicating whether the remote oscillator is lagging or leading. The digital control signals are transmitted to the remote unit to control the opening of gates at the N



output terminals of the remote oscillator in order to stop the phase of the remote oscillations. The remote oscillator preferably has a frequency that is a high multiple of the line frequency, and the oscillations are frequency divided at the output of the N output terminals.

3,629,507

**SOLID-STATE LINE KEYS**

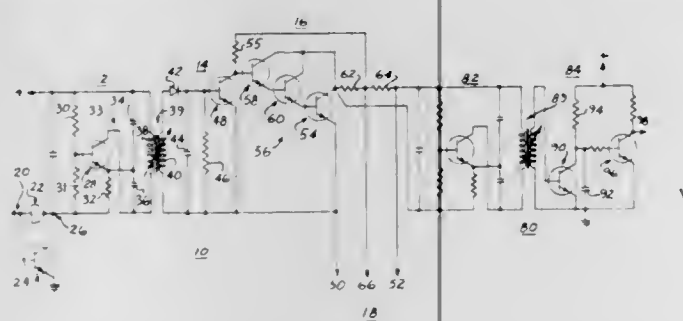
John L. Worrall, Prairie View, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 13, 1969, Ser. No. 876,323

Int. Cl. H04I 15/04

U.S. Cl. 178-79

11 Claims



A solid-state line keyer used in a telegraph system isolates an input signal from a signal line. The keyer includes an oscillator responsive to the input signal to which is inductively coupled by means of an adjustable transformer a control transistor whose output controls a Darlington circuit connected in series with and energized by the signaling line. The Darlington circuit provides a low-impedance loop during a normal mark condition and the control transistor provides a high-impedance loop when an input signal is impressed on the keyer to indicate a space condition.

3,629,508

**VISUAL READOUT RECEIVER**

Roger C. Glidden, 12 Pleasant St., Wenham, Mass.

Filed Sept. 16, 1969, Ser. No. 858,437

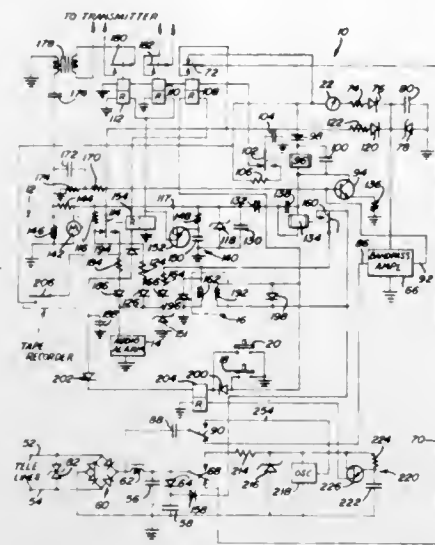
Int. Cl. H04m 11/04

U.S. Cl. 179-5 R

18 Claims

A coded message receiver at a dialed telephone station loads the lines in response to a gating tone, by setting into operation readout devices such as a magnetic tape recorder and an impulse counter as well as an audible alarm. During an ensuing message period, code signal tone bursts transmitted through the lines are recorded and counted. Upon completion of the message period, operation of the readout

devices is terminated and the receiver circuit conditioned for reset. The output of the alarm is increased to signal message



3,629,509

**N-PATH FILTER USING DIGITAL FILTER AS TIME INVARIANT PART**

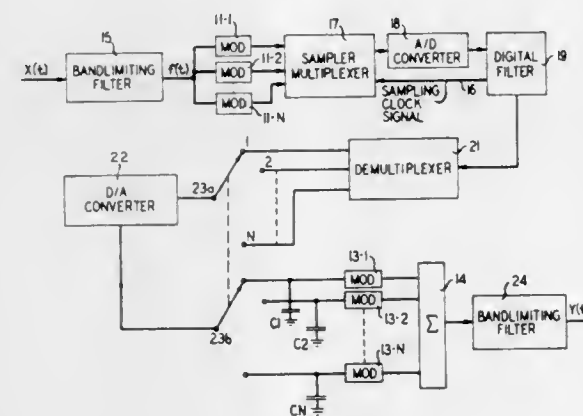
Arthur B. Glaser, East Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1969, Ser. No. 820,813

Int. Cl. H04j 3/04

U.S. Cl. 179-15 A

8 Claims



A time division multiplexed digital filter is used as the time-invariant part of an N-path filter. The use of a multiplexed digital filter alleviates the problem of closely matching the transmission characteristics of each of the N-paths.

3,629,510

**ERROR REDUCTION LOGIC NETWORK FOR HARMONIC MEASUREMENT SYSTEM**

Frederick N. Anderson, Neptune, and Ralph L. Miller, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 26, 1969, Ser. No. 880,018

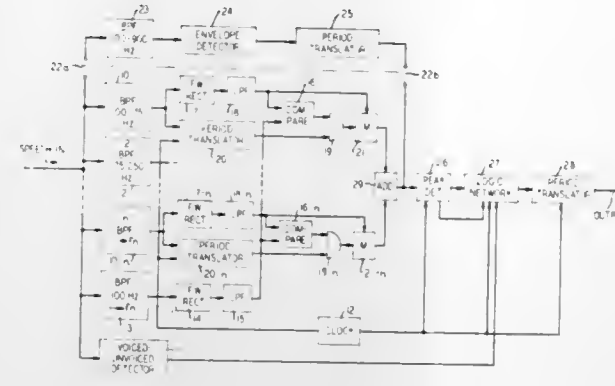
Int. Cl. G101 1/02

U.S. Cl. 179-1 SA

6 Claims

The fundamental period of a complex periodic signal may be determined by measuring the periods of individual harmonics of the periodic signal and finding their smallest common multiple. A useful display of harmonics and their sub-multiples is called a period histogram. Since the fundamental period in a period histogram is an integral multiple of a number of harmonics and is characterized by a maximum amplitude pulse, the time of occurrence of the first maximum

pulse may be taken to represent the fundamental period of the complex periodic signal. However, because the largest peak of the histogram does not always correspond to the fundamental frequency of a wave, occasional errors in the indi-



cation of pitch may result. Such errors may be obviated by examining the pitch signal developed from a histogram measurement, applying logical tests to determine its acceptability and, if the indicated pitch is found to be unacceptable, by substituting a more acceptable value.

3,629,511

**PBX TELEPHONE SYSTEM WITH MAIN AND SATELLITE SWITCH UNITS**

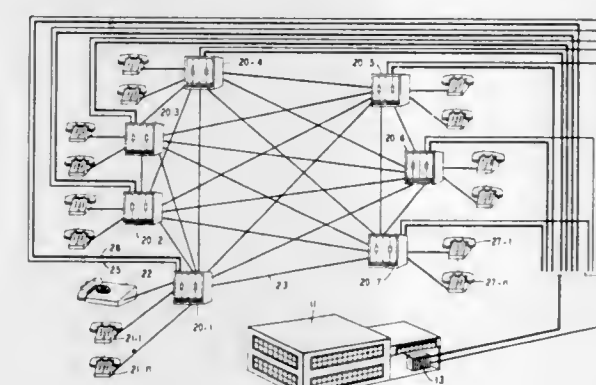
Richard B. Wolf, Evanston, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 5, 1969, Ser. No. 847,545

Int. Cl. H04q 3/58

U.S. Cl. 179-18 AD

10 Claims



A switching and control arrangement for a private branch exchange (PBX) system is described in which a plurality of satellite switch units, each terminating a distinct plurality of lines, are served by a common control unit at a remote central office. Only one of the switch units has attendant facilities, and the switch units may be directly interconnected to serve calling and called stations located in different switch units.

3,629,512

**PATH SELECTION SYSTEMS**

William K. C. Yuan, 186 Birch, Park Forest, Ill.

Filed Sept. 8, 1969, Ser. No. 855,983

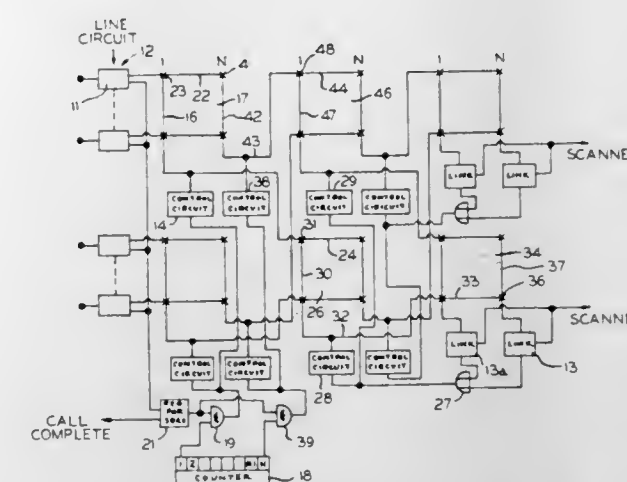
Int. Cl. H04q 3/42

U.S. Cl. 179-18 GE

16 Claims

Path selection systems for use in selecting paths in multistage cross-point-type networks. Scanner operated control circuits at both ends of the network are provided that in conjunction with a request for service signal are capable of

testing every possible path and cutting through the path that successfully traverses all stages. The control equipment then



holds the connection and blocks busy verticals. The system is extremely reliable and uses a minimum of control equipment.

3,629,513

**UNBALANCED AND BALANCED SWITCHING NETWORK FOR BALANCED TRANSMISSION CIRCUITS**

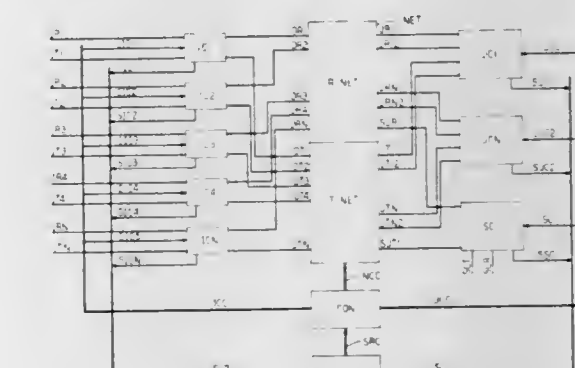
Alexander Feiner, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1969, Ser. No. 879,203

Int. Cl. H04q 3/42

U.S. Cl. 179-18 GF

21 Claims



A single and double wire switching arrangement in which each balanced two-wire transmission circuit is transformer coupled with two single-wire network terminations with capacitive DC isolation between the transformer windings and a reference potential connected between the isolating capacitors. Either of two unbalanced single-wire paths or one balanced two-wire path can be established through the network from each transmission circuit. A single-wire path is sufficient for most functions; however, the two-wire path is available for those functions requiring a metallic or a balanced path. Network blocking is low since the majority of network paths are single wire thus freeing unused single-wire links, for other paths. Supervision can be maintained either at a transmission circuit or at a junctor circuit included in the network path.

3,629,514

**SUBSCRIBER'S HOLDING CIRCUIT**

Joseph D. Flaminio, Jr., Addison, Ill., assignor to G.T.E. Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 2, 1970, Ser. No. 7,560

Int. Cl. H04m 1/00

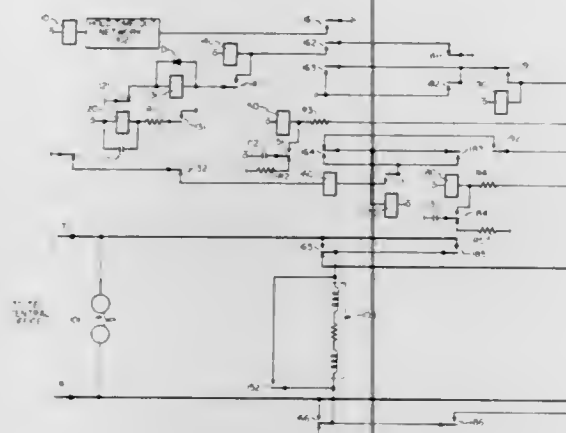
U.S. Cl. 179-99

7 Claims

A circuit arrangement for connection to a telephone subscriber's line where two or more telephone instruments are connected to the same line. The included circuitry permits a



subscriber to place a "hold" on the telephone line, by momentarily operating his hookswitch, or dialing the digit "1," if his telephone is equipped with a conventional rotary dial,



after which he may hang up and then may continue his conversation at a second telephone instrument, or return to the first telephone.

3,629,515

# MOUNT FOR CONCAVE TAPE GUIDE THAT CLEARS A LOADING PATH

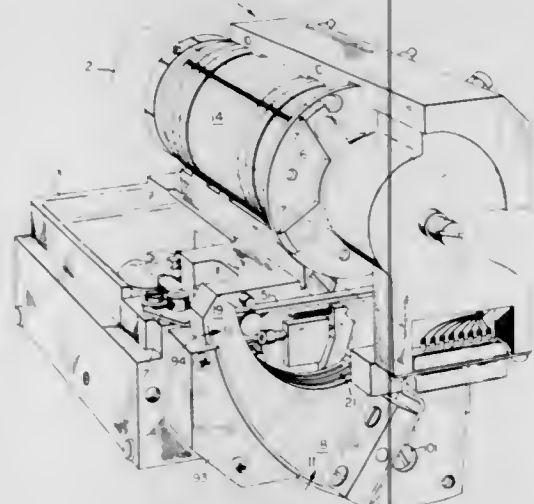
Dale P. Dolby, Redwood City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed May 24, 1969, Ser. No. 809,665

Int. Cl. G11b 5/52

U.S. Cl. 179—100.2 T

13 Claims



A concave tape guide pivots in the plane of a rotary head drum to open and clear a path for lateral loading and unloading of the tape. Fine positioning of the guide in the closed position is provided independently in each of three orthogonal directions. A double-ended wedge element, shaped like a parallelogram, is used for fine positioning of the guide in one direction; and two bearings on the guide are caused to engage and follow opposite parallel faces of the wedge element as by means of pivoting torque applied to the guide through a universal jointed shaft that is bendably flexible but torsionally and axially rigid. Thus, both the closing forces and the positioning forces are applied by the shaft, which is nevertheless free for radial movement as the fine position of the guide is altered.

## 3,629,516 STABLE MAGNETIC HEADS WITH HOUSING FORMED FROM PRESSURE-CAST DISH-SHAPED PARTS

Wolfgang Bogen, Potsdamer Strasse 23/24, 1 Berlin 37, Germany

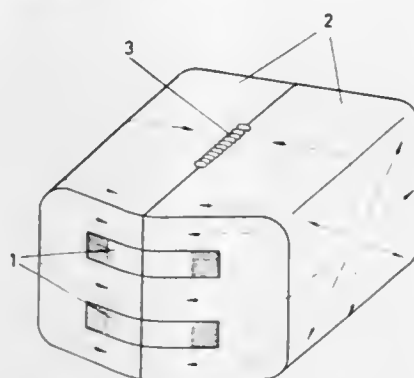
Filed May 16, 1969, Ser. No. 825,182

Claims priority, application Germany, May 16, 1968, P 17 74 285.7

Int. Cl. G11b 5/10, 5/42

U.S. Cl. 179—100.2 C

2 Claims



A magnetic head, which is time and temperature stable, is provided with dish-shaped metal parts forming a housing in which magnetic cores are embedded in recesses in the parts, the fiber direction of the material of the shaped parts not being interrupted by milling the recesses for the cores nor by forming of the dish-shaped configuration thereof.

3,629,517

# METHOD AND APPARATUS FOR MAGNETO-OPTICAL READING OF SUPERIMPOSED MAGNETIC RECORDINGS

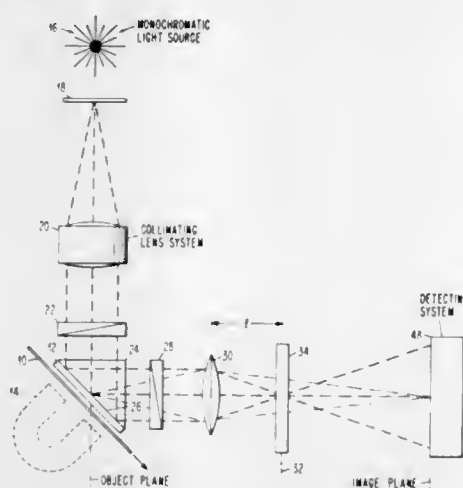
Marian Andreas Grimm, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,826

Int. Cl. G11b 11/10; G02f 1/18; G02b 5/18

U.S. Cl. 179—100.2CH

10 Claims



Superimposed tracks of magnetic recordings are read by use of a magneto-optic transducer. The recordings are on magnetic tape which is passed in close proximity to a magnetic thin-film layer coated to the reflecting side of a prism. The superimposed recordings on the tape are transferred in bulk to the magnetic thin film. Linearly polarized, monochromatic, collimated, substantially coherent light is passed into the prism and reflected from the back of the prism and out the other face of the prism. At the reflecting surface, the linearly polarized light experiences a rotation of its plane of polarization because of the magnetic field stored in the thin film. The rotation is in accordance with the well-known magneto-optic Kerr effect. The rotated light passes out of the prism and through an analyzer. The analyzer is adjusted to pass only that light which was given a particular rotation by the magnetic thin film. Because recorded tracks are closely

spaced, the light emitted from the analyzer is similar to light passing out of a diffraction grating. This light passes through a lens which forms a Fraunhofer diffraction pattern of the light passed by the analyzer at the focal plane of the lens. A Fraunhofer diffraction pattern for each orientation of recorded tracks appears at the focal plane. A spatial filter is placed at the focal plane of the lens and rotated to align itself with the Fraunhofer pattern associated with one orientation of tracks. The spatial filter passes only the light of the pattern which the filter is aligned with. This light is imaged onto a detector system to read out the information recorded in tracks orientated to produce the filtered pattern.

3,629,518

# ROTATING FIELD TRANSFORMER AND TAPE RECORDING SYSTEM USING SAME

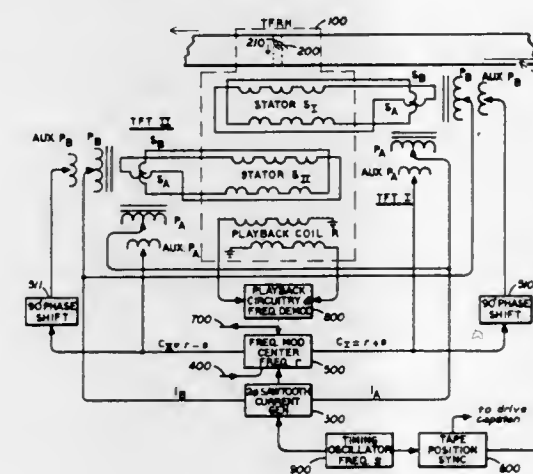
Michael J. Costa, 41 Green Place, New Rochelle, N.Y.

Continuation of application Ser. No. 503,122, Oct. 23, 1965, now abandoned. This application Nov. 10, 1969, Ser. No. 871,533

Int. Cl. G01d 15/12; G11b 5/20; H04r 1/24

U.S. Cl. 179—100.2 T

17 Claims



A magnetic recording and reproducing head which produces an incremental magnetic field perpendicular to the plane of the record medium. The field is caused to travel along a path which is transverse to the length of a relatively slow moving tape thus producing high-relative speed between tape and field.

The recording field is generated by applying opposing sawtooth signals to a pair of orthogonally related stator coils on the head and is modulated by changing the relative phase of the sawtooth signals. The signals are applied to the head through transformers having main and auxiliary primary coils, the sawtooth signals being applied to the main primary coils and modulating signals being applied to the auxiliary coils.

3,629,519

# MAGNETIC HEADS WITH POLES JOINED BY MOLECULAR TRANSPORT BONDING

Joseph John Hanak, Trenton, N.J., assignor to RCA Corporation

Original application May 23, 1967, Ser. No. 641,443, now Patent No. 3,479,738, dated Nov. 25, 1969. Divided and this application Aug. 15, 1969, Ser. No. 850,570

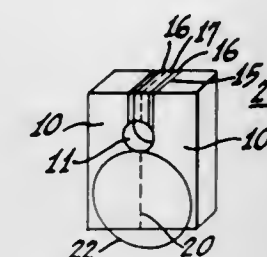
Int. Cl. G11b 5/22, 5/42

U.S. Cl. 179—100.2 C

4 Claims

There is disclosed a magnetic transducer and method of manufacturing the same for use in high-frequency recording and reproducing apparatus. The transducer comprises at least two circuit parts of single-crystal ferrite positioned to form a front gap, which is filled by a suitable technique with a nonmagnetic spacing material. The back surfaces of the ferrite circuit parts are united by molecular transport which provides a relatively low reluctance path in the vicinity of the

final assembled transducer which was formerly occupied by the back surfaces of the circuit parts or back gap. The molecular transport bond results in a ferrite molecular disturbance which affords a reluctance of the same order of mag-



nitude as the reluctance associated with a continuous body of ferrite, minimizing the drive current required for operation because of the virtual elimination of the back gap in the transducer.

3,629,520

# READOUT AND RECORDING METHOD AND APPARATUS

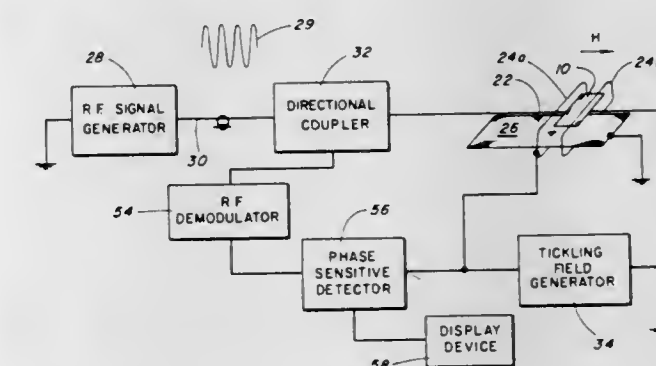
Leonard J. Schewe, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 11, 1969, Ser. No. 884,103

Int. Cl. G11b 5/02; G11c 11/14

U.S. Cl. 179—100.2CF

7 Claims



A method and apparatus for nondestructive readout of magnetic images stored on magnetic thin films and for recording magnetic inputs on thin films. A uniaxially anisotropic thin film of magnetic material carrying a recorded magnetic image is transported over a transmission line in the presence of a magnetic tickling field. A radiofrequency oscillator is coupled to the transmission line and the tickling field is made to oscillate at a relatively low frequency. The magnetic image recorded on the passing thin film is then read out by detecting the modulation of the radiofrequency signal caused by ferromagnetic resonance absorption. The same apparatus is used for recording by replacing the radiofrequency oscillator with a direct current source and by modulating the tickling field with the signal to be recorded.

3,629,521

# HEARING SYSTEMS

Henry K. Puharich, Ossining, and Joseph L. Lawrence, New York, both of N.Y., assignors to Intellectron Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 682,152, Nov. 13, 1967, now Patent No. 3,497,637, and a continuation-in-part of 446,267, Apr. 6, 1965, now abandoned. This application Jan. 8, 1970, Ser. No. 1,334

Int. Cl. H04r 25/00

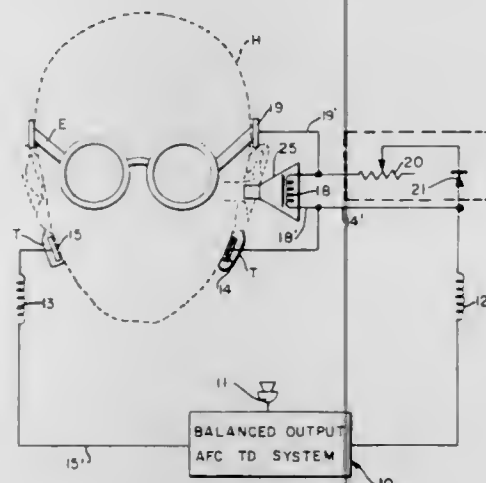
U.S. Cl. 179—107 R

11 Claims

The present invention relates to the stimulation of the sensation of hearing in persons of impaired hearing abilities or in certain cases in persons totally deaf utilizing RF energy.



More particularly, the present invention relates to a method and apparatus for imparting synchronous AF or "acoustic" signals and so-called "transdermal" or RF signals. Hearing and improved speech discrimination, in accordance with one aspect of the present invention, is stimulated by the application of an AF acoustical signal to the "ear system" conventional biomechanism of hearing, which is delivered to the brain through the "normal" channels of hearing and a separate transdermal RF electrical signal which is applied to the "facial nerve system" and is detectable as a sensation of hearing. Vastly improved and enhanced hearing may be achieved by imparting an AF acoustic signal to the ear system by means of "conventional" transducers, such as electroacoustic speakers of "in the ear" hearing aids; piezoelectric or mechanical transducers of conventional "bone con-



duction"-type hearing aids; and so-called "intraoral bone conduction transducers" of the type employed in the hearing system disclosed in Puharich and Lawrence U.S. Pat. No. 2,995,633 and No. 3,170,993 and No. 3,156,787, and by simultaneously applying a transdermal signal, which signal is an RF carrier signal amplitude modulated with AF information across the head of the subject, the head acting as capacitance in LC series resonance of the RF carrier frequency. Importantly, the applied balanced transdermal signal is in the form of a substantially pure sine wave, and it is applied to the head through one bare and one insulated electrode. The applied transdermal signal is applied to the periaural and stylomastoid regions of the head and, accordingly, the apparatus of the invention may be readily adapted for use in the temples of "eyeglass" hearing aid devices.

### 3,629,522 HEADPIECE LOUDSPEAKER

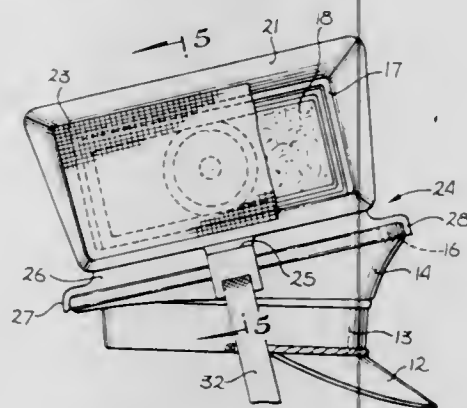
Paul E. Richards, Los Angeles, Calif., assignor to Promar International, Inc., Chatsworth, Calif.

Filed Apr. 1, 1969, Ser. No. 812,153

Int. Cl. H04m 1/05

U.S. Cl. 179-156

9 Claims



A headpiece loudspeaker is disclosed herein having a headpiece incorporating a loudspeaker oriented so as to

propagate acoustical energy from opposite sides of the headpiece. The side lobe propagation emanating from each side of the headpiece forms, in combination, a substantially "figure eight" configuration offering approximately 360° distribution of the acoustical energy emanating from a single loudspeaker. The headpiece is provided with a crown and, in one form, a detachable mount carries the loudspeaker thereon. In another form, the loudspeaker is fixed to the crown of the headpiece and a diverter baffle is disposed in fixed opposing spaced relationship to the vibrating cone of the loudspeaker that is adapted to translate acoustical energy into truly 360° distribution or excursion.

### 3,629,523 REPEATER FOR A TRANSMISSION LINE AND A METHOD OF MONITORING THE REPEATER IN THE LINE

Christian Chalhoub, Paris, France, assignor to C.I.T. Compagnie Industrielle des Telecommunication, Paris, France

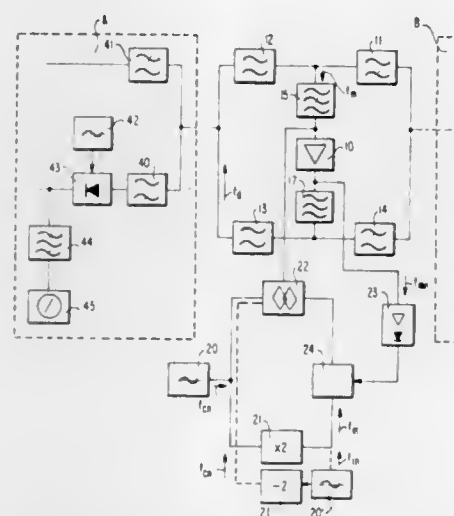
Filed Sept. 24, 1969, Ser. No. 860,746

Claims priority, application France, Sept. 25, 1968, 167602

Int. Cl. H04b 3/46; H04I 25/02

U.S. Cl. 179-175.31

13 Claims



Each repeater is fitted with a transmitter of a characteristic frequency located in the interband range of a  $n + n$  high-band and low-band link. By combining with a measuring frequency in the low band transmitted from the terminal station A, the nonlinearity of the repeater gives rise to a frequency in the high band which is received and measured in this same terminal station A.

### 3,629,524 PIVOTAL SWITCH WITH ROTOR CARRYING TWO MOVABLE CONTACTS AND HAVING THREE STABLE AND ONE UNSTABLE OPERATING POSITIONS

Edward Cryer, Higham, near Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

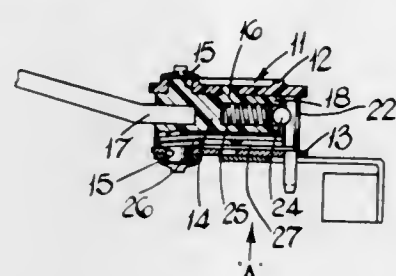
Filed Mar. 6, 1970, Ser. No. 17,056

Claims priority, application Great Britain, Mar. 17, 1969, 13,792/69

Int. Cl. H01h 23/30, 21/18

U.S. Cl. 200-6 R

3 Claims



An electrical switch includes a body, and a rotor mounted for angular movement relative to the body. A first bridging

contact is carried by the rotor, and first and second fixed electrical contacts are carried by the body, the first and second fixed electrical contacts being angularly spaced from one another and being bridged by the first bridging contact in a first angular position of the rotor. The switch further includes a second bridging contact movable in response to movement of the rotor to a further angular position to bridge the first and second fixed electrical contacts.

### 3,629,525 LOAD SELECTOR ROTARY WAFER SWITCH WITH PRINTED CIRCUIT

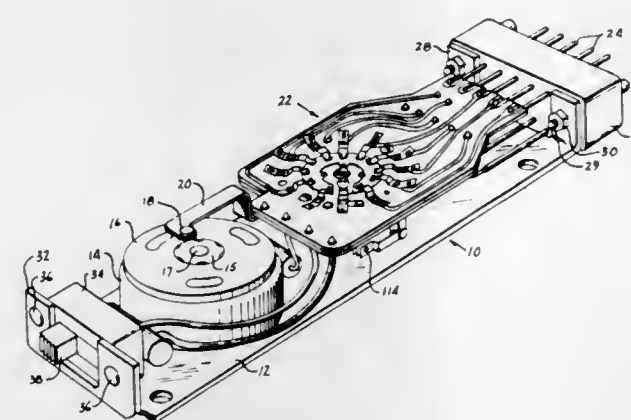
Clifford C. Giese, Jr., Kettering, Ohio, assignor to Ledex Inc.

Filed Feb. 18, 1970, Ser. No. 12,268

Int. Cl. H01h 19/58, 51/08

U.S. Cl. 200-11 DA

10 Claims



Wiring for a plural position selector switch is reduced by use of printed circuit elements. Compactness of construction is achieved through the use of two wafers laminated face to face and conductive leads disposed at the interface between the wafers. Rivets, where desired, provide through connections from one wafer to the other.

### 3,629,526 SLIDER SWITCH WITH IMPROVED DETENT MEANS

Keith Lewis, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

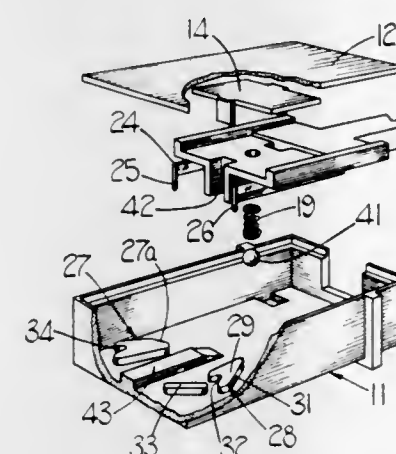
Filed Sept. 17, 1969, Ser. No. 858,664

Claims priority, application Great Britain, Sept. 23, 1968, 45,076/68

Int. Cl. H01h 15/00, 3/00

U.S. Cl. 200-16 C

4 Claims



This invention relates to electrical switches. The switch includes a body supporting first and second fixed contacts and

a slider which is mounted for sliding movement in the body. The slider carries a third contact, and is movable from a first position wherein the third contact is clear of the first and second contacts to a second position wherein the third contact engages the first contact. The slider is further movable from the second position to a third position wherein the third contact engages the second contact. There is provided resilient means urging the slider towards its first position, and a first pair of coating parts, on the body and slider respectively, which are operable to releasably retain the slider in the second position. There are further provided a second pair of coating parts being operable to releasably retain the slider in the third position.

### 3,629,527 CONTACT BREAKER ASSEMBLIES WITH IMPROVED CONTACT BREAKER ARM RETAINING MEANS

William Lawrence Fry, Houghton, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

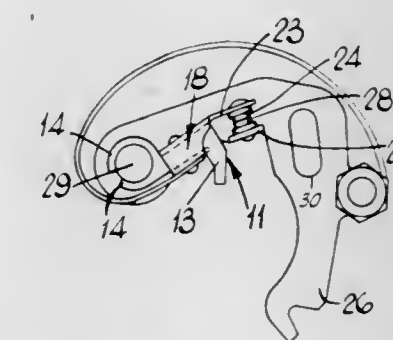
Filed Nov. 14, 1969, Ser. No. 876,953

Claims priority, application Great Britain, Nov. 22, 1968, 55,520/68

Int. Cl. H01h 19/00, 3/00

U.S. Cl. 200-19 R

2 Claims



A subassembly for use in the manufacture of a contact breaker assembly for an ignition distributor includes an insulating heel member having a pair of oppositely directed shoulders. A conductive shell member is engaged with the heel member the shell member being of generally U-shaped cross section and the heel member being received between the limbs of the shell member. The shoulders of the heel member engage opposite ends of the shell member so as to resist longitudinal movement of the shell member relative to the heel member, and one of the limbs of the shell member includes a barb which bites into one of the shoulders of the heel member to resist disengagement of the shell member from the heel member in a direction parallel to the limbs of the shell member. In use the shell member carries the movable contact of the contact breaker assembly.

### 3,629,528 ELECTRICAL TIMER MECHANISM WITH IMPROVED CAM OPERATED ACTUATING MEANS

Hans Hirzel, Zurich, Switzerland, assignor to Firma Novitas Fabrik Elektrischer Apparate AG Zurich, Zurich, Switzerland

Filed June 29, 1970, Ser. No. 50,800

Claims priority, application Switzerland, July 7, 1969, 10450/69

Int. Cl. H01h 7/08, 43/10

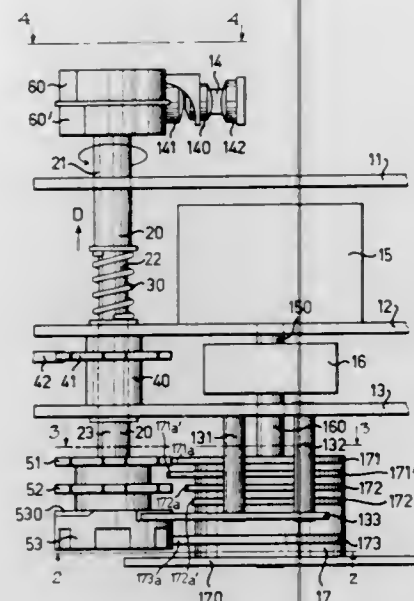
U.S. Cl. 200-38 R

5 Claims

A program-controlled electrical switching mechanism comprising a motor driven rotor and a plurality of exchangeable and angularly adjustable actuation fingers are seated axially behind one another at the rotor. Further, an additional actuation finger is secured to the rotor in a selectable angular position and a program change-switching wheel cooperates with such additional actuation finger. The program change-switching wheel is provided with axially directed cam means and a counterelement is resiliently biased against said axially



directed cam means such that upon attaining at least a predetermined rotational position there is undertaken a relative axial displacement of the rotor with respect to the switching disk means seated upon a control shaft, whereby said switching disk means at said control shaft no longer



cooperate with a first group of said actuation fingers at said rotor but with a second axially offset group of said actuation fingers so that a contact arrangement-actuation wheel means actuates its associated electrical contact arrangement according to a different program as a function of the momentary position of the rotor.

3,629,529

# RETAINING MEANS FOR OPERATING HANDLE OF MOLDED-CASE ELECTRIC CIRCUIT BREAKER

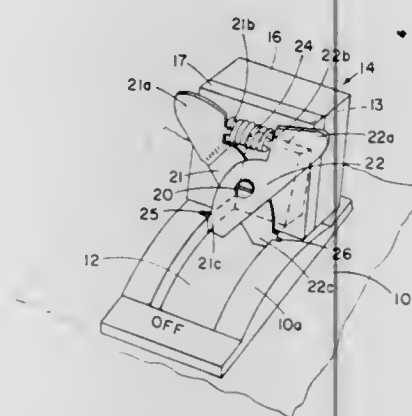
Robert E. Dietz, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Feb. 25, 1970, Ser. No. 13,974

Int. Cl. H02j 1/10

U.S. Cl. 200—42

5 Claims



The portion of a circuit breaker casing defining an opening for a pivotable operating handle is provided with a pair of grooves respectively disposed on opposite sides of the opening adjacent an ON position of the handle and extending transversely of the direction of movement of the handle. A retaining means provided on the handle includes a pair of pivotally mounted locking members having end portions insertable respectively in the grooves to lock the handle in ON position while it is being biased toward OFF position by the internal operating mechanism of the circuit breaker.

## 3,629,530 ELECTRIC SAFETY SWITCH APPARATUS

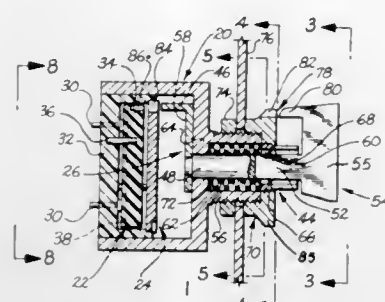
Jules Fischer, 7719 Hampton Ave., Los Angeles, Calif.

Filed Feb. 27, 1970, Ser. No. 15,069

Int. Cl. H01h 27/00

U.S. Cl. 200—44

11 Claims



An electric safety switch apparatus of a type including an electric switch means and controllably movable switch-operating means for actuating the electric switch means between open and closed relationship with respect to an electric circuit adapted to be connected to the electric switch means and further including inactivating means effectively cooperable with respect to the switch-operating means with respect to the electric switch means for effectively preventing the actuation thereof by said switch-operating means when in any position other than a predetermined, switch-engaging, inactivating-means bypassing relationship thereof. The switch-operating means has an input portion, an output portion, and an intervening coupling portion, with said input portion including means adapted to be effectively manually moved to an extent such as to actuate said electric switch means when said switch-operating means is in said predetermined switch-engaging, inactivating-means-bypassing relationship. The apparatus includes means for properly positioning said switch-operating means for manually caused movement into said bypassing relationship when operated by authorized personnel in accordance with a preselected, position-determining manner by said means.

3,629,531

# HIGH-VOLTAGE ISOLATOR WITH CONTACT TURNING ABOUT A VERTICAL AXIS

Georg Teodor Trolin, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

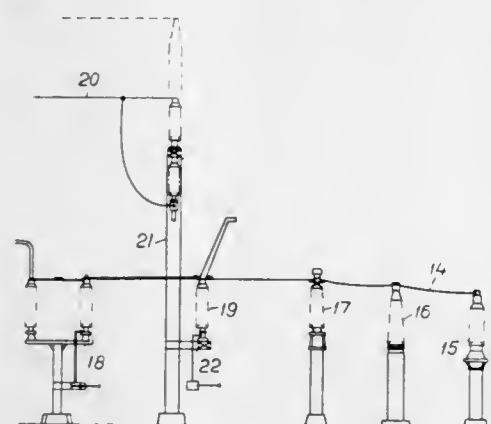
Filed Apr. 16, 1970, Ser. No. 29,142

Claims priority, application Sweden, Apr. 18, 1969, 5465/69

Int. Cl. H01h 31/00

U.S. Cl. 200—48

7 Claims



A high-voltage isolator comprises a vertical support insulator carrying an obliquely upwardly directed isolator blade, which cooperates with a stationary countercontact suspended in a bus bar conductor. The isolator is operated by turning the support insulator at least 90° about its longitudinal axis.

## 3,629,532 IMMEDIATELY RESPONSIVE FLUID FLOW OPERATED SWITCH WITH NORMALLY CLOSED SPRING CONTACT IN FLOW CHANNEL

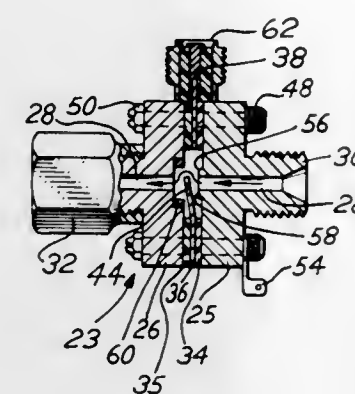
Raymond Pisors, Morton Grove, Ill., assignor to Sun Electric Corporation

Original application June 7, 1968, Ser. No. 735,309. Divided and this application Feb. 20, 1970, Ser. No. 13,040

Int. Cl. H01h 35/40

U.S. Cl. 200—81.9 R

5 Claims



A fluid flow transducer for disposition in one or more fuel feedlines of a fuel-injected engine for analyzing and timing the engine. The transducer includes a normally closed resilient movable contact in the transducer which is directly impinged by the flowing fuel to open an electrical circuit to generate signals which are indicative of the rotational speed of the engine and the frequency and time duration of fuel flow through each fuel line.

3,629,533

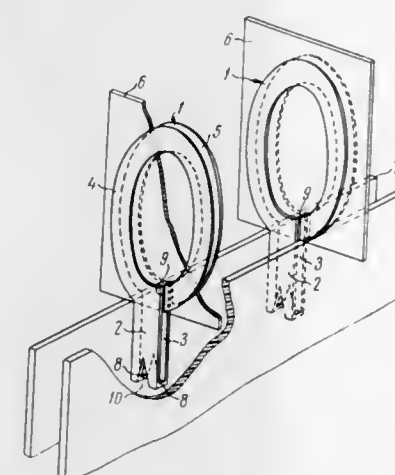
# ARC-QUENCHING CHAMBER

Rostislav Sergeevich Kuznetsov, ulitsa Scherbakovskaya, 40/42, kv. 195; Alexandr Grigorievich Uskach, ulitsa Oktyabrskaya, 49, kv. 63, and Vladimir Grigorievich Kostikov, ulitsa Davydovskaya, 10, kv. 104, all of Moscow, U.S.S.R.

Filed Feb. 12, 1970, Ser. No. 10,722

Int. Cl. H01h 33/08

U.S. Cl. 200—144 R



The present invention relates to electric switching devices, and more specifically to the arc-quenching chambers of such devices.

There is an arc-quenching chamber comprising a de-ion grid composed of spaced plates joined at one end with two straight portions and two helically bent portions lying in parallel planes; forming an airgap between the initial and end of the bent portions, through which any base point of a minor electric arc passes, the airgap being maintained at a minimum.

## 3,629,534 TRIGGER CONTROL SWITCH WITH PARTICULAR BRIDGING AND STATIONARY CONTACT ARRANGEMENTS

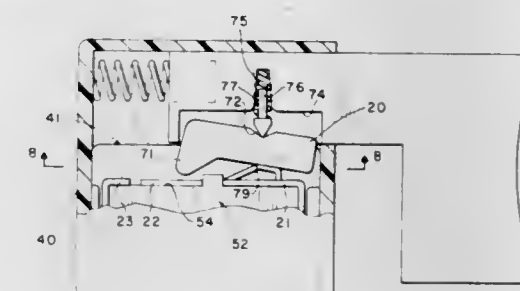
Benny L. Reviel, Irving, Tex., assignor to ECC Corporation, Euless, Tex.

Filed May 4, 1970, Ser. No. 34,345

Int. Cl. H01h 13/08, 1/44

U.S. Cl. 200—157

13 Claims



A switch in combination with a variable power control. A sliding actuator carries a bridging contact which continuously engages a pivot on one fixed contact and selectively engages two fixed contacts. An actuator pivot urges the bridging contact toward the fixed contacts, and the relative positions of the pivots provide positive switching between bridging and nonbridging conditions. An insulating boss separates the stationary fixed contacts, and the bridging contact never engages said boss in any switch position. A thick film circuit carries resistance elements on a surface; and a second movable contact, moved by the actuator, includes contact fingers engaging the resistance elements.

3,629,535

# ENVIRONMENTAL SEAL FOR AN ELECTRICAL SWITCH

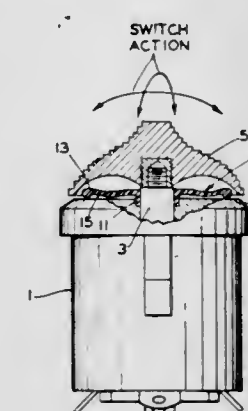
William J. Walters, Wayne; John G. Rusnack, Clifton, both of N.J., and Peter P. D. Chen, Flushing, N.Y., assignors to The Bendix Corporation

Filed July 1, 1970, Ser. No. 51,479

Int. Cl. H01h 9/04

U.S. Cl. 200—168 G

13 Claims



A switch has a body member and an actuating member mounted on the body member and movable relative thereto about mutually perpendicular axes. A sealing element in the form of a disc is mounted on one member and is fixed thereto and has a flexible portion urging a circumferential



rolled band into engagement with a smooth surface on the other member to provide an environmental seal between the members.

3,629,536

# SWITCH ENCLOSURE WITH SEALING MEANS OPERABLE BY SWITCH-OPERATING

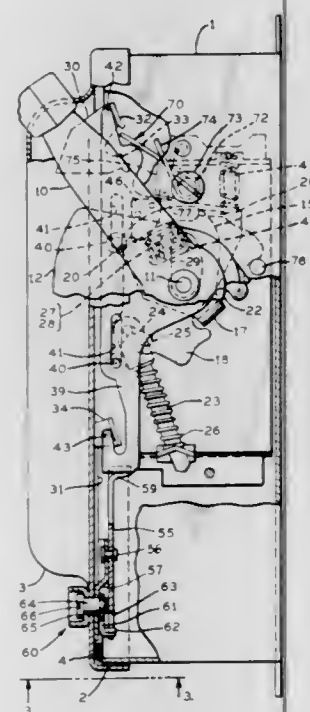
Tadeusz J. Rys, Lexington, Ky., assignor to Square D Company, Park Ridge, Mich.

Filed Oct. 16, 1970, Ser. No. 81,392

Int. Cl. H01h 9/04, 9/06

U.S. Cl. 200—168 G

6 Claims



The switch enclosure comprises a box within which a switch-operating mechanism is mounted. An external operating handle is operable to cause the mechanism to move to ON and OFF switch positions. The box is closed by a hinged door, and a sealing gasket is provided between the door and box. A combined sealing and latching bar in the box is arranged to draw the door into, and hold it in, closed sealing engagement.

The invention is characterized in that a ratchet connection is provided between the switch-operating mechanism and the bar for moving the bar into sealing and latching position when the handle is operated to move the switch-operating mechanism a predetermined distance toward ON position and to release the mechanism from the bar, and permit return of the mechanism to OFF position by the handle, while the bar remains in sealing and latching position. An interlock on the door latches the bar in the sealing and latching position upon movement of the bar into said position by the mechanism.

3,629,537

# MICROWAVE OVEN DOOR SEAL HAVING DUAL CAVITIES FED BY A BIPLANAR TRANSMISSION LINE

Duane Buford Haagensen, Edina, Minn., assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Sept. 9, 1970, Ser. No. 70,641

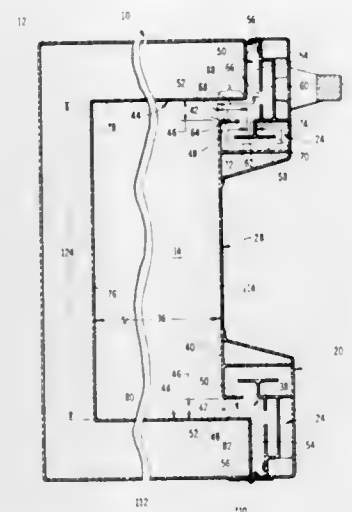
Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

26 Claims

A microwave oven door seal is established when an access opening of a heating cavity is closed by a door. The seal includes a biplanar transmission line which extends in a first direction from within the heating cavity to a point outside the heating cavity. At such point, the biplanar transmission line turns and extends in a second direction away from the access opening. A first electromagnetic wave filter is fed by the first

portion of the biplanar transmission line and a second electromagnetic wave filter is fed by the second portion of the biplanar transmission line for reducing the amount of electromagnetic wave energy which leaks from the heating cavity. The filters are cavities which are located along the biplanar transmission line and are designed to occupy a minimum of space to provide room for an observation window in the door. To improve the effectiveness of the seal on



one side of the heating cavity in the event the door is pivotally mounted to an opposite side of the heating cavity the door is mounted so that it extends from the opposite side toward the one side at an obtuse angle relative to a wall at the one side of the heating cavity. As a result, both the width and the length of the first portion of the biplanar transmission line on such one side decrease so that the sealing characteristics thereof remain relatively constant during an initial opening movement of the door.

3,629,538

# MAGNETRON MOUNTING DEVICE IN AN ELECTRONIC RANGE

Masataka Suzuki, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

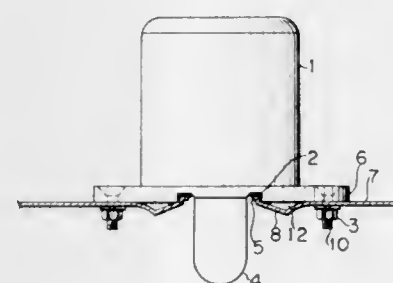
Filed Oct. 16, 1970, Ser. No. 81,404

Claims priority, application Japan, Oct. 23, 1969, 44/100838

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

3 Claims



In an electronic range, in order to prevent the leakage of electromagnetic waves through the opening provided on the baseplate of the range for inserting the antenna projecting from the magnetron, the baseplate is shaped to have a special shape in the neighborhood of the opening so that the electromagnetic waves are prevented from their leaking out from the neck of the magnetron.

3,629,539

# BORE WELDING

Daniel F. T. Roberts, Baxley, England, assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Feb. 26, 1970, Ser. No. 14,292

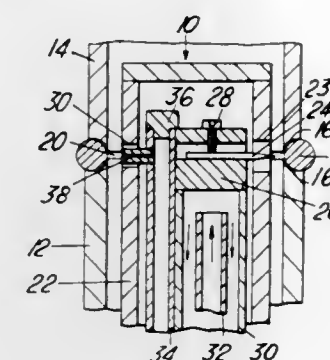
Claims priority, application Great Britain, Feb. 26, 1969,

10,405/69

Int. Cl. B23k 9/02

U.S. Cl. 219—60 A

4 Claims



This invention relates to the correct positioning of the non-consumable electrodes of inert gas shielded arc welding torches. According to the invention a welding torch is provided with probe means comprising a jet of an inert gas. Inert gas is supplied to this jet and the back pressure or flow rate of this gas is measured to align the jet with the joint to be welded. Once the jet has been aligned with the joint, the electrode is at a position relative to the torch which is known from the construction of the torch and so can be accurately positioned relative to the joint ready for welding.

3,629,540

# SPARK EROSION HEAD WITH MEANS FOR ROTATING AND GYRATING THE ELECTRODE

Hans Altfeld, Constance, and Ewald Sauter, Litzelstetten, both of Germany, assignors to Altfeld & Co. GmbH, Constance (Bodensee), Germany

Filed June 29, 1970, Ser. No. 50,803

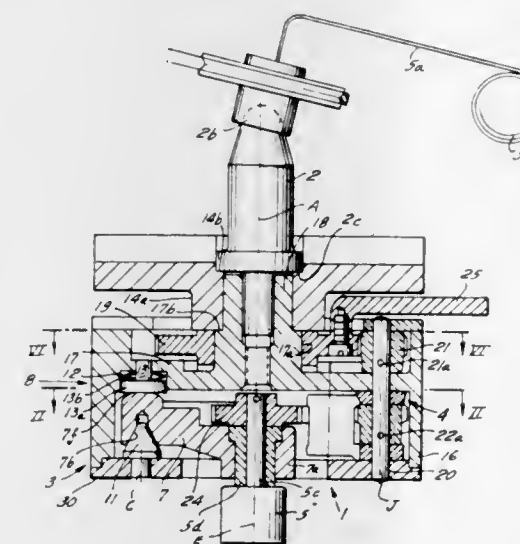
Claims priority, application Germany, July 3, 1969, P 19 33

775.8

Int. Cl. B23p 1/12

U.S. Cl. 219—69 V

9 Claims



The electrode-carrying head of an electrodischarge machining (EDM) apparatus includes a planetary-gear ar-

3,629,541

# HAND-HELD SERIES WELDING TOOL

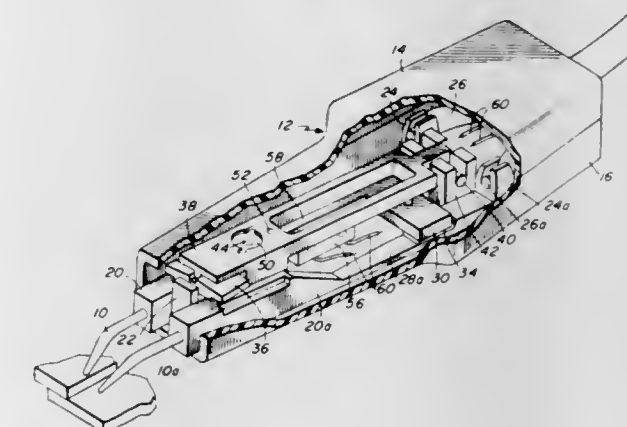
James R. Mims, Acton, and Palmer P. Derby, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 1, 1970, Ser. No. 77,087

Int. Cl. B23k 9/28

U.S. Cl. 219—78

8 Claims



A hand-held series welding tool which comprises a casing having two movable spaced electrodes interconnected by a pivot bar which transfers equalized forces from one electrode to the other, and switch means connecting the electrodes to a power supply for initiating a welding cycle when such forces reach a predetermined adjustable level.

3,629,542

# MANUFACTURE OF WIRE TERMINALS

Allan S. Warner, 6 Tudor Court, Elizabeth, N.J.

Filed May 25, 1970, Ser. No. 40,060

Int. Cl. B23k 9/12

U.S. Cl. 219—79

9 Claims



A strip of metal is fed longitudinally in steps at the end of each of which the leading end portion of the strip lies across the space between two spaced opposed electrodes adapted to be connected in an electric fusing or welding circuit and in one of which is a fixed cutting blade. A complementary blade and forming finger are moved together relatively to and



cooperate with said fixed cutting blade and said electrodes respectively to sever the leading end portion of the strip and to press it into a channel-shaped clip between said electrodes and a stop plate. Wires are inserted into the clip and the clip and wires are squeezed between the electrodes to tightly compress the wires in the clip and to press together the edge portions of the sidewalls of the clip. Then the fusing circuit is energized to fuse together the contacting portions of the clip and wires, after which the circuit is deenergized the wires are cut, the electrodes are separated, and the clip with the wires fused therein is ejected.

3,629,543

**SOLDERING AND UNSOLDERING MACHINES**

Antony James Mayhew, Billericay, and Leonard Frederick Cheale, Braintree, both of England, assignors to The Marconi Company Limited, London, England

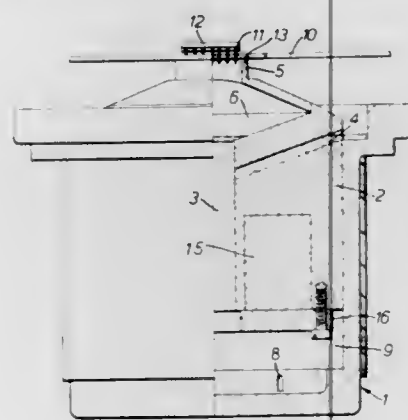
Filed June 29, 1970, Ser. No. 50,714

Claims priority, application Great Britain, June 27, 1969, 32,520/69

Int. Cl. B23k 1/02

U.S. Cl. 219—85

10 Claims



This invention provides a machine for simultaneously soldering or unsoldering a multiple connection component on a printed circuit board. The machine consists of a pot suitable for holding liquid at a temperature above the melting point of solder. A piston is fitted in the pot, and there is a channel passing through the piston. When the piston is depressed the hot liquid held in the pot rises up through the channel. The component to be soldered or unsoldered is positioned so that the surface of the hot displaced liquid comes in contact with the joints to be soldered or unsoldered.

3,629,544

**ELECTRICAL RESISTANCE WELDING OF COATED SHEET METALS**

Alfred Otto Becker, 56 Robert Rock Strasse, D-6600 Saarbrücken, Germany

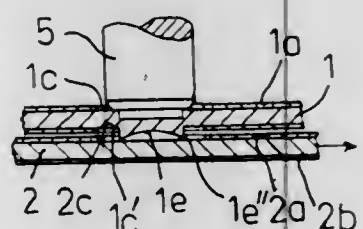
Filed Oct. 27, 1969, Ser. No. 869,668

Claims priority, application Germany, Oct. 26, 1968, Nov. 7, 1968, May 31, 1969, Sept. 3, 1969, Sept. 20, 1969; P 18 05 361.7, P 18 07 382.2, P 19 27 915.3, P 19 44 614.1, P 19 47 771.5

Int. Cl. B23k 9/28, 1/110

U.S. Cl. 219—93

25 Claims



The invention provides a method for the electrical resistance welding of coated sheet metals, in which welding current is fed to at least one of the coated sheets indirectly through the metal layer thereof and contact is established

between blank areas thereof to be welded to each other, wherein annular or elongated knife edges are provided at the welding area of the sheet metal to be welded on or on intermediate welding pieces, and cavities are produced by embossing and/or by milling, for preserving an outer coating undamaged by the heat of welding.

3,629,545

**LASER SUBSTRATE PARTING**

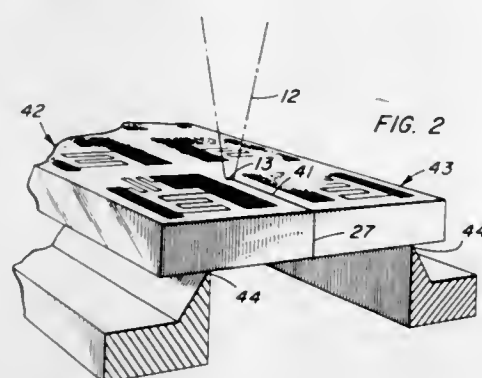
Charles Eckner Graham, Dover; Robert Miller Lumley, Trenton, both of N.J., and David James Oberholzer, Allentown, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 19, 1967, Ser. No. 691,883

Int. Cl. B23k 9/00

U.S. Cl. 219—121 L

14 Claims



A laser beam is applied to a substrate to separate the substrate at that portion of the substrate to which the laser beam is applied and the laser beam is displaced relative to the substrate to part or separate the substrate along a path defined by such relative displacement. A localized fracture, which extends entirely through the substrate but which is restricted to the portion of the substrate to which the laser beam is applied, may be generated without deleterious damage to the substrate. By displacing the laser beam along a desired path, the fracture is propagated along the desired path to separate or part the substrate.

3,629,546

**AIR-COOLED LASER PROCESSING OF MATERIALS**

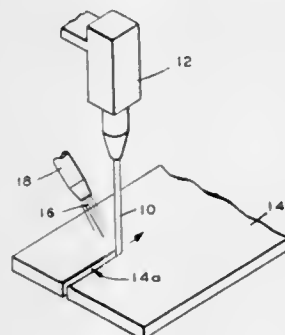
Franklin Horner Fry, Appleton, Wis., assignor to American Can Company, New York, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,763

Int. Cl. B23k 9/00

U.S. Cl. 219—121 L

8 Claims



A method for processing materials with laser beams. A laser beam is directed against the object which is to be cut, welded or joined. A generated stream of air is directed over the object so that cooling air passes over the immediate area or location at which the laser beam strikes. The combination of the directed laser beam and the air stream is such that the cut or welded joint is left free from scorching or surface deformation due to overheating and burning.

3,629,547

**SEMI-AUTOMATIC WELDING APPARATUS**

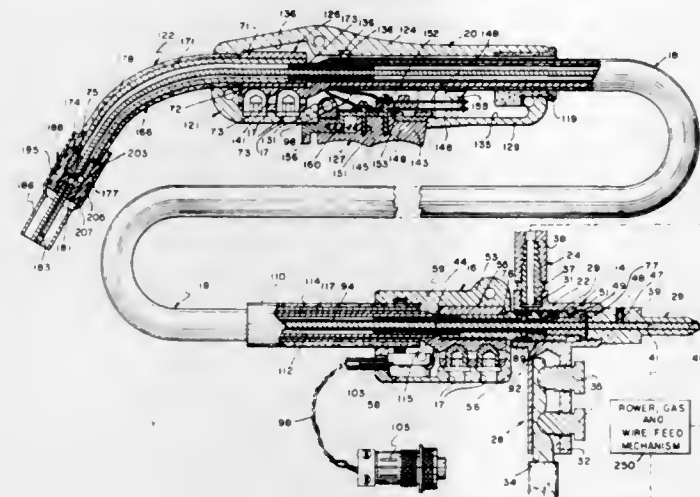
Jack R. Kester; Ray D. Multhaup; William R. Roberts; Raymond L. Townsend, and Kenneth A. Young, all of Wichita, Kans., assignors to Tweco Products, Inc., Wichita, Kans.

Filed Feb. 9, 1970, Ser. No. 9,623

Int. Cl. P23k 9/00

U.S. Cl. 219—130

4 Claims



This invention is a welding apparatus operable to automatically provide an electrode surrounded by a shielding gas for welding through an arc-welding process. More particularly, this invention is a welding apparatus having a welding gun assembly connected through a cable assembly to a quick connector assembly which, in turn, is adapted to be inserted within a supply adapter assembly to transfer gas, welding wire, and electrical power to the welding gun assembly. Additionally, this invention relates to a welding apparatus operable to supply welding wire while having structural features (1) allowing for the ready disconnecting and connecting to a supply source, and (2) to maintain the gun assembly in a cool condition during welding operations; and (3) achieving lightweight features for ease of usage.

3,629,548

**MULTI-ARC WELDING**

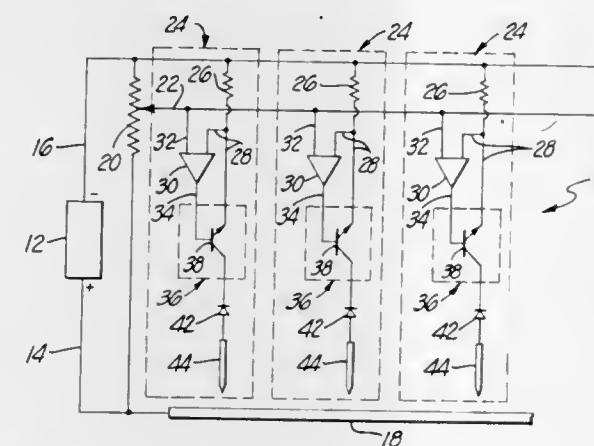
Henry V. Rygiel, 16437 E. Janine, Whittier, Calif.

Filed Jan. 18, 1971, Ser. No. 107,332

Int. Cl. B23k 9/10

U.S. Cl. 219—131 R

14 Claims



A plurality of welding arcs can be simultaneously powered by a single power supply employed to supply power to each of these arcs through separate welding circuits corresponding to each of these arcs. Each of the welding circuits involved is constructed so as to include a means for creating a voltage drop such as a resistor, a means for regulating current flow such as a transistor means, an electrode to be used in creating an arc and a voltage comparison means such as an opera-

tional amplifier for controlling the operation of the means for regulating current flow. The voltage comparison means means in each of the welding circuits is connected to a reference means for producing a reference voltage so as to operate to control the means for regulating current flow in accordance with the voltage at the reference means and at the means for creating a voltage drop.

3,629,549

**HEATING DEVICE**

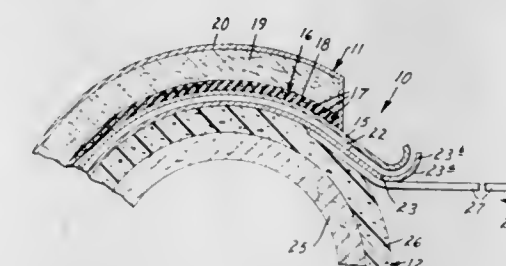
John A. Svendsen, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 29, 1969, Ser. No. 888,412

Int. Cl. H05b 1/00

U.S. Cl. 219—216

10 Claims



A heating device for producing graphic images on sheet material. The device includes a novel traveling platen that provides an even amount of heat over the whole heating surface of the heating platen. The heating platen includes a heat source, an exterior heat conductive plate having on one side a heating surface adapted to contact and conduct heat to sheet material, and a sheetlike spacer between the heat source and exterior heat-conductive plate that conducts heat more rapidly along its length than through its thickness and thereby spreads heat from the heat source as it travels to the exterior heat-conductive plate.

3,629,550

**APPARATUS FOR THE PRODUCTION OF STEAM FOR HUMIDIFYING AIR**

Bengt Henry Carlsson, Goteborg, Sweden, assignor to Kristofer Joakim Lehmkuhl, Geneva, Switzerland

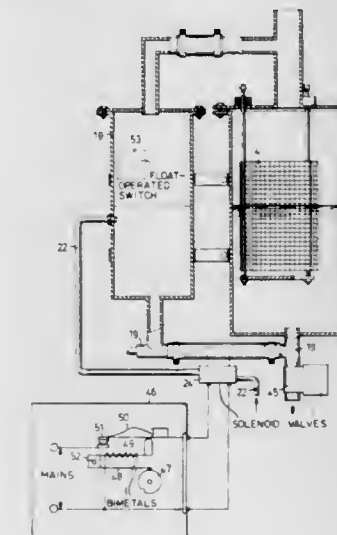
Filed Mar. 16, 1970, Ser. No. 19,865

Claims priority, application Sweden, Apr. 2, 1969, 4753/69

Int. Cl. H05b 3/60

U.S. Cl. 219—285

1 Claim



An apparatus for the production of steam for air humidifying purposes, in which water is vaporized in an electrode



container by passing current through the water between electrodes. For water level control a further container is provided communicating with the electrode container, and to which a water refill conduit is connected provided with an electrically operated valve. An energy regulator is electrically connected to the valve and is adjustable in such a manner that the current supply to the valve and thus also the water level in the electrode container can be determined.

3,629,551

# CONTROLLING HEAT GENERATION LOCALLY IN A HEAT-GENERATING PIPE UTILIZING SKIN-EFFECT CURRENT

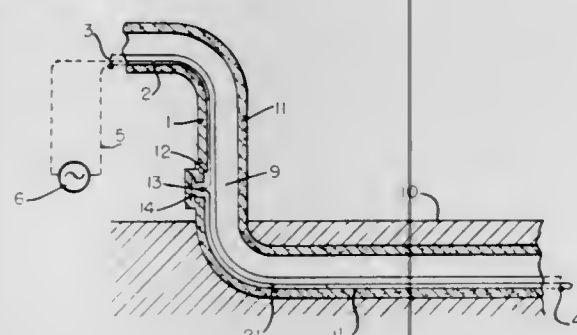
Masao Ando, Yokohama-shi, Japan, assignor to Chisso Corporation, Osaka, Japan

Filed Oct. 22, 1969, Ser. No. 868,521

Claims priority, application Japan, Oct. 29, 1968, 43/78735  
Int. Cl. H05b 3/00

U.S. Cl. 219—300

6 Claims



In a heat-generating pipe comprising a ferromagnetic pipe and an insulated conductor line installed therethrough wherein an AC flows through concentratedly in the inner skin region thereof due to the skin effect of AC heat quantity generated in the heat generating pipe is locally controlled by changing one or more factors of those consisting of cross-sectional area of the conductor line, resistivity of the same, inside diameter of the ferromagnetic pipe, resistivity of the same and permeability of the same.

3,629,552

# HEATING DEVICE FOR PARENTERAL FLUID

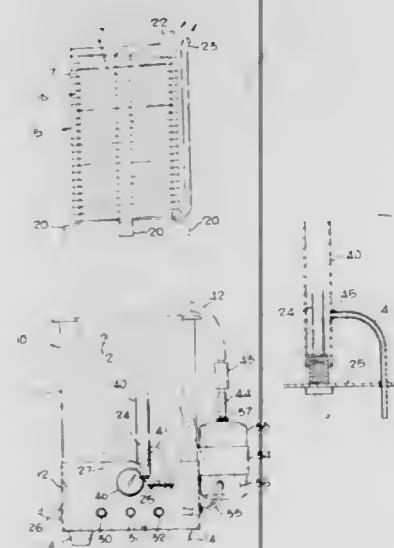
John D. Edging, East St. Louis, Ill., assignor to Lila Lee Edging, St. Louis, Ill., a part interest

Filed June 25, 1969, Ser. No. 836,499

Int. Cl. F24h 1/20; H05b 1/00; B67d 5/62

U.S. Cl. 219—302

6 Claims



A heating device for parenteral fluid includes a container holding a quantity of heat transfer liquid to which heat is imparted by a thermostatically controlled electric immersion

heating element. A coil of flexible plastic tubing having adjacent coil turns fused together to form a disposable coil envelope for conveying the parenteral fluid from a reservoir to the patient is suspended within the heat transfer liquid by means of an independent, removable support frame which holds the coil envelope in an open cylindrical configuration to facilitate heat transfer from the liquid to the parenteral liquid flowing through the envelope. The frame includes extensions removably engageable with seating portions in the container. The circulation of the heat transfer liquid about the envelope is augmented by an aeration system.

3,629,553

# RECURRENT ARC HEATING PROCESS

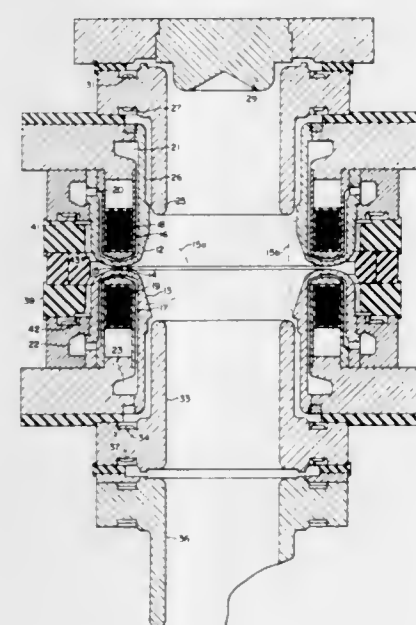
Maurice G. Fey, Turtle Creek; Charles B. Wolf, Irwin; Frederick A. Azinger, Jr., Pittsburgh, and George A. Kemeny, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1969, Ser. No. 790,417

Int. Cl. H05b 7/18

U.S. Cl. 219—383

16 Claims



A process for heating gas or fluid which comprises passing the gas or fluid through a gap between electrodes having an arc therebetween at a very high velocity while a system voltage is continuously maintained sufficient to cause breakdown at the gap. The high-velocity gas elongates the arc until the arc voltage required for electrical conduction exceeds the breakdown voltage of the gap whereupon sparkover occurs in the gap, the arc being thereafter elongated again by the gas passing through the gap until the voltage required to sustain arcing exceeds the breakdown voltage of the gap, the cycle of gap breakdown and elongation being repeated over and over again. The greatly extended arc provides for more efficient heating of the gas, better mixing and a more uniform temperature to which the gas is heated.

3,629,554

# ELECTRICALLY HEATED MULTIPLE GLAZED UNIT

John L. Stewart, Apollo, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of application Ser. No. 785,515, Dec. 20, 1968, now abandoned. This application Sept. 2, 1970, Ser. No. 68,989

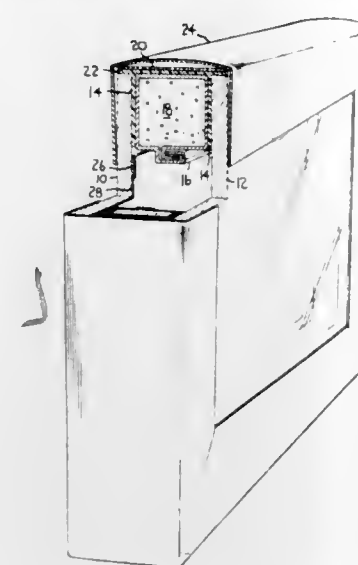
Int. Cl. H05b 3/06, 3/04

U.S. Cl. 219—522

5 Claims

An electroconductive multiple glazed unit comprising a plurality of transparent glass panels spaced from one another and sealed around their edges to unite said panels into a substantially rigid structure and provide a hermetically sealed space therebetween. A transparent electroconductive coating

on the inner surface of at least one of said glass panels and bus bars bonded to said inner surface of said one of said glass panels and in electrical contact with said electroconductive coating. The bus bars and the electroconductive coating each



being composed of material that will break into small particles with breakage of adjacent portions of the coated glass panel and said coated glass panels having a tensile strain in the area occupied by said bus bars in excess of about 2,000 millimicrons per inch.

3,629,555

# HEATING APPARATUS FOR A PRINTING PRESS

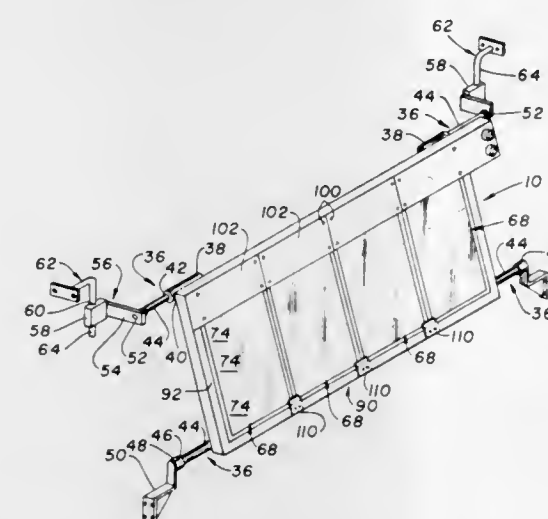
William C. Herbert, Jr., Mill Neck, N.Y., assignor to Herbert Products International, Westbury, N.Y.

Filed July 6, 1970, Ser. No. 52,541

Int. Cl. H05b 3/06

U.S. Cl. 219—525

4 Claims



A printing press heating apparatus of modular construction providing a selected size and extent of heating surface and supported in its heat exchange position with adequate allowance for thermal expansion and contraction thereof.

3,629,556

# CARD-READING MECHANISM

Walter J. Orzechowski, Arleta; Herbert D. Pace, Woodland Hills; Bruce H. Osterberg, Redondo Beach; William W. Caldwell, Palos Verdes Estates, and Arthur J. Murphy, Northridge, all of Calif., assignors to Western Data Products, Inc., Los Angeles, Calif.

Filed Oct. 20, 1969, Ser. No. 867,535

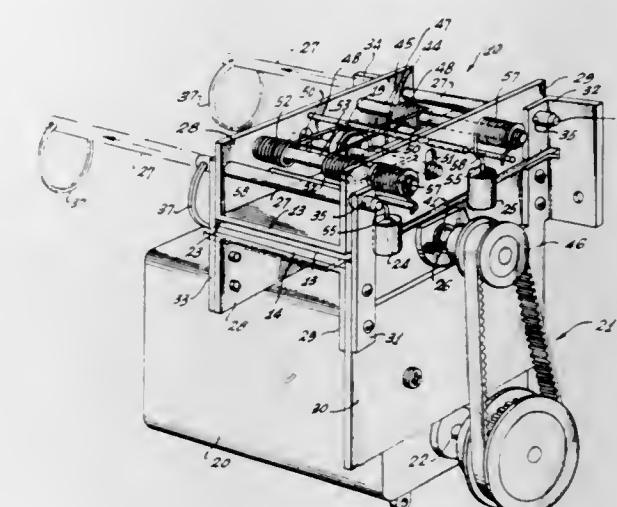
Int. Cl. G06k 7/04

U.S. Cl. 235—61.11 B

12 Claims

A mechanism for reading encoded data on a strip on credit cards of varying sizes and formats as the cards are passed

through a slot past a transducer, the strip on each card being positioned on a flat surface of the card along a longitudinal edge thereof. The mechanism has two spaced walls defining the slot and spaced to receive all of the cards loosely, and has a guide wall against which the locating edge of the cards is pressed. A pair of rollers engage opposite sides of the card alongside the strip, one roller locating the flat surface in a reference plane for engagement of the strip with a working



face of the transducer that is positioned beside the reference plane. A pressure pad holds the strip against the working face and yieldable edge guides hold the locating edge firmly against the locating edge. For simplicity of assembly and disassembly, the various elements are mounted in two subassemblies on channellike pieces held in back-to-back spaced relation on opposite sides of the card slot by quick-release connectors.

3,629,557

# YARDAGE INDICATOR

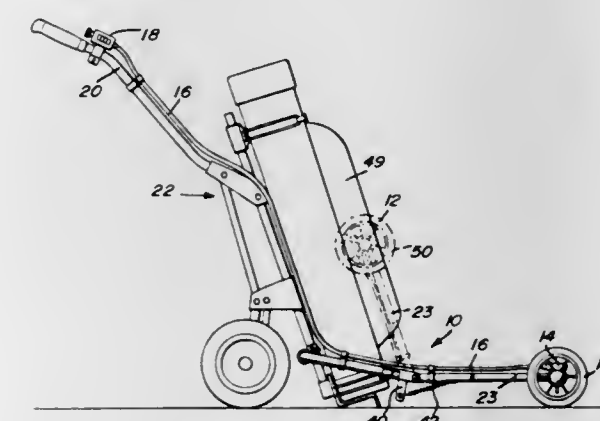
Armand R. Lareau, 271 Pleasant St., Leominster, Mass.

Filed June 2, 1970, Ser. No. 42,768

Int. Cl. G01c 22/00

U.S. Cl. 235—95

10 Claims



A wheeled carriage attached to a golf cart having an odometer secured thereto for measuring distance traversed by the carriage. The carriage is principally comprised of two tubular sections that are pivotally joined to a bracket serving as a universal joint. The outward end of the outer tubular section carries a wheel to which an odometer worm gear is attached. The gear is connected to a counter via a cable for translating rotary motion of the wheel into distance traveled by the cart. The tubular section mounting the wheel may be folded against the cart for compact storage.



3,629,558

**METHOD FOR PREPARING CONTROL TAPES**

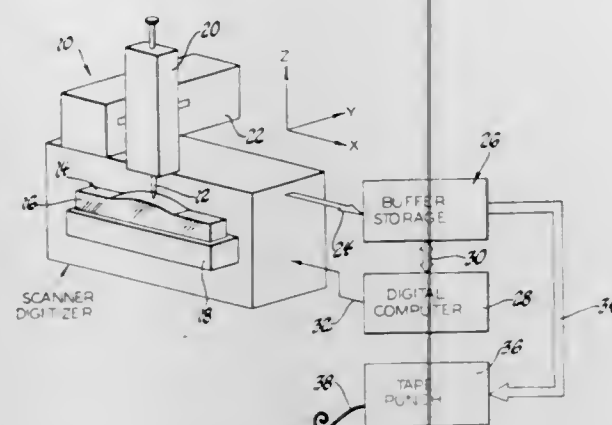
James R. Coggin, Dayton, Ohio, assignor to The Bendix Corporation

Filed Sept. 12, 1969, Ser. No. 857,402

Int. Cl. G06f 15/46

U.S. Cl. 235-151.1

9 Claims



A method of preparing a numerical control record of minimum length defining the surface of a part to a predetermined degree of accuracy by scanning the surface, placing the coordinates of a plurality of measured points in temporary storage, optimizing the data by examining each point to determine whether its chord height equals or exceeds a reference value, and transferring to the control record only those points determined on the basis of the chord height measurement to be required for adequate surface definition. A computer controlled apparatus for performing the method is disclosed.

3,629,559

**ANALOGUE TO DIGITAL CONVERTERS**

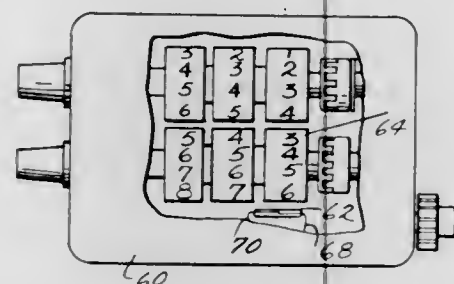
Lewis E. Cassaday, Greenwood, S.C., assignor to Greenwood Mills, Greenwood, S.C.

Filed Nov. 8, 1968, Ser. No. 774,420

Int. Cl. G07c 3/10

U.S. Cl. 235-92 PD

12 Claims



Apparatus and method for monitoring a condition of a textile machine including switch means mounted adjacent the machine having an open and closed position and means mounted on the textile machine for causing the switch means to alternately change status while the machine is in operation, the frequency of the status changes being a function of the condition being monitored. In the specific embodiment disclosed, a reed switch is mounted adjacent one of the dials on a hank counter which carries a portion of magnetic material within it so that the reed switch is periodically closed as the hank counter dial rotates to indicate the production of a given amount of material. The reed switch is attached to appropriate electrical circuitry so that a first electrical condition results when the switch is closed, and a second condition when the switch is open and the electrical conditions are periodically polled at a frequency greater than the frequency at which the switch condition changes so that all changes of status are detected and so that each change represents a specific quantity of output material produced.

**APPARATUS FOR CONTROLLED DECELERATION IN NUMERICAL POSITIONING**

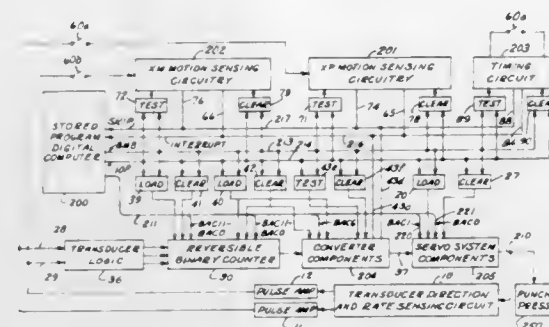
Kenneth Leonard Slawson, Depew, N.Y., assignor to Hou-daille, Buffalo, N.Y.

Filed June 6, 1969, Ser. No. 831,131

Int. Cl. G06f 15/46; G05b 15/00

U.S. Cl. 235-151.11

8 Claims



A control system wherein a supervising computer is operable to observe acceleration and deceleration characteristics of the particular control system and then to compute optimum deceleration points with respect to subsequent commands to the system on the basis of the observed characteristics and to initiate deceleration of the system at the optimum points in executing the successive commands to the system.

3,629,561

**INTERNAL REFLUX COMPUTER FOR FRACTIONATION COLUMN CONTROL**

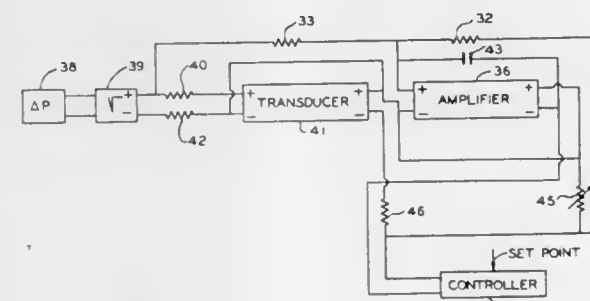
Louis D. Kleiss, Borger, Tex., assignor to Phillips Petroleum Company

Filed June 29, 1970, Ser. No. 50,719

Int. Cl. G06g 7/58, 7/32; B01d 3/42

U.S. Cl. 235-151.12

3 Claims



Internal reflux in a fractionation column is computed from measurements of the temperatures of overhead vapor and external reflux and the rate of flow of external reflux. The temperatures are sensed by temperature sensitive resistance elements which constitute the feedback and input resistors, respectively, of an amplifier employed to make the computation.

3,629,562

**CONTROL FOR POWER POOLS**

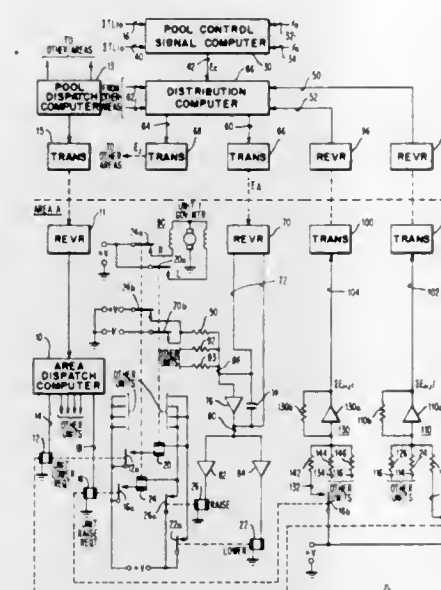
Frederick B. Davis, 3rd, Drexel Hill, and Charles W. Ross, Hatboro, both of Pa., assignors to Leeds &amp; Northrup Company, Philadelphia, Pa.

Filed Nov. 25, 1969, Ser. No. 879,646

Int. Cl. G06f 15/56; G06g 7/62

U.S. Cl. 235-151.21

6 Claims



The load of a pool is distributed among the units of its interconnected areas by allocating load to the areas in accordance with signals received from each area representative of the generation change capability of the units in that area.

3,629,563

**SIGNAL CONVERTOR**

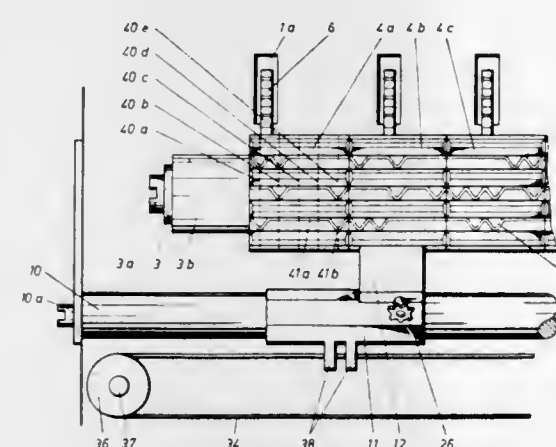
Gosta R. Englund; Mats E. Mattsson, and Claes-Goran Lindelow, all of Stockholm, Sweden, assignors to Svenska Dataregister AB, Solna, Sweden

Filed June 26, 1968, Ser. No. 740,175

Int. Cl. G08c 9/06

U.S. Cl. 235-154

13 Claims



A device for converting the value in a mechanical register, into electrical output signals. Tracks between each tooth of each gear of the register contain the value of the teeth in binary form. In setting the gears, the tracks are aligned to form a continuous track passing through all the gears of the register. A sensing finger which is connected to a photocell runs through this continuous track to convert the setting in the register gears to electrical output signals.

**CALCULATING MACHINES WITH A CONSTANT FUNCTION KEY**

James John Drage, and Norbert Kitz, both of Middlesex, England, assignors to Bell Punch Company Limited, London, England

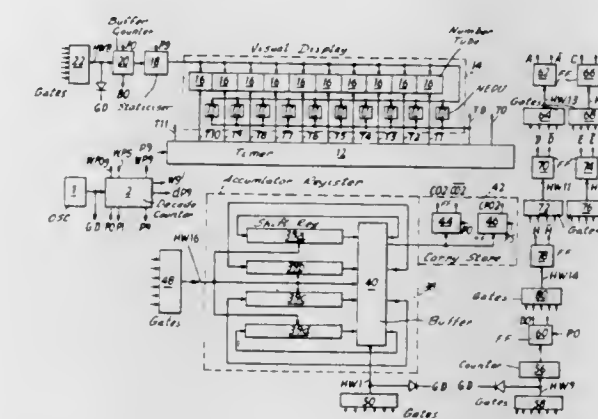
Filed July 25, 1969, Ser. No. 844,920

Claims priority, application Great Britain, Feb. 17, 1969, 8,576/69

Int. Cl. G06f 3/02

U.S. Cl. 235-159

12 Claims



There is disclosed electronic calculating machine with at least two registers for storing numbers and transferring them between registers. The numbers are read by a sequence of ten pulses for each of the digits of a number which provide output pulses as the register digit stages become zero. Transfer of data between the registers is effected by means of gates which receive the output pulses and further control signals. The gates are controlled by a function control circuit with a constant function key which will enable the number to be held in the register and prevent a new number from being entered.

3,629,565

**DECIMAL ADDER FOR DIRECTLY IMPLEMENTING BCD ADDITION UTILIZING LOGIC CIRCUITRY**

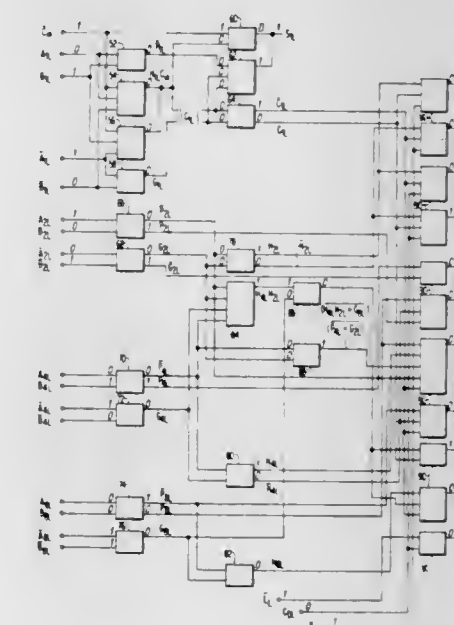
Martin S. Schmookler, Poughkeepsie, and Arnold Weinberger, Newburgh, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,246

Int. Cl. G06f 7/50

U.S. Cl. 235-174

7 Claims



An improved method and logic system for adding two decimal numbers which are coded in a four-bit binary form.



The method includes generating a propagate carry signal  $P_i$  for each of the four bits which is the OR function of the bit inputs, generating a generate carry signal  $G_i$  for each of the four bits which is the AND function of the bit inputs, and generating a binary carry  $C_1$  for the first bit. The decimal carry for the addition is then generated by a novel carry look-ahead technique by employing these signals:  $P_i$ ,  $G_i$ , and the binary carry  $C_1$ . The binary coded decimal bit signals representative of the decimal sum are also generated directly from these signals and, hence, the adder differs from prior art decimal adders which first performed binary addition in each bit and then added 6 to these binary sums whenever a decimal carry occurred so as to produce corrected binary signals representative of the coded decimal number. Several systems are disclosed employing this method and include a four-logic level, two-digit decimal adder, a three-logic level, two-digit decimal adder; and a six-logic level, eight-digit decimal adder. The six-logic level, eight-digit decimal adder combines concepts of the disclosed novel method for implementing decimal carries, as well as conventional group carry techniques used in parallel binary adders.

3,629,566

**ELECTRONIC MULTIPPOINT COMPENSATOR**

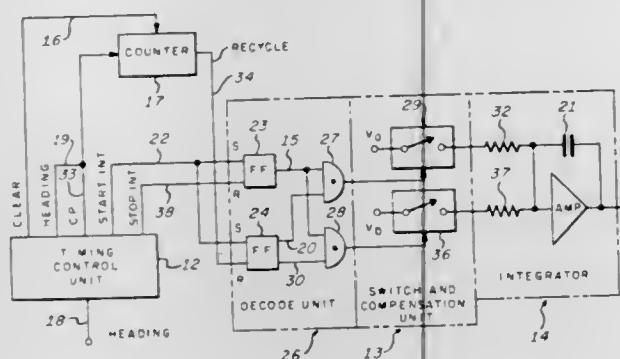
David R. Brickner, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Nov. 26, 1969, Ser. No. 880,037

Int. Cl. G06g 7/30; G06f 15/32

U.S. Cl. 235—183

7 Claims



Signal-compensating apparatus comprising a storage device containing a plurality of deviation signals corresponding to predetermined values of a variable signal and two serially connected counters for providing a digital signal representative of the instantaneous value of the variable signal, the counters being operative in conjunction with a timing unit and switching array for successively selecting the deviation signals corresponding to values of the variable signal immediately disposed about the instantaneous value thereof for application to an integrator and simultaneously controlling the integration interval of each of the selected deviation signals whereby an interpolated signal corresponding to the instantaneous value of the variable signal is obtained.

3,629,567

**ANALOGUE MULTIPLIER**

Harro Bruggemann, Glen Iris, Victoria, Australia, assignor to The Commonwealth of Australia, c/o The Postmaster General's Department Research Laboratories, Melbourne, Victoria, Australia

Filed Sept. 5, 1969, Ser. No. 855,543

Claims priority, application Australia, Sept. 15, 1968, 43033/68

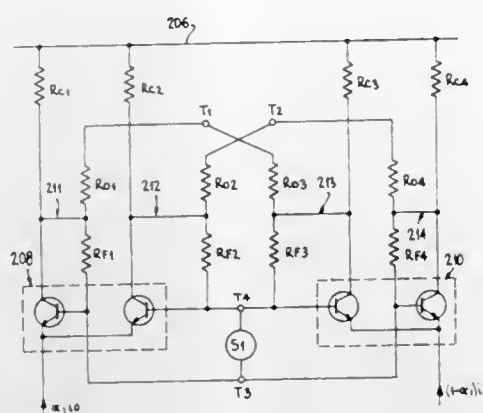
Int. Cl. G06g 7/16

U.S. Cl. 235—194

26 Claims

An analogue multiplier stage which in use receives a first input signal represented by a pair of input currents and comprises a pair of current forks which divide the input currents

in a predetermined ratio, the outputs the forks being cross-connected in one configuration to produce an output signal represented by a pair of output currents from the stage and representative of a product of the input signal and a term in-



volving the ratio, and the fork outputs being cross-connected in the alternative configuration to produce a feedback signal which can be used to control the ratio by comparison with a second input signal.

3,629,568

**SCREW AND LIGHT COMBINATION FOR INSTRUMENT LIGHTING**

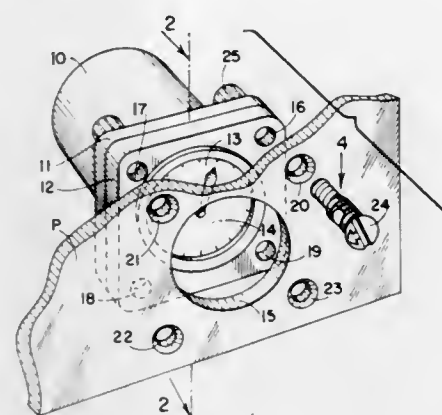
Arnold Loyd Hanes, 21149 West Entrada Place, Topanga, Calif.

Filed July 13, 1970, Ser. No. 54,111

Int. Cl. G01d 11/28

U.S. Cl. 240—2.1

8 Claims



A mounting screw for an instrument includes a shank portion having a cutout on one side. A light bulb is cradled in the cutout to emit light laterally from one side relative to the axis of the screw. Conductive slip rings circumferentially extend over the opposite side of the shank portion in axially insulated spaced relationship such that when the mounting screw is inserted in a receiving screw hole in the instrument casing adjacent to the instrument dial, the dial is internally lighted, the screw serving the dual function of mounting the instrument and providing support for the internal lighting.

3,629,569

**VEHICLE LAMP HOUSING**

John Gillis Johnsson, Oxelosund, Sweden, assignor to Sunne Gummitfabrik AB, Sunne, Sweden

Filed Apr. 1, 1969, Ser. No. 811,721

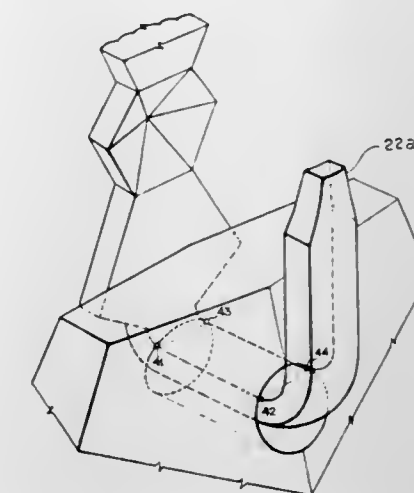
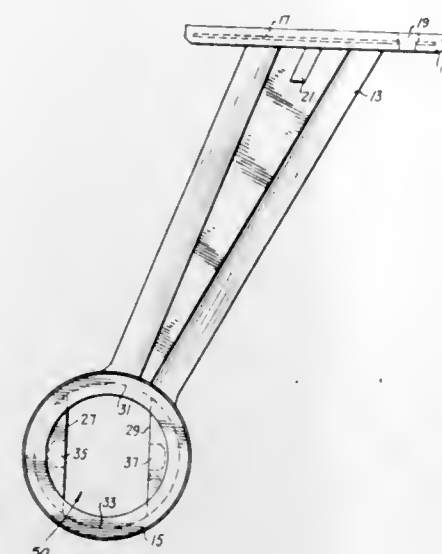
Int. Cl. B60q 1/00

U.S. Cl. 240—7.1

4 Claims

A housing for a vehicle indicator lamp comprises a rubber body forming an attachment base, an elongated arm and a head at the end thereof. The head is shaped as a short sleeve, and opposite ends thereof are closed by rigid transparent covers which are inserted with their circular edges into grooves in the elastic head, thereby stiffening the same. A tubular electric bulb extends across the cavity of the head, and

its end caps are inserted into recesses in the rubber walls thereof. Only when the covers have been taken out, the



lap faces of the trimmings at opposite sides of the apertures. Free end portions of the legs are closed into alignment with each other when the connection is made.

rubber head can be deformed enough to disengage the bulb caps from said recesses.

3,629,570

**AUTOMATIC CORRECTOR FOR AUTOMOTIVE HEADLAMP BEAM ORIENTATION**

Pierre Bouthors, and Francois Archaux, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, France and Automobiles Peugeot, Paris, France

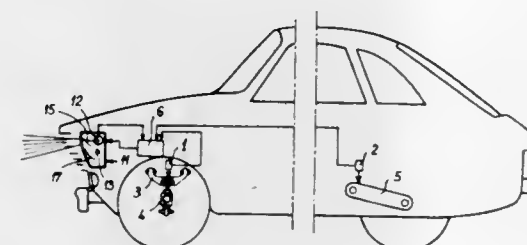
Filed June 23, 1969, Ser. No. 835,348

Claims priority, application France, Aug. 1, 1968, 161498

Int. Cl. B60q 1/00

U.S. Cl. 240—7.1

6 Claims



Automatic device for varying the orientation of the light beam emitted by the headlamps of an automobile vehicle, said headlamps comprising each a light source and a reflector, wherein the light from said source is reflected by at least one pivotally mounted mirror of which the movements are controlled by means of a system responsive to the vehicle orientation.

3,629,571

**CONNECTOR FOR CHANDELIER TRIMMINGS**

Arnold A. Schonbek, 4918 Mira Road, Montreal, Quebec, Canada

Filed May 26, 1969, Ser. No. 827,513

Claims priority, application Germany, June 14, 1968, P 17 72 647.5

Int. Cl. F21v 5/06; A44c 11/00

U.S. Cl. 240—153

14 Claims

A connector for chandelier trimmings where the trimmings are provided with circular apertures to receive the connector. The connector is a preformed U-shaped member consisting of a bight portion and a pair of legs which are passed through the apertures of an adjacent pair of trimmings. The bight portion has a fixed predetermined length to assure uniform spacing of the trimmings. The legs have an oblong, rectangular cross section with a diagonal only slightly smaller than the diameter of the apertures to resist turning of the

An alarm circuit monitor for use with railroad car hot box detection equipment is provided. The monitor, which is connected to hot box detectors adapted to generate signals responsive to the temperature of the bearings on both sides of each axle of a railroad car under consideration, includes a first circuit adapted to trigger an alarm in the event the signal responsive to the operating temperature of either bearing exceeds a threshold level for normally low running temperature bearings and a cancellation circuit to prevent the first circuit from triggering the alarm if the operating temperature of the other bearing also exceeds the low level threshold. A second circuit independent of the first circuit is also connected to the hot box detectors to trigger the alarm in the event the hot box detector signal exceeds a threshold level for normally high running temperature bearings.

3,629,573

**MONOPOLE/QUADRUPOLE MASS SPECTROMETER**

John P. Carrico, Royal Oak, Mich., and Patrick F. McGinnis, Pittsford, N.Y., assignors to The Bendix Corporation

Filed Aug. 20, 1970, Ser. No. 65,574

Int. Cl. H01j 39/36

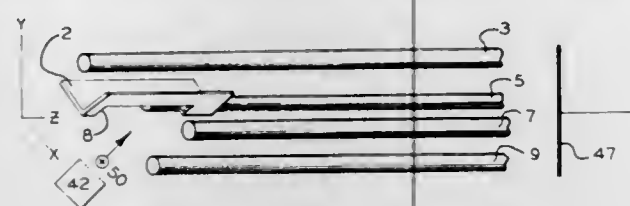
U.S. Cl. 250—41.9 DS

14 Claims

This invention combines an auxiliary apertured electrode with a quadrupole type mass filter. The assembly comprises a quadrupole arrangement with at least one of the poles of the



filter extending beyond the others. Beneath the extended electrode is a V-shaped electrode having an aperture therein for the passage of ions. The extended rod and the V-shaped electrode forms a monopole configuration so that ions to be



analyzed are introduced through the aperture in the V-shaped electrode and into the analyzing region at an angle to the central axis (Z-axis) of the quadrupole structure thereby reducing the effect of the fringing field.

3,629,574

### APPARATUS AND METHODS FOR SEPARATING ELECTRONS FROM IONS

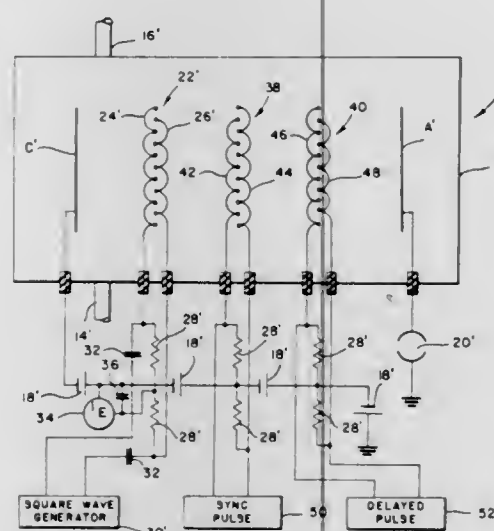
David I. Carroll, Lantana, Fla., assignor to Franklin Gno Corporation, West Palm Beach, Fla.

Filed Jan. 28, 1969, Ser. No. 794,742

Int. Cl. H01j 39/34; B01d 59/44

U.S. Cl. 250—41.9 TF

24 Claims



Electrons are separated from ions by subjecting these charged particles to a drift field to cause them to move from a first region toward a second region and by interposing an electron filter in the drift field between said regions, the filter comprising a pair of grid members to which high-frequency alternating voltages are applied. This principle is applied to an electron capture detector and to a device which separates and detects ions in accordance with their mobility.

3,629,575

### ELECTRON MICROSCOPE HAVING OBJECT LIMITING AND CONTRAST INTENSIFYING DIAPHRAGMS

Christiaan Johannes Rakels, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y. Continuation of application Ser. No. 652,804, Dec. 5, 1969, now abandoned, which is a continuation of application Ser. No. 883,671, Dec. 20, 1969, now abandoned. This application

Oct. 19, 1970, Ser. No. 82,141

Int. Cl. H01j 37/26

U.S. Cl. 250—49.5 A

1 Claim

An electron-microscope employing a contrast limiting diaphragm and an object-limiting diaphragm between the objective lens and a control lens, a current control device being provided to adjust the energizing current for the objective

lens to a fixed value lying outside of a normal control range whereby the focal plane of the objective lens facing the

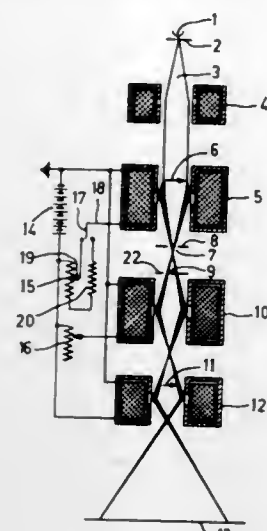


image is shifted from the contrast-intensifying diaphragm to the object-limiting diaphragm.

3,629,576

### ACCELERATOR TUBE ELECTRODE FOR FOCUSING A BEAM OF CHARGED PARTICLES

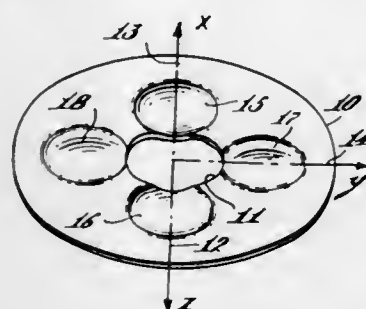
Harald A. Enge, Winchester, Mass., assignor to Deltaray Corporation, Winchester, Mass.

Filed May 21, 1970, Ser. No. 39,461

Int. Cl. H01j 37/12, 37/30

U.S. Cl. 250—49.5 C

15 Claims



An electrode for use in an accelerator tube, which electrode provides for the focusing of a beam of charged particles within said tube as the particles travel along the length thereof. The electrode has a centrally located aperture and, symmetrically disposed about such aperture, an even number (at least four or more) of indentations, alternately projecting in opposite directions along the axis of the tube. The ideal shape of the electrode can be expressed mathematically as  $z=f(r) \cos n\theta$  in a cylindrical coordinate system having coordinates  $r$ ,  $\theta$ , and  $z$  with the Z-axis corresponding to the direction of the tube axis. Here,  $f(r)$  is a function which preferably should approximate  $f(r) \approx kr^2$ , for the region substantially immediately surrounding the aperture and, preferably, up to a radius of twice the aperture radius.

3,629,577

### METHOD AND APPARATUS FOR PRODUCING A STEREO IMAGE BY ELECTRON MICROSCOPY

Ulrich Weber, Karlsruhe, and Jurgen Gullasch, Minder-sachsen, both of Germany, assignors to Siemens Aktien-gesellschaft, Berlin, Germany

Filed Sept. 22, 1969, Ser. No. 859,791

Claims priority, application Germany, Sept. 23, 1968, P 17 89 019.6

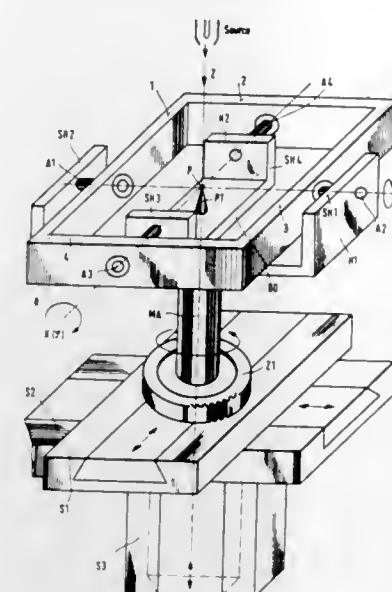
Int. Cl. H01j 37/26

U.S. Cl. 250—49.5 A

11 Claims

For producing a stereo image, for example of a crystalline object, by electron beam microscopy, any chosen surface

area of the object is rotated about a central axis defined by the direction of the electron beam. The amount of rotation is such that after a subsequent tilting of the object about a



second axis intersecting the central axis, the image intensity of the surface area is the same in the starting position as in the end position of the tilting displacement. Respective individual pictures are taken in these two object positions.

3,629,578

### MAGNETIC DEFLECTION SYSTEM FOR ELECTRON ANALYSIS DEVICES

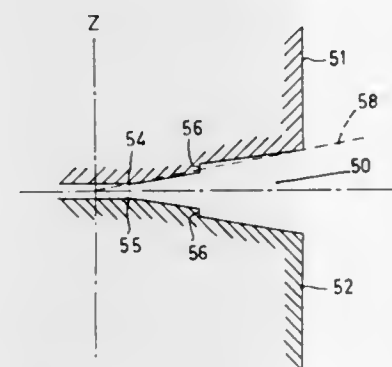
Jan B. Le Poole, Tucson, Ariz., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1969, Ser. No. 794,039

Int. Cl. H01j 37/26; G01n 23/22

U.S. Cl. 250—49.5 D

10 Claims



A magnetic deflecting system for deflecting a beam of charged particles comprising a pair of mirror symmetrical pole-pieces on opposite sides of a plane of symmetry passing through a principal ray of the beam. The surfaces of the pole-pieces have contours which define a space between the pole-pieces which varies stepwise in the direction of the main ray with a centrally constricted portion which defines a region of highest field strength. The deflection system has a field strength at which the main ray entering the deflection system, which ray extends at least partly in the direction of the constricted space between the pole-pieces, follows a curve which passes in front of the pole-pieces in the region of the highest magnetic field strength. Means are provided to produce a field strength distribution at the area of the minimum distance of the curve from the region of the highest field strength which, measured in the direction towards the highest field strength, exhibits at that area a locally stronger field strength gradient. This field strength distribution affects the beam so that a curvature of image lines transverse to the plane of symmetry in a plane transverse to the main ray is counteracted, i.e., electron-optical aberrations are reduced.

### 3,629,579 ELECTRON PROBE SPECIMEN STAGE WITH A SCATTERED ELECTRON DETECTOR MOUNTED THEREON

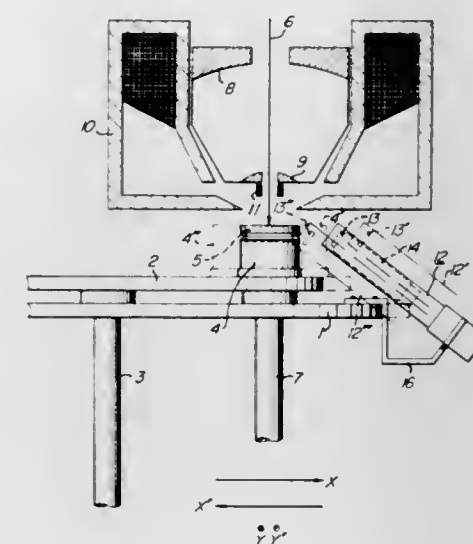
Hideo Naitou, Mito-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 16, 1970, Ser. No. 3,374

Int. Cl. H01j 37/20

U.S. Cl. 250—49.5 B

14 Claims



A scattered electron detection device for detecting secondary electrons and reflected electrons, characterized in that a scintillator element of the detection device is moved by means of a transferring mechanism which is movable in association with movements of a specimen stage finely movable in two directions in a horizontal plane, in such a manner that the transferring mechanism is moved following movements of the specimen stage in one of the directions but is held against movements of the specimen stage in the other direction orthogonal to said one direction.

3,629,580

### METHOD AND APPARATUS FOR OBTAINING HIGH-RESOLUTION X-RAY INTERFERENCE PATTERNS

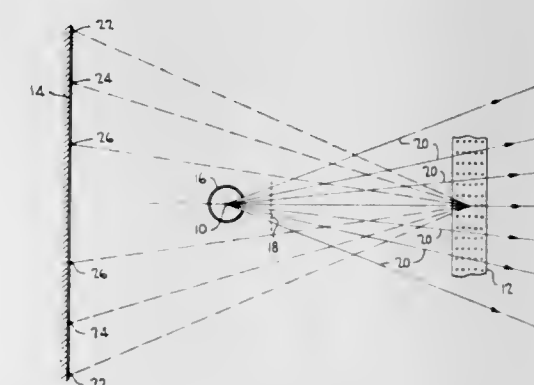
Colin S. Willett, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army

Filed July 13, 1970, Ser. No. 54,272

Int. Cl. G01n 23/20

U.S. Cl. 250—51.5

10 Claims



A high-resolution X-ray interferometer. The invention utilizes nonlocalized conical interference fringes which are formed when X-rays from a point source fall on a three-dimensional, planar crystalline array. Each atom within the crystal scatters radiation which then appears to originate from a set of virtual sources  $S_1, S_2, S_3, \dots, S_n$  located on a line perpendicular to the scattering planes of the crystal. At any point  $P'$  behind the point source (for a reflection arrangement) X-rays are received from  $S_1, S_2, S_3, \dots, S_n$  and interfere to form fringes, analogous to the familiar conical fringes in



optics. If and only if the crystal or film of crystallites is thin and less than a certain thickness will interference fringes be formed at P'. Since the fringes are nonlocalized, no optics are required to produce any focusing. The structure of the fringes reveals the structure, not of the crystal, but of the X-ray spectra. By having large crystal-to-detector distances extremely large dispersions can be realized.

3,629,581

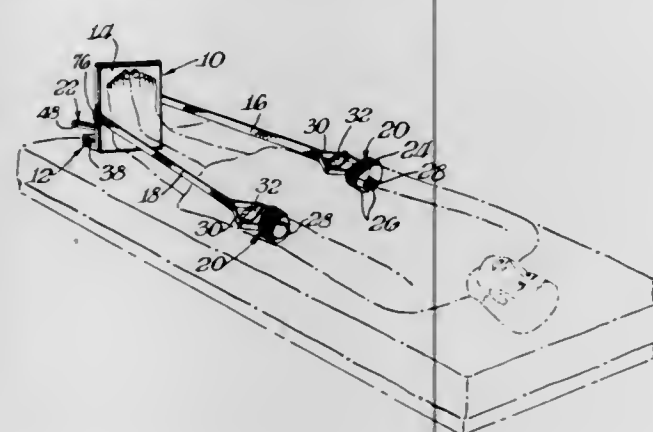
# DEVICE FOR POSITIONING A PATIENT'S SHOULDERS DURING X-RAY EXAMINATION

Jeffrey P. Smith, 2608 Whitman Drive, Wilmington, Del.  
Filed Feb. 6, 1970, Ser. No. 9,355

Int. Cl. G03b 41/16

U.S. Cl. 250-50

5 Claims



Device for positioning shoulders of prone patient away from neck area to facilitate unobstructed X-ray examination of cervical spine comprises support with vertically disposed foot rest. Flexible elongate members are connected to support, and releasable attaching structure is provided at free end of each flexible elongate member for releasably attaching members to wrists of patient. Winding mechanism on support is connected to flexible elongate members for pulling free ends of members toward footrest. Releasable locking assembly associated with winding mechanism prevents withdrawal of flexible elongate members from support when locking assembly is engaged.

3,629,582

# TIMEPIECE WITH RADIOACTIVE TIMEKEEPING STANDARD

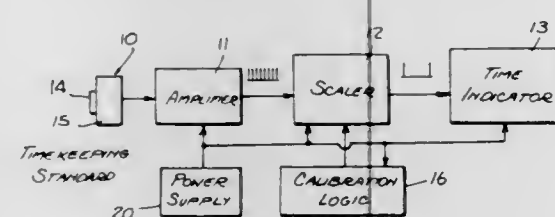
Dale R. Koehler, 601 Dale Court, River Vale, N.J., and John T. Grissom, 721 Kephart Cir., Concord, Tenn.

Continuation-in-part of application Ser. No. 651,864, July 7, 1967, which is a continuation-in-part of application Ser. No. 592,582, Nov. 7, 1966, now abandoned. This application Apr. 24, 1969, Ser. No. 819,083

Int. Cl. G01t 1/15

U.S. Cl. 250-71.5

16 Claims



A timepiece wherein the frequency standard takes the form of a radioactive source having a prolonged half-life, the alpha particulate emanations from the source being converted into electrical pulses, the pulses then being scaled down to produce low-frequency control pulses at a constant rate, which operate a time indicator.

## 3,629,583 TRACK POSITION INDICATING APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria

Filed June 5, 1968, Ser. No. 734,708

Claims priority, application Austria, June 12, 1967, A 5463/67

Int. Cl. G01t 1/16, 1/18

U.S. Cl. 250-83

14 Claims



In a mobile track liner wherein the track position is indicated by the relative position of a reference line to an indicating element associated and cooperating therewith, a radiation signal is generated which corresponds to this relative position, and the signal is transmitted to a signal-receiving device by a device arranged transversely of the track and responsive to the radiation signal.

## 3,629,584 METHOD AND APPARATUS FOR THE NONDESTRUCTIVE TESTING OF MATERIALS

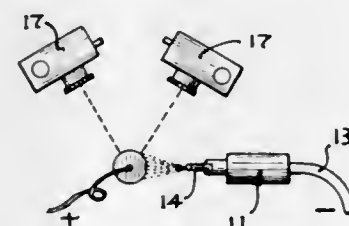
Oscar C. Blomgren, Jr., Lake Bluff, Ill., assignor to Inter-Probe, Inc., North Chicago, Ill.

Filed Sept. 28, 1970, Ser. No. 76,013

Int. Cl. G03b 41/00; G01t 1/16

U.S. Cl. 250-83.3 IR

17 Claims



A method and apparatus to determine the integrity of a wide range of materials, including electrically conductive and dielectric materials, wherein the material to be tested is first heated uniformly either naturally in the process of fabricating the material or otherwise to a temperature sufficient for it to give off detectable infrared and/or visible radiation. The material is next subjected to an electrostatic field which cools the material. During the cooling process, the material is monitored with a radiation detector which indicates by a differential in cooling rate the presence of any internal or surface defects.

## 3,629,585 IMMERSED BOLOMETER USING THIN FILM THERMISTORS

Francois Desvignes, Bourg-La-Reine; Paul Guiochon, and Jean Pompei, both of Evreux, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

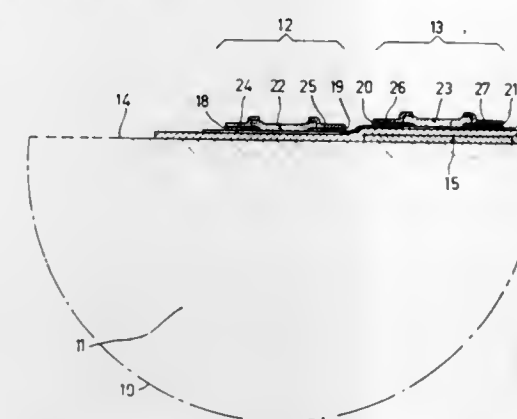
Filed Dec. 30, 1969, Ser. No. 889,027

Claims priority, application France, Dec. 31, 1969, 182969

Int. Cl. G01t 1/16

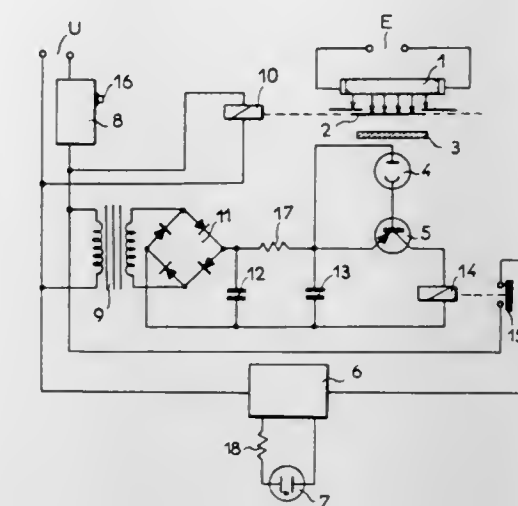
U.S. Cl. 250-83 R

4 Claims



Differential, immersed, thermistor bolometer formed by a planoconvex, transparent lens-support and two thermistors, one active and one compensation element, both deposited on the flat face of said lens.

only radiation centered on the 2,537 Å. line and its output is amplified to actuate an optical or acoustic signal which indicates when the energy of the radiation is below a predetermined threshold level. To prevent damage to the cell, a shutter is interposed between the tube and the cell and is withdrawn when a test is to be made.



## 3,629,586 APPARATUS FOR MEASURING THE MASSES OF A SERIES OF ARTICLES SPACED APART BY MODULES HAVING A SUBSTANTIALLY CONSTANT RADIATION ABSORPTION CHARACTERISTIC

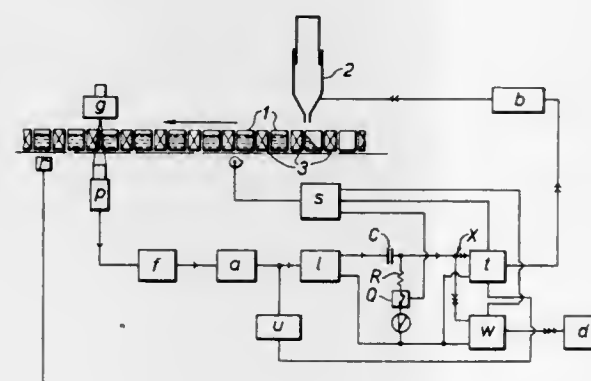
Alan Frederick Giles, Wembley, Middlesex, England, assignor to Lever Brothers Company, New York, N.Y.

Filed May 5, 1969, Ser. No. 821,601

Int. Cl. G01t 1/16

U.S. Cl. 250-83.3

8 Claims



A method and apparatus in which the masses of a series of spaced articles are scanned by radiation, e.g., Gamma radiation, and a detector produces an output dependent on the masses of the articles, the output being continuously calibrated by reference to the average value of the measured masses of spacing modules between the articles.

## 3,629,588 NEUTRON GENERATOR

Werner Eyrich, Karlsruhe Waldstadt, Germany, assignor to Gesellschaft fuer Kernforschung mbH, Karlsruhe, Weberstr., Germany

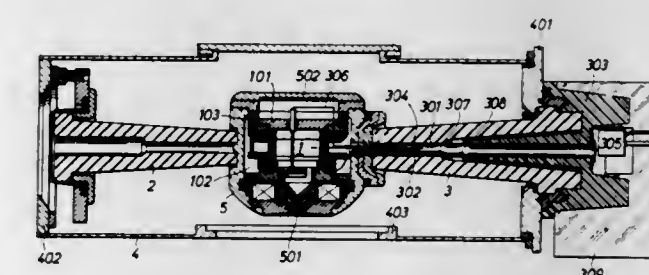
Filed Dec. 12, 1969, Ser. No. 884,506

Claims priority, application Germany, Dec. 21, 1968, P 18 16 459.5

Int. Cl. G21g 3/04

U.S. Cl. 250-84.5

14 Claims



Neutron generator with an ion source at high voltage potential for the generation of an ion beam and a target in which neutrons are generated by the ion beam through nuclear reactions.

## 3,629,587 DEVICE FOR MEASURING THE GERMICIDAL ACTION OF ULTRAVIOLET RADIATION

Jean A. Decupper, Neuilly, France, assignor to Detec S.A., Geneva, Place Cornavin, Switzerland

Filed Aug. 4, 1969, Ser. No. 847,366

Claims priority, application Switzerland, France, Aug. 5, 1968, June 4, 1969, 11783/68, 6918367

Int. Cl. G01j 1/22

U.S. Cl. 250-83.3 UV

7 Claims

In a device for testing the germicidal action of an ultraviolet ray tube, a photoelectric cell receives from the tube

## 3,629,589 OPTICAL DOUBLE-BEAM MEASURING INSTRUMENT

Franz Gleixner, Munich Pasing, and Heinz Schreyer, Munich, both of Germany, assignors to Erwin Sick, Icking am Isartal, Stifterweg, Germany

Filed Mar. 23, 1970, Ser. No. 21,816

Claims priority, application Germany, Mar. 22, 1969, P 19 14 655.5

Int. Cl. G01j 1/32

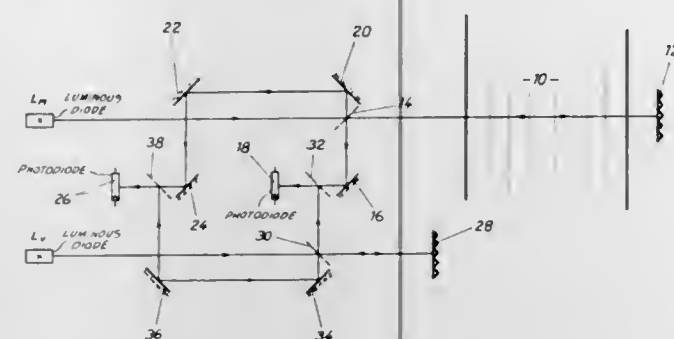
U.S. Cl. 250-205

11 Claims

Before traversing the area in which conditions are to be measured, a portion of a modulated luminous measuring beam is branched off and directed to a photoelectric detector. A portion of a modulated luminous comparison beam also is branched off and sent to the detector. The strengths of



the beams received by the detector are compared and used to control the intensity of one or both of the beam sources in



a manner such that the ratio of intensities of the two sources is constant.

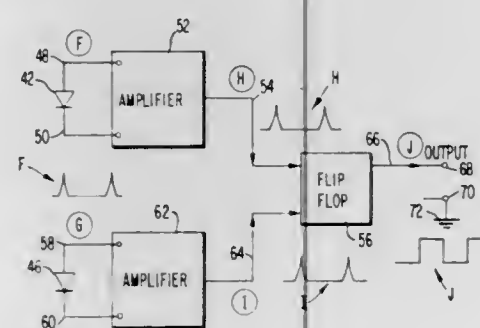
**3,629,590**

**PHOTOELECTRIC RELAY USING OPTICAL COUPLES**  
Alfred L. Case, College Park, Md., assignor to Versitron, Inc., Washington, D.C.

Continuation-in-part of application Ser. No. 428,347, Jan. 27, 1965, now Patent No. 3,462,606. This application Jan. 21, 1969, Ser. No. 792,597  
Int. Cl. H01j 39/12

U.S. Cl. 250—208

17 Claims



Disclosed is an isolator switch or relay for isolating an electrical input and output. It comprises a pair of optical source-detector couples in which the sources are alternately over-driven over a low duty cycle to provide a rapid response. Input and output logic elements are connected to the couples, the former providing alternate time-spaced signals to the couples and the latter recovering the polarity of the input signal. Improved electromagnetic isolation between opposite sides of the couple as well as strobing and termination circuits are provided. The switch is adapted for use in all types of digital data communication circuits.

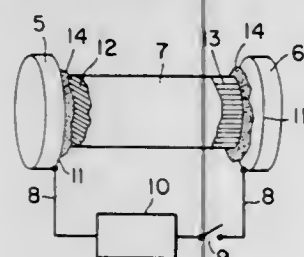
**3,629,591**

**PROTECTIVE LIGHT IMAGE TRANSLATING SYSTEM**  
William McNeill, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 14, 1969, Ser. No. 799,292  
Int. Cl. H01l 15/00

U.S. Cl. 250—213 R

10 Claims



A light image translating system comprising a plurality of metallic rods insulated one from the other. Each rod, at op-

posite ends, is provided with an electroluminescent film and a photoconductive film or layer. The rods are mounted with like ends together in tight parallel relation between and abutting with two spaced transparent electrode elements which are connected with a voltage supply source to cause the electroluminescent film to start to glow when the illumination on the photoconductor layer is at a minimum, and to increase with increasing illumination. The ends of the metallic rods carrying the electroluminescent films thus provide an amplified reproduction of whatever illuminated picture is observed by the opposite photoconductive ends of the rods.

**3,629,592**

**OPTICAL MEANS FOR SPACE EXPLORATION**

Gilbert Courrier, Juvisy-sur-Orge, France, assignor to Compagnie Generale d'Electricite, Paris, France

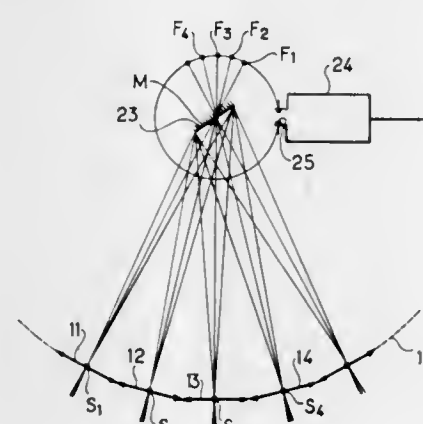
Filed June 24, 1970, Ser. No. 49,478

Claims priority, application France, June 27, 1969, 6921831

Int. Cl. H01j 3/14, 5/16

U.S. Cl. 250—216

10 Claims



A device enabling the scanning of a space through a wide field, comprising several lenses whose optical axes are concurrent at a point where a field diaphragm directs the light rays coming from space through the lenses towards a photosensitive cell.

**3,629,593**

**AIR BEARING FOR OPTICAL READER**

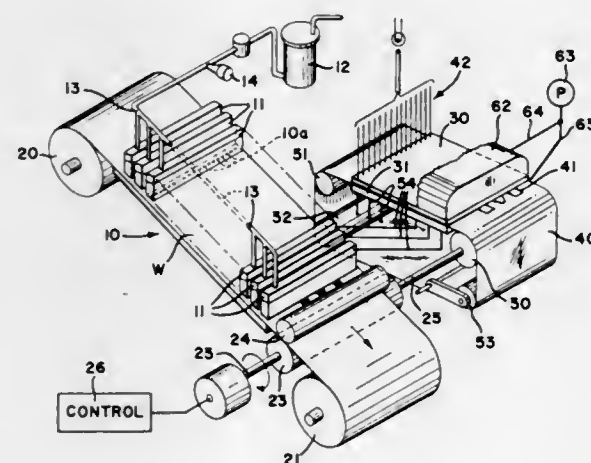
Russell H. Van Brimer, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 17, 1969, Ser. No. 877,254

Int. Cl. G01n 21/30

U.S. Cl. 250—219 DC

3 Claims



In an optical reader for a noncontacting printing system in which a film transparency is conveyed between a pair of plates, one of which has a series of photosensitive devices mounted therein and the other a series of light-projecting

means mounted therein, openings are formed in each plate and a fluid, such as air, is pumped through the openings to form an air cushion and prevent the film from touching either of the plates as it passes therebetween.

**3,629,594**

**PATIENT-POSITION-MONITORING METHOD AND SYSTEM FOR USE DURING MEDICAL DIAGNOSTIC AND THERAPEUTIC PROCEDURES**

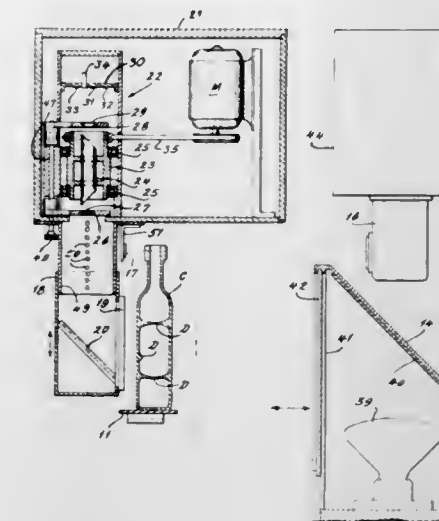
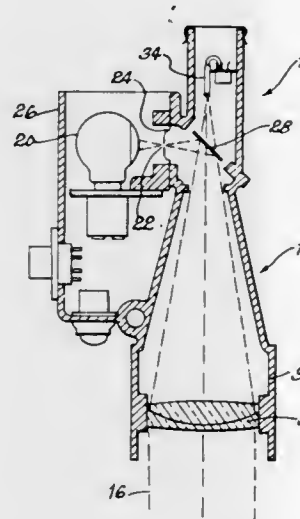
Glen Sandberg, Chicago, Ill., assignor to Michael Reese Hospital and Medical Center

Filed Apr. 16, 1970, Ser. No. 29,041

Int. Cl. G03b 41/16

U.S. Cl. 250—221

21 Claims



lumination is detected by the photocells, the container in which the change or effect occurs is rejected.

**3,629,596**

**FREE PISTON GENERATOR**

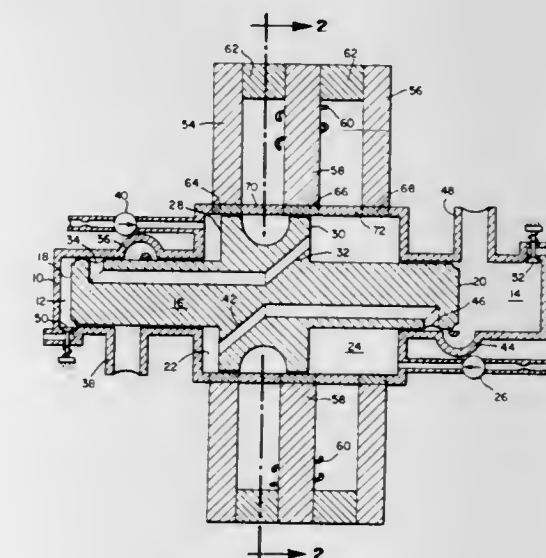
James Milner Wills, Gulfport, Miss., assignor to General Electric Company

Filed Dec. 29, 1970, Ser. No. 102,406

Int. Cl. H02p 9/04

U.S. Cl. 290—1

3 Claims



A light beam is directed upon a retroreflective element, located adjacent the pertinent portion of the patient's body and is reflected upon a photocell or some other photoresponsive means. If there is any appreciable change in the patient's position, the signal from the photocell will change. The changed signal can be employed to perform a control function, such as actuating a warning device, or terminating the diagnostic or therapeutic procedure, so that the radiation will not be misdirected. The light beam is preferably produced by an optical system comprising a lamp, an apertured member to produce a small spot of light, a partially light-transmitting mirror, and a lens for focusing the beam upon the retroreflective element. The reflected beam is preferably focused by the lens through the mirror and upon the photocell. The retroreflective element is preferably in the form of a small piece of retroreflective adhesive tape, to be stuck to or adjacent to the patient's body.

**3,629,595**

**TRANSPARENT CONTAINER INSPECTION APPARATUS**  
Momir Babunovic, Des Peres, and Virgil Melvin Stapf, Bridgeton, both of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed Mar. 11, 1970, Ser. No. 18,652

Int. Cl. B07c 5/342

U.S. Cl. 250—223 B

12 Claims

Apparatus which will inspect containers for defects such as spikes, birdswings, and undesired flaws in the walls which render containers commercially objectionable. The apparatus operates to move containers in series and spaced relation through an inspection station where a background lighting is established to illuminate an area of each container larger than the field to be inspected. Opposite the source of light is an image-forming surface or mirror which directs the illuminated container image to an inspection unit which rotates the image to evaluate the overall evenness or uniform background lighting effect and photocells react to dark spots or areas usually caused by spikes, birdswings and flaws which upset the uniformity of the light in the area of the container

The structure of a free piston engine is integrated with a magnetic circuit. The magnetic circuit has alternate magnetic flux paths with common central legs having generating coils thereon. A portion of the reciprocating piston completes first one flux path and then the other. Permanent magnets are included in the circuit arranged so that the direction of magnetic flux in the central leg reverses as the piston reciprocates, thereby generating an alternating current.

**3,629,597**

**ENGINE-STARTING SYSTEMS**

David Wiley, 4A Tong Street, Walsall, Staffordshire, and Maurice James Allport, 70 Stevens Road, Stourbridge, Worcester, both of England

Filed Apr. 14, 1970, Ser. No. 28,314

Claims priority, application Great Britain, May 12, 1969, 24,054/69

Int. Cl. F02n 11/00

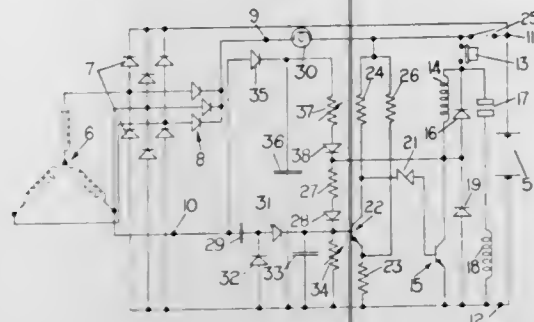
U.S. Cl. 290—37

2 Claims

In an engine-starting system there is a starter circuit for starting the engine in the usual way, but in the starting circuit



is provided means for breaking the transistor circuit when the engine speed is above a predetermined value. Conveniently this means is a transistor in series with a relay controlling the starter, and this transistor is turned off when the engine



speed is above a predetermined value. However, delay means is provided for keeping the starter circuit broken for a predetermined period of time after the engine speed falls below the predetermined value.

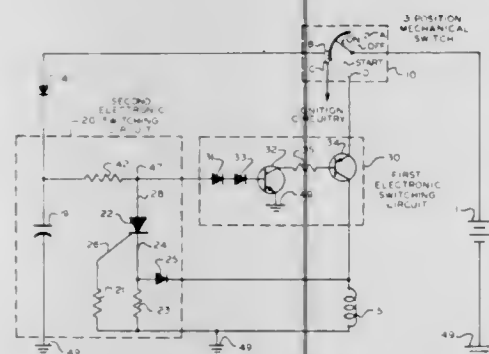
3,629,598

**ELECTRIC STARTING MOTOR LOCK-OUT SYSTEM**  
Todd L. Rachel, Elmira, N.Y., assignor to The Bendix Corporation

Filed Sept. 14, 1970, Ser. No. 71,714  
Int. Cl. F02n 1/14

U.S. Cl. 290-38 R

10 Claims



An electrical starting system for an internal combustion engine that includes solid-state control devices that are responsive to the voltage produced by the collapsing field of a starter solenoid when the starter is deenergized to prevent the reenergization of the starter solenoid until a manually operated ignition switch is moved to the off position for a predetermined time.

3,629,599

**CONTROL APPARATUS**

Harold J. Zuckerman, East Paterson, N.J., assignor to Zytron Industries, Inc., South Hackensack, N.J.

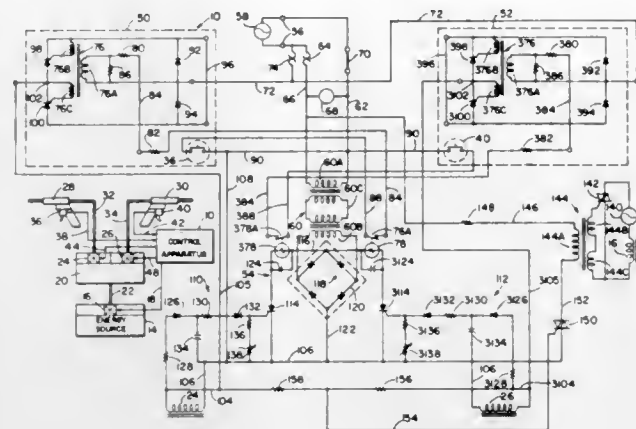
Filed Apr. 10, 1970, Ser. No. 27,337  
Int. Cl. F15c 21/10

U.S. Cl. 307-38

12 Claims

Apparatus for controlling the selective and individual operation of at least a first and a second tool operable from a single energy source of the cyclical type comprising a first switch which is operable to connect the first tool to the energy source and a second switch which is operable to connect the second tool to the energy source. Disabling means

responsive to the operation of the first or second switch is operable to disable the other switch for a predetermined in-



terval of time after one of the switches has been operated to permit the energy source to recycle.

3,629,600

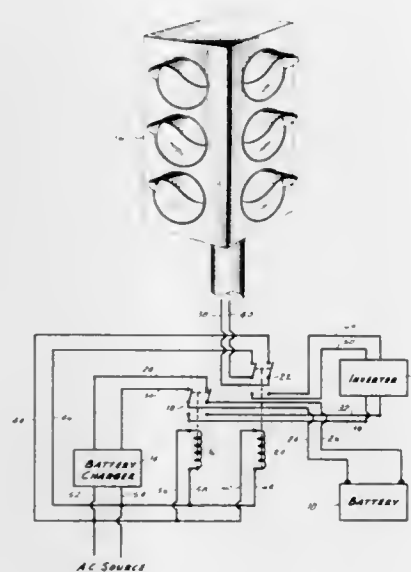
**EMERGENCY TRAFFIC LIGHT CONTROL**

C. Robert Stulter, 2335 Evans Drive, Clearwater, and Theodore H. Smith, Dunedin, both of Fla., assignors to said Stulter by said Smith

Filed Jan. 22, 1969, Ser. No. 793,010  
Int. Cl. H02j 7/00

U.S. Cl. 307-66

2 Claims



Automatic changeover apparatus for operating a traffic light under DC power through an inverter upon a failure of a primary power source. A battery charger is incorporated into the apparatus to maintain the battery providing the DC power at peak voltage.

3,629,601

**HIGH-RESOLUTION OPTICAL UPCONVERTER**

Arthur H. Firester, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Army

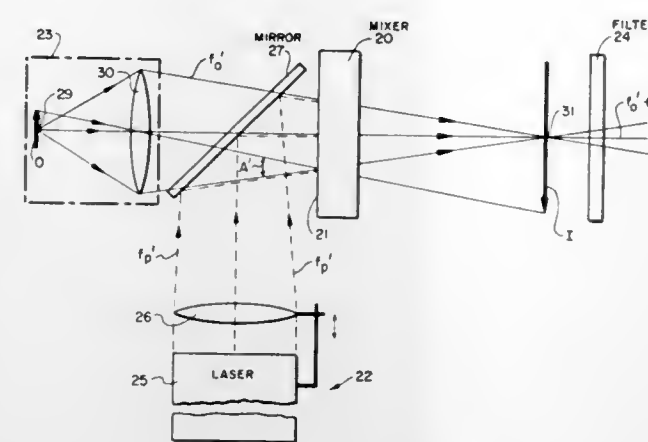
Filed May 15, 1970, Ser. No. 37,646  
Int. Cl. H03f 7/00

U.S. Cl. 307-88.3

10 Claims

An optical upconverter having a pump source, an object source, a nonlinear optical material, and a filter for passing the sum of the pump and object frequencies. A dichroic mirror or beam splitter and the pump are arranged such that the pump source appears to the entrance face of the nonlinear material to be a point source located at the object plane. The

phase matching acceptance angle of the nonlinear optical material is greater than the maximum angle formed between



the pump rays and the object rays for spaced points on the object.

3,629,602

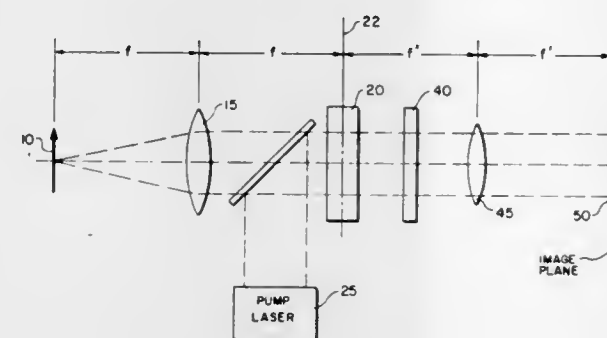
**PARAMETRIC OPTICAL SYSTEM**

Arthur H. Firester, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed May 15, 1970, Ser. No. 37,648  
Int. Cl. H03f 7/00

U.S. Cl. 307-88.3

10 Claims



A parametric optical system in which an object beam of a first frequency is combined within an optically nonlinear medium with a substantially planar optical pump beam of a second frequency to provide either an upconverted image at the sum (or difference) frequency or an amplified version of the object beam, depending upon the design of the nonlinear medium, characterized in that a first lens of a given focal length is positioned between the object and the nonlinear medium and spaced from each by a distance equal to said focal length; this lens serves as a Fourier transform mechanism wherein the Fourier transform plane of the object is located substantially in the center of the nonlinear medium; that is, an image that is the Fourier transform of the object is formed in the back focal plane of the lens at which focal plane the nonlinear medium is situated. Furthermore, a similar Fourier transform technique is used between the nonlinear medium and the observer or detecting device; that is, a second lens is positioned a focal length distant from both the nonlinear medium and the detecting device for generating the Fourier transform of the upconverted (or amplified) image of the medium. In this manner, the optical resolution is unlimited by the thickness of the nonlinear medium.

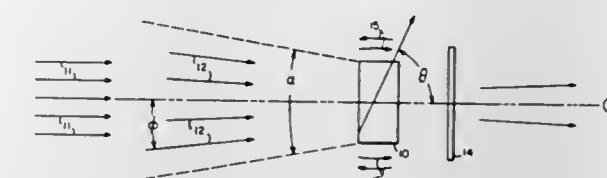
**MEANS AND METHOD FOR OPTICAL PARAMETRIC UP CONVERSION OF IR IMAGES**

Ronald A. Andrews, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 20, 1970, Ser. No. 12,948  
Int. Cl. H03f 7/00

U.S. Cl. 307-88.3

7 Claims



This invention provides a means and method of increasing the annular tolerance on the propagation of infrared radiation through a nonlinear crystal for phase-matched up conversion of infrared images to the visible light.

3,629,604

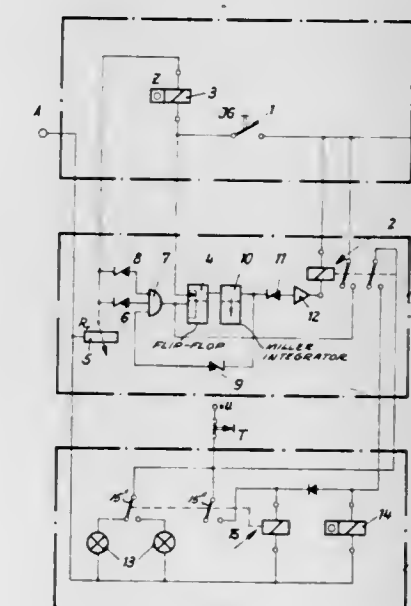
**PULSE-CONDUCTING CIRCUIT ARRANGED TO DETECT TROUBLES IN ITS OPERATION**

Anton Halder, Muhlhausen Schwenningen, and Erwin Buhl, Frittlingen, both of Germany, assignors to J. Hengstler K.G. Aldingen Kreis, Tuttlingen, Germany

Filed June 26, 1970, Ser. No. 50,141  
Claims priority, application Germany, Aug. 8, 1969, P 19 40 337.3

Int. Cl. H03k 3/00  
U.S. Cl. 307-106

12 Claims



A pulse source is operable to deliver pulses having a current value within a predetermined range and a predetermined duration. A detecting circuit is connected to said pulse source and arranged to detect a condition in which one of said pulses has a current value outside said range or a duration which is shorter than said predetermined duration. The detecting circuit comprises means for adjusting said range and a relay, which is connected to a voltage source and arranged to give a predetermined response when said voltage source applies a predetermined voltage to said relay and said detecting circuit detects said condition.



3,629,605

# **APPARATUS FOR PROVIDING A STEEP VOLTAGE STEP ACROSS A LOAD IN ELECTRIC HIGH-VOLTAGE CIRCUIT**

Nils Robert Nilsson, Uppsala, Sweden, assignor to Instrument AB Scanditronix, Taby, Sweden

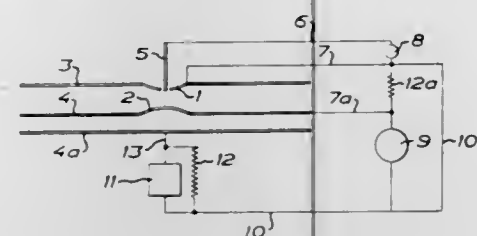
Filed June 20, 1969, Ser. No. 835,112

Claims priority, application Sweden, June 24, 1968, 8507/68

Int. Cl. H03k 3/00

U.S. Cl. 307-106

4 Claims



An apparatus for providing a steep voltage step across a load has two sets of electric conductors with electrodes forming spark gaps, said sets of conductors being connected to be charged in parallel by high-voltage source and discharged in series by spark gaps in order to impress a multiple of the tension of said high-voltage source upon the load and said sets of conductors being shaped and arranged to form around such of said spark gaps a transmission conducting zone in which the impedance continuously varies in a direction away from the spark gap and is at its minimum at the outer boundary of the zone in order to make the voltage step steep by impedance transformer action for the high frequencies generated at breakthrough in the spark gap.

3,629,606

# **MASTER AND REMOTE SWITCH CIRCUIT**

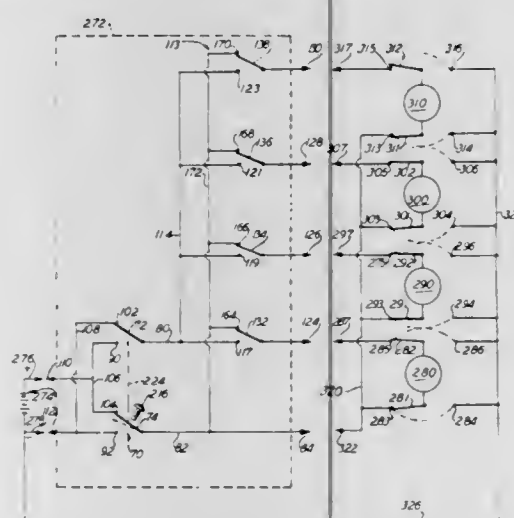
Charles J. Mathey, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Original application Sept. 30, 1966, Ser. No. 583,249, now Patent No. 3,400,232. Divided and this application Mar. 27, 1968, Ser. No. 739,574

Int. Cl. H02p 1/00

U.S. Cl. 307-114

3 Claims



This control circuit applies an electrical potential to either side of an electric motor upon actuation of one of several separately located switch assemblies. One switch assembly comprises two single-pole, double-throw switches having the poles connected to opposite sides of the motor. Each pole is individually movable to first and second terminals, and one side of a battery is connected to each first terminal. A second switch assembly is located in the circuitry connecting the other side of the battery to the second terminals and includes a switch mechanism for reversing the battery polarity at either of the second terminals individually.

# **THERMOSTAT WITH HEAT ANTICIPATION AND VOLTAGE REGULATION**

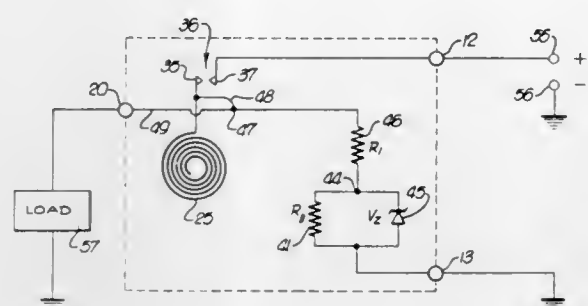
Gregory A. Maddox, Los Angeles, Calif., assignor to Cam-Stat Incorporated, Los Angeles, Calif.

Filed Sept. 4, 1970, Ser. No. 69,818

Int. Cl. H01h 37/00

U.S. Cl. 307-117

4 Claims



A thermostat for controlling a room heating system or the like and operable from a widely varying electric power source, such as the battery of a mobile home or trailer or camper. A thermostat with a thermally responsive bimetal member operating a switch as a function of temperature, a heating resistor positioned adjacent the bimetal member for heat anticipation, and a voltage regulating Zener diode in circuit with a current dropping resistor and the heating resistor to provide constant heating current and thereby constant anticipation while the voltage of the power source fluctuates over a wide range.

3,629,608

# **REMOTE CONTROL CIRCUITS**

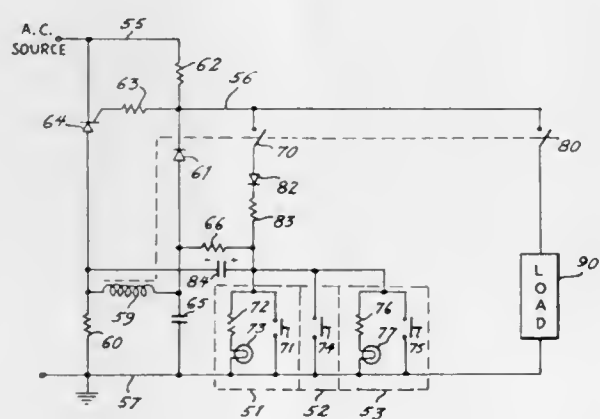
Joseph W. Trindle, Augustine Road, Box 577 RD 1, Sellersville, Pa.

Filed Dec. 10, 1969, Ser. No. 883,924

Int. Cl. H01h 47/00

U.S. Cl. 307-140

7 Claims



A remote control circuit for controlling the application of power to a load by latching and unlatching a relay. The relay is controlled by a capacitor which is coupled to the relay by means of a plurality of switches which may be placed at different locations. The condition of the capacitor and its location in the circuit are selected such that current through the relay is alternately increased and decreased sufficiently to cause latching and unlatching in response to successive momentary closings of any of the switches.

3,629,609

# **TTL INPUT ARRAY WITH BYPASS DIODE**

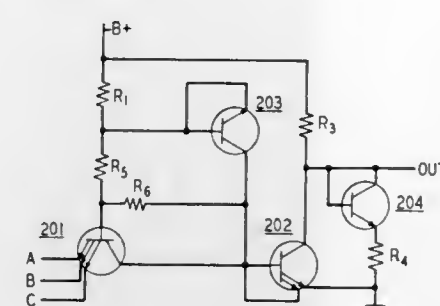
Richard Alan Pedersen, Allentown, Pa.; Ray Allen Reed, Aurora, and Milton Dean Underwood, Geneva, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 20, 1970, Ser. No. 12,997

Int. Cl. H03k 19/08, 19/36

U.S. Cl. 307-203

5 Claims



A transistor-transistor logic gate characterized by a low inverse alpha current and high noise margins includes a multiemitter input array and a unique biasing arrangement. This arrangement comprises a diode-connected transistor in combination with a pair of resistors connected across the base-collector junction of the multiemitter transistor for maintaining an optimum biasing voltage across the base-collector junction of the multiemitter transistor regardless of the value of signals applied at the emitters thereof.

3,629,610

# **ECL LOGIC CIRCUIT**

Wilhelm Wilhelm, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

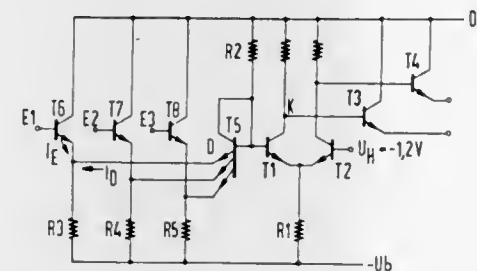
Filed Mar. 9, 1970, Ser. No. 17,731

Claims priority, application Germany, Apr. 14, 1969, P 19 18 873.9

Int. Cl. H03k 19/22

U.S. Cl. 307-218

3 Claims



An emitter-coupled logic circuit for realization of an AND linkage in positive logic, utilizing a differential amplifier in the form of emitter-coupled transistors, in which a polyemitter transistor forms the control input for the differential amplifier and has the emitter electrodes thereof connected over respective emitter-follower stages to the respective input signal sources.

3,629,611

# **ELECTRONIC PROCESSING APPARATUS**

Allen Leroy Limberg, Somerville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 29, 1969, Ser. No. 888,365

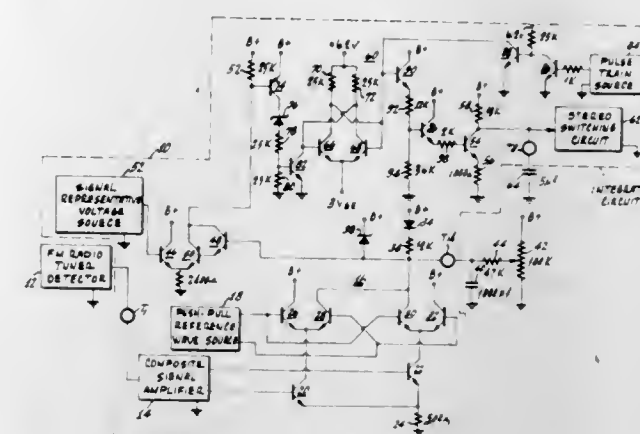
Int. Cl. H03k 5/20

U.S. Cl. 307-235

14 Claims

Average detection apparatus employing pulse-stretching techniques for increasing the energy content and compressing the dynamic pulse width range of a pulse train including randomly occurring, short duration, widely spaced pulses. The pulse train and a train of reference pulses are

supplied to a bistable storage element to set and reset the element, respectively, to first and second output states. An



average detector is coupled to the output of the storage element.

3,629,612

# **OPERATION OF FIELD-EFFECT TRANSISTOR CIRCUIT HAVING SUBSTANTIAL DISTRIBUTED CAPACITANCE**

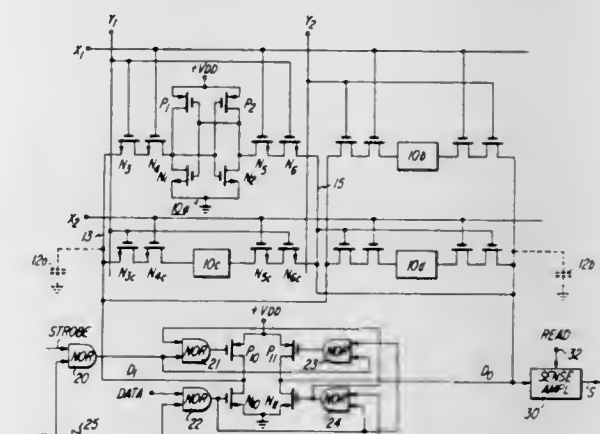
Donald Duane Harbert, Prosperity, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,342

Int. Cl. G11c 11/34

U.S. Cl. 307-238

11 Claims



The distributed capacitance at circuit nodes between interconnected field-effect transistors of a memory decoder is maintained charged to a fixed value during the major portion of the memory operating time. For example, the distributed capacitance may be connected to the charging source except for brief intervals during which data is being written into or read from the memory. Operation in this way makes it possible to increase the memory operating speed.

3,629,613

# **COMMUTATION DIRECTION CIRCUIT**

Edgar P. Feige, Chester, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 1, 1970, Ser. No. 77,298

Int. Cl. H03k 17/00

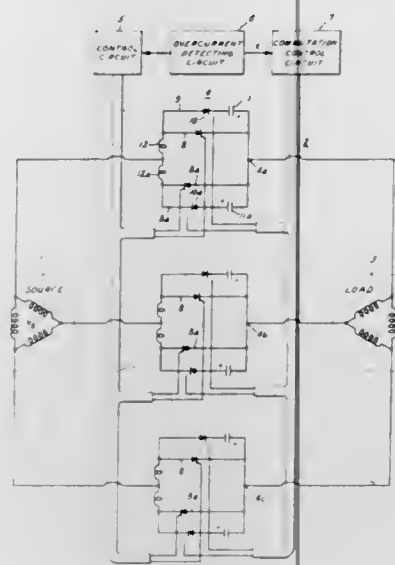
U.S. Cl. 307-252 Q

5 Claims

Disclosed is means for insuring proper commutation in an inverse parallel connected power thyristor switch. The switch includes selectively operable commutation means for interrupting a fault current in rapid response to a stop signal from an overcurrent detector, polarity detecting means which determine direction of current flow through the switch and



control means operative in response to the polarity detector means which enables the stop signal to actuate the commuta-



tion means associated with the fault current conducting thyristor. Further, means are provided to ensure that the stop signal once given quickly terminates.

3,629,614

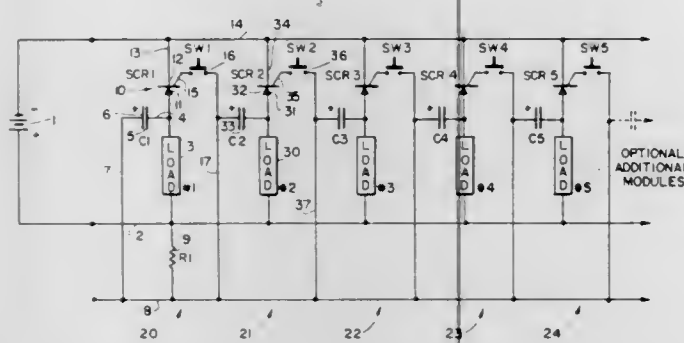
### PARALLEL CONNECTED CONTROLLED RECTIFIER SWITCHING CIRCUIT

Raymond W. Matthews, Jr., 28 Bernard Lane, Commack, N.Y.

Filed Jan. 22, 1969, Ser. No. 793,020  
Int. Cl. H03k 17/00

U.S. Cl. 307-252

3 Claims



A switching system is constructed using a plurality of modules. Each module controls the power to a separate load and includes a capacitor, a silicon controlled rectifier, and a switch. In each module the gate of each of the controlled rectifiers is connected, through a switch, to a common lead line which line is also connected to one side of the capacitor.

3,629,615

### CURRENT-LIMITING MEANS FOR DC PULSE-CONTROLLED CIRCUITS

David Gurwicz, Gateshead, England, assignor to Sevcon Engineering Limited

Filed June 11, 1968, Ser. No. 736,136  
Claims priority, application Great Britain, June 14, 1967, 27,413/67

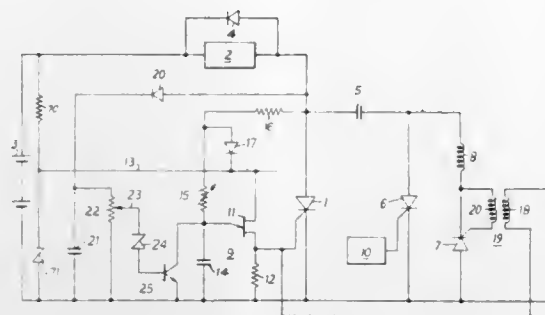
Int. Cl. H03k 17/00

U.S. Cl. 307-252 M

11 Claims

A static switching controller for repetitively connecting to, and disconnecting from, a load of a DC source, the circuit of the load of the source possessing inductance, comprises thyristor means, energizable to connect the load of the source, and a commutating capacitor for switching off the thyristor means, wherein there are provided sensing means which senses a voltage dependent upon the current passing

through the thyristor means on commutation thereof and circuit elements which, when said voltage sensed by the sensing means exceeds a predetermined value, are operative to effect



limitation of the main current flowing through the load by reducing the ratio of conducting to nonconducting time of the thyristor means.

3,629,616

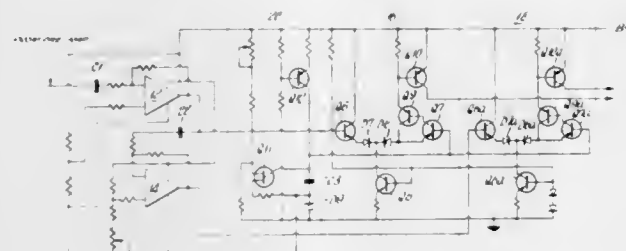
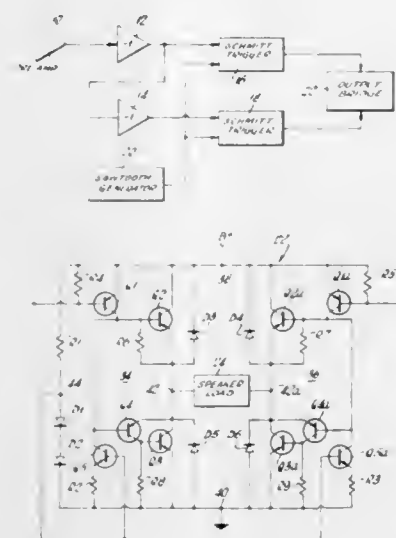
### HIGH-EFFICIENCY MODULATION CIRCUIT FOR SWITCHING-MODE AUDIO AMPLIFIER

Nell Edward Walker, Tampa, Fla., assignor to Electronic Communications, Inc., St. Petersburg, Fla.

Filed July 1, 1969, Ser. No. 838,176  
Int. Cl. H03k 17/00

U.S. Cl. 307-254

5 Claims



A circuit for efficiently coupling an amplified audio signal to a transducer is disclosed. In the form herein described, two 180° out-of-phase audio signals are respectively applied to first and second comparators which compare the audio signals with a reference signal to produce two pulse-width-modulated signals. The latter signals are applied to switching semiconductors connected in the two arms of a bridge which includes the transducer.

3,629,617

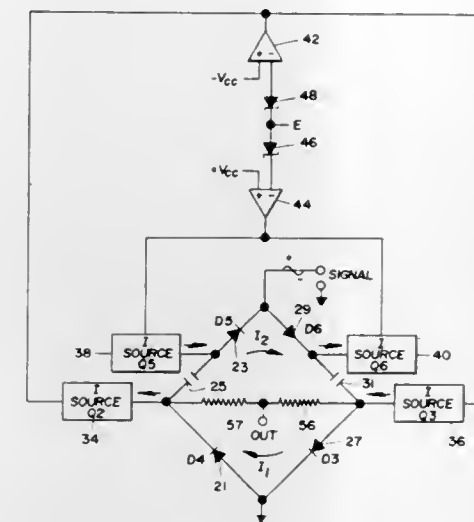
### VOLTAGE-CONTROLLED LOGARITHMIC ATTENUATOR

Gerald F. McGowan, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,264  
Int. Cl. H03k 17/74

U.S. Cl. 307-257

5 Claims



A voltage-controlled attenuation circuit providing an approximate linear relationship between a control voltage and the logarithm of the circuit attenuation ratio. The circuit includes parallel diode voltage dividers connected in parallel with a signal source and a source of control voltage which drives two pairs of current bias sources. The signal current adds to and subtracts from the bias current in each of the voltage dividers to yield a logarithmic voltage output across the summing resistors forming an output circuit across the pair of voltage dividers.

3,629,618

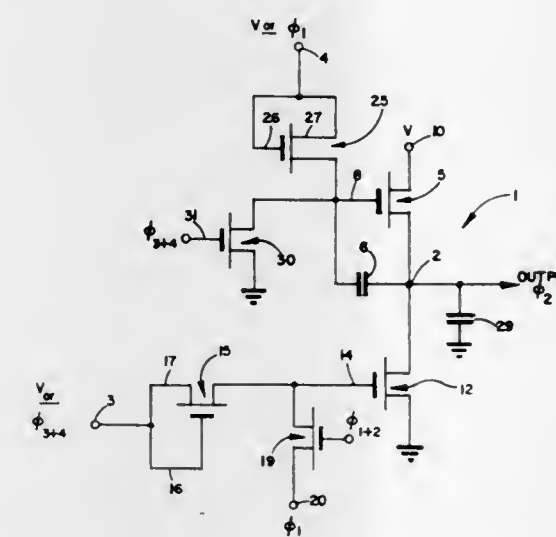
### FIELD EFFECT TRANSISTOR SINGLE-PHASE CLOCK SIGNAL GENERATOR

Ted Y. Fujimoto, Santa Ana, Calif., assignor to North American Rockwell Corporation

Filed Feb. 27, 1970, Ser. No. 67,459  
Int. Cl. H03k 17/60

U.S. Cl. 307-269

5 Claims



An output driver field effect transistor using a feedback capacitor for boosting the voltage on its gate electrode is controlled by single-phase and double-phase clock signals for producing a different single-phase clock signal output having the required voltage level. The voltage level at the output can be provided by a clock signal or by a fixed voltage source.

3,629,619

### DEVICE INCLUDING A COMPARISON STAGE IN THE FORM OF A BISTABLE TRIGGER

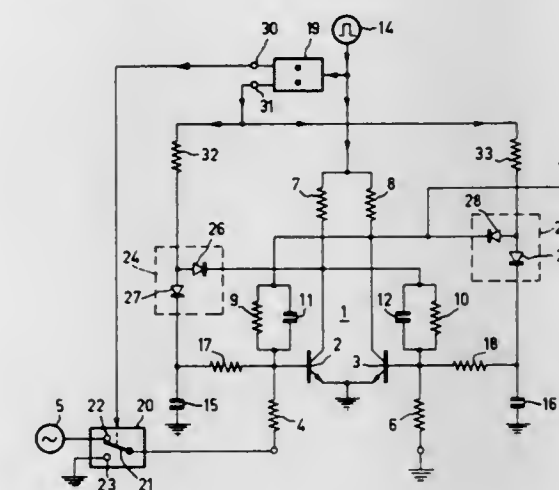
Johannes Anton Greefkes; Karel Riemens, both of Emmasingel, Eindhoven; Geerlof Jan Korevaar, and Van Dijk Leonardus Petrus Jozef, both of Hilversum, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,649  
Claims priority, application Netherlands, Sept. 27, 1968, 6813832

Int. Cl. H03k 5/20

U.S. Cl. 307-264

9 Claims



A device for furnishing a stable reference level voltage for an input signal subject to periodic sampling, comprising a bistable trigger, a pulse generator which causes the bistable trigger to conduct in one of its balanced states in accordance with the relative magnitude of the input signal source with respect to the reference level voltage, and a direct voltage stabilization circuit coupled to the output of the bistable trigger for providing feedback to adjust the reference level voltage to agree with a fixed reference voltage.

3,629,620

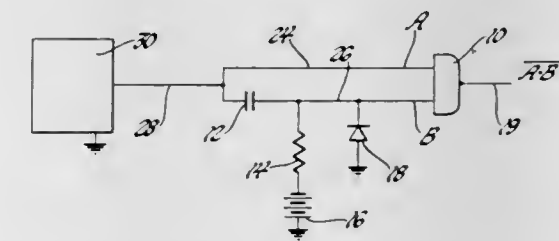
### SINGLE LOGIC GATE MONOSTABLE MULTIVIBRATOR

Thaddeus Schroeder, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1970, Ser. No. 36,324  
Int. Cl. H03k 3/26

U.S. Cl. 307-273

3 Claims



A system for providing a series of output pulses from a series of input pulses wherein the pulse widths of the output pulses are equal to or less than the pulse widths of the input pulses. In this system a logic gate forms part of a monostable multivibrator providing an output pulse of a predetermined pulse width when constant-amplitude input pulses of indeterminate pulse widths exceeding the predetermined pulse width of the output pulses are supplied from a pulse source. When shorter pulse width input pulses are applied to the multivibrator, the output pulses have pulse widths equal to the pulse widths of the input pulses. To effect the desired operation, an RC timing circuit is connected with one input of a two-input gate element. The pulse source is connected to this gate input through the timing circuit and it is directly conductive-



ly coupled with the other input to the logic gate. In this manner, the input signals necessary for the creation of an output pulse are present for a time interval determined by the parameters of the timing circuit or the duration of the input pulse. Hence, output pulses are provided which have a pulse width equal to or less than the pulse widths of the input pulses.

3,629,621

# BISTABLE MULTIVIBRATOR EMPLOYING A PAIR OF FOUR-LAYER DIODES

Luther L. Genuit, Scottsdale, Ariz., assignor to Honeywell Information Systems Inc.

Original application Mar. 9, 1967, Ser. No. 621,884, now Patent No. 3,526,823. Divided and this application Oct. 22, 1969, Ser. No. 868,563

Int. Cl. H03k 3/31

U.S. Cl. 307-287

3 Claims



A bistable multivibrator employs a single transistor, a capacitor, a pair of four-layer diodes and a pair of transistors. Trigger pulses applied to the base of the transistor caused the multivibrator to be switched each time a positive pulse is applied.

3,629,622

# SWITCHING REGULATOR HAVING A LOW DISSIPATION CURRENT OVERLOAD DETECTION DEVICE

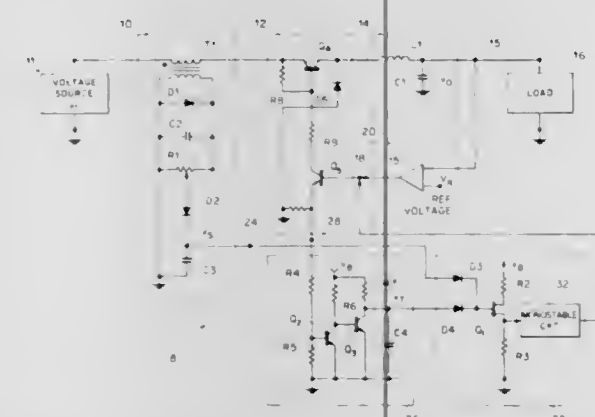
David Denenberg, Jr., Mendon, Mass., assignor to Sylvania Electric Products Inc.

Filed Apr. 3, 1970, Ser. No. 25,411

Int. Cl. G05f 1/40

U.S. Cl. 307-297

2 Claims



A switching regulator employs between a primary power source and a switching transistor a sensing circuit which senses the current being drawn through the switching transistor by a load. A storage filter circuit having a large series inductance is connected between the load and the switching transistor. A feedback network is connected between the output connection of the storage filter circuit and the switching transistor to activate the switching transistor when the output voltage falls below a predetermined value and to

inactivate the switching transistor when the output voltage exceeds a predetermined reference value. The sensing means which senses gradual overloads and a timing circuit which senses abrupt overloads are coupled to the switching transistor via a threshold circuit which compares the output signals from the sensing means and the timing circuits to a predetermined threshold level. When either of the output signals exceeds the threshold level, the switching transistor is opened interrupting the current from the primary power source.

3,629,623

# COMPOSITE SEMICONDUCTOR DEVICE AND SEMICONDUCTOR VOLTAGE REGULATOR DEVICE FOR VEHICLES

Michio Sakurai, Nagoya, and Yoshichi Kawashima, Gifu-shi, both of Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

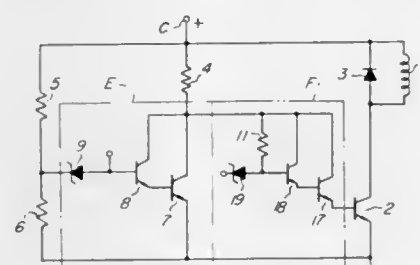
Filed Aug. 28, 1969, Ser. No. 853,708

Claims priority, application Japan, Nov. 1, 1968, 43/95694

Int. Cl. H03k 3/26

U.S. Cl. 307-303

5 Claims



A composite semiconductor element formed in a thick film comprising a plurality of circuit units and functioning as a multi-input switching circuit or a multi-input logic circuit, each unit being mainly composed of two transistors connected in Darlington connection with a common collector region. This composite semiconductor element is especially useful for voltage regulators for vehicles.

3,629,624

# ELECTROSTATIC MOTOR

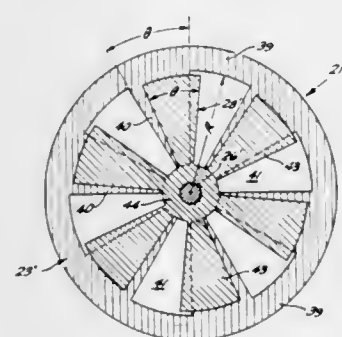
Juergen H. Staudte, P. O. Box 2866, Fullerton, Calif.

Filed Mar. 23, 1970, Ser. No. 21,598

Int. Cl. H02m 1/00

U.S. Cl. 310-6

19 Claims



An electrostatic motor adapted for use in a wristwatch and comprising a pair of relatively rotatable, capacitor plate members each having a large number of spaced preferably sector-shaped segment which may be fabricated microlithographically. For synchronous operation, a unipolar square wave voltage is applied directly across the capacitor plate members, the resultant electrostatic forces causing rotation of the motor. In alternative embodiments, sets of capacitor plate segments may be driven by signals appropriately phased to insure unidirectional motor rotation, or the segments may be connected so that only one plate member receives a drive

signal. For self-switching operation, the drive voltage is switched on or off in response to changes in effective capacitance as the motor rotates. The inventive device also may be used for extremely accurate measurement of rotational speed.

3,629,625

# PIEZOELECTRIC BENDER BILAYER WITH FLEXIBLE CORRUGATED CENTER VANE

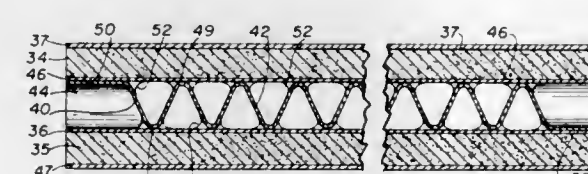
Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of application Ser. No. 773,914, Nov. 6, 1968, now abandoned. This application Sept. 17, 1970, Ser. No. 72,990

Int. Cl. H01v 7/00

U.S. Cl. 310-8.6

21 Claims



A transducer such as a bender bilayer piezoelectric device, or bimorph, in the form of a flat disc includes a pair of sheets, made for example of ceramic, separated by a center vane. The center vane is corrugated with the apices of the corrugations cemented to the sheets. The center vane has a center portion which acts as a stiff hinge permitting movement of the sheets relative to each other. The outer portion of the center vane includes corrugations at right angles to the corrugations of the center portion to prevent movement of the circumferences of the sheets with respect to each other.

3,629,626

# LOW-INERTIA, HIGH-TORQUE MOTORS

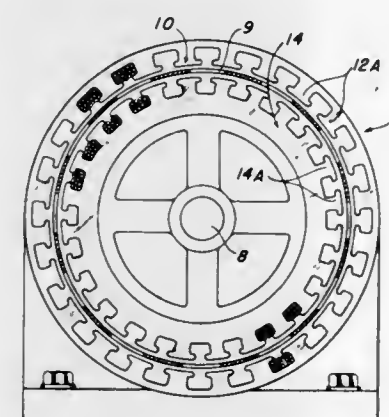
Frank R. Abbott, 3953 Wildwood, San Diego, Calif.

Filed Sept. 22, 1969, Ser. No. 859,628

Int. Cl. H02k 37/00

U.S. Cl. 310-49

3 Claims



A motor which comprises a rotor having a thin-walled non-magnetic cylinder in which is embedded parallel bars. The bars are thin, being limited by the thickness of the cylinder wall, and are wide enough, approximately, to span one stator pole face. Preferably two stator structures are employed, one inside and the other outside the rotor cylinder. One set of windings for raw AC, and another set of windings for pulsed or rectified AC of either polarity, are so distributed in the slots between the pole pieces as to generate a magnetic torque in either direction. The direction the armature steps is controlled by selecting the loop of positive or negative polarity obtained by rectifiers from the AC power source.

# COOLING ARRANGEMENT FOR A DYNAMOELECTRIC MACHINE

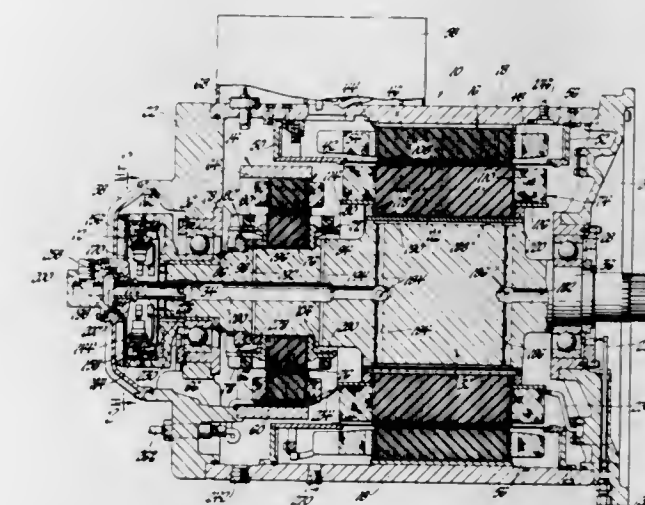
Gene L. Dafler, New Lebanon, and Wayne V. Fannin, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,556

Int. Cl. H02k 9/00

U.S. Cl. 310-54

3 Claims



A dynamoelectric machine cooling arrangement is disclosed for a brushless alternating current generator including an integral rectifier assembly. Rotating parts mounted on the machine shaft are cooled by annular pools of liquid coolant which are circulated around annular supporting portions of the rotating parts. A rectifier support wheel mounted on the shaft has an annular cooling chamber. Heat sinks for supporting radially oriented semiconductor diodes are mounted within the annular chamber and are cooled by an annular pool of coolant supplied by a coolant flow directed over the semiconductor diodes. Coil end turn supports mounted on the shaft include annular reservoirs for containing annular pools of coolant with a coolant flow being directed thereto form radial passages provided in the shaft.

3,629,628

# COOLING ARRANGEMENT FOR A SQUIRREL CAGE ROTOR ASSEMBLY

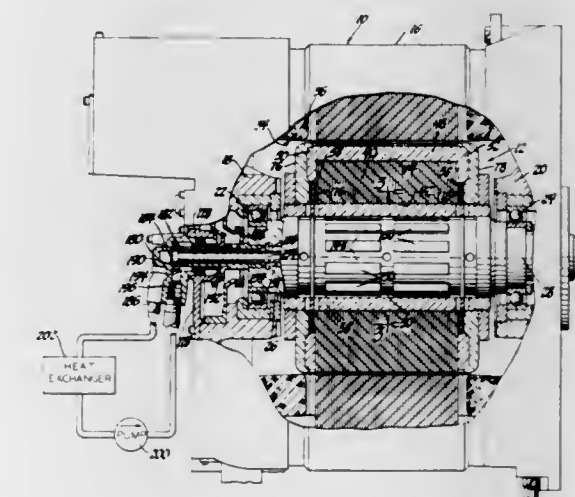
William E. Rank, Dayton, and Gene L. Dafler, New Lebanon, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,557

Int. Cl. H02k 9/00, 3/06

U.S. Cl. 310-54

4 Claims



In a preferred form, a cooling arrangement for a squirrel cage rotor assembly of an alternating current electric drive



motor includes a pair of rotor end plates clamped to the ends of a rotor core carrying a pair of conductive end rings extending from the ends of the rotor core. The rotor end plates form end ring cooling cavities circumscribing the inner peripheries of the end rings. The rotor core is carried by the motor shaft and a recessed area on the outer diameter of the shaft forms axial cooling channels in heat conducting relation with the inner bore of the rotor core. A pair of concentric axial shaft passages extend through a bore in the center of the shaft and communicate with radial shaft passages connected with the end ring cooling cavities and with the axial cooling channels. A hollow insert is mounted in the shaft bore for separating the pair of axial shaft passages. A liquid coolant is circulated from one end of the shaft through the end ring cooling cavities and the annular cooling chamber to transfer heat from the end ring and the rotor core.

3,629,629

## ELECTRICAL MACHINE HAVING SALIENT ROTOR POLES

Wolfgang Liebe, and Maria Susanne Wendt, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

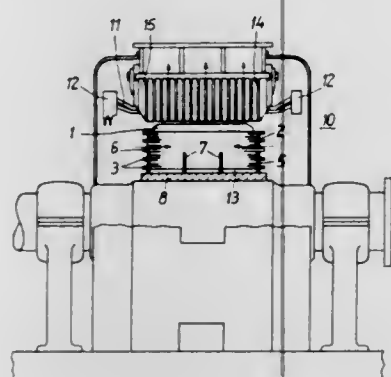
Filed Oct. 13, 1970, Ser. No. 80,328

Claims priority, application Germany, Oct. 17, 1969, P 19 53 110.3

Int. Cl. H02k 9/02

U.S. Cl. 310—59

13 Claims



An electrical machine has a salient pole rotor with respective pole windings and a stack of rotor laminations disposed radially with respect to the rotor. The machine is coolable by air passing parallel to the rotor axis through interpolar gaps defined by mutually adjacent rotor poles and continuing radially over the stator laminations. The improvement provides for a plurality of deflectors for partially blocking the respective interpolar gaps at the inlet side thereof. Each of the deflectors lies in a radial plane substantially perpendicular to the rotor axis and extends across the interpolar gap defined by a pair of next-adjacent rotor poles so as to lie against the respective pole windings corresponding to the latter; these deflectors block at least the respective radially inner portions of the openings.

3,629,630

## FULL WAVE RECTIFIER ASSEMBLIES

Herbert John Thomas Cotton, Hollywood, and Robert Hemmings, Halesowen, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 9, 1970, Ser. No. 1,644

Claims priority, application Great Britain, Jan. 13, 1969, 1,878/69

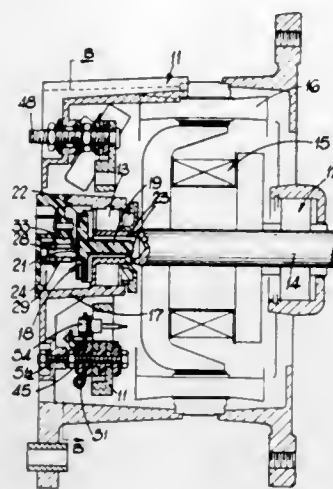
Int. Cl. H02k 11/00

U.S. Cl. 310—68

4 Claims

A full wave rectifier assembly for use in an alternator includes first and second curved terminal plates. The first terminal plate carries a set of diodes with their cathodes electrically connected to the first plate, and the second terminal

plate carries a second set of diodes with their anodes electrically connected to the second plate. The first and second plates are physically interconnected in insulated relationship



when the assembly is mounted in an alternator, and the first and second terminal plates are so shaped that when the first and second plates are interconnected then the diodes lie substantially in the same plane.

3,629,631

## FULL WAVE RECTIFIER ASSEMBLIES

Herbert John Thomas Cotton, "Lea Mount" 195 Alcester Road, Hollywood, Worcestershire, and Robert Hemmings, 49 Masters Lane, Halesowen, Worcestershire, both of England

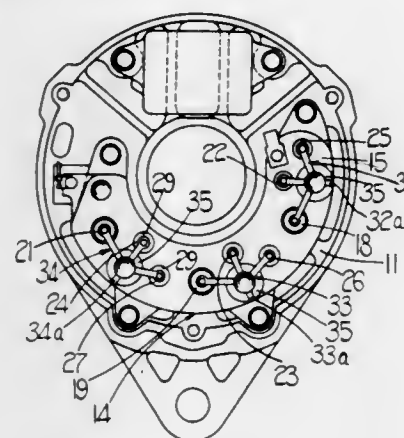
Filed Apr. 21, 1970, Ser. No. 30,563

Claims priority, application Great Britain, June 9, 1969, 29,033/69

Int. Cl. H02k 11/00

U.S. Cl. 310—68 D

5 Claims



A full wave rectifier assembly includes a first plate carrying first, second, and third semiconductor diodes with their terminals of one polarity electrically connected to the first plate, and a second plate positioned parallel to the first plate and in heat exchange relationship therewith. The second plate is spaced from the first plate by a thin layer of insulating material, and the other terminals of the first, second and third diodes of opposite polarity to the one polarity extend through holes in the second plate. Fourth, fifth and sixth semiconductor diodes are carried by the second plate with their terminals of the opposite polarity electrically connected to the second plate. The assembly further includes first, second, and third phase connectors, the first phase connector being connected to the other terminals of the first and fourth diodes, the second phase connector being connected to the other terminals of the second and fifth diodes and the third phase connector being connected to the other terminals of the third and sixth diodes, so that in use when the phases of a three-phase AC supply are connected to the phase connectors respectively DC will flow in a load connected across the first and second plates.

3,629,632

## FLYWHEEL ELECTRICAL GENERATOR

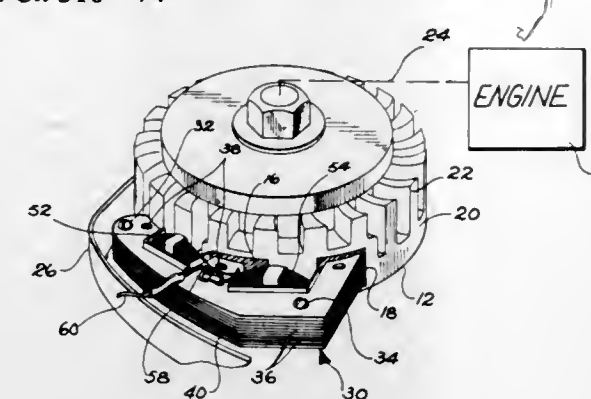
Richard H. Loupe, Seal Beach, Calif., assignor to Altralite, Inc., Long Beach, Calif.

Filed July 30, 1970, Ser. No. 59,503

Int. Cl. H02k 7/02

U.S. Cl. 310—74

5 Claims



A generator for use with a small rotary engine incorporating permanent magnets in its flywheel, the generator being mounted exteriorly of the flywheel and within the flywheel housing, if any is used. The magnets move relative to a stator having a "double-E" configuration with two poles, each of which carry a pair of windings. The windings on each pole are connected in electrical opposition through diodes to supply the desired electrical current. The stator structure is laminated and has preferred physical dimensions.

3,629,633

## CONTROLLED-VELOCITY DRIVE CONTROL

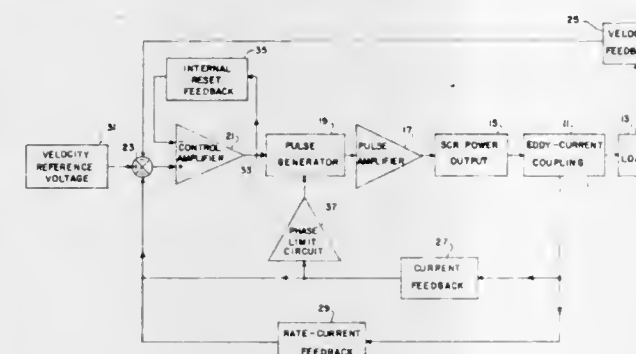
Gerald F. O'Callaghan, Kenosha, Wis., assignor to Eaton Yale & Towne Inc., Cleveland, Ohio

Filed Oct. 26, 1970, Ser. No. 83,826

Int. Cl. H02k 49/04

U.S. Cl. 310—94

20 Claims



A control for a controlled-velocity drive having a driven member and an electromagnetic coupling having a winding the energization of which controls the angular velocity of the driven member. A triggerable semiconductor current switching device is adapted to be connected between a source of AC power and the winding for controlling the energization thereof. Three feedback circuits provide degenerative feedback signals respectively varying according to the driven member angular velocity, the current in the winding and the rate of change of the current. Means is provided for producing a reference voltage proportional to a preselected angular velocity of the driven member. Circuitry is responsive to the reference voltage and to the three feedback signals for causing triggering of the current switching device at varying phase angles of the AC power to drive the driven member substantially at said preselected angular velocity. This circuitry is also operational for causing triggering of the switching device at a substantially constant phase angle of the AC power to cause conduction of the switching device when the AC power voltage and the voltage across the wind-

ing are inverted so that current in the winding decays rapidly when energization thereof is rapidly reduced. Various optional control functions are also provided which may be connected by jumper leads.

3,629,634

## CONDUIT ARRANGEMENT FOR A LIQUID-COOLED DYNAMOELECTRIC MACHINE

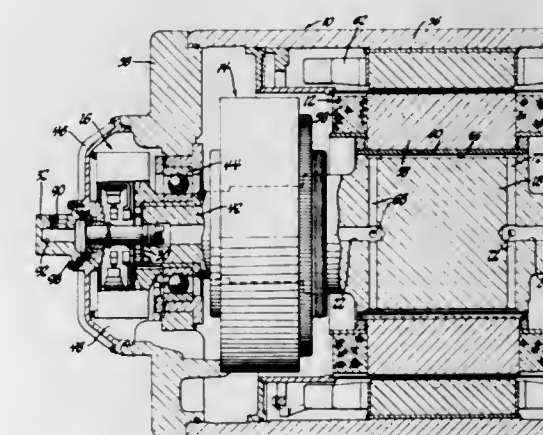
Gene L. Dafler, New Lebanon, and Wayne V. Fannin, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,559

Int. Cl. H02k 9/00

U.S. Cl. 310—54

3 Claims



A conduit arrangement is described for conducting a liquid coolant between stationary and rotating parts of a liquid-cooled dynamoelectric machine. One conduit end is rotatably mounted in a self-aligning bearing supported in the stationary part and the other end is mounted for universal movement within the passage opening of the rotating part. The conduit is rotated by a pin extending into the passage of the rotating part.

3,629,635

## WHEEL-SPEED SENSOR FOR AN ADAPTIVE BRAKING SYSTEM

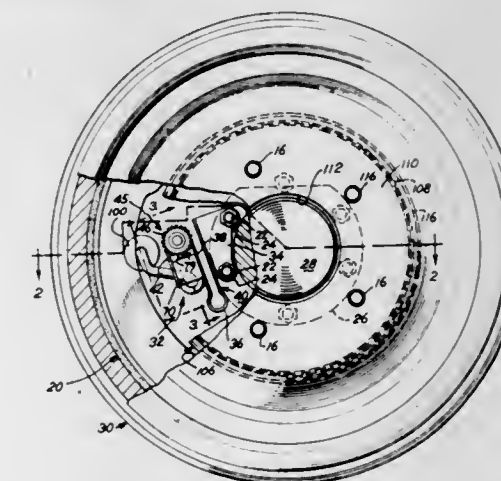
Edward M. Pauwels; Irving M. Ritsema, and Ward C. Suttle, all of South Bend, Ind., assignors to The Bendix Corporation

Filed June 1, 1970, Ser. No. 42,402

Int. Cl. H02k 17/42

U.S. Cl. 310—168

7 Claims



A wheel-speed sensor utilizing a magnetic pickup and adapted for use on an automotive vehicle. A cup-shaped drive wheel has an elastomeric friction ring secured to the inside surface of the rim of the cup. The friction ring drives a driven wheel and tone wheel element of an assembly includ-



ing a pickup whose components are assembled on a unitary plastic molding which also serves as the bobbin for the coil. The mounting element of the driven wheel and pickup is a unitary stamping attached to a nonrotatable portion of the vehicle.

3,629,636

# ALTERNATORS UTILIZING TWO-PHASE T-CONNECTED WINDINGS TO GET THREE-PHASE OUTPUT

William Frank Hill, 2 Oakridge Close, Stafford, Staffordshire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

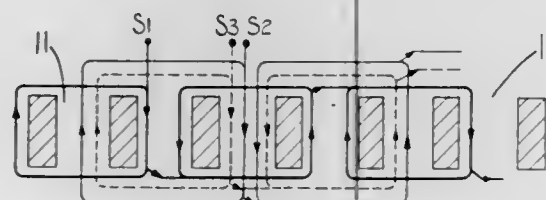
Filed Mar. 25, 1970, Ser. No. 22,510

Claims priority, application Great Britain, Apr. 2, 1969, 17,165/69

Int. Cl. H02k 3/28

U.S. Cl. 310-184

5 Claims



An alternator including a stator structure and a rotor structure the latter defining poles and the stator structure having stator slots equal to twice the number of poles there being disposed in the stator slots a two-phase winding which comprises a pair of windings which are disposed in the slots so that the voltages induced between the ends of the windings are in quadrature. The one winding has more turns than the other winding so that a three-phase output voltage is obtained at the ends of the windings.

3,629,637

# INDICATOR TUBE WITH LEADS EXTENDING THROUGH MESA TO SUPPORT CATHODES

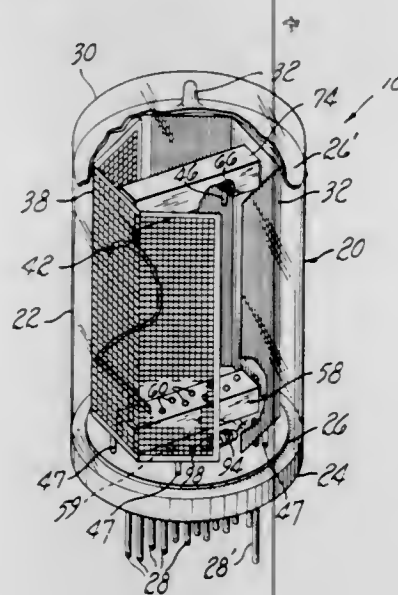
James Thomas Boyer, Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of application Ser. No. 631,109, Mar. 15, 1967, now abandoned. This application Apr. 1, 1970, Ser. No. 22,131

Int. Cl. H01j 61/66, 17/48

U.S. Cl. 313-109.5

12 Claims



This application discloses an indicator tube which includes, in a gas-filled envelope, a stack of cathodes having upper and lower leads which are sealed in unitary bodies of insulating material, and an anode assembly which includes a back plate behind the cathodes and an optical screen in front of the

cathodes. The upper body of insulating material which secures the upper cathode leads is rigidly secured between the anode back plate and screen.

Also disclosed is a method of making an indicator tube electrode assembly which comprises stacking cathode electrodes in a mold upside down, the cathodes having upper and lower leads. The upper leads, which face down, are positioned in a container filled with powdered glass and placed at the bottom of the mold. The lower leads, which face up, are threaded on a preformed glass disk which ultimately forms the base of the tube envelope. The entire assembly is heated to cause the glass powder and the glass disk to melt and form a strong, rigid mount for the cathodes through their upper and lower leads, when the assembly is allowed to cool.

In a modification of the tube structure, which is particularly adapted for use with the above-described assembly method, the lower glass disk is replaced by powdered glass held in a suitable container in which it is melted and then solidified to form the stem of the tube.

3,629,638

# PLASMA DISPLAY DEVICE WITH INTERNAL-EXTERNAL ELECTRODE STRUCTURE

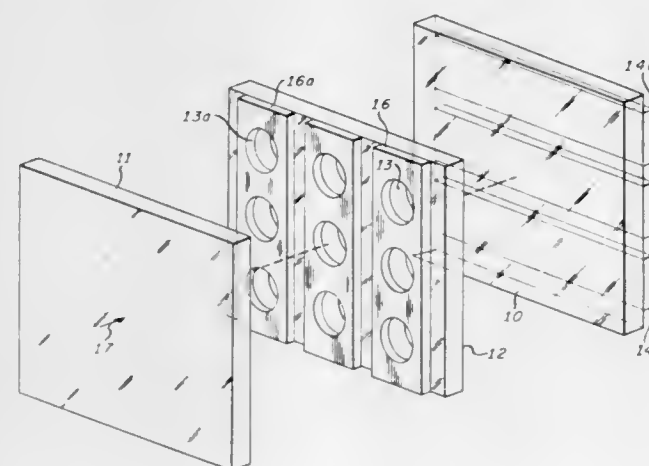
Harry Veron, Framingham, and Richard Allan Carey, Sr., Marlboro, both of Mass., assignors to Sperry Rand Corporation

Filed Jan. 15, 1970, Ser. No. 3,126

Int. Cl. H01j 17/48

U.S. Cl. 313-109.5

4 Claims



A gas discharge panel display device comprising a planar dielectric member having a plurality of gas cell forming holes arrayed therein and disposed intermediate a pair of exterior planar dielectric members. An electrode configuration for firing the gas cells includes an external electrode structure positioned on the outer surface of one of the exterior members operating in conjunction with an internal electrode arrangement positioned on the remote surface of the intermediate member, holes being formed in the internal electrode structure in overlaying relation with and conforming to the shape of the gas cells.

3,629,639

# MEASURING INSTRUMENT

Bill M. McClure, Pine Bluff; John J. Berk, Little Rock, both of Ark., and George R. Savage, Kansas City, Mo., assignors to The United States of America as represented by the Secretary of the Army

Filed July 15, 1969, Ser. No. 841,716

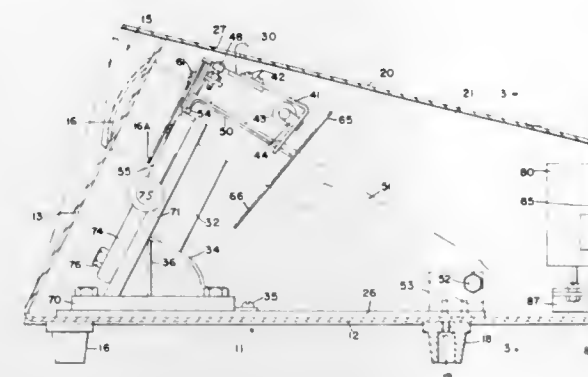
Int. Cl. G01b 5/00

U.S. Cl. 33-143

9 Claims

A gel-diffusion precipitate band reader used to measure the length of precipitate zones or bands in which a gel tube is retained in a slotted holder by a spring clip in alignment with a viewing lens, a movable hairline structure operated by a micrometer, and an adjustable structure containing a pair of

fixed hairlines. A viewing lens is located in front of the arrangement and rearwardly of the holder a fluorescent tube is



mounted adjacent a backdrop carried by the movable hair-line structure.

3,629,640

# LAMP BASE

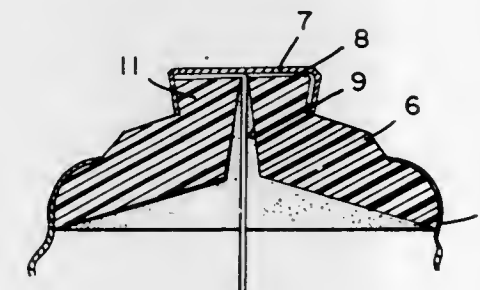
Emery Audesse, Salem, and Robert Wilbur Cookson, Reading, both of Mass., assignors to Sylvania Electric Products Inc.

Filed Jan. 2, 1970, Ser. No. 371

Int. Cl. H01j 5/50

U.S. Cl. 313-318

4 Claims



An electric lamp having a contact base, and a contact base for said lamp, the base having a metal shell closed at one end by a glass plug with a hole at its apex through which a lead-in wire can pass, a metal cylinder being fitted to the plug over the lead-in wire to be the center contact.

3,629,641

# LOW-PRESSURE MERCURY VAPOR DISCHARGE LAMP CONTAINING AMALGAM

Dieter Hofmann, Munich, Bernhard Kuhl, Geiseltasteig, and Erhard Rasch, Ottobrunn, all of Germany, assignors to Patent-Freihand-Gesellschaft für elektrische Glühlampen mbH

Filed July 16, 1970, Ser. No. 55,396

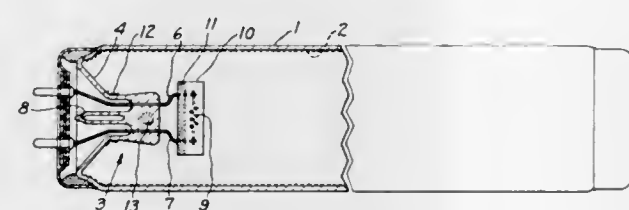
Claims priority, application Germany, July 25, 1969, P 19

37 938.5

Int. Cl. H01j 61/20

U.S. Cl. 313-229

7 Claims



A low-pressure mercury vapor fluorescent lamp containing amalgams at three different locations in order to extend the temperature range of maximum light output. The main amalgam is indium with a weight ratio of indium to mercury from

12:1 to 3:1 located at places within the lamp having temperatures from 80° to 110° C. The two additional or runup amalgams are located at places within the lamp envelope which are much hotter than the main amalgam and which attain their operating temperature successively and earlier than the main amalgam, for instance on the electrode cap and on the stem press.

3,629,642

# INSULATED FILAMENT SUPPORTS

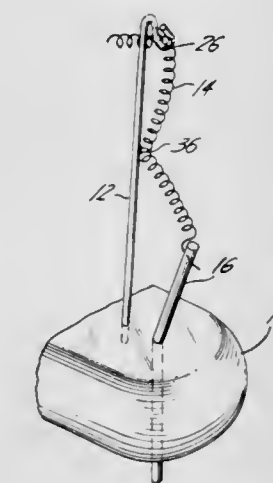
Nickolas P. Demas, Cranford, N.J., assignor to Wagner Electric Corporation

Filed Jan. 29, 1970, Ser. No. 6,772

Int. Cl. H01j 1/90

U.S. Cl. 313-277

5 Claims



A new type of support for filaments in incandescent lamps and vacuum tubes is disclosed. The support is nonconductive, able to resist high temperatures, rigid, malleable, and it eliminates variation in rating and stability of rating in lamps and tubes caused by filament contact with the support.

3,629,643

# DEVICE FOR PRODUCING BURSTS OF CHARGED PARTICLES

Michel Roche, Quetigny, France, assignor to Commissariat A L'Energie Atomique, Paris, France

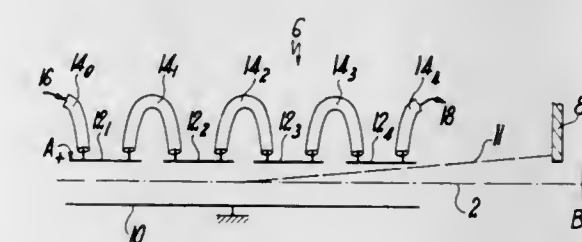
Filed Oct. 23, 1968, Ser. No. 769,857

Claims priority, application France, Oct. 31, 1967, 126662

Int. Cl. H01j 29/76

U.S. Cl. 315-18

4 Claims



Device for producing bursts of charged particles issuing from an accelerator of the type in which the beam is alternatively directed onto a target, said active target, and onto a nonreactive target in a shifted position with respect to the active target, under control of a beam deflecting device that comprises essentially two members symmetrically disposed with respect to an axis: a plate parallel to said axis and brought to a reference potential and a plurality of identical small plates parallel to said axis, regularly distributed along it and brought to a bias potential, and sections of coaxial cable connecting the adjoining small plates whose length is so chosen that the pulses propagating through the second member has the same propagating velocity as the beam.



3,629,644

**HIGH-VOLTAGE REGULATION AND PROTECTION CIRCUIT**

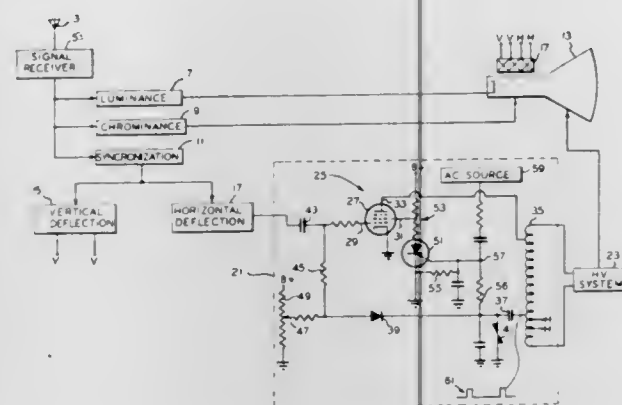
George Cleveland Waybright, Batavia, N.Y., assignor to Sylvania Electric Products Inc.

Filed Jan. 15, 1970, Ser. No. 3,171

Int. Cl. H01j 29/80

U.S. Cl. 315—22

9 Claims



High-voltage regulation and protection circuitry includes a current-generating means in the form of an electron device having an output electrode coupled to a load circuit, a feedback bias means coupling a potential from the load circuit to a first control electrode of the electron device, and a switching means coupled to the junction of the feedback bias means and an AC source and to the second control electrode of the electron device whereby the feedback bias means regulates the load circuit potential which controls the high voltage and the switching means responds to a component failure of the feedback bias means to reduce the potential of the load circuit and the high voltage.

3,629,645

**TELEVISION RECEIVER PROTECTIVE SYSTEM FOR PREVENTING SCREEN BURN**

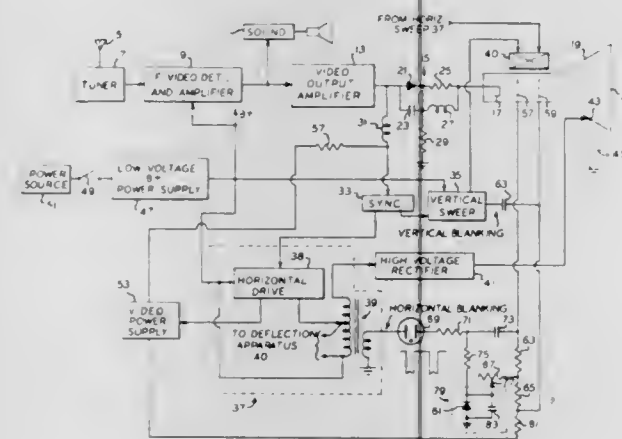
Thomas Lester Taylor, Batavia, N.Y., assignor to Sylvania Electric Products Inc.

Filed Aug. 19, 1969, Ser. No. 851,191

Int. Cl. H01j 29/52

U.S. Cl. 315—20

9 Claims



In a television receiver in which a television signal source is DC coupled to the cathode of a picture tube and circuit means including a brightness control is connected between the control grid of the picture tube and a power supply, a protective system for preventing screen burn comprising a diode with parallel capacitor connected between the variable tap of the brightness control and ground, the diode being rendered conducting in response to applied horizontal blanking pulses. Upon cessation of blanking pulses from a threshold controlled source, the brightness control tap is disconnected from ground, thereby causing the control grid

voltage to increase and thus increase the beam current to discharge the high voltage stored on the picture tube before scan collapse.

3,629,646

**GRID STRUCTURE FOR CATHODE-RAY TUBE**

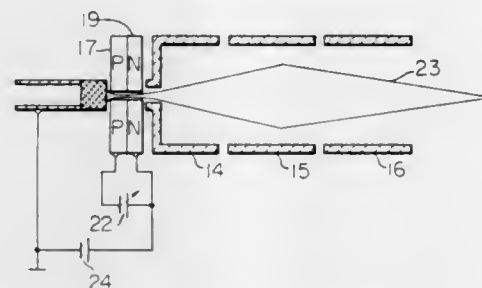
Tomoyasu Nakano; Ikuo Matsuda, and Jun Nishida, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Oct. 28, 1969, Ser. No. 871,904

Claims priority, application Japan, Oct. 29, 1968, Dec. 11, 1968, 43/80183; 43/92494

U.S. Cl. 315—31

19 Claims



A grid structure or "electron optical system" formed integrally and used in a small-sized electron gun for focusing an electron beam generated in a cathode-ray tube, which grid structure comprises at least two disc-shaped apertured electrodes positioned closely adjacent to the cathode in parallel to each other and made of conductive or semiconductive materials such as metal or P-type and N-type semiconductive materials, respectively, and a disc-shaped barrier layer interposed fixedly between the two electrodes for electrically isolating the same from each other, whereby the electron beam passing through the aligned apertures is focused by the action of the potential difference established between the two electrodes.

3,629,647

**VOLTAGE DOUBLER STARTING CIRCUIT FOR DISCHARGE LAMP**

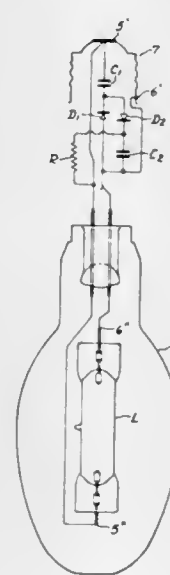
William H. Lake, Novelty, Ohio, assignor to General Electric Company

Filed July 15, 1970, Ser. No. 54,879

Int. Cl. H01j 7/44; H05b 31/30, 41/231

U.S. Cl. 315—59

4 Claims



A voltage doubler starting circuit converting the AC voltage impressed on the lamp to a DC voltage of twice the peak AC amplitude which is fed back to the lamp terminals. The circuit includes two diodes and two capacitors arranged in a

3,629,650

**METHOD AND APPARATUS FOR OPERATING A GAS DISCHARGE TUBE**

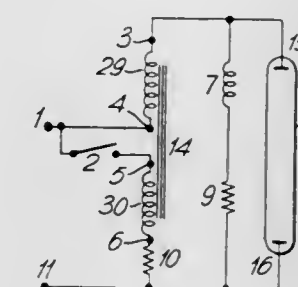
Michael Alfred Patrick, Brighton, and Derek John Brittain, Goring-by-Sea, both of England, assignors to Patrick and Drew Limited, Sussex, England

Filed Nov. 21, 1968, Ser. No. 777,776

Int. Cl. H05b 41/00, 41/10, 41/16

U.S. Cl. 315—177

19 Claims



Circuits for starting and operating a gas discharge tube without the need to preheat filamentary electrodes prior to starting, including an autotransformer to provide sufficient starting potential to the discharge tube, and switch means for inhibiting transformer action following arc discharge within said tube whereupon part of the autotransformer winding performs the function of a series connected inductive ballast with said tube. Said autotransformer having a predetermined leakage inductance coacting with stray capacitance in circuit therewith to provide a high-frequency component to said starting potential for lowering said requisite starting potential. Said switch means comprising either an electromagnetic relay or magnetic shunt in the autotransformer core. There is also provision for dimming the light output of said tube by limiting its discharge current.

3,629,651

**PULSE-GENERATING APPARATUS**

Irving E. Linkroom, Hancock, N.Y., assignor to The Bendix Corporation

Filed Sept. 25, 1969, Ser. No. 861,120

Int. Cl. H05b 37/00

U.S. Cl. 315—227

13 Claims



voltage doubling configuration along with a bleeder resistor, and may, if desired, be built into the lamp base or into the lamp itself in the case of a double envelope lamp. The circuit is used with a ballast of the magnetic type having a series secondary power factor correcting capacitor.

3,629,648

**TRANSISTORIZED FLUORESCENT TUBE OPERATING CIRCUIT**

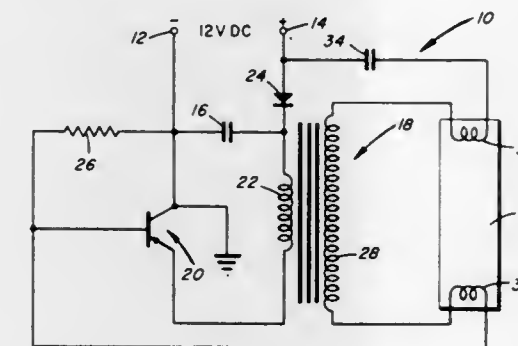
Brent W. Brown, 175 S. Main, Providence, Utah, and Edward B. Rich, 2568 Swaner Place, Ogden, Utah

Filed July 31, 1969, Ser. No. 846,505

Int. Cl. H03k 3/28; H05b 41/232, 41/29

U.S. Cl. 315—98

9 Claims



A circuit for operating fluorescent tubes ranging from 8 to 40 watts, the circuit being supplied by either direct or alternating current. The circuit components are arranged so that input current flows through a series path defined by the primary winding of a transformer and the emitter and collector junctions of a transistor. The secondary winding of the transformer serves to provide energy for lighting the fluorescent tube and further serves to provide a feedback current for biasing the transistor.

3,629,649

**THRESHOLD DETECTOR FOR INCIDENT RADIATION**

Giorgio Del Zotto, Milan, Italy, assignor to Ates Componenti Elettronici S.p.A., Milan, Italy

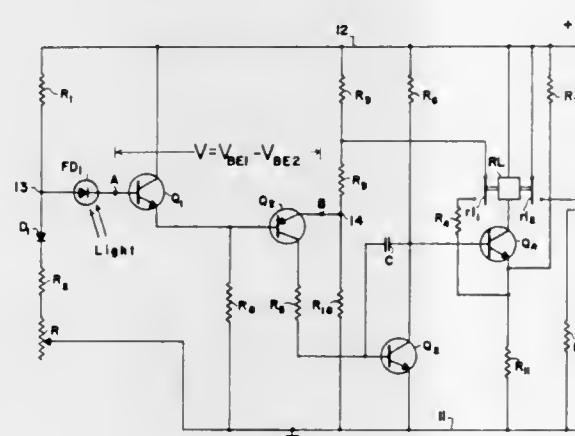
Filed Nov. 24, 1969, Ser. No. 879,461

Claims priority, application Italy, Nov. 26, 1968, 24164A

Int. Cl. H01j 39/12

U.S. Cl. 315—159

10 Claims



A resistance bridge, having one diagonal connected across a source of direct current, includes in its other diagonal a photodiode in series with the base/emitter circuits of two transistors of opposite conductivity types. One of these transistors controls a further two-transistor stage for operating a relay when the photodiode is illuminated; an armature of that relay exerts a latching or toggle effect by modifying the bias of two of the transistors to vary the sensitivity of the detector in a sense tending to maintain the relay in either its operated or its unoperated state.

A condenser discharge-type electrical pulse-generating circuit, such as for a combustion engine ignition system, wherein two storage capacitors are charged in parallel and partially discharged in series through two control gaps and the primary winding of a high-frequency transformer, the secondary winding of which is connected in series with a high-voltage igniter gap and one of the condensers through one of said control gaps.



3,629,652

## IGNITION SYSTEMS

William Henry Maycock, Coventry, and Henry James Chafer, Rugby, both of England, assignors to Rotax Limited, London, England

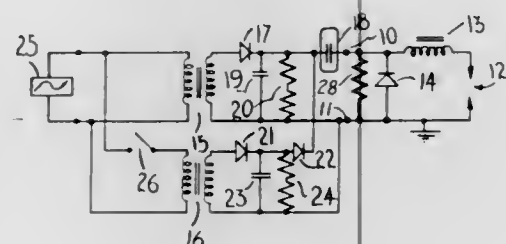
Filed May 27, 1969, Ser. No. 828,225

Claims priority, application Great Britain, June 10, 1968, 27,426/68

Int. Cl. H01t 15/02

U.S. Cl. 315—239

3 Claims



The invention relates to an ignition system for supplying energy to a spark device. The system includes a first capacitor which can be charged from a source of DC supply, a device which breaks down when the voltage across the capacitor attains a predetermined value thereby to allow the capacitor to discharge through the spark device and a further capacitor which is connected in parallel with the capacitor and which can be charged from a separate source of supply when a higher energy is required, there being provided a unidirectional current flow device in series with the two capacitors.

3,629,653

## CROSSED GRID EL DISPLAY DRIVER TECHNIQUE

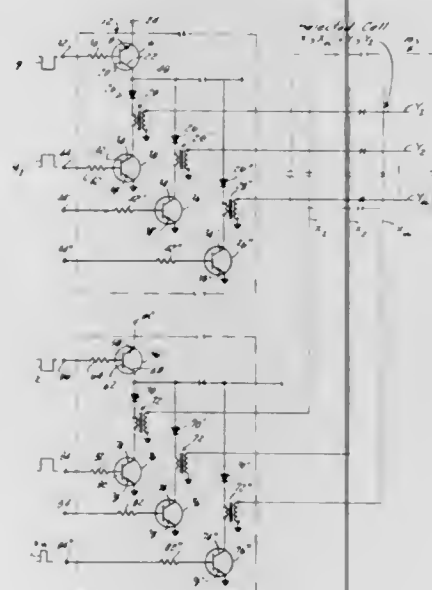
Munt Irwin, Elizabeth, N.J., assignor to The United States of America

Filed Mar. 23, 1970, Ser. No. 21,610

Int. Cl. H05b 37/00

U.S. Cl. 315—169

3 Claims



Variable brightness, crossed grid, electroluminescent panel driving circuitry and logic means are described wherein the brightness of a selected cell is controlled by the length of driver circuit input pulse. The length of the input pulse is controlled by logic means.

3,629,654

## REMOVABLE ELECTRODE DISPLAY DEVICE

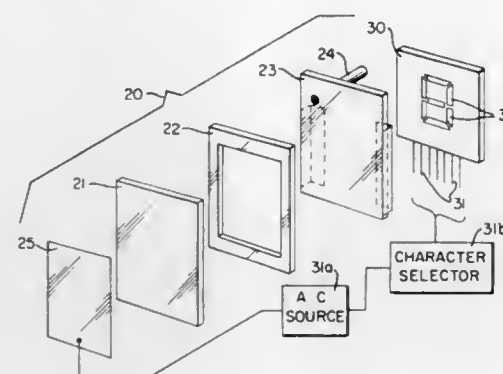
John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 28, 1969, Ser. No. 880,676

Int. Cl. H05b 37/00

U.S. Cl. 315—246

5 Claims



An electroluminescent display device formed by superimposing a first substrate upon a second substrate, forming a cell between the surfaces of the two substrates. A common transparent electrode is deposited on the outside surface of one of the two substrates overlying the entire cell formed by the superimposed substrates. A conductive pattern electrode, having a desired configuration, is placed in intimate contact (e.g., pressure contact) against the outside surface of the other substrate. Information is displayed by applying an alternating voltage of sufficient magnitude and frequency between the two electrodes, resulting in the ignition of an excitable gas contained within the formed cell, the illumination produced corresponding to the configuration of the conductive pattern electrode. The conductive pattern electrode is removable, since it is retained against the outside surface of the cell only by a pressure contact; therefore, the type of information to be displayed can be easily varied simply by removing the conductive pattern electrode and placing another in its place. The various designs of removable electrode patterns which can be employed are endless and can encompass Arabic numerals, alphabetic characters, and other designs.

3,629,655

## LUMINOUS DISPLAY DEVICE

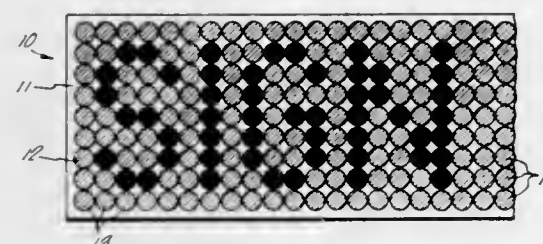
Dean W. Fullmer, 3981 South 3210 East, Salt Lake City, Utah

Filed Feb. 9, 1970, Ser. No. 9,881

Int. Cl. H05b 41/00

U.S. Cl. 315—313

7 Claims



A display device adapted to be illuminated is disclosed herein having a reflective back member for carrying a spirally configured tube containing a gas such as Neon. Electrodes communicate the gas tube with a suitable power source for ignition purposes so that the ignited gas will produce a luminous glow. The devices are arranged in rows and columns and electrically couple together so as to selectively ignite a selected plurality of devices whereby a meaningful pattern is displayed, such as a letter or number, for example.

3,629,656

## METHOD AND APPARATUS FOR NEUTRALIZING ELECTROSTATICALLY CHARGED FLUIDS

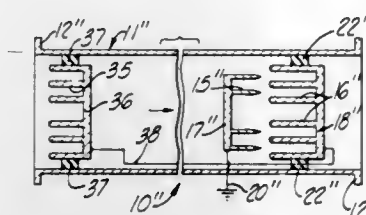
Frank J. Willig, 10640 Somma Way, Los Angeles, Calif.

Filed Sept. 21, 1970, Ser. No. 73,876

Int. Cl. H05f 3/00

U.S. Cl. 317—2 F

32 Claims



A method and apparatus for neutralizing electrostatically charged flammable fluids typically occurring during handling, agitation, filtration or turbulent conditions. The method involves positioning two sets of conductive members in series with the path of fluid flow therepast and locating the sharpened edges of one set closely spaced from the rounded blunt edges of the other set and electrically isolated therefrom. The sharp-edged members function to release electric charges into the fluid to neutralize it under the influence of an electrostatic field produced by an electrical potential between these sharp edges and the rounded blunt edges of the second set of conductive members. One set of conductive members is typically grounded and the other set operates at a potential closely related to the unbalanced charge present in the fluid being neutralized. The members of both sets are aligned generally with the path of flow therepast and are closely spaced from one another transversely of this path.

3,629,657

## DC ASSISTED POWER SUPPLY

Eric Paddison, and Michael Charles Stephen Simpson, both of Stafford, England, assignors to The English Electric Company Limited, London, England

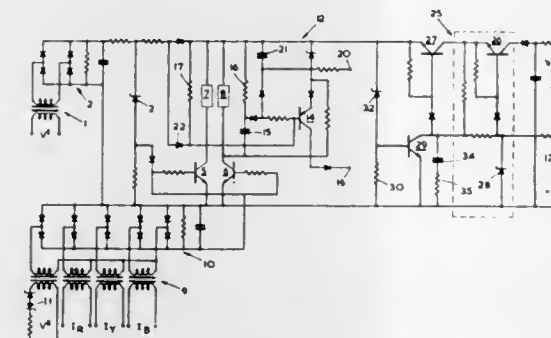
Filed Feb. 18, 1970, Ser. No. 12,330

Claims priority, application Great Britain, Feb. 18, 1969, 8,642/69

Int. Cl. H01h 47/18; H02j 7/34

U.S. Cl. 317—33 R

6 Claims



This invention relates to monitoring circuits for monitoring power transmission systems, and is concerned with providing DC energization for them. A protection scheme for a transmission system normally has a "station" battery of high voltage and capacity for operating the main circuit breakers. The voltage on this may change violently, e.g. by 50 percent, and it must also be protected from even quite small continuous discharges. The monitoring circuit is normally powered from the transmission system by the signals which it monitors, but this power is sometimes insufficient. By this invention, the "station" battery 13 is used to keep the monitoring circuit 12 continuously powered, being connected to the monitoring circuit via a voltage regulator 25-32 which is set to be cutoff in normal conditions.

3,629,658

## STATIC IMPEDANCE RELAY

Anders Helge, and Torkel Johansson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

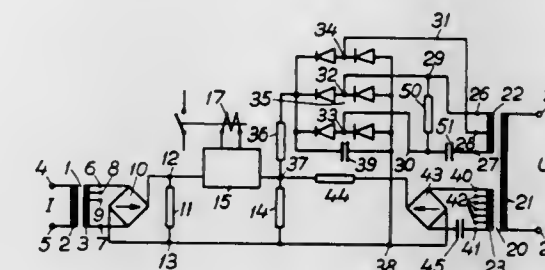
Filed May 7, 1970, Ser. No. 35,504

Claims priority, application Sweden, May 8, 1969, 6507/69

Int. Cl. H02h 3/38

U.S. Cl. 317—36 D

4 Claims



A static impedance relay for controlling a circuit includes a switch operated by a relay coil which is connected to a zero detector. The zero detector is fed with a first pulsating voltage which is proportional to the current supplied and a second voltage which is the algebraic sum of a direct voltage proportional to the voltage supply and a second pulsating voltage adjustably proportional to the voltage supply.

3,629,659

## GAS TUBE ISOLATOR AND CHARGING CIRCUIT FOR PULSE AMPLIFIERS IN PHASED ARRAYS

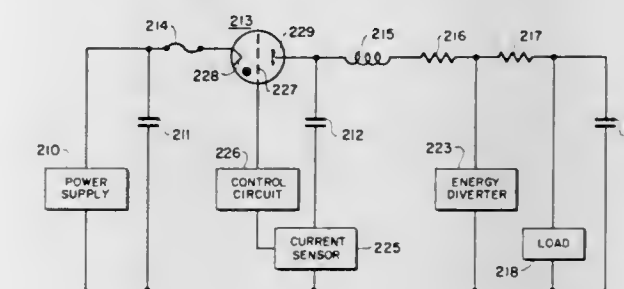
Sol Schneider, Little Silver, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 4, 1970, Ser. No. 95,174

Int. Cl. H02h 7/20

U.S. Cl. 317—51

5 Claims



This disclosure relates to energy control and particularly to energy control for charging energy storage devices and for isolating and protecting multiple amplifier circuits operating from a common power supply. More particularly, this disclosure relates to the use of a gaseous tube as a switch for charging the energy storage capacitor bank of an individual pulse amplifier circuit or unit of a multiple unit system having a common power supply. This disclosure teaches the connection of a gaseous discharge tube as a switch between the common, main, power supply and the secondary energy storage capacitor bank of each of the pulse amplifier circuits; and the firing of the gaseous discharge tube to recharge the secondary capacitor bank between pulses. This disclosure also teaches the delay of the firing of the gaseous discharge tube under conditions such as those of a short circuit where firing could damage the individual circuit; or drain or damage the common power supply; or interfere with operation of other circuits using the same common power supply.



3,629,660

**LIGHTNING ARREST ASSEMBLY**

Takayoshi Kamada; Nobuo Nagai, and Shoji Tada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

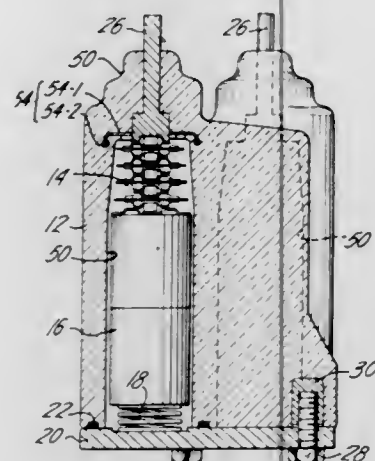
Filed Oct. 12, 1970, Ser. No. 80,042

Claims priority, application Japan, Oct. 15, 1969, 44/98079

Int. Cl. H02h 9/06

U.S. Cl. 317-69

4 Claims



Three lightning arresters including a characteristic element in series with gaps are disposed in individual parallel openings within a single insulating housing with their longitudinal axes located at apices of a regular triangle. The openings are closed at one end on the incoming-line side by the end portion of the housing through which three terminals are sealed to be connected to the respective arresters and in which one annular metallic shield is embedded so as to be connected to each terminal.

3,629,661

**METAL CLAD SWITCHGEAR FOR HIGH VOLTAGE COMPRISING COMPARTMENTS ADAPTED TO BE DIVIDED BY MOVABLE TRANSVERSE PARTITION WALLS**

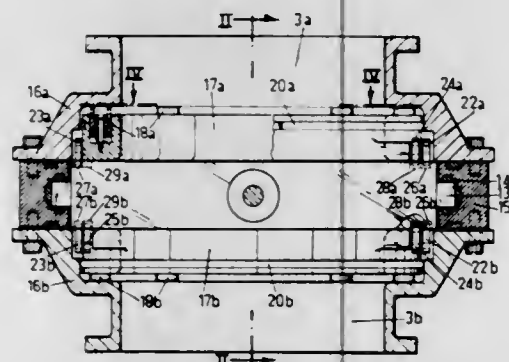
Egbertus Adrianus Frowein, Arnhem, Netherlands, assignor to N.V. "COQ", Utrecht, Netherlands

Filed Sept. 30, 1970, Ser. No. 76,749

Int. Cl. H01h 33/82

U.S. Cl. 317-103

5 Claims



In metal clad switchgear the provision of slide valves to divide compartments in two parts which are separated from one another in a gastight manner, when said slide valves are in their closed position, said slide valves being held against movement in a direction at right angles to their plane by guides and cooperating with axially movable, coaxial sealing rings which are supported by the envelope of said compartments and forced against said slide valves by springs.

3,629,662

**ELECTRONIC COMPONENT WITH LEAD REVERSELY BENT FOR PLURAL TERMINAL CONNECTIONS**

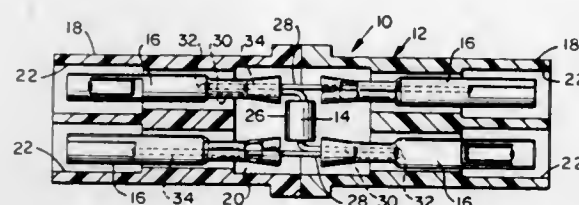
Edward P. Cattey, Wallingford; Raymond H. Poturnicki, New Haven; James J. Johnston, Cheshire, and Walter J. Bedard, Meriden, all of Conn., assignors to Automatic Equipment Development Corporation, West Haven, Conn.

Filed Sept. 15, 1970, Ser. No. 72,473

Int. Cl. H05k 5/02; H01c 1/14

U.S. Cl. 317-118

12 Claims



A modular electronic component for releasable plugging connection in an associated electronic circuit and having a hollow housing containing an electronic element. The element has a body and includes a pair of leads which extend outwardly from opposite ends thereof. Each lead has one portion which extends beyond the body in one direction and toward one end of the housing and another portion which is bent in a reverse direction and extends beyond the body in the direction of the other end of the housing. Two plug receptacles are attached to each lead, each receptacle being exposed at an associated end of the housing.

3,629,663

**MAGNET CONTROLLER**

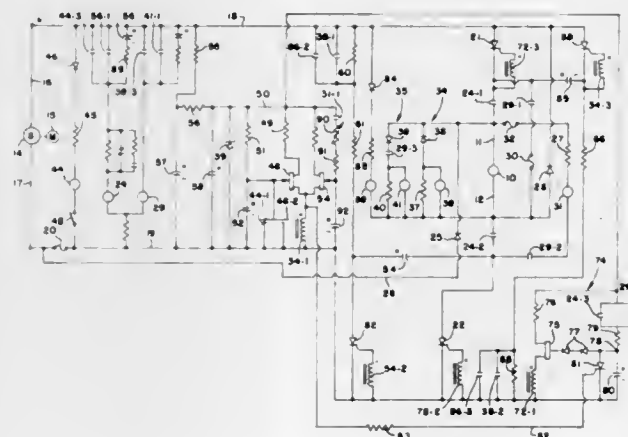
Gediminas J. Butkus, University Heights, Ohio, assignor to N-E-M Controls, Inc., Wickliffe, Ohio

Filed Apr. 17, 1970, Ser. No. 29,551

Int. Cl. H01f 7/20, 13/00; H01h 47/32

U.S. Cl. 317-123

14 Claims



An industrial lifting magnet control circuit using semiconductors and conventional relay components for performing and timing the power switching cycles of magnet energization, discharge and current reversal for drop-off. Reversing contacts control the direction of current flow through the magnet and in one embodiment of the invention a single SCR together with a diode-resistor quench circuit provide the switching of power and the dissipation of magnet energy. Another embodiment of the invention further includes a second SCR for switching and isolation and a pair of diodes for directing and rapidly dissipating the magnet energy through the motor-generator power source. The switching SCR's are triggered by unijunction transistor timing circuits and are commutated by SCR-controlled capacitor discharge.

3,629,664

**SOLID-STATE TIMING MODULE**

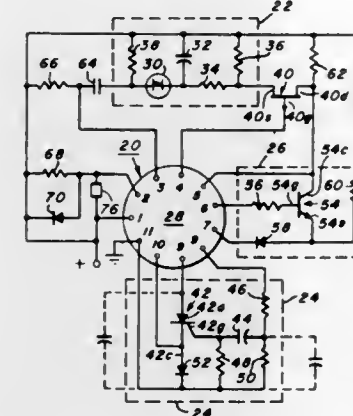
Peter A. Lajoie, Chelmsford, Mass., assignor to Allegheny Ludlum Industries, Inc.

Continuation-in-part of application Ser. No. 811,902, Apr. 1, 1969, now abandoned. This application Nov. 12, 1970, Ser. No. 88,624

Int. Cl. H02b 1/04; H01h 47/18, 47/32

U.S. Cl. 317-141 S

8 Claims



A solid-state timing module for direct current relay control systems characterized in that a combination of timing circuits are housed on a single pronged header and provided with means for interconnecting the circuits in various configurations to effect different timing modes and timing ranges. The module eliminates the necessity for stocking a wide variety of time delay relays and results in reduction of maintenance problems.

3,629,665

**TOUCH-RESPONSIVE OSCILLATOR-CONTROLLED CIRCUIT**

Marcel B. Hoste, Bourgneubus, France

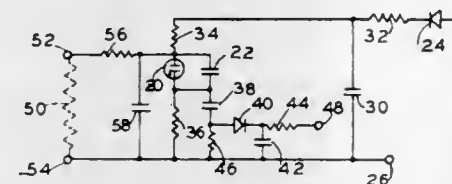
Filed Jan. 31, 1968, Ser. No. 702,112

Claims priority, application France, Feb. 1, 1967, 93291

Int. Cl. H01h 35/00

U.S. Cl. 317-146

2 Claims



Electric control device actuated by manual bridging of spaced contacts acting on the capacitance of a relaxation oscillator to block oscillation, and a signal circuit providing a signal voltage only in response to oscillations. Circuit includes a time delay so that variations or interruptions in the manual application of the resistive impedance across the contacts, as by nervous persons will not affect the signal.

3,629,666

**SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME**

Masami Yokozawa, and Hitoo Iwasa, both of Osaka, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Nov. 13, 1968, Ser. No. 775,355

Claims priority, application Japan, Nov. 22, 1967, 42/75585

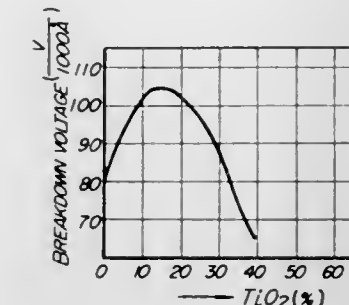
Int. Cl. H01l 9/00

U.S. Cl. 317-234 R

3 Claims

A semiconductor device with at least one PN junction and a method of manufacturing the same wherein a passivating

film or a surface film for insulation is made of a chemical mixture of oxides composed of  $\text{SiO}_2$ - $\text{TiO}_2$  so that the breakdown voltage and electrical stability of said PN junction can be increased. This effect is based on the suppression of movement of alkali ions in said film with the mixture of ox-



ides. The film with the mixture of oxides composed of  $\text{SiO}_2$ - $\text{TiO}_2$  is obtained with a method where vapors of organo-oxy-silicon compound and organo-oxy-titanium compound are led onto a substrate, with which is heated and sustained at a predetermined temperature, and pyrolyzed on a surface of the substrate to make the film.

3,629,667

**SEMICONDUCTOR RESISTOR WITH UNIFORM CURRENT DISTRIBUTION AT ITS CONTACT SURFACE**

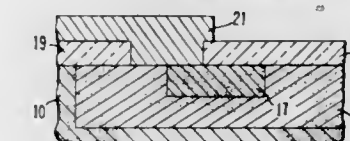
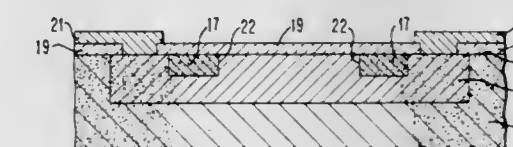
Neil D. Lubart, Syracuse, and Madhukar B. Vora, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 14, 1969, Ser. No. 807,351

Int. Cl. H01l 5/02

U.S. Cl. 317-234 R

2 Claims



A diffused resistor for semiconductor integrated circuits which avoids the problems caused by the high surface current density. The resistor includes at least one semiconductor region of conductivity type opposite to the resistor proper located between a pair of ohmic contacts to the resistor region. This semiconductor region diverts the current flow from the surface of the resistor region and causes a more uniform current distribution across the surface of the ohmic contacts.

3,629,668

**SEMICONDUCTOR DEVICE PACKAGE HAVING IMPROVED COMPATIBILITY PROPERTIES**

Ashok R. Hingorany, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1969, Ser. No. 886,713

Int. Cl. H01l 3/00, 5/00

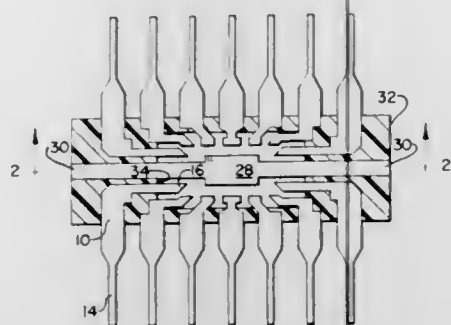
U.S. Cl. 317-234 R

3 Claims

A semiconductor device package is provided including a lead frame formed of a first preselected conductive material which is thermally and/or chemically compatible with a support carrier material. The lead frame includes a plurality of exposed leads adapted to be interconnected in an electronic system and a plurality of associated terminals which are integrally joined to the leads by shoulder members and are



adapted to be interconnected with a semiconductor device. A semiconductor bonding pad and supporting tie bars extending from opposed ends thereof is formed of a second preselected material which is thermally and/or chemically compatible with the material from which the semiconductor device is formed, and is arranged in spaced relationship with



the terminals for supporting the semiconductor device. The tie bars are attached to temporary side members on the lead frame during fabrication of the unit in order to temporarily support the bonding pad in position prior to removal of the supporting side members and the completion of the encapsulation of the package in the support carrier.

3,629,669

#### PASSIVATED WIRE-BONDED SEMICONDUCTOR DEVICE

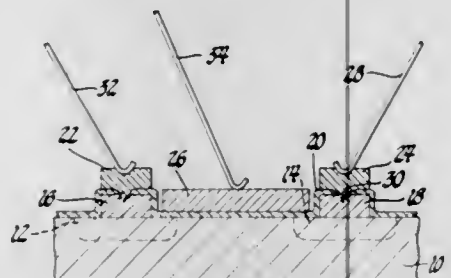
James E. Kauppila, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1968, Ser. No. 778,625

Int. Cl. H01L 1/14, 1/14

U.S. Cl. 317-235 R

7 Claims



A semiconductive device is described in which electrical contact is made with the semiconductor surface through a rupture in an overlying frangible dielectric coating. Contact is achieved by forming an electrode pad on the semiconductor surface, coating the surface of the semiconductor and the electrode pad with a frangible layer of dielectric, forming a terminal connector contact pad on the dielectric coating over the electrode pad, rupturing the dielectric layer to communicate the pads, and bonding a terminal lead to the connector contact pad. In a preferred embodiment, the rupturing and bonding steps are simultaneously achieved by compression bonding a terminal wire to the connector contact pad.

3,629,670

#### ELECTRICAL CONTACT TO SILICON CARBIDE

Ronald J. Perusek, Chardon, and Ralph M. Potter, Pepper Pike, both of Ohio, assignors to General Electric Company

Filed Sept. 23, 1970, Ser. No. 74,545

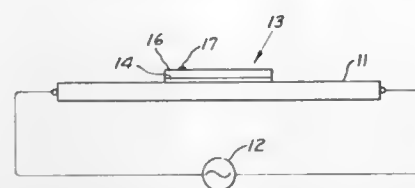
Int. Cl. H01L 1/14

U.S. Cl. 317-237

8 Claims

Yttrium metal provides a low-resistance electrical contact to a silicon carbide wafer, useful in the manufacture of solid-

state lamps. A preferred method comprises the steps of plac-



ing a small piece of yttrium on a silicon carbide wafer, and heating to cause fusion to occur.

3,629,671

#### MEMORY AND NONMEMORY-TYPE SWITCHING ELEMENT

Naomasa Sunano, and Shinichi Nishida, both of Kyoto, Japan, assignors to Shinyei Co., Inc., Kobe, Japan

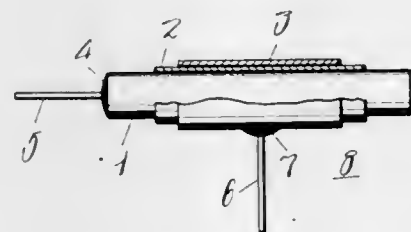
Filed Apr. 21, 1970, Ser. No. 30,445

Claims priority, application Japan, Apr. 23, 1969, 44/31763

Int. Cl. H01L 11/00

U.S. Cl. 317-238

6 Claims



A semiconductor obtained by reducing a solid solution of vanadium oxide, barium oxide, and potassium oxide (or silver oxide) is disposed between electrodes, the amount of oxygen in  $V_2O_5$  of the reduced solid solution being  $V_2O_{5-x}$  in which  $x$  is greater than 3.7 but less than 4.2. The element thus formed performs electrical switching action of memory or nonmemory type between high-resistance state and a low-resistance state. By selecting the amounts of the three constituent oxides in predetermined proportions which are variable depending upon the kind of metal serving as electrodes, a memory-type or nonmemory-type switching element can be obtained. Particularly in the case where an oxide film of a specific metal is provided between the electrodes along with the reduced semiconductor, the switching element may provide a high-resistance state, a first low-resistance state and a transitional second low-resistance state, so that when voltage is selectively applied between the electrodes, the element serves as memory and nonmemory type switching element.

3,629,672

#### SEMICONDUCTOR DEVICE HAVING AN IMPROVED HEAT SINK ARRANGEMENT

Peter Wilhelmus Maria Van de Water, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

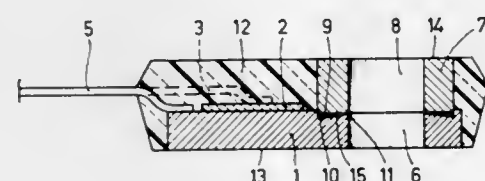
Filed Feb. 25, 1970, Ser. No. 14,041

Claims priority, application Netherlands, Mar. 1, 1969, 6903229

Int. Cl. H01L 3/00

U.S. Cl. 317-234 R

6 Claims



A semiconductor device comprising a metal cooling plate on which a semiconductor body is arranged, a number of

conductors electrically connected to the semiconductor body and protruding from a synthetic resin envelope. The cooling plate is located on an outer side of the envelope, and opening being provided in the cooling plate and in the envelope for passing a fastening bolt, while the part of the opening located above the cooling plate is formed by a pressure-resistant metal ring.

3,629,673

#### DIRECT CURRENT CONVERTOR FOR DC SUPPLY WITH EXTINGUISHING CIRCUIT

Kjeld Thorborg, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

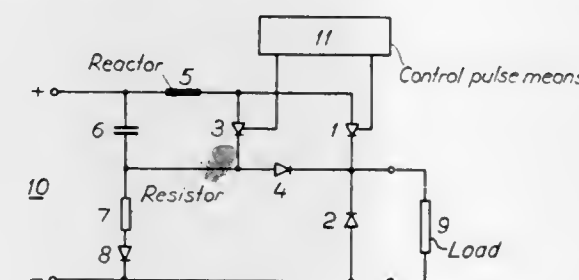
Filed Aug. 17, 1970, Ser. No. 64,447

Claims priority, application Sweden, Sept. 1, 1969, 12045/69

Int. Cl. H02M 7/52

U.S. Cl. 321-45 C

3 Claims



A DC converter for controlling the average value of an intermittent direct current comprises a main thyristor which is ignited with a certain frequency and provided with an extinguishing circuit having an auxiliary thyristor, the ignition of which causes the extinction of the main thyristor. The extinguishing circuit further comprises an oscillating circuit which includes a reactor and a capacitor, which reactor is in series with the main thyristor as well as the auxiliary thyristor.

3,629,674

#### TRANSIENT RESISTANT TRANSISTORIZED BLOCKING OSCILLATOR FOR SWITCHING INDUCTIVE LOADS

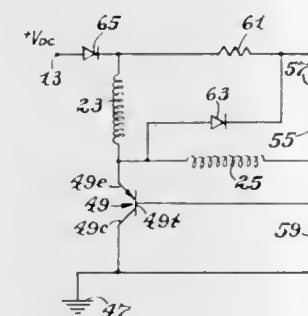
Ralph V. Brown, Cayuta, N.Y., assignor to The Bendix Corporation

Filed June 18, 1970, Ser. No. 47,496

Int. Cl. H02K 33/02

U.S. Cl. 318-128

16 Claims



An electromagnetic fluid pump has a reciprocating plunger driven in one direction by a solenoid and driven in an opposite direction by a spring. A transistor is connected in series with the solenoid to regulate the current therethrough. The transistor is controlled by a detection coil magnetically linked to the solenoid and connected across the emitter-base junction of the transistor. A resistor network is connected in series with the detection coil to increase initial emitter to base voltage thereby assuring initial transistor conduction and to limit reverse voltages during collapse of the magnetic field of the solenoid. A series-connected diode and resistor are connected across the solenoid and the detection coil to draw current from the solenoid through the detection coil during collapse of the solenoid field, thereby protecting the

transistor and providing for a rapid collapse of the field resulting in rapid plunger release and increased pump delivery.

3,629,675

#### CONTROL SYSTEM FOR ELECTRIC MOTORS

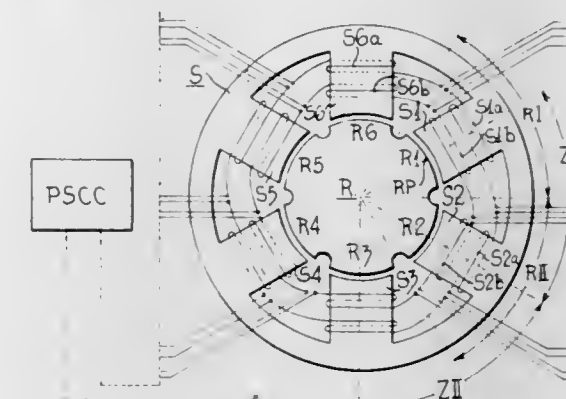
Nachum Porath, 59 Rothschild Blvd., Tel Aviv, Israel

Filed Nov. 2, 1970, Ser. No. 86,216

Int. Cl. H02K 29/00

U.S. Cl. 318-138

6 Claims



A control system for a brushless, permanent magnet, electric motor having a rotor including at least two poles forming a rotor pole pair, and a stator including at least two poles forming a stator pole pair, each stator pole having a first and a second bifilar winding. Power supply and control means are provided for energizing the stator bifilar windings to provide polarization zones which are periodically reversed to form a rotating magnetic field for driving the rotor. The latter means comprises an alternating current source having a frequency of at least several multiples of the rate of zone reversal at maximum motor speed. The said means further comprises switching means connecting the alternating current source to the first bifilar winding of each stator pole for energizing same with a plurality of half-cycle alternations of one sign when a reference point on the rotor arrives at the beginning of one zone of the stator, which switching means also connects the alternating current source to the second bifilar winding of each stator pole for energizing same with a plurality of half-cycle alternations of opposite sign when the rotor reference point arrives at the next, oppositely polarized zone of the stator. The system further includes torque control means controlling the switching mean to control the time of initiation of energization of the energized bifilar windings during each half-cycle alternation, the energized windings being automatically deenergized by the switching means at the end of each half-cycle alternation.

3,629,676

#### TRACTION MOTOR TEMPERATURE CONTROL OF LOCOMOTIVE POWER

Max Ephraim, Jr., Evergreen Park, and Earl D. Smith, Naperville, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1970, Ser. No. 26,861

Int. Cl. H02P 5/22

U.S. Cl. 318-144

4 Claims

A system for controlling the power output of the generator of a locomotive as a function of the temperature of the traction motors connected to the generator. The system utilizes an electrical heater element connected in series with at least one traction motor and the heater generates an amount of heat which is a function of the amount of current being supplied to the traction motor. The heater element forms part of a simulator such that the temperature developed by it simulates the operating temperature of the traction motor for a given traction motor current. A temperature sensitive resistance element senses the temperature of the simulator and



is connected with a control circuit so as to vary the excitation and output power of the generator as a function of the tem-

perature sensed by the resistance element. The simulator and traction motors are arranged such that they both are at substantially the same ambient temperature.



3,629,677

**MOTOR SPEED CONTROL CIRCUIT**

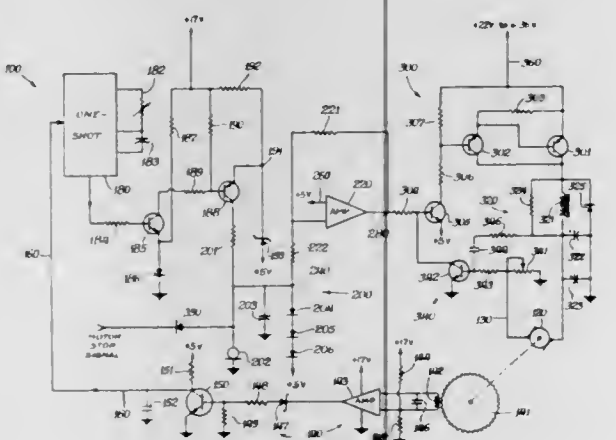
Gary L. Means, Waukegan, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,470

Int. Cl. H02p 5/16

U.S. Cl. 318-341

8 Claims



An improved circuit for precisely controlling the speed at which a motor rotates and for protecting the motor against excessive current drain. Pulses generated synchronously with rotation of the motor trigger a one-shot. The one-shot generates a nonsymmetrical square wave whose symmetry varies with the rotational speed of the motor. In one embodiment, an integrating circuit then converts this nonsymmetrical square wave into a sawtooth or triangular waveform that includes a DC component proportional in magnitude to the motor rotation speed. This waveform is fed into one input of a differential amplifier. The amplifier generates a continuous output, a pulse width modulated rectangular wave output, or no output, depending upon whether the motor is running below the proper speed, approximately the proper speed, or overspeed. This output is fed to a switching-type current regulator connected in series with the motor.

3,629,678

**PROXIMITY SWITCH**

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 15, 1969, Ser. No. 884,958

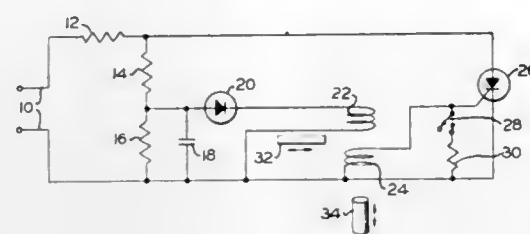
Int. Cl. H02p 1/08

U.S. Cl. 318-558

21 Claims

A proximity switch operable in response to the position of a movable object and including a pulse-forming circuit for generating a series of pulses in a first coil, and a detecting

network including a second coil for energizing a load whenever a pulse from the first coil is induced in the second coil.



The first and second coils are positioned such that the degree of coupling therebetween is responsive to the proximity of the object for controlling the energization of the load.

3,629,679

**LINEAR MOTOR POWER FAILURE DETECTION CIRCUIT AND FAIL-SAFE CONTROL**

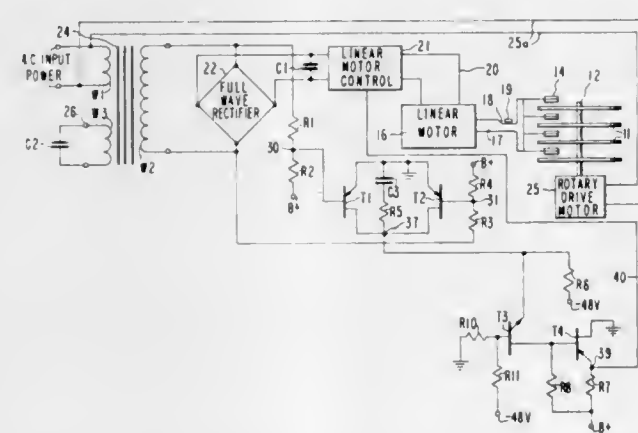
Martin O. Halfhill, San Jose, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed June 29, 1970, Ser. No. 50,631

Int. Cl. G05b 9/02

U.S. Cl. 318-563

7 Claims



A circuit for controlling an actuator including means for setting the actuator for movement to a rest position in response to an interruption in the electrical power supplied, with the actuator being energized after the power interruption by energy stored in the circuit normally used for regulating the circuit waveform.

3,629,680

**TOY BATTERY CHARGER**

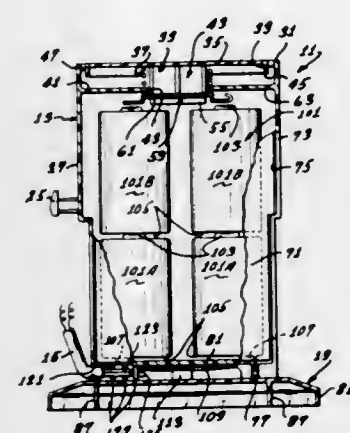
William R. Baynes, Palos Verdes Peninsula; John P. Hiltbold, Manhattan Beach, and William A. Staats, Torrance, all of Calif., assignors to Mattel Inc., Hawthorne, Calif.

Filed Apr. 17, 1970, Ser. No. 29,510

Int. Cl. H02j 7/00

U.S. Cl. 320-2

4 Claims



A battery charger for charging electric motor-powered toy vehicles with self-contained rechargeable batteries, the

charger including a self-contained charging battery housed in a simulated vehicle service facility such as, for example, an automotive service station gasoline pump including a normally open electrical push switch connected in series with the charging battery and an electrical charging current delivery cable and connector resembling a fuel dispensing hose and nozzle. The self-contained charging battery has a greater nominal potential than the vehicle's rechargeable batteries and the charger electrical circuitry includes a series connected current limiting resistor to protect the rechargeable batteries from excessive sustained charging current flow.

3,629,681

**CIRCUITS FOR CONTROLLED BATTERY CHARGERS**

David Gurwicz, Gateshead, England, assignor to Sevcon Engineering Limited, Durham, England

Filed Apr. 8, 1970, Ser. No. 26,694

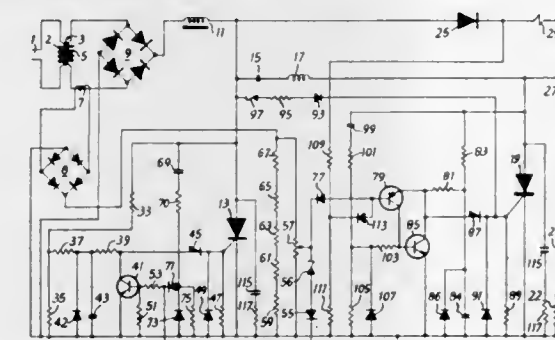
Claims priority, application Great Britain, Apr. 10, 1969,

18,486/69

Int. Cl. H02j 7/10

U.S. Cl. 320-21

9 Claims



The illustrated embodiment of the invention is a circuit for a controlled battery charger comprising for connection with a source of rectified AC supply a series circuit including a semiconductor switch and having inductance and in parallel with the semiconductor switch a unidirectional conduction device in series with connections to which can be connected a battery to be charged the voltage of the battery exceeding the rectified AC supply voltage, control circuit means being provided to control the frequency of switching of the semiconductor switch whereby, in operation, during conduction of the semiconductor switch electrical energy is stored in the series circuit containing the switch as the current therethrough grows inductively while energy so stored is supplied to the battery in the intervals between conducting periods of the switch.

3,629,682

**INVERTER WITH ZENER-REGULATED OUTPUT FREQUENCY AND VOLTAGE**

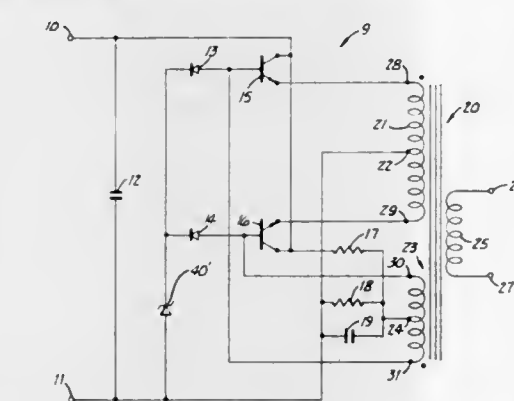
Donald A. Boelter, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed Mar. 11, 1970, Ser. No. 18,416

Int. Cl. H02m 7/52; H03k 3/28

U.S. Cl. 321-2

4 Claims



A solid-state power supply for transforming unregulated direct current electrical energy into regulated alternating

current and/or direct current electrical energy. The power supply has a common collector, DC to AC inverter with a circuit for limiting the excursion of the inverter drive voltage to prevent saturation of the common collector power transistors. The power transistors in the inverter function simultaneously as power oscillators and as series regulators. A shunt regulator is connected to a pair of diodes which in turn are connected to the power transistors for controlling the excursion of the base drive voltage. The inverter is connected to a transformer which provides one or more regulated AC outputs. Rectifier-filter circuits may be connected to the output of the transformer to provide regulated direct current electrical energy. A feedback network is connected from the output of the inverter to the shunt regulator to control the limiting voltage of the shunt regulator.

3,629,683

**HIGH-FREQUENCY LAMP OPERATING CIRCUIT**

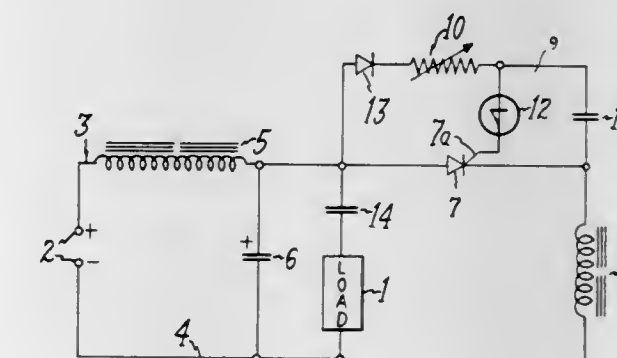
Joe A. Nuckolls, Hendersonville, N.C., assignor to General Electric Company

Filed Nov. 21, 1968, Ser. No. 777,677

Int. Cl. H02m 3/22

U.S. Cl. 321-2

12 Claims



Circuit operating from a low-voltage current source for applying high-voltage, high-frequency alternating current to a load such as a gaseous discharge lamp connected across the source includes a charging capacitor and a first induction coil connected across the source and forming a first resonant circuit, a second induction coil and a controlled rectifier switch connected in series across the capacitor forming a second resonant circuit when the controlled rectifier switch is closed, and triggering means connected to the source for operating the controlled rectifier switch in accordance with a predetermined rate, the second resonant circuit operating to close the controlled rectifier switch, and the first resonant circuit operating when the switch is opened to raise the voltage and apply it to the load in high-frequency pulses for starting and operating the same.

3,629,684

**POWER SUPPLY WHEREIN STAR-CONNECTED WINDINGS ARE ARRANGED TO PRODUCE FIELDS MECHANICALLY COINCIDENT AND ELECTRICALLY OUT OF PHASE**

Roland W. Christen, Garfield Heights; John C. Guyeska, Novelty, and Gerald H. Horstman, Bedford, all of Ohio, assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Oct. 23, 1970, Ser. No. 83,285

Int. Cl. H02m 5/14, 5/16, 5/20

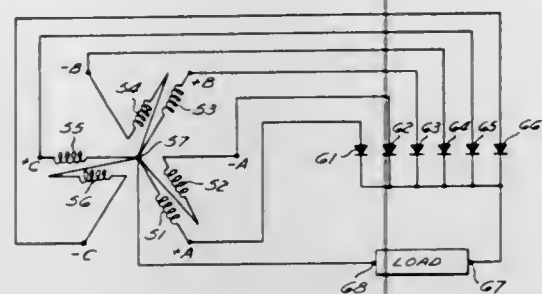
U.S. Cl. 321-7

7 Claims

A power supply comprising a polyphase source of higher frequency alternating current and a rectifying system connected to it for providing a single-phase output of a lower frequency alternating current and/or unidirectional current of one or both polarities. The polyphase source has output



windings arranged in a manner to increase the degree of utilization of the core by minimizing the net magnetomotive



forces produced by large unidirectional current components present in the windings and tending to saturate the core.

3,629,685

### STATIC CONVERTER STATION CONNECTED TO A DC TRANSMISSION LINE OVER A DC REACTOR WITH LIGHTNING ARRESTER PROTECTION MEANS

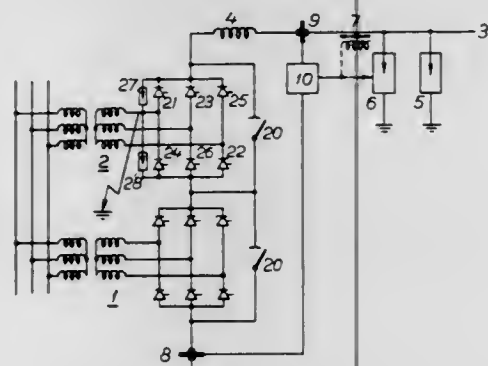
Arne Johansson, Grangesberg, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 20, 1970, Ser. No. 91,328

Int. Cl. H02m 1/18; H02p

U.S. Cl. 321-13

4 Claims



A static converter station connected to a DC transmission line over a DC reactor is provided with lightning arrester protection means which includes a spark gap stack connected to the DC line and provided with a starting mechanism for its ignition, and with an arrangement responsive to earth faults in the station to control the starting mechanism to trigger the lightning arrester.

3,629,686

### VOLTAGE SUPPLY APPARATUS FOR APPLYING A DIRECT CURRENT TO A PERIODICALLY VARYING LOAD

Wilhelmus Theodorus Hendrikus Hetterscheid, and Gerrit Pieter Johannes Van Schaik, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,923

Claims priority, application Netherlands, Apr. 25, 1969, 6906394

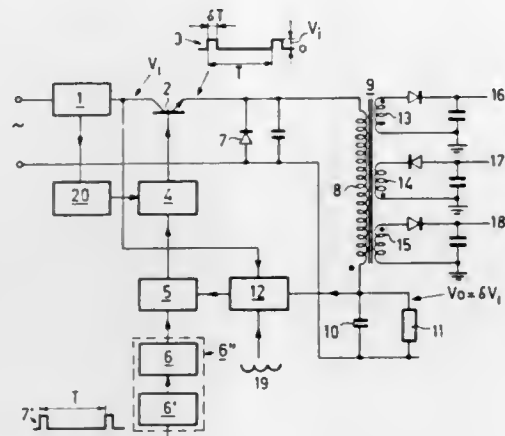
Int. Cl. H02m 7/12

U.S. Cl. 321-18

10 Claims

A voltage supply apparatus for feeding a periodically varying load provided with a safety circuit wherein a rectified voltage originating from the mains is converted into an output direct voltage by means of a chopper. The switching frequency of the chopper is at least equal to that of the load. The apparatus comprises measuring means by which the chopper is stopped in case of overload, while a smoothing

capacitor having a comparatively low capacitance is arranged parallel to the load. After an overload the output voltage is slowly built up. For this purpose the ratio between the active period of the chopper and the period of the switching frequency must become small ( $\approx 0.1$ ). This is achieved by using a thyristor as a pulse duration modulator and by having a capacitor of high value shunt a reference voltage element in the comparison circuit of the chopper. The coil of the



chopper constitutes the primary winding of a transformer secondary windings of which drive diodes which conduct simultaneously with the efficiency diode of the chopper so as to generate further direct voltages. In a preferred embodiment the apparatus feeds the line deflection circuit of a picture display device wherein the switching frequency is the line frequency and wherein the output voltage can be modulated by a parabola voltage of field frequency for the purpose of correcting the East-West-pincushion distortion.

3,629,687

### ARRANGEMENT IN CONVERTER STATIONS FOR ULTRAHIGH VOLTAGES

Petter Hessen, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

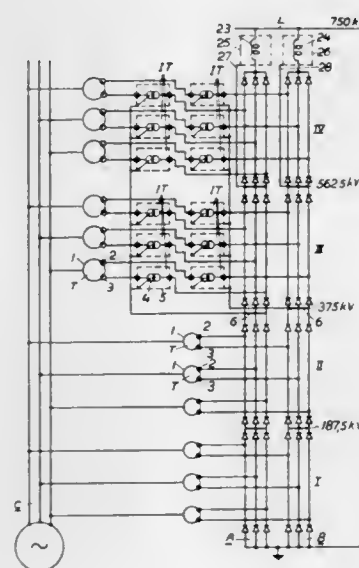
Filed Dec. 18, 1970, Ser. No. 99,394

Claims priority, application Sweden, Jan. 5, 1970, 52/70

Int. Cl. H02m 7/00

U.S. Cl. 321-27 R

10 Claims



In converter stations in DC networks for ultrahigh voltages there is at least one chain of converter bridges. The converter bridges in each chain are series connected on the DC side and connected over transformers to an alternating current network on the AC side. When there are two or more chains all chains are connected in parallel between earth and the transmission line in the DC network. At least some of the

apparatus connected to high potential, such as transformers, reactors and the like, have their tanks connected to the DC side of the converter chain at a point where the potential in relation to earth is at least half the voltage in the DC network.

### ERRATUM

For Class 321-45 C see:  
Patent No. 3,629,673

3,629,688

### INVERTERS

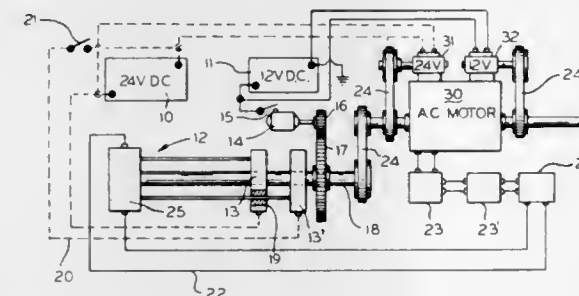
Irving E. Fink, 925 Park Road, El Paso, Tex.

Filed July 9, 1970, Ser. No. 53,471

Int. Cl. H02m 7/60

U.S. Cl. 321-50

9 Claims



A unique device for changing direct current to alternating current. The "heart" of the device is a commutatorlike switch which provides the alternating current by continuously switching the direct current. The switch can also "generate" power using a piezo-electrical effect.

3,629,689

### VOLTAGE REGULATOR FOR BRUSHLESS ALTERNATORS INCLUDING A SQUARE WAVE MULTIVIBRATOR

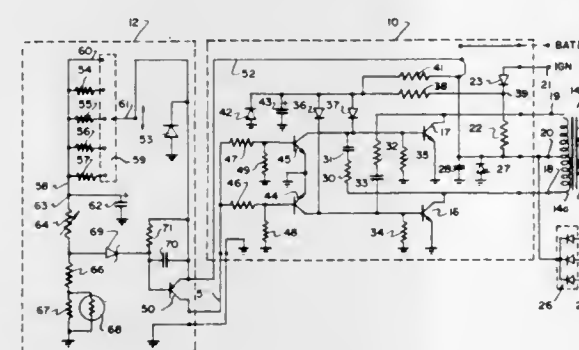
James A. Riff, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 13, 1970, Ser. No. 36,911

Int. Cl. H02p 9/30

U.S. Cl. 322-28

5 Claims



A voltage regulator for brushless alternators including an oscillator circuit which has the output thereof fed into stationary, primary winding of a rotary transformer device which has a rotatable secondary winding secured to the rotor shaft of the alternator. The oscillator is a free running, square wave multivibrator with cross coupling means between the output of one transistor stage thereof to the input of the other transistor stage. The oscillator operates at a frequency within a given range of frequencies dependent on load conditions, and the output of the oscillator is controlled by a voltage sensor between fully on and fully off conditions to regulate the power output of the alternator.

3,629,690

### CURRENT LIMITING DEVICE FOR LIMITING SHORT-CIRCUIT CURRENT IN ENERGY TRANSFER SYSTEMS

Ernst Massar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 18, 1970, Ser. No. 47,222

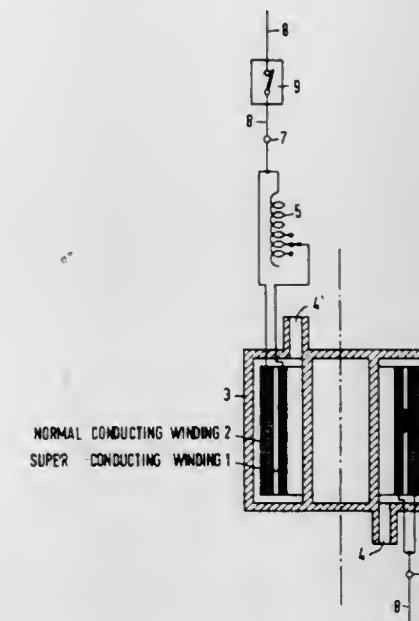
Claims priority, application Germany, June 26, 1969, P 19 32

379.6

Int. Cl. H01v 11/06

U.S. Cl. 323-9

2 Claims



An electrically normal conducting impedance winding is connected in series with one of two inductively interlinked windings of a current limiting device and has an inductivity which is such that approximately the same electric voltage drop occurs at the impedance winding as does at the other of the windings when the current limiting device is operated at a current which is smaller than or equal to the limiting current. The series connection of the impedance winding and the one of the windings of the current limiting device is connected in parallel with the other of the windings of the current limiting device. The two windings, one of which is connected in series with the impedance winding and the other of which is connected in parallel with the series connection, have mutually opposed and substantially equal ampere turns. The one of the windings at least partially comprises superconducting material and has a critical field intensity which is exceeded when the limit value of the current is exceeded and the winding becomes electrically normal conducting.

3,629,691

### CURRENT SOURCE

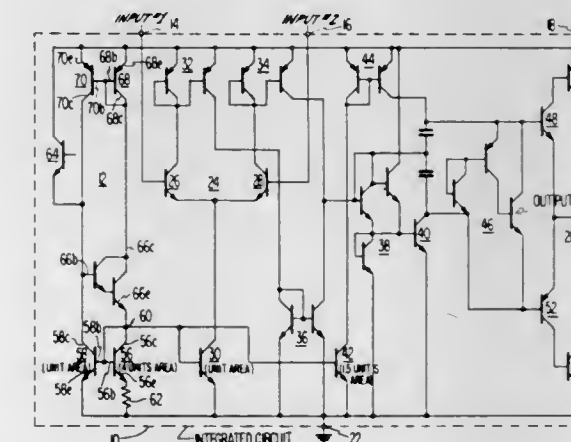
Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation

Filed July 13, 1970, Ser. No. 54,536

Int. Cl. G05f 3/08

U.S. Cl. 323-1

15 Claims



A semiconductor current source adapted for integrated circuit fabrication. A first transistor and a second diode-con-



nected transistor have their base-emitter circuits coupled in parallel. A current-determining resistor is connected between the emitters of the transistors. The effective base-emitter junction area of the diode-connected transistor is greater than that of the first transistor. The collectors of the first and second transistors are coupled to feedback circuitry which tends to maintain their collector currents substantially equal despite the difference in device areas. A difference in base-emitter voltage of the two transistors appears across the emitter resistor and determines the operating current level.

3,629,692

### CURRENT SOURCE WITH POSITIVE FEEDBACK CURRENT REPEATER

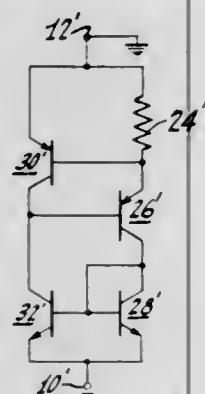
Ronald Bruce Goyer, Hollywood, Calif., assignor to RCA Corporation

Filed Jan. 11, 1971, Ser. No. 105,520

Int. Cl. G05f 1/56

U.S. Cl. 323-4

10 Claims



A two-terminal current-limiting or current source arrangement is coupled across a source of voltage which is subject to variations. The limiter includes a current determining resistor connected in the base-emitter circuit of a first transistor. A second transistor provides negative feedback between collector and base of the first transistor and also provides a collector-emitter circuit in series with the resistor. A current repeater is connected between the collectors of the first and second transistors and produces positive feedback to the base of the second transistor. The repeater includes a transistor, the collector-emitter circuit of which is connected to the collector of the first transistor. The voltage source is of sufficient magnitude to bias the repeater transistor and second transistor to nonsaturated conduction.

3,629,693

### HIGH-PERFORMANCE CURRENT TRANSFORMERS

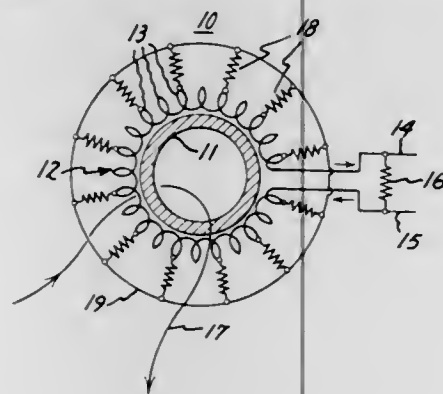
John M. Anderson, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 14, 1970, Ser. No. 97,919

Int. Cl. G01r 19/00; H01f 40/06

U.S. Cl. 323-6

10 Claims



Current transformers which exhibit a uniform response and freedom from distortion as a function of frequency of currents sensed include a secondary winding having a number of

turns about a suitable core. Oscillation-damping resistances are connected between electrically uniformly spaced points along the secondary winding and a common low-inductance conductor.

3,629,694

### METHOD AND APPARATUS PROVIDING A DIFFERENCE SIGNAL INDICATIVE OF RADIATION ABSORPTION IN A MAGNETOMETER

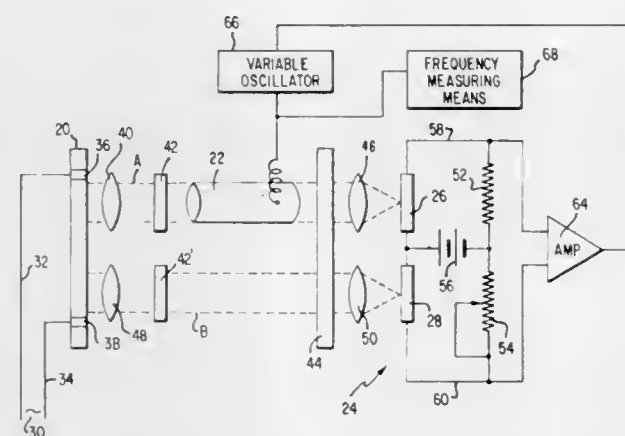
Daniel P. Hearn, Tulsa, Okla., assignor to Atlantic Richfield Company

Continuation of application Ser. No. 595,185, Nov. 17, 1966, now abandoned. This application Nov. 23, 1970, Ser. No. 92,319

Int. Cl. G01r 33/08

U.S. Cl. 324-0.5

4 Claims



An optically pumped magnetometer including a radiation source, a radiation absorption cell through which radiation from the source passes, a radiation detector for detecting radiation passing from the absorption cell, and means for creating a radio frequency magnetic field in the absorption cell, and including a second radiation detector receiving radiation from the source but not passing through the absorption cell. The two detector outputs are combined in a balancing circuit to provide a difference signal indicative of the radiation absorption.

3,629,695

### PRERECORDED ELECTRONIC TAPE CONTROLLED CIRCUIT TESTING SYSTEM UTILIZING DIGITAL SIGNAL LOGIC

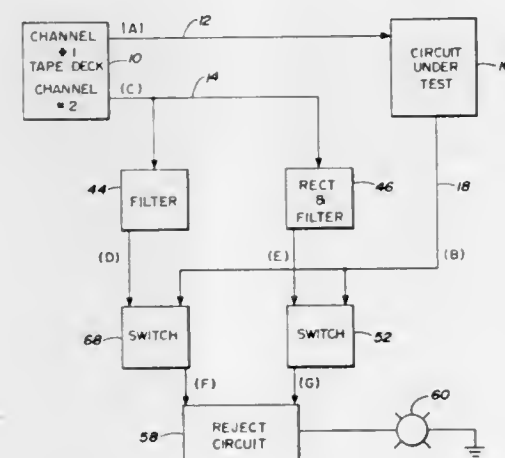
Jefferson H. Taylor, Dallas, and James J. Jones, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 31, 1969, Ser. No. 846,546

Int. Cl. G01r 31/00

U.S. Cl. 324-57 R

10 Claims



The operation of an electronic circuit is checked by prerecorded waveforms that are converted into electrical

signals. One of the electrical signals resulting from the processing of the prerecorded waveforms is connected to the input terminal of the circuit being checked. Another of the prerecorded waveforms is processed into a check signal and subsequently characterized into individual synchronizing pulses. A reject indicator, which includes switching circuitry operatively responsive to the check signals and the output from the circuit being tested, is energized to indicate when a circuit does not perform to certain operational specifications.

3,629,696

### METHOD AND APPARATUS FOR MEASURING DELAY DISTORTION INCLUDING SIMULTANEOUSLY APPLIED MODULATED SIGNALS

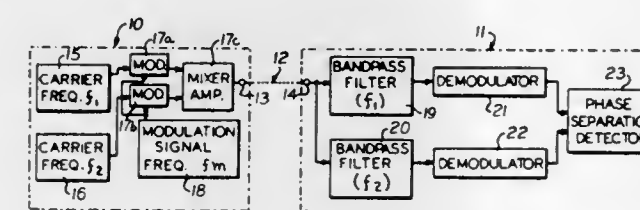
Everhard H. B. Bartelink, Concord, N.H., assignor to Northeast Electronics Corporation, Concord, N.H.

Filed Aug. 6, 1968, Ser. No. 750,524

Int. Cl. G01r 27/00

U.S. Cl. 324-57 R

15 Claims



A common modulating signal is applied to a plurality of carrier signals of differing frequency to provide signals with phase coincident modulation envelopes. These are simultaneously transmitted across transmission circuit being investigated, received at distant terminal, and individually demodulated. Phase separation between demodulated envelopes is ascertained as indication of delay distortion in transmission circuit.

3,629,697

### PARAMAGNETIC RESONANCE AND OPTICAL PUMPING MAGNETOMETER IN THE NEAR ZERO MAGNETIC FIELD-RANGE

Marie-Anne Bouchiat; Jean Brossel; Claude N. Cohen-Tannoudji; Jacques A. Dupont-Roc; Serge Haroche; Alfred H. Kastler, all of Paris, and Jean-Claude Lehmann, Boulogne, all of France, assignors to Agence Nationale De Valorisation De La Recherche A.N.V.A.R., Puteaux, France

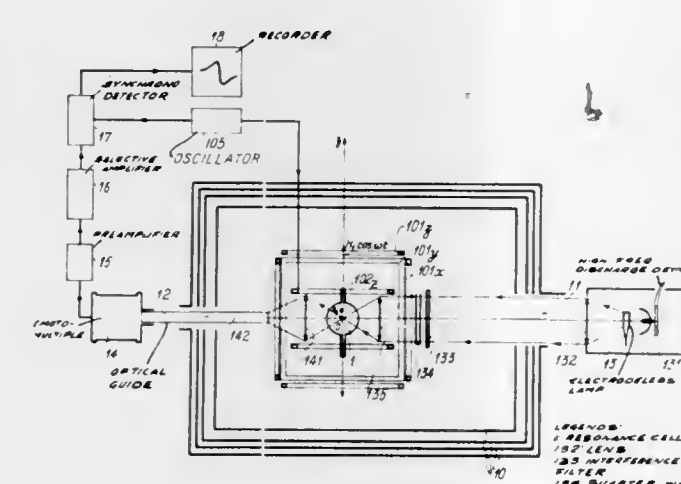
Filed Dec. 10, 1969, Ser. No. 883,900

Claims priority, application France, Dec. 12, 1968, 177928

Int. Cl. G01r 33/08

U.S. Cl. 324-0.5

9 Claims



Magnetometer for measuring steady magnetic fields of steady direction in the range of the nanogauss field intensi-

ties. The apparatus is generally used for measuring weak fields in a limited region of the inside of a magnetic shield envelope and comprises a paramagnetic resonance cell, three direct current pairs of Helmholtz coils the axis of which form a three-dimensional rectangular coordinate system, the origin point of which lies in said resonance cell, and a pair of alternating current Helmholtz coils having its axis coinciding with one selected axis among those of the direct current coils. DC currents are applied to the direct current coil pairs and are adjusted to obey approximately compensate the field in said region except in the direction of said selected axis, along which exact compensation is aimed at, trihedral and an alternating current is applied to the alternating coil pair and produces an alternating magnetic field colinear with the steady field to be measured. The cell is filled with atoms of alkaline metals in vapor state or with  $^4\text{He}$  in the state  $2^3\text{S}_1$ . Pumping light is applied to the cell perpendicularly to the field to be measured and the light transmitted through the cell in the same direction as that of the pumping beam is collected on a photomultiplier. The signal delivered by the photomultiplier is filtered at the frequency of the alternating current and synchronously detected. When exact compensation of the steady field component to be measured along said selected axis is reached, the intensity of the light transmitted through the cell reaches a maximum value, and, in the light intensity modulation caused by the alternating field, the odd harmonic components pass through the zero value. The frequency of the alternating current is chosen much higher than the product of the gyromagnetic ratio of the material inside the cell by twice the direct current field variation on either side of the zero value that would reduce the light intensity change caused by the latter field to half its maximum value, and; the amplitude of the alternating field is given an optimum predetermined value. The value of the steady field component to be measured is calculated from the direct current intensity in the coil having said selected axis, while the direct current intensities in the other coils are so adjusted that the variation of said light intensity modulation as a function of the value of the latter current intensity be as sharp as possible.

3,629,698

### MESOCAVITY SPECULAR INTEGRATOR REFRACTOMETER

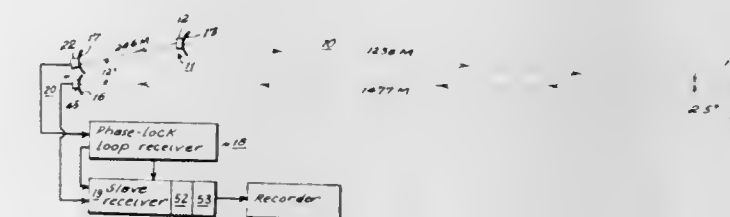
James J. Lamb, Sierra Vista, Ariz., assignor to The United States of America as represented by the Secretary of the Army

Filed Apr. 21, 1970, Ser. No. 30,404

Int. Cl. G01r 27/04

U.S. Cl. 324-58.5 B

4 Claims



A mesocavity specular integrating refractometer for measuring atmospheric refractivity consisting of a single-frequency coherent radio wave interferometer system of obtuse triangular configuration wherein a frequency stable continuous microwave transmitter located at the obtuse apex directs a microwave beam signal to a plane reflector at the most acute apex of the configuration which reflects and critically aims the microwave beam signal to the less acute apex where is



located receiver means comprising a phase-lock loop receiver in combination with its slave receiver. The phase-lock loop receiver is phase-locked to the direct microwave beam signal and supplies locally generated oscillatory energy to the slave receiver for intermediate frequency conversion, detection and phase reference. The second receiver is oriented most favorably to the critically aimed reflected beam and has incorporated therein a phase comparator providing as an output a resultant difference voltage proportional to the phase angle between the intermediate frequency voltages of the second receiver which are derived from the direct and reflected microwave beams or signals. This output is a varying DC voltage directly proportional to variations in the atmospheric refractivity.

3,629,699

# APPARATUS FOR DIELECTRIC TESTING OF CONTAINERS HAVING AN EXPANDABLE CAPACITIVE ELECTRODE

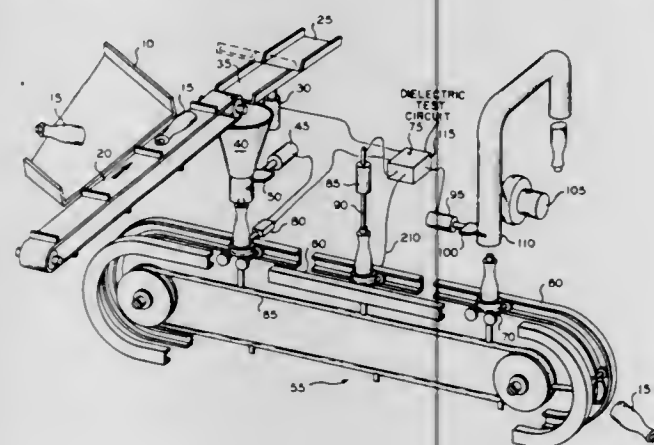
Raymond G. Voss, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 22, 1969, Ser. No. 826,818

Int. Cl. G01r 27/26

U.S. Cl. 324-61 R

9 Claims



Apparatus for dielectrically testing the bottom region of a container to determine the existence of pinholes, inhomogeneities, and thin walls which comprises in part an expandable element adapted to be inserted into the neck of a container to be tested and thereafter expanded into testing position wherein one plate of a capacitance element is formed by the expansion of the element into testing position.

3,629,700

# CAPACITANCE AND DISSIPATION FACTOR MEASURING APPARATUS HAVING COHERENT DETECTORS

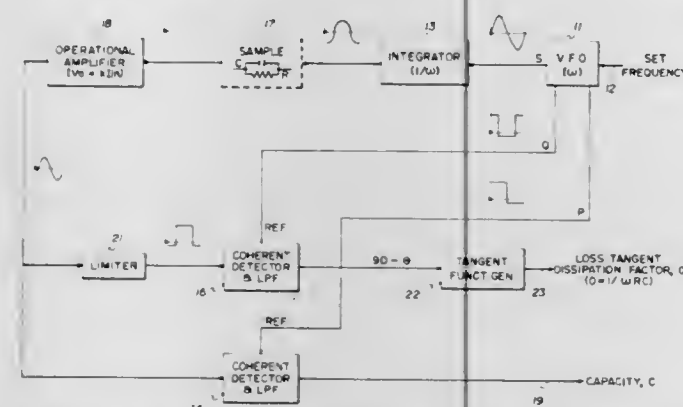
Stanley A. Yalof, Rte. 1, Box 720, Escondido, Calif., and Lawrence Van Doren, 5119 Arlene Place, San Diego, Calif.

Filed Sept. 16, 1969, Ser. No. 858,266

Int. Cl. G01r 11/52

U.S. Cl. 324-60 R

5 Claims



A dielectric meter for measuring electrical characteristics of a dielectric sample having resistive and capacitive com-

ponents in which a variable-frequency oscillator has a sine wave output coupled through an integrator with a 1-watt transfer characteristic into a sample; the output of the sample being coupled through an operational amplifier to the input of a first coherent detector and through a limiter to the input of a second coherent detector; the first coherent detector having a reference input comprising an inphase square wave signal from the variable-frequency oscillator and the second coherent detector having a reference input comprising a quadrature square wave signal output coupled from the variable-frequency oscillator; the output of the first coherent detector having an amplitude directly proportional to the capacitor component of the sample and the output of the second coherent detector being passed through a tangent function generator yielding a loss tangent dissipation factor.

3,629,701

# PRECISION VARIABLE RESISTOR FOR HIGH-FREQUENCY USE

Bunjiro Ichijo, 2-23-10 Hirotsuwa, Hamamatsu, Japan

Filed Aug. 11, 1970, Ser. No. 62,835

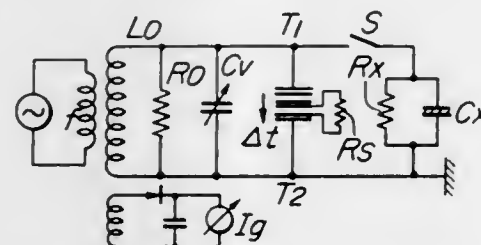
Claims priority, application Japan, June 16, 1970, 45/52099;

Aug. 15, 1969, Japan, 44/64617

Int. Cl. G01r 27/02

U.S. Cl. 324-62 R

3 Claims



A precision variable high resistor for high-frequency use comprises a complex series condenser composed of three spaced, parallel plates. The intermediate plate is mechanically movable relative to the pair of outer plates in parallel relation thereto. The three plates comprise discs of dielectric material having thin metal electrodes attached to their facing surfaces; and the electrodes attached to their facing surfaces; and the electrode which is attached to one of said outer plates, and which faces said intermediate plate, is grounded. A fixed resistance is connected between said grounded electrode and the facing electrode on said intermediate plate.

3,629,702

# AUTOMATIC TESTER FOR A PLURALITY OF DISCRETE ELECTRICAL COMPONENTS SUPPLIED IN A REPETITIVE PREDETERMINED SEQUENCE

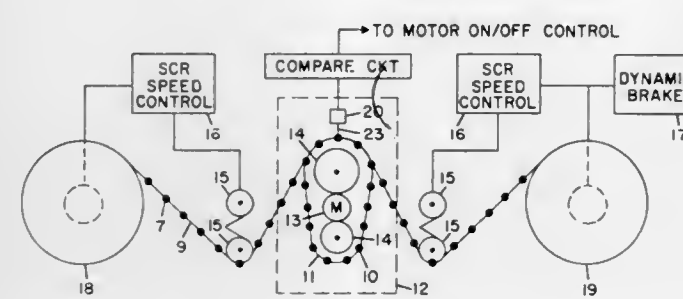
Heinz F. Henken, East Northport, N.Y., assignor to Hazeltine Corporation

Filed Mar. 9, 1970, Ser. No. 17,833

Int. Cl. G01r 15/12

U.S. Cl. 324-73 AT

6 Claims



Disclosed is an automatic component tester which accepts a plurality of supplied electronic components arranged in a repetitive predetermined sequence and compares them to a reference sequence of corresponding sample components.

The apparatus includes a motor-driven mechanism for accepting a conveyor of such supplied components and advancing both conveyors through an inspection station such that the components pass therethrough in pairs. Further included in a comparison circuit, which is momentarily connected to each pair of components as it passes through the inspection station and which provides an output indication whenever a selected difference in the electrical characteristics of a supplied and a reference component is detected.

3,629,703

# BALANCED BRIDGE OPTICAL TRANSMISSION TELEMETERING DEVICE FOR MEASURING AN ELECTRICAL QUANTITY ASSOCIATED WITH A POWERLINE WITH AN INDEPENDENT OPTICAL BALANCING SYSTEM

Georges Bernard, Saint-Egreve, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

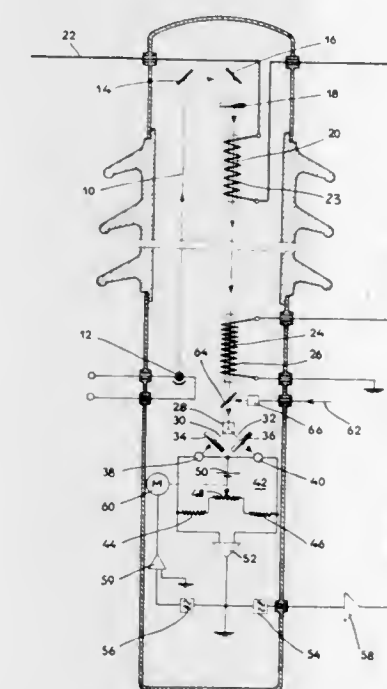
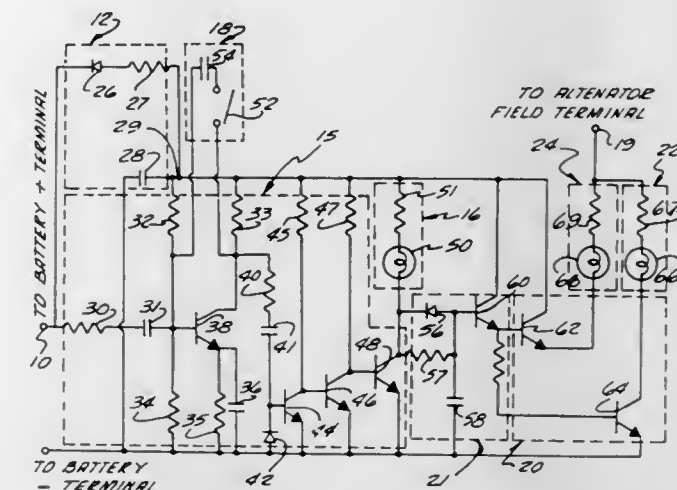
Filed June 30, 1970, Ser. No. 51,264

Claims priority, application France, July 7, 1969, 6923035

Int. Cl. G01r 31/00

U.S. Cl. 324-96

7 Claims



Telemetering device for sensing an electrical quantity such as the current or the voltage associated with a high-voltage powerline. The rotation of the polarization plane of a polarized light beam directed from the vicinity of said powerline to ground and having traversed a magneto-optically or electro-optically transducer sensitive to said quantity is measured at a ground station where the light beam is divided in a pair of elementary beams directed to a pair of photoelectrical devices inserted in a measuring bridge. The bridge is balanced by a servomechanism controlled by the electrical error signal produced in the bridge under the influence of an independent second divided light beam.

3,629,704

# AUTOMOTIVE ELECTRICAL SYSTEM TEST APPARATUS

Carlile R. Stevens, 1000 Ironwood Place, Alamo, Calif.

Filed Nov. 24, 1967, Ser. No. 685,456

Int. Cl. G01r 31/00, 19/16

U.S. Cl. 324-158 MG

11 Claims

An automobile alternator and voltage regulator test apparatus which may be connected to the electrical system of a car without altering the existing wiring. The test apparatus

analyzes the waveform and magnitude of the ripple voltage superimposed on the alternator output, and also senses the voltage level present at the field terminal of the alternator. In

response to the detected ripple characteristics and measured field voltage, the device provides an unambiguous visual indication of which components, if any, are malfunctioning.

3,629,705

# METHOD AND APPARATUS FOR DETERMINING ANGULAR VELOCITY

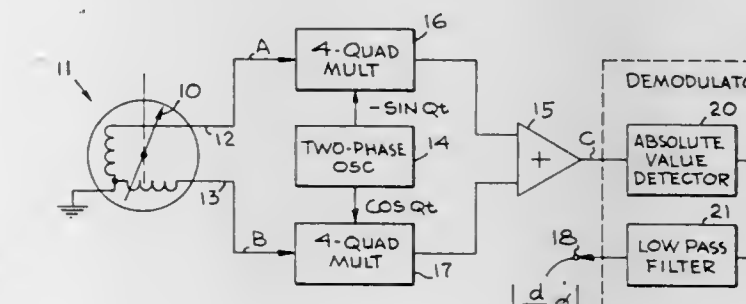
Ronnie G. Walters, Mayfield Heights, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Aug. 21, 1969, Ser. No. 851,975

Int. Cl. G01p 3/48

U.S. Cl. 324-173

10 Claims



Apparatus is disclosed for determining angular velocity using a resolver and multiplying its stator (orthogonal vector component) signals by signals representing the functions  $-\sin Q_t$  and  $+\cos Q_t$ , combining the products arithmetically, and demodulating the sum signal. The demodulator output is proportional to the magnitude of angular velocity. For a velocity signal with proper sign, the stators are driven by the signals representing the functions  $-\sin Q_t$  and  $+\cos Q_t$  to obtain a signal across a high impedance (constant current) source which, upon compensation for phase shifts introduced by the resolver, is used as a reference in determining the proper sign for a velocity signal. When the stator signals are replaced by orthogonal vector component signals of any vector, rectangular to polar coordinate conversion is achieved. A DC signal proportional to the vector angle is obtained by a circuit which detects the phase difference between the sum signal and the signal representing the function  $\cos Q_t$ .



3,629,706

# STRAIGHT-THROUGH R.F. MICROWAVE COMMUNICATIONS REPEATER SYSTEM USING TUNNEL DIODE AMPLIFIER FOR CONSTANT POWER OUTPUT LEVEL

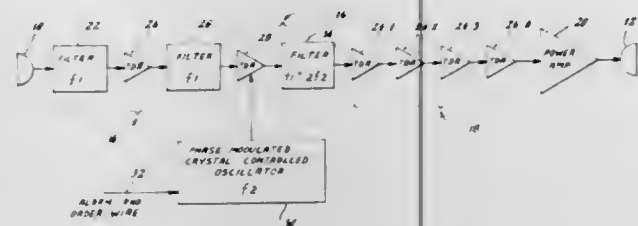
Norman E. Chasek, Stamford, Conn., assignor to International Microwave Corporation, Cos Cob, Conn.

Filed Jan. 28, 1969, Ser. No. 794,680

Int. Cl. H04b 1/59, 7/14

U.S. Cl. 325—9

4 Claims



A straight-through radiofrequency microwave communications repeater system using tunnel diode amplifier for constant power output level in spite of changes in input power level over very wide ranges without distortion, i.e. a novel limiting action which is substantially perfect over a very wide range of input levels such as occurs by "fading" of the input signals. The output level is kept constant on an instantaneous basis independent of the input level without frequency distortion, without AM to phase modulation distortion, thus providing nearly perfect limiting action over a wide dynamic range of received signal levels. Automatic gain control is obtained without any feedback arrangements. A fail-safe action is provided by the novel arrangement of the tunnel diode amplifier modules coupled in cascaded relationship. In the illustrative embodiment a tunnel diode amplifier translator provides frequency conversion with zero db conversion loss and with a translation of the input signal by an amount of twice the frequency of the local oscillator, while the carrier signal is suppressed. Other frequency translators may be used if desired. A great reduction in the number of components is attained, while a greatly increased bandwidth capability is achieved, i.e. up to 500 megaHertz, the result of these features plus the fail-safe attributes is a tremendous increase in reliability, and an extension of commercial microwave communications into hitherto unexploited frequency realms becomes possible.

3,629,707

# MOVING OBJECT COMMUNICATION CONTROL SYSTEM

Takeshi Baba, Tokyo; Kenji Shibuya, Ohmiya; Ietsuro Maruhama, Amagasaki; Tsuneo Nakahara, Nishinomiya, and Kenichi Yoshida, Sakai, all of Japan, assignors to Japanese National Railways; Mitsubishi Electric Corp., Tokyo and Sumitomo Electric Industries, Ltd., Osaka, Japan

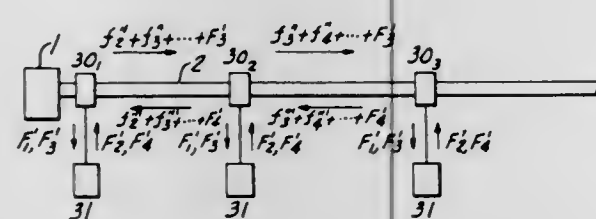
Filed July 28, 1969, Ser. No. 845,167

Claims priority, application Japan, July 30, 1968, 43/54099

Int. Cl. H04b 1/00

U.S. Cl. 325—53

8 Claims



A communication system between mobile and wayside stations wherein the mobile stations are traveling on a track

which is divided into sections by means of an open-type transmission line paralleling the track. A frequency selection and conversion device for each section of transmission line or track is connected to the transmission line to define the length of each section. A series of lower frequency carriers transmitted on the line are allotted respectively to each specific section of transmission line. These low-frequency carriers travel with a low loss along the transmission line and they are selected and converted by their respective frequency selection and converter device to a common high-frequency carrier signal for leaky transmission to a mobile station on the corresponding track section. These signals are used for train control and other communication signals may be transmitted on the same transmission line by a high-frequency carrier signal which is common to all sections, such that the common signal will leak from the transmission line for reception by a mobile station no matter its location on the track.

3,629,708

# VHF-UHF TUNER MECHANISM FOR TELEVISION RECEIVERS

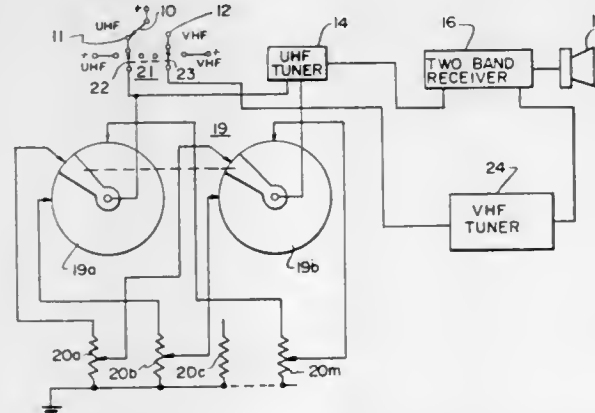
Orville D. Thurnell, St. Charles, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Sept. 16, 1969, Ser. No. 858,452

Int. Cl. H04b 1/16

U.S. Cl. 325—461

13 Claims



A tuner control mechanism for a television receiver capable of operation in the VHF and UHF bands of frequencies includes a conventional VHF tuner mounted on a common shaft with a turret of radially extending linear potentiometers for each of the detented positions of the VHF tuner. The linear potentiometers are used to provide a tuning voltage for a varactor tuned UHF tuner, and a band select switch is located for operation by a rotary cam which is rotated with the VHF and UHF tuner elements in order to effect selection of the band of frequency to which the television receiver is to be tuned for each detented position of the mechanism.

3,629,709

# ELECTRONIC FREQUENCY CONVERTER

Jean Engdahl, Neuchatel, Switzerland, assignor to S. A. Ebauches, Neuchatel, Switzerland

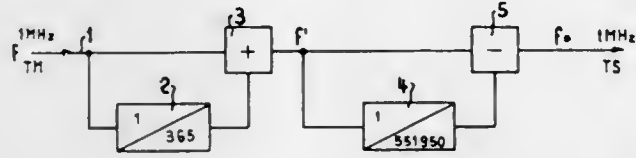
Filed Dec. 17, 1969, Ser. No. 885,884

Claims priority, application Switzerland, Dec. 20, 1969, 19087/68

Int. Cl. H03b 19/00

U.S. Cl. 328—15

8 Claims



An electronic frequency converter for digitally converting the frequency of a first pulse series at a frequency cor-

responding to mean time or atomic time into a pulse series at a frequency corresponding to sidereal time by pulse addition and pulse subtraction.

3,629,710

# DIGITALLY CONTROLLED PULSE GENERATOR

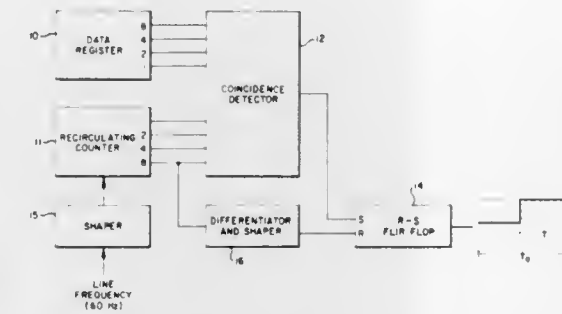
Douglas H. Durland, Palo Alto, Calif., assignor to Beckman Instruments, Inc.

Filed Dec. 16, 1970, Ser. No. 98,724

Int. Cl. H03k 5/04, 23/02

U.S. Cl. 328—58

10 Claims



A digitally controlled pulse generator whose duty cycle may be rapidly and accurately varied to supply a load with a required amount of power including a data register, a recirculating counter, a coincidence detector connected to the memory unit and the recirculating counter for providing an output signal when the count stored in the memory unit coincides with that in the recirculating counter and a bistable storage element having one input connected to the coincidence detector and a second input connected to the counter such that the storage element is set in one state each time the coincidence detector provides an output signal and in the other state each time the counter recycles to zero.

3,629,711

# THREE WIRE DIGITAL SYNCHRONIZER

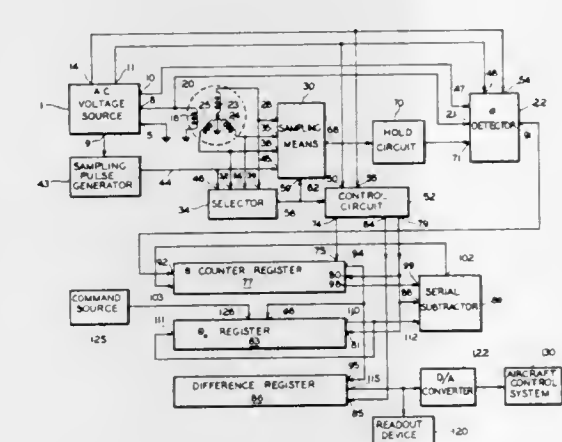
John C. Strole, Dumont, N.J.; Laszlo I. Szerenyi, Frederick, Md., and Harold Morelines, Springfield, N.J., assignors to The Bendix Corporation

Filed June 18, 1968, Ser. No. 738,045

Int. Cl. H03k 17/00

U.S. Cl. 328—72

8 Claims



A three-wire digital synchronizer for use in an aircraft for synchronizing flight data to prevent an abrupt change in air-

893 O.G.—42

craft attitude when switching from manual to automatic control. Converting means are provided for converting the intermediate output of a three-wire signal device, such as a synchro, to pulses related in quantity to the actual flight of the aircraft. A counter/register counts the pulses and applies the count to a register until control of the aircraft is switched from manual to automatic control whereupon the count present in the register is locked in but the count in the counter/register continues to change in accordance with the flight data. A subtractor determines the difference in count contained in the counter/register and the register and the difference is used to automatically correct flight of the aircraft.

3,629,712

# PHASE COMPARATOR

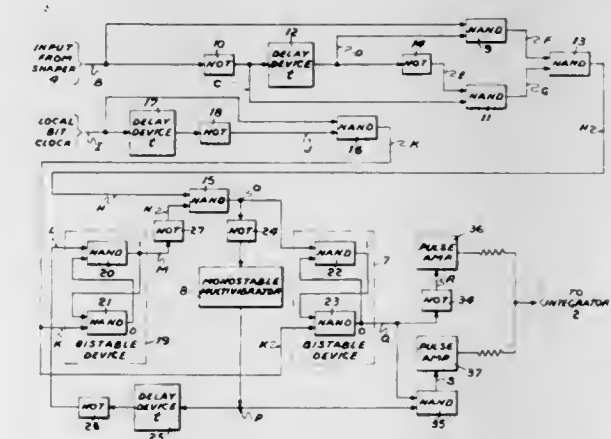
James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 24, 1970, Ser. No. 66,324

Int. Cl. H03k 5/20

U.S. Cl. 328—109

6 Claims



An improved phase comparator for a phase-locked loop to extract the bit clock from binary data bits by detecting both the positive and negative transitions of the data bits. An equal number of the positive and negative transitions, statistically, are sampled and a transition (either positive or negative) is inhibited by cooperation of an additional bistable device controlled by a monostable device, if this transition occurs within one bit period after a previously sampled transition (either positive or negative). This technique compensates for the asymmetrical phase noise characteristic present due to transition jitter when only one transition of the data bits are detected and prevents an attempt at 100 percent duty cycle operation of the monostable device when both transitions of the data bits are detected.

3,629,713

# METHOD OF OBTAINING THE SIGNAL DEPENDENT UPON THE PERCENTAGE ASYMMETRY OF A 3-PHASE SYSTEM

Stanislaw Szpilka, plac Grunwaldzki 4/84, Katowice, Poland  
Continuation-in-part of application Ser. No. 672,238, Oct. 2, 1967, now abandoned. This application June 1, 1970, Ser. No. 42,256

Int. Cl. H03b 3/04; H03k 5/20

U.S. Cl. 328—149

4 Claims

For a three-phase input signal, three detecting circuits for generating triggering pulses when the phases reach predeter-



mined magnitudes and monostable circuits generating rectangular pulses under the control of the triggering pulses, there



further being a gate to generate an output signal when the three-phase signal is unbalanced.

3,629,714

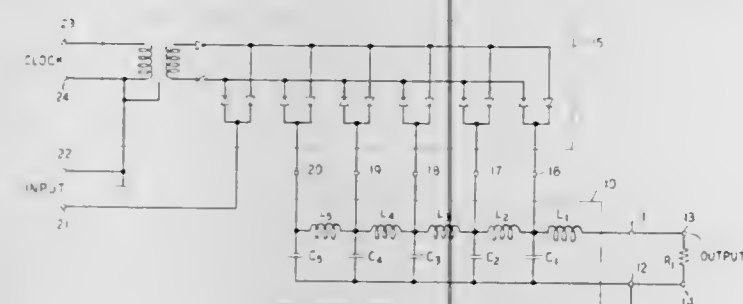
## ELECTRONIC SAMPLING AND HOLD CIRCUIT

Ronald Lee Earp, Burlington, N.C., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.  
Filed Mar. 12, 1970, Ser. No. 18,912

Int. Cl. H03k 17/74

U.S. Cl. 328-151

5 Claims



A sample and hold circuit is disclosed in which a gate is enabled to apply a wave sample to the capacitors of a delay line whereupon energy is stored in the capacitors. When the gate is disabled, the stored energy is discharged with the line being effective to produce a relatively flat-topped output over a period of time following the disablement of the gate.

3,629,715

## DIGITAL PHASE SYNTHESIZER

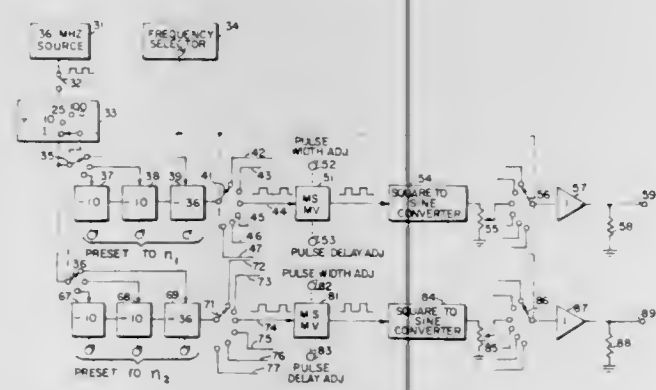
Benjamin W. Brown, Nashua, and James A. Valentino, Salem, both of N.H., assignors to Sanders Associates Inc., Nashua, N.H.

Filed Oct. 15, 1969, Ser. No. 866,550

Int. Cl. H03b 3/04

U.S. Cl. 328-155

11 Claims



A method and apparatus for generating two series of repetitive signals having the same selectable repetition

frequency but differing in phase by a precisely selectable amount in which repetitive signals are generated and then counted simultaneously in two series starting with different preselected initial counts and in which first and second output signals are generated each time each count reaches a predetermined count and integral multiples thereof.

3,629,716

## METHOD AND APPARATUS OF INFINITE Q DETECTION

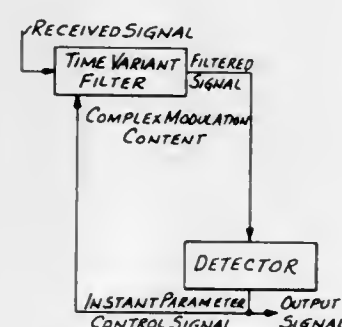
Donald F. Dimon, Pittsburgh, Pa., assignor to Infinite Q Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1969, Ser. No. 809,675

Int. Cl. H03d 3/18

U.S. Cl. 329-50

12 Claims



The method of maintaining positive locked-on detection with instantaneous locked-on filter tracking of a complex modulated carrier signal by instantaneous employment of the complex modulation content of the signal to respectively provide complex-angularly locked-loop detection of any modulated carrier and exclude all other signals and noise not a part of the modulated carrier signal to provide detection of infinite Q capabilities and the structure thereof.

Locked-on tracking is obtained by instantaneously and continuously filtering the modulated carrier signal by synchronously filter-tracking the same with the modulation excursions thereof.

To maintain synchronization with the unfiltered modulated carrier signal, synchronous demodulation is preferred whereby a matched signal (matched to the filtered signal) is generated and synchronously demodulated with the filtered signal and the modulation excursion or content signals of both the filtered modulated carrier and the matched modulated carrier are used to produce output signal that is employed to instantaneously control the parameters of the tracking filter and the parameters of the matched signal generator, thereby maintaining synchronization in continuous tracking and positive locked-on detection (complex-angularly locked-loop detection).

The unfiltered modulated signal is filtered through a time variant filter to produce the carrier signal with its modulations alone. The filter and the generator employed for producing the synchronized matched modulated carrier signal, are each preferably identical structures with the exception that the generator does not have an external input connection.

The filter and generator preferably include as one example embodiment, a connected closed loop series circuit having a multiple input inverter and a first and second integrator, each integrator having variable parameters that are controlled by the modulation content of the filtered signal obtained through a detection process.

3,629,717

## CIRCUIT ARRANGEMENT FOR STABILIZING AGAINST VARIATIONS IN TEMPERATURE AND SUPPLY VOLTAGE

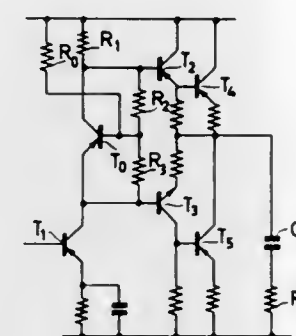
Jorgen Peter Christian Vilhelm Bisgaard, Copenhagen, Denmark, assignor to North American Philips Company Inc., New York, N.Y.

Continuation of application Ser. No. 481,699, Aug. 23, 1965, now abandoned. This application Mar. 29, 1968, Ser. No. 717,461

Int. Cl. H03f 1/32, 3/04

U.S. Cl. 330-23

13 Claims



A temperature dependent element for bias stabilizing transistors comprises a transistor connected as a negative feedback amplifier with a voltage divider for applying a predetermined portion of the collector-emitter voltage to the base. The collector-emitter path of the transistor is connected in parallel with the emitter-base paths of the transistors to be stabilized. A resistor connected between the divider and the operating source may be provided to stabilize the bias of the transistors against supply voltage variations.

3,629,718

## MULTICHANNEL DYNAMIC LEVEL CONTROL CIRCUIT

Eberhard Klein, and Hans-J. Zabel, both of Hildesheim, Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany

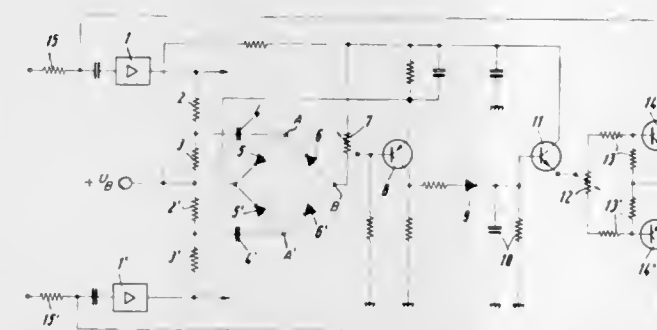
Filed Jan. 22, 1970, Ser. No. 5,047

Claims priority, application Germany, Mar. 20, 1969, P 19 14 071.7

Int. Cl. H03g 3/30

U.S. Cl. 330-29

3 Claims



To enable use of a single automatic gain control amplifier in stereo, and other multichannel apparatus, a control transistor is provided, having similar input coupling circuits, connected to the various channels, over condenser-diode networks, the diodes being so poled that only a half wave of the signal from any one channel is applied to the control transistor, and signal feed back from one channel to another is inhibited, the serial path between two channels being formed by serially connected, oppositely poled diodes; preferably, the AGC output stage has a center tapped, adjustable resistance as its input, compensation for inequality between amplifier characteristics with respect to the various channels being done by adjusting the exact position of the center tap.

3,629,719

## DIFFERENTIAL AMPLIFYING SYSTEM

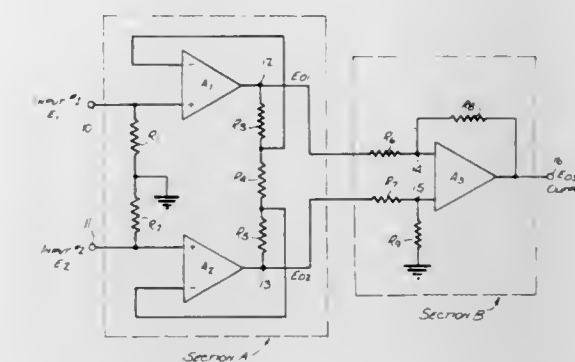
Oscar Heller, Brooklyn, N.Y., and John A. Chmiel, Linden, N.J., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,166

Int. Cl. H03f 2/00

U.S. Cl. 330-69

4 Claims



A differential amplifying system in which two signal voltages are applied to respective positive inputs of a pair of high-gain operational amplifiers, each of whose output terminals is coupled by a negative feedback resistor to the negative input. The output terminals of the pair of amplifiers are connected to the two inputs on a third operational amplifier having a relatively low gain to produce a single-ended output voltage at the output terminal thereof, the system being characterized by a high common-mode rejection ratio, high differential voltage gain, and high-input impedance of equal magnitude at each input terminal.

3,629,720

## DIGITALLY CONTROLLED VARIABLE-GAIN LINEAR DC AMPLIFIER

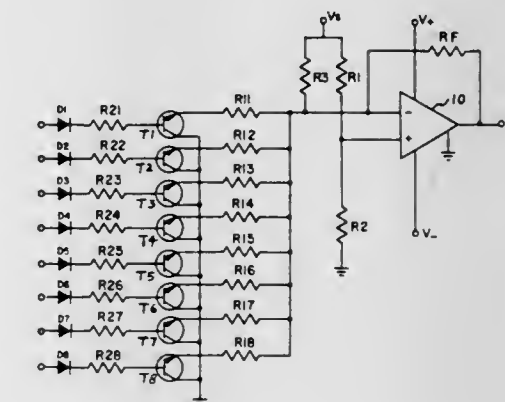
Adel S. Sedra, 66 Pacific Avenue #1412, Toronto, 65, and Kenneth C. Smith, 92 Pettit Drive, Weston, Ontario, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Mar. 12, 1970, Ser. No. 18,930

Int. Cl. H03g 3/00

U.S. Cl. 330-86

4 Claims



A digitally controlled variable gain linear DC amplifier consisting of a resistance bridge in which the resistance of one arm is determined by "n" binary weighted resistors connected in parallel and adapted to be switched in or out of the circuit by a n-bit binary control signal has its output connected to the input of an operational amplifier having a feedback resistor of equal value to the resistance of one arm of the bridge. The gain of the amplifier is determined by the resistance value of the "n" binary weighted resistors in relation to the resistances in the other arms of the bridge and the feedback-resistance of the amplifier.



3,629,721

## ORTHOGONAL FILTERS

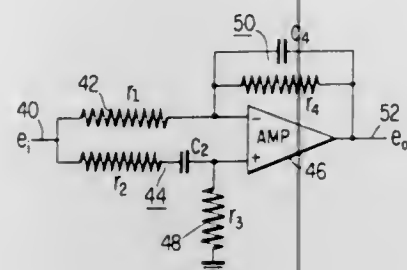
William Fulmer Fordyce, Woburn, and Edmund John Mitchell, Auburndale, both of Mass., assignors to RCA Corporation

Filed July 30, 1969, Ser. No. 846,029

Int. Cl. A03f 1/36

U.S. Cl. 330-107

2 Claims



An orthogonal filter is synthesized from a transfer function. The elements are calculated exactly, as opposed to trial and error. Filters are provided having a first and second impedance connected to the first and second input terminals of a differential amplifier, a third impedance connected between one input terminal of the amplifier and a point of reference potential and a fourth impedance is connected between the other input terminal and the output terminal of the amplifier.

3,629,722

## BACK-TO-BACK OSCILLATOR SWITCHING ARRANGEMENT

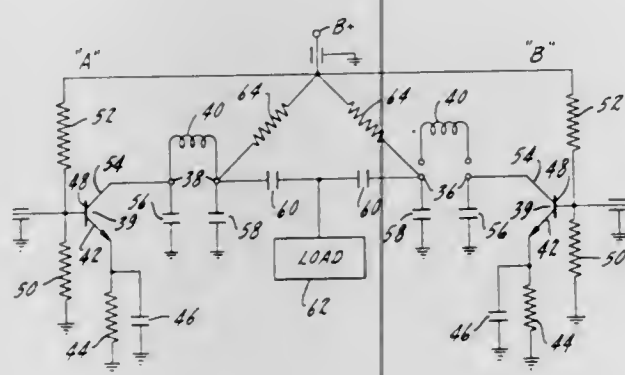
Eugene C. Walding, Arlington Heights, Ill., assignor to Oak Electro/Netics Corporation, Crystal Lake, Ill.

Filed Feb. 19, 1970, Ser. No. 12,599

Int. Cl. H03b 5/12; H03j 5/28

U.S. Cl. 331-48

8 Claims



A switching arrangement including a rotatable shaft and a detent controlling position of the shaft. Mounted on the shaft are a pair of circuit element carriers, each including a plurality of similar circuit elements and having peripheral blades for use in making electrical connection with the circuit elements. Positioned alongside of the shaft are stationary clips, which are arranged relative to the shaft and the circuit element carriers such that at each position of the rotatable shaft, as controlled by the detent, only one circuit element will be connected to the stationary clips. Oscillator circuit means are associated with the stationary clips. At each position of the rotatable shaft only one circuit element is connected in operable electric circuit with the oscillator means.

## ATHERMAL LASER USING A ONE-EIGHTH WAVE FARADAY ROTATOR

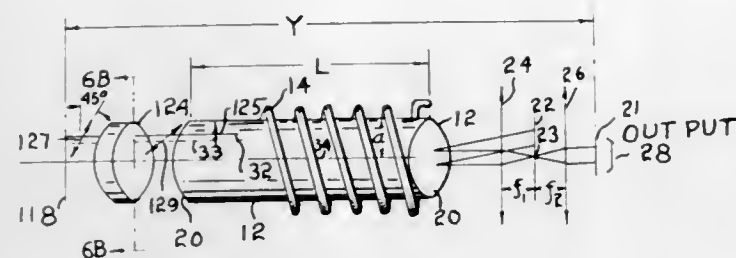
Elias Snitzer, Wellesley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of application Ser. No. 375,568, June 16, 1964, now abandoned. This application Apr. 21, 1969, Ser. No. 817,867

Int. Cl. H01s 3/16

U.S. Cl. 331-94.5

9 Claims



A laser device with a laser rod positioned within an optical resonant cavity. The composition of the rod is chosen to have a coefficient of linear expansion  $\alpha_L$  and a thermal coefficient of the index of refraction  $\alpha_n$  such that the average of the optical path lengths for radial and tangential polarization is equal to the optical path lengths for a ray through the center of the rod. A mode selecting aperture is positioned at an end of the rod along the axis of the cavity for discriminating against all but the  $HE_{11}$  mode. A  $\frac{1}{8}$  wave Faraday rotator is also positioned along the axis of the cavity. The result is a laser device in which the thermal gradient effects are substantially eliminated.

3,629,724

## SEMICONDUCTOR OSCILLATING-RESONANCE CIRCUIT DEVICE

Kazumasa Shiga, Kadoma, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Limited, Osaka, Japan

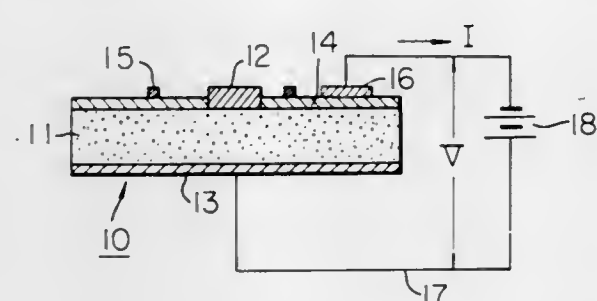
Filed July 7, 1969, Ser. No. 839,154

Claims priority, application Japan, July 19, 1968, 43/51425

Int. Cl. H03b 7/14

U.S. Cl. 331-96

3 Claims



A semiconductor oscillating-resonance circuit device is provided, which comprises a first plate electrode, a substrate disposed on the first electrode and having a negative resistance under a strong electric field, a spiral induction element having an inductance disposed at the opposite side of the substrate to the first plate electrode, an insulating layer disposed between the substrate and the induction element for providing a capacitance between the first electrode and the induction element, a second electrode connected to the one end of the induction element and ohmically contacted with the substrate, electric terminal connected to the other end of the induction element, and a DC power source connected to the first plate electrode and the electric terminal for establishing the strong electric field in the substrate.

The thus-constructed device generates a high-frequency signal having a frequency determined by the inductance and the capacitance.

3,629,725

## DRIVEN INVERTER WITH LOW-IMPEDANCE PATH TO DRAIN STORED CHARGE FROM SWITCHING TRANSISTORS DURING THE APPLICATION OF REVERSE BIAS

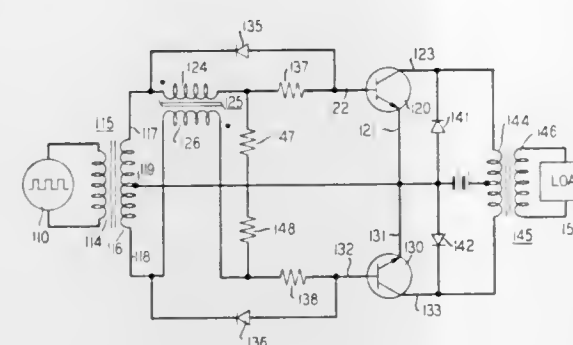
Ping Sun Chun, Morris Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 24, 1969, Ser. No. 888,019

Int. Cl. H03f 3/26; H03k 3/26

U.S. Cl. 331-113 A

6 Claims



The base drive paths of the two switching transistors in a push-pull type inverter are magnetically coupled by a saturating magnetic core. Until saturation of the core occurs, the base-emitter voltage of the on-going switching transistor is clamped at a sufficiently low value to prohibit turn-on of the transistor. Thus turn-on of the on-going transistor is delayed. Each base drive path includes an impedance in series with the base during conduction to limit stored charge in the transistor base region, as well as a reverse-bias low-impedance discharge path to allow the stored charge in the off-going transistor to dissipate during the delay interval.

3,629,726

## OSCILLATOR AND OSCILLATOR CONTROL CIRCUIT

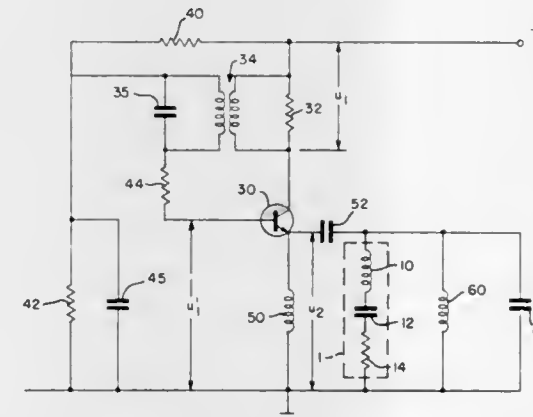
Gabriel Popescu, Queens, N.Y., assignor to Surgical Design Corp., Long Island City, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,240

Int. Cl. H03b 5/40

U.S. Cl. 331-116 M

11 Claims



An oscillator circuit adapted particularly for use with transducers for producing energy in the ultrasonic frequency range in which a combination of feedback signals representative of the voltage across the transducer and the current through the transducer are used to more precisely lock the oscillator to the resonant frequency of the load to thereby provide improved power transfer from the oscillator to the transducer. A current control circuit is also provided to control the amount of shock delivered by the transducer.

3,629,727

## CIRCUIT FOR SUSTAINING OSCILLATION OF A RESONATOR BY A FREQUENCY ABOVE THE NATURAL FREQUENCY OF SAID RESONATOR

Jean Claude Berney, Lausanne, Switzerland, assignor to Compagnie des Montres Longines, Francillon S.A., Berne, Switzerland and Bernard Golay S.A., Lausanne, Vand, Switzerland

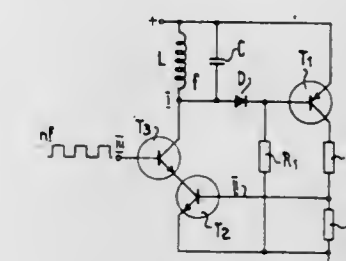
Filed May 5, 1970, Ser. No. 34,735

Claims priority, application Switzerland, May 20, 1969, 7635/69

Int. Cl. H03b 3/04, 5/12

U.S. Cl. 331-117 R

3 Claims



An electronic circuit allowing sustaining oscillation of a resonator by a reference frequency substantially exceeding the natural frequency of the resonator, wherein pulses at reference frequency and natural frequency are applied to the inputs of an AND-gate and the resonator is coupled to the output of the AND-gate for sustaining its oscillation by the output pulses of the AND-gate.

3,629,728

## A PULSE SELECTION SYSTEM USING PULSE POSITION TO PULSE AMPLITUDE CONVERSION

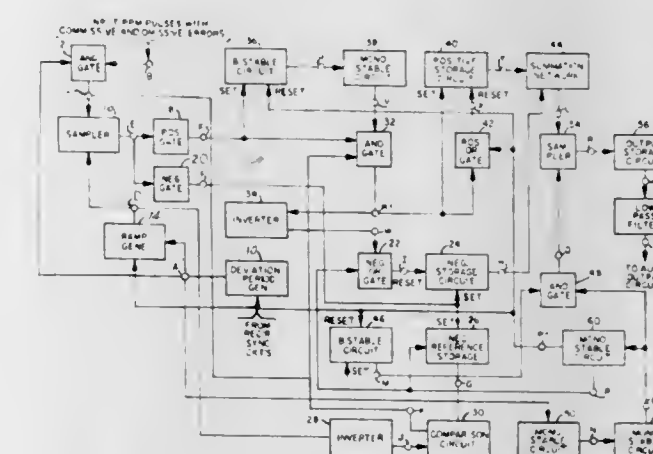
Billy W. Whitlow, Orange County, Fla., assignor to Martin-Marietta Corporation, Middle River, Md.

Filed Mar. 31, 1964, Ser. No. 356,147

Int. Cl. H03k 7/00

U.S. Cl. 332-1

5 Claims



This invention pertains to a pulse selector for demodulating pulse position modulated signals, involving means for converting all incoming pulses received during the first half cycle of a time frame into amplitude modulated pulses of one polarity, and all pulses received during the last half cycle of the time frame to the opposite polarity, such means being used in conjunction with selecting means for selecting from each set of amplitude modulated pulses, the pulse which is closest in amplitude to zero volts. A pulse containing intelligence is thus separated from noise and interference pulses based upon the likelihood that the pulse nearest the center of a given sample period is the intelligence pulse.



3,629,729

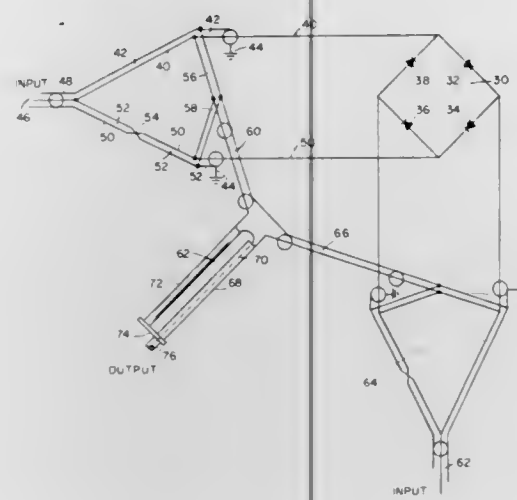
**HIGH-FREQUENCY DOUBLY BALANCED WIDE WAVEBAND RING-CONNECTED DIODE MODULATOR**  
John Hessler, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 24, 1970, Ser. No. 49,291

Int. Cl. H01p 3/06; H04b 1/26

U.S. Cl. 332-16 R

3 Claims



A very wide band high-frequency modulator is disclosed using ring-connected diodes in which the local oscillator and the signal frequency can be very different from each other. The modulator is doubly balanced and uses two wide band phase inverters connected across conjugate diagonals of the ring-connected diodes and a balanced to unbalanced output connection.

3,629,730

**CAPACITOR ARRANGEMENT FOR WAVE CONDUCTOR SYSTEMS**

Hans-Joerg Penzel, and Hermann Kadow, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

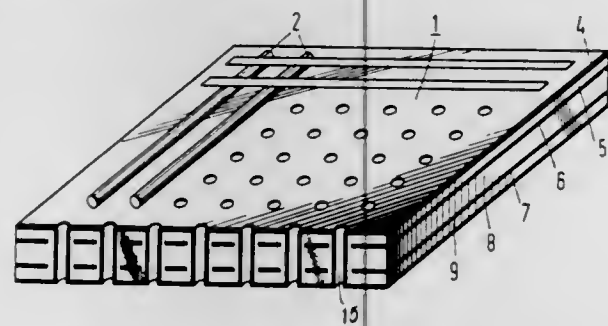
Filed Mar. 23, 1970, Ser. No. 21,770

Claims priority, application Germany, Apr. 15, 1969, P 19 19 110.7

Int. Cl. H01p 3/02; H03h 7/48

U.S. Cl. 333-1

2 Claims



A matrix storer having magnetic storage elements arranged in rows and columns and constructed as wave conductors. The wave conductors are disposed substantially parallel to a base conductor which serves as a common return line for pulses conducted along the drive or reading lines of the storer. A further conducting plane is spaced from the base plane and separated therefrom by a thin insulating layer to form a capacitor which couples the potential of the drive or reading lines to the base plane. Additional layers of conducting planes can be provided to form an additional capacitor for high-frequency coupling to the base plane. The additional conductors are insulated from each other and from the conductors forming the first capacitance, and a plurality of connectors are distributed throughout the surface of the capacitor to directly couple one of the conducting plates forming the second capacitor to the base plane.

3,629,731

**SAMPLING SYSTEM**

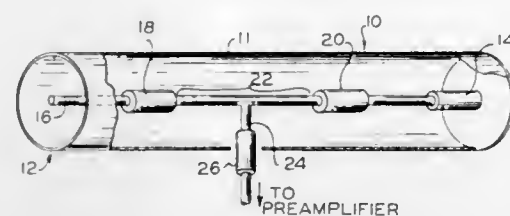
George J. Frye, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed July 12, 1968, Ser. No. 744,491

Int. Cl. H01p 5/12, 3/08; H03k 5/13

U.S. Cl. 333-7

29 Claims



A sampling system for providing a sample of a high-speed input signal for display on an oscilloscope includes a transmission line to which the input signal is applied. The transmission line includes a pair of semiconductor diodes which are rendered nonconducting at a selected time for isolating a section of transmission line therebetween and temporarily storing a sample of the input signal. Output means connected to the transmission line between the diodes couples the sample to a cathode ray tube display means.

3,629,732

**BROADBAND BIASING CIRCUIT COOPERATING WITH SWITCH TO ESTABLISH BROADBAND RF FILTER PATH BETWEEN INPUT AND OUTPUT PORTS**

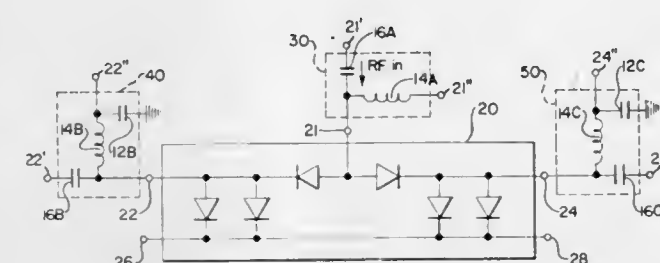
Philip E. King, Acton, and Paul C. Finne, Reading, both of Mass., assignors to Alpha Industries, Inc., Newton Upper Falls, Mass.

Filed May 5, 1969, Ser. No. 821,650

Int. Cl. H01p 1/10

U.S. Cl. 333-7

3 Claims



A broadband biasing circuit in a coaxial line configuration includes L-networks formed of series capacitors and shunt inductors. The inductors are coils formed within the coaxial line and have a diameter approximately half the diameter of the inner conductor. The L-networks connect to the RF-signal terminals of a device to be biased and supply bias signals to the device through the inductors. The L-networks selectively interconnect with one another through the device forming a substantially reflectionless high-pass filter circuit.

3,629,733

**HIGH-DIRECTIVITY MICROSTRIP COUPLER HAVING PERIODICALLY INDENTED CONDUCTORS**

Allen F. Podell, Cambridge, Mass., assignor to Adams-Russell Co., Inc., Waltham, Mass.

Filed June 8, 1970, Ser. No. 44,217

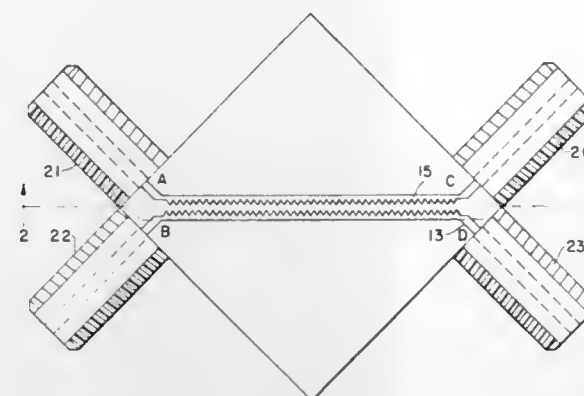
Int. Cl. H01p 5/14

U.S. Cl. 333-10

7 Claims

A directional coupler employing a microstrip line with a pair of conductors printed on a dielectric block, which has a ground plane adhered to the opposite surface. The inner con-

fronted edges of the pair of conductors are periodically indented with the indentations being staggered so that the dielectric constant. A magnetic bias is applied parallel to the side or narrow waveguide wall in the vicinity of the laminated



spacing between the edges of the conductors remains uniform.

3,629,734

**BROADBAND DOUBLE-RIDGE WAVEGUIDE MAGIC TEE**

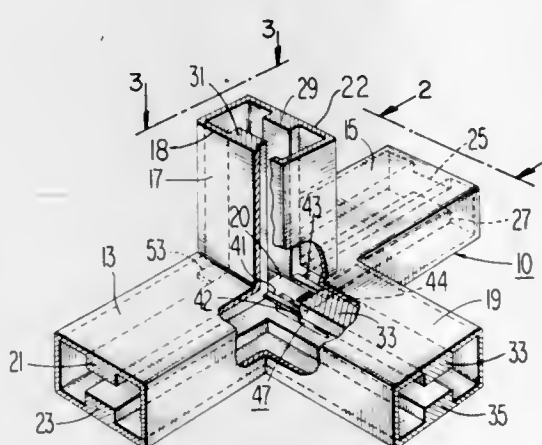
Wieslaw Wojciech Siekanowicz, and Robert Wayne Paglione, both of Trenton, N.J., assignors to RCA Corporation

Filed July 15, 1970, Ser. No. 55,057

Int. Cl. H01p 5/12

U.S. Cl. 333-11

6 Claims



A broadband double-ridge waveguide magic tee employing two rods for connecting the upper ridge of the H-arm of the magic tee to both ridges of the E-arm of the magic tee. The upper ridges of each of the colinear side arms is connected to the nearest ridge of the E-arm. The lower ridges of the colinear side arms and the H-arm are connected to each other.

3,629,735

**WAVEGUIDE POWER LIMITER COMPRISING A LONGITUDINAL ARRANGEMENT OF ALTERNATE FERRITE RODS AND DIELECTRIC SPACERS**

John L. Carter, Oakhurst, and Joseph W. McGowan, Spring Lake Heights, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

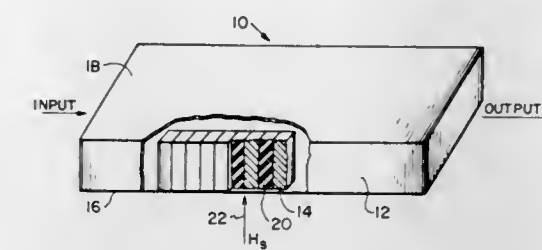
Filed Oct. 1, 1969, Ser. No. 862,734

Int. Cl. H03g 11/04; H01p 1/32

U.S. Cl. 333-17

8 Claims

A microwave power limiter having a plurality of spaced, uniformly dimensioned ferrite rods aligned along and adjacent to the side or narrow wall of a rectangular waveguide propagating the energy to be limited. The ferrite rods are separated by dielectric rods which are identical in configuration to the ferrite rods and are characterized by the same



ferrite and dielectric rod structure to provide a condition of subsidiary resonance.

3,629,736

**SYSTEM FOR GENERATING INITIAL SETTINGS FOR AN AUTOMATIC TRANSVERSAL EQUALIZER**

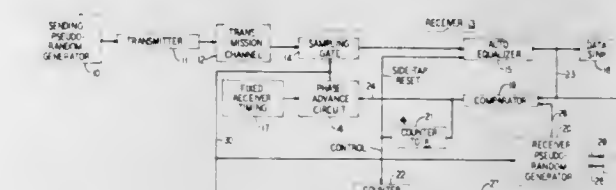
Donald Hirsch, Matawan, and Howard Clarence Meadors, Jr., Wayside, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 2, 1970, Ser. No. 77,657

Int. Cl. H04b 3/04

U.S. Cl. 333-18

6 Claims



In a transversal equalizer with tap multipliers whose settings are automatically controlled by the mean-square error difference between a predetermined transmitted work pattern and a receiver-generated identical pattern, an improvement in startup performance in the presence of high-level distortion is achieved by making incremental phase changes in the receiver timing on each failure of comparison between the two patterns. Further improvement is effected by resetting all tap multipliers, except a reference multiplier, to the zero condition when such comparison failures persist. Upon repeated failure for a predetermined number of occurrences the state of the receiver word generator is altered to conform to the most recently received segment of the transmitted work pattern thus attaining timing synchronization and initial equalizer adjustment simultaneously.

3,629,737

**TRANSMISSION LINE FORMED BY A DIELECTRIC BODY HAVING A METALLIZED NONPLANAR SURFACE**

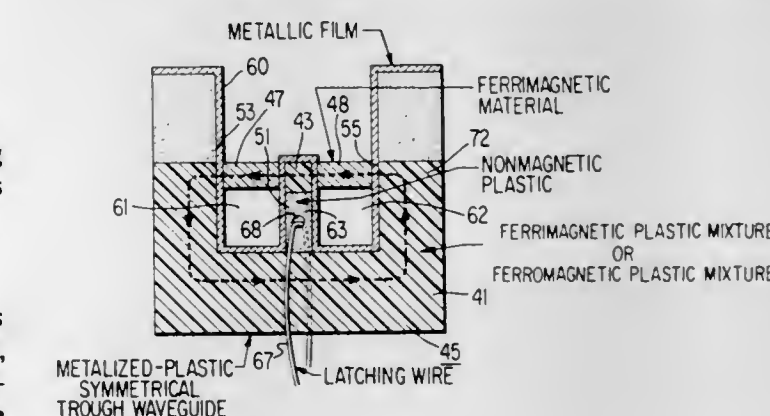
Cheng Paul Wen, Trenton, N.J., assignor to RCA Corporation

Filed Aug. 18, 1969, Ser. No. 850,862

Int. Cl. H01p 1/32, 3/12, 5/02

U.S. Cl. 333-24.1

5 Claims



A transmission line made of a block of dielectric material having a metallized formed surface which determines the



electric and magnetic field characteristics of an electromagnetic wave applied thereto. The formed surface of the block of dielectric material is such as to define two sidewalls, a ridge between the two sidewalls and two bottom walls with the ridge being spaced between the sidewalls by the width of the bottom walls. The formed surface is covered by conductive material so as to cover the ridge, the bottom walls and the sidewalls, whereby the entire surface of the groove comprises conductive material. This transmission line lends itself to batch fabrication techniques for the production of a single transmission line or a complete system of such lines.

3,629,738

## MICROSTRIP DELAY LINE

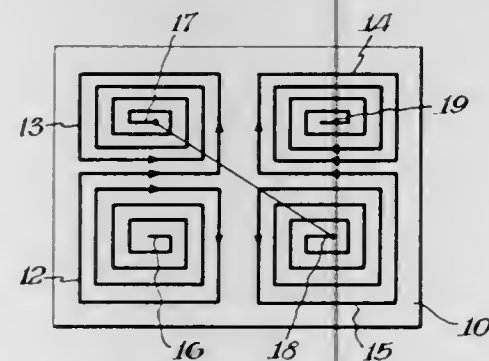
George A. Sent, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of application Ser. No. 730,026, May 17, 1968. This application June 1, 1970, Ser. No. 42,414

Int. Cl. H03b 7/30

U.S. Cl. 333-30

6 Claims



An effective ground plane pattern adjusted for minimum phase distortion is provided for a microstrip delay line by varying the distances between shorting bars which interconnect conductive strips spaced apart so as to encompass the entire ground plane area.

3,629,739

## REFLECTION-TYPE DIGITAL PHASE SHIFTER

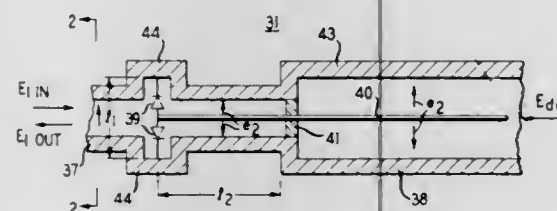
Mark R. Barber, Summit, and Reed E. Fisher, Parsippany-Troy Hills Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Original application Feb. 23, 1966, Ser. No. 529,453, now Patent No. 3,460,122, dated Aug. 5, 1969. Divided and this application Aug. 4, 1969, Ser. No. 858,229

Int. Cl. H03h 7/18

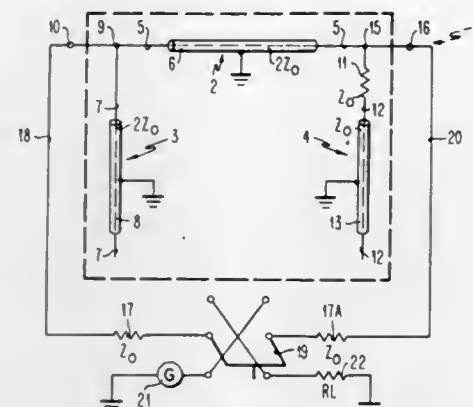
U.S. Cl. 333-31

9 Claims



A reflection-type digital phase shifter, which may also be called a path length modulator is disclosed comprising a waveguide, a pair of diodes interconnecting first and second opposite walls of the waveguide, and a center conductor of a coaxial cable extending through a third wall of the waveguide to bias the diodes.

3,629,740  
TRANSMISSION LINE FILTER CIRCUIT  
John F. Merrill, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed June 30, 1969, Ser. No. 837,758  
Int. Cl. H03h 7/28, 7/00; H03k 5/00  
U.S. Cl. 333-73 C 26 Claims



A filter circuit stage for pulse shaping having a main shield-grounded transmission line having a characteristic impedance  $2Z_0$  and a time length  $T$  terminated at both ends with legs of the same  $2Z_0$  impedance and same characteristic time length  $T$ . The first leg comprises an open-circuited shield-grounded stub of  $2Z_0$  impedance, and the other leg comprises a resistor  $Z_0$  impedance connected at one end to the main line and at the other end to an open-circuit shield-grounded transmission line stub of  $Z_0$  impedance. The filter is only required to be connected to a matching impedance of  $Z_0$  at the juncture of the first leg and the main transmission line. The input transition pulse can be applied at either end of the main line and the output pulse produced at its other end is an ultimate composite of two replicas of the input pulse. Each replica is one-half of the input amplitude. One is delayed by the time length  $T$  of the stage and the other is delayed by 3 times the time length of the stage.

3,629,741

## TRANSFORMER WITH CONTROLLED LOW COUPLING

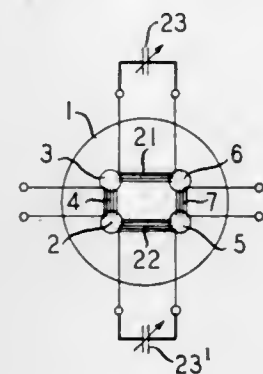
William L. Brune, Winston-Salem, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 29, 1969, Ser. No. 828,851

Int. Cl. H03h 7/08

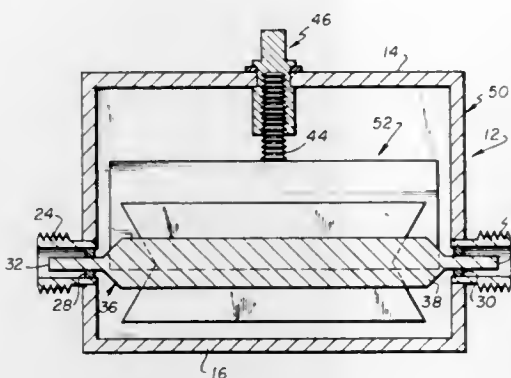
U.S. Cl. 333-78

4 Claims



A transformer having controlled low coupling between its windings. The transformer comprises a unitary core of ferromagnetic material, such as ferrite or carbonyl iron, fabricated in one piece with first and second pairs of apertures formed therein. A primary winding is threaded through the first pair of apertures and a secondary winding is threaded through the second pair of apertures. The coupling between these windings is controlled by means including a portion of the unitary core which is located between the two pairs of apertures. This provides completely closed magnetic paths in the core material for all the magnetic flux produced by driving either the primary or secondary windings.

3,629,742  
VARIABLE COAXIAL ATTENUATOR  
Ronald Davo, Succasunna, N.J., assignor to Meca Electronics, Inc., Denville, N.J.  
Filed Mar. 16, 1970, Ser. No. 19,908  
Int. Cl. H01p 1/22  
U.S. Cl. 333-81 A 12 Claims



A variable coaxial attenuator comprising a conductive casing having first input means and first output means for connecting the casing to the outer conductor of a coaxial transmission line, an inner conductive member disposed in the casing and spaced from the walls of the casing, second input means and second output means for connecting the inner conductor of a coaxial transmission line to the inner conductive member, lossy dielectric material disposed in the walls of the casing, and a pair of conductive plate members movably supported for movement between a nonobstructing position in which the lossy dielectric material will be entirely in the field of electromagnetic energy carried by the coaxial transmission line and an obstructing position in which the conductive plate members are disposed between the inner conductive member and the lossy dielectric material so that none of the electromagnetic energy carried by the coaxial transmission line is absorbed by the lossy dielectric material.

3,629,743

## OSCILLATING SYSTEM WITH MEANS FOR FREQUENCY VARIATION THEREOF

Jean-Claude Berney, Lausanne, Switzerland, assignor to Compagnie des Montres Longines Franchillon S.A., Saint-Imier and Bernard Golay S.A., Lausanne, Switzerland

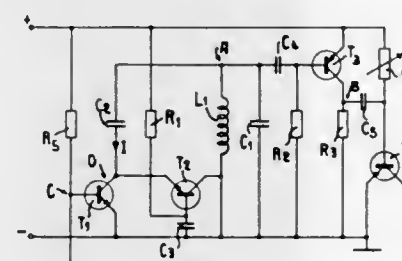
Filed Dec. 19, 1969, Ser. No. 886,448

Claims priority, application Switzerland, Dec. 27, 1968, 19285/68

Int. Cl. H03j 3/20

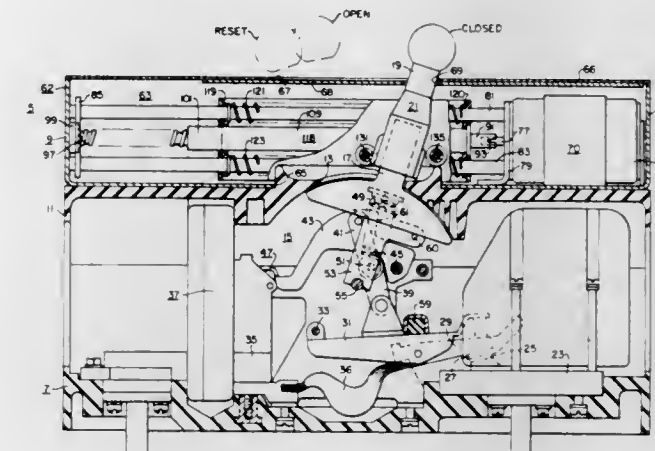
U.S. Cl. 334-89

5 Claims



A device for varying the resonance frequency of an oscillating system, comprising a condenser coupled to said system by means of an electronic two-way switch, open and closed condition of this switch being controllable in such a way that the apparent value of the condenser and thus the resonance frequency of said system may be shifted in accordance with the relation between the duration of closed and open condition of the switch.

3,629,744  
MOTOR-OPERATED CIRCUIT BREAKER  
Alfred E. Maier; Louis N. Ricci, both of Beaver Falls, and Charles E. Haugh, New Brighton, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Mar. 27, 1970, Ser. No. 23,199  
Int. Cl. H01h 3/02  
U.S. Cl. 335-69 9 Claims



An electric circuit breaker is manually operable by means of a front accessible handle and electrically operable by means of an improved motor-operating mechanism having resilient handle-operating means for preventing damage to the circuit breaker handle during operation.

3,629,745

## INTERRUPTER SWITCH FOR ROTARY SOLENOID

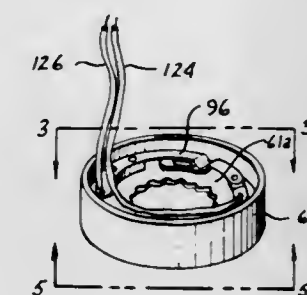
Robert M. Anderson, Xenia, Ohio, assignor to Ledex Inc., Dayton, Ohio

Filed July 7, 1970, Ser. No. 52,855

Int. Cl. H01h 67/06

U.S. Cl. 335-122

10 Claims



An interrupter switch is assembled in a rotary solenoid having two cooperating rotary conversion plates, one rotatably mounted and one nonrotatably mounted to develop a rotary motion. The rotary motion is transmitted to a driven shaft through a one-way drive mechanism. The driven shaft carries a detent structure coacting with an index plate to locate shaft positions. The interrupter switch is mounted to the index plate and operated by means of a cam slidably mounted in a window through the index plate and driven by a stud affixed to the rotatably mounted rotary conversion plate.



### 3,629,746 VACUUM RELAY

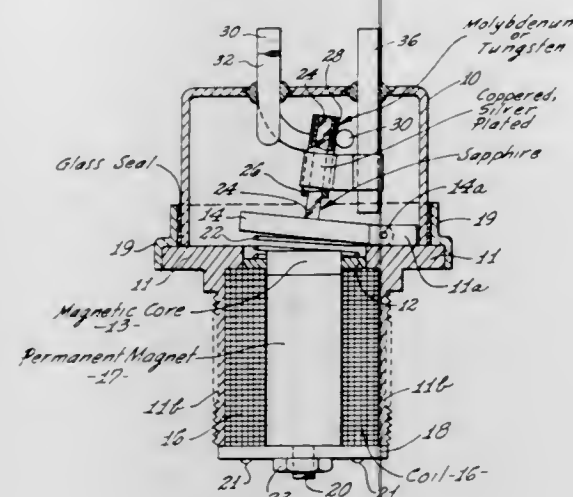
Victor E. De Lucia, Los Angeles, Calif., assignor to Torr Laboratories, Inc., Los Angeles, Calif.

Filed May 4, 1970, Ser. No. 34,387

Int. Cl. H01h 9/20

U.S. Cl. 335-170

7 Claims



An improved construction for a miniature vacuum relay is provided, whereby the relay is capable of a latching operation. The relay responds to an electric pulse of a first polarity to move from one electrical switching condition to another, and it remains in the second electrical switching position until a second pulse of opposite polarity is applied to the relay, at which time the relay returns to its original switching position. A permanent magnet is included in the magnetic circuit of the relay so that when the armature is moved against the action of the biasing spring of the relay to a particular position, it is retained in that position by the permanent magnet until an opposing magnetic flux is created in the magnetic circuit to nullify the action of the permanent magnet.

### 3,629,747

#### ELECTROMAGNETIC TRIP DEVICE FOR CIRCUIT INTERRUPTERS

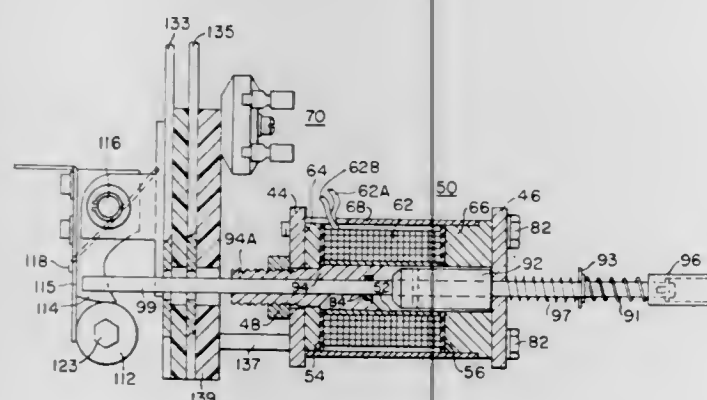
Joseph D. Findley, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 26, 1970, Ser. No. 22,915

Int. Cl. H01h 9/00

U.S. Cl. 335-174

8 Claims



An electromagnetic trip device for a circuit interrupter or circuit breaker comprising an electrically conducting substantially nonmagnetic tube having a relatively large number of conductor turns of an energizing coil wound thereon. A stationary magnetic structure is provided which includes a

pair of end members disposed at the opposite ends of the above-mentioned tube and a central leg member which extends axially inside of said tube. A magnetic armature or plunger is disposed to move reciprocally between an engaged position with respect to the central leg member of the associated stationary magnetic structure and another position which is spaced axially away from said central leg member. A substantially nonmagnetic tripping rod is provided to move with the associated armature axially through an opening in at least one of the end members of the stationary structure.

### 3,629,748

#### ELECTRICAL SWITCH

John Covell Collier, Farnworth, and David William Rickards, Stanmore, both of England, assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 4, 1970, Ser. No. 43,523

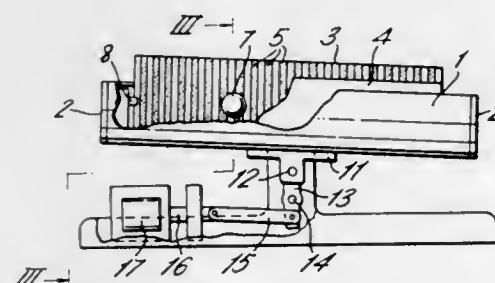
Claims priority, application Great Britain, June 26, 1969,

32,358/69

Int. Cl. H01h 1/16

U.S. Cl. 335-196

11 Claims





3,629,754

**MAGNETICALLY ACTUATED COUPLING**

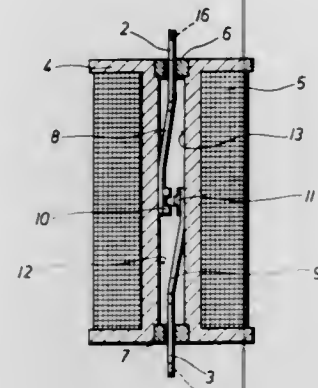
Dieter Sobottka, Jever, I. O.; and Dieter Folkens, Wilhelmshaven, both of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed Mar. 24, 1970, Ser. No. 22,185

Int. Cl. H01f 7/08

U.S. Cl. 335—253

11 Claims



A magnetically actuated coupling for transmitting linear forces and composed of a pair of coupling elements arranged in a magnetic field, which is preferably produced by an electromagnet having a hollow core in which the coupling elements are arranged. The coupling elements are constructed of a magnetizable material, so that they will be drawn together at the axis of the core of the electromagnet when power is provided to the coil of the electromagnet, and released when the power to the electromagnet is terminated. At least one of the coupling elements is resiliently mounted, so that it will move out of contact with the other element when the electromagnetic field collapses.

3,629,755

**HAMMER ACTUATOR CONSTRUCTION FOR HIGH-SPEED PRINTERS**

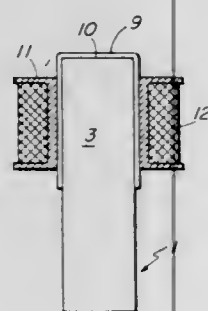
Frank H. Schaller, Needham Heights, Mass., assignor to Data Printer Corporation, Cambridge, Mass.

Filed Sept. 8, 1970, Ser. No. 70,268

Int. Cl. H01f 7/08

U.S. Cl. 335—271

3 Claims



A print hammer actuator for high-speed printers comprising a ferromagnetic core, an armature pivoted to the core, a coil on the core, and a nonmagnetic spacer comprising a strip of flexible insulating material held on the core in position to be struck by the armature when the coil is energized.

3,629,756

**THIN SHEET MAGNET**

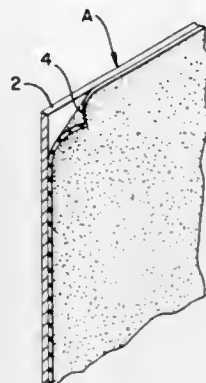
Herman Holtz, 62 Wiesbaden Postfach 167 Postscheckkonto, Frankfurt, Germany

Filed Mar. 23, 1970, Ser. No. 21,888

Int. Cl. H01f 7/20

U.S. Cl. 335—285

5 Claims



A thin sheet magnet comprised of a thin soft iron foil base with a magnetized barium-ferrite dispersion on one or both sides for use as a wall covering to provide direct mounting means for pictures and the like containing a thin foil backing or as an intermediary between a wall and a picture or the like.

3,629,757

**LOW-NOISE TRANSFORMER DEVICE**

Hideo Katayama, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

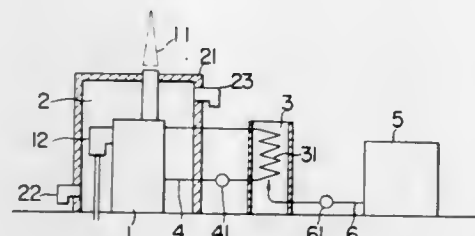
Filed Dec. 7, 1970, Ser. No. 95,793

Claims priority, application Japan, Dec. 11, 1969, 44/99688

Int. Cl. H01f 27/08

U.S. Cl. 336—55

2 Claims



A low-noise transformer device is so arranged that the transformer main body is disposed inside of a noise-shielding chamber, and a cooler for cooling the insulation oil circulated throughout the transformer is cooled with a liquefied gas ejected onto a cooling pipe for removing out of the cooler heat corresponding principally to the heat of vaporization of the gas, which is discharged into the atmospheric without being recovered.

3,629,758

**TRANSFORMER USING NONCOMBUSTIBLE FLUID DIELECTRIC FOR COOLING**

Henry A. Pearce, Jr., Stoneboro, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1969, Ser. No. 866,301

Int. Cl. H01f 27/10

U.S. Cl. 336—57

10 Claims

A fluid-cooled transformer having an outer casing of metal and an inner casing of electrical insulating material. The

3,629,761

**BROADBAND HIGH-FREQUENCY TRANSFORMER**

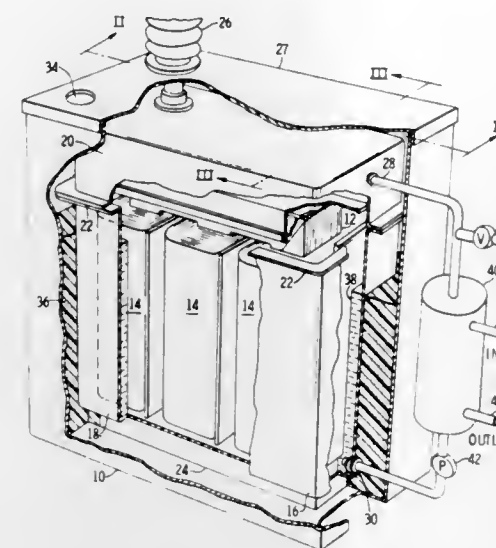
Kenneth P. Lundgren, Arlington Hts., and Rolf E. Kowalewski, Palatine, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 1, 1970, Ser. No. 33,778

Int. Cl. H01f 27/28

U.S. Cl. 336—192

6 Claims



material filling the inner casing to a predetermined height. Bushings extend through the outer and inner casings for making necessary electrical connections to the coil.

3,629,759

**COUPLING TRANSFORMER ASSEMBLY**

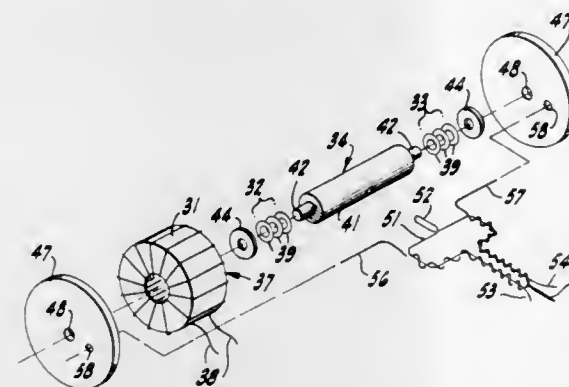
Ellwood S. Douglas, Orinda, and Wallace W. Wahlgren, Oakland, both of Calif., assignors to The Rucker Company, Oakland, Calif.

Filed May 20, 1970, Ser. No. 38,966

Int. Cl. H01f 15/02

U.S. Cl. 336—82

8 Claims



Transformer assembly having an electrically conductive casing and spindle member forming a one-turn winding linking a plurality of toroidal cores within the casing.

3,629,760

**ELECTRICAL DEVICE CASING MATERIALS**

George P. Seitanakis, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

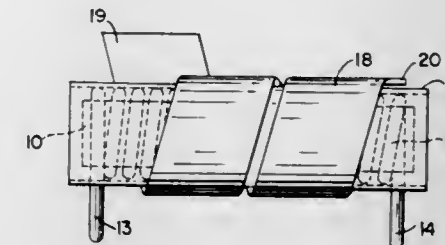
Filed Aug. 11, 1969, Ser. No. 849,610

Int. Cl. H01f 27/02; C22c 39/24

U.S. Cl. 336—90

2 Claims

An electrical device; e.g., a transformer, with a fluctuating magnetic field, contained within a casing comprised of steel which has a resistivity in excess of about 65 microhm-cm. at room temperature and a permeability of less than about 1.3 at 200 oersteds after a cold reduction of up to 65 percent. The steel consists essentially of 0.12-0.25% C, 14-15.5% Mn, up to 0.5% Si, 16.5-18.0% Cr, 1.00-1.75% Ni, 0.32-0.40% N, balance Fe and incidental impurities.



3,629,762

**CIRCUIT BREAKER**

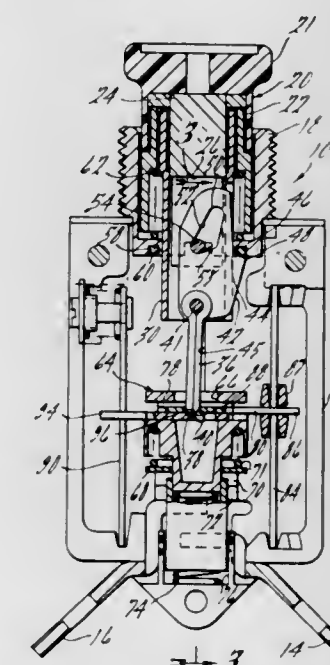
Dean D. Walling, Jackson, Mich., assignor to Mechanical Products, Jackson, Mich.

Filed Jan. 21, 1970, Ser. No. 4,672

Int. Cl. H01h 71/16, 71/22, 73/30

U.S. Cl. 337—62

7 Claims



An aircraft circuit breaker in which a push-pull manual operator controls a slidable contact carrier. The contact carrier is controlled by a pair of laterally extending slides which are engaged, respectively, with a current-responsive bimetal



and an ambient temperature-responsive bimetal. Relative lateral movement of the slides effects disengagement of a latch to permit movement of slidable contact carrier into the contact's open position. A manual latch, operated by the push-pull manual operation, is provided which self-disengages when the automatic latch disengages. The manual latch includes a manual latch member which is mounted independently of the temperature-responsive bimetal and a manual latch surface which is supported on the housing independently of the current-responsive bimetal element which is engageable with the latch member to effect a manual latch for maintaining the contacts in a closed condition.

### 3,629,763 CIRCUIT BREAKER

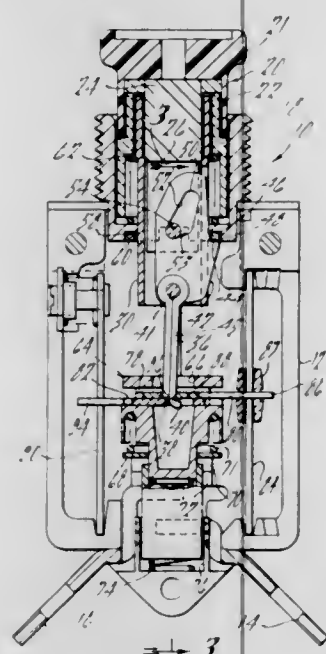
Dean D. Walling, and Preston D. Rowan, both of Jackson, Mich., assignors to Mechanical Products, Jackson, Mich.

Filed Jan. 27, 1970, Ser. No. 6,264

Int. Cl. H01h 71/16, 71/22, 73/30

U.S. Cl. 337-66

4 Claims



An aircraft circuit breaker in which a push-pull manual operator controls a slidable contact carrier. The contact carrier is controlled by a pair of laterally extending slides which are engaged, respectively, with a current responsive bimetal and an ambient temperature-responsive bimetal. Relative lateral movement of the slides effects disengagement of a latch to permit movement of slidable contact carrier into the contact's open position. A manual latch, operated by the push-pull manual operator, is provided which self-disengages when the automatic latch disengages. The manual latch includes a manual latch member which is mounted independently of the temperature-responsive bimetal and a manual latch surface which is supported on the housing independently of the current-responsive bimetal element which is engageable with the latch member to effect a manual latch for maintaining the contacts in a closed condition.

### 3,629,764

#### CIRCUIT BREAKER WITH EXTERNAL HEATER

Cleon F. Frey, Sebastian, Fla., and Myron F. Melvin, Indianapolis, Ind., assignors to Comel International Corporation, Bayamon, P.R.

Filed Aug. 19, 1970, Ser. No. 65,100

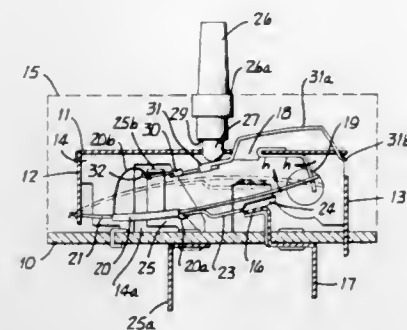
Int. Cl. H01h 61/00

U.S. Cl. 337-91

1 Claim

The invention is embodied in an overload circuit breaker or protective switch of the type in which a member responsive to an electrical overload opens the circuit through the switch by latching open the switch contacts. A resetting

member, when actuated, serves to reclose the switch contacts. The circuit breaker, however, is characterized by a set of auxiliary or secondary switch contacts connected electrically in series with the primary circuit breaker contacts. The movable contact arm or blade carrying the movable auxiliary contact is segmented so that the contact it carries can be



electrically connected to an electric heater wrapped about the thermally responsive operator for the main switch contacts and the arm can, nevertheless, be supported by the electrically conductive housing or chassis, as can the operator for the main switch, without adversely affecting the trip-free reset operation of the breaker.

### 3,629,765 CIRCUIT BREAKER

Richard J. Hanson, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1970, Ser. No. 38,336

Int. Cl. H01h 37/54, 61/013, 61/04

U.S. Cl. 337-103

4 Claims



A circuit breaker having a bimetallic member normally in a circuit closed position in which it engages a stationary terminal to provide a conductive path therebetween, but which is movable toward a circuit open position when heated in response to an electric current in excess of a predetermined magnitude being passed therethrough. The circuit breaker also includes a resistance heater in the form of a printed circuit bonded to the bimetallic member and which is in a parallel circuit with the bimetallic member. When the bimetallic member is moved toward its circuit open position the current flows through the resistance heater to maintain the bimetallic member in a heated condition and in its circuit open position.

### 3,629,766

#### FUSIBLE LINK CIRCUIT PROTECTIVE DEVICE

Robert R. Gould, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1970, Ser. No. 88,389

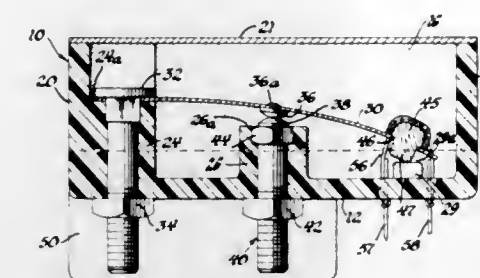
Int. Cl. H01h 85/36

U.S. Cl. 337-239

5 Claims

A thermally actuated switch having a pair of fixed contacts and a pair of movable contacts, the movable contacts being

located on a pair of electrically conductive resilient contact carrying arms supported in cantilever fashion such that the movable contacts are located intermediate the ends of the arms for cooperation with a pair of fixed contacts, and a crossbeam member spring biasing the free ends of the spring arms into contact closing position. A fusible wire link is as-



sociated with the crossbeam for holding the movable contacts in engagement with the fixed contacts whereby the wire link fuses when a predetermined electric current is passed therethrough effecting snap-action release of the spring arms in unison to simultaneously open the paired contacts and electrically disconnect the line conductors of an electrical appliance from a power source.

### 3,629,767

#### CIRCUIT INTERRUPTER WITH DAMPER BODY TO REDUCE SPEED OF MOVING TERMINAL

Edwin W. Schmunk, Park Ridge, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Jan. 7, 1971, Ser. No. 104,551

Int. Cl. H01h 85/02, 85/36, 85/42

U.S. Cl. 337-275

15 Claims



After initial arc drawing movement the rodlike terminal of high voltage alternating current power fuse driven by a spring and gas pressure has its speed reduced by encountering a damper body which is normally latched in a stationary position until it is unlatched on impact by the terminal. Some of the kinetic energy of the moving terminal is dissipated by deforming metallic coupling parts and additional kinetic energy is absorbed in accelerating the damper body. A cross slide latch and a latch lever are employed to hold the damper body stationary in a fuse housing for release on impact by the terminal.

### 3,629,768

#### CIRCUIT INTERRUPTER WITH DAMPER BODY TO REDUCE SPEED OF MOVING TERMINAL HAVING A CROSS SLIDE LATCH

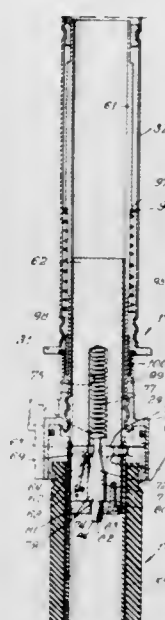
Henry W. Scherer, Niles, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Jan. 7, 1971, Ser. No. 104,552

Int. Cl. H01h 85/02, 85/36, 85/42

U.S. Cl. 337-275

6 Claims



After initial arc drawing movement the rodlike terminal of a high-voltage alternating-current power fuse driven by a spring and gas pressure has its speed reduced by encountering a damper body which is normally latched in a stationary position until it is unlatched on impact by the terminal. A cross-slide latch is employed to hold the damper body stationary in a fuse housing for release on impact by the terminal.

### 3,629,769

#### QUIET OPERATING CONDITION RESPONSIVE SNAP SWITCH MECHANISM

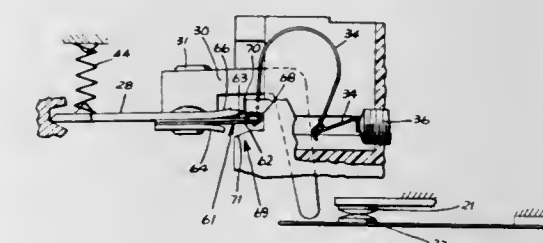
John L. Slonneger, Morrison, Ill., assignor to General Electric Company

Filed Sept. 14, 1970, Ser. No. 72,072

Int. Cl. H01h 37/36

U.S. Cl. 337-318

8 Claims



A condition responsive snap switch mechanism includes a pair of contacts and a pivoted contact operator for operating the contacts. Spaced-apart fixed stops are provided for limiting movement of the operator. A thin, flexible damping arm is firmly connected to the contact operator and extends between the stops for yieldingly engaging one of the stops upon operation of the contacts.



3,629,770

**THERMOSTAT WITH STABLE SWITCH MOUNT**

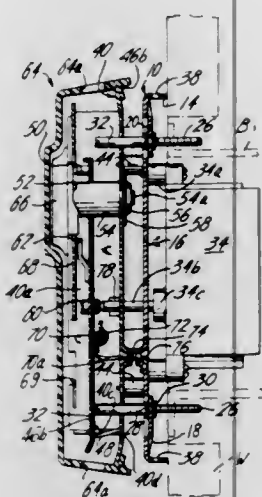
Jean R. Fortier, South Orange, N.J., and Paul M. Moskowitz, Brooklyn, N.Y., assignors to Federal Pacific Electric Company, Newark, N.J.

Filed Oct. 26, 1970, Ser. No. 83,994

Int. Cl. H01h 37/52

U.S. Cl. 337—333

4 Claims



A line-voltage thermostat is described having a snap-switch proportioned to carry heavy line current to an electric room heater. The snap-switch is mounted on a baseplate which is to be mounted on a wall box. The screws used to mount the baseplate have long shanks so as to be accessible well forward of the baseplate. The mounting screws extend through arched straps which are sheared free of the baseplate except at their ends. This avoids upset of the calibration due to deformation of the baseplate during tightening of the mounting screws, considering mainly the area of the baseplate where the switch is mounted.

The thermostat has a bimetal held at a hinge point by a single unique spring. Fixed ears project toward the bimetal to limit the extent the bimetal can be depressed, protecting the switch from damage and from calibration error due to excessive manual force on the bimetal when the thermostat is being installed or serviced.

3,629,771

**THERMOSTAT WITH STABLE BIMETAL SUPPORT**

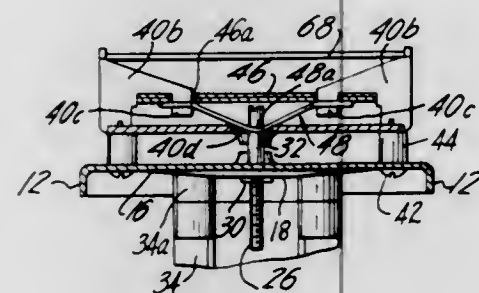
Jean R. Fortier, South Orange, N.J., and Paul M. Moskowitz, Brooklyn, N.Y., assignors to Federal Pacific Electric Company, Newark, N.J.

Filed Oct. 26, 1970, Ser. No. 83,992

Int. Cl. H01h 37/04

U.S. Cl. 337—372

4 Claims



A line-voltage thermostat is described having a snap-switch proportioned to carry heavy line current to an electric room heater. The snap-switch is mounted on a baseplate which is

to be mounted on a wall box. The screws used to mount the baseplate have long shanks so as to be accessible well forward of the baseplate. The mounting screws extend through arched straps which are sheared free of the baseplate except at their ends. This avoids upset of the calibration due to deformation of the baseplate during tightening of the mounting screws, considering mainly the area of the baseplate where the switch is mounted.

The thermostat has a bimetal held at a hinge point by a single-unique spring. Fixed ears project toward the bimetal to limit the extent the bimetal can be depressed, protecting the switch from damage and from calibration error due to excessive manual force on the bimetal when the thermostat is being installed or serviced.

3,629,772

**NOVEL THERMISTOR AND METHOD OF MAKING**

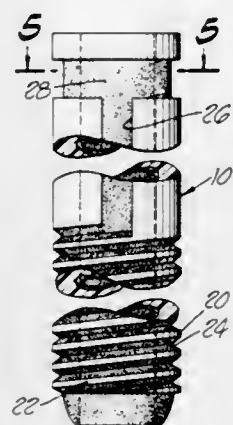
Leroy E. Beightol, Los Angeles, Calif., assignor to Solar Laboratories, Inc., Torrance, Calif.

Continuation-in-part of application Ser. No. 790,307, Jan. 10, 1969. This application Feb. 19, 1969, Ser. No. 800,610

Int. Cl. H01c 7/04

U.S. Cl. 338—28

5 Claims



This patent describes a thermistor comprising a plastic body member of a generally cylindrical configuration having an opening passing longitudinally therethrough, a plurality of threads on the exterior of said body in proximity to one end thereof, a thin metal film within the grooves but not on the lands of said threads and metal disposed on the exterior and interior of said body to establish a continuous metal path from the exterior of the end opposite said end having threads to the interior of said end opposite said end having threads, said metal path being composed of an electrically conductive metal having a high-temperature coefficient of resistivity.

3,629,773

**TRANSDUCER**

Bernard A. Shoor, Atherton, Calif., assignor to Becton, Dickinson Electronics Company, Pasadena, Calif.

Original application Apr. 10, 1967, Ser. No. 629,496, now Patent No. 3,474,526, dated Oct. 28, 1969. Divided and this application Dec. 27, 1968, Ser. No. 787,529

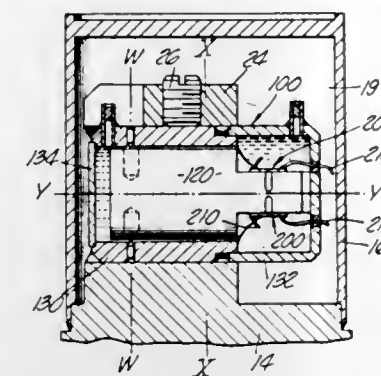
Int. Cl. G01b 7/16; G01p 15/08

U.S. Cl. 338—43

11 Claims

Stops are provided to limit the displacement of a moving member of a transducer to microscopic distances of less than

about 100 microinches and to an accuracy of  $\pm 15$  microinches or better in order to protect delicate strain sensitive elements against breakage. The gap is formed by bringing hard elements into contact with soft, work hardenable,



elements of the assembled unit and then impacting the hard and soft elements together to form the microscopic gaps by virtue of yielding of the soft element and also because of any consequent hardening to resist further yielding.

3,629,774

**PROGRESSIVELY COLLAPSIBLE VARIABLE RESISTANCE ELEMENT**

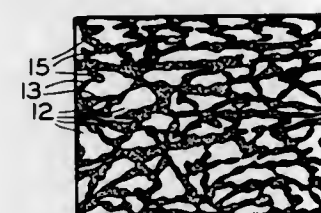
Nelson A. Crites, Columbus, Ohio, assignor to Scientific Advances, Inc.

Continuation-in-part of application Ser. No. 523,205, Jan. 26, 1966, now abandoned, Continuation-in-part of application Ser. No. 609,372, Jan. 16, 1967, now abandoned. This application Oct. 21, 1968, Ser. No. 772,464

Int. Cl. H01c 13/00

U.S. Cl. 338—114

16 Claims



A resistance element of elastic material has at least an interconnected portion coated with a nonfriable electrically conductive material forming an electrical path that changes its resistance as a function of the state of tension or compression of the resistance element. A conductive material is prepared from particulate electrical conductive material, an elastic binder and a solvent. Pretreatment of an elastic material of elastomer foam prior to application of conductive material produces a useful resistance element.

3,629,775

**STEREO BALANCE AND FADER POTENTIOMETER**

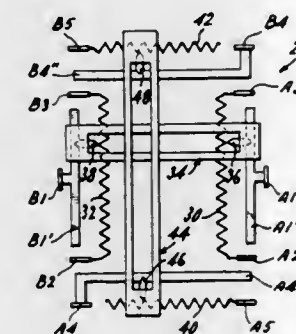
William B. Kindred, Allen Park, Mich., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed June 19, 1970, Ser. No. 47,651

Int. Cl. H01c 5/00

U.S. Cl. 338—128

20 Claims



A voltage and/or impedance control for simultaneously adjusting a number of circuits or electrical components finding

useful application in a number of environments, including the provision of a stereophonic balance and fader potentiometer for a four-speaker stereo system, including a common joystick control for individually and concurrently adjusting two pairs of wiper contacts associated with the circuits or electrical components.

3,629,776

**SLIDING THIN FILM RESISTANCE FOR MEASURING INSTRUMENTS**

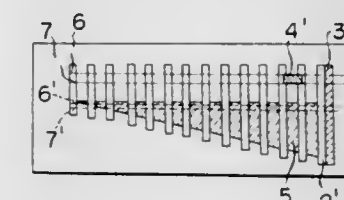
Yutaka Watano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 18, 1968, Ser. No. 768,716

Claims priority, application Japan, Oct. 24, 1967, 42/68037 Int. Cl. H01c 5/06

U.S. Cl. 338—140

2 Claims



A variable resistor is provided wherein a thin metallic film is deposited as by sputtering on a base of insulating material. The thin film consists of at least two layers; the bottom layer being of a base metal selected from the group consisting of manganese, titanium beryllium, tantalum, nickel and chrome, or alloys thereof, and the upper layer being of palladium.

3,629,777

**END CLOSURE ARRANGEMENT FOR VARIABLE RESISTOR**

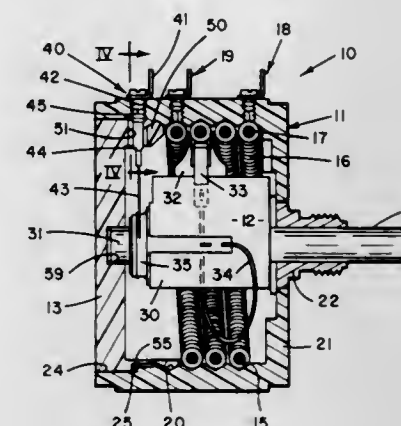
Robert J. De Long, Temple City, and Paul F. Gerwitz, West Covina, both of Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.

Filed Nov. 13, 1970, Ser. No. 89,192

Int. Cl. H01c 5/02

U.S. Cl. 338—149

6 Claims



A potentiometer is provided having a cylindrical housing with an internal helical resistor groove having a helical resistance element disposed in the forward portion thereof. A rotor member having a resistance wiper element is disposed within the housing for contact with resistance element. A cylindrical end closure member having a raised external helical ridge thereon is threaded into the end portion of the helical resistor groove in the housing member. A rotor terminal



pin is threaded radially into the housing member and through a radial aperture in the closure member to secure the closure member in a predetermined rotational relationship with the housing member and to align a stop shoulder on the closure member with the housing member. A plurality of radially extending compression pads are formed on a forwardly facing shoulder of the closure member and engage a rearwardly facing shoulder on the housing member to enable the closure member to be rotated to a precise predetermined relationship with the housing while compensating for manufacturing tolerances in the fabrication of the housing and closure members.

3,629,778

# LINEAR MOTION VARIABLE RESISTOR WITH CARBON AND SPRING METAL CONTACTS

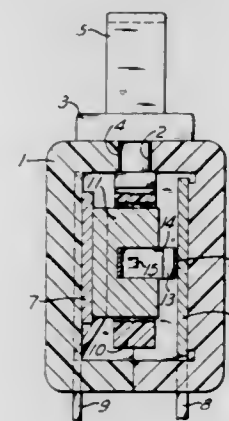
Mogens W. Bang, Ridgway, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed Nov. 25, 1970, Ser. No. 92,706

Int. Cl. H01c 9/02

U.S. Cl. 338—183

8 Claims



A slide is movable lengthwise between spaced parallel collector and resistance strips. A carbon contact between the strips engages the resistance strip, and a sheet metal spring contact compressed between the carbon contact and the collector strip is connected to the carbon contact. Either of the contacts is connected with the slide for movement lengthwise of the strips. The spring has legs extending in opposite directions along the collector strip in sliding engagement with it and presses the carbon contact against the resistance strip.

3,629,779

# RECTILINEAR POTENTIOMETER

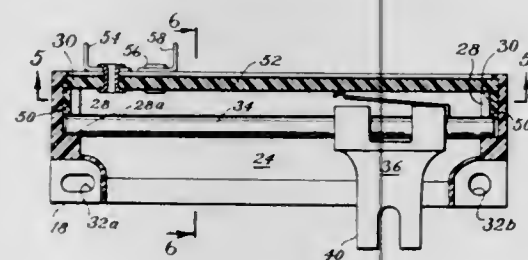
Arnold S. Louis, Hastings-on-Hudson, N.Y., and Hans H. Wormser, New Milford, N.J., assignors to Markite Corporation, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,311

Int. Cl. H01c 9/02

U.S. Cl. 338—183

4 Claims



An inexpensive, variable resistance device such as a potentiometer is characterized by a minimum number of parts that

include a housing and a cover that is secured thereto without the use of fasteners. The resistance element, the collector and terminal means may be integral with the cover. The wiper element is positioned on a brush block that is suitably mounted on a shaft that is located within the housing. A portion of the brush block extends through the housing for coupling to actuation means.

3,629,780

# VARIABLE RESISTANCE CONTROL AND SWITCH WITH COMMON OPERATING MEMBER

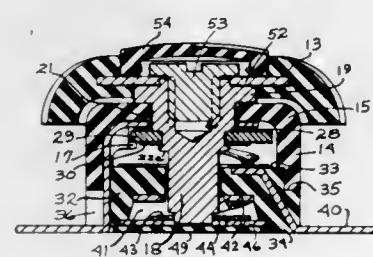
Ronald E. Burcham, Arden, N.C., and William L. Kelter, Jr., Cassopolis, Mich., assignors to CTS Corporation, Elkhart, Ind.

Filed May 8, 1970, Ser. No. 35,859

Int. Cl. H01c 9/08

U.S. Cl. 338—198

17 Claims



An improved miniature variable resistance control and integral switch is provided for use in hearing aids. The combination is enclosed in a housing having an aperture in one end and an opening in the other end being closed by a base having terminals insert molded therein. The terminals are flush with the surface of the base whereby the resistance path supported on the surface is connected to the terminals by conductive material applied in a uniform layer directly on the surface and the terminals. A cavity in the base contains a switch contactor and switch contact in spaced parallel relationship. In order to actuate the switch and adjust the variable resistance control, a driver rotatably supported in the housing actuates a contactor for wipingly engaging the resistance path and actuates a switch actuator positioned between the switch contactor and the switch contact. The switch actuator and contactor are separated by the base and registered such that the switch is opened and closed when the variable resistance control is set at an extremely low resistance value. Electrical connection between a collector and the contactor is made through a conductive stop plate and wave washer disposed around the driver.

3,629,781

# CYLINDRICALLY MOLDED METAL FILM RESISTOR

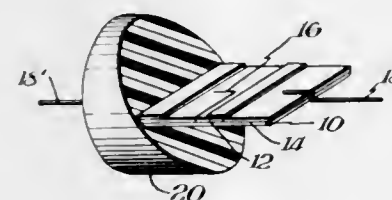
Walter Helgeland, Nashua, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed Dec. 4, 1969, Ser. No. 882,184

Int. Cl. H01c 1/02

U.S. Cl. 338—276

4 Claims



A metal film resistor formed on a flat chip and encapsulated within an insulative compound by a molding process which forms a cylindrical resistor having axial leads.

3,629,782

# RESISTOR WITH MEANS FOR DECREASING CURRENT DENSITY

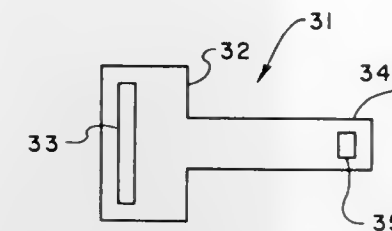
Ravinder J. Sahni, Hopewell Junction, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,437

Int. Cl. H01c 7/00

U.S. Cl. 338—308

10 Claims



Semiconductor and cermet or thin film resistors employ thin film contacts of aluminum and the like. Failure of these resistors at the positive terminal due to electromigration is virtually eliminated by special designs for decreasing current density at the positive end of the resistor. The width of the resistor at its positive end, and its associated contact is made larger than at the negative end. With semiconductor resistors, a more heavily doped diffusion is used at the positive end.

3,629,783

# FLAT WIRING HARNESS ROUTING ARRANGEMENT

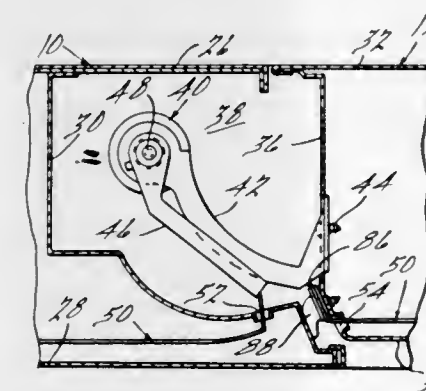
Robert W. Holzwarth, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sept. 15, 1969, Ser. No. 857,990

Int. Cl. H01r 35/00

U.S. Cl. 339—4

10 Claims



An arrangement for routing a flat, electrical wiring harness from a relatively stationary structural member such as a motor vehicle body to a movable structural member such as a vehicle door that is hingedly connected to the stationary member. The wiring harness is formed having two relatively straight portions that axially are offset and are connected by a third portion disposed perpendicularly to both the straight line portions. The harness is positioned so that it extends from one of the structural members into a hollow, protective housing secured to at least one of the structural members. Within the housing, the configuration of the harness is a coil that includes the third harness portion. The harness extends from the housing to the other of the structural members so that it is capable of conducting electrical energy between these members.

3,629,784

# ELECTRIC SWIVEL CONNECTION

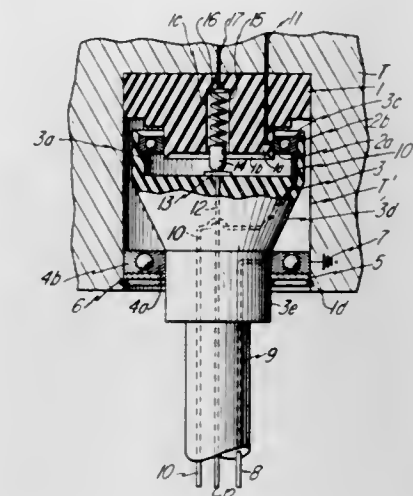
James M. Bjorn, 69 18th Ave., and Frederick Marx, Jr., 1510 North "D" St., both of Lake Worth, Fla.

Filed Dec. 19, 1969, Ser. No. 886,644

Int. Cl. H01r 39/46

U.S. Cl. 339—8 P

10 Claims



The electrical swivel connection is housed in a recess in a power tool handle and has a relatively fixed section of insulating material fitting the inner end of said recess, and has an axially disposed reduced cylindrical outer end, and has an axially disposed bore extending inwardly from the outer end thereof. The rotatable section of insulating material has a larger inner end within the recess of the tool handle, and has an outer cylindrical end of reduced diameter projecting beyond the outer end of the recess. The rotatable section has a cylindrical recess in its inner end receiving the reduced cylindrical outer end of the fixed section. A first ball bearing has its inner race fixedly secured to the cylindrical outer end of the fixed section, and has its outer race fixedly secured to the inner end of the rotatable section. An electrical contact is disposed at the center of the recess in the rotatable section and a second contact is disposed at the inner end of the bore in the fixed section. A spring-biased plug in the bore establishes an electrical circuit between said contacts. A power conductor extends from the second contact through the fixed section into the handle. A second power conductor extends from the inner race through the fixed section into the handle. A second ball bearing has its inner race removably mounted on the outer cylindrical end of the rotatable section, and has its outer race engaging the wall of the recess in the handle and grounded thereto. A washer closes the outer end of the recess beyond the second ball bearing. An electric cable having three leads is connected to the outer end of the rotatable section, one lead being connected through the rotatable section with the inner race of the second ball bearing, another lead being connected through the rotatable section to the first contact of that section, and the third lead being connected through the rotatable section with the outer race of the first ball bearing.

3,629,785

# DUAL ELECTRICAL CONNECTOR HAVING SELF-LEVELING SERVICE MECHANISM

Richard R. Cowmeadow, Bramalea, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Mar. 19, 1970, Ser. No. 20,928

Int. Cl. H01r 13/62

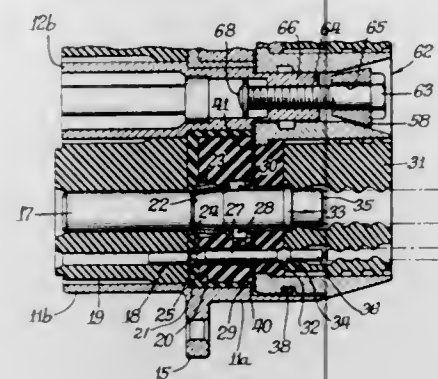
U.S. Cl. 339—14 R

9 Claims

Electric connector in which a self-leveling mechanism connects independently movable shells with rigidly interconnected shells to move end faces of contact carrying means in the shells into equalized pressure engagement and to lock contact means in position, the mechanism being movable to an unlocked condition to permit insertion, removal and



replacement of contacts. The mechanism preferably includes a pair of yoke members on opposite ends of a fulcrum member and each having opposite end portions engaged with side portions of a pair of independently movable shells, ac-



tuating means being connected to a central portion of the fulcrum member which is provided with sides suitably angled to provide locking angles to prevent large axial movements of the two independent shells, when subjected to insertion and removal forces.

3,629,786

## COMBINATION CONNECTOR

Frank L. Reynolds, Monroe; Alfred C. Langer, Brookfield, and Ellsworth Tweedie, Milford, all of Conn., assignors to Frigtronics of Conn., Inc., Shelton, Conn.

Filed Sept. 9, 1970, Ser. No. 70,655

Int. Cl. H01r 3/04

U.S. Cl. 339-16 R

10 Claims

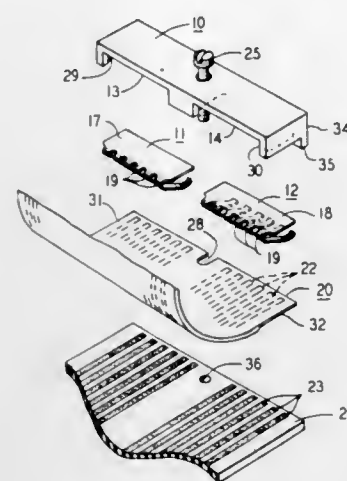


There is disclosed a separable connector for both gas and electricity. It comprises a panel-mounted female member having an electrically conductive socket containing a reciprocable spring-loaded valve member. The valve member has a first position in which it shuts off gas flow and makes an electrical connection with the socket, and a second position which permits gas flow and wherein it is electrically isolated from the socket. External electrical connections are made to both the socket and the valve member. A male member includes a probe which may be inserted into the socket to make an electrical connection therewith. The probe carries an actuating member which is electrically isolated from the probe body. Upon insertion of the probe into the socket, the actuating member actuates the valve from its first to its second position and simultaneously makes electrical contact therewith. Electrical connections may be made to the probe body and to the actuating member.

3,629,787  
CONNECTOR FOR FLEXIBLE CIRCUITRY  
James Wilson, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed June 19, 1970, Ser. No. 47,820  
Int. Cl. H05k 1/04

U.S. Cl. 339-17 F

5 Claims



This disclosure describes a connector for joining items of flexible circuitry. A chambered clamping bar houses compression elements which force exposed circuit paths of the flexible circuitry against an element to be joined thereto. Fingered springs and spring-loaded rubber pads are two species of the compression element. The bar may be clipped, screwed, or snap mounted to the circuitry to be joined.

3,629,788

## ELECTRICAL INTERCONNECT SYSTEM

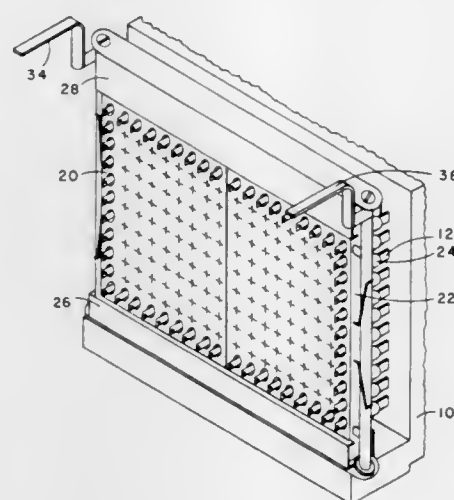
Jack B. Hartley, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed July 1, 1970, Ser. No. 51,480

Int. Cl. H01r 25/00; H02b 2/04

U.S. Cl. 339-18 B

11 Claims



An electrical interconnect system includes a circuit terminal member having a plurality of contact posts extending therefrom. An electrical connector for attaching to said terminal includes first and second plates which are movable to first and second positions thereby engaging or disengaging contact members extending from said plates and said contact posts of said terminal member.

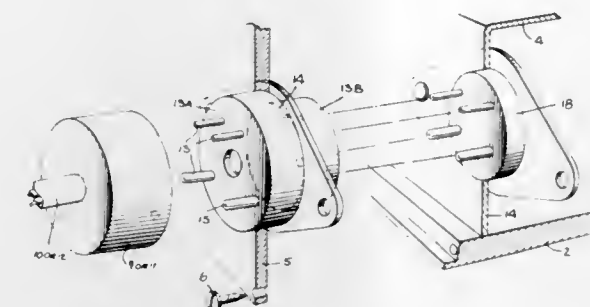
3,629,789  
TELEVISION RECEIVER SAFETY INTERLOCK SYSTEM  
FOR POWER CONNECTIONS  
Norman Szeremy, Portsmouth, Va., assignor to General Electric Company

Filed Feb. 2, 1970, Ser. No. 7,555

Int. Cl. H01r 27/00, 13/50

U.S. Cl. 339-33

8 Claims



A simplified power interconnection is provided in a television receiver adapted for both battery and AC power operation and having a normally closed cabinet with a removable wall in the cabinet for access to the chassis by skilled service personnel. The power interconnection is fixed in the removable wall and has one connector pattern on the exterior of the wall which mates with disconnectable alternative battery and AC power source plugs outside the cabinet, and has a different connector pattern on the inside of the wall which mates with a single set of power connectors on the chassis inside the cabinet. Because the outside and inside mating patterns are different, unskilled personnel may alternatively energize the chassis through either of the power source plugs only when the removable wall is in position, and may not mate the loose power plugs to the chassis when the wall is removed.

3,629,790

## NO SHOCK ELECTRIC PLUG

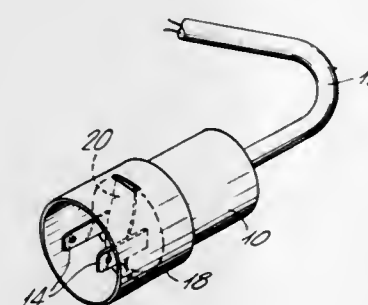
Frank D. McSherry, Jr., McAlester, Okla., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,304

Int. Cl. H01r 13/44, 13/60

U.S. Cl. 339-42

4 Claims



A sliding collar is secured to an electric plug having metal prongs by elastic means whereby the prongs are covered by the collar during insertion in and removal from an electrified socket.

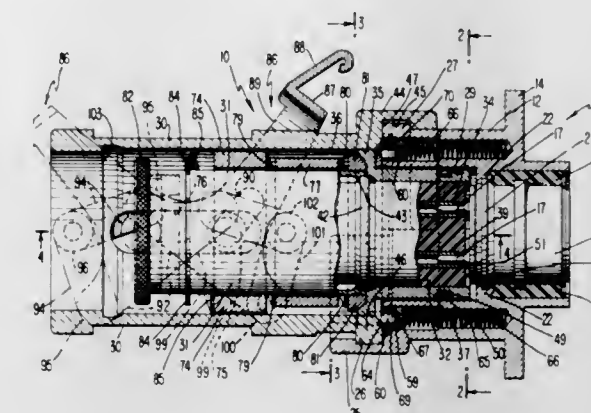
3,629,791  
ELECTRICAL CONNECTOR  
Richard W. Normann, Otego, N.Y., assignor to The Bendix Corporation

Filed Sept. 30, 1968, Ser. No. 763,568

Int. Cl. H01r 13/62

U.S. Cl. 339-45 M

15 Claims



A plug- and socket-type electrical connector having a linearly movable component for quickly engaging and disengaging the mating contacts and for locking and unlocking the connector parts. The connector has novel means for retaining the connector parts in axially aligned relationship after their preliminary assembly by relative transverse movement of said parts, and novel means for selectively securing the linearly movable component in its advanced, connector part mating position and in its retracted, connector part unmated position.

3,629,792

## WIRE SEALS

Robert F. Dorrell, Des Plaines, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Jan. 28, 1969, Ser. No. 794,546

Int. Cl. H01r 13/52

U.S. Cl. 339-60 M

5 Claims



Wire seals in the form of tubular seal members having outer and inner surfaces in pressure sealing engagement with inner surfaces of passages in a dielectric support member and with outer surfaces of the insulating coverings of wires connected to contacts in the passages. Preferably, the pressure sealing engagements are established upon axial movement of the seal members into the passages and interlocking means are provided to retain the seal members in the passages, the seal members however being removable for servicing of wires and contacts. Important features relate to the materials used to permit operation under extremes of environmental conditions.



3,629,793

**BATTERY COMPARTMENT**

Helmut Ettischer, Ruit, Kreis, Eblingen, and Dietmar Blattner, Schwaikheim, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

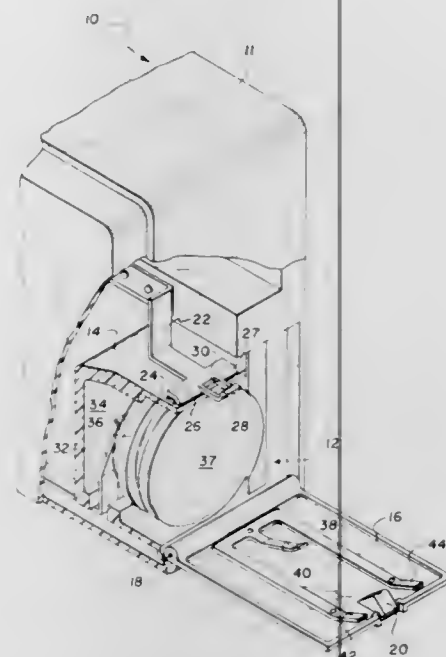
Filed Sept. 5, 1969, Ser. No. 855,662

Claims priority, application Germany, Sept. 25, 1968, K 62 459/57A

Int. Cl. H01r 13/54

U.S. Cl. 339-91 R

4 Claims



A battery compartment includes a body portion forming a battery receiving cavity and a cover hingably mounted on the body portion to close the cavity. An electrical lead is positioned adjacent the outside of the body portion and forms a pair of bearing surfaces and a resilient finger, the latter of which cooperates with a projection on the cover to latch the cover closed. A current conductor is carried on the inner surface of the cover and includes a first resilient finger which extends into the cavity to contact a pole of a received battery and a pair of resilient fingers electrically connected to the first resilient finger and positioned to contact the bearing surfaces of the lead when the cover is closed to complete the circuit and to provide an opening force to the cover.

3,629,794

**FOLDED BOX SPLICE TERMINAL**

Fritz Kourimsky, Leutershausen, Germany, assignor to AMP Incorporated, Harrisburg, Pa.

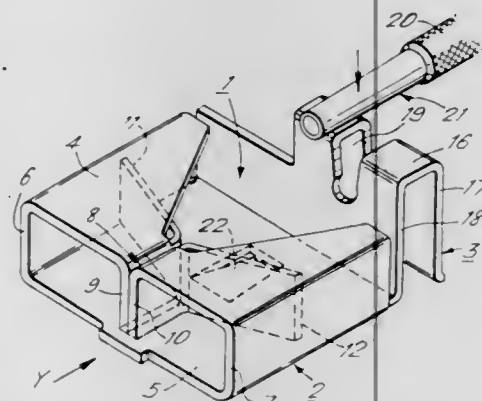
Filed Apr. 21, 1970, Ser. No. 30,401

Claims priority, application Germany, May 21, 1969, G 69 20 524.9

Int. Cl. H01r 11/20

U.S. Cl. 339-95 D

5 Claims



A splice terminal to form an electrical connection between a plurality of electrical conductors at least one of which is

clamped by a leaf spring to a side of the terminal, and a housing of insulating material dimensioned to receive the terminal, a wall of the housing including two funnels formed with apertures arranged to lie generally parallel to the abutting portion of the flanges and each to receive an electrical conductor.

3,629,795

**UNDERWATER PRESSURE PULSE DETECTOR**

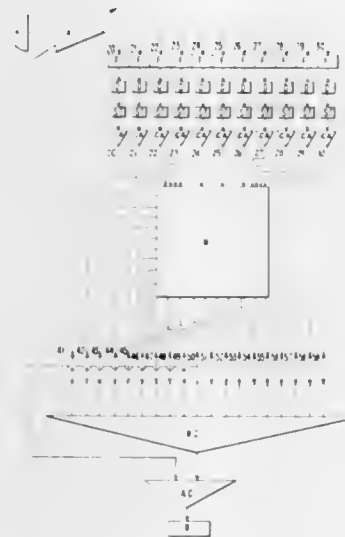
Kern M. Bowyer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1962, Ser. No. 219,341

Int. Cl. H04b 11/00

U.S. Cl. 340-5 R

3 Claims



1. An assembly for automatically detecting a pair of pressure pulse sequences emanated from a longitudinal array of spaced explosive elements detonated in the ocean in a manner such as to form two parallel detonation trains travelling in opposite directions relative to each other, the periods of each of the pair of pressure pulse sequences received at any angle from said array varying according to said angle and being the same at a normal angle to said array, the periods of pressure pulse sequences expected to be received at different angles from said array being known, and the sum of the periods of a pair of pressure pulse sequences received at any angle from said array being equal to  $2T_0$ , where  $T_0$  is the period of the pulse sequences emanating in a normal direction from said array, which assembly comprises

- a pressure transducer;
- an amplifier with automatic gain control coupled to said pressure transducer;
- a frequency separator coupled to said amplifier and having  $n$  frequency-band elements each of which passes a narrow band of frequencies, said frequency-band elements collectively passing all frequencies expected at all angles from said array and being so arranged that their center frequencies provide equal period increments between successive elements;
- an integrating detector coupled to each of said frequency-band elements;
- a triggering device coupled to each integrating detector;
- a sorting circuit coupled to said triggering devices, said sorting circuit having a plurality of conductors adapted to carry an output signal therefrom when signals are received from at least two different triggering devices, the number of said conductors being equal to  $2n-3$ ,  $n$  being as defined above, one of said conductors carrying an output signal when

signals have been passed by two frequency-band elements whose center frequencies correspond to periods which add up to one sum, another to a different sum, etc., for all possible sums;

g. a logic circuit coupled to said sorting circuit, said logic circuit being adapted to produce an electrical impulse signal upon reception of (1) an output signal from an output conductor carrying a signal when signals have been passed by two frequency-band elements whose center frequencies correspond to periods which add up to  $2T_0$ , and (2) signals from no other output conductors.

3,629,796

**SEISMIC HOLOGRAPHY**

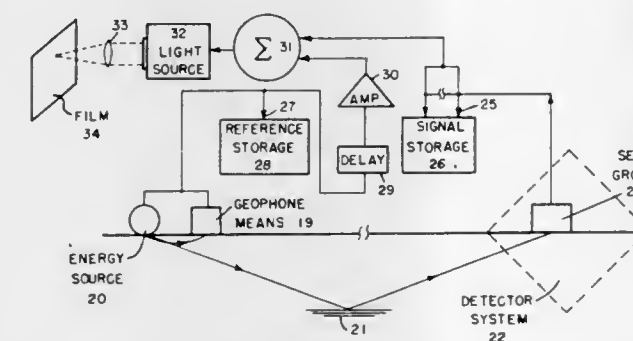
Eugene R. Brownscombe, Dallas; William M. Campbell, Irving, and Emmet D. Riggs, Dallas, all of Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Dec. 11, 1968, Ser. No. 782,965

Int. Cl. G01v 1/00

U.S. Cl. 340-15.5

1 Claim



Apparatus and processes for seismic holography with emphasis on field procedures, recording methods, and interpretation processes. Coherent acoustical energy is transmitted into the earth and received with areal detector means. The received signals are mixed with a reference signal so that interference signals are obtained. The interference signals are recorded as spot exposures on photographic film or plates. After arranging the exposures in proper order and scaling, the resulting hologram is illuminated with coherent light. Subsurface structure is indicated by comparing pairs of holograms by observing their images. Holographic images can be combined in several ways to give a difference image which indicates change in subsurface structure.

3,629,797

**MAGNETIC SIGNAL TRANSMISSION METHOD AND MEANS**

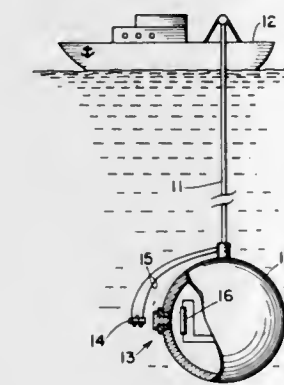
William C. Dillon, Sr., Van Nuys, Calif., assignor to W. C. Dillon & Company, Inc.

Filed Aug. 21, 1969, Ser. No. 852,019

Int. Cl. H04r 17/00

U.S. Cl. 340-8 R

10 Claims



A method and means is provided for transmitting electrical signal information through an iron plate by securing a non-

magnetic insert member in the iron plate and providing a flux carrier means secured within the nonmagnetic insert member. Portions of the flux carrier means are adjacent to opposite surfaces of the iron plate so that by positioning a magnet adjacent to one portion, flux is transmitted through the flux carrier means to the other portion on the other side of the iron plate. By providing a magnetic flux responsive means such as a reed switch on this other side juxtaposed the other portion of the flux carrier means, signal information may be passed through the iron plate by way of the flux carrier means, the presence of the signal being detected by the magnetically operated switch.

3,629,798

**METHOD AND SYSTEM FOR REFRACTION SEISMIC EXPLORATION**

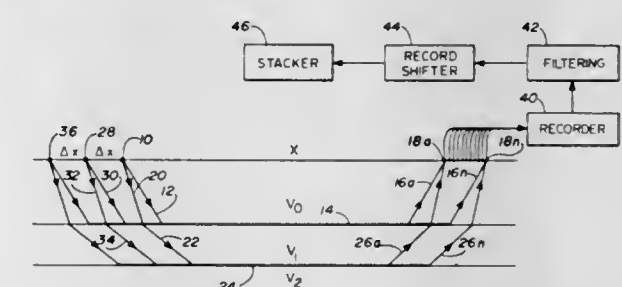
Donald W. Rockwell, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 8, 1969, Ser. No. 823,011

Int. Cl. G01v 1/00

U.S. Cl. 340-15.5

19 Claims



A first seismic disturbance is generated at a reference location and a first set of refraction signals from the seismic disturbance is detected at a plurality of receiver locations spaced a preselected distance from the reference location. A second seismic disturbance is generated at an incremental distance from the reference location, the incremental distance being small compared to the preselected distance. A second set of refraction signals from the second seismic disturbance is received at the receiver locations. The first and second sets of refraction signals are time-shifted relative to one another by a time interval dependent upon the incremental distance and particular refractor layer velocities. The time-shifted signals are then combined in order to enhance selected portions of the signals and to attenuate unwanted or interfering events and noise.

3,629,799

**LAMP FAILURE WARNING SYSTEMS**

Harold Birtwistle, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

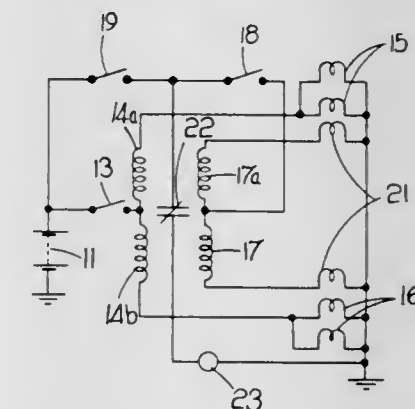
Filed Nov. 14, 1969, Ser. No. 876,954

Claims priority, application Great Britain, Nov. 22, 1968, 55,519/68

Int. Cl. G08b 21/00; B60q 1/04

U.S. Cl. 340-52 R

1 Claim



In a lamp failure warning system first and second windings are provided, each in two parts. A circuit to the first winding



is completed by way of its midpoint, through one part of the winding in one lamp, with another circuit completed through the midpoint, of the other part of the winding and another lamp. Normally the parts of the winding produce a balanced magnetic field, but if a lamp fails the field is unbalanced and a contact is operated to energize a warning lamp. The other winding serves the same function to another pair of lamps.

3,629,800

### GAPPED DECONVOLUTION REVERBERATION REMOVAL

William A. Schneider, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of application Ser. No. 559,811, June 23, 1966.

This application Sept. 18, 1969, Ser. No. 859,002

Int. Cl. G01v 1/36, 1/28

U.S. Cl. 340—15.5

12 Claims



Disclosed is a method of suppressing reverberatory energy in a seismic trace by subtracting from said trace a trace synthesized by time domain filtering said seismic trace, delayed by time,  $T$ , approximately equal to the two-way travel time of seismic energy in the reverberating medium, said filter parameters being defined by the matrix equation  $Y_m(X) = Z$  where  $Z$  is the crosscorrelation coefficient function of a portion of the seismic trace within a truncated data gate and characterized by the reverberation energy, and a similar portion of the seismic trace delayed by a time  $T$ ;  $X$  is the autocorrelation coefficient function of that portion of the trace and  $Y_m$  is the function designing filter weights.

3,629,801

### SEISMIC EXPLORATION IN THE VICINITY OF A SHORE AREA

Erwin C. Brede, Metairie, La., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 28, 1969, Ser. No. 853,645

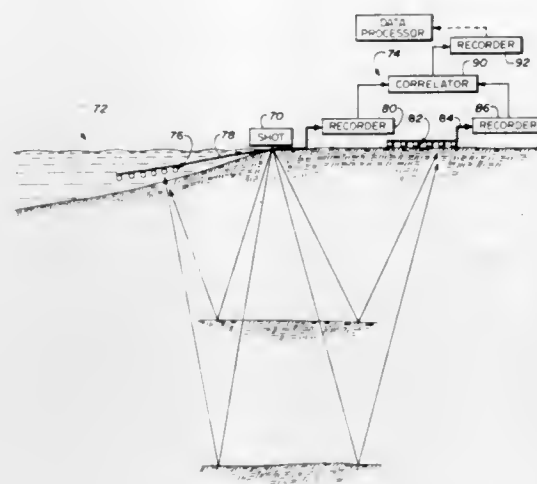
Int. Cl. G01v 1/16, 1/28

U.S. Cl. 340—15.5

18 Claims

First electrical signals are generated in response to detection in shallow water adjacent a shore area of variations in

pressure created by the generation of seismic waves. Second electrical signals are generated at the shore area in response to particle velocity variations created by the seismic waves.



The first and second electrical signals are recorded and then phase shifted with respect to one another according to a predetermined optimum time shift function determined by cross-correlation of test signals.

3,629,802

### CONFLICTING PHASE ERROR DETECTOR

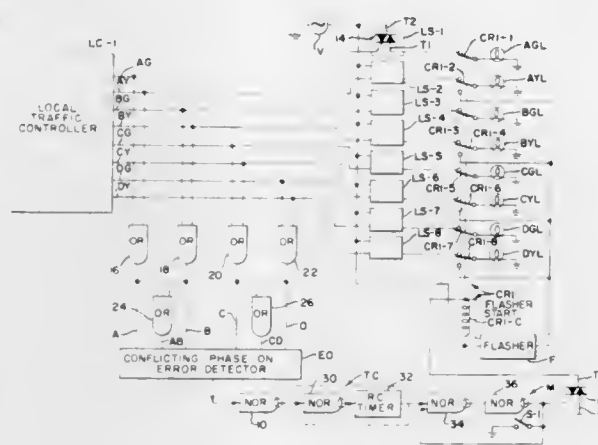
Larry K. Clark; Peter G. Bartlett, both of Davenport, Iowa, and Frank W. Hill, Moline, Ill., assignors to Gulf & Western Industries, New York, N.Y.

Filed July 18, 1968, Ser. No. 749,560

Int. Cl. G08g 1/097

U.S. Cl. 340—46

10 Claims



A system for traffic signal controllers is provided to detect the occurrence of coincident command signals that would cause right-of-way signals to be displayed for conflicting or intersecting traffic lanes or traffic paths or courses. For such detection NOR logic means are provided with input connections to controller command signal output lines to produce an output when different right-of-way command signals are coincident. The output from the NOR logic means is employed to disconnect all right-of-way traffic lamps and to connect all caution lamps to an energy source through a flasher.

3,629,803

### CONNECTOR FOR POINT-TO-POINT WIRING SYSTEM

Glenn Harlan Gluntz, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,175

Int. Cl. H01r 13/58

U.S. Cl. 339—107

5 Claims

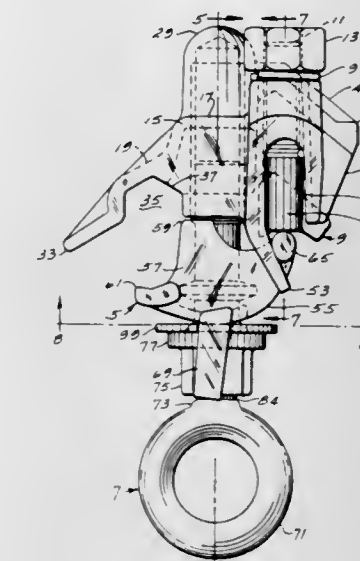
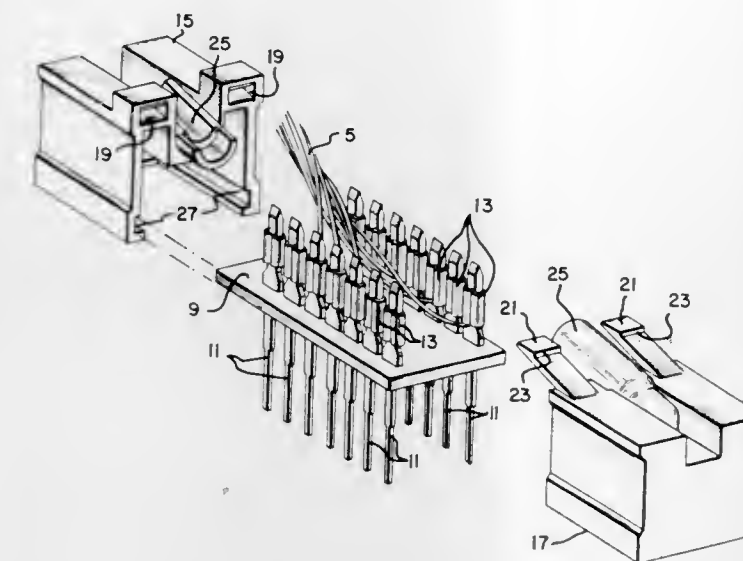
Vernon E. Peek, Birmingham, Ala., assignor to Anderson Electric Corporation, Leeds, Ala.

Filed Feb. 6, 1969, Ser. No. 797,009

Int. Cl. H01r 7/22

U.S. Cl. 339—109

17 Claims



The disclosure relates to an electrical connector which is pluggable into an apertured panel board for point-to-point wiring, the connector including a plurality of wiring posts mounted in an insulating board and having wire clips thereon for retaining wires in contact with each of the posts. The mounting board slidably fits into grooves in a two-piece housing, the housing members being interconnected by means of notched extension in one of the housing members which extends through apertures formed in the other housing member to provide a lock between two housing members with the insulating board and pluggable posts mounted within the housing.

A hot line clamp having a clamp body and a keeper for clamping a main conductor and a tap conductor against the body, with a clamp bolt for drawing the keeper and body together. An auxiliary clamp jaw is interposed between the keeper and the body and has means associated therewith for drawing it toward the body initially to clamp the tap conductor against the body independently of the clamp bolt. The keeper, when drawn toward the body, engages the auxiliary jaw and acts via the latter to apply additional clamping pressure to the tap conductor for high-pressure electrical contact purposes.

3,629,804

### TELEVISION LEAD-IN WIRE CONNECTOR

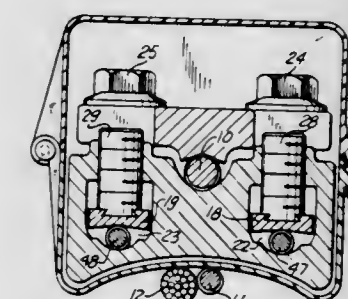
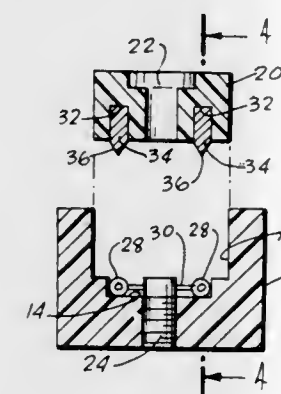
Donald G. Behymer, 400 N. Los Robles Ave., Pasadena, Calif.

Filed Oct. 8, 1969, Ser. No. 864,587

Int. Cl. H01r 9/08

U.S. Cl. 339—98

8 Claims



A connector for interconnecting two spaced but abutting ends of separate insulated conductors in such manner as to form the electrical connection without stripping insulation, soldering, twisting wires together or the like.

A midspan connector for easily mechanically and electrically connecting one or more tap lines to one phase of a system so that a remaining phase need not be connected but without manipulation assumes a predetermined position separated from the connected phase with the tap conductors in the same plane and parallel to the run conductor.



3,629,807

## UNIVERSAL PRINTED CIRCUIT CARD EDGE CONNECTOR

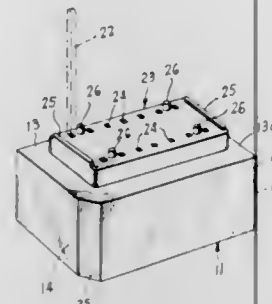
Glenwood A. Fuller, Bloomington, Ill., assignor to General Electric Company

Filed Oct. 21, 1969, Ser. No. 868,033

Int. Cl. H01r 13/46

U.S. Cl. 339-126

8 Claims



A universal edge connector, preferably for use with printed circuit cards, including a plurality of contacts suitably retained in a patterned arrangement within a housing body formed of nonmetallic material, the housing body having provided on the wiring side thereof a rectangular boss comprising a first independent means for mounting the connector, at each end of the rectangular boss an elevated pad being provided, the two elevated pads combining to comprise a second independent means for mounting the connector, and the rectangular boss being further provided with at least two diametrically opposed standoffs positioned on the rectangular boss inwardly of the aforesaid two elevated pads to enable the connector to be mounted in a third independent manner.

3,629,808

## ELECTRICAL CONNECTOR DEVICE

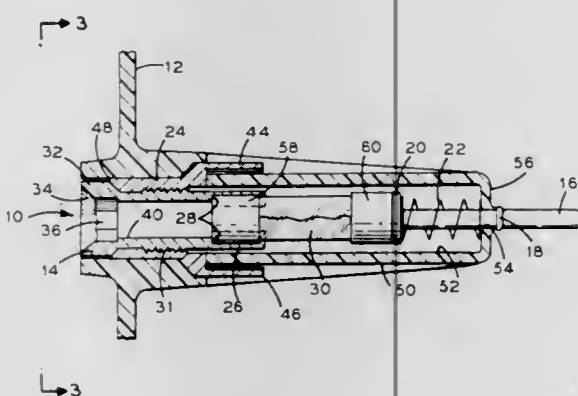
Joseph R. Andreaggi, Short Hills, and George Zenuch, Edison, both of N.J., assignors to Weston Instruments, Inc., Newark, N.J.

Filed Oct. 24, 1969, Ser. No. 869,080

Int. Cl. H01r 9/04, 13/08, 13/68

U.S. Cl. 339-126 R

6 Claims



An electrical connector includes a cylindrical housing member having one end portion adapted to receive a fuse member and the other end portion fitted with a connector plug or jack. The end carrying the plug or jack is further provided with a key opening adapted to receive a mating tool key for assembly of the housing member into a panel-mounted receiving member portion of the connector.

3,629,809

## ELECTRICAL CONNECTOR PARTICULARLY FOR PRINTED CIRCUITS

Hans-Peter Tillmann, Bruxelles, and Hugo Richard N. De Vuyst, Kasteeldreef, both of Belgium, assignors to Burndy Corporation

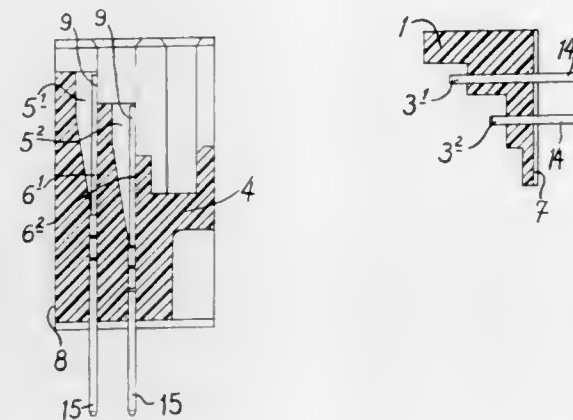
Filed Feb. 12, 1970, Ser. No. 10,922

Claims priority, application Belgium, Aug. 8, 1969, 77723

Int. Cl. H05k 1/04

U.S. Cl. 339-176 M

2 Claims



An electrical connector specifically applicable to establishing connections between a flat surface such as a printed circuit board, and contact elements extending at right angles to the plane of the board. The connector includes two halves. One half includes a plurality of rodlike contact elements mounted in parallel, side-by-side relationship, in a housing of insulating material. The ends of the rods extend from opposite sides of the housing. The mating half of the connector includes a plurality of forklike contacts mounted in a housing of insulating material in position for the forks to straddle the extending ends of the rods. Successive rows of the rods are formed with increasing lengths to mate with corresponding forks arranged in successive layers. Separation and mating of the connector halves is achieved by relative movement in a direction substantially perpendicular to the axes of the rods.

3,629,810

## PREINSULATED ELECTRICAL TERMINAL

Jean Gorjat, Barcelona, Spain, assignor to AMP Incorporated, Harrisburg, Pa.

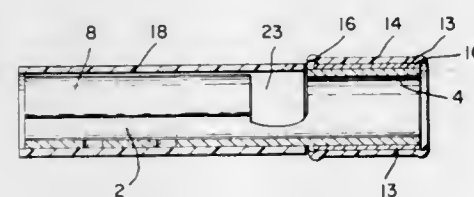
Filed Mar. 11, 1970, Ser. No. 18,437

Claims priority, application Spain, Jan. 8, 1970, 146500

Int. Cl. H01v 13/50; H01r 9/08

U.S. Cl. 339-217 R

1 Claim



An electrical terminal having a contact portion and a ferrule portion, the ferrule portion being surrounded by an insulating covering, the contact portion being surrounded by an open-ended insulating housing, the insulating covering of the ferrule portion serving to restrain withdrawal of the terminal from the housing.

3,629,811

## TERMINAL FOR ASSEMBLY INTO A TERMINAL BLOCK

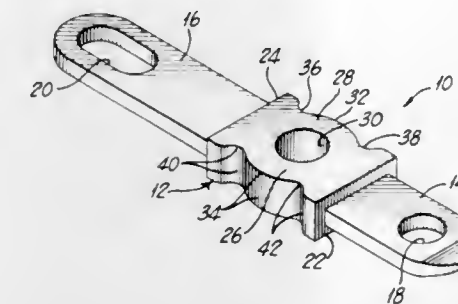
Norman Deutsch, Morton Grove, Ill., assignor to C. P. Clare &amp; Company, Chicago, Ill.

Filed Apr. 6, 1970, Ser. No. 25,797

Int. Cl. H01r 9/14

U.S. Cl. 339-220 R

7 Claims



An improved terminal includes a central portion which is uniformly collapsed by the closure of a terminal board mold. The central portion of the terminal is given convex sides and is pierced by a cylindrical, central opening in such a manner that two uniformly convex columns are formed. Shoulders on either side of the central portion engage the edges of the mold. When the mold closes, the convex columns buckle uniformly and provide an extremely close fit between the shoulders and the mold. Flash from the mold is thus prevented from forming on the exposed portion of the terminal.

3,629,812

## TURBULENCE-COMPENSATED ULTRASONIC INTRUDER DETECTOR

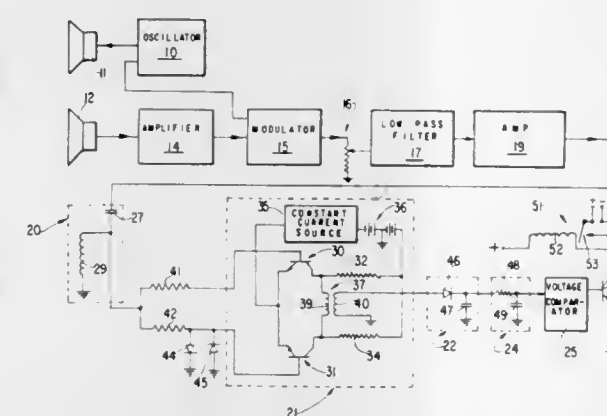
Ernest J. Amato, Nutley, N.J., assignor to Walter Kidde &amp; Company, Inc., Belleville, N.J.

Filed May 15, 1969, Ser. No. 824,823

Int. Cl. G01s 9/66

U.S. Cl. 340-1 R

7 Claims



An ultrasonic intruder detector including a transmitter for radiating sound energy into a space, a receiver for receiving reflected sound energy, and a modulator for beating the transmitted and received signals to produce a doppler frequency signal, a filter for eliminating the doppler signals having a frequency below 15 cycles and passing the doppler signals in a higher frequency range, a differential amplifier having first and second amplifier circuits connected to a common input and having their outputs balanced against each other, a pair of oppositely poled diodes connected to one of the amplifier circuits to unbalance these circuits when the amplitude of one of the higher range signals exceeds a predetermined level, and a sensitivity control for adjusting

3,629,813

## METHOD AND APPARATUS FOR ECHO-SOUNDING OF SHORT DISTANCES

Hans Drenckelfort, Kiel-Elmschenhagen, Germany, assignor to Electroacoustic Gesellschaft m.b.H., Kiel, Germany

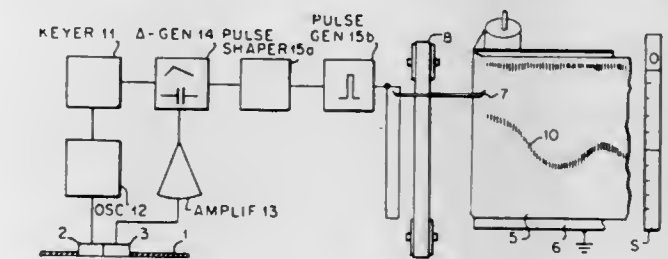
Filed July 31, 1969, Ser. No. 846,415

Claims priority, application Germany, Aug. 3, 1968, P 17 66 881.4

Int. Cl. G01s 9/68

U.S. Cl. 340-3 R

27 Claims



An echo-sounding method and apparatus for measuring short distances, particularly shallow depths, with the aid of a periodically moving indicator member whose indicating action is triggered in dependence upon the time elapsing from the emission moment of the pulse to the reception moment of the echo. For improving the resolution of indication at short distances, the time is expanded by continuously interposing between the echo reception moment and the triggering moment, a delay which increases in proportion to the length of the pulse travel time. For this purpose a triangular wave voltage is generated, the ascending portion of the wave commencing to ascend at the moment of pulse emission and to decline at the moment of echo reception. Concurrently with the triangular wave voltage there is provided an auxiliary voltage, for example of rectangular or trapezoidal wave shape, which has a steep lagging flank coincident with the end of the triangular wave. A trigger pulse derived from the steep lagging flank controls the action of the moving indicator member. Preferably the triangular wave voltage is obtained by supplying a constant current charge to a capacitor commencing with the moment of pulse emission, and changing from charging to constant current discharging of the capacitor under control by the arrival of the echo.

3,629,814

## DISK BRAKE ROTOR SCRAPER AND WEAR INDICATOR MEANS

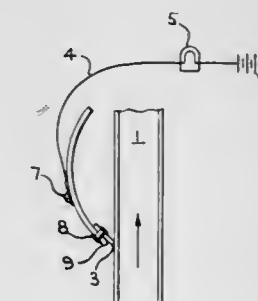
Bruce W. Klein, South Bend, Ind., assignor to The Bendix Corporation

Filed Feb. 17, 1970, Ser. No. 11,987

Int. Cl. F16d 66/02

U.S. Cl. 340-52 A

1 Claim



A scraper apparatus for the rotor of a disk brake commonly used for general automotive application which also serves as a scraper wear indicator.



3,629,815

**OPTICAL-WARNING SYSTEM FOR VEHICLE BRAKES**  
Peter Hattwig, Heidelberg, Germany, assignor to Teldix G.m.b.H., Heidelberg, Germany

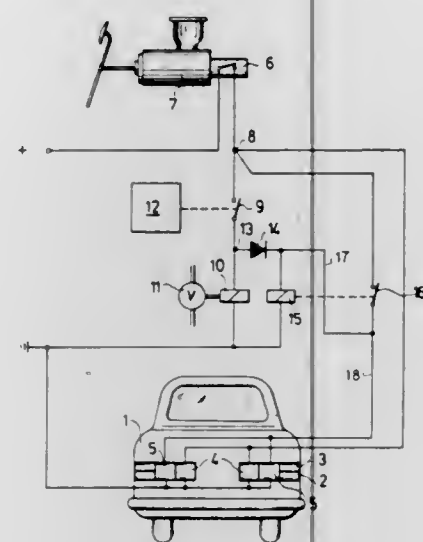
Filed Mar. 3, 1970, Ser. No. 16,013

Claims priority, application Germany, Mar. 4, 1969, P 19 10 904.7

Int. Cl. B60t 8/10

U.S. Cl. 340—52 B

7 Claims



A system for providing an optical warning indication to persons behind a motor vehicle equipped with a brake control system which prevents locking of the wheels thereof during braking showing that the antilocking control system has been actuated. The optical warning system provides for two different indications, one when the normal braking action has been initiated and a second when the antilocking control system has been actuated.

3,629,816

**AIR CUSHION ACTUATION AND MONITORING CIRCUIT**

Arden G. Gillund, Oak Creek, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1970, Ser. No. 62,381

Int. Cl. B60q 3/04; G08b 19/00

U.S. Cl. 340—61

10 Claims



A control circuit for actuating an inflatable air cushion in a motor vehicle includes an electrically operated actuator connected between a pair of normally open acceleration responsive switches. A storage capacitor connected to the switches is discharged through the actuator upon acceleration or deceleration of the vehicle in excess of a predetermined magnitude and duration. Malfunction of either of the acceleration responsive switches or the storage capacitor is detected

on a continuous basis by monitoring the voltage at a junction between the actuator and one of the switches and comparing the voltage at the monitored junction with upper and lower reference levels. Both analog and digital embodiments of the invention are disclosed.

3,629,817

**WARNING SYSTEMS FOR ROAD VEHICLES**  
William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

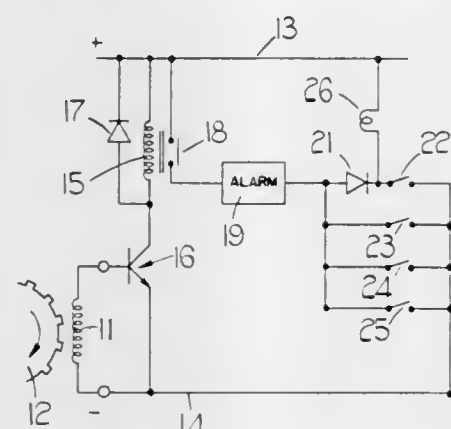
Filed July 14, 1969, Ser. No. 841,254

Claims priority, application Great Britain, July 25, 1968, 35,483/68

Int. Cl. G08b 23/00

U.S. Cl. 340—62

1 Claim



A warning system for a road vehicle has a pair of supply line across which is connected, a circuit including a first switch, a warning device and a second switch. The second switch is operated when a potentially hazardous situation exists in the vehicle, and the first switch is closed when the vehicle is in motion.

3,629,818

**ANTITHEFT DEVICE FOR A MOTOR VEHICLE**  
Teruo Hiram, Yokohama, and Yukio Yamamoto, Ohmiya, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

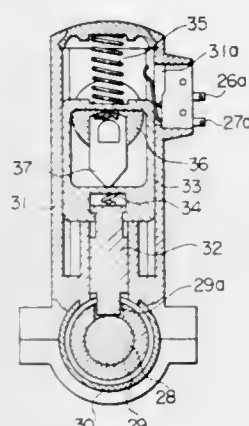
Filed Oct. 29, 1969, Ser. No. 872,139

Claims priority, application Japan, Nov. 12, 1968, 43/98040

Int. Cl. B60r 25/02

U.S. Cl. 340—64

3 Claims



An antitheft device for a motor vehicle, which device is a combination of steering shaft locking means and two switches operated by the motion of the locking means. One of the switches is closed only when the door is opened and the other when the steering shaft is not ready to be locked so that the alarming means, which may actually be an alarming light or buzzer, becomes operative if and only if the door is opened when the locking means is held in the unlocking positions.

3,629,819

**VEHICLE ELECTRONIC BACKUP WARNING DEVICE**  
Edwin R. Peterson, 3109 Bogus Basin Road, Boise, Idaho

Filed Sept. 16, 1969, Ser. No. 858,282

Int. Cl. B60q 1/26

U.S. Cl. 340—70

6 Claims U.S. Cl. 340—81



This is an electronic circuit which is useful particularly in establishing for vehicles a backup warning. The circuit is adapted to input voltages ranging from 6 to 36 volts of either polarity and wherein the output voltage can be varied to develop a given desired regulated voltage for actuating a warning device. The circuit comprises basically a bridge section, a capacitor section, a regulator section and speaker and may include oscillator, flip-flop, and amplifier.

3,629,820

**SIGNAL DEVICE FOR PREVENTING REAR END COLLISIONS OF AUTOMOBILES**  
Yasuhiko Sakurai, Kariya-shi, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan

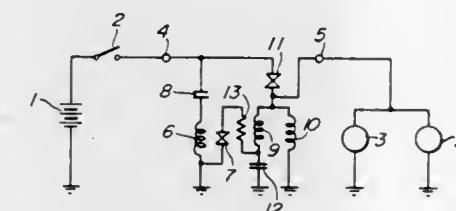
Filed Feb. 17, 1969, Ser. No. 799,633

Claims priority, application Japan, Feb. 19, 1968, 43/12157

Int. Cl. B60q 1/44

U.S. Cl. 340—72

3 Claims



A signal device for preventing rear end collisions of automobiles including a time limit relay having a normally closed contact therein and a flashing relay having another normally closed contact therein, both of which are connected between brake lamps and a brake switch in an automobile so that the operation of the flashing relay may be stopped by means of the normally closed contact in the time limit relay.

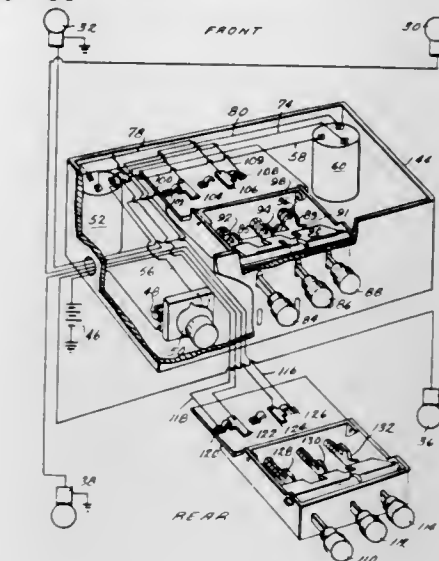
3,629,821

**VISUAL DISTRESS SIGNALING SYSTEM**  
Hugh L. Dobbins, 827 Concord Road, Smyrna, Ga.

Filed Sept. 30, 1969, Ser. No. 862,437

Int. Cl. B60q 1/52

5 Claims



A visual distress signaling system designed especially for use in conjunction with automotive vehicles and including two lamps of different colors viewable from the front of the vehicle, and two lamps of different colors viewable from the back of the vehicle. A manually operable control unit capable of operating the front and rear lights independently, and particularly for flashing the front or rear lights alternately as a primary distress signal and simultaneously flashing only one of the lights (preferably the blue light) at the opposite end of the vehicle indicating to passers-by going in the other direction to disregard for flashing only one of the front and rear lights as an acknowledgement of another primary distress signal, and for flashing only the other lamp of the front and rear lights as a secondary distress signal for guiding a rescue vehicle or indicating that assistance has been provided.

3,629,822

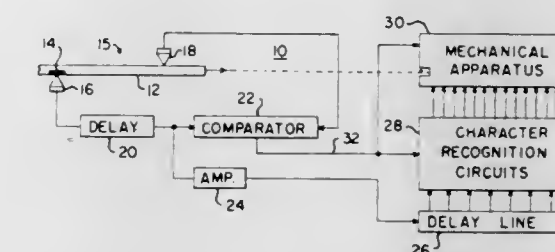
**MICR DOUBLE FEED DETECTOR**  
Donn A. Johnson, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Jan. 8, 1970, Ser. No. 1,405

Int. Cl. G06r 9/18; G11b 27/00

U.S. Cl. 340—146.3 C

7 Claims



In a magnetic ink character recognition (MICR) reading system, there is provided a pair of transducer reading heads for reading magnetic characters imprinted on one surface of a document. One head scans the surface having the characters on it, and the other head scans the opposite surface. Delaying, amplifying, and filtering circuits are provided to make the signals provided by each head equal in time and magnitude and opposite in polarity if only one document is being read. These signals are then added, and their sum is rectified and applied to a threshold circuit. When one document is read, the magnitude of the sum is below the threshold voltage, and nothing results. However, when multiple documents are read, the magnitude of the sum is above the



threshold voltage, and the threshold circuit causes a signal to be provided which sends the multiple documents to a reject pocket or slot in the reading system.

3,629,823

# INFORMATION-HANDLING SYSTEM HAVING ERROR CORRECTION CAPABILITIES

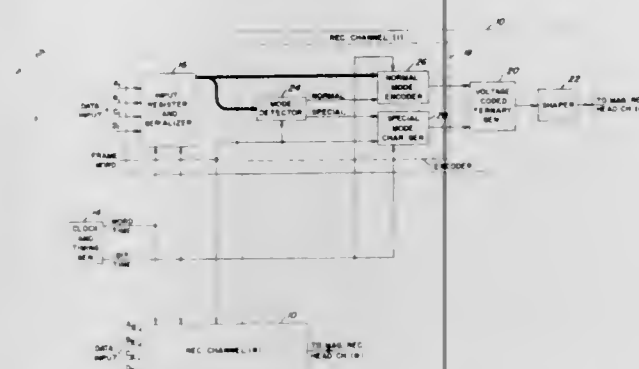
Roy S. Czernikowski, Rochester, N.Y., assignor to General Dynamics Corporation

Filed Nov. 14, 1969, Ser. No. 876,982

Int. Cl. H03k 13/34

U.S. Cl. 340—146.1

10 Claims



A system of storing digital data on multitrack magnetic records (tape or disc) with extremely high-packing density is described. The input data is encoded into unique four-ter, trilevel zero average format words. Because of the zero average property of the words, an alphabet of 18 zero average words is possible. A parity generator operative on a modulo 18 basis forms a parity word from the input data. This parity word is selected from the available alphabet of ternary words and is recorded in ternary form on one of the tracks in parallel with the ternary words for which it forms a parity check. On playback, the words are decoded and outputs are obtained indicating whether or not the words in each track are valid or invalid. A corrected word generator operative on a modulo 18 basis derives the corrected word and logic is provided for substituting a corrected word for the one of the playback data words which is indicated as being invalid.

3,629,824

# APPARATUS FOR MULTIPLE-ERROR CORRECTING CODES

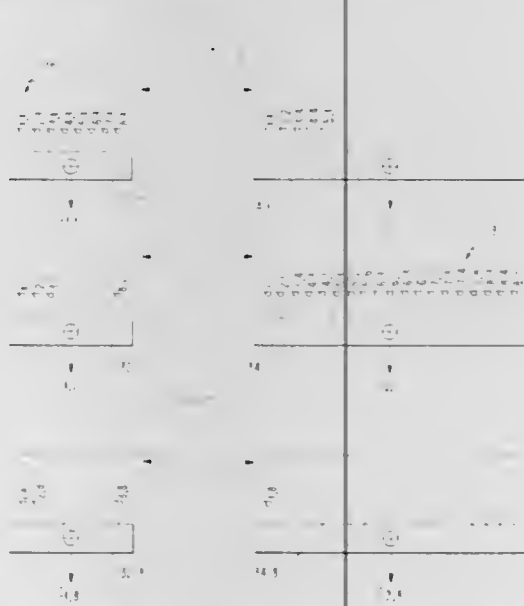
Douglas C. Bossen, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1970, Ser. No. 10,847

Int. Cl. G06f 11/12; G08c 25/00

U.S. Cl. 340—146.1

7 Claims



Apparatus including an encoder adapted for encoding blocks of data into a sent message and a decoder adapted for

recovering the data from a received message corresponding to the sent message but which may be in error wherein the blocks of data consist of K-bytes of data ( $D_1, D_2, \dots, D_K$ ) each of  $b$  bits. The sent message comprises the K-bytes of data plus two check bytes  $C_1$  and  $C_2$ , each of  $b$  bits. The decoder is effective in recovering the data without error when not more than a single byte of the received message is in error no matter how many bits may be in error in the single byte. The encoder computes the check bytes according to the relationships

$$C_1 = ID_1 + ID_2 + \dots + ID_K$$

$$C_2 = A_1 D_1 + A_2 D_2 + \dots + A_K D_K$$

wherein  $I$  is the identity element and  $A_1, A_2, \dots, A_K$  are distinct nonzero elements of Galois Field ( $2^b$ ), wherein the indicated multiplication and addition are the Galois Field defined operations, and wherein  $b$  is an integer  $> 1$ , and  $K$  is an integer  $2 < K < 2^b$ .

3,629,825

# ERROR-DETECTING SYSTEM FOR DATA-PROCESSING CIRCUITRY

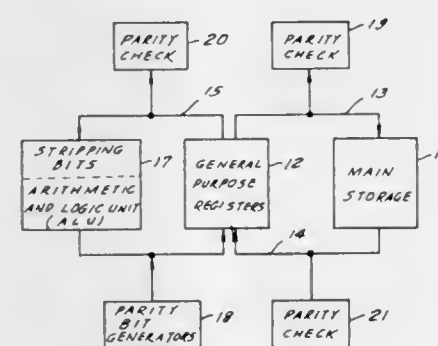
Earl M. Bloom, Jr., Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1969, Ser. No. 881,240

Int. Cl. G06f 11/08, 11/12, 11/10

U.S. Cl. 340—146.1

6 Claims



This invention is directed to error detection circuitry for combination with data-processing systems. The information which comprises the message transmission is transmitted in binary fashion in channels each of a selected number of data bits, and through the addition of two check bits it is possible to detect both single and double parity errors of the asymmetric-type.

3,629,826

# SECTIONING APPARATUS AND METHOD FOR CHARACTER RECOGNITION SYSTEMS

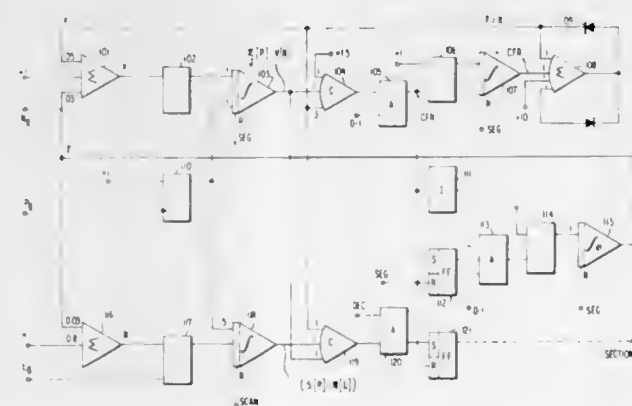
Alfred Cutaia; John W. McCullough, and Don W. Piller, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1970, Ser. No. 338

Int. Cl. G06k 9/00

U.S. Cl. 340—146.3 R

18 Claims



In character recognition systems, there exists the problem of recognizing adjacent characters which are touching rather

than being completely separated by blank spaces. The system described generates a section gate in dependence upon an algorithm geared to character topology. The section gate enables a segmentation system which is adapted to properly segment the characters.

3,629,827

# SYSTEM AND METHOD FOR DETERMINING THE POSITION, HEIGHT AND WIDTH OF A CHARACTER MARKING

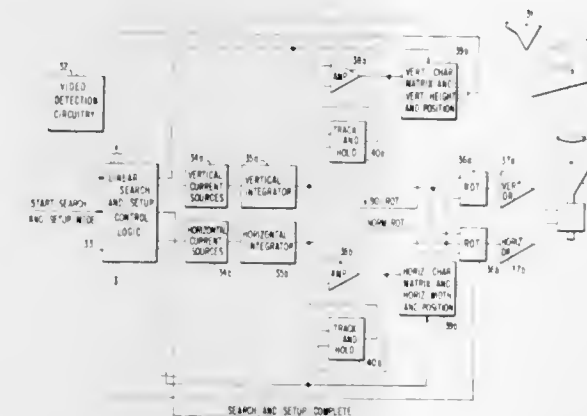
David L. Johnston, and Paul E. Nelson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,616

Int. Cl. G06k 9/04

U.S. Cl. 340—146.3 H

13 Claims



A beam is linearly swept across a character marking and stepped in directions perpendicular to the sweep. The extremes of the marking in four orthogonal directions, as determined during the sweep, are stored for use in controlling the positioning of a recognition scanning beam.

3,629,828

# SYSTEM HAVING SCANNER CONTROLLED BY VIDEO CLIPPING LEVEL AND RECOGNITION EXCEPTION ROUTINES

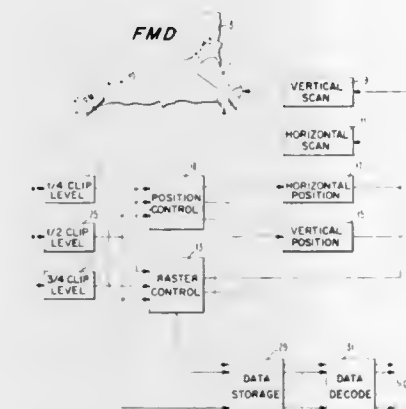
Frederick M. Demer, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1969, Ser. No. 822,580

Int. Cl. G06k 9/00

U.S. Cl. 340—146.3AG

4 Claims



A character recognition system comprising a flying spot scanner with appropriate scanner controls for causing the scanner to execute a plurality of scanning modes, recognition data storage for storing the data received from the flying spot scanner, a recognition decoding section and a coded output section for providing outputs in accordance with the characters scanned. Particularly, the invention provides for incremental movement of the flying spot scanner beam governed by different levels of clipping level control to provide for location of the scanning beam with respect to the registration portion of a stylized character which is to be scanned; a data compression means which combines information in several

different scanning areas into particular zones and stores the information; and means which will selectively provide one or more specifically located additional recognition scans as required over and above a normal number of recognition scans, to accommodate a few special characters.

3,629,829

# CHARACTER RECOGNITION CIRCUITRY

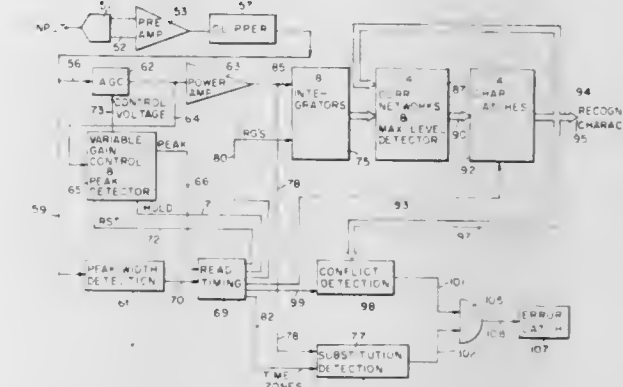
Robert Ordower, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 9, 1969, Ser. No. 858,253

Int. Cl. G06k 9/10

U.S. Cl. 340—146.3 Q

4 Claims



This invention is directed to method and apparatus for the reading and identification of characters on business documents and the like. Analog wave forms derived from scanning the characters are analyzed by integrating the signals in a plurality of time zones or divisions which span the width of the character. The integrated signals are then supplied to a plurality of correlation networks, one for each character to be recognized. The network having the highest output, as determined by maximum level detector means, represents the character which has been scanned.

3,629,830

# CHARACTER RECOGNITION APPARATUS

Gordon George Scarrott, Welwyn Garden City, and Thomas M. McCormick, Clifton, both of England, assignors to International Computers Limited, London, England

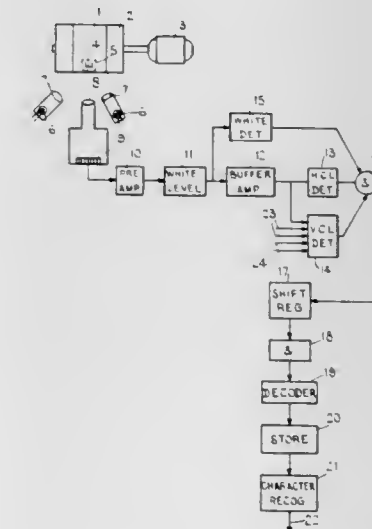
Filed Nov. 25, 1969, Ser. No. 879,687

Claims priority, application Great Britain, Nov. 30, 1968, 56,959/68

Int. Cl. G06r 9/04

U.S. Cl. 340—146.3 H

4 Claims



A character recognition apparatus with a plurality of sensing devices arranged in a line for scanning elemental character areas in a direction perpendicular to the line. Scan signals are applied through corresponding preprocessing net-



works each of which includes horizontal and vertical center line detectors. The output of the detectors are combined in a gate which in turn produces a pulse whenever center lines are detected. The gate output pulse is held in a shift register with the contents of the shift register being examined by a logic circuit and decoder to determine whether a vertical portion of a character is being sensed with the decoder output being an outline of the character. The outline is then applied to a character recognition circuit. A white level detection circuit is provided to inhibit operation of the gate when blank paper is being sensed.

3,629,831

# DATA TRANSMISSION CONTROLLER FOR CENTRAL TO REMOTE SYSTEM

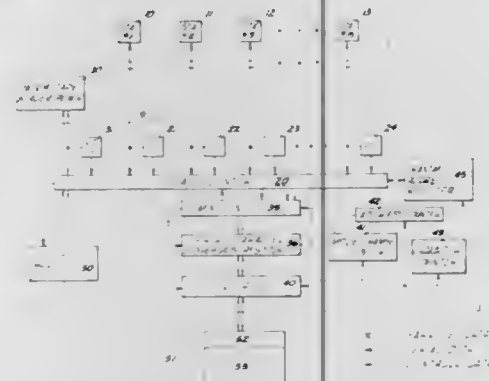
Leonard E. Mikus, Phoenix, and William G. Harvey, Glendale, both of Ariz., assignors to Honeywell Information Systems Inc.

Continuation of application Ser. No. 247,734, Dec. 27, 1962, now abandoned. This application Jan. 3, 1967, Ser. No. 613,707

Int. Cl. H04q 5/00, 11/00

U.S. Cl. 340-152

13 Claims



An apparatus for controlling a link in transferring information between a plurality of remote stations and a central location employing automatic data-processing equipment wherein the apparatus communicates with the central location in character serial form and communicates with the remote station in bit serial form. Selection means comprising a plurality of counters are actuated in a given manner to indicate the selection of a particular station.

3,629,832

# WELL LOGGING

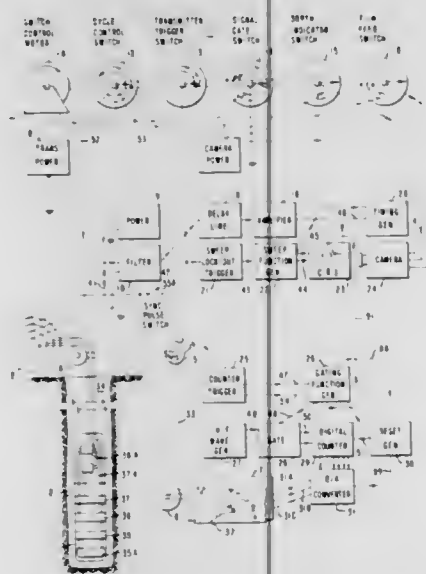
Charles B. Vogel, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of application Ser. No. 493,999, Mar. 14, 1955. This application Jan. 24, 1963, Ser. No. 253,682

Int. Cl. G01v 1/40

U.S. Cl. 340-15.5 TN

5 Claims



3. In an acoustical logging system including at least one receiver and a repetitively excited transmitter contained

within an instrument adapted to traverse a borehole, a method for reducing the incidence of erroneous recorded measurement comprising:

- generating a relatively large signal in time relationship to the excitation of the transmitter;
- rendering effective a normally ineffective recording system in response to said relatively large signal;
- and rendering said recording system ineffective in response to succeeding relatively smaller signals from the receiver contained in said subsurface instrument.

3,629,833

# CHARACTER RECOGNITION SYSTEM EMPLOYING A PLURALITY OF CHARACTER COMPRESSION TRANSFORMS

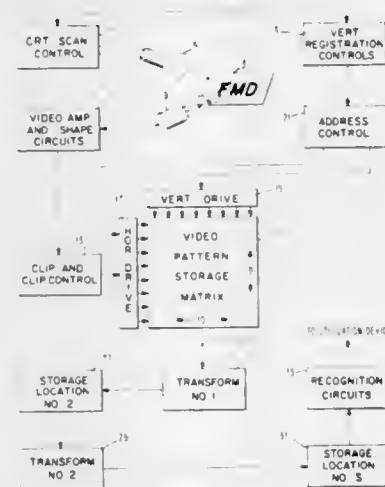
Frederick M. Demer, 307 Robin Lane, Vestal, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,450

Int. Cl. G06k 9/04

U.S. Cl. 340-146.3 H

3 Claims



A character recognition system, based upon a low-resolution video scanner, in which the binarized video data from sequential vertical scans is laterally related and registered in a two-dimensional storage.

The data in this storage, a two-dimensional pattern of the character to be recognized, is logically relocated and compacted prior to the application of recognition criteria for the purposes of eliminating the differences in patterns caused by various styles and sizes of the same character; filling data voids resulting from low-density characters; and excluding redundant data derived from heavily imprinted characters. The logical operations (transformations) reduce the patterns to the degree that there is left only that data in each pattern which makes it unique within the array to be recognized, and therefore recognizable by the application of minimum criteria.

3,629,834

# ACCESS-CONTROL EQUIPMENT AND ITEM-DISPENSING SYSTEMS CONTROLLED BY CREDIT CARD

William E. Randall, 67, Sunnyfield, Mill Hill, London, N.W.7, and Geoffrey Ernest Patrick Constable, Withy Furlong, Malleson Road, Gotherington, Cheltenham, Gloucestershire, both of England, assignors to Chubb & Son's Lock and Safe Company Limited; Smith's Industries Limited; Cricklewood Works, all of London, England, part interest to each

Filed Aug. 19, 1969, Ser. No. 851,301

Claims priority, application Great Britain, Aug. 30, 1968, 41,423/68

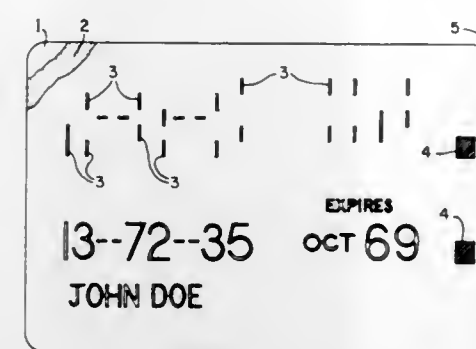
Int. Cl. H04q 1/00, 3/00

U.S. Cl. 340-149

14 Claims

A money-dispensing system is operative to dispense money in response to a bank customer's embossed credit card and keyed entry of his personal identification number, only if this number accords with the customer's account number as read from an accounting record impressed from the card. Accord is checked at the bank's central computer and approval for

dispensing, and return of the card to the customer, is given by an encyphered signal transmitted back to the dispensing terminal. The card is returned to the customer, whether or



not he is successful in achieving the accord necessary for dispensing, only if the card carries an authentic magnetic recording and has not expired. If the card does not carry the recording, or has expired, dispensing is in all cases inhibited and the card is transported into a bin that is out of reach of the customer for retention until the machine is serviced by bank staff.

3,629,835

# CREDIT CARD VALIDATION SYSTEM USING AN OPTICAL READER EMPLOYING REFLECTED LIGHT

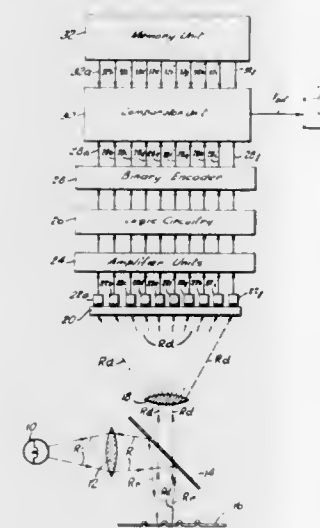
William F. Brown, Wappingers Falls; Ronald J. Goetichius, Fishkill; George R. Furman, Glenham, and Alan D. Rouse, Pawling, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 21, 1969, Ser. No. 826,473

Int. Cl. H04q 3/00, 5/00

U.S. Cl. 340-149

2 Claims



Hereinafter disclosed is methodology and apparatus for optically reading, or recognizing, numbers on such articles such as credit cards and the like. According to one illustrative embodiment of the invention a credit card having an identifying number, or account number, consisting of a plurality of decimal digits is illuminated by a source of light. Reflected light from the face of the card is directed through a lens and projected on a mask which has a plurality of unique hole patterns therein. The light reflected from the digits on the card is considerably darker than the light reflected from other portions of the card. There is provided in the mask an individual pattern, or array, of holes for each digit's reflected light. Each hole in each pattern of holes has associated therewith a photodetector. Hence, each pattern of holes has a corresponding pattern of photodetectors. For each of the decimal digits 0 through 9 on the card a unique pattern of illuminated and nonilluminated (or light and dark) photode-

tectors results. This unique pattern, or array, of light and dark photodetectors provides a unique set of signals which are representative of the particular decimal digit whose light has been reflected on the hole pattern in the mask. Ultimately, sets of such signals representing all the decimal digits are delivered to a comparator for the purpose of determining whether or not the number on the credit card corresponds to a like number stored in suitable storage means; said stored number also being delivered to the comparator.

3,629,836

# CROSSBAR MATRIX FOR PROGRAMMED SWITCHING

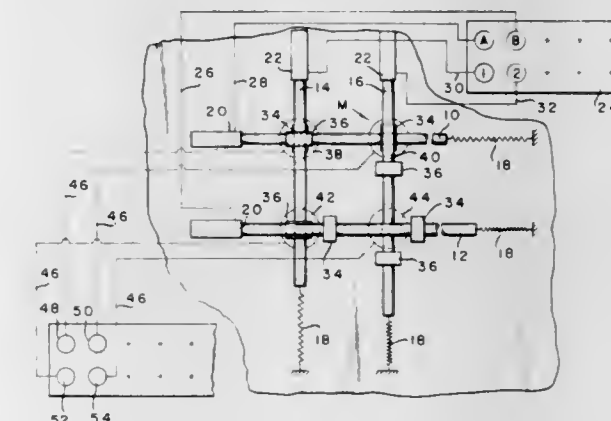
Bernard Edward Shlesinger, Jr., 3906 Bruce Lane, Annandale, Va.

Filed Jan. 9, 1970, Ser. No. 1,774

Int. Cl. H01h 63/02, 67/02; H04g 9/00

U.S. Cl. 340-166 R

68 Claims



A crossbar matrix for programmed switching and operation of electrical devices including a first series of bars mounted for movement in a first coordinated direction between operative and inoperative positions; each bar of the first series having a series of spaced first energy-emitting devices or energy controlling devices; a second series of bars mounted for movement in a second coordinated direction between operative and inoperative positions; each bar of said second series having a series of spaced second energy-emitting devices or energy controlling devices; means for selectively moving the bars; the second and first energy-emitting devices or energy-controlling devices forming pairs cooperating only when the respective bars of each pair are moved to operative positions; an electrically energizing component for each of the pairs operated only upon cooperation of its respective pair when the respective bars of each pair are moved to operative positions; whereby selectively moving the bars selectively operates the electrical energy-operated components thereby cooperates selective electrical devices.

3,629,837

# CODED SIGNAL COMMUNICATION SYSTEM

James A. Fraunfelder, North Wales; Frank C. Getz, Jr., Upper Providence; Sidney L. Kauffman, Jr., Swarthmore, and William H. Kurlans, Media, all of Pa., assignors to Gulf & Western Systems Company, New York, N.Y.

Continuation of application Ser. No. 654,649, July 19, 1967, now abandoned. This application Feb. 2, 1970, Ser. No. 7,373

Int. Cl. H04q 1/102

U.S. Cl. 340-171

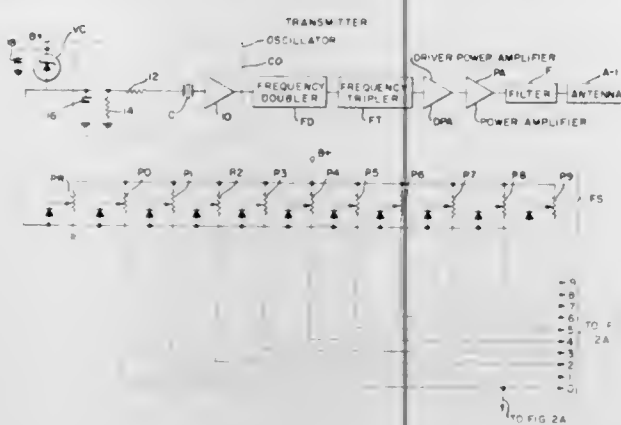
21 Claims

A communication system is disclosed herein which includes a plurality of transmitters, each operative to transmit at least one transmitter address frequency pulse and a message frequency pulse, wherein each frequency pulse is of a frequency selected from one of 10 different frequencies of respectively increasing decimal weight representative of



decimal numbers 0 through 9. A receiver serves to decode the frequency pulses and provide a decimal readout indica-

puts of the selected storage devices on the buses are sampled from the buses and opposite polarity constant current pulses



tion thereof, as by a visual decimal readout, so that both the message and transmitter address may be displayed.

3,629,838

## STATISTICAL DISPLAY APPARATUS

Ronald William Taylor, Hitchin, England, assignor to Datran Limited, Hitchin, England

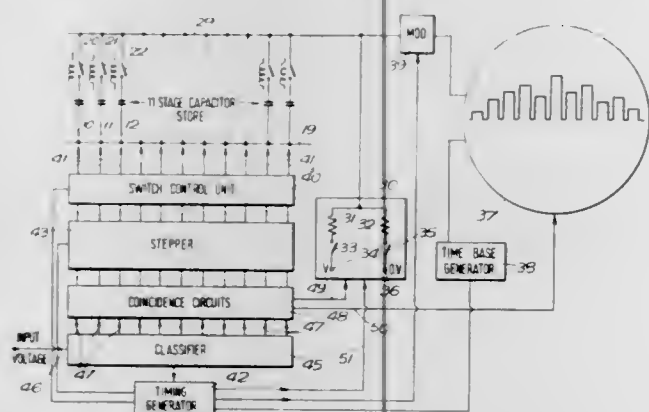
Filed June 20, 1968, Ser. No. 738,702

Claims priority, application Great Britain, June 20, 1967, 28,489/67

Int. Cl. G01F 7/00; H01J 31/08

U.S. Cl. 340-172

12 Claims



A statistical display apparatus for displaying information about the magnitude of a variable in histogram form comprises a number of capacitors corresponding to the number of classes into which the magnitude of the variable is to be classified. The variable is periodically sampled and, in accordance with the magnitude of the sample, an appropriate capacitor is selected by a stepping-switch unit and a unit charge is fed into the selected capacitor. In this selection, all the capacitors are scanned by the stepping switch and part of the charge is removed from each capacitor. The capacitors are also scanned in sequence and the magnitudes of their charges are displayed on a cathode-ray tube.

3,629,839

## TIME DIVISION MULTIPLEX SWITCHING SYSTEM

James Owen Dimmick; Theras Gordon Lewis, and John Francis O'Neill, all of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 13, 1970, Ser. No. 27,892

Int. Cl. H04j 3/00

U.S. Cl. 340-172.5

27 Claims

A time division switching system includes a first and a second group of storage devices. A selected first group storage device is connected to a first common bus and a selected second group storage device is connected to a second common bus during the same time interval. The out-

are applied to said common buses for a period of time corresponding to the difference between the sampled outputs whereby the sampled outputs are exchanged between the selected storage devices.

3,629,840

## APPARATUS FOR SENSING AND COUNTING IMAGES DISPOSED ON INFORMATION-BEARING MEDIA

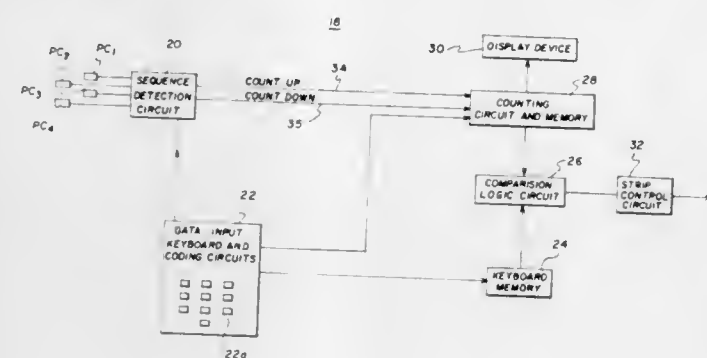
Robert E. Cullen, Foxborough, Mass., assignor to Eastman Kodak Company

Filed Apr. 24, 1970, Ser. No. 31,475

Int. Cl. G06f 7/28

U.S. Cl. 340-172.5

17 Claims



Apparatus is disclosed for sensing and counting the number of information images disposed on an information-bearing medium such as a strip of microfilm. At least first and second rows of images are recorded on a strip of microfilm and apparatus is disclosed herein for counting marks or indicia associated with each of the information images (or frames). More specifically, the apparatus includes a first set of means disposed to sense the counting marks of the first row as the strip is moved in a first direction and to provide signals which are counted to indicate the number of images in the first row. Further, the apparatus includes a second set of means disposed to sense the counting marks in the second row as the strip is moved in a second opposite direction and to enable the apparatus to continue sequentially to count the images in the second row. In an illustrative embodiment of this invention, the first set of means may provide signals indicative of counting down the images in the first row as the strip is moved in the second direction; and the second set of means may provide signals indicative of counting down the images in the second row as the strip is moved in the first direction.

3,629,841

## VECTOR GENERATOR APPARATUS

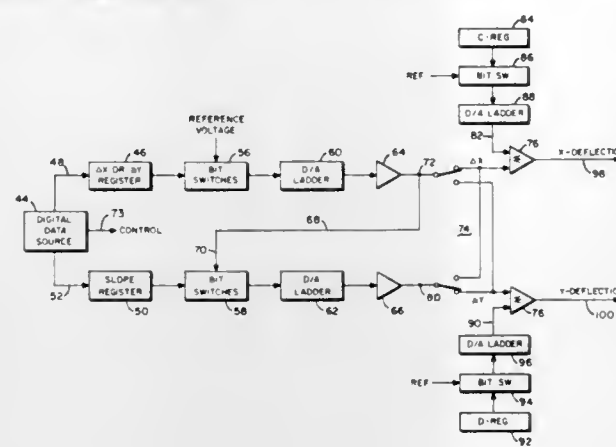
Charles A. Hare, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,337

Int. Cl. G06f 3/14; H01j 31/08

U.S. Cl. 340-172.5

2 Claims



A vector generator for use with a cathode-ray tube (CRT) display for forming line segments of a desired length and at a desired angle with respect to a reference. Digital signals from a computer or other source, representative of an incremental change in the coordinates in the line segment to be formed and of the slope of the segment are converted to analog signals and applied to summing amplifiers along with analog signals representative of an initial X and Y coordinate location of a point on the line segment to be formed. The output of the summing amplifiers are analog signals which are coupled to the CRT deflection electrodes such that when the beam is unblanked, the beam will trace a path from the point  $(X_1, Y_1)$  to the point  $(X_1 + \Delta X_2, Y_1 + \Delta Y_2)$ .

3,629,842

## MULTIPLE MEMORY-ACCESSING SYSTEM

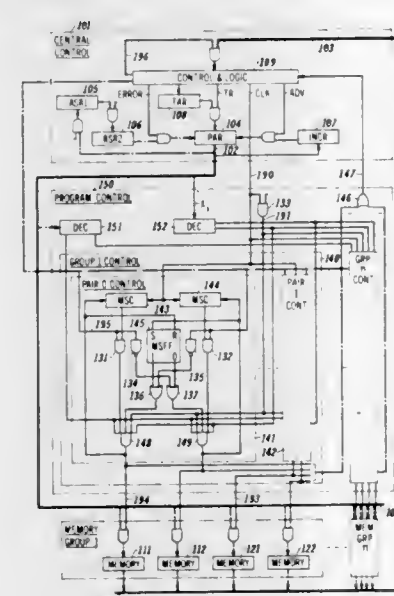
Frank Finley Taylor, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,274

Int. Cl. G06f 9/06

U.S. Cl. 340-172.5

20 Claims



A memory-accessing system is disclosed which is comprised of a plurality of pairs of memories, a decoder, and an access control means. Identical instruction sets are stored in each memory of a memory pair and consecutive address locations correspond to consecutive memory pairs. The decoder is responsive to memory addresses to select one memory pair for access. The access control means is then operative to select the one memory, of the memory pair selected by the decoder, which was accessed the longest time

in the past and to provide a transmission path for the memory address to the selected memory.

3,629,843

## MACHINE PROCESS FOR ASSIGNING INTERCONNECTED COMPONENTS TO LOCATIONS IN A PLANAR MATRIX

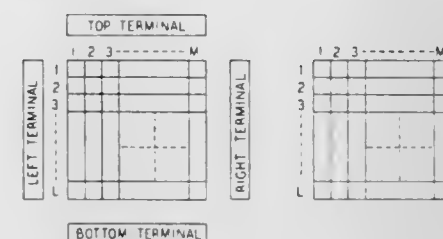
Arnold Herbert Scheinman, Deal, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 11, 1970, Ser. No. 36,233

Int. Cl. G06f 9/06

U.S. Cl. 340-172.5

14 Claims



Initially, components are assigned arbitrarily to locations in a planar matrix. Horizontal pairwise interchanges of adjacent components are then made if either (1) the absolute sum of the horizontal "moments" of the adjacent components or the system "moment" is made lower thereby. Vertical and diagonal pairwise interchanges are then made according to a similar criteria. This sequence of operations may be repeated as often as desired by the user until an acceptable configuration is obtained.

3,629,844

## MULTIFUNCTION ROUTING NETWORK

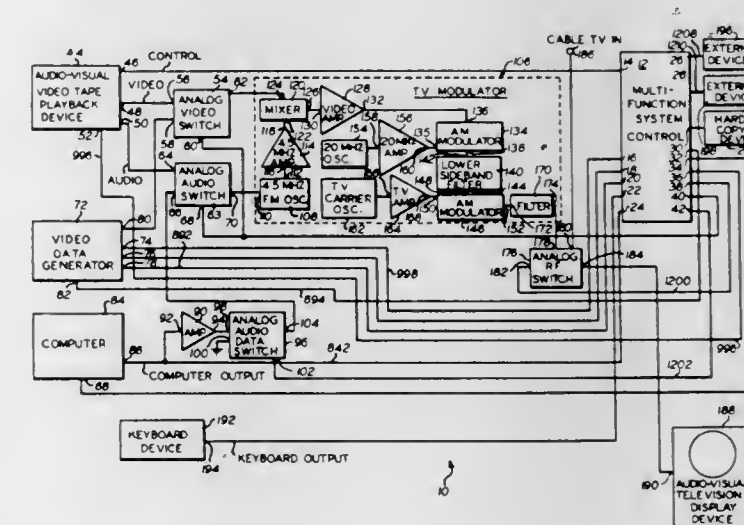
Douglas E. Dancis, Putnam Valley; Gerald E. Dorfuss, White Plains, and Benjamin C. Zitron, New York, all of N.Y., assignors to Allied Management & Systems Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,795

Int. Cl. G06f 9/19, 3/00, 15/56

U.S. Cl. 340-172.5

23 Claims



A multifunction routing network. The routing network is provided with a function control means including a condition responsive logic network having an iterative multifunction



control loop. Register and memory means are also provided in the routing network which are operatively associated with the control means for providing input conditions thereto and for receiving output conditions therefrom. The logic network is provided with a multistable means having a plurality of states and is responsive to the states thereof and the input conditions thereto to provide a plurality of control functions of both a data control and an execute non-data control nature for the routing network. A computer, an input keyboard, an audiovisual playback device, and a television are also provided which are operatively associated with the register and memory means for providing input conditions thereto and for responding to output conditions therefrom.

3,629,845

# DIGITAL ADJUSTMENT APPARATUS FOR ELECTRONIC INSTRUMENTATION

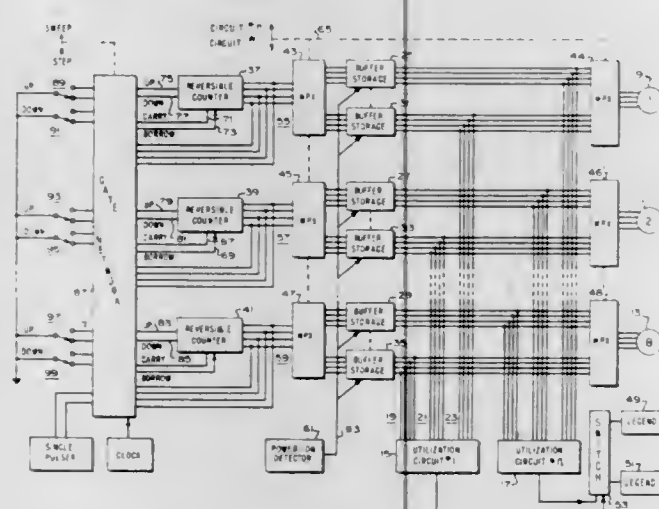
Hamilton C. Chisholm, Los Altos, and Raymond M. Shannon, Cupertino, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 3, 1970, Ser. No. 42,969

Int. Cl. G05b 21/00; H03k 19/00

U.S. Cl. 340—172.5

8 Claims



An electronic instrument for processing signals containing analog information includes a logic circuit which responds to operator-originated digital signals to incrementally alter the values of selected parameters of the signal processed by the instrument.

3,629,846

# TIME-VERSUS-LOCATION PATHFINDER FOR A TIME DIVISION SWITCH

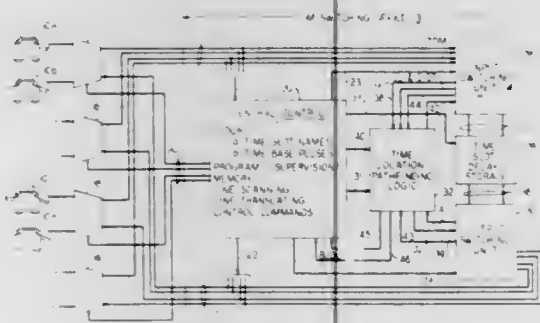
John Stewart Thompson, Sea Bright, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 11, 1970, Ser. No. 45,296

Int. Cl. H04q 11/04; H04b 3/00

U.S. Cl. 340—172.5

26 Claims



Storage access to multiple storage locations is coordinated for the time slots of successive frames of a time slot interchange operation in a time division multiplex system by

registering location access control signal changes, identifying first and second time slots of interest, and then identifying a transmission path in the form of a time-location sequence of uniform location availability status between such time slots in the time-storage domain of the locations. Time coordinates of the termini of the sequence are registered for use by the system's control logic to determine one or more locations of the sequence and to store appropriate information in control memories supplying the access control signals. Pathfinding embodiments are shown for time slot interchangers using as storage the locations of a reentrant shift register, a random access memory, or a delay line.

3,629,847

# DIGITAL DECODER

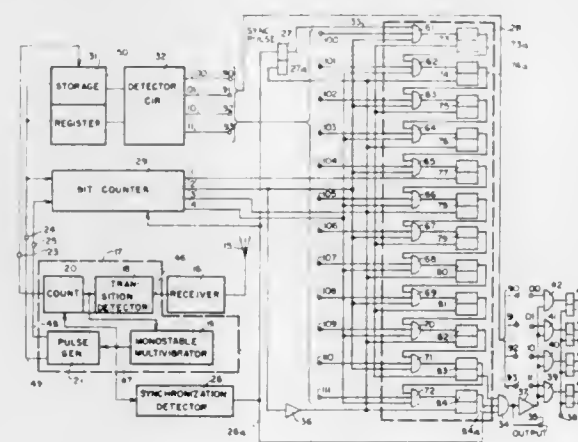
Richard H. Adlhoeh, Bellwood, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 23, 1970, Ser. No. 48,998

Int. Cl. H04b 15/00

U.S. Cl. 340—172.5

23 Claims



A digital decoder for a receiver including a two-stage storage register, a detector circuit, a bit counter and a 12-stage sequential address register. Each stage of the sequential address register is coupled to the bit counter and selectively coupled to the detector circuit output according to the binary code signal sequence. The binary code signal sequence is serially coupled to the storage register where it is detected by the detector circuit to develop an output signal which is coupled to the sequential address register. Counting pulses representing each binary data bit are coupled from the bit counter to the sequential address register. A stage of the sequential address register will change from a first to a second state when signals are simultaneously coupled to that stage from the detector circuit output, the bit counter, and the prior stage of the sequential address register. Serial operation of the stages of the sequential address register will occur if the correct binary code signal sequence is received.

3,629,848

# PRINT COMPARE OPERATION FROM MAIN STORAGE

Robert G. Gibson, Binghamton; Allan Greenberg, Poughkeepsie, and John D. Wilcox, Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,918

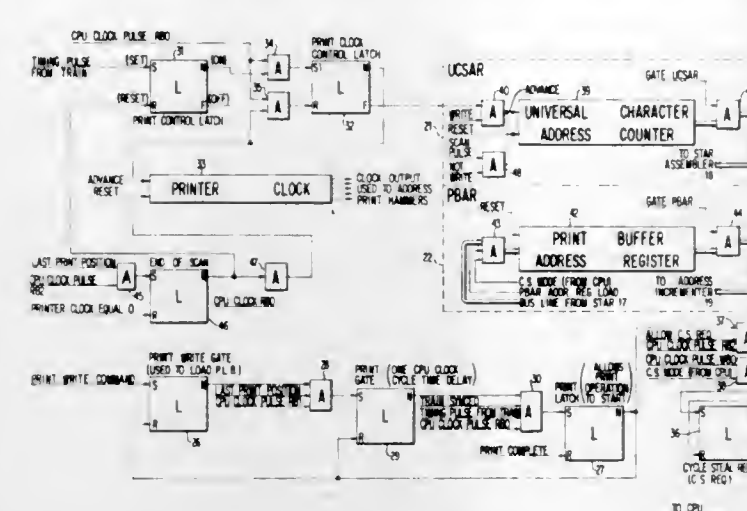
Int. Cl. G11c 7/00

U.S. Cl. 340—172.5

5 Claims

An adapter for controlling the operation of chain/train printers employs the main storage of a central processing unit to store characters to be printed and an image of the chain. Two hardware address registers are provided to read out or load the contents of the two storage areas. One register is used to address the character to be printed in the print line area. The second register addresses the character properly aligned with the print position to be printed. The two characters are read out of storage sequentially via a "cycle steal" technique. Upon acceptance of a cycle steal request, the con-

tents of the first address register is entered into the storage address register, and the proper chain character is read out into the cycle steal register and then transferred to the



universal character set register. A second cycle steal is begun by presenting the contents of the second address register to the storage address register. The proper print line character is then read out into the cycle steal register. The two characters are then compared to determine if a print hammer is to be fired.

3,629,849

# PATTERN RECOGNITION, AND PARTICULARLY DETERMINATION OF HOMOMORPHY BETWEEN VECTOR SYSTEMS FORMING INTERRELATED STRUCTURES

Jacques Sauvan, Paris, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation S.N.E.C.M.A., Paris, France

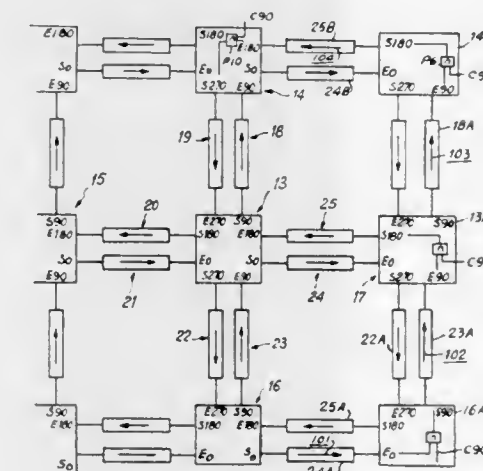
Continuation-in-part of application Ser. No. 634,387, Apr. 27, 1967, now abandoned. This application Apr. 27, 1970,

Ser. No. 32,334

Int. Cl. G06f 7/02; G06g 7/28; G11b 13/00

U.S. Cl. 340—172.5

36 Claims



A pattern is represented by vectors in a coordinate system. A matrix, forming an electrical analog of a vector, or point units within the matrix, is constructed, signals representative of the direction of the vectors of a second vector group (structure) are then generated and sequentially applied to the matrix; upon noncoincidence of the signal representative of change of orientation of the vector traversing the circuit, further comparison is stopped and the state of the circuit is stored, so that an indication of similarity of a structure, as represented by the signals with another structure, as represented by the circuit is obtained, to the extent that such a similarity exists. In a modification, fictitious signals may be generated to provide continuity for noncontinuous vector quantities or to simulate specific problems.

3,629,850

# FLEXIBLE PROGRAMMING APPARATUS FOR ELECTRONIC COMPUTERS

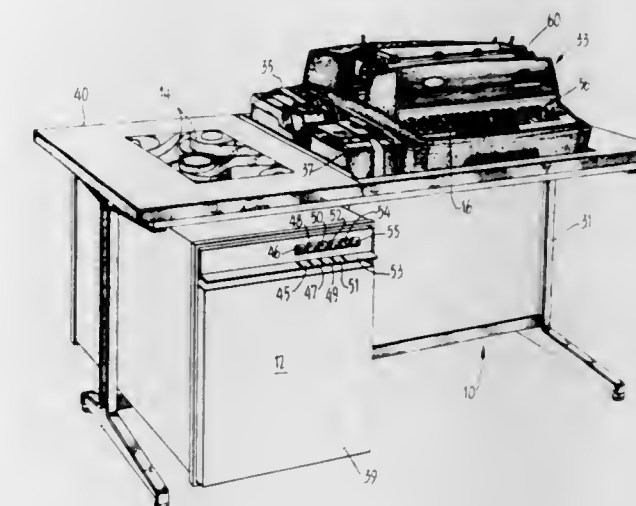
William R. Clark, Castro Valley; George H. Hare, Oakland, and Peter E. Osborn, San Leandro, all of Calif., assignors to The Singer Company

Filed Nov. 25, 1966, Ser. No. 596,920

Int. Cl. G06f 9/06

U.S. Cl. 340—172.5

16 Claims



An electronic billing and accounting machine having a program memory means for loading one or more programs into the program memory, and means for requesting and identifying particular programs and causing execution of the particular programs once identified in the program memory.

3,629,851

# SCANNER CONTROL CIRCUIT FOR A PROGRAM-CONTROLLED COMMUNICATION SWITCHING SYSTEM

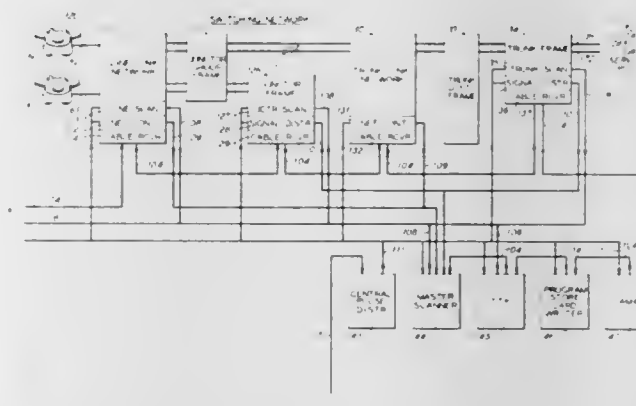
Ulrich Werner, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 21, 1969, Ser. No. 868,170

Int. Cl. G06f 15/16, 13/00

U.S. Cl. 340—172.5

9 Claims



A program-controlled telephone switching system which includes a main processor which serves to control the system's switching network and to process data obtained by the main processor and data obtained by an auxiliary processor. The auxiliary processor comprises a control unit and a memory which is directly shared by the main processor and the auxiliary processor. The auxiliary processor operates in accordance with programs and data placed in the shared memory by the main processor and by means of such programs and data examines the lines and trunks of the system to detect significant changes which are indicative of a request for attention by a line or trunk. Upon detection of a significant condition, the auxiliary processor places a record in the shared memory which identifies the line or trunk which has experienced a significant change.



3,629,852

## TRANSIENT ANALYZER

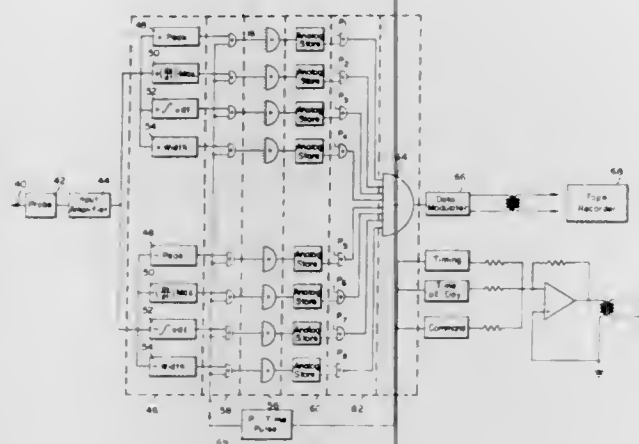
Melvin W. Thexton, La Palma, Calif., and Stanley R. Schaub, Brussels, Belgium, assignors to Pioneer Magnetics, Inc.

Filed Feb. 13, 1969, Ser. No. 807,162

Int. Cl. G01r 27/28

U.S. Cl. 340—172.5

21 Claims



Transient phenomena in a system are monitored, analyzed, and stored by apparatus which converts significant characteristics of transient phenomena as they occur, into quantified, electrical signals. The significant characteristics include positive and negative peaks, duration of positive and negative transient, and the rate of "rise" of positive and negative transients. The quantified data can be applied in real time to a display apparatus to provide a chronological record of each of the characteristics, or can be stored in a relatively low-bandwidth memory system for subsequent playback into display apparatus.

3,629,853

## DATA-PROCESSING ELEMENT

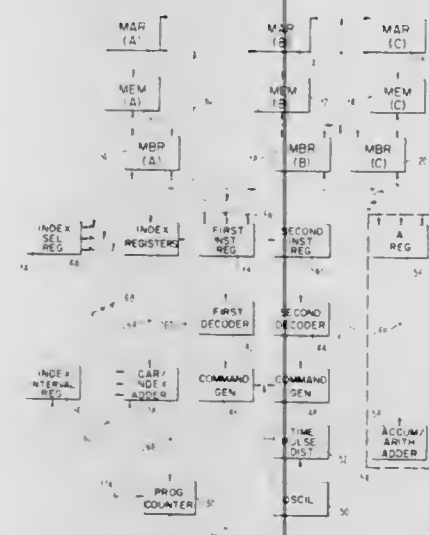
John D. Newton, Kingston, N.Y., assignor to International Business Machines Corporation, New York, N.Y.

Filed June 30, 1959, Ser. No. 823,988

Int. Cl. G06f 9/10

U.S. Cl. 340—172.5

34 Claims



A digital computer system having multiple memory units for storing information words representative of data and instructions, control means including means for extracting information words from the memory units, and two instruction registers. A first instruction register stores an instruction while first steps in the manipulation thereof are performed and a second instruction register stores the instruction while second steps in the manipulation thereof are performed. The computer further includes means for transferring an instruction from the first instruction register to the second instruction register and means for transferring a further instruction to the first instruction register for effecting the concurrent processing of two instructions. Both data and instruction

words may be extracted from different memory units at the same time. Control logic provides signals indicative of memory accessibility. The computer is also adapted to conditionally proceed with the processing of an instruction sequence in accordance with the probability of the occurrence of a condition prior to the ascertainment of that condition and to inhibit the instruction sequence and initiate the processing of another instruction sequence if the condition occurs.

3,629,854

## MODULAR MULTIPROCESSOR SYSTEM WITH RECIRCULATING PRIORITY

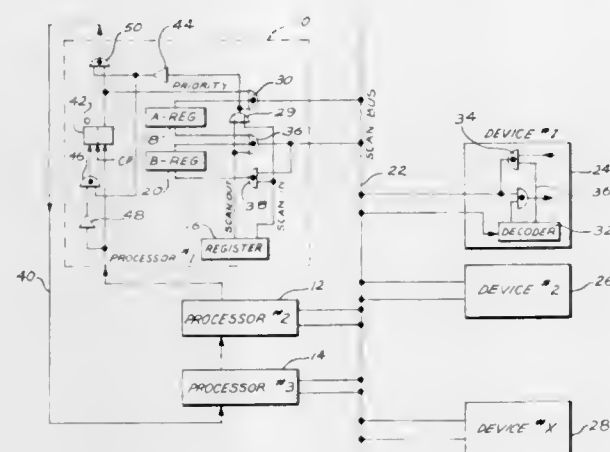
Erwin A. Hauck, Arcadia, and John R. Werner, Glendora, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed July 22, 1969, Ser. No. 843,345

Int. Cl. G06f 15/16

U.S. Cl. 340—172.5

4 Claims



A computer having any number of processors of equal capability in the system, each processor being able to scan all peripheral devices over a common bus, with priority resolution being provided by connecting the processors in a closed loop on which is circulated a priority bit. Only the processor receiving the bit can utilize the common bus and circulation of the bit is interrupted by the processor utilizing the common bus.

3,629,855

## DATA ACQUISITION AND IDENTIFICATION SYSTEM

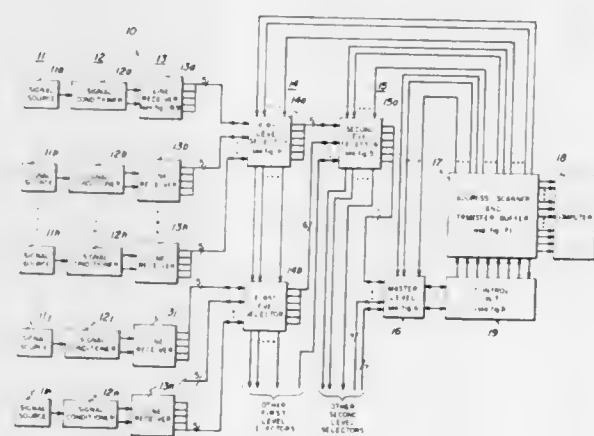
James W. Conley, Scotia, N.Y., assignor to General Electric Company

Filed Oct. 2, 1969, Ser. No. 863,217

Int. Cl. G11b 13/00

U.S. Cl. 340—172.5

14 Claims



A method and apparatus are disclosed for monitoring a plurality of signal sources to detect the time of occurrence of

a change in signal condition from any of the signal sources, the sign of the change and the signal source generating the change. The monitoring is performed by source-associated receivers which generate an "event flag" upon occurrence of a change in signal condition. The outputs of each receiver are combined in intermediate level selectors for use by a master level selector to enable an address scanner to search the level selectors for the receiver generating the "event flag" and to record the time of occurrence of the "event flag." When the particular receiver which generated the "event flag" is found, its address and the sense of the change are also recorded.

3,629,856

## MULTICHANNEL SIGNAL-PROCESSING SYSTEM

Takeshi Arai; Hideo Aizawa, both of Yokohama; Masashi Miura; Yoshio Numaho; Masahisa Takeya; Tasuku Yoshida; Noboru Ishibashi, all of Tokyo, and Kaichiro Yamashita, Funabashi, all of Japan, assignors to Tokyo Keiki Seizosho Co., Ltd., Tokyo, Japan

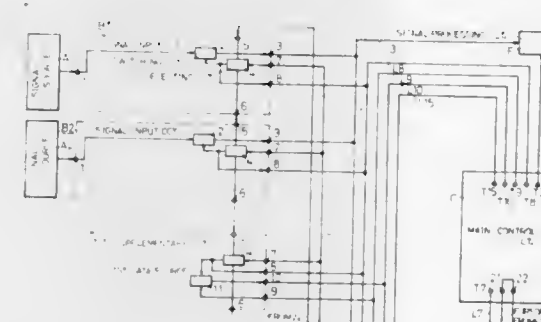
Filed Mar. 19, 1970, Ser. No. 21,119

Claims priority, application Japan, Mar. 22, 1969, 44/21415

Int. Cl. G06f 3/04

U.S. Cl. 340—172.5

11 Claims



A multichannel signal-processing system having a simplified arrangement wherein multiple signal channel-selecting circuits for multiple channel input signals and a supplementary channel-selecting circuit or circuits corresponding to single or plural data available from supplementary circuit or circuits each having a data source is loop connected in series with each other in a predetermined order in the form of a ring counter, said signal channel-selecting circuits and said supplementary channel-selecting circuit or circuits are driven in a predetermined order so that the multiple channel input signals and the single or plural data may be successively selected, and the multiple channel input signals of the multiple channel input signals and single or plural data selected in the predetermined order as described above are processed in a signal-processing circuit controlled by a main control circuit, whereas the single or plural data are supplied to the main control circuit to constitute control signal to control the signal-processing circuit.

3,629,857

## COMPUTER INPUT BUFFER MEMORY INCLUDING FIRST IN-FIRST OUT AND FIRST IN-LAST OUT MODES

Ulbe Faber, Honeybrook, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 18, 1969, Ser. No. 859,139

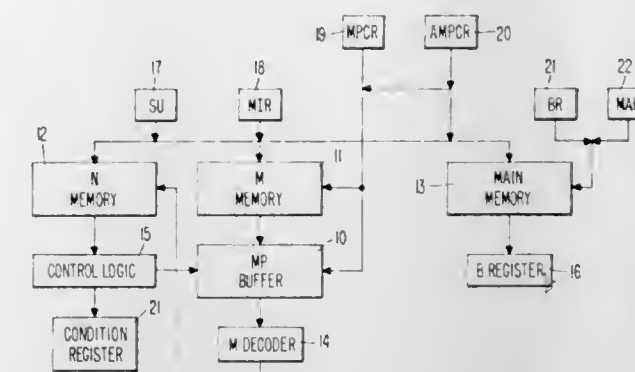
Int. Cl. G11c 7/00

U.S. Cl. 340—172.5

12 Claims

This disclosure relates to a memory or storage array that can be accessed randomly and also in both a first-in-first-out mode and a first-in-last-out mode. The array is word oriented and each word location is provided with an indicator flip-flop which is placed in a ONE state when a word has been entered therein, the flip-flop being reset to ZERO when the word has been fetched from that location in a nonrandom access mode. Address logic is provided to select the next successive location in one of the fetching modes having the same

sequence as the storage mode. In addition, the address logic provides for selecting locations in an opposite sequence and



for selecting locations in a random manner during the other fetching modes.

3,629,858

## LIQUID SUPPLYING APPARATUS

Ken Hayakawa, Yokohama, and Mitsuaki Tamada, Sagami-hara, both of Japan, assignors to Tokico Ltd., Kanagawa-Ken, Japan

Filed Apr. 7, 1970, Ser. No. 26,318

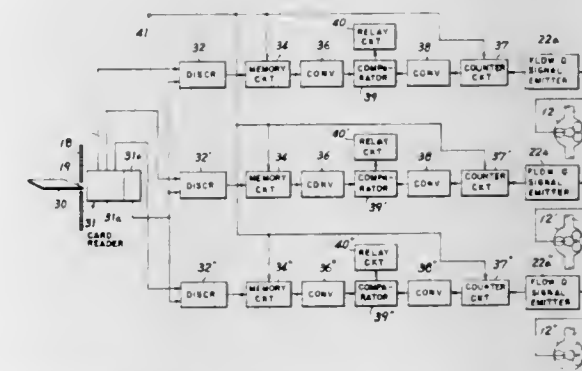
Claims priority, application Japan, Apr. 9, 1969, 44/27550

Apr. 14, 1969, Japan 44/27550

Int. Cl. G07f 13/00

U.S. Cl. 340—172.5

6 Claims



A liquid-supplying apparatus including a card reader having a single card insertion opening connected to a plurality of liquid-supplying systems for varieties of liquid. The kinds and quantities of liquid are respectively read from cards put in and out of the card reader in sequence, stored in a memory circuit and used for supply of liquid in the predetermined quantity.

3,629,859

## OIL FIELD PRODUCTION AUTOMATION AND APPARATUS

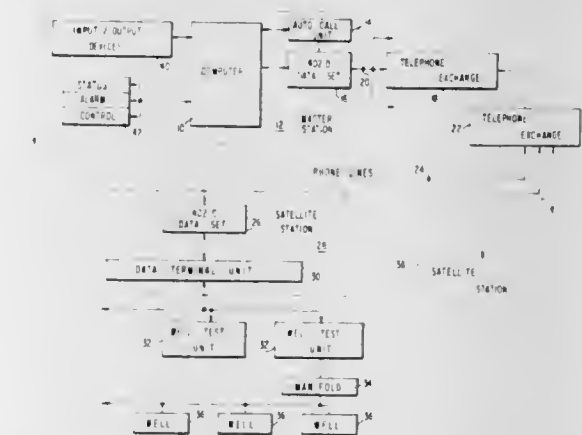
George V. Copland, and Edward W. Gass, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 14, 1969, Ser. No. 876,911

Int. Cl. H04b 3/00

U.S. Cl. 340—172.5

52 Claims



Method and apparatus for remote computer evaluation



and control of oil fields commercially installed telephone lines. Digital well condition sensors and interface circuitry for asynchronous data transmission are disclosed.

3,629,860

# RECORD LOCATE APPARATUS FOR VARIABLE-LENGTH RECORDS ON MAGNETIC DISK UNITS

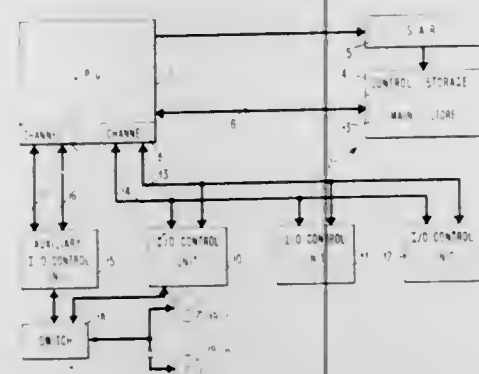
Anthony J. Capozzi, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,137

Int. Cl. G11b 13/00

U.S. Cl. 340-172.5

7 Claims



Improved control apparatus which is independent of record format frees the channel of a central processor and/or the disk storage control unit connected to the channel until a read/write head and disk are relatively positioned for transfer of a selected record with minimum delay. In data processing systems having a plurality of magnetic disk drive units controlled by a common storage control unit, the improved apparatus determines the order in which selected variable length record positions on disks carried by the drive units become available to their respective read/write heads and renders the control unit effective to read or write a record only when that record is immediately available to its read/write head. In one arrangement the improved apparatus determines the length of time required for each selected record position to reach its respective read/write head and in the event that considerable delay will be encountered, it frees the channel and control unit for other processing work during the delay.

3,629,861

# CONTROL FOR CHAIN PRINTER

Lynn W. Marsh, Jr., Melrose, and Edward M. Schneiderhan, Billerica, both of Mass., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,354

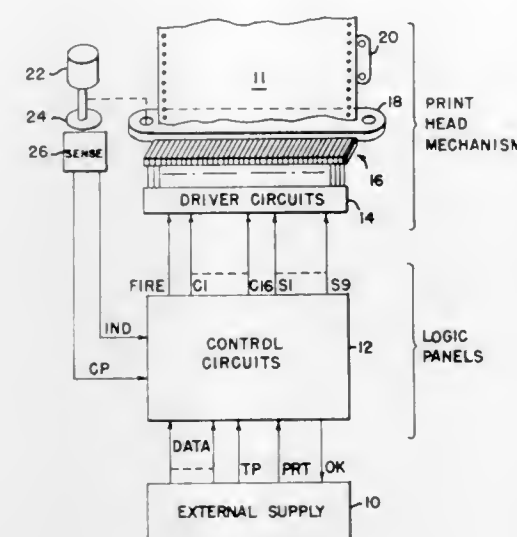
Int. Cl. G06k 15/08

U.S. Cl. 340-172.5

8 Claims

A control system for a horizontal-type carrier, or "chain," printer wherein a recirculating shift register memory is employed to store the code representations of characters to be printed on the printline. A tracking or address counter is advanced in synchronism with the movement of data through the shift register and serves to identify each character stored therein with the particular print position in which it is to be printed. Generation of print command signals is accomplished by comparing, in sequence, each character stored in the memory with the output of a character generation counter which is advanced in synchronism with the movement of the type carrier to identify the order in which the types on the carrier move past the print positions. Actuation of the comparator and advancement of the character generation counter are controlled directly by the output of the tracking counter. Beginning-of-font sync pulses are generated by gating a primary index signal derived directly from the type carrier with a secondary index signal derived from a rotating code disc. A plurality of index marks are provided

on the code disc in a manner to enable generation of properly timed beginning-of-font signals for any of a variety



of different font length type carriers interchangeably employable in the printer.

3,629,862

# STORE WITH ACCESS RATE DETERMINED BY EXECUTION TIME FOR STORED WORDS

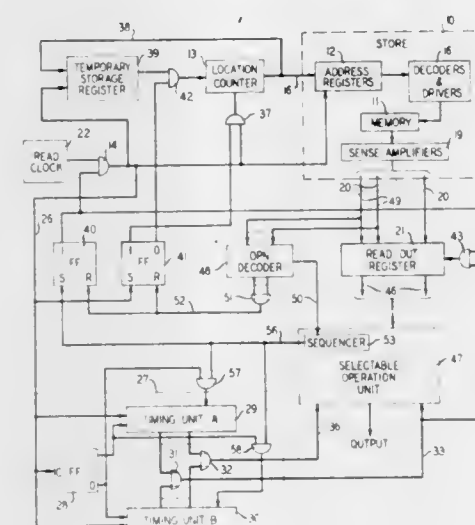
Woo F. Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 17, 1969, Ser. No. 858,780

Int. Cl. G06f 9/00

U.S. Cl. 340-172.5

7 Claims



The long term effective access time of a single store is reduced by applying successive access drives at a rate which is greater than the rate normally permitted by the memory access-to-readout period. Processor instructions which are read out of the store are decoded and utilized to effect a temporary suspension in the application of access signals during the execution of each instruction requiring an execution time in excess of the access drive rate.

3,629,863

# FILM DEPOSITED CIRCUITS AND DEVICES THEREFOR

Ronald G. Neale, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

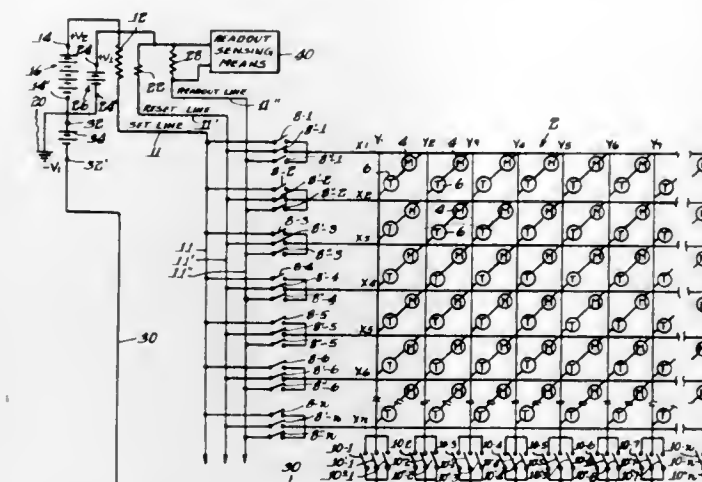
Filed Nov. 4, 1968, Ser. No. 773,013

Int. Cl. G11c 11/36

U.S. Cl. 340-173

25 Claims

An entire circuit is formed by a number of overlapping



deposited films of conduct semiconductor and insulating

materials. A switching matrix circuit made in accordance with the invention comprises an insulating base, bands of X and Y axes conductors deposited on one side of said insulating base in crossing rows and columns with a layer of insulating material interposed between the X and Y axes conductors at each crossing point to insulate the same. At least one switch device is coupled between each X and Y axes conductor adjacent each active crossing point thereof, the switch device associated with each crossing point including a layer of semiconductor material deposited over the portion of the X or Y axis conductor involved between the associated Y and X axis conductor and the immediately adjacent Y or X axis conductor, the deposited layer of semiconductor material associated with each crossing point having a relatively high-resistance condition which is switched to a relatively low-resistance condition when the value of a voltage applied thereto reaches a first voltage threshold level which low-resistance condition remains until the value of the current therethrough drops below a given holding value.



# DESIGNS

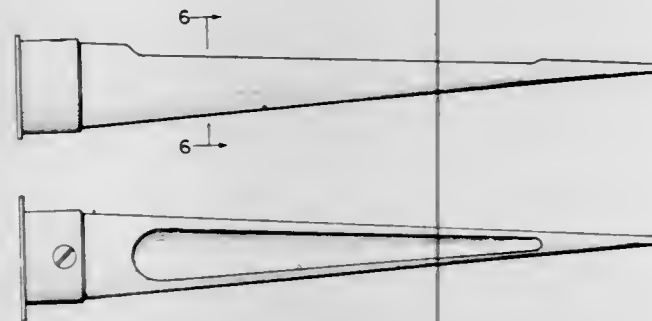
DECEMBER 21, 1971

222,739

## WALL MOUNTED FID

Edward I. Friedman, Warwick, R.I.  
(32 Westminster St., Providence, R.I. 02903)  
Filed Sept. 21, 1970, Ser. No. 25,078  
Term of patent 14 years  
Int. Cl. D8—05

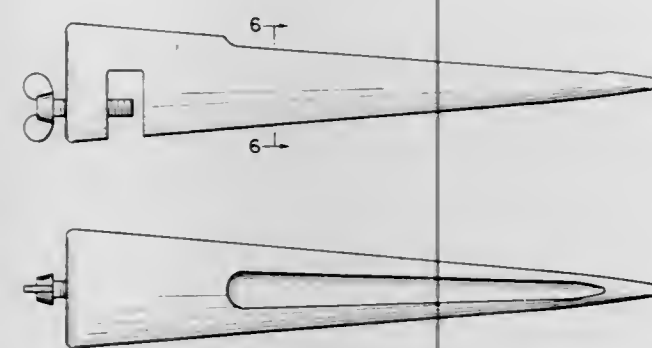
U.S. Cl. D8—14



222,740  
FID

Edward I. Friedman, Warwick, R.I.  
(32 Westminster St., Providence, R.I. 02903)  
Filed Sept. 21, 1970, Ser. No. 25,077  
Term of patent 14 years  
Int. Cl. D8—05

U.S. Cl. D8—14



222,741  
BOTTLE

Reginald Malcolm Broadhead, Maidenhead, England, assignor to Crown Distillers Limited, London, England  
Filed Jan. 2, 1970, Ser. No. 20,737  
Claims priority, application Great Britain Nov. 25, 1969  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—63



222,742  
BOTTLE

Reginald Malcolm Broadhead, Maidenhead, England, assignor to Crown Distillers Limited, London, England  
Filed Sept. 4, 1970, Ser. No. 24,843  
Claims priority, application Great Britain Mar. 13, 1970  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—67



DECEMBER 21, 1971

U. S. PATENT OFFICE

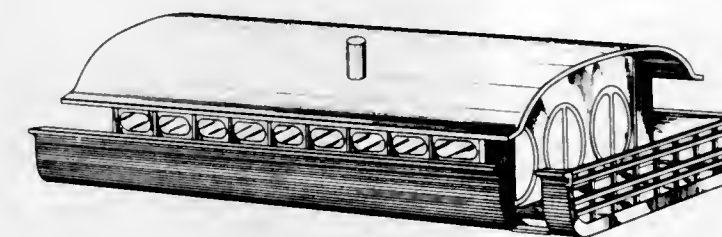
1199

222,743

## BUILDING

John B. Shaw, Cherokee Ranch,  
Sedalia, Colo. 80135  
Filed Sept. 17, 1970, Ser. No. 25,318  
Term of patent 14 years  
Int. Cl. D25—03

U.S. Cl. D13—1



222,744

## DECORATIVE SILL AND RAIL COMBINATION FOR AUTOMOBILE WINDOWS

Robert G. T. Reilly, Tustin, Calif., assignor to Autogear of California, Orange, Calif.  
Filed June 15, 1970, Ser. No. 23,478  
Term of patent 14 years  
Int. Cl. D12—16

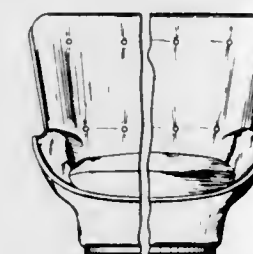
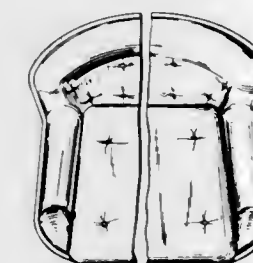
U.S. Cl. D14—6



222,745  
CHAIR

Charles Bernard, Montreuil-sous-Bois, France, assignor to Airborne S.A., Montreuil-sous-Bois, France  
Filed Oct. 8, 1969, Ser. No. 19,453  
Claims priority, application France Apr. 28, 1969  
Term of patent 7 years  
Int. Cl. D6—02

U.S. Cl. D15—11

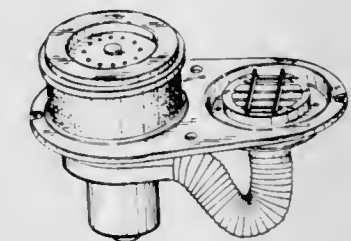


222,746

## COMBINED AIR PURIFIER AND DEODORIZER FOR AUTOMOBILES

John E. Gilbertson, 3209 Douglas Ave.,  
Des Moines, Iowa 50309  
Filed June 25, 1970, Ser. No. 23,667  
Term of patent 14 years  
Int. Cl. D23—99

U.S. Cl. D23—149

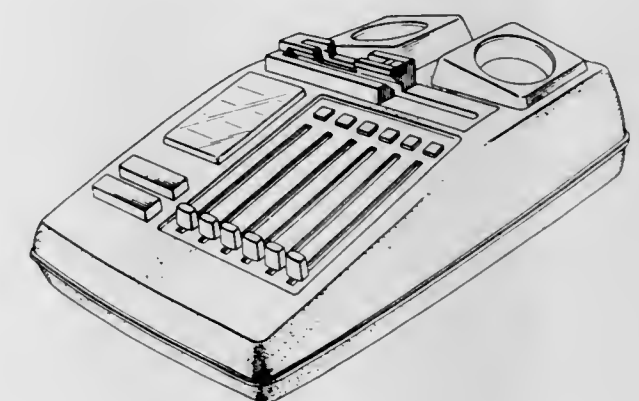


222,747

## CREDIT CARD DATA TERMINAL

Leonard N. Albrecht, Tiberon, Calif., assignor to Albert J. Day  
Filed Nov. 12, 1970, Ser. No. 25,948  
Term of patent 14 years  
Int. Cl. D14—02

U.S. Cl. D26—5

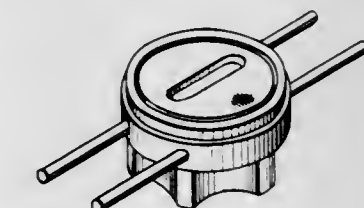


222,748

## COMBINED MINIATURE LAMP AND HOLDER THEREFOR

Bernard V. Strianese, Manhasset, N.Y., assignor to Ackerman Engravers, Inc., Long Island City, N.Y.  
Filed Feb. 24, 1970, Ser. No. 21,598  
Term of patent 14 years  
Int. Cl. D26—04

U.S. Cl. D26—8



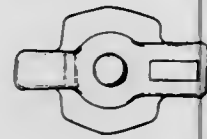


222,749

**LAMP CORD SWITCH**

Herbert G. Lehmann, 5 Kent Road,  
Easton, Conn. 06612  
Filed Apr. 30, 1970, Ser. No. 22,724  
Term of patent 14 years  
Int. Cl. D13—03

U.S. Cl. D26—13

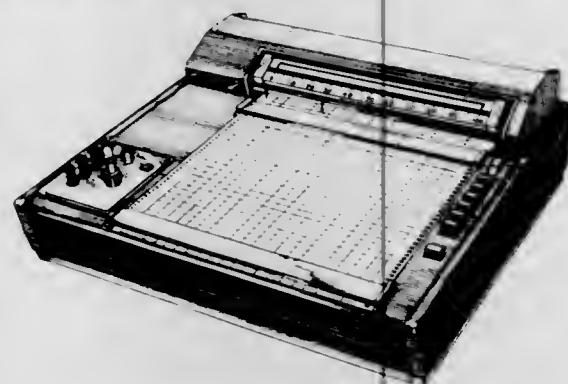


222,750

**CHART RECORDER**

Severin L. Johassen, Lafayette Hill, and Harper Landell,  
Fort Washington, Pa., assignors to Leeds & Northrup  
Company, North Wales, Pa.  
Filed Oct. 7, 1970, Ser. No. 25,366  
Term of patent 14 years  
Int. Cl. D14—02

U.S. Cl. D26—14

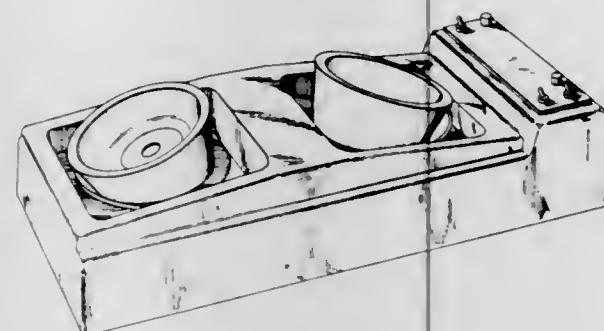


222,751

**COUPLER**

Melvin Rudin, Palo Alto, Calif., assignor to Datel  
Corporation, McLean, Va.  
Filed Nov. 4, 1970, Ser. No. 25,828  
Term of patent 14 years  
Int. Cl. D14—03

U.S. Cl. D26—14

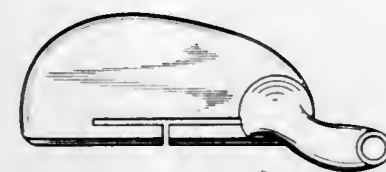


222,752

**GOLF PUTTER HEAD**

Raymon W. Cook, 1026 Mount Eden,  
San Antonio, Tex. 78213  
Filed Feb. 3, 1970, Ser. No. 21,227  
Term of patent 14 years  
Int. Cl. D21—02

U.S. Cl. D34—5



222,753

**GOLF PUTTER HEAD**

Raymon W. Cook, 1026 Mount Eden,  
San Antonio, Tex. 78213  
Filed Feb. 3, 1970, Ser. No. 21,229  
Term of patent 14 years  
Int. Cl. D21—02

U.S. Cl. D34—5

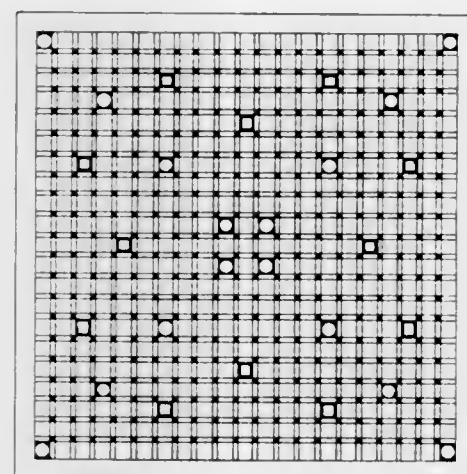


222,754

**GAME BOARD**

James A. Jones, 1637 Prospect Ave.,  
Willow Grove, Pa. 19090  
Filed Apr. 13, 1970, Ser. No. 22,378  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—5

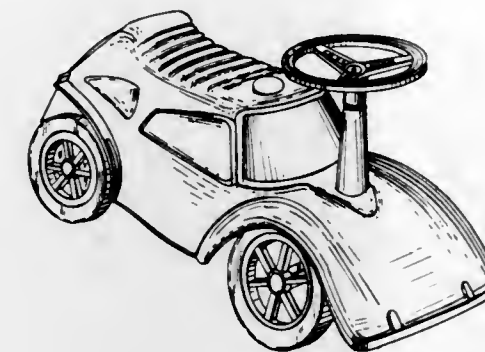


222,755

**RIDING TOY**

John M. Michael, Philadelphia, Pa., assignor to  
Carolina Enterprises, Inc., Tarboro, N.C.  
Filed Aug. 10, 1970, Ser. No. 24,402  
Term of patent 3½ years  
Int. Cl. D21—01

U.S. Cl. D34—15



222,756

**HOUSING FOR A PORTABLE FOOD MIXER**

Downer P. Dykes, Lawrence, Kans., assignor to Rival  
Manufacturing Company, Kansas City, Mo.  
Filed Sept. 14, 1970, Ser. No. 24,966  
Term of patent 14 years  
Int. Cl. D7—04

U.S. Cl. D44—1

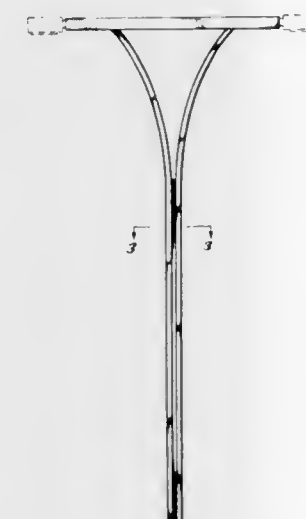


222,757

**LIGHT STANDARD OR SIMILAR ARTICLE**

Robert W. Selden, Seattle, Wash., assignor to  
Weyerhaeuser Company, Tacoma, Wash.  
Original design application Oct. 20, 1969, Ser. No. 19,631,  
now Patent No. 220,533, dated Apr. 20, 1971. Divided  
and this application Aug. 31, 1970, Ser. No. 24,770  
Term of patent 14 years  
Int. Cl. D26—03

U.S. Cl. D48—31

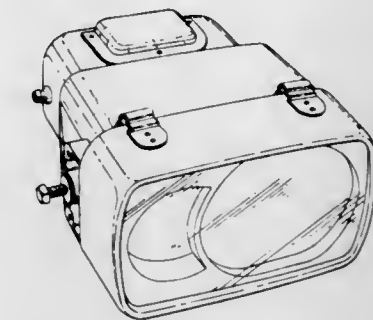


222,758

**VEHICLE LAMP UNIT**

Harris Vernon Hicks, 61 Ferndale Road,  
Lichfield, Staffordshire, England  
Filed July 13, 1970, Ser. No. 23,911  
Claims priority, application Great Britain Jan. 13, 1970  
Term of patent 14 years  
Int. Cl. D26—06

U.S. Cl. D48—32

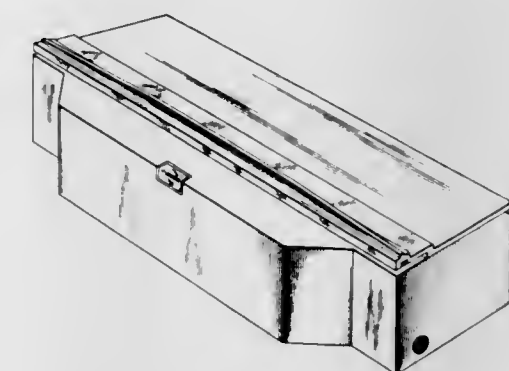


222,759

**MACHINE FOR CUTTING AND SEALING PLASTIC SHEETING**

Max Freeman, Great Neck, N.Y., assignor to Americana  
Craftsmen, Inc., Long Island City, N.Y.  
Filed Aug. 24, 1970, Ser. No. 24,660  
Term of patent 14 years  
Int. Cl. D15—99

U.S. Cl. D55—1

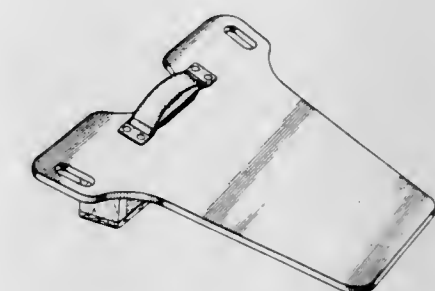


222,760

**CARDIAC RESUSCITATOR**

Stanley F. Meyer, 6598 Mount Ripley Drive,  
Buena Park, Calif. 90620  
Filed May 5, 1970, Ser. No. 22,816  
Term of patent 14 years  
Int. Cl. D24—02

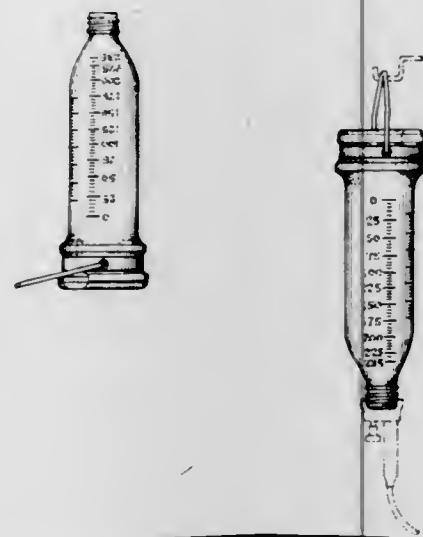
U.S. Cl. D83—1





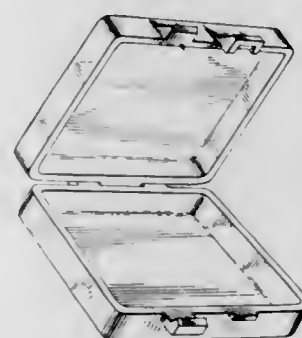
**222,761**  
**MEASURING CONTAINER FOR PEDIATRIC SOLUTION ADMINISTRATION**  
 Robert Lewis Giles, Mundelein, Ill., assignor to Abbott Laboratories, North Chicago, Ill.  
 Filed Mar. 30, 1970, Ser. No. 22,108  
 Term of patent 14 years  
 Int. Cl. D24—05; D9—01

U.S. Cl. D83—8



**222,762**  
**VANITY COMPACT**  
 Louis E. Allen, 7401 New Hampshire Ave., Apt. 614, Hyattsville, Md. 20783  
 Filed Feb. 25, 1970, Ser. No. 21,623  
 Term of patent 14 years  
 Int. Cl. D3—99

U.S. Cl. D86—10



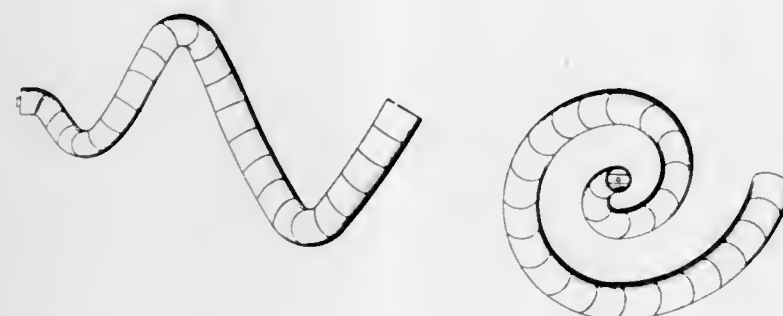
**222,763**  
**LACE TABLE CLOTH**  
 Robert A. Padmore, Dunmore, Pa., assignor to The Scranton Corporation, Scranton, Pa.  
 Filed Apr. 9, 1970, Ser. No. 22,338  
 Term of patent 14 years  
 Int. Cl. D5—02

U.S. Cl. D92—26



**222,764**  
**ADVERTISING SIGN OR SIMILAR ARTICLE**  
 Leon Goldpaint, 11702 Dunning St., Santa Fe Springs, Calif. 90670  
 Filed Jan. 12, 1970, Ser. No. 20,867  
 Term of patent 14 years  
 Int. Cl. D20—04

U.S. Cl. D96—12



## LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF DECEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- 5 Day Division of Associated Products, Inc.: See—  
 Kahn, Rolf, 3,628,733.  
 A-T-O Inc.: See—  
 Grobowski, Ben T., 3,628,318.  
 Grobowski, Ben T., 3,628,396.  
 Aaron, Joseph E.: See—  
 Hardie, Waldo R.; and Aaron, Joseph E., 3,629,287.  
 AB Platmanufaktur: See—  
 Haggard, Nils Olof; Murne, Bertil Sven Oskar; and Jakobsen, Kjell Mosvoll, 3,628,688.  
 Abbott, Bernard J.: See—  
 Casida, Lester E., Jr.; and Abbott, Bernard J., 3,629,072.  
 Abbott, Frank R. Low inertia, high torque motors, 3,629,626, Cl. 310-49.  
 Abbott Laboratories: See—  
 Harnden, Michel Raymond, 3,629,276.  
 Jones, Peter Hadley, 3,629,232.  
 Abe, Kenji, to Kabushiki Kaisha Suwa Seikosha. Clutch lever escapement, 3,628,327, Cl. 58-116.  
 Abegg, Jean-Louis: See—  
 Kalopissis, Gregoire; and Abegg, Jean-Louis, 3,628,544.  
 Abington Textile Machinery Works, Inc.: See—  
 Ramo, Oliver H., 3,628,213.  
 Abitibi Paper Company Ltd.: See—  
 Riem, Roland Hendrik; and Dwaars, Wilhelmus Theodorus Albertus, 3,629,055.  
 Aere, Sydney R., to Midland-Ross Corporation. Power brake reaction mechanism, 3,628,422, Cl. 91-369.  
 Adachi, Kiyoshi: See—  
 Murotani, Kenichi; Sugimoto, Hiroshi; Sahara, Hajime; Kosaka, Kenzo; Adachi, Kiyoshi; and Nakamura, Tunchiko, 3,628,224.  
 Adams, Charles T., to Shell Oil Company. Catalyst impregnation method, 3,629,146, Cl. 252-435.  
 Adams, Hobart S. Precision long reach hole punch, 3,628,407, Cl. 83-140.  
 Adams, Thomas L.: See—  
 Stepanich, Fred C.; and Adams, Thomas L., 3,628,337.  
 Adams-Russell Co., Inc.: See—  
 Podell, Allen F., 3,629,733.  
 Adamski, Henry S.: See—  
 Jungjohann, Vernon H.; Adamski, Henry S.; and Richardson, Stephen M., 3,628,856.  
 Addressograph-Multigraph Corporation: See—  
 Deegan, James E., 3,628,977.  
 Addy, Leslie Ernest, to BP Chemicals (U.K.) Limited. Process for making isobutene polymerization catalyst from silica, aluminum alkyl and a halide, 3,629,150, Cl. 252-442.  
 Adlhoeh, Richard H., to Motorola, Inc. Digital decoder, 3,629,847, Cl. 340-172.5.  
 Advanced Patent Technology, Inc.: See—  
 Snaper, Alvin A.; and Farrell, Frank C., 3,628,601.  
 Snaper, Alvin A.; and Farrell, Frank C., 3,628,852.  
 Aepli, Otto T.: See—  
 Palmer, Frank W.; and Aepli, Otto T., 3,629,127.  
 Aerojet-General Corporation: See—  
 Baum, Kurt, 3,629,342.  
 Gold, Marvin H.; and Marcus, Henry J., 3,629,440.  
 Lawrence, Ralph W., 3,629,019.  
 Martin, Fred E., 3,629,338.  
 Nelson, Marvin L., 3,628,226.  
 Agazzi, Alberto; Broggi, Armando; Galli de Paratesi, Sergio; and Ghiurghi, Luciano, to European Atomic Energy Community (Euratom). Fluid control and safety rods for nuclear reactors, 3,629,059, Cl. 176-22.  
 Agencie Nationale de Valorisation de la Recherche, A.N.V.A.R.: See—  
 Bouchiat, Marie-Anne; Brossel, Jean; Cohen-Tannoudji, Claude N.; Dupont-Roc, Jacques A.; Haroche, Serge; Kastler, Alfred H.; and Lehmann, Jean-Claude, 3,629,697.  
 Agfa-Gevaert Aktiengesellschaft: See—  
 Puschel, Walter; Danhauser, Justus; Kabitzke, Karlheinz; Marx, Paul; Melzer, Arnfried; Schranz, Karl-Wilhelm; Vetter, Hans; and Pez, Willibald, 3,628,952.  
 Riebel, Alexander; Himmelmann, Wolfgang; Meyer, Karl-Otto; and Van Veelen, George Frans, 3,628,961.  
 Taefner, Klaus; and Luhrig, Hermann, 3,628,745.  
 Aichenegg, Paul C., and Thornhill, Richard A., to Chemagro Corporation. Sulfanyl thiol- and dithio- phosphates, 3,629,375, Cl. 260-934.  
 Aichenegg, Paul C.: See—  
 Emerson, Carl D.; and Aichenegg, Paul C., 3,629,312.  
 Emerson, Carl D.; and Aichenegg, Paul C., 3,629,313.  
 Air Preheater Company, Inc.: See—  
 Bakker, Lubertus, 3,628,665.  
 Air Products and Chemicals, Inc.: See—  
 Rohrberg, Roderick G.; and Harvey, Don E., 3,628,236.  
 Airco, Lynn, Inc., and: See—  
 Lynn, Charles L., Jr., 3,628,673.  
 Aizawa, Hideo: See—  
 Arai, Takeshi; Aizawa, Hideo; Miura, Masashi; Numaho, Yoshio; Takeya, Masahisa; Yoshida, Tasuku; Ishibashi, Noboru; and Yamashita, Kaichiro, 3,629,856.  
 Ajinomoto Co., Inc.: See—  
 Katsuya, Noboru; Sugara, Takaaki; Takahashi, Reiji; and Ojima, Takashi, 3,628,966.  
 Akaishi, Mineichi: See—  
 Uchisaka, Tsunehiko; and Akaishi, Mineichi, 3,628,887.  
 Akamatsu, Kiyoshi; Hagihara, Takeaki; and Ishido, Teruhisa, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive compositions, 3,628,963, Cl. 96-115.  
 Akatu, Katutosi: See—  
 Toyoda, Kozo; and Akatu, Katutosi, 3,628,241.  
 Akron Standard: See—  
 Clark, Fred E., 3,628,712.  
 Aktiebolaget Electrolux: See—  
 Liljendahl, Sven Algot Joel, 3,628,194.  
 Nilsson, Arne Lennart, 3,628,882.  
 Aktiengesellschaft Brown, Boveri & Cie: See—  
 Sattler, Gunter; and Weimann, Klaus, 3,628,294.  
 Akutagawa, Takaichi: See—  
 Watanabe, Takeshi; Yoshida, Masatsugu; Akutagawa, Takaichi; and Noguchi, Shiro, 3,629,387.  
 Akzona Incorporated: See—  
 Gardner, James H., 3,629,365.  
 Alberto-Culver Company: See—  
 Schmitt, William H., 3,629,398.  
 Alburn, Harvey E.: See—  
 Fenichel, Richard L.; and Alburn, Harvey E., 3,629,391.  
 Alibrandi, Gaetano. Space-age necktie and button engaging fastener, 3,628,220, Cl. 24-56.  
 Allegheny Ludlum Industries, Inc.: See—  
 Lajoie, Peter A., 3,629,664.  
 Allegheny Ludlum Steel Corporation: See—  
 Seitanakis, George P., 3,629,760.  
 Allen, Robert J.; Martin, Philip C.; and Urbonas, Vacys, to Ex-Cell-O Corporation. Liquid filling machine with automatic filler volume adjustment control, 3,628,698, Cl. 222-168.  
 Allen, Roy A.; and Somerville, George R., to Shell Oil Company. Two-package epoxy-urethane coating composition, 3,629,167, Cl. 260-18.  
 Allen-Bradley Company: See—  
 Walters, Ronnie G., 3,629,705.  
 Allied Chemical Corporation: See—  
 Beauchamp, William D.; Port, Eugene B.; and Howard, Carlton J., 3,628,919.  
 Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, 3,629,255.  
 Degginger, Edward R.; and Balquist, James M., 3,629,337.  
 Largman, Theodore; and Newallis, Peter Edward, 3,629,459.  
 Newallis, Peter E., 3,629,280.  
 Rumanowski, Edmund J., 3,628,944.  
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- Soldatos, Anthony C., to Union Carbide Corporation. Phenolic resin compositions containing polymers of cyclic esters. 3,629,364, Cl. 260-838.
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- Yoshida, Yasuyuki: *See—*  
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- Yoshii, Toshiya: *See—*  
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- Young, David W.: *See—*  
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- Young, Herman S. W.: *See—*  
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- Young, Kenneth A.: *See—*  
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- Yumoto, Hirosuke: *See—*  
Yoda, Naoya; Kurihara, Masaru; Dogoshi, Noriaki; Nakanishi, Ryoji; Yumoto, Hirosuke; Itoga, Masaaki; Mochizuki, Hiroshi; Yoshii, Toshiya; and Fujita, Saburo, 3,629,180.
- Zabel, Hans-J.: *See—*  
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- Zangrando, Roy A., to United States of America, Army. Eccentric-ring combination lock. 3,628,355, Cl. 70-315.
- Zavodsky, Ladislav: *See—*  
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- Zenuch, George: *See—*  
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- Ziegler, Kurt F., to Outboard Marine Corporation. Method of constructing an engine with a prefabricated cylinder line. 3,628,237, Cl. 29-527.6
- Zimmerman, Charles R.: *See—*  
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- Zirkle, Charles L.: *See—*  
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- Zitron, Benjamin C.: *See—*  
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- Zivi, Samuel M., to TRW Inc. Safety apparatus for nuclear reactors. 3,629,064, Cl. 176-38.
- Zollman, Peter M., to Badalex Limited. Manufacture of electric switches. 3,628,242, Cl. 29-622.
- Zucker, Edwin, to Xerox Corporation. Imaging machine improvement. 3,628,859, Cl. 355-8.
- Zuckerman, Harold J., to Zyrotron Industries, Inc. Control apparatus. 3,629,599, Cl. 307-38.
- Zuse KG: *See—*  
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- Zyrotron Industries, Inc.: *See—*  
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# LIST OF REISSUE PATENTEES

TO WHOM  
PATENTS WERE ISSUED ON THE 21ST DAY OF DECEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amdahl, Gene M., E. D. Council, R. J. Flaherty, and J. P. Zagursky, to International Business Machines Corp. Memory protection system. Re. 27,251, 12-21-71, Cl. 340-172-5.  
Aziende Chimiche Riunite Agellini: See Palazzo, Giuseppe. Re. 27,253.  
Bell Telephone Laboratories, Inc.: See Lucky, Robert W. Re. 27,250.  
Clifftronic, Inc.: See—  
Ganowsky, Raymond J. Re. 27,247.  
Council, Edwin D.: See—  
Amdahl, Gene M., Council, Flaherty, and Zagursky. Re. 27,251.  
Flaherty, Robert J.: See—  
Amdahl, Gene M., Council, Flaherty, and Zagursky. Re. 27,251.  
Ganowsky, Raymond J., to Clifftronic, Inc. Rotary solenoid. Re. 27,247, 12-21-71, Cl. 335-228.  
Harper-Wyman Co.: See—  
Lamar, Charles C. Re. 27,254.  
Hedstrom Union Co.: See—  
Pieron, Raymond G., Jr. Re. 27,255.  
International Business Machines Corp.: See—  
Amdahl, Gene M., Council, Flaherty, and Zagursky. Re. 27,251.  
Lamar, Charles C., to Harper-Wyman Co. Gas oven ignition. Re. 27,254, 12-21-71, Cl. 126-39.  
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McJunkin, William D., and J. A. Webb, Sr.: said Webb assignor to said McJunkin, Automatic bowling score computer. Re. 27,249, 12-21-71, Cl. 273-54.  
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Mercier Freres: See—  
Mercier, Christian. Re. 27,248.  
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Sklar, Isadore, and Walker. Re. 27,252.  
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Pieron, Raymond G., Jr., to Hedstrom Union Co. Children's play seat. Re. 27,255, 12-21-71, Cl. 297-258.  
Sklar, Isadore, and G. W. Walker, to Mobil Oil Corporation. Thermal method for producing heavy oil. Re. 27,252, 12-21-71, Cl. 166-231.  
Walker, G. W.: See—  
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Webb, Joseph A., Sr.: See—  
McJunkin, William D., and Webb. Re. 27,249.  
Zagursky, Joseph J.: See—  
Amdahl, Gene M., Council, Flaherty, and Zagursky. Re. 27,251.

# LIST OF DESIGN PATENTEES

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Ackerman Engravers, Inc.: See—  
Strianese, Bernard V. 222,748.  
Airborne, S.A.: See—  
Bernard, Charles. 222,745.  
Albrecht, Leonard N., to Albert J. Day. Credit card data terminal. 222,747, 12-21-71, Cl. D26-5.  
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# CLASSIFICATION OF PATENTS

ISSUED DECEMBER 21, 1971

NOTE.—First number, class; second number, subclass; third number, patent number

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30- 92.5 :	3,628,246	54.6 :	3,628,331	711 :	3,628,399	70.2 :	3,628,458	124- 24 :	3,628,519	361 :	3,628,587
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32- 10 :	3,628,248	272 :	3,628,328	865 :	3,628,401	104- 8 :	3,628,460	126- 39 :	Re. 27,254		3,629,023
63 :	3,628,249	61- 1 :	3,628,333	75- 3 :	3,628,402	17 :	3,628,461	85 :	3,628,521	56 :	3,629,024
33- 15 :	3,628,250	5 :	3,628,334	10 :	3,628,403	105 :	3,628,462	127- 5 :	3,629,001	69 :	3,629,025
27 :	3,628,251	45 :	3,628,335	159 :	3,628,404	152 :	3,628,463		3,629,002	161 :	3,629,026
32 :	3,628,252	46.5 :	3,628,336	81- 3.42 :	3,628,405	201 :	3,628,465	30 :	3,629,003	167 :	3,629,027
143 :	3,629,639	53.68 :	3,628,337	9.5 :	3,628,402	366 :	3,628,466	128- 2 :	3,628,522	175 :	3,629,028
189 :	3,628,253		3,628,338	82- 24 :	3,628,403	369 :	3,628,467		3,628,524	189 :	3,629,029
225 :	3,628,254	67 :	3,628,338		3,628,404	106- 89 :	3,628,973		3,628,525		3,629,030
34- 56 :	3,628,258	62- 5 :	3,628,339	89 :	3,628,406	125 :	3,628,974	05 :	3,628,526	190 :	3,629,031
35- 9 :	3,628,255	18 :	3,628,340	83- 38 :	3,628,405	279 :	3,628,975	06 :	3,628,527	196 :	3,629,032
	3,628,259	23 :	3,628,342	140 :	3,628,407	288 :	3,628,976	57 :	3,628,528	204 :	3,629,033
	3,628,259	58 :	3,628,341	175 :	3,628,408	108- 51 :	3,628,468	66 :	3,628,529	219 :	3,629,034
10.2 :	3,628,256		3,628,343		3,628,409	56 :	3,628,469	130 :	3,628,530	241 :	3,629,035



156-244	3,629,037	180-69	3,628,622	219-78	3,629,541	244-110	3,628,757	260-17.3	3,629,166	260-294.8	3,629,270
245	3,629,038	79.2	3,628,623	79	3,629,542	135	3,628,758	18	3,629,281		
269	3,629,039	98	3,628,624	85	3,629,543	246-169	3,629,572	295.5	3,629,271		
275	3,629,040	115	3,628,625	93	3,629,544	248-42	3,628,759	296	3,629,272		
289	3,629,041	181-33	3,628,626	121	3,629,545	59	3,628,760	23	3,629,170		
303.1	3,629,042	36	3,628,627	130	3,629,546	184	3,628,761	304	3,629,274		
358	3,629,043	182-222	3,628,628	131	3,629,547	235	3,628,762	306.8	3,629,275		
160-40	3,628,588	184-6.17	3,628,629	131	3,629,548	400	3,628,763	307	3,629,276		
161-5	3,629,044	50	3,628,630	216	3,629,549	249-9	3,628,764	308	3,629,277		
	3,629,045	55	3,628,631	285	3,629,550	19	3,628,765	309.6	3,629,278		
43	3,629,046	186-1	3,628,632	300	3,629,551	129	3,628,766		3,629,279		
57	3,629,047	188-1	3,628,633	302	3,629,552	250-41.9	3,629,573		3,629,280		
	3,629,048		3,628,634	383	3,629,553		3,629,574		3,629,281		
60	3,629,049	26	3,628,635	522	3,629,554	49.5	3,629,575		3,629,282		
64	3,629,050	73.3	3,628,636	525	3,629,555		3,629,576		3,629,283		
162	3,629,051	4	3,628,637	220-6	3,629,556		3,629,577		3,629,284		
170	3,629,052	300	3,628,638	20.5	3,628,682		3,629,578		3,629,285		
173	3,629,053	312	3,628,639	21	3,628,683		3,629,579		3,629,286		
182	3,629,054	190-412	3,628,640	29	3,628,684	50	3,629,581		3,629,287		
162-159	3,629,055	192-0.73	3,628,641	42	3,628,685	51.5	3,629,582		3,629,288		
305	3,629,056	58	3,628,642	44	3,628,686	71.5	3,629,583		3,629,289		
312	3,629,057	194-10	3,628,643	47	3,628,687	83	3,629,584		3,629,290		
336	3,629,058	195-1.8	3,629,071	53	3,628,688		3,629,585		3,629,291		
363	3,629,059	28	3,629,072	85	3,628,689		3,629,586		3,629,292		
164-63	3,628,591	62	3,629,073	221-45	3,628,690		3,629,587		3,629,293		
183	3,628,592	103.5	3,629,074	70	3,628,691		3,629,588		3,629,294		
208	3,628,593	197-12	3,628,644	223	3,628,692	84.5	3,629,589		3,629,295		
270	3,628,594	90	3,628,645	265	3,628,693	205	3,629,590		3,629,296		
274	3,628,595	198-22	3,628,646	89	3,628,694	208	3,629,591		3,629,297		
283	3,628,596	30	3,628,647	99	3,628,695	213	3,629,592		3,629,298		
344	3,628,597		3,628,648	111	3,628,696	216	3,629,593		3,629,299		
350	3,628,598	32	3,628,649	168	3,628,697	219	3,629,594		3,629,300		
165-22	3,628,599	33	3,628,650	182	3,628,698	221	3,629,595		3,629,301		
	3,628,600		3,628,651	207	3,628,699	223	3,629,596		3,629,302		
47	3,628,601	34	3,628,652	400.7	3,628,700	251-139	3,628,701		3,629,303		
61	3,628,602	81	3,628,653	402.13	3,628,701	148	3,628,702		3,629,304		
151	3,628,603	179	3,628,654	454	3,628,702	149.9	3,628,703		3,629,305		
166-5	3,628,604	200-6	3,629,524	513	3,628,703	331	3,628,704		3,629,306		
226	3,628,605	11	3,629,525	527	3,628,704	252-8.5	3,629,101		3,629,307		
241	3,628,606	16	3,629,526	567	3,628,705		3,629,102		3,629,308		
251	Re.27.252	19	3,629,527		3,628,706		3,629,103		3,629,309		
305	3,628,607	38	3,629,528	224-45	3,628,707		3,629,104		3,629,310		
171-14	3,628,609	42	3,629,529	225-96.5	3,628,708		3,629,105		3,629,311		
172-9	3,628,610	44	3,629,530	226-49	3,628,709		3,629,106		3,629,312		
39	3,628,611	48	3,629,531	227-7	3,628,710		3,629,107		3,629,313		
311	3,628,612	81.9	3,629,532	228-1	3,628,711		3,629,108		3,629,314		
805	3,628,613	144	3,629,533	229-15	3,628,712		3,629,109		3,629,315		
173-29	3,628,614	157	3,629,534	230-6	3,628,713		3,629,110		3,629,316		
174-7	3,629,485	168	3,629,535	231-7	3,628,714		3,629,111		3,629,317		
16	3,629,486		3,629,536	232-1	3,628,715		3,629,112		3,629,318		
22	3,629,487	202-248	3,629,094	233-1	3,628,716		3,629,113		3,629,319		
73	3,629,488	203-1	3,629,095	234-1	3,628,717		3,629,114		3,629,320		
107	3,629,489	9	3,629,096	235-1	3,628,718		3,629,115		3,629,321		
175-65	3,628,615	28	3,629,097	236-1	3,628,719		3,629,116		3,629,322		
375	3,628,616	35	3,629,098	237-1	3,628,720		3,629,117		3,629,323		
176-20	3,629,060	67	3,629,099	238-1	3,628,721		3,629,118		3,629,324		
22	3,629,059	72	3,629,100	239-1	3,628,722		3,629,119		3,629,325		
31	3,629,062	157.1	3,629,101	240-1	3,628,723		3,629,120		3,629,326		
37	3,629,063	159.14	3,629,102	241-1	3,628,724		3,629,121		3,629,327		
38	3,629,064	163	3,629,103	242-1	3,628,725		3,629,122		3,629,328		
54,000	3,629,065	165	3,629,104	243-1	3,628,726		3,629,123		3,629,329		
76	3,629,066	168	3,629,105	244-1	3,628,727		3,629,124		3,629,330		
78	3,629,067	181	3,629,106	245-1	3,628,728		3,629,125		3,629,331		
	3,629,068		3,629,107	246-1	3,628,729		3,629,126		3,629,332		
86	3,629,069	192	3,629,108	247-1	3,628,730		3,629,127		3,629,333		
87	3,629,070	195	3,629,109	248-1	3,628,731		3,629,128		3,629,334		
	3,629,071		3,629,110	249-1	3,628,732		3,629,129		3,629,335		
177-116	3,628,617	197	3,629,111	250-1	3,628,733		3,629,130		3,629,336		
178-5.2	3,629,490		3,629,112	251-1	3,628,734		3,629,131		3,629,337		
4	3,629,491	224	3,629,113	252-1	3,628,735		3,629,132		3,629,338		
6	3,629,492	298	3,629,114	253-1	3,628,736		3,629,133		3,629,339		
6	3,629,493	206-8	3,628,655	254-1	3,628,737		3,629,134		3,629,340		
6	3,629,494	46	3,628,656	255-1	3,628,738		3,629,135		3,629,341		
3,629,495		208-89	3,629,196	256-1	3,628,739		3,629,136		3,629,342		
7.1	3,629,496	159	3,629,197	257-1	3,628,740		3,629,137		3,629,343		
2	3,629,498	209-111.7	3,628,657	258-1	3,628,741		3,629,138		3,629,344		
3,629,499		125	3,628,658	259-1	3,628,742		3,629,139		3,629,345		
3	3,629,497	126	3,628,659	260-1	3,628,743		3,629,140		3,629,346		
3,629,500		210-31	3,629,198	261-1	3,628,744		3,629,141		3,629,347		
3,629,501		104	3,628,660	262-1	3,628,745		3,629,142		3,629,348		
25	3,629,502		3,629,199	263-1	3,628,746		3,629,143		3,629,349		
3,629,504		130	3,628,661	264-1	3,628,747		3,629,144		3,629,350		
69.5	3,629,503	136	3,628,662	265-1	3,628,748		3,629,145		3,629,351		
3,629,505		141	3,628,663	266-1	3,628,749		3,629,146		3,629,352		
3,629,506		169	3,628,664	267-1	3,628,750		3,629,147		3,629,353		
79	3,629,507	242	3,628,665	268-1	3,628,751		3,629,148		3,629,354		
179-5	3,629,508	370	3,628,666	269-1	3,628,752		3,629,149		3,629,355		
15	3,629,509	446	3,628,667	270-1	3,628,753		3,629,150		3,629,356		
3,629,510		510	3,628,668	271-1	3,628,754		3,629,151		3,629,357		
18	3,629,511	519	3,628,669	272-1	3,628,755		3,629,152		3,629,358		
3,629,512		528	3,628,670	273-1	3,628,756		3,629,153		3,629,359		
3,629,513		211-73	3,628,671	274-1	3,628,757		3,629,154		3,629,360		
99	3,629,514	153	3,628,672	275-1	3,628,758		3,629,155		3,629,361		
100.2	3,629,515	214-1	3,628,673	276-1	3,628,759		3,629,156		3,629,362		
3,629,516			3,628,674	277-1	3,628,760		3,629,157		3,629,363		
3,629,517		3	3,628,675	278-1	3,628,761		3,629,158		3,629,364		
3,629,518		35	3,628,676	279-1	3,628,762		3,629,159		3,629,365		
3,629,519		450	3,628,677	280-1	3,628,763		3,629,160		3,629,366		
3,629,520		730	3,628,678	281-1	3,628,764		3,629,161		3,629,367		
107	3,629,521	215-9	3,628,679	282-1	3,628,765		3,629,162		3,629,368		
156	3,629,522		3,628,680	283-1	3,628,766		3,629,163		3,629,369		
175.31	3,629,523	48	3,628,681	284-1	3,628,767		3,629,164		3,629,370		
180-1	3,628,620	219-10.55	3,629,537	285-1	3,628,768		3,629,165		3,629,371		
7	3,628,618		3,628,682	286-1	3,628,769		3,629,166		3,629,372		
9.64	3,628,619	60									



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## PATENTS

1 : 3,628,385	6 : 3,628,497	6 : 3,629,371	8 : 3,629,839	10 : 3,629,210	17 : 3,628,303
3,628,747	3,629,388	3,629,388	3,629,189	3,629,301	3,628,305
3,628,868	3,628,529	3,629,422	3,628,278	3,629,318	3,628,330
3,629,805	3,628,559	3,629,424	3,628,375	3,629,323	3,628,362
3 : 3,629,479	3,628,566	3,629,440	3,628,386	3,629,439	3,628,367
4 : 3,628,254	3,628,616	3,629,478	3,628,446	3,629,581	3,628,408
3,628,618	3,628,627	3,629,480	3,628,454	3,629,795	3,628,427
3,628,815	3,628,648	3,629,487	3,628,467	3,629,161	3,628,431
3,629,022	3,628,653	3,629,491	3,628,471	3,629,184	3,628,463
3,629,163	3,628,657	3,629,515	3,628,476	3,629,340	3,628,464
3,629,566	3,628,664	3,629,522	3,628,476	3,629,580	3,628,477
3,629,578	3,628,680	3,629,530	3,628,479	3,628,204	3,628,517
3,629,621	3,628,682	3,629,548	3,628,679	3,628,210	3,628,521
3,629,698	3,628,691	3,629,556	3,628,721	3,628,334	3,628,535
3,629,729	3,628,692	3,629,568	3,628,813	3,628,401	3,628,537
3,629,831	3,628,704	3,629,607	3,628,839	3,628,485	3,628,584
5 : 3,628,528	3,628,719	3,629,618	3,628,901	3,628,588	3,628,610
3,628,903	3,628,725	3,629,624	3,628,910	3,628,655	3,628,612
3,629,639	3,628,758	3,629,626	3,628,962	3,628,731	3,628,621
3,629,729	3,628,760	3,629,632	3,628,970	3,628,791	3,628,643
3,629,831	Re. 27,252	3,629,645	3,628,994	3,628,821	3,628,661
3,628,528	3,628,795	3,629,653	3,629,061	3,628,836	3,628,662
3,628,903	3,629,639	3,629,655	3,629,062	3,628,925	3,628,672
3,629,639	3,628,812	3,629,656	3,629,070	3,629,010	3,628,678
3,628,225	3,628,819	3,629,678	3,629,080	3,629,492	3,628,708
3,628,226	3,628,852	3,629,679	3,629,111	3,629,574	3,628,714
3,628,236	3,628,854	3,629,680	3,629,152	3,629,600	3,628,732
3,628,247	3,628,872	3,629,692	3,629,207	3,629,616	3,628,753
3,628,250	3,629,019	3,629,700	3,629,247	3,629,728	3,628,770
3,628,273	3,629,020	3,629,704	3,629,331	3,629,784	3,628,782
3,628,276	3,629,045	3,629,710	3,629,348	3,628,249	3,628,814
3,628,277	3,629,064	3,629,719	3,629,389	3,628,265	3,628,823
3,628,279	3,629,079	3,629,746	3,629,397	3,628,459	3,628,844
3,628,282	3,629,081	3,629,759	3,629,414	3,628,625	3,628,881
3,628,284	3,629,090	3,629,772	3,629,423	3,628,706	3,628,902
3,628,308	3,629,142	3,629,773	3,629,431	3,628,879	3,628,928
3,628,317	3,629,143	3,629,777	3,629,434	3,629,229	3,628,933
3,628,322	3,629,149	3,629,797	3,629,438	3,629,821	3,628,942
3,628,339	3,629,168	3,629,804	3,629,660	3,628,730	3,628,967
3,628,356	3,629,169	3,629,845	3,629,662	3,628,827	3,628,968
3,628,373	3,629,182	3,629,850	3,629,706	3,629,134	3,628,973
3,628,382	3,629,225	3,629,852	3,629,786	3,629,135	3,629,042
3,628,383	3,629,242	3,629,854	3,628,526	3,629,819	3,629,076
3,628,416	3,629,281	8 : 3,628,352	3,628,884	Re. 27,254	3,629,100
3,628,458	3,628,287	3,628,764	3,628,913	3,628,212	3,629,116
3,628,469	3,629,296	3,629,051	3,628,956	3,628,237	3,629,119
3,628,488	3,629,324	3,629,353	3,629,047	3,628,245	3,629,139
3,628,489	3,629,338	3,629,382	3,629,048	3,628,269	3,629,190
3,628,492	3,629,342	3,629,517	3,629,156	3,628,275	3,629,232
3,628,493	3,629,362	3,629,617	3,629,187	3,628,299	3,629,276

17	: 3.629.294	22	: 3.629.801	26	: 3.628.817	34	: 3.628.321	34	: 3.629.833	36	: 3.629.496
	3.629.304	23	: 3.628.208		3.628.820		3.628.350		3.629.843		3.629.499
	3.629.307	24	: 3.628.244		3.628.831		3.628.355		3.629.846		3.629.518
	3.629.346		3.628.268		3.628.841		3.628.370		3.629.862		3.629.521
	3.629.357		3.628.333		3.628.853		3.628.449	35	: 3.628.504		3.629.535
	3.629.398		3.628.347		3.628.862		3.628.456	36	: Re.27.247		3.629.555
	3.629.413		3.628.371		3.628.866		3.628.478		3.628.197		3.629.560
	3.629.457		3.628.522		3.628.937		3.628.480		3.628.201		3.629.565
	3.629.467		3.628.579		3.629.025		3.628.533		3.628.231		3.629.572
	3.629.502		3.628.638		3.629.046		3.628.546		3.628.256		3.629.573
	3.629.504		3.628.733		3.629.071		3.628.550		3.628.259		3.629.598
	3.629.507		3.628.757		3.629.086		3.628.599		3.628.262		3.629.614
	3.629.511		3.628.833		3.629.091		3.628.600		3.628.266		3.629.644
	3.629.512		3.628.851		3.629.092		3.628.640		3.628.267		3.629.651
	3.629.514		3.628.915		3.629.093		3.628.650		3.628.298		3.629.667
	3.629.532		3.629.007		3.629.106		3.628.654		3.628.340		3.629.674
	3.629.552		3.629.021		3.629.115		3.628.681		3.628.353		3.629.693
	3.629.584		3.629.178		3.629.127		3.628.762		3.628.358		3.629.702
	3.629.594		3.629.410		3.629.129		3.628.792		3.628.360		3.629.726
	3.629.625		3.629.520		3.629.153		3.628.809		3.628.372		3.629.740
	3.629.676		3.629.590		3.629.175		3.628.842		3.628.381		3.629.779
	3.629.677	25	: 3.628.207		3.629.228		3.628.846		3.628.394		3.629.782
	3.629.689		3.628.213		3.629.266		3.628.847		3.628.405		3.629.791
	3.629.708		3.628.215		3.629.297		3.628.861		3.628.410		3.629.823
	3.629.722		3.628.220		3.629.298		3.628.920		3.628.411		3.629.824
	3.629.750		3.628.230		3.629.299		3.628.927		3.628.418		3.629.825
	3.629.751		3.628.235		3.629.315		3.628.939		3.628.421		3.629.829
	3.629.761		3.628.257		3.629.344		3.628.940		3.628.428		3.629.844
	3.629.767		3.628.260		3.629.367		3.628.941		3.628.435		3.629.848
	3.629.768		3.628.380		3.629.402		3.628.944		3.628.440		3.629.853
	3.629.769		3.628.412		3.629.406		3.628.949		3.628.470		3.629.855
	3.629.792		3.628.447		3.629.419		3.628.969		3.628.484		3.629.860
	3.629.806		3.628.525		3.629.483		3.628.971		3.628.510	37	: 3.628.419
	3.629.807		3.628.534		3.629.606		3.628.991		3.628.530		3.628.540
	3.629.811		3.628.543		3.629.620		3.629.006		3.628.552		3.628.647
	3.629.842		3.629.842		3.629.669		3.629.016		3.628.617		3.629.365
	3.629.847		3.628.632		3.629.762		3.629.033		3.628.659		3.629.683
	3.629.851		3.628.690		3.629.763		3.629.044		3.628.665		3.629.714
18	: 3.628.196		3.628.761		3.629.775		3.629.072		3.628.711		3.629.741
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	3.628.374		3.629.036		3.628.519		3.629.144		3.628.755		3.628.329
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	3.628.466		3.629.110		3.628.727		3.629.198		3.628.773		3.628.396
	3.628.505		3.629.130		3.628.871		3.629.255		3.628.781		3.628.403
	3.628.575		3.629.132		3.628.947		3.629.265		3.628.785		3.628.414
	3.628.577		3.629.272		3.628.980		3.629.267		3.628.786		3.628.440
	3.628.620		3.629.336		3.628.992		3.629.269		3.628.789		3.628.450
	3.628.626		3.629.381		3.629.013		3.629.278		3.628.829		3.628.453
	3.628.670		3.629.390		3.629.023		3.629.292		3.628.840		3.628.491
	3.628.673		3.629.508		3.629.089		3.629.295		3.628.855		3.628.561
	3.628.705		3.629.541		3.629.160		3.629.303		3.628.856		3.628.565
	3.628.724		3.629.557		3.629.250		3.629.337		3.628.857		3.628.572
	3.628.888		3.629.576		3.629.319		3.629.355		3.628.859		3.628.585
	3.629.041		3.629.622		3.629.332		3.629.361		3.628.863		3.628.586
	3.629.096		3.629.638		3.629.537		3.629.364		3.628.864		3.628.587
	3.629.112		3.629.640		3.629.549		3.629.374		3.628.877		3.628.590
	3.629.321		3.629.664		3.629.826		3.629.377		3.628.891		3.628.630
	3.629.392		3.629.668		3.629.827		3.629.385		3.628.894		3.628.639
	3.629.405		3.629.721		3.629.841		3.629.394		3.628.919		3.628.641
	3.629.409		3.629.723	28	: 3.629.596		3.629.412		3.628.926		3.628.645
	3.629.635		3.629.732	29	: 3.628.199		3.629.415		3.628.950		3.628.658
	3.629.682		3.629.733		3.628.200		3.629.433		3.628.951		3.628.669
	3.629.764		3.629.738		3.628.297		3.629.436		3.628.955		3.628.671
	3.629.814		3.629.755		3.628.369		3.629.437		3.628.958		3.628.693
19	: 3.628.536		3.629.840		3.628.379		3.629.459		3.628.978		3.628.695
	3.628.558		3.629.861		3.628.468		3.629.465		3.628.979		3.628.712
	3.628.685	26	: 3.628.190		3.628.498		3.629.472		3.628.995		3.628.742
	3.628.876		3.628.216		3.628.500		3.629.489		3.628.998		3.628.784
	3.628.972		3.628.222		3.628.675		3.629.494		3.628.999		3.628.811
	3.629.529		3.628.274		3.628.689		3.629.503		3.629.008		3.628.835
	3.629.802		3.628.296		3.628.737		3.629.509		3.629.014		3.628.837
20	: 3.628.251		3.628.351		3.628.772		3.629.510		3.629.063		3.628.843
	3.628.611		3.628.376		3.628.800		3.629.513		3.629.065		3.628.880
	3.628.613		3.628.399		3.628.807		3.629.519		3.629.158		3.628.885
	3.628.729		3.628.400		3.628.946		3.629.542		3.629.165		3.628.890
	3.628.759		3.628.422		3.628.982		3.629.545		3.629.179		3.628.930
	3.628.945		3.628.423		3.628.997		3.629.582		3.629.185		3.628.931
	3.628.993		3.628.424		3.629.114		3.629.599		3.629.195		3.628.977
	3.629.164		3.628.430		3.629.120		3.629.601		3.629.199		3.628.985
	3.629.280		3.628.443		3.629.124		3.629.602		3.629.205		3.628.996
	3.629.354		3.628.486		3.629.206		3.629.611		3.629.220		3.629.004
	3.629.375		3.628.487		3.629.209		3.629.637		3.629.251		3.629.009
	3.629.376		3.628.494		3.629.312		3.629.642		3.629.274		3.629.026
	3.629.547		3.628.512		3.629.313		3.629.659		3.629.279		3.629.068
21	: 3.628.502		3.628.549		3.629.329		3.629.691		3.629.288		3.629.109
	3.628.644		3.628.551		3.629.380		3.629.711		3.629.309		3.629.123
	3.628.845		3.628.564		3.629.447		3.629.712		3.629.314		3.629.140
	3.629.536		3.628.608		3.629.448		3.629.725		3.629.320		3.629.141
22	: 3.628.192		3.628.623		3.629.595		3.629.734		3.629.326		3.629.147
	3.628.261		3.628.634	31	: 3.628.532		3.629.735		3.629.330		3.629.208
	3.628.346		3.628.666		3.628.547		3.629.736		3.629.358		3.629.223
	3.628.899		3.628.677	32	: 3.628.601		3.629.737		3.629.403		3.629.345
	3.628.918		3.628.698		3.629.835		3.629.739		3.629.407		3.629.356
	3.628.986		3.628.768		3.629.696		3.629.742		3.629.421		3.629.395
	3.629.052		3.628.774		3.629.715		3.629.770		3.629.425		3.629.408
	3.629.108		3.628.783	34	: Re.27.250		3.629.771		3.629.432		3.629.451
	3.629.113		3.628.788		3.628.198		3.629.781		3.629.450		3.629.481
	3.629.128		3.628.793		3.628.243		3.629.787		3.629.455		3.629.495
	3.629.151		3.628.798		3.628.270		3.629.808		3.629.473		3.629.525
	3.629.401		3.628.816		3.628.307		3.629.812		3.629.493		3.629.558



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3,629,627	3,628,288	3,629,136	3,628,460	3,629,018	3,629,789
3,629,628	3,628,295	3,629,159	3,629,029	3,629,104	3,629,836
3,629,634	3,628,304	3,629,171	3,629,339	3,629,105	53 : 3,628,253
3,629,647	3,628,332	3,629,235	3,629,559	3,629,146	3,628,316
3,629,654	3,628,344	3,629,262	46 : 3,628,264	3,629,148	3,628,578
3,629,663	3,628,345	3,629,285	47 : 3,628,556	3,629,186	3,628,734
3,629,670	3,628,361	3,629,333	3,628,818	3,629,311	3,628,794
3,629,684	3,628,364	3,629,360	3,629,133	3,629,316	3,629,000
3,629,705	3,628,377	3,629,391	3,629,138	3,629,325	3,629,005
3,629,745	3,628,398	3,629,427	3,629,202	3,629,328	3,629,030
3,629,752	3,628,407	3,629,462	3,629,222	3,629,341	54 : 3,629,200
3,629,765	3,628,417	3,629,475	3,629,322	3,629,352	3,629,219
3,629,766	3,628,455	3,629,476	48 : Re. 27,249	3,629,363	3,629,264
3,629,774	3,628,483	3,629,488	3,628,232	3,629,534	3,629,277
3,629,822	3,628,509	3,629,553	3,628,280	3,629,561	3,629,308
3,629,828	3,628,527	3,629,554	3,628,336	3,629,695	3,629,310
40 : 3,628,255	3,628,545	3,629,562	3,628,348	3,629,788	55 : 3,628,306
3,628,314	3,628,592	3,629,591	3,628,349	3,629,796	3,628,311
3,628,343	3,628,593	3,629,608	3,628,357	3,629,798	3,628,384
3,628,580	3,628,594	3,629,609	3,628,397	3,629,800	3,628,406
3,628,912	3,628,595	3,629,612	3,628,462	3,629,832	3,628,496
3,628,929	3,628,596	3,629,613	49 : 3,628,206	3,628,206	3,628,570
3,628,975	3,628,609	3,629,716	3,628,531	3,628,631	3,628,583
3,629,097	3,628,663	3,629,744	3,628,539	3,628,722	3,628,598
3,629,102	3,628,676	3,629,747	3,628,568	3,629,648	3,628,701
3,629,172	3,628,694	3,629,758	3,628,569	3,628,359	3,628,921
3,629,372	3,628,699	3,629,760	3,628,604	3,629,032	3,629,028
3,629,694	3,628,743	3,629,778	3,628,605	51 : 3,628,368	3,629,039
3,629,699	3,628,776	3,629,803	3,628,606	3,628,378	3,629,057
3,629,790	3,628,778	3,629,837	3,628,615	3,628,415	3,629,154
3,629,859	3,628,884	3,629,857	3,628,628	3,628,451	3,629,162
41 : 3,628,472	3,628,917	44 : 3,628,576	3,628,718	3,628,633	3,629,177
3,628,542	3,628,935	3,628,715	3,628,728	3,628,696	3,629,468
3,628,602	3,628,948	3,629,396	3,628,756	3,629,049	3,629,469
3,629,731	3,628,974	45 : 3,628,289	3,628,765	3,629,176	3,629,546
42 : Re. 27,255	3,629,012	3,628,302	3,628,822	3,629,197	3,629,633
3,628,202	3,629,077	3,628,319	3,628,832	3,629,454	3,629,688
3,628,233	3,629,094	3,628,320	3,628,898		

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## PATENT OFFICE NOTICES

### Availability of Annual Report on Government Patent Policy

The Combined December 1969 and 1970 Annual Report on Government Patent Policy of the Federal Council for Science and Technology recently has been published.

The report assesses the effectiveness of the 1963 Presidential Statement of Government Patent Policy based on the information available from the seven years' operation, and describes the progress made to date by the Committee on Government Patent Policy.

The report contains:

The revised Memorandum and Statement of Government Patent Policy issued by President Nixon on August 23, 1971 and an explanation of the revisions.

A report on a Government-wide comprehensive patent licensing program. This report contains the proposed licensing regulations to be promulgated by the General Services Administration. It also contains legal memoranda of the Department of Justice which discuss the concept of issuing limited exclusive licenses on Government-owned inventions.

A statistical analysis of the Government's patent operations for fiscal years 1963 through 1970. This report includes the total number of invention disclosures reported to the Government agencies, the type of patent clauses used in R & D contracts, the extent of patent protection sought by the Government, and the available information on the licensing of Government-owned patents.

A list, by agency, of all statutes, memoranda and regulations pertaining to the allocation of rights to inventions. This list also contains the identity of the office within each agency which has the primary responsibility for Government patent policy matters.

Information on the merger of the Patent Advisory Panel and the Committee on Government Patent Policy of the Federal Council for Science and Technology.

The report may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, for \$1.25. A check or money order made payable to the Superintendent of Documents must accompany your order.

O. A. NEUMANN,

Executive Secretary,  
Committee on Government Patent Policy  
Federal Council for Science and  
Technology.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,853,736, A. Gussoni, MACHINE FOR THE MANUFACTURE OF BOTTLES FROM PLASTIC MATERIAL; 3,011,216, same, METHOD FOR PRODUCING HOLLOW BLOWN ARTICLES FROM THERMOPLASTIC MATERIALS, filed Jan. 29, 1971, D.C.N.J. (Camden), Doc. C-125-71, *Samuel Dubiner v. Jomar Industries, Inc.* Stipulation of dismissal with prejudice, July 7, 1971. Same, filed Aug. 2, 1971, D.C.N.J. (Camden), Doc. C-27-71, *Samuel Dubiner v. Wheaton Industries, Inc.* Stipulation of dismissal, Aug. 2, 1971.

2,925,719, Robbins and Linn, REFRIGERATING PACKAGE, filed June 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1375, *Kwik-Kold, Inc. v. American Hospital Supply Corporation.*

3,011,057, H. O. Anger, RADIATION IMAGE DEVICE, filed Aug. 26, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2088, *Hal O. Anger and Nuclear-Chicago Corp. v. Nuclear Data, Inc.*

3,011,216. (See 2,853,736.)

3,017,187, J. W. Ryan, MULTIPLE SPEECH PHONOGRAPH, filed July 20, 1971, D.C., S.D.N.Y., Doc. 71-3231, *Mattel Inc. v. Ideal Toy Corp.*

3,031,680, R. Compiano, BOWLING GLOVE, filed Mar. 24, 1967, D.C., M.D. Fla. (Tampa), Doc. 67-141-C-T, *National Athletic Supply Corp. v. Muscie-Matic, Inc. et al.* Judgment in favor of plaintiff, Jan. 11, 1971.

3,046,805, F. Van Gorp, WING PULLEY BELT GRIPPING DEVICE, filed Mar. 18, 1970, D.C., M.D. Fla. (Jacksonville), Doc. 70-4-C-Occ., *Van Gorp Manufacturing, Inc. v. Toynley Industrial Plastics, Inc.* Judgment in favor of defendant, June 8, 1971.

3,061,332, L. S. Goulden, CARGO TRANSPORT ASSEMBLY, filed Sept. 3, 1971, D.C., M.D. Ala. (Montgomery), Doc. 1174-S, *Leo S. Goulden v. Dorsey Trailers, Inc.*

3,078,397, Tummers and Hanyman, TRANSISTOR, filed Sept. 8, 1970, D.C., S.D. Fla. (Miami), Doc. 70-1307-C-CF, *U.S. Philips Corporation v. Solitron Devices, Inc.* Consent order, patent valid and infringed, July 20, 1971.

3,079,243, H. F. G. Ueltz, ABRASIVE GRAIN, filed July 2, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C-1971-309, *The Carborundum Company v. Norton Company.*

3,110,034, J. A. Aileo, HELMET WITH VENT IN VISOR COVER, filed Dec. 21, 1967, D.C., E.D.N.Y. (Brooklyn), Doc. 67-C-1196, *Genter Corp. v. Transaero, Inc.* Dismissed on the merits, Aug. 2, 1971.

3,110,465, Sugarman and Cable, PIPE HANGER, filed Aug. 5, 1971, D.C., N.D. Calif. (San Francisco), Doc. 71-1494, *Edward Sugarman and Mrs. Clyde F. Cable v. Charles A. Varney et al.*

3,114,026, W. S. Fortune, SOLDER REMOVING TOOL, filed Aug. 26, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2049-HP, *William S. Fortune v. Swiss American Precision Imports, Inc.*

3,124,674, Edwards and Wheatley, DATA COLLECTION AND DISTRIBUTION SYSTEM, filed Aug. 25, 1971, D.C., S.D.N.Y., Doc. 71-C-3781, *Electronic Assistance Corp. v. City of New York, N.Y.*

3,127,518, C. H. Pruitt, SERVICE VEHICLE ELECTRICAL SUPPLY APPARATUS, filed July 6, 1971, D.C., W.D. Okla. (Oklahoma City), Doc. 71-429-C, *Cary H. Pruitt v. Vassar Manufacturing Company and I. D. Vassar.* Plaintiff's withdrawal of complaint against defendants without prejudice is approved and so ordered, July 27, 1971.

3,164,129, P. D. Rigerlink, AUTOMATIC NEST GUARD, filed July 28, 1971, D.C., S.D. Ind. (Indianapolis), Doc. IP-71-C-394, *U.S. Industries, Inc. v. Storm System, Inc.*

3,164,933, A. Labowsky, GRINDING WHEEL, filed Mar. 19, 1970, D.C.N.J. (Newark), Doc. 321-70, *Diamond Productions, Inc. and Dorothy Labowsky v. Associated Diamond Products, Inc. et al.* Stipulation and order of dismissal, Aug. 25, 1971.

3,169,142, Knaggs and Nussbaum, METHOD FOR SULFONATION AND SULFATION OF ORGANIC COMPOUNDS, filed Aug. 24, 1971, D.C., W.D. Mich. (Grand Rapids), Doc. G211-71-CA0, *Stapan Chemical Company v. Lakeview Chemicals, Inc.*

3,214,844, Oates, Rahm, Kelley and Danko, APPARATUS AND METHOD FOR DRYING PARTICULATE MATTER, filed Feb. 2, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c232, *Midland-Ross Corporation v. Krispy Kist Korn Machine Company.* Motion to dismiss pursuant to Rule 41(a)(2) granted. Counterclaim to remain, Dec. 15, 1970. Motion to dismiss defendant's counter-plaintiff's counterclaim with costs of \$97.30 taxed against plaintiff counter-defendant granted, Apr. 23, 1971.

3,249,270, B. Zuckerman, GARMENT SUPPORT MEANS, filed Aug. 31, 1971, D.C., S.D.N.Y., Doc. 71-C-3876, *Mr. Hanger, Inc. v. W. R. Grace & Co. Same*, filed Sept. 28, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-1277, *Mr. Hanger, Inc. v. Plasti-Form Enterprises Corp.*

3,250,662, N. R. Seaman, COATED FABRIC, filed Aug. 25, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71-830, *Shelter-Lite, Inc. v. Reeves Brothers, Inc.*

3,257,668. (See 3,293,663.)

3,262,626, P. Davis, CUP, filed July 16, 1970, D.C. Mass. (Boston), Doc. C.A. 70-937-F, *Sweetheart Plastics Inc. v. Illinois Tool Works Inc.* Stipulation entered dismissing case without prejudice, July 28, 1971.

DECEMBER 28, 1971

U. S. PATENT OFFICE

1205

3,286,929, R. W. Henningsen, OSCILLATING SPRINKLER, filed Aug. 26, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2050-F, *The Leisure Group, Inc. v. W. D. Allen Manufacturing Co.*

3,293,663, T. D. Cronin, SURGICALLY IMPLANTABLE HUMAN BREAST PROSTHESIS; 3,257,688, S. A. Braley, SILICONE RUBBER PROSTHETIC EAR FRAME, filed Feb. 19, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71-C-75, *Doie Corning Corporation v. Surgitek, Inc. and Medical Engineering Corp.* Consent decree, plaintiff owner of said patents which are valid and infringed; defendants permanently enjoined, Aug. 3, 1971.

3,298,039, J. Schmerler, SWIMMING POOL COPING, filed Feb. 3, 1971, D.C.N.J. (Newark), Doc. 148-71, *Major Pool Equipment Corp. v. Helder Associates, Inc.* Consent judgment for permanent injunction as to the defendant filed on July 27, 1971 (case still pending as to third party).

3,305,186, Burdorf and Balkistone, TAPE TRANSPORT SYSTEM USING A DRIVE BELT CONTACTING TAPE PACKS, filed Aug. 23, 1971, U.S. Ct. of Cl., Doc. 693-71, *Echo Science Corporation v. The United States of America.*

3,312,130, L. A. Krauthelm, APPARATUS FOR SLITTING ROLLS OF MATERIAL, filed Apr. 18, 1967, D.C.N.J. (Newark), Doc. 433-67, *Oscar I. Judelson, Inc. v. Lever Manufacturing Corporation.* Stipulation and order of dismissal of action, Sept. 2, 1971.

3,332,544, A. H. Willinger, PACKAGING ARRANGEMENT FOR AN AQUARIUM, filed Mar. 19, 1969, D.C., E.D.N.Y. (Brooklyn), Doc. 69C293, *Aquariums Inc. v. Miracle Pet Products Inc. et al.* Order of discontinuance, Aug. 4, 1971.

3,523,402, West and Henschman, APPARATUS FOR BANDING TUBES, filed July 28, 1971, D.C., M.D. Pa. (Scranton), Doc. 71-313, *Cico Wrap Corporation v. Elsner Engineering Works, Inc.*

3,560,979, D. A. Boelter, METHOD AND ELECTRICAL CIRCUIT FOR PROCESSING AIRPORT RUNWAY LOCALIZER AND GLIDESLOPE INFORMATION, filed Aug. 6, 1971, D.C., S.D. Tex. (Houston), Doc. CA 71-H-865, *General Aviation Electronics, Inc. v. Van Dusen, Inc., Narco Scientific Industries, Inc.*



## Certificates of Correction for the Week of Dec. 28, 1971

Re. 27,146	3,574,138	3,585,074	3,589,893
3,372,734	3,575,510	3,585,177	3,589,915
3,475,771	3,575,750	3,585,183	3,589,932
3,503,707	3,576,792	3,585,188	3,590,047
3,515,979	3,576,922	3,585,245	3,590,056
3,517,537	3,577,515	3,585,576	3,590,243
3,518,247	3,577,866	3,585,602	3,590,484
3,530,164	3,578,449	3,586,225	3,590,502
3,532,490	3,578,561	3,586,289	3,590,557
3,533,876	3,578,614	3,586,442	3,591,221
3,535,433	3,578,787	3,586,522	3,591,227
3,535,938	3,578,968	3,586,577	3,591,246
3,541,929	3,579,438	3,586,807	3,591,372
3,542,500	3,579,480	3,586,929	3,591,504
3,545,611	3,579,505	3,586,952	3,591,711
3,547,153	3,579,783	3,587,307	3,592,615
3,552,545	3,580,127	3,587,479	3,592,701
3,553,321	3,580,176	3,587,518	3,592,775
3,554,413	3,580,581	3,587,759	3,592,921
3,554,987	3,581,105	3,587,771	3,594,419
3,557,439	3,581,412	3,587,942	3,595,609
3,558,518	3,581,494	3,588,042	3,595,613
3,558,520	3,581,565	3,588,424	3,595,628
3,561,028	3,582,463	3,588,530	3,595,713
3,561,801	3,583,295	3,588,551	3,595,789
3,562,178	3,583,333	3,588,635	3,595,841
3,566,042	3,583,920	3,588,653	3,595,883
3,566,239	3,584,149	3,588,660	3,595,959
3,569,762	3,584,687	3,589,264	3,597,387
3,569,779	3,584,781	3,589,305	3,597,465
3,573,429	3,584,848	3,589,374	3,597,476
3,574,054	3,585,067	3,589,617	3,598,551

## Dedications

3,232,725.—*Herbert Campbell Secord*, Markyate Herts, England and *Bernard J. Clarke*, White Plains, N.Y. METHOD OF STORING NATURAL GAS FOR TRANSPORT. Patent dated Feb. 1, 1966. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,250,420.—*Harold B. Kohn*, Yonkers, N.Y. INTERNAL ACCESS MEANS FOR CONTAINERS. Patent dated May 10, 1966. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,270,700.—*Harold B. Kohn*, Yonkers and *Morgan Chuan-Yuan Sze*, Garden City, N.Y., *Harold L. Cook, Jr.*, Bellaire, Tex., *Herbert C. Secord*, Little Cheverells, Markyate, Herts, England and *Oystein Arvesen*, Haslum, Norway. SHIPBOARD INSTALLATION OF ELONGATED PRESURE VESSELS. Patent dated Sept. 6, 1966. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,293,011.—*John D. Lewis*, Forest Hills, *Morgan Chuan-Yuan Sze*, Garden City, *Carroll O. Bennett*, Pelham Manor, and *Maurice E. Brooks*, Great Neck, N.Y., *Irvin H. Lutz*, Westfield, and *Howard B. Zasloff*, Rockaway, N.J. METHOD OF HANDLING NATURAL GAS. Patent dated Dec. 20, 1966. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,298,805.—*Herbert Campbell Secord*, Markyate, England, and *Bernard J. Clarke*, Columbus, Ohio. NATURAL GAS FOR TRANSPORT. Patent dated Jan. 17, 1967. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,319,466. *John D. Lewis*, Berkeley Heights, N.J. TEMPERATURE DROP DETECTION MEANS. Patent dated May 16, 1967. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,354,905.—*John D. Lewis*, Berkeley Heights, N.J., *Morgan C. Sze*, Garden City, and *Harold B. Kohn*, Yonkers, N.Y. FLUID DISTRIBUTOR. Patent dated Nov. 28, 1967. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,487,692.—*Harold L. Cook, Jr.*, Houston, Tex. METHOD AND APPARATUS FOR SAMPLING REFRIGERATED VOLATILE LIQUIDS. Patent dated Jan. 6, 1970. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,544,289.—*Norton H. Berlin*, Matawan, N.J. FLUID CONTROL SYSTEM FOR LIQUID STORAGE APPARATUS. Patent dated Dec. 1, 1970. Dedication filed Sept. 16, 1971, by the assignee, *Vehoc Corporation*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,557,094.—*Kenneth Butler*, Waterford, Conn. SUBSTITUTED ALKYL ESTERS OF  $\alpha$ -CARBOXY ARYL PENCILLINS. Patent dated Jan. 19, 1971. Dedication filed Oct. 13, 1971, by the assignee, *Pfizer Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

## PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner

F. H. BRONAUGH, Deputy Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF DECEMBER 14, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	7-13-70
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	5-22-70
Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director.....	10-09-70
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director.....	8-21-70
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director.....	7-06-70
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	4-07-71
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	
SECURITY, GROUP 220—R. L. CAMPBELL, Director.....	5-01-70
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	11-04-70
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	11-30-70
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
PHYSICS, GROUP 280—R. L. EVANS, Director.....	10-05-70
Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	10-23-70
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director.....	9-02-70
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	9-03-70
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	8-17-70
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toletry; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	12-09-70
Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director.....	10-06-70
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	

Expiration of patents: The patents within the range of numbers indicated below expire during December 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,695,998 to 2,698,433, inclusive  
Plant Patents..... Numbers 1,328 to 1,338, inclusive



# REISSUES

DECEMBER 28, 1971

Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,256

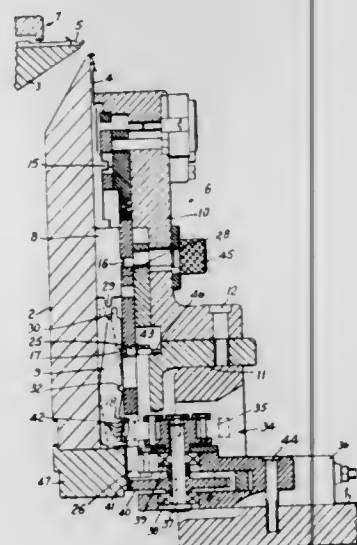
## CIRCULAR KNITTING MACHINES

Frederick Henry Carrotte, Leicester, England, assignor to A. Kirkland & Company Limited, Syston, Leicester, Leicestershire, England  
Original No. 3,470,713, dated Oct. 7, 1969, Ser. No. 652,838, July 12, 1967. Application for reissue May 28, 1970, Ser. No. 41,515  
Claims priority, application Great Britain, July 15, 1966, 31,912/66

Int. Cl. D04b 9/06, 9/38

U.S. Cl. 66—25

2 Claims



A circular knitting machine comprising single-butt needles which cooperate with cam segments, each segment having one track permitting passage of said butts without causing needle movement and a second track for producing knitting motion of the needles. Two butts on a selector jack associated with each needle selectively cooperate with said segments for aligning said needle butts to enter the second track when desired, and a locking jack between needle and selector jack, retains the two butts in their selected condition. Two of said segments include means for releasing and re-locking the locking jacks and a setting device selects the position of said two selector jack butts of each needle whilst the locking means is released, whereby the sequence in which said two butts are set may be changed during knitting.

27,257

## BRAKE ACTUATORS

Frank T. Cox, Rochester, Mich., and William J. Williams, Ashtabula, Ohio, assignors to Rockwell-Standard Company, Pittsburgh, Pa.  
Original No. 3,395,584, dated Aug. 6, 1968, Ser. No. 536,384, Mar. 22, 1966. Application for reissue June 9, 1970, Ser. No. 44,908

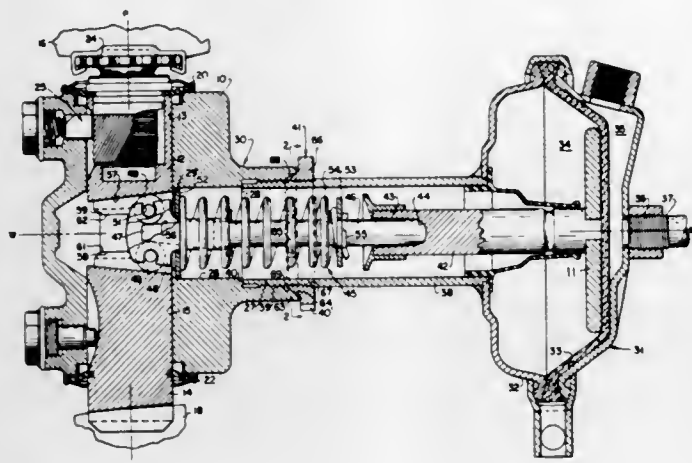
Int. Cl. F16h 21/44

U.S. Cl. 74—110

5 Claims

In a brake assembly of the type having a reciprocable wedge actuator driven by a fluid pressure motor in an external casing with a tubular extension threaded into an internal bore in a boss on the actuator housing, positioning means comprising an abutment in the threaded bore against which the end of the casing extension may be seated, and a locking ring externally threaded on the

casing extension and having an inclined end lip engaging a cooperating inclined end lip on the boss, with the inner



one of said inclined end lips being axially split so as to be flexible for compression locking.

27,258

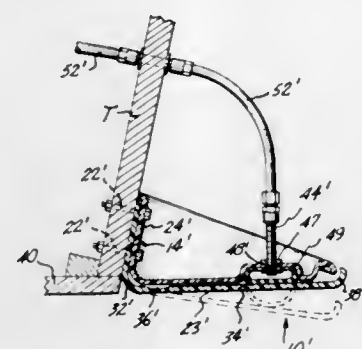
## TRIM CORRECTING APPARATUS FOR BOATS

Robert E. Yunker, West Sacramento, Calif., and John P. Southern, Seattle, Wash., said Yunker assignor to Delbert J. Barnard, Seattle, Wash.  
Original No. 3,313,262, dated Apr. 11, 1967, Ser. No. 573,380, Aug. 18, 1966. Application for reissue Apr. 10, 1969, Ser. No. 860,442

Int. Cl. B63b 7/28

U.S. Cl. 114—66.5

19 Claims



An inflatable bladder is positioned between a stern located support and a lift member swingable downwardly from a position substantially level with the bottom of a boat into a downwardly and rearwardly sloping position. Inflation of the tube causes it to press against the swingable member and deflect it downwardly.

27,259

## IN-LINE PLURAL BEAM CATHODE RAY TUBE

WITH AN ASPHERICAL APERTURE MASK

Wilfred D. Rublack, De Witt, N.Y., assignor to

General Electric Company

Original No. 3,435,268, dated Mar. 25, 1969, Ser. No. 573,604, Aug. 19, 1966. Application for reissue Apr. 1, 1970, Ser. No. 24,892

Int. Cl. H01j 29/02, 29/50

U.S. Cl. 313—70 C

7 Claims

A plural beam cathode ray tube comprising a spherical screen including a plurality of phosphor dots arranged in rows, an aspherical mask adjacent the spherical screen

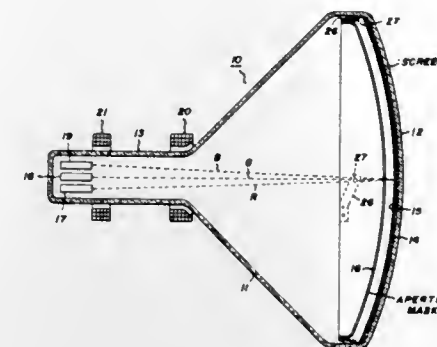
DECEMBER 28, 1971

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1209

and comprising a plurality of apertures arranged in rows, and a plurality of electron guns arranged in an in-line

periphery of the base of the drilling apparatus to maintain the drilling string in a vertical position during pitch and roll of the vessel. The pitch and roll compensating means act in combination to compensate for simultaneous pitch and roll of the vessel. The drilling apparatus



configuration parallel with the rows of the screen and the rows of the mask.

27,260

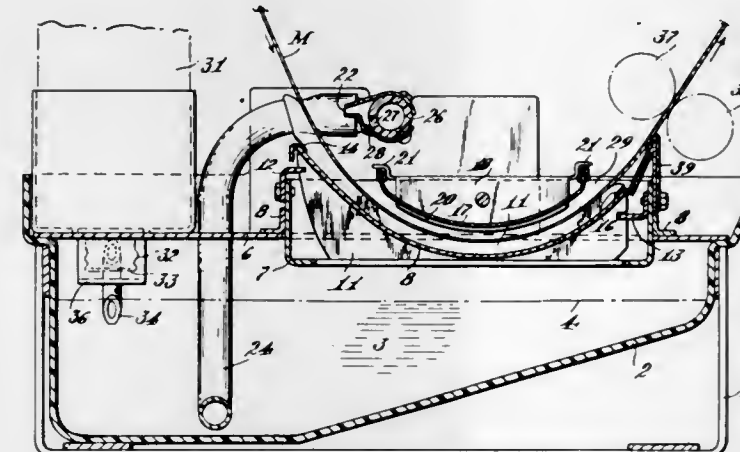
## DEVELOPMENT OF ELECTROSTATIC IMAGES

Alfred K. MacKenzie, Wayland, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.  
Original No. 3,359,945, dated Dec. 26, 1967, Ser. No. 587,198, Oct. 17, 1966. Application for reissue Jan. 27, 1969, Ser. No. 822,065

Int. Cl. B05b 5/02

U.S. Cl. 118—637

1 Claim



Apparatus for developing electrostatic images on a sheet of material comprising means for feeding the sheet edgewise through a pool of developer with metallic members in close juxtaposition to opposite sides of the path of sheet through the pool, the member on the image side of the sheet comprising a screen, and means for circulating developer through the screen to the sheet.

27,261

## STABILIZED OFFSHORE DRILLING APPARATUS

Raymond J. Bromell and Marion D. Lackey, Dallas, Tex., assignors to Kendrick Cattle Company, Sheridan, Wyo.  
Original No. 3,390,654, dated July 2, 1968, Ser. No. 626,091, Mar. 27, 1967. Application for reissue May 11, 1970, Ser. No. 36,192

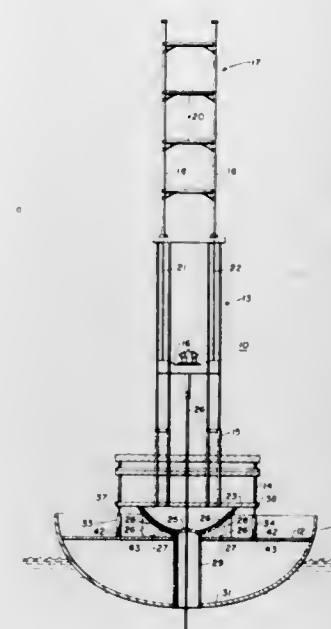
Int. Cl. B63b 35/00

U.S. Cl. 114—5

13 Claims

An offshore drilling apparatus mounted on a floating vessel so that the vessel can both roll and pitch relative to the drilling apparatus. Roll and pitch sensors, in response to movements of the vessel, actuate a plurality of hydraulic cylinder and rod assemblies disposed about the

includes hydraulic cylinder and rod means for suspending the drill string through the bottom of the vessel and means are provided for compensating for vertical movement of the floating vessel to maintain the drill string in a relatively fixed position relative to the earth.



27,262

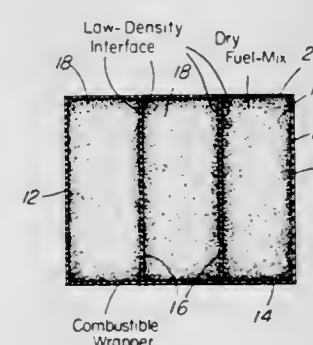
## FUEL COMPOSITIONS

John W. Schick and John H. Stockinger, Cherry Hill, N.J., assignors to Mobil Oil Corporation  
Original No. 3,402,031, dated Sept. 17, 1968, Ser. No. 628,786, Apr. 5, 1967, which is a continuation-in-part of abandoned Ser. No. 508,829, Nov. 19, 1965, and a continuation of Ser. No. 519,798, Jan. 10, 1966. Application for reissue Sept. 22, 1969, Ser. No. 862,996

Int. Cl. C10I 5/36

U.S. Cl. 44—14

7 Claims



A fuel composition is provided comprising a combustible wrapper containing a plurality of [nonseparable adjoining] adjacent closely associated fuel sections having interfacing surfaces at least slightly spaced, each section comprising a mixture of petroleum coke, wood-sawdust, charcoal, an oxidizing agent capable of supporting combustion and a [heat-sensitive] binder for adhering the particles of said fuel sections during combustion as a self supporting free-standing unitary structure, wherein the interface areas between these sections have relatively lower densities than the remaining areas of the sections.



27,263

**WEIGHER HEAD**

Donald W. Garnett, Grand Ledge, Mich., assignor to The Olofsson Corporation, Lansing, Mich.  
Original No. 3,369,620, dated Feb. 20, 1968, Ser. No. 462,674, June 9, 1965. Application for reissue May 18, 1970, Ser. No. 48,754

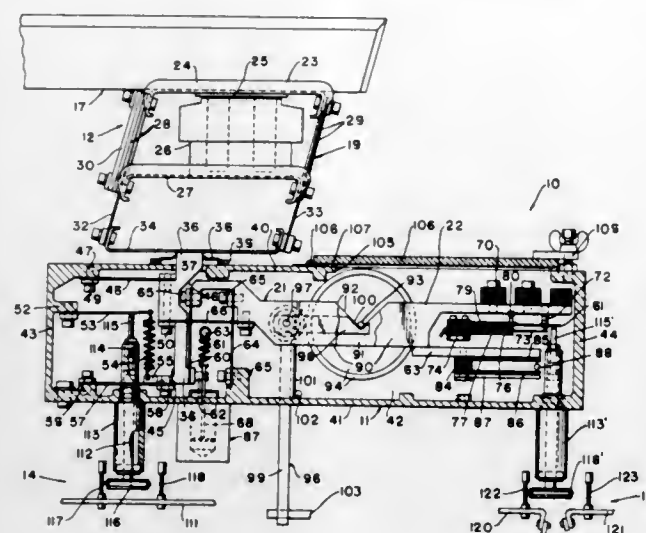
Int. Cl. G01g 3/08

U.S. Cl. 177-229

16 Claims

A weigher head is provided for use in high speed, high precision rotary weighing machines, in which head a system of leaf springs is substituted for the usual means by which a scale beam within the housing of the head is pivoted. The springs include a pair which are horizontally disposed, each being anchored at one end of the housing and at the opposite end thereof secured to a vertically disposed member by which a weighing receptacle associated with the head is supported. The leaf springs further include a vertically disposed pair, one of which is anchored at one end to the housing, being secured at its opposite end to the scale beam, and the other of which is secured at its opposite ends to the beam and to the receptacle supporting member. The head also includes further means by which the scale beam is periodically "zeroed" to compensate for the disturbing effect of a possible accretion of grease, coating material or the like

upon the weighing receptacle, as well as to compensate out other factors influencing high-precision weighing.



Provision is also made to make adjustments for the purpose of maintaining precise accuracy of weighing within predetermined high and low goal limits.

**PATENTS**

GRANTED DECEMBER 28, 1971

**GENERAL AND MECHANICAL**

3,629,864

**PROTECTIVE HELMET**

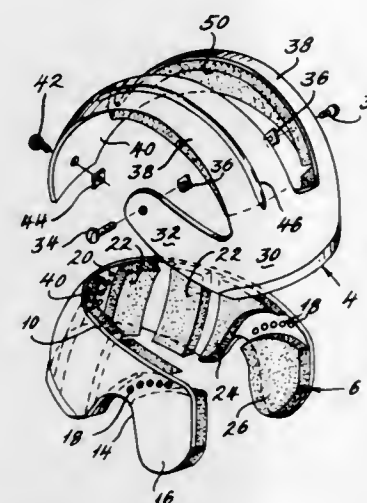
Roland N. Latina, Belleville, Ill., assignor to A-T-O Inc., Willoughby, Ohio

Filed Feb. 16, 1970, Ser. No. 11,655

Int. Cl. A42b 3/00

U.S. Cl. 2-3 A

7 Claims



A helmet includes a backpiece and a crownpiece, the former of which extends from the vicinity of the wearer's temples rearwardly around the back of his head, while the latter has a foreportion extending across the wearer's forehead and a pair of protective bands extending rearwardly from the foreportion over the wearer's skull. The foreportion at its lateral ends merges into a pair of rearwardly extending wings which overlie the portions of the back piece located at the wearer's temples. The bands merge into a common connecting segment which overlies the rearmost portion of the backpiece. Both the connecting segment and the wings are adjustably connected to the respective portions of the backpiece over which they are disposed. Padding is attached to the inwardly presented surfaces of the backpiece and crownpiece.

3,629,865

**BABY TOWEL**

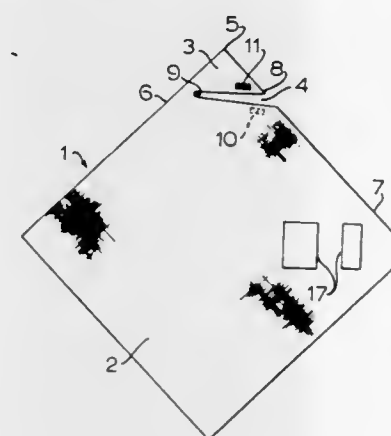
Sondra Weiner, 1400 W. Spruce Ct., Milwaukee, Wis.

Filed Feb. 11, 1970, Ser. No. 10,524

Int. Cl. A41d 13/04

U.S. Cl. 2-48

5 Claims



A towel and apron to be worn when bathing an infant and easily removable for drying. Towels varying in size and shape

are partially separated near a corner to form a collar to removably secure in place around the neck with fasteners. The upper corner above the partial separation may be utilized as an auxiliary drying means and pockets may be attached to the main drying portion of the towel for bottles and the like.

3,629,866

**SHIRT COLLAR CONSTRUCTION**

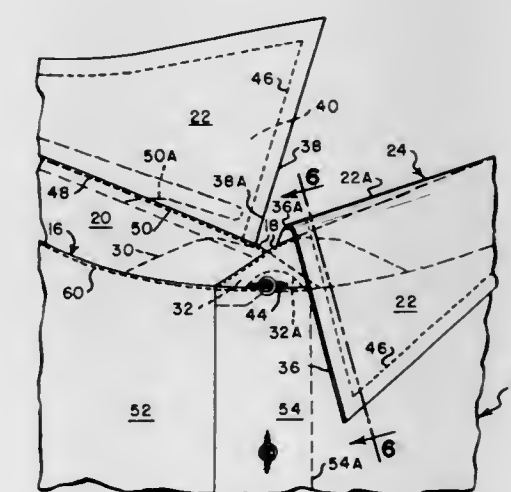
Sidney D. Blue, 605 Park Ave., New York, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,956

Int. Cl. A41b 3/06, 5/00

U.S. Cl. 2-132

5 Claims



In a shirt of the type which includes a cloth body and a collar secured thereto along an upper marginal edge of the neck opening of the body, the collar including a neckband portion, a cape portion turned downwardly with respect to the neckband along a fold line and an elongated semirigid element disposed within the cape portion to displace the fold line upwardly with respect to the neckband portion so that the displaced portion of the fold line coincides substantially with the upper marginal edge of the semirigid element, the improvement comprising opposite end portions of the neckband which have an upper marginal edge tapering downwardly toward the shirt body to a substantially zero height with respect to the shirt body at the juncture between the neckband and the shirt body, a buttonhole disposed in one end portion of the neckband adjacent the juncture with the shirt body, and two semirigid elements disposed within the respective end portions of the neckband which contact with the semirigid element in the cape portion to prevent buckling of the neckband when the cape portion is folded downwardly with respect to the neckband and the end portions of the neckband are secured to each other in overlapping relationship.

3,629,867

**GLOVE WITH PENCIL HOLDER**

Eugene M. Taylor, 409 Armor Pl., Vandalia, Ohio

Filed June 17, 1970, Ser. No. 47,086

Int. Cl. A41d 19/00

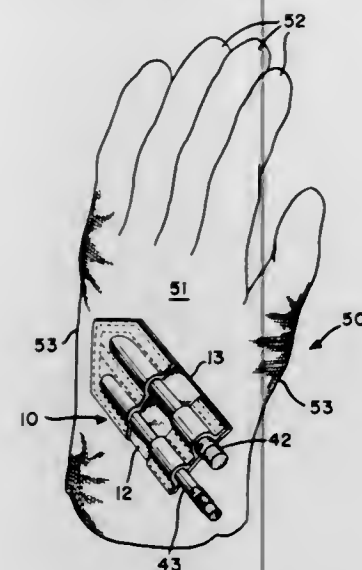
U.S. Cl. 2-160

2 Claims

A holder for pencils, pens or other writing instruments has an adhesive coating applied to its lower surface so that it may



be attached to the surface of an article for easy accessibility to the contents of the holder. The stalls which receive the writing instruments preferably are formed with an opening in the middle for increased flexibility and the adhesive applied to the lower surface of the holder may be of the pressure-sensitive type and covered with a masking sheet for ease in han-



dling and attaching. The holder is capable of general use but finds particular utility in its application to the back of a workman's glove, such as a carpenter's glove, since it does not interfere with the workman's normal movements but locates the pens, pencils or the like where they may conveniently be reached.

3,629,868

#### ADAPTER ASSEMBLY FOR A WELDING HELMET OR THE LIKE

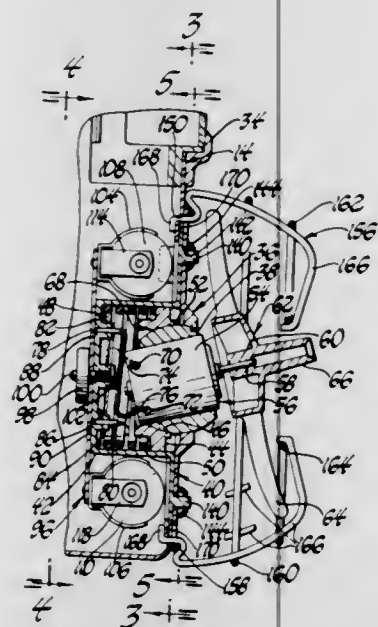
Harry R. Greenlee, Detroit, Mich., assignor to Trison Corporation, Southfield, Mich.

Filed July 21, 1970, Ser. No. 56,908

Int. Cl. A61f 9/04

U.S. Cl. 2—8

20 Claims



An electric motor and fan driven thereby are carried by mounting means adapted to be detachably secured to the forward portion of a protective helmet or a face-shielding mask so as to be effective, when actuated, to draw fresh air into the mask or helmet generally about the operator's head and expelling such air through a forwardly directed opening, formed in the mask, in a stream-like path aimed at a selected direction with respect to the mask or helmet.

#### 3,629,869 PARTIAL VISION-MASKING TRAINING DEVICE Virgil L. Sweet, 657 Ravine Drive, Valparaiso, Ind. Filed Oct. 3, 1969, Ser. No. 863,639 Int. Cl. A61f 9/04

U.S. Cl. 2—12

3 Claims



A device for partially masking the vision of a wearer to aid in training of the wearer as, for example, in dribbling a basketball without visually monitoring the same. The device includes a nosepiece integrally formed with and joining a pair of shields both of which have a U-shaped cut therein so that a wearer will have unimpaired straight-ahead vision but will have downward vision precluded when the device is in place on the head of a wearer and held in position by a band.

3,629,870

#### INSTRUMENT FLYING TRAINING DEVICE

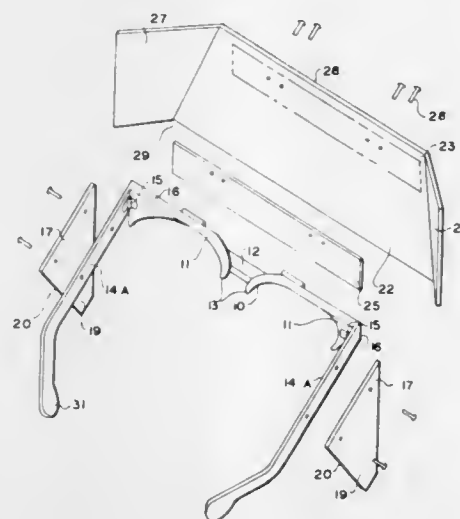
Herbert J. Paisley, 392 Lyle Street, Winnipeg 12, Manitoba, Canada

Filed Nov. 28, 1969, Ser. No. 880,878

Int. Cl. A61f 9/04

U.S. Cl. 2—15

1 Claim

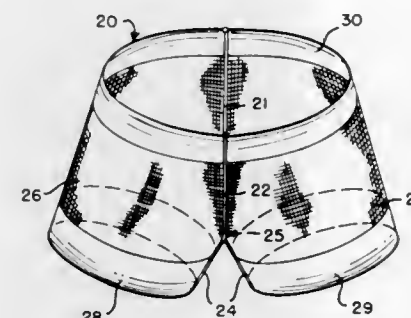


A nose-engaging portion having temple strips hinged to each end with peripheral vision shields on each temple strip and a vision shield hinged to the upper edge of nose-engaging portion with rearwardly and downwardly angulated end portions to said vision shield.

#### 3,629,871 FULLY CONTOURED, HIGHLY STYLIZED PANTY-TYPE GARMENT AND PROCESS FOR MAKING SAME Louis Sarmiento, Hasbrouck Heights, N.J., assignor to International Stretch Products, Inc., New York, N.Y. Continuation-in-part of application Ser. No. 10,770, Feb. 12, 1970, and a continuation-in-part of 21,409, Mar. 20, 1970, and a continuation-in-part of 36,552, May 12, 1970. This application Nov. 3, 1970, Ser. No. 86,582 Int. Cl. A41b 9/04

U.S. Cl. 2—224 R

4 Claims



A fully contoured, highly stylized panty-type garment (for example, panty or panty girdle), which is constructed in a novel manner, utilizing two or three separate pieces of fabric is disclosed. Each of the fabric pieces are of warp knitted construction, and are specially constructed to have integrally knitted selvages of one-way stretch, elastic construction. In the finished garment, the elastic selvages of the fabric pieces are joined to form either the waistband or the legband elastics. A highly stylized, fully contoured shape is imparted to the finished garment by utilizing, in the construction thereof, superimposed pairs of identical, generally trapezoidal sections of the warp knitted material in which the bases of the trapezoidal sections comprise legband selvages and are substantially greater than the lengths of the upper edges of the trapezoidal sections which comprise the waistband selvages. The opposite sides of the trapezoidal sections are defined by "178 Y" cuts in which the stem of the Y is perpendicular to the legband seldve and the arms of the Y are generally parabolic. The garment is completed by sewing together the superimposed parabolic edges of the trapezoidal sections, thereby forming generally vertical, central front and rear garment seams, and then sewing together the opposite straight edges of each trapezoidal section to form a generally horizontal crotch seam. Where large body sizes are to be accommodated, a separate crotch piece is incorporated in the garment construction, extending in the front-to-back direction between the straight side edges of the trapezoidal sections. The crotch piece, like the main fabric section, is of warp knitted construction and has integral elastic selvages identical in construction to that of the legband selvages of the main or body fabric section.

3,629,872  
BED PAN RINSER

Richard G. Parkison, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 884,780, Dec. 24, 1969, now abandoned, which is a continuation of application Ser. No. 685,477, Nov. 24, 1967, now abandoned. This application July 6, 1970, Ser. No. 52,401

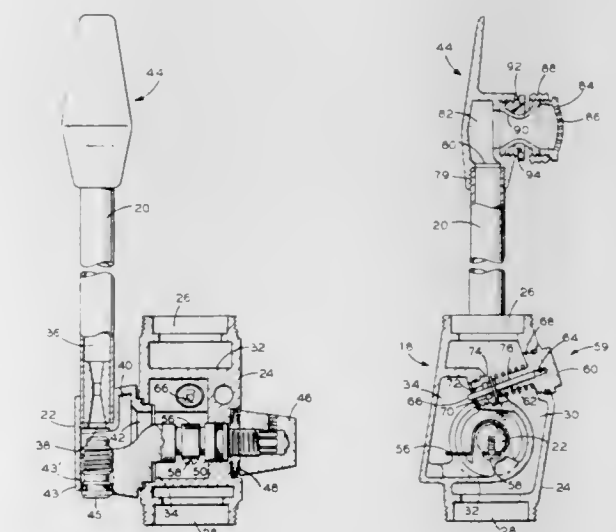
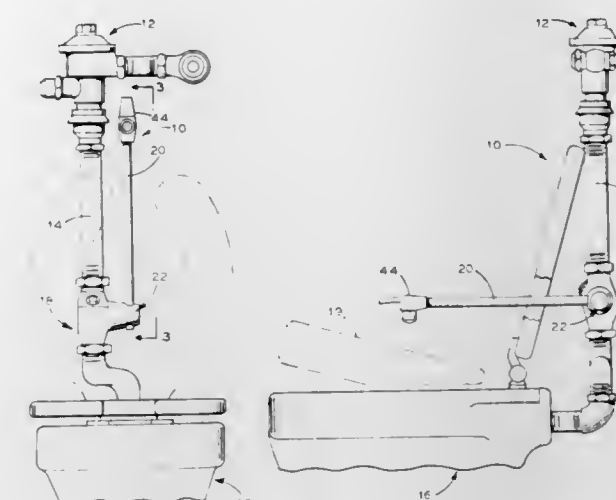
Int. Cl. A47k 17/00

U.S. Cl. 4—1

19 Claims

The present device comprises an apparatus for rinsing bedpans which may be connected to conventional plumbing.

The apparatus includes a novel water diverter member operable to divert some of the water flowing in the plumbing

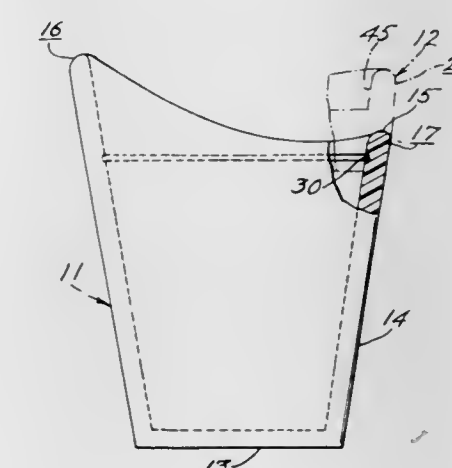


to a spray arm upon movement of the spray arm from a first off position to a second on position in which the spray arm is positioned to rinse the bedpan.

#### 3,629,873 CONTAINER STRUCTURE Harold W. Long, 4008 Mountview Road, Columbus, Ohio Filed Apr. 16, 1970, Ser. No. 29,049 Int. Cl. A47k 11/12

U.S. Cl. 4—110

10 Claims



A disposable container which is particularly suited for collecting and containing specimens of human female urine has



a body provided with an upstanding sidewall shaped at its upper end to engage the female pubic region and receive within its opening the labial portion of the genitalia. A lid is provided to engage over the upper terminus of the shaped sidewall to sealingly cover the opening and contain the collected specimen. The lid has an upper flat horizontal surface to afford stacking of the covered container. In one embodiment, the lid is formed of frangible material and is centrally weakened to permit a pipette to be inserted therethrough for withdrawing a portion of the specimen. In another embodiment, a lid of frangible material is weakened in two locations and it has a pour spout adjacent its periphery to permit the specimen to be poured from the container and through the lid when the lid is punctured in both locations.

3,629,874

# PORTABLE BUILDING HAVING A CHEMICAL TOILET THEREIN

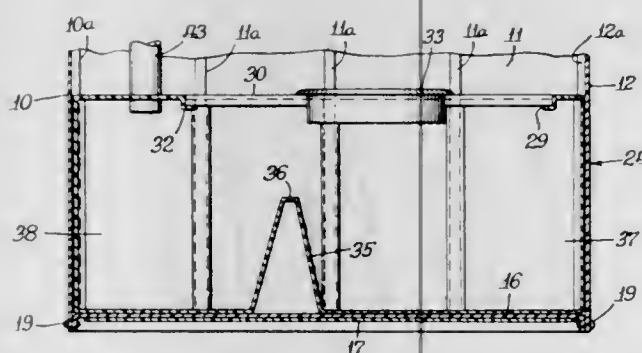
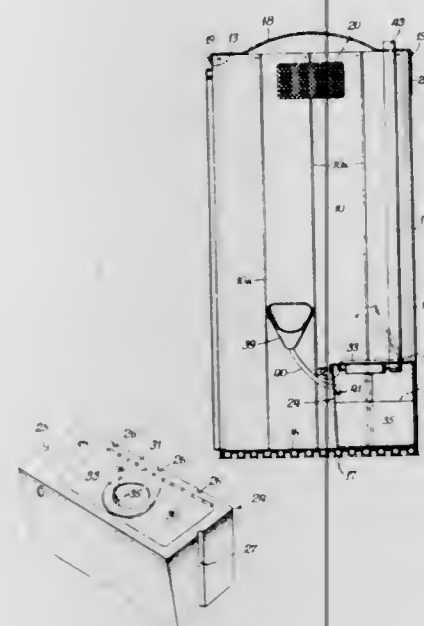
Frank W. Beller, Aurora, Ill., assignor to Belson Manufacturing Co., Inc., North Aurora, Ill.

Filed Oct. 7, 1970, Ser. No. 78,760

Int. Cl. A47k 11/02, 11/12

U.S. Cl. 4-119

7 Claims



A portable building is formed of plastic and the walls have vertical ribs for rigidity. A plastic waste tank within the building is in juxtaposition with three walls of the building and has grooves which mate with the wall ribs to lock the tank in place. A weir in the tank divides the tank into two compartments. The toilet seat is over the larger of these compartments. A urinal on the building wall has a drain leading into that larger compartment.

# 3,629,875 PORTABLE INFLATABLE ENCLOSURE FOR PERSONAL USE

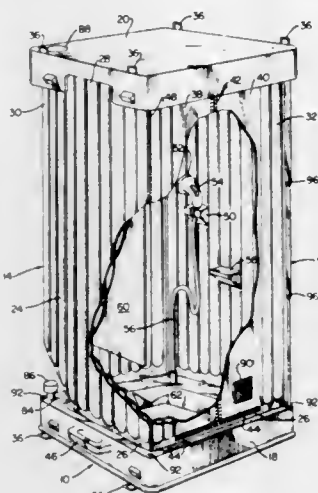
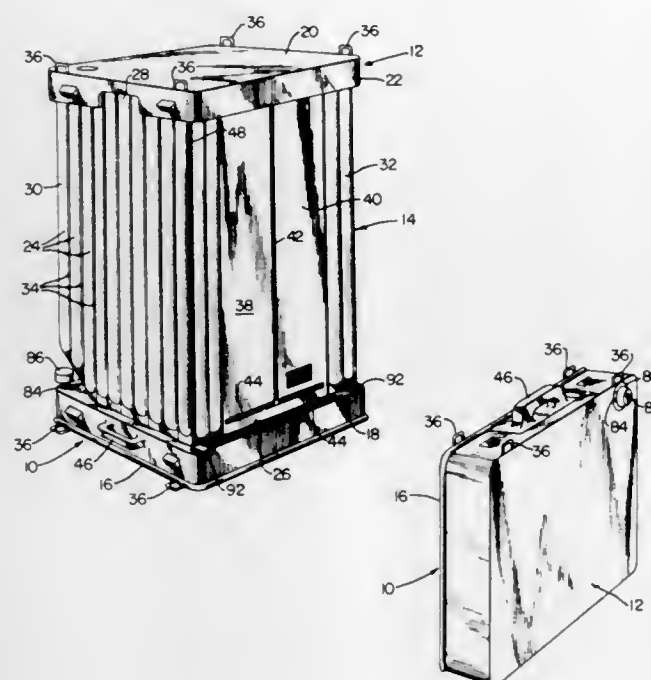
Doris I. Dow, 12616 Appaloose Pl., Broomfield, and Ernest P. Kollar, North of Broomfield, both of Colo.

Filed Feb. 4, 1970, Ser. No. 8,509

Int. Cl. A44k 3/22; F24h 1/06

U.S. Cl. 4-146

18 Claims



Crown and base member of corresponding size and shape peripherally connected to upper and lower ends of space-enclosing curtain. Longitudinal pockets on curtain inflatable to erect the enclosure and make it self-supporting. Crown or base or both may be hollow container for water with air pump to force water up to shower head. Other water source may be hose or external tank pressurized by any means. Same pump may be used to inflate curtain and pressurize water. Roof-type crown and pan-type base securable together to form carrying case for curtain and shower accessories. Similar enclosure used for toilet or lavatory and connected facewise to shower enclosure. Divided and zipped wall of shower protects lavatory room against water from shower room.

3,629,876

# EYEWASH FOUNTAIN WITH INTEGRAL NOZZLES

Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Faucet Company, Berkeley, Calif.

Filed Nov. 28, 1969, Ser. No. 880,669

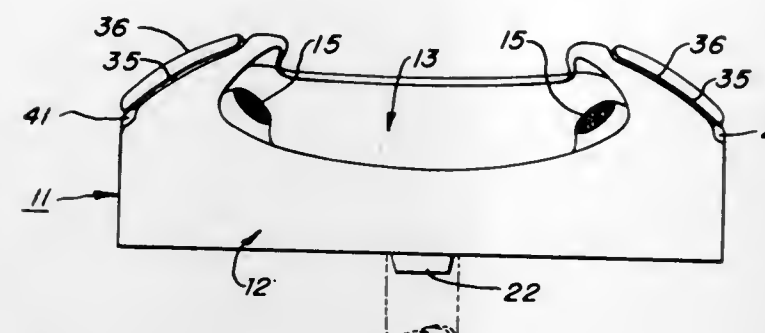
Int. Cl. A47k 1/04

U.S. Cl. 4-166

4 Claims

An eyewash fountain especially useful in industrial and laboratory environments to provide a water discharge suit-

ble for flushing irritants from the eyes of a workman. The fountain includes a bowl having a pair of upwardly and inwardly facing nozzles through which an eye-bathing flow of water can be discharged for so flushing the eyes of a workman. A valve connected in the water supply line controls the flow of water to the nozzles, and operating mechanism as-



sociated with the valve selectively opens and closes the same. The operating mechanism includes activators located along opposite sides of the bowl and essentially forming a part of the exterior surface thereof, and such activators can be operated to open the valve by a slight downward pressure as by leaning thereon with the hands, forearms, or elbows.

3,629,877

# METHOD AND APPARATUS FOR WAVE FORMATION IN SWIM POOLS

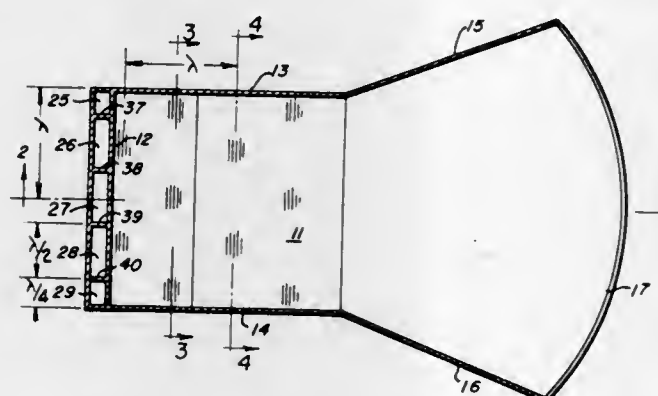
Siegfried A. Schuster, One Berlin 39, Marinesteig, and Christian H. Boes, One Berlin 21, Bartningalle 7, both of Germany

Filed Aug. 7, 1969, Ser. No. 848,300

Int. Cl. E04h 3/18

U.S. Cl. 4-172.16

23 Claims



A swim pool is disclosed with a method and apparatus for forming waves for the enjoyment of the swimmers with the waves formed by an air pressure source directly acting on a plurality of separate portions of the water surface in wave-forming tanks to cause depression of the water and consequent formation of the waves without requiring any mechanical apparatus to be immersed in the water. The swim pool has a width equal to at least one wavelength of the waves in the water and a standing wave is caused to move along the length of the pool by applying force alternately on first and second parts of the water surface of the width of the pool.

3,629,878

# SWIMMING POOL PROTECTION DEVICE

Robert I. Martin, Manheim, Pa., assignor to Rimar Manufacturing, Inc., Manheim, Pa.

Filed Mar. 23, 1970, Ser. No. 21,858

Int. Cl. E04h 3/16, 3/18

U.S. Cl. 4-172

4 Claims

A swimming pool protection device comprising a resilient, water-resistant, hollow casing enclosing a quantity of air and

a quantity of ballast material in sufficient quantities and pro-



portion to buoy the device in water in partially submerged, vertical position.

3,629,879

# LIQUID WASTE CONTAINER

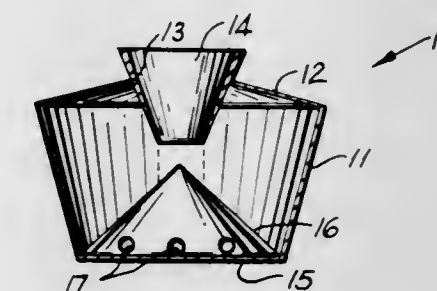
Carl K. Forst, Linneus, Mo.

Filed June 19, 1970, Ser. No. 47,716

Int. Cl. A61c 17/04

U.S. Cl. 4-258

2 Claims



A device for receiving liquid waste, the device being on the order of a cuspidor. The main body of the device includes a flexible upper wall to which is secured an upwardly extending funnel which may be pushed downward onto an internal cone secured to the bottom wall of the device in order to close the device.

3,629,880

# APPARATUS FOR ASSISTING INVALIDS

Johannes Nicolaas van Rhyn, Main Road, Klappmuts, Cape Province, Republic of South Africa

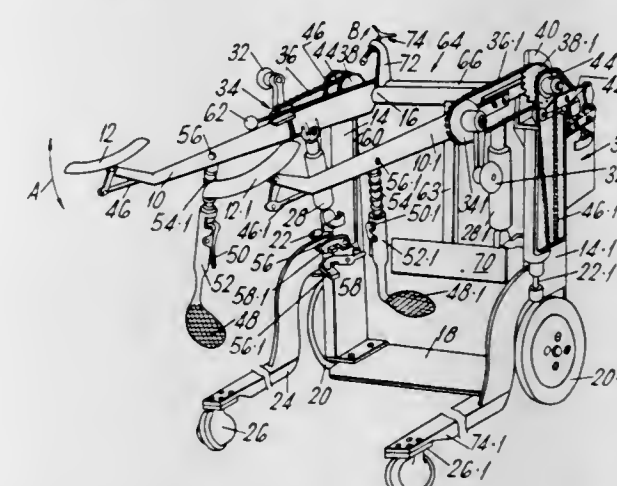
Filed Sept. 8, 1969, Ser. No. 855,965

Claims priority, application Republic of South Africa, Sept. 10, 1968, 68/5849

Int. Cl. B62m 1/14

U.S. Cl. 5-86

6 Claims



This invention relates to an apparatus for assisting a user thereof (particularly a person who has some disability in his



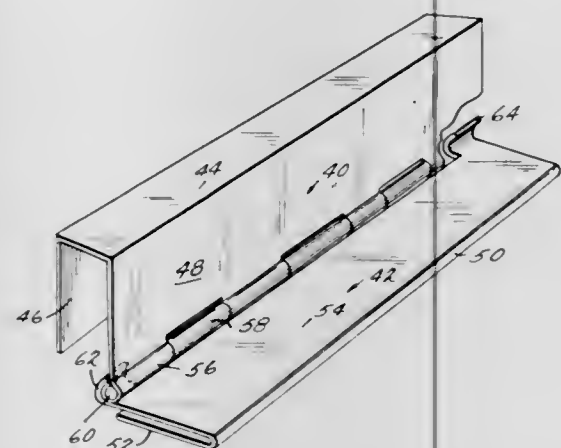
legs) to stand and comprises a framework incorporating a raisable seat member adapted to support the seat of the user, means for raising the seat member, and a knee support adapted to engage at about knee height with the legs of the user.

### 3,629,881 BEDRAIL FOOTREST

Esper P. Hinshaw, 402 West Georgia, Anadarko, Okla.  
Filed Nov. 12, 1968, Ser. No. 774,884  
Int. Cl. A47c 21/00

U.S. Cl. 5-317

4 Claims



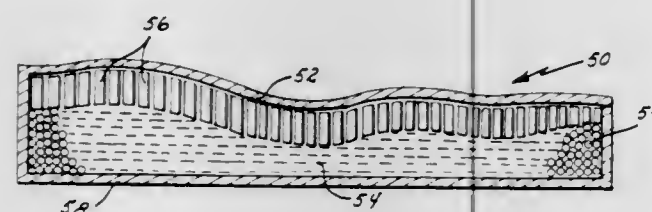
The bedrail footrest comprises a hanger member for mounting the bedrail footrest on a bedrail or the like and a footrest member, which is either rigidly secured to the hanger member or pivotally secured to the hanger member, wherein the footrest can be pivoted from a vertical storage position to a horizontal position when the footrest is to be used. In one embodiment of the invention, either member can serve as the hanger member or the footrest member depending on the type of bedrail.

### 3,629,882 ENERGY DISSIPATING SUPPORT DEVICE

Edward P. Thorne, Box G-D-4, 453 1st C.S.G.D, Homestead AFB, Homestead, Fla.  
Original application Dec. 17, 1968, Ser. No. 784,345, now Patent No. 3,529,306. Divided and this application Feb. 11, 1970, Ser. No. 10,336  
Int. Cl. A47c 27/00

U.S. Cl. 5-345

1 Claim



Small round pellets are confined in a given space. A series of closely fitted bars or shaped plunger units are placed in a pattern with ends flush against the pellets. The outer surface of the plungers is exposed and accepts the application of any force or blow applied thereto. Each plunger conveys its own shock to the adjacent area containing the pellets which in turn pass the shock uniformly and instantaneously to all other pellets. Each pellet absorbs an equal amount of shock and any remaining shock not wholly dissipated by the pellets is sent back in an outward force against the unaffected plunger bars.

3,629,883  
BAND-BREAKING TOOL  
Abraham D. Norman, 24040 Norwood Ave., Oak Park, Mich.  
Filed July 28, 1970, Ser. No. 58,941  
Int. Cl. B25b; B25f 1/00  
U.S. Cl. 7-1 R 10 Claims

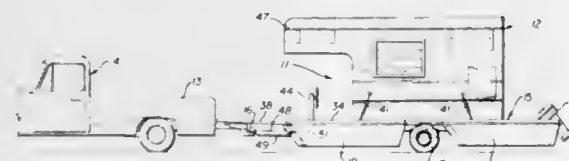


A metal or plastic band-breaking tool having a band-receiving slot disposed in a plane substantially containing the axis of the handle of the tool and having a plurality of tool head pivoting edges adjacent the band slot for pivotally engaging the banded box or article, is described.

3,629,884  
CAMPER-BOAT-TRAILER  
Clyde A. Brown, 1080 Estes St., Lakewood, Colo.  
Filed Aug. 7, 1969, Ser. No. 848,156  
Int. Cl. B63c 13/00

U.S. Cl. 9-1 T

7 Claims



A pontoon-type boat unit adapted as a navigable support to receive and float a camper of the type normally carried by pickup trucks. The camper then protects and provides utility and living comfort for passenger occupants. On land the unit is moved in a narrow telescoped configuration as a trailer supported by wheels that are retractable for water use. Transfer of the camper from and to the truck and the boat-trailer is facilitated by roller and guide elements or alternately by truck-powered movements when the pontoons are in retracted position and camper support jacks are used. A cab-over-type camper provides shelter for an operator control station.

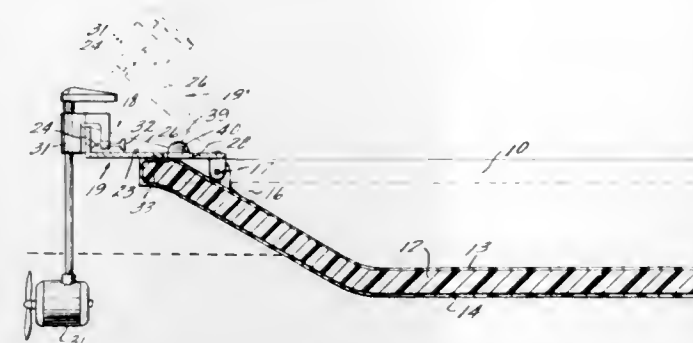
3,629,885  
MOTOR-MOUNTING BRACKET  
Ralph E. Jackson, 2250 Jane's Ln., Covington, Ky.  
Filed Dec. 3, 1969, Ser. No. 881,706  
Int. Cl. B63b 17/00

U.S. Cl. 9-1 R

6 Claims

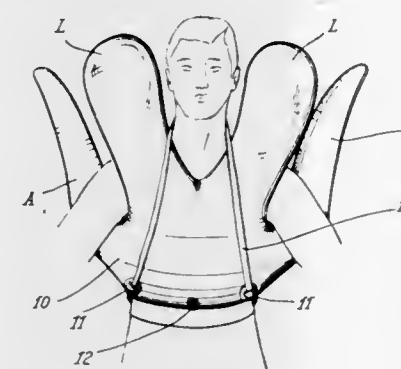
A motor-mounting bracket for a boat having an upright platelike member at the bow and a transverse pin mounted in the platelike member which includes lugs swingably mounted

on the pin on opposite sides of the platelike member, a mounting bracket swingable with the lugs between an ex-



tended position in which an end portion of the bracket extends outwardly of the boat and a retracted position inside the boat, and a motor support on the bracket.

3,629,886  
INFLATABLE SWIM APPLIANCE  
Georges A. Barnier, Parc Alexandra, Bd. Alexandre III, 06 Cannes, France  
Filed Sept. 3, 1969, Ser. No. 854,858  
Claims priority, application France, Sept. 4, 1968, 9406 AM  
Int. Cl. B63c 9/16  
U.S. Cl. 9-336 4 Claims

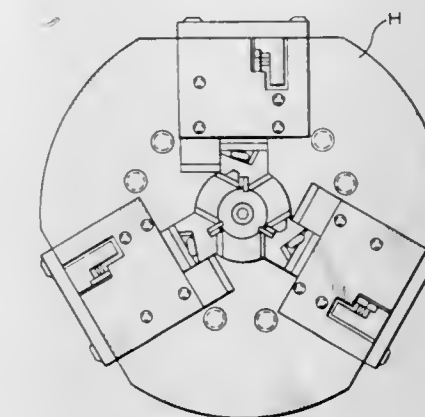


The present invention deals with a flotation device in the form of a swim appliance which is provided with a plurality of inflatable bladder sections, which are so arranged to each other that the chest of the wearer is substantially covered by a first bladder section which is V-shaped near the neck of the wearer and is also provided with bladder extension sections which are located above the shoulders of the wearer and project upwardly therefrom and further with extension bladder sections branching out from the chest bladder section below the armpits and projecting above the shoulders at the dorsal part of the wearer. These extension sections are in communication with the interior of the chest bladder section and the extension bladder sections are shaped in a predetermined fashion in order to stabilize the wearer's swimming actions. Strap means are employed which are made of rubber and anchored at the lowest part of the chest bladder section, encircling the rear part of the neck of the wearer and lead from the anchoring locations to the dorsal part of the person having the device applied to his body.

3,629,887  
CARBIDE THREAD CHASER SET  
Robert F. Urbanic, Willowick, Ohio, assignor to The Pipe Machinery Company, Willowick, Ohio  
Filed Dec. 22, 1969, Ser. No. 887,457  
Int. Cl. B23g 1/26, 5/04  
U.S. Cl. 10-120 9 Claims

A set of multitooth thread chasers with their teeth shaped and arranged to perform a succession of central roughing

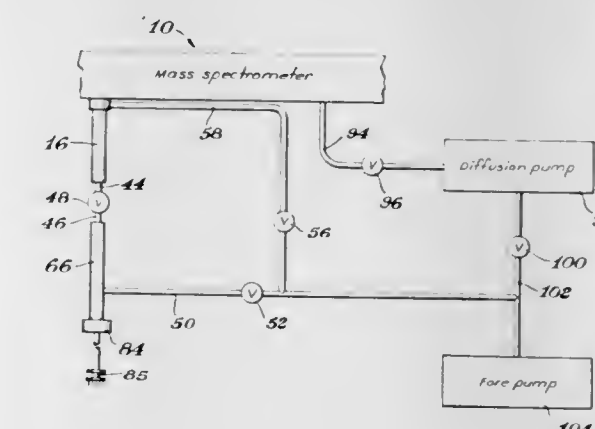
cuts of approximately trapezoidal cross section, respectively, and of successively decrescent areas. The chasers are free from any portions which can cause flanking cuts which result in lateral flanges on the resultant chips. The cut produced by each tooth extends close to, but terminates a few thousandths of an inch short of, the flanks of two adjacent threads so that, in the final rough-cut thread, a very thin layer of metal



remains between the rough-cut thread surface and the thread finish lines, and this layer is continuous and uninterrupted along the entire final rough-cut thread surface.

This layer is removed by a single finishing tooth which makes a single finish cut concurrently cutting a portion of one crest, along the thread trough and flanks and a portion of the adjacent crest, thus cutting over a length of thread cross section equivalent to one complete thread.

3,629,888  
FURNACE ASSEMBLY FOR THERMAL ANALYSIS USE  
Horst G. Langer, Wayland, Mich., assignor to The Dow Chemical Company, Midland, Mich.  
Filed Sept. 9, 1969, Ser. No. 856,398  
Int. Cl. H05b 3/26  
U.S. Cl. 13-31 4 Claims



This invention relates to a heating furnace assembly which is adapted to be coupled to and become a part of a mass spectrometer adjacent to the ion source (usually) within the instrument. The furnace assembly comprises two furnaces in end-to-end relationship with sealing means between the furnaces and means for transmitting gas from one furnace to another. Each furnace is adapted to be controlled by means of temperature sensing which is adapted to be disposed within the furnace assembly.

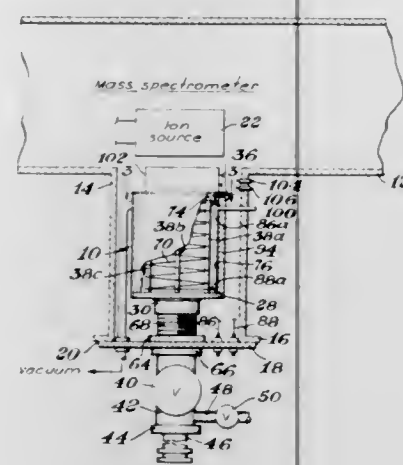


3,629,889

**FURNACE ASSEMBLY FOR THERMAL ANALYSIS USE**  
 Horst G. Langer, Wayland, and Earl D. Ayers, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 9, 1969, Ser. No. 856,397  
 Int. Cl. H05b 3/26

U.S. Cl. 13—31



This invention relates to an enclosed heating furnace assembly which is adapted to be coupled to and become a part of a mass spectrometer adjacent to the ion source (usually) within the instrument. The furnace includes a heating device usually utilizing a helical coil and reflective surface and is adapted to be temperature controlled by means of temperature-sensing means disposed within a separate thermal analysis cell which is adapted to be disposed within the furnace. Means are provided for evacuating the interior of the furnace enclosure and for introducing gas or vapor to the furnace enclosure. Means are also provided for apertures of various sizes to open from the furnace enclosure to the mass spectrometer.

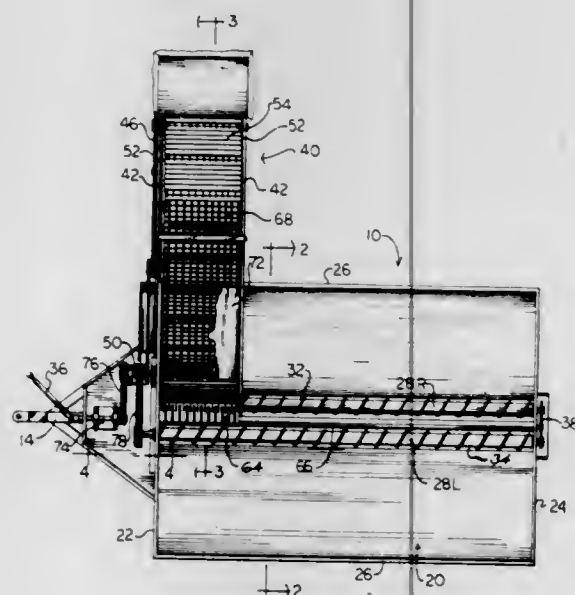
3,629,890  
BEET CART

Harold D. Harris, Lubbock, Tex., assignor to Harris and Thrush Manufacturing Company, Lubbock, Tex.  
 Continuation-in-part of application Ser. No. 709,981, Mar. 4, 1968, now Patent No. 3,460,698, dated Aug. 12, 1969. This application May 6, 1969, Ser. No. 822,280

Int. Cl. A23n 15/00

U.S. Cl. 15—3.11

10 Claims



A cart receives sugar beets from a harvester while the harvester is in operation. The cart then delivers the beets for

transportation to a refinery. The beets are delivered from the cart by an elevator and are cleaned in the cart as they are moved to and up the elevator.

3,629,891

CABLE-STRIPPING EQUIPMENT

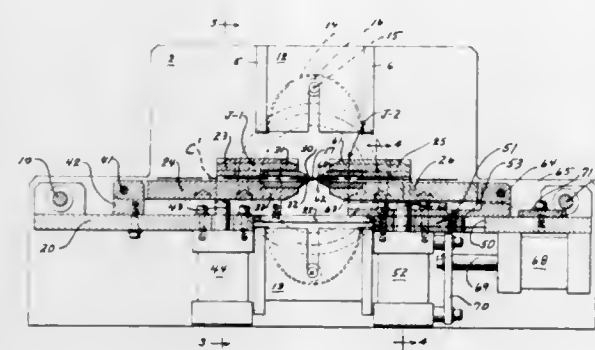
Ross F. Morrone, Trenton, N.J., assignor to Spectra Instruments, Inc., Trenton, N.J.

Filed Nov. 6, 1969, Ser. No. 874,525

Int. Cl. H02g 1/12

U.S. Cl. 15—4

7 Claims



Equipment for removing insulating plastic from flat cable conductors including means to form a linelike area of infrared energy on the cable surface to vaporize the plastic thereof, jaw means to shield plastic which is to remain on the cable from the infrared and means to pull plastic along the conductors to expose the same for the soldering operation.

3,629,892

CARPET SWEEPER

Donald N. Smyth, South Plympton, and Bruce A. G. Heard, Plympton Park, both of Australia, assignors to S. A. Brush Company Limited, Albert Park, Australia

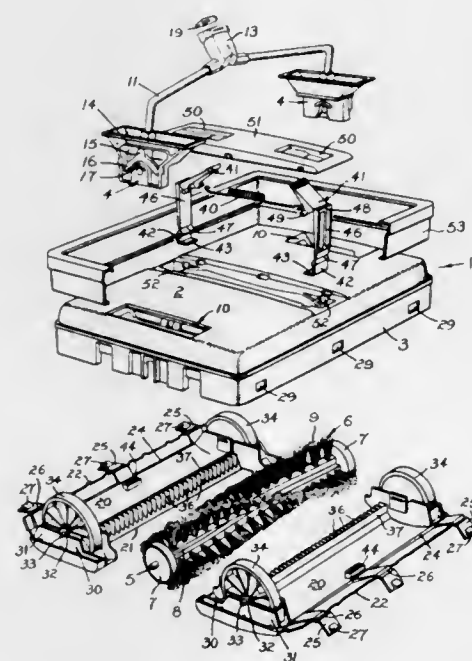
Filed May 20, 1970, Ser. No. 39,066

Claims priority, application Australia, May 26, 1969, 55579/69

Int. Cl. A47l 11/08

U.S. Cl. 15—48

12 Claims



A carpet sweeper in which the trays which receive the material swept up by a central brush are themselves hinged and carry the wheels and a comb which contacts the brush to ensure effective removal, a feature being that as the trays together with the wheels move clear of the brush for

discharging of the materials much more ready and effective cleaning as well as collection of the materials is possible.

3,629,893

WINDOW-CLEANING APPARATUS

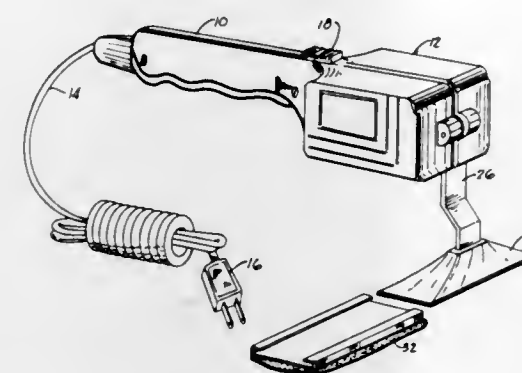
Thomas Brown, 720 Hunts Point Ave., Bronx, N.Y.

Filed Apr. 1, 1969, Ser. No. 811,857

Int. Cl. A47l 1/04

U.S. Cl. 15—103

1 Claim



A portable device is provided with a pad, sponge or the like adapted to contact a window for cleaning which is connected via a linkage to an electrically operated vibrator. As the device is moved over the surface of the window to be cleaned by an operator the vibrating motion causes the pad to clean the surface.

3,629,894

PAINT APPLICATOR

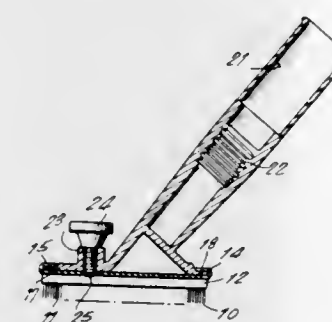
William W. Stefany, Bernardville, N.J., assignor to Red Devil Incorporated, Union, N.J.

Filed Mar. 2, 1970, Ser. No. 15,584

Int. Cl. A46b 5/02

U.S. Cl. 15—146

3 Claims



A paint applicator in which a paint-applying member in the nature of a pile fabric material is secured to one side of a thin flat resilient block. A rigid plate is secured to the top of the resilient block and has marginal flanges which grasp a painting guide therebetween. A handle member secured to the painting guide is provided with locking means so that the painting guide may be slid across the surface of the rigid plate and frictionally secured thereto.

3,629,895

BRUSH FOR CLEANING KITCHEN UTENSILS AND METHOD FOR MAKING SAME

Jack Wayne Colgan, 1905 N. Tylano Blvd., New Haven, Ind.

Filed July 30, 1970, Ser. No. 59,619

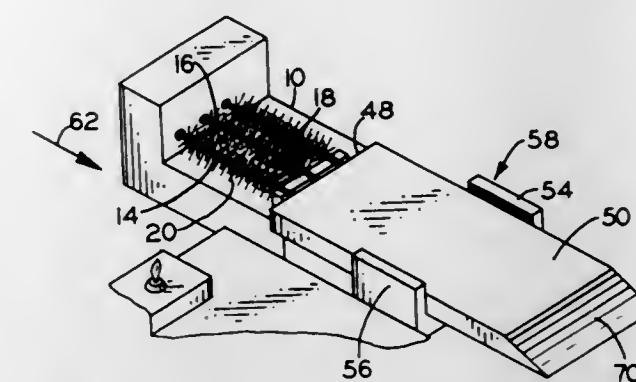
Int. Cl. A46b 3/00

U.S. Cl. 15—160

8 Claims

A brush is designed to clean the areas of a fork and particularly the spaces between the tines of the fork. The brush

consists of a number of spaced brushes having interfitting bristles and are passed by interference fit between the tines. The bristles are vigorously passed back and forth between the tines. The bristles are held by braided stems and the stems are permanently imbedded within a thermoplastic han-



dle by first heating the stems and then inserting the stems under pressure endwise within the handle, the heat causing a temporary softening of the plastic. Once the plastic hardens the brushes are held permanently by the handle which serves to mount the brushes.

3,629,896

COMBINED WASHING, DRYING, SCRUBBING AND SCRAPING IMPLEMENT

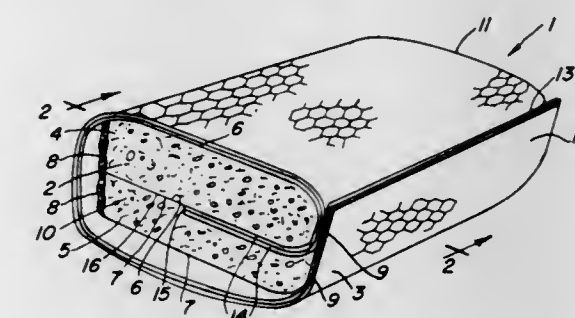
Michael Sirnec, 1 Park Estates, Granville, Ill.

Filed Mar. 23, 1970, Ser. No. 21,943

Int. Cl. A47l 13/16, 17/08

U.S. Cl. 15—118

5 Claims



A cleaning article which includes a washing member, such as a sponge, having a recess in one peripheral edge thereof and with a cover member having an edge portion secured in the recess, the cover member being adapted to be wrapped around the washing member or to be disposed in outwardly extending relation thereto, as desired.

3,629,897

CONNECTION MEANS FOR WINDSHIELD WIPER BLADE

Dario Arman, Strada Comunale Druento Venaria Druento 10040, Torino, Italy

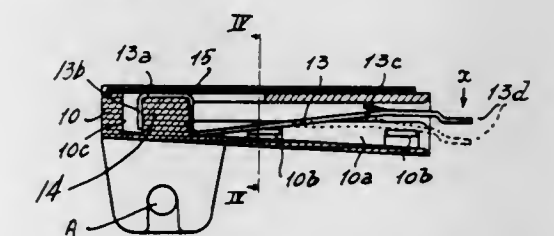
Filed Sept. 4, 1969, Ser. No. 855,222

Claims priority, application Italy, Apr. 23, 1969, 51551 A/69

Int. Cl. A47l 1/00

U.S. Cl. 15—250.32

4 Claims



A box-shaped element, attached to an oscillating, U-shaped support, releasably holds an automotive wiper blade



by means of a laminar plate that straddles on a retention seat formed on a box-shaped element and secured thereto by means of a hooked terminal.

3,629,898

## WINDSHIELD WIPER ASSEMBLY

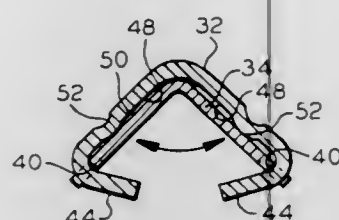
John J. Plisky, Munster, Ind., assignor to The Anderson Company

Filed June 1, 1970, Ser. No. 41,802

Int. Cl. A471 1/00; B60s 1/02

U.S. Cl. 15-250.42

2 Claims



This invention relates to windshield wiper assemblies which include a wiping element and a pressure-distributing superstructure operatively connected together so as to transmit and distribute the pressure received by the pressure-distributing superstructure from the wiper arm to spaced locations along the length of the wiping element. The pressure-distributing superstructure comprises at least one lower member having an inverted V-shaped cross section and an upper member also having an inverted V-shaped cross section. The upper member is pivotally connected to the lower member by a pair of intumed tabs seated in a pair of notches in the lower member and has round embossments adjacent the inboard ends of the intumed tabs on each side of the underside thereof, which embossments engage the upper surface of the lower member when the lower member rocks with respect to the upper member.

3,629,899

## SELF-CLOSING HINGE

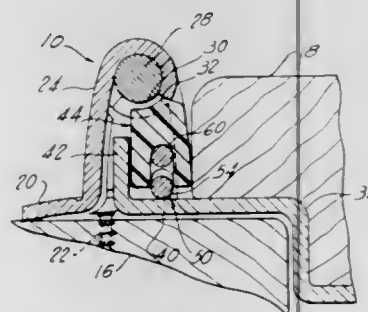
James R. Deadrick, Winston Salem, N.C., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Feb. 2, 1970, Ser. No. 7,877

Int. Cl. E05d 11/08

U.S. Cl. 16-142

1 Claim



The following specification describes a self-closing cabinet hinge having a spring-biased plastic cam follower that is camouflaged by one of the hinge leaves and also by the door to which the other leaf is fixed.

3,629,900

## LOCKING HINGES

Robert Beerli, Jr., 9456 La Luna, Fountain Valley, Calif.

Filed Aug. 13, 1969, Ser. No. 849,790

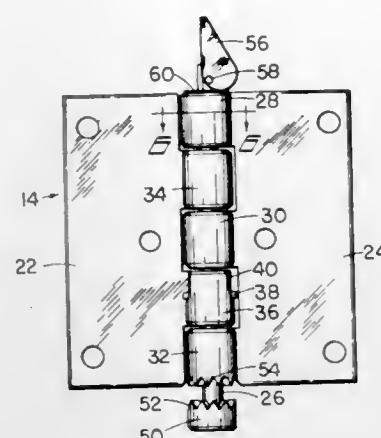
Int. Cl. E05d 11/10

U.S. Cl. 16-144

4 Claims

Locking hinges in which the hinge leaves or arms are locked in selected angular position against hinge action or

relative rotational displacement by clamping structure utiliz-



ing the hinge pin to clamp the hinge leaves together as an incident to translation of the hinge pin along its axis.

3,629,901

## HINGES

Johann Alois Wolf, deceased, late of Neustadt, Germany, and Maria Hermine Wolf, administratrix, 8 Schellerstrasse, Neustadt bei Coburg, Germany, assignors to Lenox-Werk Emil Liebler & Co., Vahrendorf, Germany

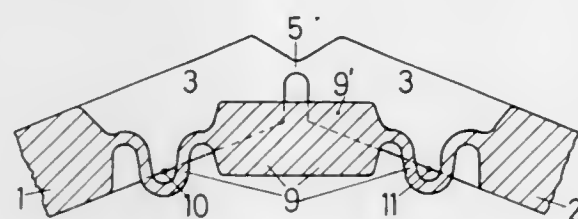
Filed Apr. 29, 1969, Ser. No. 831,806 Claims priority.

application Germany, Apr. 30, 1968, P 17 59 430.8

Int. Cl. E05d 9/00

U.S. Cl. 16-150

9 Claims



A one-piece hinge formed of plastic material, movable about an axis from a closed and open position is disclosed, the hinge including two hinge plates interconnected by a web which lies in one axis, at least one slit arranged at right angles to the axis separating the web into two or more hung strips, one of the strips being grooved at the position of the axis, another hinge strip acting as a tension spring to bias the hinge into its closed and open positions also including a spring portion thereof having an undulating form in both the closed and open positions and displaceable about two additional axes parallel to but at points offset from the first axis.

3,629,902

## BONE AND MEAT SEPARATOR

Gordon C. Leonard, Dalton, Ga., assignor to Meat Separator Corp., Dalton, Ga.

Filed June 4, 1970, Ser. No. 43,490

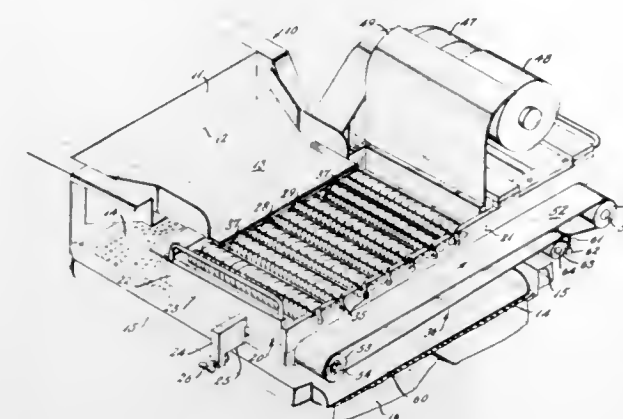
Int. Cl. A22c 17/04

U.S. Cl. 17-1 G

9 Claims

Apparatus for separating meat from low-density bones and gristle to provide an edible food product. The apparatus includes a plurality of pairs of counterrotating rollers having helical grooves in which said rollers are spaced slightly apart to permit relatively soft meat to be pulled between the rollers

while the harder bone and gristle will not pass therethrough. The helical grooves cause the material on the upper portion



of the rollers to be moved lengthwise of the rollers and simultaneously rotated or tumbled so that substantially all of the meat will be removed from the bones.

3,629,903

## DEVICE FOR AND METHOD OF PREPARING FOWL WINGS

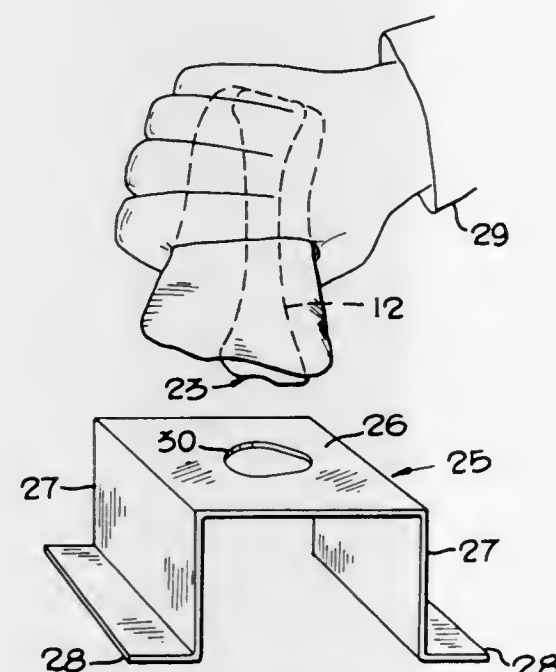
Nadine Turner, 101 W. Main St., Warrenton, Mo.

Filed Aug. 8, 1969, Ser. No. 848,543

Int. Cl. A22c 17/04

U.S. Cl. 17-11

1 Claim



The device includes a support plate having an aperture which is compatibly configured with the bone material of a fowl wing. By inserting the bone material of a severed wing portion into the aperture and urging the wing meat into engagement with the support plate, the meat at that end of the wing portion is pushed to the other end. Excess gristle may be removed from the bone by applying pressure to the bone material as it passes through the aperture.

3,629,904

## SHRIMP-DEHEADING MACHINE

Ben P. Zober, 1364 S. Edgewater Drive, Charleston, S.C., and Arthur G. Teston, Jr., P. O. Box 181, Hollywood, S.C.

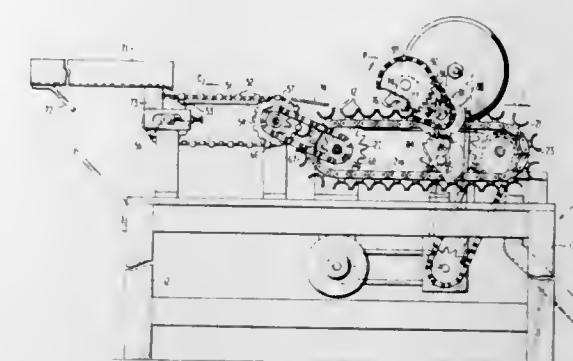
Filed Dec. 12, 1969, Ser. No. 884,463

Int. Cl. A22c 29/00

U.S. Cl. 17-71

5 Claims

A shrimp-deheading machine comprising a plurality of troughlike receptacles supported in an endless row to suc-



cessively receive shrimp to be deheaded and with which is associated shrimp head severing means and shrimp-retaining means movable into and out of each of the advancing recep-

3,629,905

## BREAD BAG RESEALER

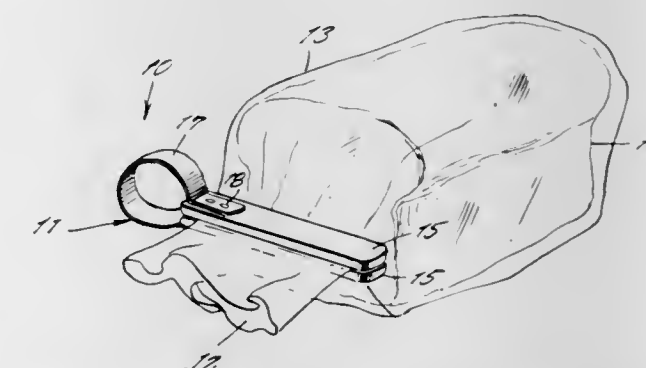
Delmer J. Cote, 624 Arch St., New Britain, Conn.

Filed June 17, 1970, Ser. No. 47,017

Int. Cl. A44b 21/00

U.S. Cl. 24-30.5 R

2 Claims



A clipping device for resealing a bag containing a loaf of bread after having been opened up, the device comprising an elongated clip having flat straight jaws between which the mouth of the bag may be retained in closed position, and one end of the jaws being connected to a resilient spring member normally urging the jaws toward a pivotally closed position.

3,629,906

## CONNECTOR DEVICE FOR AERIAL BANNER DISPLAY

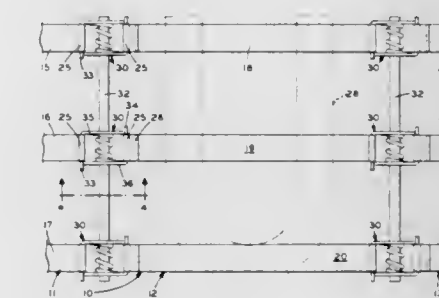
Ronald Cleveland Gasser, Gasser Banners, Inc., P.O. Box 3502, Airport Station, Nashville, Tenn.

Filed Feb. 13, 1970, Ser. No. 11,101

Int. Cl. A44b 21/00; G09f 21/12

U.S. Cl. 24-81 C

5 Claims



A connector device having substantially parallel prongs at each end. The prongs have exposed free ends for engaging



the loop ends of a pair of straps of adjacent letter panels of an aerial display banner. The connector device is also provided with means for holding a stiffening rod substantially parallel to the prongs and between the straps.

These connector devices are adapted to be used in sets, each set being received on and spaced longitudinally of a single rod and connected to the plurality of straps between a pair of adjacent letter panels. Thus, each pair of adjacent letter panels are connected by a set of the connector devices and a single stiffening rod.

3,629,907

## CONTAINER HOLDER TRAY

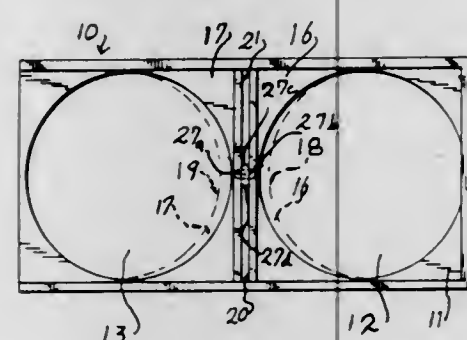
James A. Gageby, Minneapolis, Minn., assignor to Studebaker Corporation, Minneapolis, Minn.

Filed Apr. 23, 1970, Ser. No. 29,420

Int. Cl. A44b 21/00

U.S. Cl. 24—81 E

8 Claims



A combination clamp assembly and drip tray including two circular openings in a flat retainer tray; each opening separately receiving a cylindrical container. A flat cam-actuated slide member having a semicircular recess therein is positioned about each opening for engaging the container about a portion of the container's periphery to thereby effect clamping.

3,629,908

## LARIAT HONDA

Wiley M. Phillips, 713 McLemore, Garland, Tex.

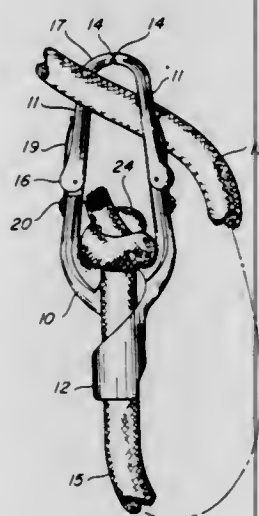
Filed June 8, 1970, Ser. No. 44,337

Int. Cl. F16g 11/00

U.S. Cl. 24—115 F

10 Claims U.S. Cl. 24—201

1 Claim



A releasable lariat honda having a pair of fingers extending from a yoke or body. At least one of the fingers is segmented and has loading means associated therewith whereby the finger tips of the honda are urged toward each other. The

yoke holding the pair of fingers has a stem extending rearwardly therefrom. Said stem defines a bore which extends through the yoke and has a longitudinal axis which extends through the point of intersection of the fingertips. The stem and the yoke are adapted to holdingly receive a lariat. In the preferred embodiment, the stem defines a helix, which helix is carried through the yoke on one side.

3,629,909

## DROP WIRE CLAMP

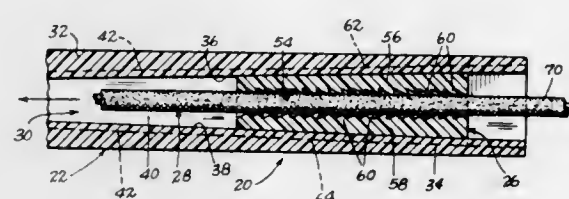
William J. Riley, 4728 Millcreek Road, Dallas, Tex.

Filed Mar. 4, 1970, Ser. No. 16,428

Int. Cl. F16g 11/02

U.S. Cl. 24—126

6 Claims



A wire clamp of plastic in which the housing is provided having a wedge-shaped slotlike opening receiving a plastic insert having a conforming wedge-shaped exterior with the housing and an elongated slotlike opening within which a wire is received with the walls forming the opening being depressable or clampable together as the wedge-shaped insert is pressed into the housing. The insert is made of plastic and may be of different sizes and forms to receive different types of wire and may be further provided with cast-in teeth in the plastic insert walls forming the slotlike opening to bear against the plastic coating used in electrical wires and the like. Keyway means are provided for the insert and the housing for registration and locking of the two together.

3,629,910

## HANDLE ASSEMBLY FOR PICTURE PROJECTION SCREEN

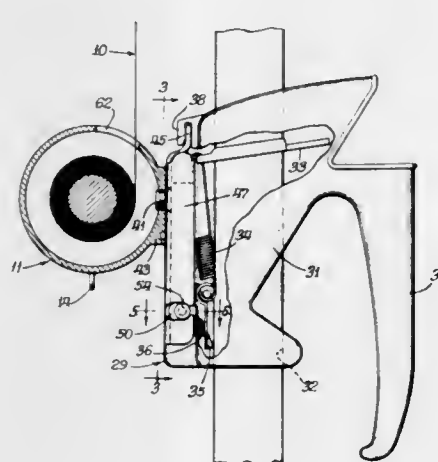
Richard C. Kirberg, Elk Grove Village, and Christopher C. Hsiao, Buffalo Grove, both of Ill., assignors to Graflex, Inc., Rochester, N.Y., by said Richard C. Kirberg

Filed Nov. 28, 1969, Ser. No. 880,804

Int. Cl. G03b 21/56

U.S. Cl. 24—201

1 Claim



A rollup-type screen for receiving projected pictures and constructed to operate either on a floor stand or hung from a wall or ceiling. The construction includes a releasable latch mechanism between the screen roll housing and the floor stand.

3,629,911

## SLIDE FASTENER

Bernd Porepp, 16 Am Rebberg, 7764 Wangen (Bodensee), Germany

Filed Mar. 12, 1969, Ser. No. 806,620

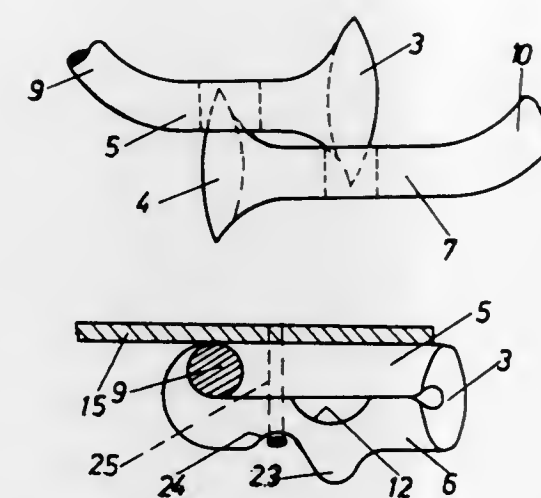
Claims priority, application Germany, Mar. 13, 1968, P 16

60 799.1

Int. Cl. A44b 19/12, 19/34

U.S. Cl. 24—205.1

3 Claims



A slide fastener comprises a pair of rows of continuous links of plastic material formed with coupling heads at adjacent inner edges of the rows. The coupling heads engage in coupling spaces formed by depressions in legs of the links. Projections formed on the legs prevent shifting of mounting threads toward the coupling spaces.

3,629,912

## CLAMP AND METHOD OF MAKING SAME

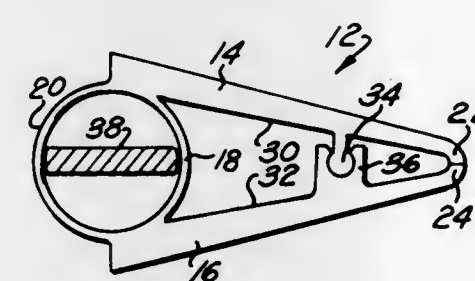
Edward M. Klopp, Seville, Ohio, assignor to The Chemical Rubber Co., Cleveland, Ohio

Filed Apr. 13, 1970, Ser. No. 27,817

Int. Cl. A44b 21/00

U.S. Cl. 24—255 SL

11 Claims



A one piece, plastic clamp formable from extruded stock. The clamp comprises a pair of lever arms merged toward one end through an integral bight portion, to form a generally U-shaped member. Releasably locking fulcrum means are positioned between the free and merged ends of the lever arms. The releasably locking fulcrum extends the full width of the clamp. The cross section of the clamp through every plane perpendicular to the extrusion axis is identical in every essential respect.

3,629,913

## SHELL TRIMMER

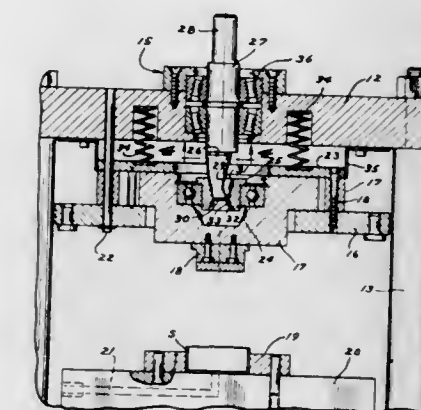
Robert M. Gold, Minneapolis, and Thomas L. Turnquist, Prior Lake, both of Minn., assignors to Dayton Rogers Manufacturing Co., Minneapolis, Minn.

Filed Jan. 12, 1970, Ser. No. 2,153

Int. Cl. B26d 1/00

U.S. Cl. 29—1.32

10 Claims



A shell trimmer removing waste material from a drawn shell wherein a pair of cooperating cutting tools fit inside and outside the drawn shell to shear the peripheral edge; tool mountings movable toward and away from each other, and a rotatable crank acting on one of the tools to align such tools when separated for insertion of the shell and orbiting one of the tools respective to the other when the tools are in cooperative cutting relation.

3,629,914

## METHOD OF MAKING AN ELONGATED SINGLY COILED FILAMENT AND MOUNTING IT IN A TUBULAR INCANDESCENT LAMP

Erik N. Giertsen, Verona, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 10, 1970, Ser. No. 18,227

Int. Cl. H01j 9/18, 9/36

U.S. Cl. 29—25.15

6 Claims



The elongated filament of a lumiline- or showcase-type incandescent lamp is initially wound as a coiled coil filament and attached to the lead wires of the mount assembly. When a getter is used, the getter is applied to the primary turns of the coiled coil filament before it is stretched and remains on the primary turns of the resulting singly coiled filament that is attached to the mount assembly.



3,629,915

## ARC LAMP CONSTRUCTION

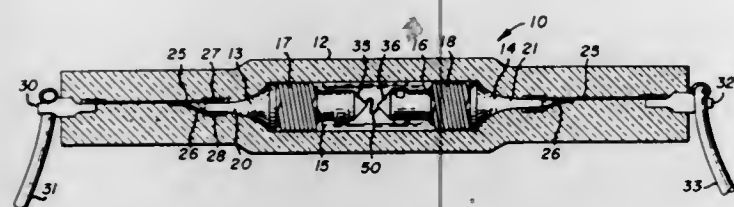
Raymond E. Paquette, Saratoga, Calif., assignor to Republic National Bank of Dallas; Irving Trust Company and Union Bank

Original application Oct. 24, 1967, Ser. No. 677,565, now Patent No. 3,518,480, dated June 30, 1970. Divided and this application Oct. 13, 1969, Ser. No. 871,201

Int. Cl. H01j 9/36, 9/18

U.S. Cl. 29—25.16

4 Claims



An arc lamp construction in which the lamp envelope portion surrounding the main body portions of the arc electrodes is spaced therefrom to define a cylindrical gap and in which a packing member is disposed in the cylindrical gap to support the electrodes. The packing member is elastic, or radially deformable, to prevent cracking of the envelope as the gap width changes with temperature, and is thermally conductive to allow the transfer of electrode heat across the gap to the envelope.

3,629,916

## MAKING ALKALI METAL ALLOYS FOR CATHODE LAMPS

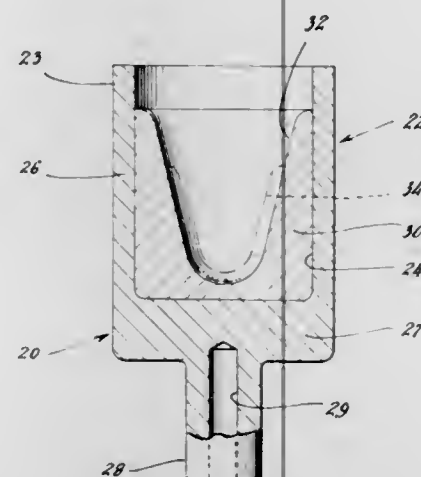
John W. Vollmer, Danbury, and Laurence Pellier, Westport, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Original application July 27, 1967, Ser. No. 656,564, now Patent No. 3,560,790, dated Feb. 2, 1971. Divided and this application Apr. 27, 1970, Ser. No. 32,220

Int. Cl. H01j 9/02; C22c 1/00

U.S. Cl. 29—25.17

9 Claims



A type of spectral source lamp has a hollow cup-shaped cathode, the interior of which is coated with the spectrally emitting element or elements. A technique for forming such a coating of an alloy of an alkali metal (or metals), with, say, tin in the presence of some boron is proposed, (resulting in higher melting points and lower vapor pressures, thereby allowing higher operating lamp currents and consequent spectral radiation intensity). The coating material may be conformed directly on the interior of the cathode cup (say, of titanium) by fusing an alkali metal borohydride with tin, thereby avoiding the need to handle pure alkali metal. The hydrogen gas liberated during alloy formation removes some

of the contaminants (e.g., oxides). A boron-containing, glassy slag may be readily separated from the alkali metal alloys. Specific examples in which the alkali metal component is sodium, potassium, or a mixture of sodium and potassium are disclosed. The other metal may be, for example, tin or lead.

3,629,917

## MACHINING CENTER EMPLOYING NON-CAPTIVE TOOLS WITH RELEASABLE HOLD-DOWN ATTACHMENT

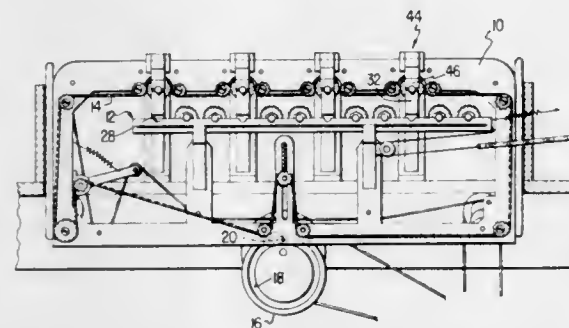
John A. Cupler, II, 10 Cupler Drive, La Vale, Cumberland, Md.

Continuation-in-part of application Ser. No. 715,711, Mar. 25, 1968, now Patent No. 3,478,419. This application Aug. 20, 1969, Ser. No. 851,715

Int. Cl. B23q 3/157

U.S. Cl. 29—26

6 Claims



The disclosure relates to a method and apparatus for rigidly restraining a noncaptive tool against transverse bodily movement during that time the tool is actually working.

A noncaptive tool is herein defined as one which may undergo bodily movement, transversely of its own axis, relative to both the tool bearing structure which accommodates the tool in working position and a tool support structure which supports the tool in a nonworking position adjacent the bearing structure. The noncaptive tool is unrestrained against the aforesaid bodily movement except during that time the tool is actually working and, while working, a rigid restraint is imposed in addition to a flexible restraint imposed by the tool driving means.

The foregoing is accomplished by the mounting of a first open bearing structure upon a tool placement rack for movement therewith during its tool interchange cycle into and out of coating relationship with a second, fixed open bearing structure. The two open bearing structures coact in one position of the tool placement rack to provide a composite rigid bearing structure rigidly restraining transverse bodily movement of the tool journaled therein and in all other positions of the tool placement rack are maintained out of the aforesaid coacting relationship.

3,629,918

## FILE

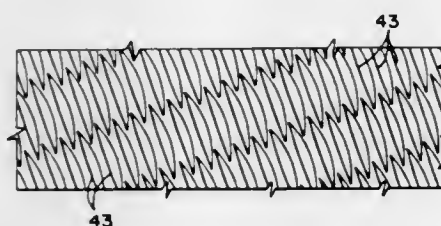
Lowell T. Hart, Newcomerstown, Ohio, assignor to Heller Tool Division, Wallace-Murray Corporation, Newcomerstown, Ohio

Filed Sept. 22, 1969, Ser. No. 859,802

Int. Cl. B23d 71/00

U.S. Cl. 29—78

15 Claims



A file having a convex surface with a multiplicity of spaced depressions therein. At least some of the depressions are spaced from all the others and include an adjacent upset

cutting lip. The surface of each of at least some of the depressions defines an arc in one plane; the arc being coextensive with the gullet of that depression; and the length of the chord from one end of the gullet to the other being greater than the width of the depression in an orthogonal plane.

3,629,919

## TOOL AND TOOL HOLDER ASSEMBLY

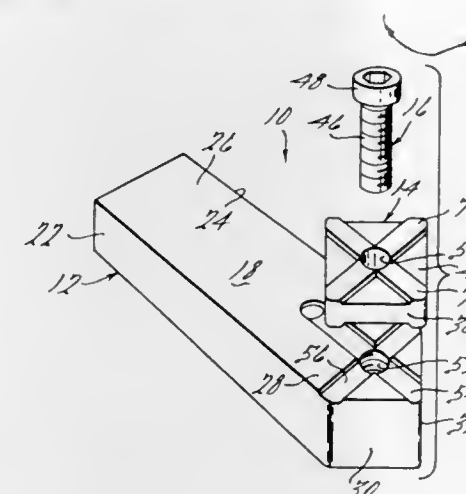
David J. Trevarrow, Jr., 3864 Tyrconnel Trail, Orchard Lake, Mich.

Filed Sept. 17, 1969, Ser. No. 858,676

Int. Cl. B26d 1/00

U.S. Cl. 29—96

2 Claims



A combination tool and tool holder assembly, the tool holder member of which comprises upper and lower sides and converging edge portions which define a tool support section; a tool member adapted for operative support on the tool support section and having one or more cutting portions adapted to overlaid the converging edge portions thereof so as to project outwardly therefrom for engagement with a workpiece to be machined; means for operatively securing the tool member on the tool holder member, and means for resisting rotational, transverse and longitudinal movement of the tool member relative to the tool holder member including a generally channellike recess formed on one side of one of the members and a complementary shaped embossed portion formed on the confronting side of the other of the members adapted for operative engagement with the recess.

3,629,920

## GEAR CUTTER

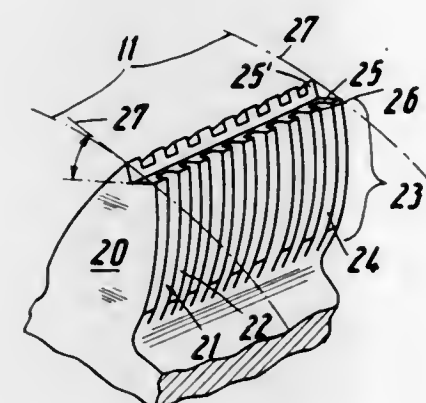
Herbert Loos, Munich, Germany, assignor to Carl Hurth Maschinen-und Zahnradfabrik, Munich, Germany

Continuation of application Ser. No. 735,618, June 10, 1968, now abandoned. This application May 22, 1970, Ser. No. 41,670. Claims priority, application Germany, June 12, 1967, H 62978

Int. Cl. B26d 1/00

U.S. Cl. 29—103

10 Claims



A tool for the precision working of gears by chip removal therefrom such as in gear shaving and of the type wherein the

flanks of the tool teeth comprise a plurality of alternate grooves and lands having a novel cutting edge construction between the surfaces of said lands and the walls of the adjacent grooves and between the tip surfaces of the tool teeth and the land adjacent thereto. Particularly said walls and the tip surfaces adjacent thereto are provided with cutting edges for plunge shaving wherein with a given relief angle the rake angle may be positive, negative or zero.

3,629,921

## METHOD OF FABRICATING A BEARING DEVICE

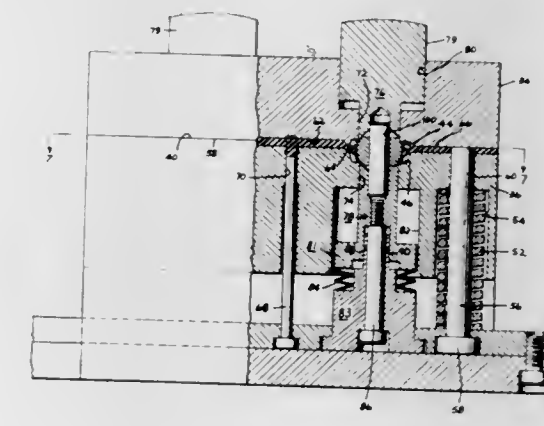
Gilbert E. Davies; Robert J. Loubier; John M. Weston, and Robert A. Muhn, all of Fort Wayne, Ind., assignors to Tuthill Pump Company, Chicago, Ill.

Filed Jan. 9, 1970, Ser. No. 1,733

Int. Cl. B23p 11/00

U.S. Cl. 29—149.5 B

13 Claims



The method of fabricating a bearing device comprising a housing having an opening therethrough, a ball-shaped swivel member positioned within the opening and spaced from the surface of the housing which defines the opening, and a raceway of solidified bearing material in the space between the swivel member and housing, the raceway having a swiveling clearance with and retaining said swivel member in the housing, the inner surface of the raceway being shaped to correspond to a part of an elongated sphere. In the fabrication of this bearing device, the swivel member is reciprocated relative to the housing during the hardening of liquified bearing material injected into the space between the swivel member and housing. The apparatus which accomplishes this method includes relatively moveable members which engage, respectively, the housing and the swivel member, these mold members providing the relative reciprocatory movement.

3,629,922

## METAL PLATING OF PLASTICS

George T. Miller, Lewiston, N.Y., and Arabinda N. Dey, Arlington, Mass., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Mar. 23, 1967, Ser. No. 625,310

Int. Cl. B23p 3/00

U.S. Cl. 29—195

28 Claims

Plastics, particularly nylon, poly(haloethylene), and phenolic resins are plated with metals by pretreatment of the plastic surface with a phosphorus compound such as trihydroxymethyl phosphine in a solvent, followed by contacting the treated surface with a metal salt or complex thereof. The resulting treated surface is either conductive or is capable of catalyzing the reduction of a metal salt to produce a conductive surface. Such conductive surfaces are readily electroplated by conventional techniques.



3,629,923

# INSTALLATION FOR REMOVING A STOPPER ROD FROM A LADLE, APPLYING A NEW COVERING TO SAID STOPPER ROD AND REINSERTING THE STOPPER ROD INTO THE LADLE

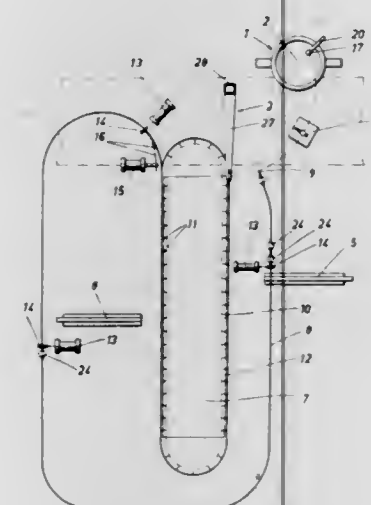
Erwin Kuebel; Josef Lambrecht; Alfred Linke, all of Linz, and Georg Stadlmann, Bad-Ischl, all of Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Apr. 20, 1970, Ser. No. 29,927

Claims priority, application Austria, June 6, 1969, 5304/69  
Int. Cl. B23p 19/00

U.S. Cl. 29—200 R

14 Claims



A resting place for a ladle, a knocking off station for knocking off a refractory covering from said stopper rod, a drying kiln provided with a rod-circulating device, and a receiving portion of an inclined guide leading into said drying kiln are disposed within a range in which a rod-handling device is horizontally and vertically movable. The installation further comprises adjacent to said guide a rod-straightening station and a station for applying a refractory covering to said stopper rod.

3,629,924

## BAND CLAMP

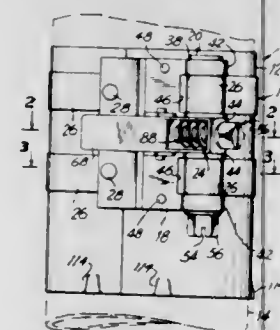
Milton C. Everett, Nassau County, N.Y., assignor to Kastar, Inc., New York

Filed July 3, 1968, Ser. No. 742,206

Int. Cl. B23p 15/10

U.S. Cl. 29—224

24 Claims



Continuously adjustable worm driven band clamp provided with rapid takeup and release particularly adapted for use as a ring compressor.

3,629,925

# APPARATUS FOR COMPACTING DYNAMOELECTRIC MACHINE COILS WITH MEANS FOR PREVENTING LAMINATION DISTORTION

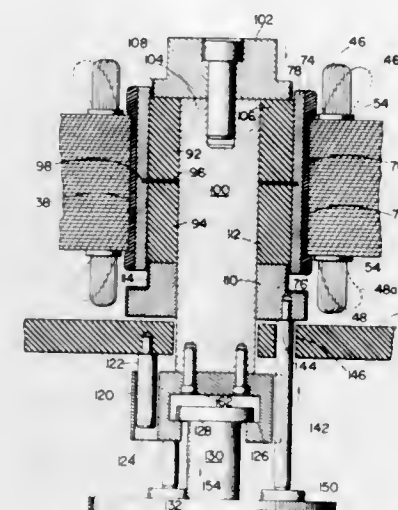
William N. Brown, Jr., and Robert J. Eminger, both of Fort Wayne, Ind., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Dec. 4, 1969, Ser. No. 881,977

Int. Cl. H02k 15/00

U.S. Cl. 29—205 D

15 Claims



Electrical surge apparatus for compacting dynamoelectric machine coils in the slots of an internally slotted, laminated stator core member and for forming the end turn portions of the coils outwardly away from the bore of the core member, which includes a resilient sleeve engaging the bore of the core and having portions extending axially outwardly beyond each end face, an expansible conductive sleeve engaging the inner surface of the resilient sleeve, a second resilient sleeve engaging the inner surface of the conductive sleeve, and a mandrel extending through and engaging the inner surface of the second resilient sleeve. A first compressing member mounted on one end of the mandrel engages one end of the second resilient sleeve and a second compressing member surrounds the mandrel and engages the other end of the second resilient sleeve. A fluid power cylinder is arranged to move the two compressing members toward each other so as to compress the second resilient sleeve therebetween thereby deforming the second resilient sleeve radially outwardly, expanding the conductive sleeve radially outwardly, and compressing the first resilient sleeve radially outwardly against the bore of the core so that the projecting portions are deformed radially outwardly respectively into engagement with the outer surfaces of the inner ends of the teeth of the respective end laminations of the core so as to prevent distortion of the teeth ends during application of the electrical surge to the field coils.

3,629,926

# APPARATUS FOR AUTOMATICALLY ASSEMBLING SLIDE FASTENERS

Masayuki Maeda, No. 5395, Nyuzen, Nyuzen-machi, Shimonikawa-gun, Toyama-ken, Japan

Original application June 6, 1967, Ser. No. 643,875, now Patent No. 3,530,563, dated Sept. 9, 1970. Divided and this application May 5, 1970, Ser. No. 34,790

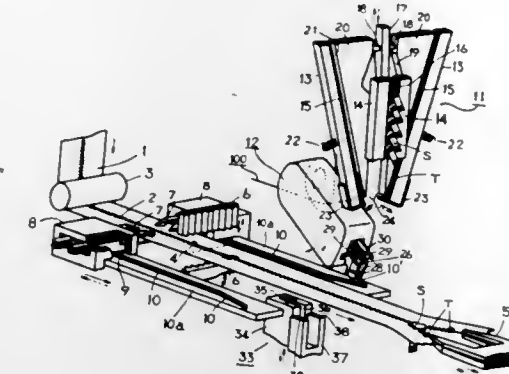
Int. Cl. B23p 19/04; B21d 53/52

U.S. Cl. 29—207.5

4 Claims

An apparatus for supplying sliders and top stops to a slide fastener stringer maintained in a successive movement along a horizontal path of travel. Such apparatus has in combination a pair of top stops chutes arranged in V-shape and a slider chute disposed intermediate said top stops chutes, a

parts holder having integral therewith separate nests for resiliently engaging and releasably retaining a slider and top stops delivered from their respective nests of said parts



feeder and movable into and out of the path of the tape travel, and a punching means for clamping the top stops to the tapes of the slide fastener.

3,629,927

## MOUSE HOLE CHUCK

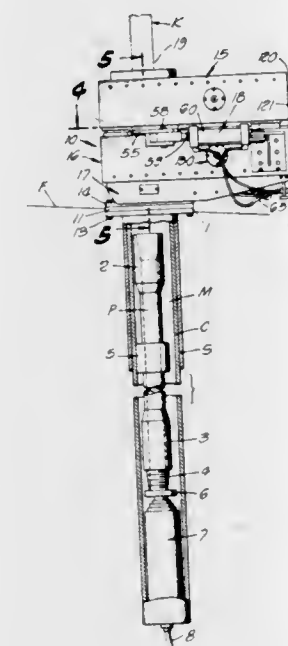
Melvin J. Palmer, Huntington Park, and Michael A. Seitz, Whittier, both of Calif., assignors to Byron Jackson, Inc., Long Beach, Calif.

Filed Mar. 30, 1970, Ser. No. 23,613

Int. Cl. B23p 19/04; B25b 21/00

U.S. Cl. 29—240

15 Claims



A chuck assembly for making up and breaking out threaded connections between a drill pipe single disposed in a mouse hole and a Kelly suspended above the mouse hole, in which a lower chuck subassembly is fixedly mounted at the top of the mouse hole, and an upper chuck subassembly is pivotally mounted on the lower chuck subassembly, a fluid pressure operated actuator being interconnected with the chuck subassemblies to effect pivotal movement of the upper chuck subassembly, the chuck subassemblies respectively having opposing jaws actuatable into gripping engagement with the joint part at the upper end of the single of drill pipe and at the lower end of the Kelly saver sub to effect rotation of one joint part relative to the other upon angular movement of the upper chuck subassembly. Such a mouse hole chuck in which a centering device engages the pipe to substantially center its tool joint part with respect to the axis of relative rotation of the chuck subassemblies.

# METHOD FOR REPAIRING APPARATUS SUCH AS CHILL MOLDS

Gerhard Hammerle, Eschen Furstentum, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

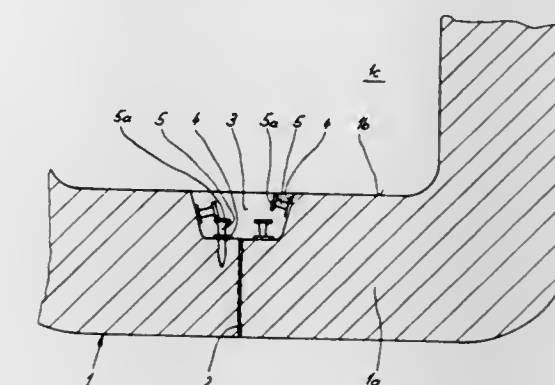
Filed July 21, 1970, Ser. No. 56,769

Claims priority, application Germany, Aug. 4, 1969, P 19 39 640.8

Int. Cl. B23b 7/04

U.S. Cl. 29—402

3 Claims



This invention relates in general to a method for repairing an apparatus such as a cast chill mold and to a new and useful method for repairing chill molds wherein a groove is provided along the tear or rupture at the inner wall of the mold, and a plurality of securing elements, such as nails, are driven into the wall and secured within the groove below the surface of the wall and the groove is filled with a welding material; and to an improved repaired chill mold construction.

3,629,929

# METHOD FOR MANUFACTURING COMPACTED TUBES AND RODS

Otto Wessel, Duisburg-Ungelshelm, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed July 3, 1969, Ser. No. 839,049

Claims priority, application Germany, July 9, 1968, P 17 52 757.0

Int. Cl. B23q 17/00

U.S. Cl. 29—403

14 Claims

The disclosure relates to utilization of metallic shavings, usually regarded as waste. The shavings are compressed to billets and extruded. Prior to extrusion the shavings and/or the billets may be annealed. To control composition the shavings may be mixed with particular powder at selected ratios prior to compression.

3,629,930

# METHOD OF MAKING A SELF-GRIPPING FASTENING DEVICE

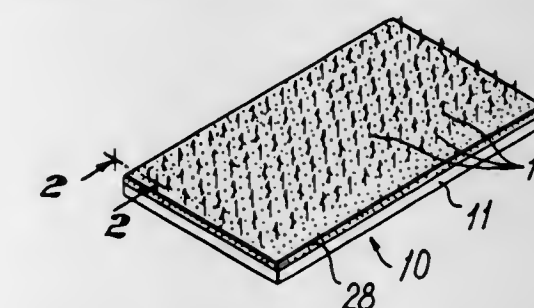
George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J.

Original application Jan. 12, 1968, Ser. No. 697,527, now Patent No. 3,494,006. Divided and this application May 7, 1969, Ser. No. 822,656

Int. Cl. B23p 11/00

U.S. Cl. 29—432

6 Claims



A self-gripping fastening device for connecting together a pair of articles, only one of which is required to be provided



with the device, and the method for making the same. The device comprises a plurality of barbed fastening elements, each being secured at one end to one surface of one of the articles to be gripped. When the fastening device is pressed against the opposing surface of the other article to be gripped, the free ends of the fastening elements penetrate and lodge in the other article to thereby effect adhesion between the pair of articles.

3,629,931

# METHOD AND APPARATUS FOR NAILING A STRUCTURAL FRAME

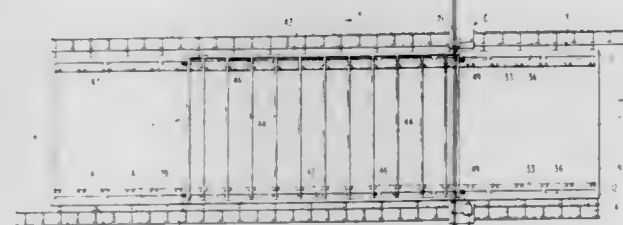
James M. Stanley, Vicksburg, Miss., assignor to Multi-Systems, Inc., Vicksburg, Miss.

Filed Feb. 18, 1970, Ser. No. 12,399

Int. Cl. B23p 11/00; B25c 7/00

U.S. Cl. 29-432

10 Claims



A portable jig on which is positioned a plurality of frame elements in an assembled condition with joints and which has side edges on each which a track is supported. A carriage is arranged on each of the tracks for guided movement thereon and a nailing device is supported on the carriage for positioning in nailing relationship with each of the joints in the associated edge portion of the assembled elements as the carriage is advanced on the track. The nailing device is actuated by an operator in each nailing position to nail together the frame elements in a permanent form.

3,629,932

# WELDING OF EXPLOSIVE-PLATED METAL SHEETS

Ulf Richter, Wurgendorf, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

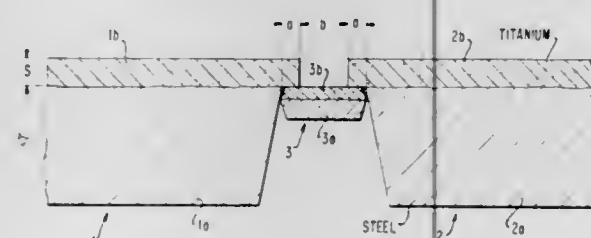
Filed Mar. 3, 1970, Ser. No. 16,128

Claims priority, application Germany, Mar. 3, 1969, P 19 10 674.2

Int. Cl. B23k 31/02

U.S. Cl. 29-472.1

7 Claims



The present disclosure relates to a process and arrangement of elements for welding explosive-clad metal sheets which substantially eliminate the formation of cracks when the weld is exposed to mechanical stresses.

3,629,933

# METHOD FOR ATTACHING METALLIC MEMBERS

Emil Sirmay, 2419 Hamilton Ave., Trenton, N.J.

Filed Apr. 3, 1969, Ser. No. 813,254

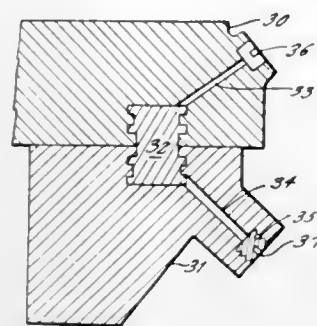
Int. Cl. B23k 1/20, 31/02, 35/12

U.S. Cl. 29-483

2 Claims

Two or more bodies of metallic material have adjacent reentrant openings, the surfaces of which are roughened, and

a molten metallic is poured into the cavity formed by the adjacent openings to secure the members together. The cast in-



sert may be of any material and the bodies formed may be of any materials similar or dissimilar to one another and the cast locking insert.

3,629,934

# SHEET METAL WORKING MACHINE

Hermann Wirl, Bruchsal/Baden, Germany, assignor to Scharringhausen Maschinenbau Gesellschaft GmbH

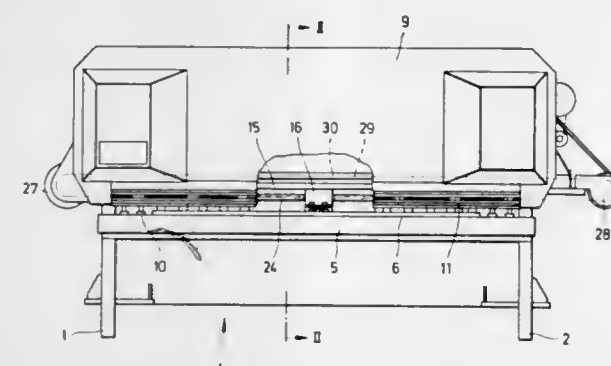
Filed Apr. 2, 1969, Ser. No. 812,585

Claims priority, application Germany, Apr. 5, 1968, P 17 52 117.4

Int. Cl. B23p 23/00

U.S. Cl. 29-564

18 Claims



A sheet metal working machine for cutting and edge-trimming of metal sheets and plates comprises the combination of a conventional seesaw shear having shear blades extending in parallel to one another and also having a pressure pad for holding the plates down with means for subsequent cutting-shaping of the plate edges to form V-, double V-, Y-, and U-formed butt joints for welding purposes.

The means consist of a guide way for a carriage, the guide way extending in parallel to the shear blades and being spaced from the shear blades so as not to obstruct the handling of the plates. A slide is supported on the carriage which slide is laterally displaceable thereon, and cutting tools are mounted on the slide.

During the cutting process the carriage idles on one side of the metal plate from where it is moved after cutting in parallel to the plate edge for shaping the plate edges to the desired form by driving means.

3,629,935

# METHOD OF MAKING CAPACITOR HAVING CHORDWISE TAB-RETAINING SLIT

John W. Carino, Columbia, S.C., assignor to General Electric Company

Original application May 22, 1968, Ser. No. 731,229, now Patent No. 3,569,794. Divided and this application Jan. 29,

1970, Ser. No. 12,528

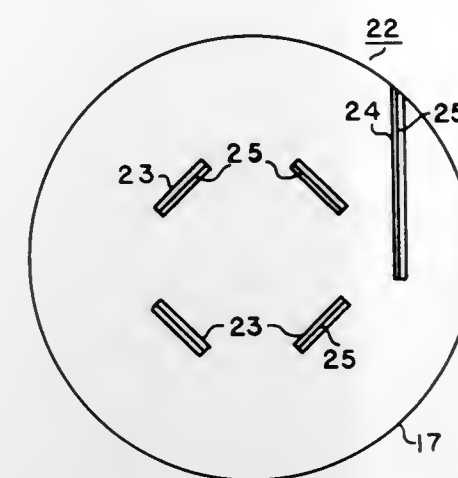
Int. Cl. H01g 9/00

U.S. Cl. 29-570

5 Claims

An improved electrolytic capacitor cover is disclosed which includes inner and outer relatively rigid supporting

disc members and an intermediate disc member of a rubbery or easily sealable material. The supporting disc members contain a number of slots therein for the passage of capacitor leads therethrough, and these slots are in registry with slits in



the rubbery sealing material. The inner disc member includes a chordwise slot therein in registry with a chordwise slit in the rubbery seal material. In the assembly of the capacitor a soft cathode foil tab or riser is easily passed through the chordwise slit by a slicing action therein.

3,629,936

# ELECTRODE ARRANGEMENT FOR THE MEASUREMENT OF PARTIAL PRESSURES OF GASES IN LIQUIDS AND METHOD OF ITS MANUFACTURE

Karl Harnoncourt, Graz, Austria, assignor to Hans List, Graz, Austria

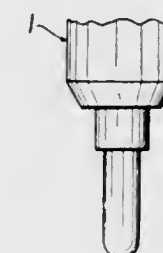
Filed Dec. 22, 1969, Ser. No. 887,073

Claims priority, application Austria, Dec. 23, 1968, A 12554/68 Dec. 4, 1969, A 11343/69

Int. Cl. H01s 4/00

U.S. Cl. 29-592

6 Claims



An electrode arrangement of a design for serial production and measuring the properties of individual electrodes. The measuring is carried out in a carrier of a housing with the extremity of the electrodes being sealed off in a sealing means and an electrolytic liquid being provided in a zone between two sealing means.

3,629,937

# METHOD OF FORMING A HELICAL ANTENNA

Ake A. Fredriksson, Fullerton; F. Nicholas Fossati, Lafayette, and F. Alexander Roberts, Brea, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Original application Nov. 14, 1966, Ser. No. 593,967, now Patent No. 3,449,657, dated June 10, 1969. Divided and this

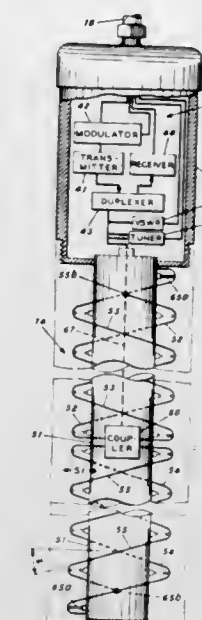
application Nov. 19, 1968, Ser. No. 798,832

Int. Cl. H11p 11/00

U.S. Cl. 29-600

3 Claims

The method of making an antenna wherein pairs of conducting elements are helically disposed and supported



pled with other conductive element pairs so arranged.

3,629,938

# METHOD AND APPARATUS FOR WIRE WINDING

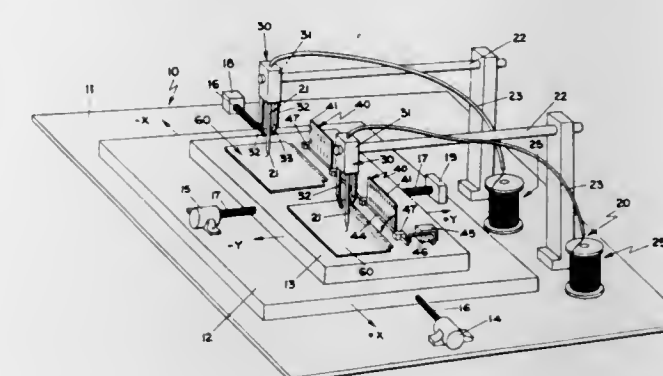
Gino Venturi, Ann Arbor, and John F. Stankey, Inkster, both of Mich., assignors to Sycor, Inc., Ann Arbor, Mich.

Filed Apr. 1, 1970, Ser. No. 24,500

Int. Cl. H01f 7/06

U.S. Cl. 29-604

21 Claims



Wire-wound memory devices or like articles are automatically manufactured by securing an end of the wire to a desired point on the apparatus and then drawing wire from the end of a narrow feeder tube which is held in a fixed position as a result of controlled movement of the device or article to be wired with respect to the end of the feeder tube. The device to be wired is mounted on an X-Y table for such controlled movement, and the X-Y table is moved in accordance with a program carried on and automatically read from a tape, which also is used to automatically control a soldering head and a wire-tamping apparatus so that the wire can be soldered automatically at desired points during the winding program and periodically tamped into a neat and compact winding configuration.

3,629,939

# MULTILAYER CORE MEMORY PROCESS

Ralph H. Baer, Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Original application Feb. 10, 1965, Ser. No. 431,558, now abandoned. Divided and this application Feb. 10, 1969, Ser.

No. 811,268

Int. Cl. H01f 7/06

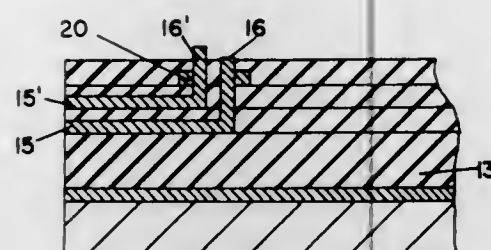
U.S. Cl. 29-604 R

8 Claims

A method of making a magnetic core matrix by selectively etching a conductive layer to form horizontal conductors



leaving vertically extending conductors over which apertured cores are disposed. The vertical conductors are then connected by deposited conductor material thereby threading



said core apertures. Insulating material is deposited where needed to secure the cores in place and/or insulate conductive areas.

3,629,940

## METHODS FOR FORMING MAGNETIC CORES

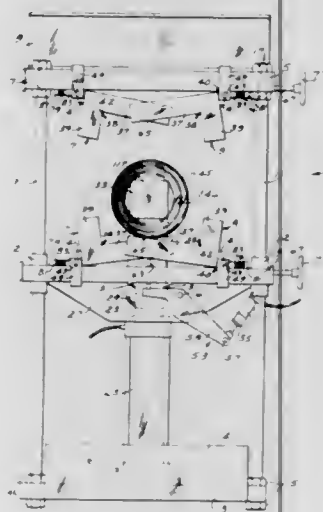
David F. Winter, Kirkwood, Mo., assignor to Central Transformer, Inc., Pine Bluff, Ark.

Original application July 13, 1967, Ser. No. 653,216, now Patent No. 3,535,907, dated Oct. 27, 1970. Divided and this application Feb. 2, 1970, Ser. No. 12,495

Int. Cl. H01f 7/06

U.S. Cl. 29—609

7 Claims



Hydraulic press apparatus and methods for die-forming magnetic cores from a wound circular configuration to a generally rectangular configuration are described. The press is constituted by a pair of opposed relatively movable platens, each having a pair of L-shaped die bar assemblies pivotally mounted thereon and arranged so that the horizontal legs of the bars on each platen are interdigitatable and the vertical legs of the bars on one of the platens are interdigitatable with the vertical legs of the bars on the other platen, the L-bars being arranged on their respective platens so as to define an open rectangle. A corner block of chevron, curved or triangular cross section is optionally removably mounted in the inner apices of the L-bars for shaping the outside corners of the cores during the pressing operation, and a rectangular window block is insertable into and extractable from the center opening of the core by a transverse hydraulic ram thereby to form a generally rectangular core window. To form a transformer core, a circular wound loop of magnetizable material is inserted in the press between the pairs of opposed L-bars with the desired corner blocks and window form, and the lower platen is advanced toward the upper platen. The core yokes are restrained by the vertical L-bar legs to a dimension corresponding to the overall desired core length and the width of the core is determined by the

core build and the width dimension of the window form. As the core is pressed, the magnetic strip is forced to assume the desired configuration in accordance with the size and configuration of the corner blocks and window form. The corner blocks may then be partially or completely removed from the corner areas, the window form reduced in thickness and the core again pressed to overbend the core yokes and sharply bend the core corners.

3,629,941

## METHOD OF FORMING COAXIAL CONDUCTORS OF SMALL DIAMETERS

Rolf Wagele, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hannover, Germany

Filed Mar. 20, 1968, Ser. No. 714,455

Claims priority, application Germany, Mar. 25, 1967, K 61833

Int. Cl. H01h 11/00

U.S. Cl. 29—624

3 Claims

A method of forming coaxial conductors of small diameters.

3,629,942

## GRASS TRIMMER

Joseph Leo Guay, 169 Maplewood Ave., Hamilton, Ontario, Canada

Filed Feb. 5, 1970, Ser. No. 8,956

Claims priority, application Canada, Feb. 6, 1969, 042,199

Int. Cl. B26b 13/00

U.S. Cl. 30—248

2 Claims



A grass trimmer having a wheeled framework with shears projecting forwardly therefrom, gearing associated with the shears for actuating the shears rapidly as the gearing is operated slowly and manually operated means for operating the gearing.

3,629,943

## DENTAL PROSTHETIC ASSEMBLY

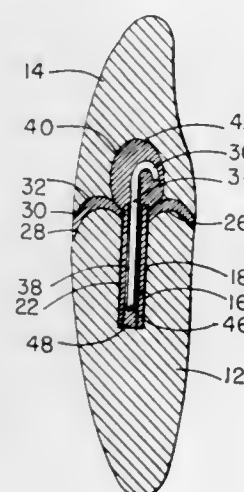
Abraham Gindea, Brooklyn, N.Y., assignor to Whaledent, Inc., Brooklyn, N.Y.

Filed July 13, 1970, Ser. No. 54,105

Int. Cl. A61c 5/08

U.S. Cl. 32—13

11 Claims



Apparatus and method for securing a dental prosthetic structure, such as a false tooth, to a patient's tooth stub and

comprising the drilling of a bore in the tooth stub, inserting a preformed hollow sleeve having a closed distal end and an open proximal end in the bore so drilled, inserting the lower end portion of an intermediate rod member within the opening in said sleeve to frictionally secure the same therein forming a dental prosthetic structure with an opening in the bottom thereof and with the bottom peripheral surface thereof conformed with that of the prepared tooth stub or jawbone, and bending over the upper portion of said rod member upon itself and securing the bent-over rod portion within the opening in said dental prosthetic structure by means of a self-curing resin to thereby secure said prosthetic structure with respect to said prepared tooth stub.

3,629,944

## ROTARY IMPLEMENT

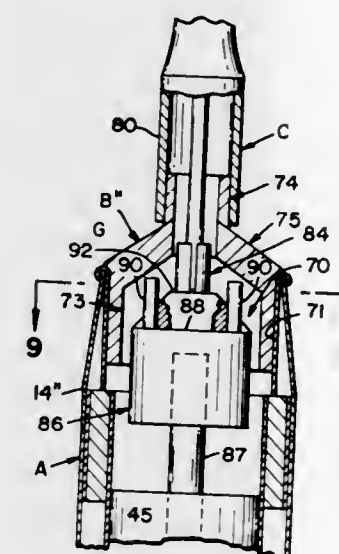
Edward A. Avakoff, South San Francisco, and Oliver G. Harris, San Francisco, both of Calif., assignors to Lord Corporation

Continuation-in-part of application Ser. No. 796,739, Feb. 5, 1969, now abandoned. This application June 17, 1969, Ser. No. 839,774

Int. Cl. A61c 17/00

U.S. Cl. 32—59

3 Claims



A portable rotary cup toothbrush in which a contraangle is affixed to a hand-held motor and has the rotary power of the motor communicated therethrough to power a rotating cup or buffer for removing the bacterial plaque from the teeth of the user. An adapter is disclosed which will couple a standard dentist's contraangle to a hand-held motor. Additionally, the coupling between the motor on one hand and the contraangle on the other hand is provided with a flywheel for the storage of rotational energy.

3,629,945

## OPTICAL GAGE

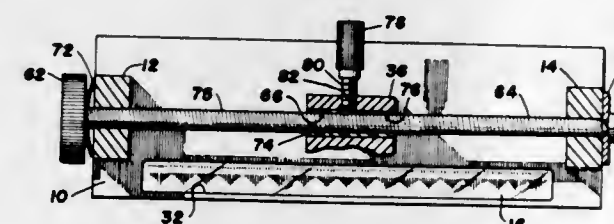
John C. Liuzzo, and Helmut Welker, both of Jamestown, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Oct. 6, 1969, Ser. No. 863,882

Int. Cl. G01d 3/04

U.S. Cl. 33—107 R

9 Claims



A gage for linear measurement of a workpiece comprises an optical assembly for viewing a linear scale placed for read-

ing upon the workpiece, both the scale and the observed portion of the workpiece being at the same focal length. The optical assembly is slidable either by manual operation or by a control mechanism including a control shaft having spiral grooves which are diminutive in depth which journal within, for example a thermoplastic bushing housed by the optical assembly. Rotation of the control shaft about its axis causes the optical assembly to traverse along the length of the scale. The optical assembly is also slidably translatable.

3,629,946

## LEVEL MEASURING DEVICE FOR A CONTAINER OF BULK MATERIAL

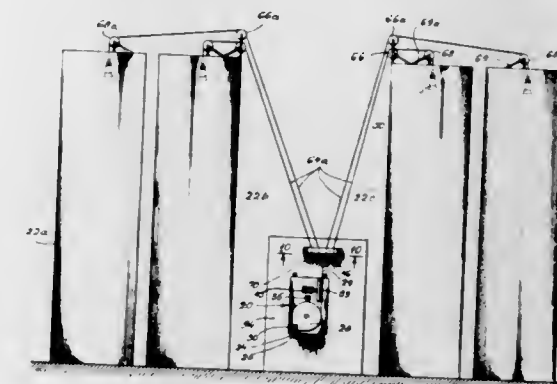
Ward H. Parsons, 1202 Green Glen Road, Birmingham, Ala.

Filed Oct. 9, 1969, Ser. No. 866,431

Int. Cl. G01b 3/00

U.S. Cl. 33—126.5

9 Claims



A measuring device comprises a plate on which is mounted a digital counter, a pulley driving the counter, and a reel on which is wound a line. The line terminates in a coupling member engageable with a coupling member at the end of another line. The other line is entrained over sheaves carried by a framework on a silo. A weighted bell is attached to the other line and is suspended over material in the silo. A bracket on the side of the silo engages the other coupling member. A plurality of other lines and coupling members entrained over other adjacent silos can be provided. A bracket on a support for the plate will engage the other coupling members so that any one can be selected for engaging the first coupling member. The plate can be detachable mounted on the support for removal and mounting on another remote support.

3,629,947

## APPARATUS FOR MEASURING LENGTHS

Johann Meier, Casa Clarissa, Brione s.M., Switzerland

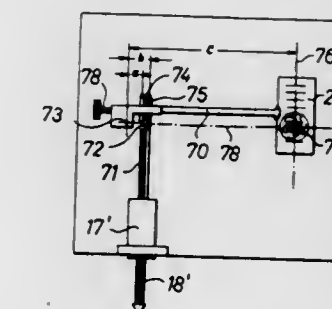
Filed July 9, 1969, Ser. No. 840,386

Claims priority, application Switzerland, July 15, 1968, 10523/68

Int. Cl. G01b 5/02

U.S. Cl. 33—147 E

5 Claims



A novel apparatus for measuring lengths is disclosed, the apparatus comprising a measuring sensor displaceable in its



longitudinal direction. An optically transparent projection scale provided with measuring marks is coupled for movement with the measuring sensor and is displaceable in the same direction thereof. An illumination means is disposed on one side of the projection scale and a projection lens is disposed on the other side thereof. A mirror system is provided and is generally disposed on the same side of the projection scale as is the projection lens. Specifically, a first mirror is disposed in the light path from the projection lens so as to deflect the light beam about a first axis from the projection lens or objective. A second mirror is disposed in the light path of the light beam deflected from the first mirror so as to deflect the light beam about a second axis parallel to the light beam emerging from the projection objective. A third mirror is provided for deflecting the light beam from the second mirror about the a third axis parallel to the second axis. Finally, the novel apparatus includes a multiportion reading scale upon which the measuring marks of the projection scale are projected, the reading scale being disposed transversely to the projection scale and thus transversely to the direction of movement of the measuring sensor.

3,629,948

## DRYING APPARATUS

Eric Wain, Hilton, and Neil Steadman, Buckden, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

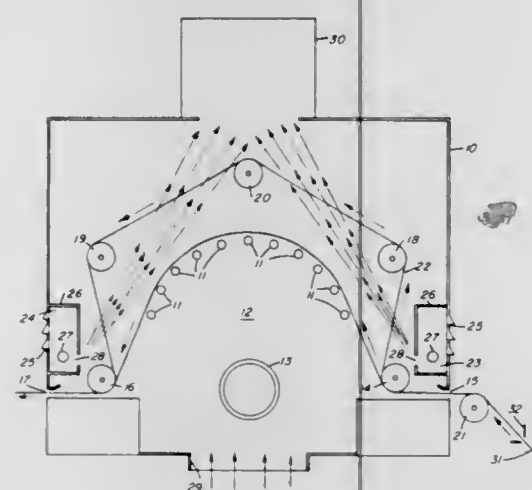
Filed Nov. 24, 1969, Ser. No. 879,068

Claims priority, application Great Britain, Nov. 25, 1968, 55,781/68

Int. Cl. B01k 5/00

U.S. Cl. 34—1

10 Claims



A dryer, for drying moisture-containing webs, comprises a stray-field platen defined by a plurality of radio frequency electrodes arranged substantially on an arc and defining a path for a web to be dried, feed means for initially feeding a web to be dried through the dryer and extending along a path remote from the platen and additional heating means for initially directing a jet of a warm gas such as air on to the web to be dried.

3,629,949

## THREADING PROCEDURE

Harry Knelson, Prince Rupert, Canada, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Filed Oct. 14, 1969, Ser. No. 866,350

Claims priority, application Canada, May 26, 1969, 52,511

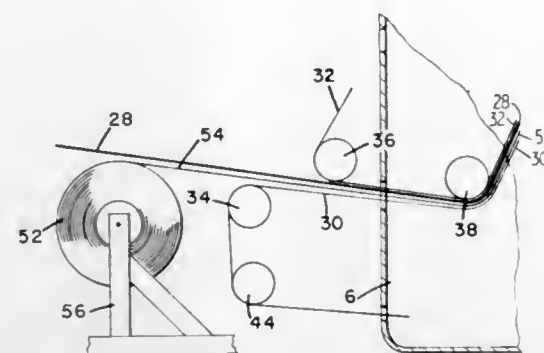
Int. Cl. F26b 3/00

U.S. Cl. 34—23

3 Claims

Two contiguous conveyor belts for threading a pulp web tail through a dryer to avoid bunching and consequent tearing or cutting of the web tail by means of a paper tape such

as those found on adding machines between the web and one belt. The paper tape allows relative slippage between one



3,629,950

## METHOD AND APPARATUS FOR DRIVING AND DRYING MULTIPLE STRANDS

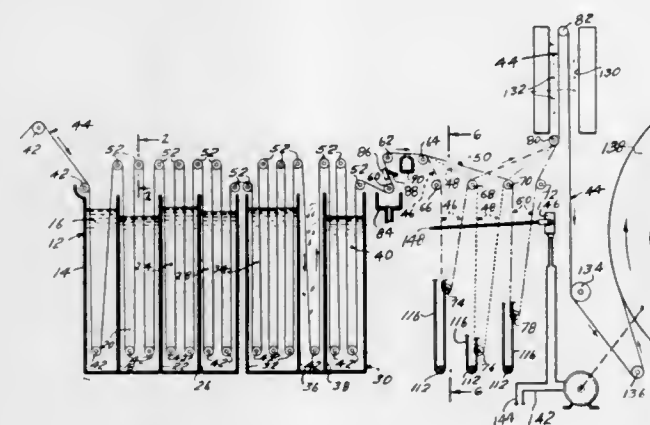
Leonard H. Tall, 6308 S.E. 22nd, Mercer Island, Wash.

Filed Oct. 27, 1969, Ser. No. 869,743

Int. Cl. F26b 3/04

U.S. Cl. 34—23

11 Claims



This invention is directed to a tendency drive unit for continuously processing and advancing a plurality of strips of photographic prints.

These strips of photographic prints are run through developing solutions and are in contact with liquids. Then, after being developed, it is necessary to dry these strips of photographic prints. In the drying of the strips and due to the mechanical variations in the rollers and the drying components and the fact that strips do not significantly expand and contract, the strips tend to wander on the rollers and to become entangled with one another. As a result, the strips are not advanced, the prints are not developed and the processing of the prints is hindered, and, possibly, stopped.

The following disclosure is for a method and apparatus for compensating for the mechanical variations in the rollers and the drying components.

3,629,951

## MULTILEVEL SPRAY-DRYING METHOD

Robert P. Davis, Cincinnati; Michael S. Haines, Springfield Township, Hamilton County, and John A. Sagel, Colerain Township, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 31, 1970, Ser. No. 60,011

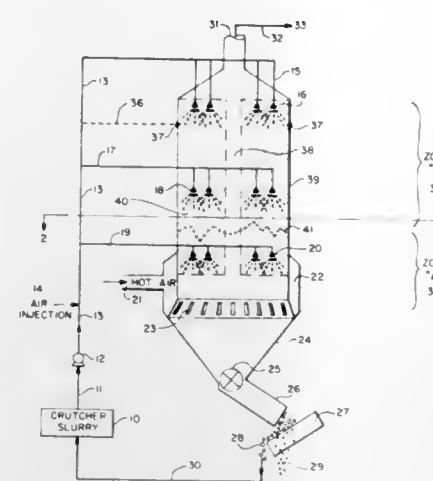
Int. Cl. F26b 3/00

U.S. Cl. 34—33

10 Claims

A method is provided for spray-drying large volumes of a synthetic detergent slurry which comprises spraying the slurry into the spray-drying chamber in at least two different levels of uniformly spaced atomizing nozzles. The lowest

level of nozzles is critically positioned at a point in the spray chamber below a 190° F. isotherm and above a boiling point isotherm. From 30 to 80 percent of the slurry is atomized at



this lowest level. The balance of the same slurry is sprayed through the remaining levels. Apparatus is provided for practicing this process.

3,629,952

## AIRFOIL WEB DRYER

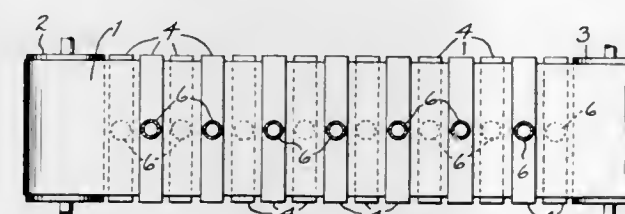
Wm. F. Overly, Winneconne, and Kenneth J. Pagel, Neenah, both of Wis., assignors to Overly, Inc., Neenah, Wis.

Continuation-in-part of application Ser. No. 817,834, Apr. 21, 1969. This application Nov. 16, 1970, Ser. No. 89,744

Int. Cl. B65h 17/32

U.S. Cl. 34—156

2 Claims



An airfoil nozzle is disposed adjacent the moving web to be dried and is constructed with a substantially flat planular guide surface trailing the nozzle, facing the web and substantially parallel thereto.

3,629,953

## MATERIAL DRYING APPARATUS

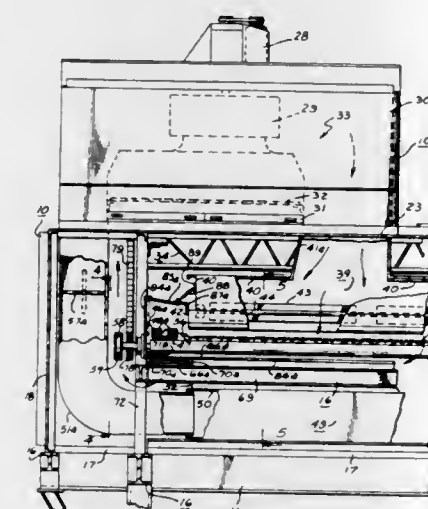
Myron T. Fleming, Maple Glen, Pa., assignor to Lansdowne Steel & Iron Company, Morton, Pa.

Filed Sept. 22, 1970, Ser. No. 74,332

Int. Cl. F25b 13/00

U.S. Cl. 34—158

10 Claims



A material drying apparatus particularly intended for drying carpeting dyed by a wet process, the apparatus compris-

ing a housing and means for continuously moving the carpeting along a predetermined path through the housing. The apparatus further includes a plurality of air conditioning and driving means for drawing air from the interior of the housing, heating it, and channelling it into upper and lower plenum chambers located on opposed sides of the carpeting. The apparatus may be selected to impinge heated air from each of the plenum chambers against opposed sides of the carpet for subsequent recirculation without passing therethrough or alternatively may be selected to drive air from one of the chambers through the carpeting. The air is driven through the carpet by means of a baffle system which extends or enlarges one of the plenum chambers into substantially airtight communication with one side of the carpet. Additional baffle means are provided to maintain the airtight communication between the carpet and the plenum chamber as the support means for the carpeting is moved to accommodate carpets of various widths. The baffle system also incorporates a wall system for permitting the dryer to operate along one length of the housing to drive heated air through the carpet, while concurrently operating to impinge air against both surfaces of the carpet along another length of the housing.

3,629,954

## GRAVITY FLOW GRAIN DRIES

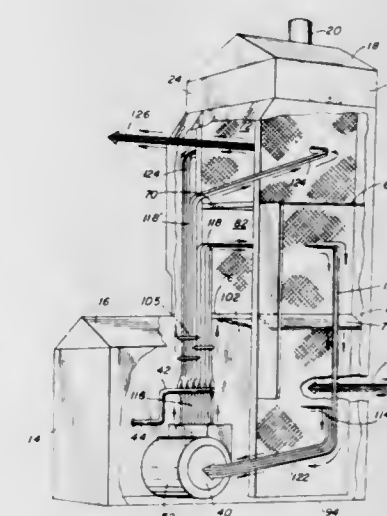
James P. Lavalier, Mahtomedi, Minn., assignor to Hart-Carter Company, Chicago, Ill.

Filed Sept. 26, 1968, Ser. No. 762,750

Int. Cl. F26b 17/12

U.S. Cl. 34—167

6 Claims



The disclosure describes a dryer for granular material provided with first and second successive zones to treat the material with heated gas under dehydrating conditions and a third zone connected therewith wherein the material is treated with incoming cool gas, characterized by passageways to conduct the flow of gas in opposite directions transversely through the first and second zones and means to combine the effluent gases from the second and third drying zones and supply heat thereto to form the heated gases used in the first and second zones. In one embodiment the granular material is passed successively through the first, second and third treating zones, the supply of cool gas is conveyed into the third zone to cool the dehydrated material therein, the effluent gases from the cooling zone are passed to a heating zone to form a portion of the dehydrating gas passed to the first and second zones while the effluent from the second zone is being recycled to the heating zone to be mixed with the effluent from the cooling zone and the effluent from the first zone is being exhausted from the system. In another embodiment the granular material is passed downwardly by gravity through perforated columns arranged in a vertical substantially parallel relationship, and a baffle system surrounds the columns to provide a division of the heated treating gas, between the first and second zones, whereby a por-



tion of the gas is directed outwardly from between the columns in the second zone and then recirculated while the remainder of the gas is directed inwardly through the perforated columns of the first zone from which it is discharged as the effluent from the system. Other embodiments are disclosed including means to control the volume of recycled effluent from the second treating zone, e.g., the proportion of moisture laden gas sent to the heating zone for recirculation.

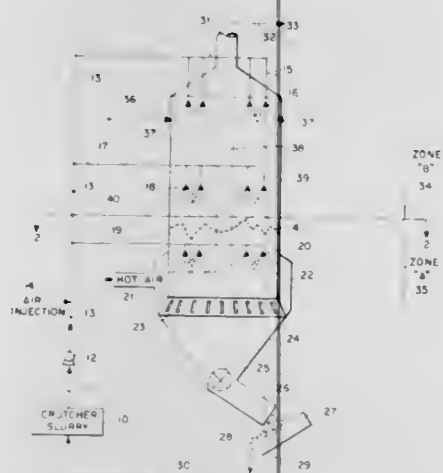
3,629,955

**MULTILEVEL SPRAY-DRYING APPARATUS**

Robert P. Davis, Cincinnati; Michael S. Haines, Springfield Township, Hamilton County, and John A. Sagel, Colerain Township, Hamilton County, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio  
Filed July 31, 1970, Ser. No. 60,012  
Int. Cl. F26b 17/12

U.S. Cl. 34-174

3 Claims



A means is provided for spray drying large volumes of a synthetic detergent slurry which comprises a means spraying the slurry into a spray-drying chamber in at least two different levels of uniformly spaced atomizing nozzles. The lowest level of nozzles is critically positioned at a point in the spray chamber below a 190° F. isotherm and above a boiling point isotherm. From 30 percent to 80 percent of the slurry is atomized at this lowest level. The balance of the same slurry is sprayed through the remaining levels. Means is provided at the bottom of the chamber for introducing a cyclonic current of heated drying gas, and a means is provided at the top of the chamber for exhausting the gas.

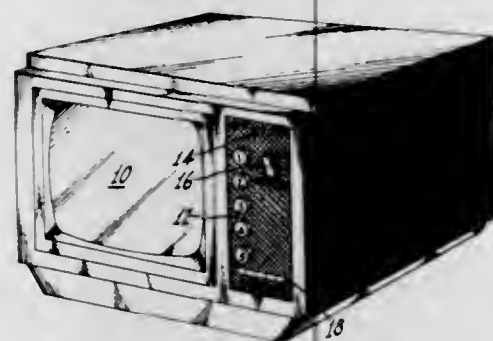
3,629,956

**TEACHING AND GAME PLAYING MACHINE**

Lucius Ponder Thomas; James Alexander McDonald; Eugene Ernst Janson; Todd J. Christopher, and John Charles Peer, all of Indianapolis, Ind., assignors to RCA Corporation  
Filed Aug. 4, 1970, Ser. No. 60,866  
Int. Cl. G09b 7/08

U.S. Cl. 35-9 A

4 Claims



Frames on a film may contain multiple choice questions which can be answered by selecting one of a number of

answer buttons but each frame includes only a single next address code. The latter has only a small number of bits but is ambiguous in the sense that the present address on a number of frames is equal to this next address. The ambiguity is resolved by counting the frames having this common present address until the one called for by the selected answer button is reached. A second feature of the machine useful in playing games is the production of a random number in response to a user actuated button for comparison with the count of frames having a particular common present address.

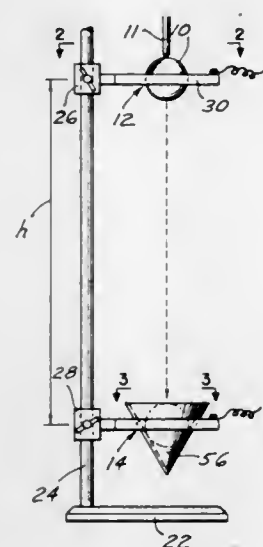
3,629,957

**GRAVITY-MEASURING APPARATUS**

Saligrama C. Somashekar, 55 West 76th St., New York, N.Y.  
Filed Jan. 29, 1970, Ser. No. 6,708  
Int. Cl. G09b 23/10

U.S. Cl. 35-19 R

6 Claims



Apparatus for measuring the acceleration due to gravity includes first and second mechanically operated switch means positioned one below the other on an upright rod. Each switch means is opened or closed in accordance with whether the switch means supports a ball which freely falls from the upper to the lower switch means. Both of the switch means are in a series circuit which includes an electrically operated timer.

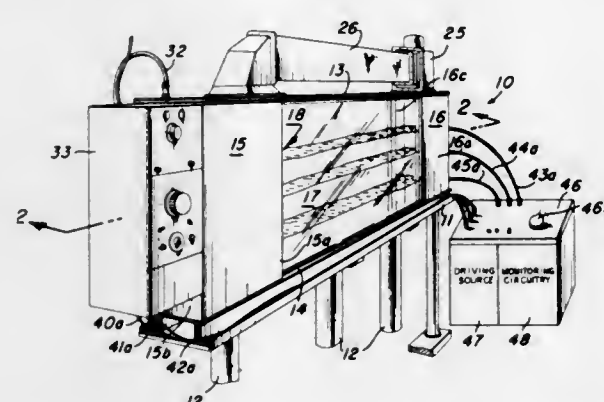
3,629,958

**INTERNAL AND SURFACE WAVE SIMULATOR TANK**

Jack R. Olson, San Diego, and Henry M. Miller, Jr., Lakeside, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy  
Filed Mar. 6, 1969, Ser. No. 804,866  
Int. Cl. G09b 23/12

U.S. Cl. 35-19

5 Claims



A rectangularly shaped tank having at least one transparent wall is partially filled with fluids having discrete

specific gravities to ensure a stratified separation of the fluids within the tank. A visual observation of this separation is aided by dyeing the fluids different colors. A reciprocating vane or bellows is suspended in the liquid and, via an appropriate driving mechanism, is reciprocated at various frequencies and magnitudes imparting an internal wave motion to the layered fluids to simulate oceanographic internal waves found in the strata of the ocean as determined by volumes of water having distinct salinities, temperatures, or currents, etc. A variable-speed fan disposed in a recirculating-air system impels air onto the exposed upper surface of the fluids simulating wind conditions and their creation of various surface waves. High-frequency sonar or optical beam forming and receiving device transducers are optionally mounted at opposite ends of the tanks in the separate layers to transmit and receive signals through the layers and thus provide, through appropriate monitoring circuitry and devices, an indication of the effects of surface and internal wave action on the signals.

3,629,959

**METHOD OF AND SYSTEM FOR TRAINING IN FIRING GUIDED MISSILES FROM A MOBILE PLATFORM**

Georges Colin, Essonne, and Pierre de Guillenchmidt, Hauts-de-Seine, both of France, assignors to Giravions Dorand, Suresnes, France

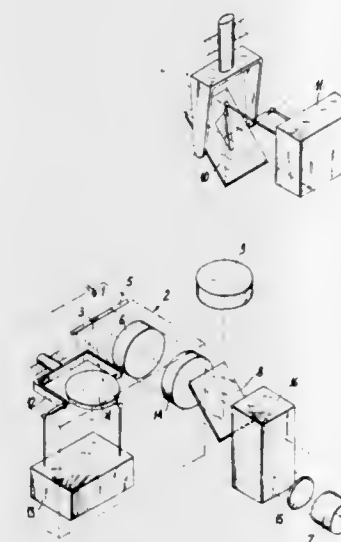
Filed Dec. 16, 1968, Ser. No. 783,889

Claims priority, application France, Feb. 16, 1968, 140097

Int. Cl. F41g 3/26; G09b 9/00

U.S. Cl. 35-25

9 Claims



In a method of and device for training in firing guided missiles from a mobile platform, both a device for generating a spot simulating a trace of the missile, and the eyepiece of an aiming device, are made unitary with said platform, an image of the real landscape is gyroscopically stabilized in relation to the platform, and an image of the spot simulating a trace of the missile is superimposed on the landscape image by introducing the spot image into the eyepiece of the aiming device.

3,629,960

**REMOVABLE COMPARTMENT FOR DESK TOP**

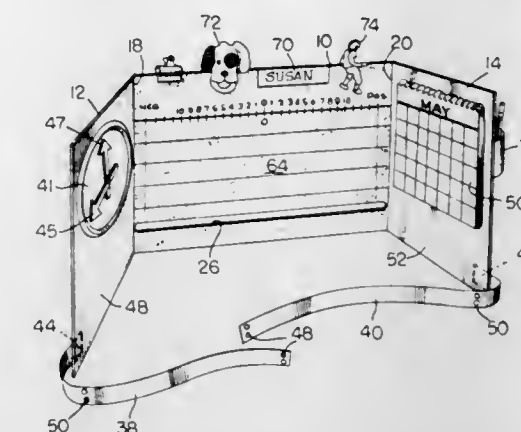
Marjorie P. Roush, 2340 College Ave., Huntington, Ind.  
Filed Dec. 17, 1969, Ser. No. 885,869  
Int. Cl. A47b 41/00

U.S. Cl. 35-60

5 Claims

A removable desk top packet containing multiple learning and teaching devices, which is comprised of three panels of cardboard or the like which surrounds the top of the desk, the middle panel being slotted to receive an edge of the desk

to hold the panels in an upright position, and a buckle draws the two side panels together against the sides of the desk in order to form an enclosure at the desk so that each student



can see and handle and work with learning and teaching aids which are available for mounting on the interior sidewalls and exterior walls of the panels.

3,629,961

**SHOE CONSTRUCTION INCORPORATING CUSHIONED SOCK LINING**

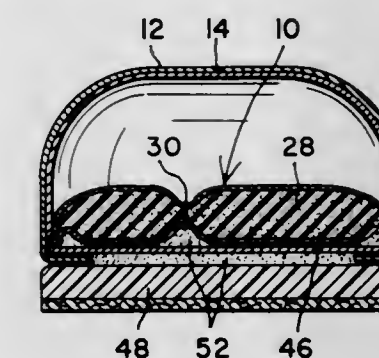
Josef Seif, 63-36 Bourton St., Rego Park, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,346

Int. Cl. A43b 9/00

U.S. Cl. 36-2.5 R

8 Claims



A shoe construction incorporating a sock lining filled with a cushioning material. The lining covering the upper inner surface of the shoe is sewn along its outer periphery to the edges of a cushioned sock lining. An inner sole is adhesively attached to the outer portion of the sock lining and an outer sole is affixed to the inner sole to provide a firm outer surface.

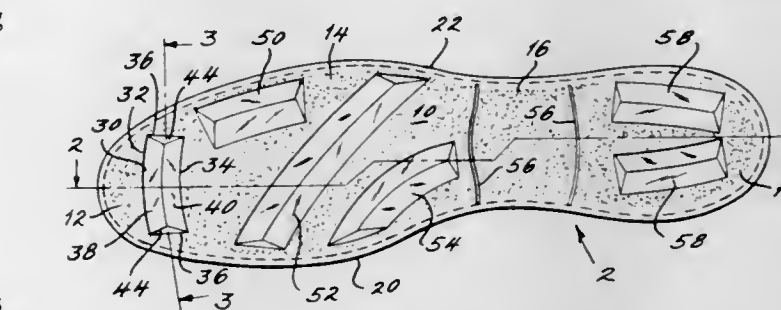
3,629,962

**SHOE OUTSOLE**

Louis C. Brock, 9716 Bonhomme Estates Drive, Olivette, Mo.  
Filed Mar. 4, 1970, Ser. No. 16,364  
Int. Cl. A43b 13/00

U.S. Cl. 36-59 C

9 Claims



An outsole has a generally flat ground-engaging surface and elongated recesses projecting upwardly into the sole



proper from the ground-engaging surface. One recess extends transversely across the toe area of the sole. Another extends longitudinally along the outer side of the sole in the ball area. Still others extend obliquely through the ball area and terminate in the vicinity of the shank area. Two more are arranged side-by-side in the heel area and extend longitudinally therein. All recesses have arcuate longitudinal margins and are V-shaped in transverse cross section. The foregoing arrangement and configurations of the recesses afford excellent footing when quick starts or changes in position are attempted, both in forward and lateral directions.

3,629,963

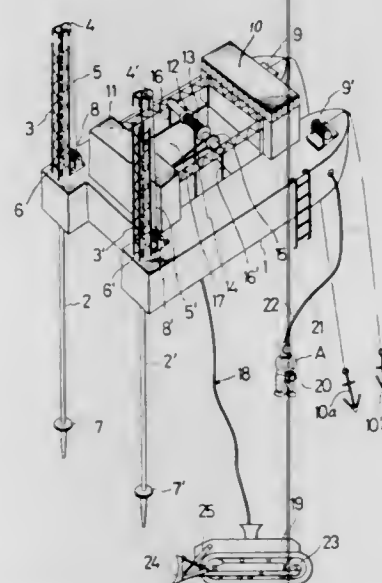
**APPARATUS FOR LEVELLING UNDERWATER GROUND**  
Yasuo Itami, Tokyo, Japan, assignor to Japan Construction and Development Co., Ltd., Tokyo, Japan

Filed May 19, 1969, Ser. No. 828,091

Claims priority, application Japan, Dec. 23, 1968, 43/94681  
Int. Cl. E02f 5/00

U.S. Cl. 37-54

1 Claim



In an apparatus for levelling underwater ground, an underwater bulldozer is suspended from a ship by means of a cable, and a diver is lowered near the bulldozer to remotely manipulate the bulldozer by operating a control panel carried by him. Electric signals from the control panel are supplied to the bulldozer via an electric cable. The ship is provided with a cavity to accommodate the bulldozer, a winch to raise and lower the bulldozer and retractable bulldozer-supporting means.

3,629,964

**EARTH EXCAVATING CUTTING BIT AND MOUNT THEREFOR**

James C. Russel, Route 2, Box 742, Yakima, Wash.

Filed Aug. 11, 1969, Ser. No. 848,870

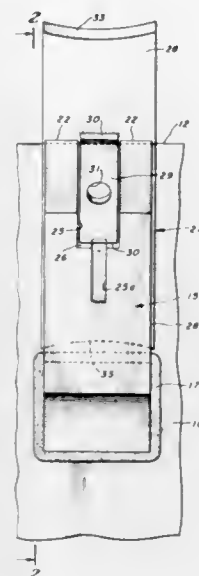
Int. Cl. E02f 9/28

U.S. Cl. 37-141 T

3 Claims

A double ended reversible earth excavating cutter bit comprising two teeth in approximately opposed relation joined together at their butts at an angle with each other of approximately 164°, a relatively long narrow lug integral with and extending from said bit into the included angle between said teeth, said lug having a central recess for applying a punch and hammer thereto for mounting or dismounting said bit. The invention also includes a mount for said bit comprising a heavy steel plate which may be a wall of a back hoe bucket or a rotary trencher bucket or a bit mounting plate on a chain trencher and the amount includes also a bracket welded to said plate and terminating approximately flush with the leading edge of said plate and spaced from said plate for most of its length to form a long tapered open ended slot between the bracket and said plate, each of the teeth on the

opposite ends of said bit being also tapered alike to fit snugly the tapered slot between said bracket and said plate. The bracket has a slot in its outer end which opens into said tapered slot for snugly receiving said lug when a punch is applied to the central recess in said lug and a hammer applied to said punch to drive one of the teeth of said bit into the tapered slot between said bracket and said plate. The lug receiving slot in the end of said bracket has a depth which



will be reached by said lug only after said tooth has been driven very tightly into the tapered slot between said bracket and said plate. Said cutter bit is reversible in said mount by applying a punch and hammer to said lug recess in the opposite direction from which it was applied in driving said bit into said mount. No other means than the friction between the bit and the mount is required to hold the bit in place during operation of the excavating equipment embodying the invention.

3,629,965

**LIGHT BOX**

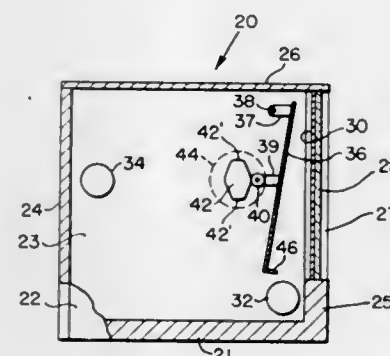
William A. Heindl, Jr., 1171 Palmerston Road, Rochester, N.Y.

Filed July 14, 1969, Ser. No. 841,440

Int. Cl. G09f 11/30

U.S. Cl. 40-63 A

2 Claims



A conventional transparency is removably mounted in an opening in the front of a box containing a translucent shade, which is mounted to pivot about its upper edge toward and away from the transparency, and to closed and open positions, respectively. A first lamp adjacent the lower edge of the shade illuminates the transparency when the shade is in its open position, and a second lamp rearward of the shade may be energized to superimpose an image of the shade onto the transparency, when the shade is closed. Two such shades pivoted relative to one another may be mounted in the box as an alternate construction.

3,629,966

**FISHING LINE STORAGE AND RELEASE DEVICE**

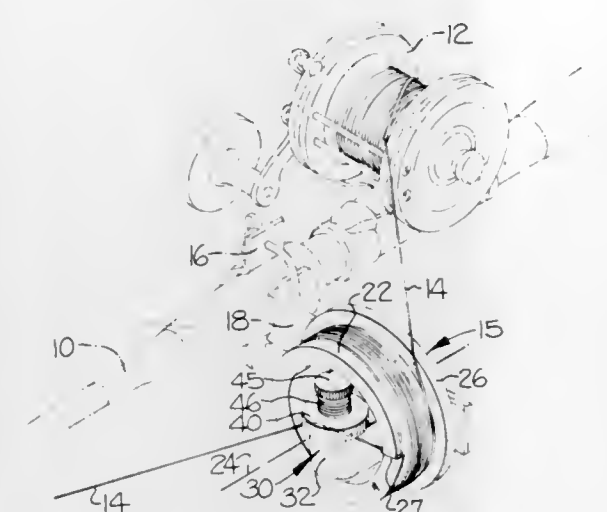
Venancio D. Sanchez, P.O. Box 1544, Charlotte, N.C.

Filed May 22, 1970, Ser. No. 39,933

Int. Cl. A01k 97/00

U.S. Cl. 43-25

10 Claims



A line storage device for use with a fishing rod or the like and which is designed to store a predetermined length of line in front of the reel. The device includes a releasable guide element for releasing the line as slack upon the application of a predetermined tension on the line as would occur when a fish strikes the bait.

3,629,967

**FOLDING BOOK TOY**

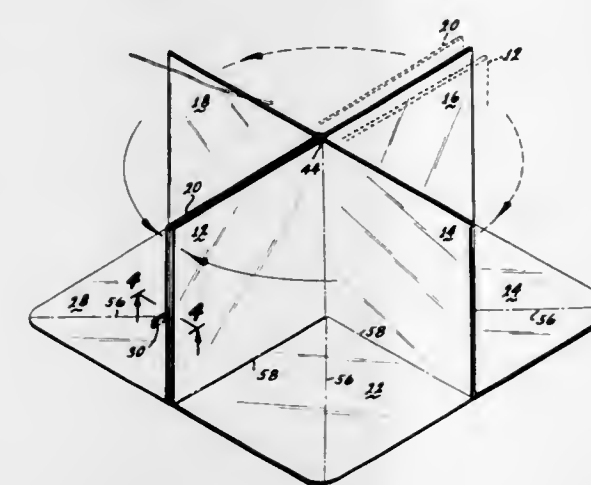
Sidney Bass, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed June 5, 1970, Ser. No. 43,745

Int. Cl. A63h 33/00

U.S. Cl. 46-1 L

12 Claims



A booklike toy which can be opened to display up to four different stage settings, each setting including a pair of walls at right angles and a floor. The toy is formed from a single sheet of thin cardboard formed with a plurality of successive page portions positioned in a row and separated by folding lines for folding, accordion style, into a book. The sheet also includes platform portions, each extending laterally from a page portion, a pair of adjacent platform portions glued together in a lap joint so they lie taut when the adjacent pages are opened to a 90° angle. The sheet also includes a pair of cover portions with a spine strip between them, the first and second cover portions respectively glued to a first and last of the pages to create a hard-cover book appearance.

3,629,968

**TOY VEHICLE**

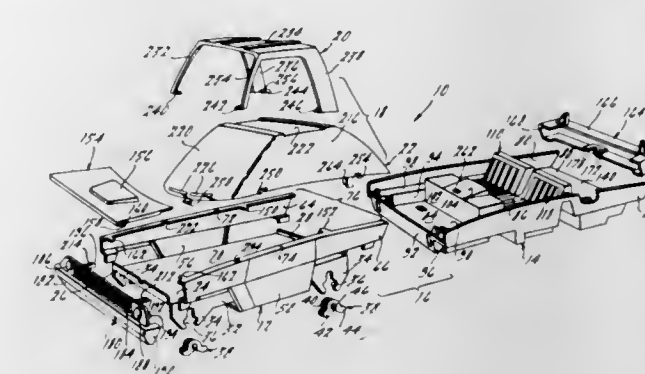
Robert S. Linstead, Rockford, Ill., assignor to King-Seeley Thermos Co., Ann Arbor, Mich.

Filed Jan. 17, 1969, Ser. No. 791,889

Int. Cl. A63h 33/06

U.S. Cl. 46-17

29 Claims



A toy vehicle including a body assembly comprising a generally U-shaped body member including a lower base section and laterally spaced upstanding side sections providing front and rear fenders and an access door along each side of the vehicle, an insert member having a lateral dimension approximately equal to the lateral spacing between the side sections and a longitudinal dimension approximately equal to the length of the body member and providing an engine compartment, an operator and passenger compartment and a luggage compartment interiorly of the body member, means for securing the body member and insert member against relative movement therebetween, and a one-piece transversely extending generally upright windshield element and a top subassembly adapted to be interchangeably mounted on the body assembly.

3,629,969

**SEGMENTED MODEL HOUSE**

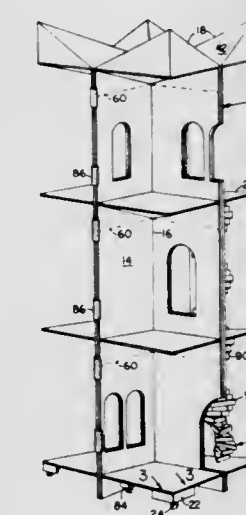
Bruce C. Dodd, 745 Santa Barbara Road, Berkeley, Calif.

Filed Apr. 28, 1969, Ser. No. 819,849

Int. Cl. A63h 33/16

U.S. Cl. 46-21

7 Claims



A toy dollhouse comprised of a series of movable hinged-together sections having a pair of vertical wall portions connected at a corner which form the exterior walls of the house in its normal state with the sections folded together and which form interior walls or partitions viewed from inside the house when the sections are folded outwardly in various positions, thereby exposing and providing access to the house interior. Each house section may include a series of floor members supported on its vertical wall portions in addition to top and bottom members.



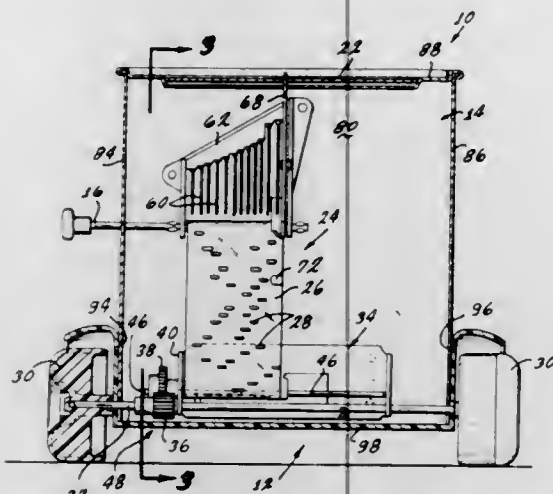
### 3,629,970 PULL TOY

William R. Baynes, Palos Verdes Peninsula; Thomas G. Frickanisce, Hawthorne; William Hart, Torrance; Andrew M. Holland, Santa Monica, and Joseph P. Morris, Huntington Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 20, 1970, Ser. No. 12,946  
Int. Cl. A63h 5/00

U.S. Cl. 46—111

5 Claims



A musical jack-in-the-box toy which can be operated by pulling it along the ground or by turning a handle, comprising a sheet metal box on a molded plastic carriage. The carriage has walls that form a recess for receiving the sheet metal box, while the box has sidewalls but no bottom wall. In order to prevent inward buckling of the box sidewalls, a bottom wall of the carriage has pins to push the box walls outwardly against the carriage sidewalls. A clutch for coupling the carriage wheels to the music mechanism includes an integral pawl member with a hub and pawls joined by a thin section of material which acts as a hinge.

### 3,629,971

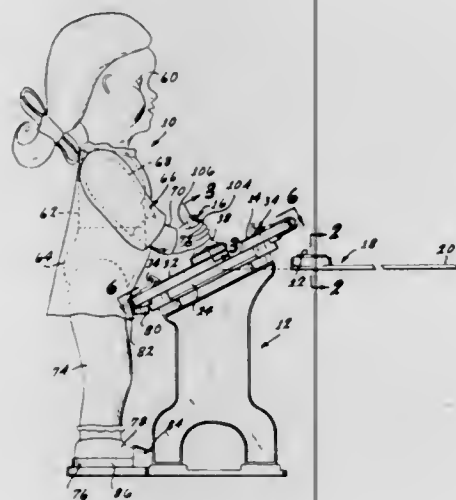
#### DRAWING DOLL ASSEMBLY

Earl O. Antell, Gardena; Jack L. Bartus, Cerritos; Gregory M. Gunther, Palos Verdes Peninsula; Warren D. Kabot, Torrance; J. Stephen Lewis, Pacific Palisades; Donald J. Maurer, Torrance; Richard L. May; Brian G. Osborne, both of Manhattan Beach; John W. Ryan, Los Angeles, and Floyd E. Schlau, Palos Verdes Peninsula, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Mar. 4, 1970, Ser. No. 16,450  
Int. Cl. A63h 33/26

U.S. Cl. 46—240

12 Claims



Drawing apparatus including a doll with pivotable joints, a desk which can capture the shoes of the doll so that the doll's arms lie over the upper desk surface, a drawing instrument

designed to be held by a hand of the doll to feed a crayon therefrom so that the doll can draw on paper laid on the upper surface of the desk, and a wand for movement by a child, the wand having a magnet that can be moved around a region beneath the upper desk surface to pull the drawing instrument and crayon therein along a sheet of paper on the desk. A template defining a design to be drawn is placed on the desk beneath a sheet of paper, so that movement of the crayon results in the template design being drawn on the paper. The drawing instrument includes a spring or flat plate of rubber with a hole through which a crayon can be inserted so that the crayon is held tightly in place, and so that the crayon tends to be fed outwardly with a predetermined force.

### 3,629,972

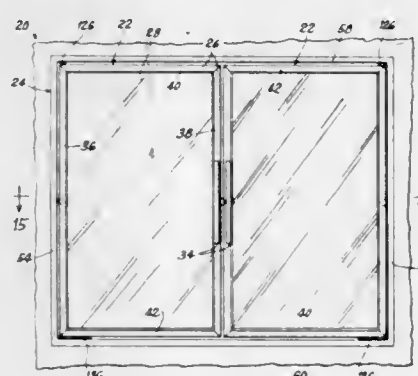
#### REFRIGERATOR DOOR CONSTRUCTION

Thomas R. Rehberg, and Francis M. Niekrasz, both of Homewood, Ill., assignors to Ardco, Inc., Chicago, Ill.

Filed Feb. 9, 1970, Ser. No. 9,514  
Int. Cl. E06b 7/12

U.S. Cl. 49—70

12 Claims



One or more glass panel refrigerator doors are swingably mounted in a mounting frame. Each door is mounted so that it can be reversed between left- and right-hand swing. This is accomplished by providing upper and lower hinge pins rotatably mounted in the door, the pins having noncircular elements projecting from the door. A torsion spring is mounted in the door and is connected between one of the hinge pins and an adjusting member for regulating the initial stress in the spring. The noncircular elements of the hinge pins are engageable with socket members on the mounting frame. The socket members have noncircular openings and are movable between left- and right-hand positions on the mounting frame. Each door is reversed by removing the door, moving the socket elements to the opposite positions, inverting the door, and reinserting it into the frame. Each adjusting member is hidden when the door is closed, but is accessible when the door is open through a rearwardly facing recess formed in the door along the hinge axis. The recess is also employed to receive the connecting cord for the door heater. The cord is fitted with a plug which is positioned just behind the recess. To provide for reversal of the door, receptacles capable of accommodating left- or right-hand doors are mounted on the mounting frame to receive the plug in the left- and right-hand positions of the door.

### 3,629,973

#### DOOR-OPERATING MECHANISM

Frank Bond, 1418 Wexford Ave., Parma, Ohio; Robert H. Boucherle, 266 Morewood Drive, Avon Lake, Ohio, and Everett K. Mentzer, 2010 Thalia Ave., Youngstown, Ohio

Filed Jan. 2, 1970, Ser. No. 294  
Int. Cl. E05f 13/04, 15/04

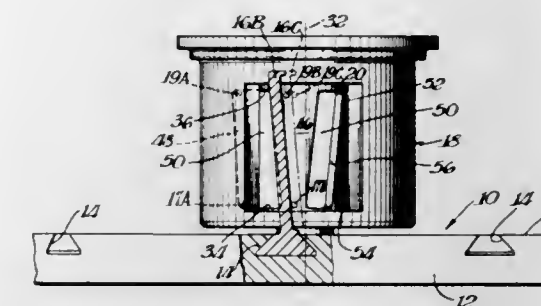
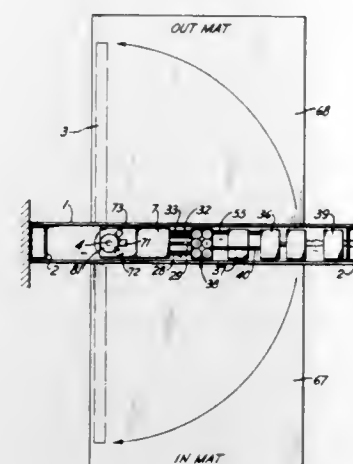
U.S. Cl. 49—264

7 Claims

First and second fluid pressure operated means are provided for swinging a door open in opposite directions. There

are means actuated by a person approaching the door from either direction for supplying pressure fluid at a predetermined rate to the fluid pressure operated means that will

are inclined with respect to the planar support surface of the runnerhead. An impeller case is mounted at the center of the runnerhead with a slotted impeller disposed in the impeller



swing the door away from him. In case another person approaches the door from the direction toward which the door is opening, means are actuated by that person for reducing the opening speed of the door.

Each impeller slot includes a particle projecting edge which is inclined parallel to a corresponding vane in the runnerhead.

### 3,629,976

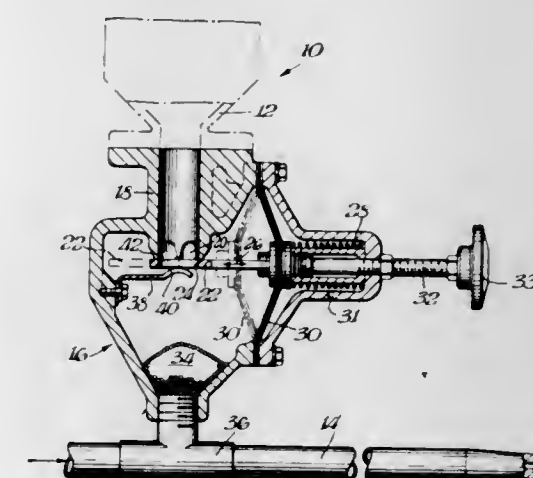
#### ABRASIVE-TREATING APPARATUS

James H. Carpenter, Jr., Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed June 27, 1969, Ser. No. 837,271  
Int. Cl. B24c 3/00

U.S. Cl. 51—12

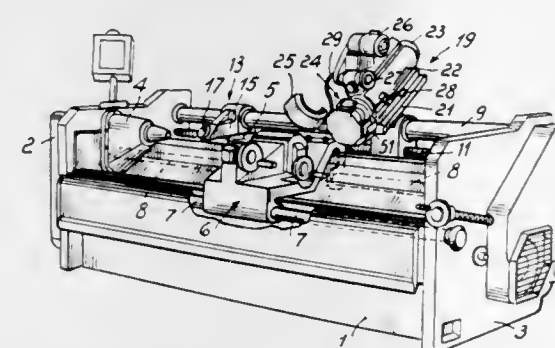
9 Claims



3,629,974  
POLISHING AND DIAMOND-TRUING MACHINE FOR PHOTOENGRAVING  
Giorgio Andreotti, Via Don Gnocchi, 29 Milan, Italy  
Filed Jan. 21, 1970, Ser. No. 4,590  
Claims priority, application Italy, June 20, 1969, 18477 A/69  
Int. Cl. B24b 7/00

U.S. Cl. 51—5

6 Claims



A polishing and diamond-truing machine for photoengraving cylinders wherein a frame on which a photoengraving cylinder is rotatably supported and operatively controlled in order to be machined by a diamond-truing tool unit mounted on an arm projecting transverse to said frame.

A treating apparatus includes particle feed means which supplied treating particles, such as abrasive shot, to a nozzle under pressure. Metering means is disposed between the feed means and nozzle and is actuated by the pressure to open and close communication therebetween. The metering means includes a particle outlet extending from the feed means and having a defined geometric shape with a metering gate being in sliding contact with the outlet. The metering gate also has an opening of a defined geometric shape so that the degree of registry of the openings controls the amount of particle flow to the nozzle.

### 3,629,975

#### PARTICLE-THROWING APPARATUS

Harper W. Good, Waynesboro, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,289  
Int. Cl. B24c 3/00

U.S. Cl. 51—9

25 Claims

A particle-throwing apparatus comprises a runnerhead having a plurality of radially mounted throwing vanes which

### 3,629,977

#### WORK-FEEDING DEVICE

Robert L. Holden, Westboro, Mass., assignor to Norton Company, Worcester, Mass.

Filed Dec. 19, 1969, Ser. No. 886,578  
Int. Cl. B24b 7/02

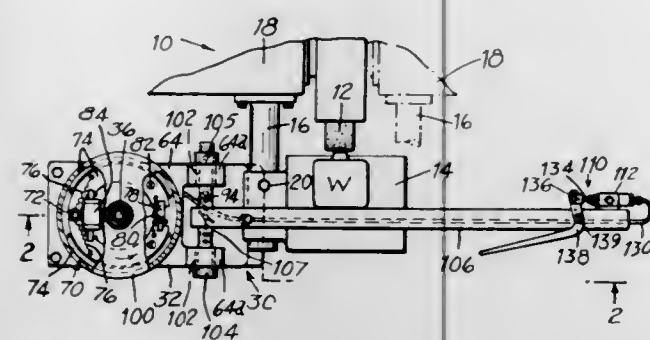
U.S. Cl. 51—98 R

10 Claims

A powered, adjustable, and pivotable elongated pressure bar for greatly assisting a snagging machine operator to feed



at various feed rates workpieces such as foundry castings into a multipoint cutting tool such as a grinding wheel or abrasive belt to rapidly remove fins, gates and risers therefrom. A high-torque and slowly rotating drive means is coupled by a variable fluid pressure actuated friction clutch mechanism to



a driven member which pivots the pressure bar held by the operator. A remote control is provided on the bar for the operator to actuate and control the friction clutch mechanism and thereby cause the pressure bar to exert the desired pressure against a workpiece placed between it and the cutting tool.

3,629,978

#### APPARATUS WITH SELECTIVELY RIGID AND FLEXIBLE SUPPORT CABLE

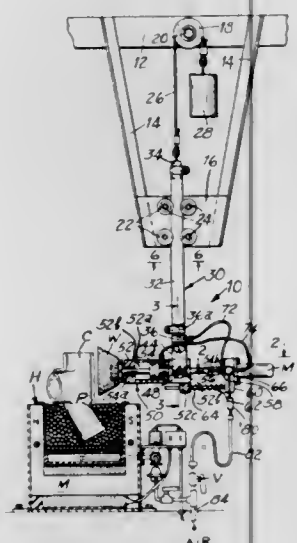
Loring Coes, Jr., Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Filed Apr. 20, 1970, Ser. No. 30,004

Int. Cl. B24b 7/00; F16m 1/00

U.S. Cl. 51-126

12 Claims



An easily manually operated, positioned, and controlled apparatus having a fluid pressure system to drive and/or feed a tool into a workpiece. A toolhead is pivotally supported, for movement in various directions, at an end of an unsupported portion of a normally rigid movable composite cable extending longitudinally above a floor from between guide rollers mounted on a support. The composite cable is rigidified by a radially compressed bundle of flexible strands of wires held in frictional engagement by the contracting force of a resilient flexible tube expanded thereover. Hence, the composite cable acts like a solid shaft providing greater resistance to bending by the fluid pressure feed means. Fluid under pressure is admitted to inflate the resilient tube and separate the wires whereby the composite cable is easily flexed to position the toolhead adjacent the workpiece whereupon the fluid pressure is turned off to rigidify the flexed composite cable to retain the toolhead in the desired position and feed the tool therefrom.

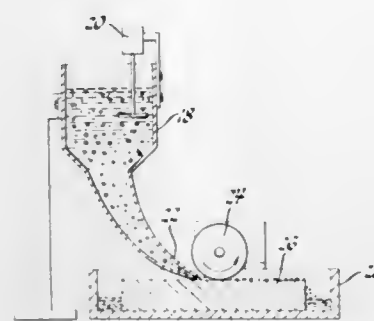
**3,629,979**  
**PROCESS OF ABRADING WITH GERMANIUM DIOXIDE**  
Walter A. Albers, Jr., Northville, and Don E. Swets, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1970, Ser. No. 28,772

Int. Cl. B24b 1/00

U.S. Cl. 51-317

3 Claims



The abrasive qualities of tetragonal germanium dioxide are described, along with compositions and articles made with a tetragonal germanium dioxide abrasive. Techniques for using tetragonal germanium dioxide as an abrasive are also described.

3,629,980

#### MULTIGLAZED WINDOW UNIT

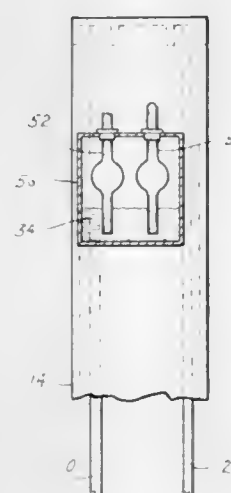
Charles K. Hordis, Cinnaminson, N.J., assignor to Hordis Bros., Inc., Pennsauken, N.J.

Filed Jan. 5, 1970, Ser. No. 52

Int. Cl. F16k 9/00

U.S. Cl. 52-1

1 Claim



A multiglazed window having a liquid-sealed venting system effective to normally provide a hermetic seal to the window interior but permitting airflow when the pressure differential between said interior and the surrounding atmosphere exceeds a predetermined value to thereby effectively limit such differential pressure.

3,629,981

#### ADJUSTABLE HEIGHT STRUCTURE COVER FOR MANHOLES AND THE LIKE

Joseph S. McCaffery, 1524 Wellington St., Oakland, Calif.

Continuation of application Ser. No. 671,012, Sept. 27, 1967,

now abandoned. This application Oct. 6, 1969, Ser. No.

867,117

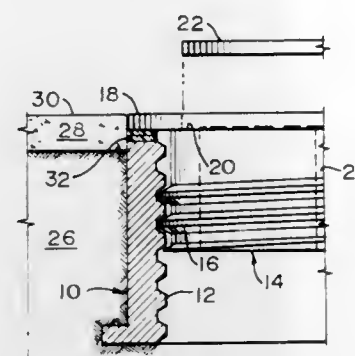
Int. Cl. E02d 29/14

U.S. Cl. 52-19

7 Claims

An adjustable height assembly for supporting a cover over a subterranean access opening wherein a cylindrical frame

structure having interior coaxial acme threads is adapted to be permanently located in nonrotatable submerged position. An inner sleeve, having a conformingly shaped acme thread about the outer surface thereof, is provided to be received in threaded engagement with the cylindrical frame structure, the inner sleeve being adjustable in height by rotation and



designed to support a load-bearing disc-shaped cover flush with the surface surrounding the access opening. The threaded portions of the frame structure and inner sleeve are effectively sealed from the surrounding earth and pavement so that height adjustment may be relatively easily accomplished even after a prolonged period of installation and use.

3,629,982

#### PORTABLE FOLDABLE SHELTER

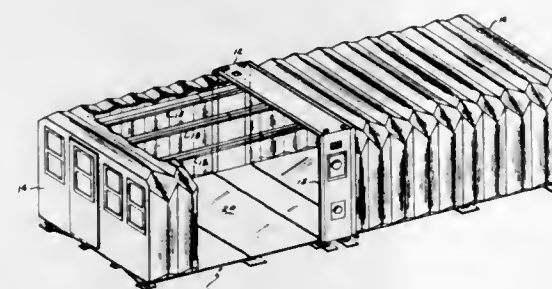
Joseph M. Ballay; William R. Wakefield, both of Cincinnati, Ohio; Lawrence L. Fabbro, River Vale, N.J., and James M. Alexander, Jr., Cincinnati, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Filed July 15, 1970, Ser. No. 54,952

Int. Cl. E04b 1/344, 1/347, 7/04

U.S. Cl. 52-69

3 Claims



A portable shelter having a storage container and a roof and wall section that folds in 180° folded configuration for storage in the storage container, leaving a large storage space in the lower portion of the container. Foldable roof support beams are stored below the roof and wall section in the container. End walls are hinged to floor sections which fold out from opposite sides of the storage container. Flysheets are secured to the roof and wall sections and have locking seals which attach to flanges on the central container endwalls and floor to provide seals. Leveling jacks are attached to the floor sections to level the floor of the shelter.

3,629,983

#### PRECONSTRUCTED MULTIPLE UNIT HOUSING

Louis J. Jenn, 4917 Laurel Circle, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 744,721, July 15,

1968, now abandoned. This application Sept. 2, 1969, Ser.

No. 854,671

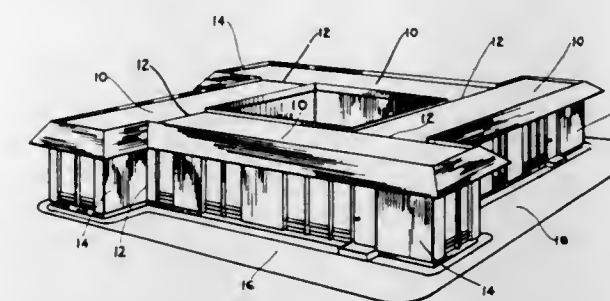
Int. Cl. E04h 1/02; E04b 1/348

U.S. Cl. 52-169

18 Claims

This disclosure is to a new and useful physical arrangement of substantial preconstructed building modules or living units

which can be manufactured in a plant and then transported to location and there assembled together in a manner to



achieve styling, efficiency of construction and economy of land use.

3,629,984

#### MODULAR PANEL WALL SYSTEM

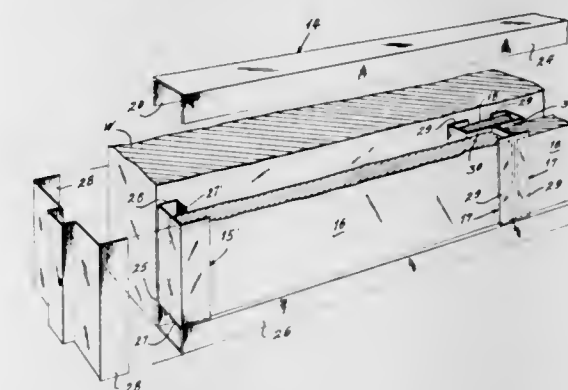
Cletus Richardson, 3419 A Winnebago St., St. Louis, Mo.

Filed May 19, 1970, Ser. No. 38,749

Int. Cl. E04h 1/00

U.S. Cl. 52-241

7 Claims



A system of single face and double faced panel walls having vertically aligned ceiling and floor channel members, grooved studs extending vertically between the channel members, wall forming panels marginally engaged for support in the channel members and grooves of the studs and locking key members engaged in the vertical stud grooves to unite the studs and panels in a substantially rigid wall. In the single face wall the key members may be hidden or more or less revealed, and in the double face wall the key members may be hidden or more or less revealed so that in either character of assembly the key members may when revealed form a wall panel.

3,629,985

#### PREFABRICATED WATER TANK

Chozaburo Ueno, Chiba-shi, Japan, assignor to Kawasaki Steel Corporation, Kobe-shi, Japan

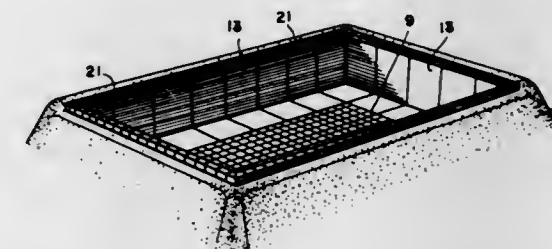
Continuation-in-part of application Ser. No. 697,773, Jan. 15, 1968, now Patent No. 3,500,602. This application Jan. 19,

1970, Ser. No. 3,796

Int. Cl. E02d 27/46; E04h 7/02

U.S. Cl. 52-265

2 Claims



A lightweight water tank construction having sidewalls and a grid base, the grid base being formed of a plurality of connecting plates, channel members and capping members designed so as to allow the bottom structure to relatively shift



to absorb forces created by ground swelling or water pressure.

3,629,986

## EXPANSION JOINT FILLER

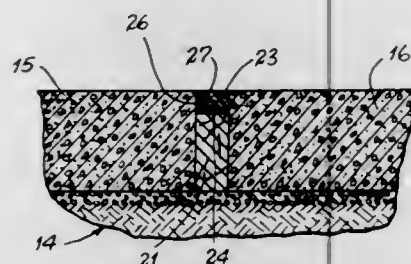
Clarence A. Klittich, St. Louis, Mo., assignor to MFG Associates, Inc., St. Louis, Mo.

Filed Dec. 22, 1969, Ser. No. 887,173

Int. Cl. E01c 11/10

U.S. Cl. 52—396

6 Claims



An expansion joint assembly used between concrete slabs. A lower expansion joint strip that becomes permanently positioned between the concrete slabs and a removable topping strip that exposes a controlled depth groove above the expansion joint strip for receiving a sealant. In a modification, the upper edge of the expansion joint strip is coated with a material that will not bond or adhere to the sealant, permitting unrestricted lateral expansion and contraction of the sealant.

## ERRATUM

For Class 52—537 see:  
Patent No. 3,629,988

3,629,987

## BAG FORMING, FILLING AND SEALING MACHINE

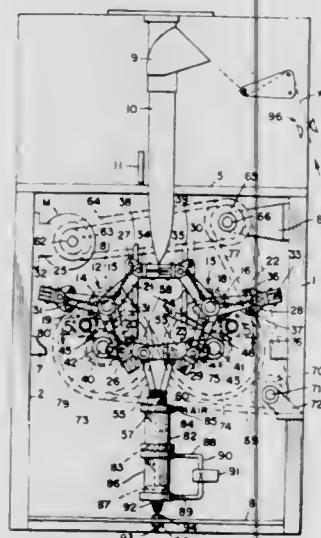
King L. Klopfenstein, Prospect Heights, and Erik O. Vilen, Niles, both of Ill., assignors to Triangle Package Machinery Company, Chicago, Ill.

Filed May 27, 1970, Ser. No. 40,753

Int. Cl. B65b 9/12

U.S. Cl. 53—182

15 Claims



Flexible bags are formed by making spaced transverse seals along a continuous web formed by multiple layers of a heat-sealable material. The seals are made by mating sealing and cutting elements extending radially from a pair of rotary members or wheels rotating in opposite directions, to which heat is supplied by suitable means, said elements clamping the web therebetween, thus sealing and cutting and advancing the web as the members rotate. In a vertical machine the

transverse seals form the bottom of one bag and the closed top of the preceding bag after it has been filled with the desired commodity. The rotary members are mounted on shafts which are displaceable toward and away from each other, thereby enabling the sealing members to move in a straight line together during the sealing operation. Means are provided for controlling the timing of the meeting and separating of the sealing elements, thereby enabling the making of bags of different lengths either automatically or by manual adjustment.

3,629,988

## ROOFING TILES

Jan Hendricus Zylstra, Auckland, New Zealand, assignor to

Alex Harvey Industries Limited, Auckland, New Zealand

Filed Feb. 16, 1970, Ser. No. 11,801

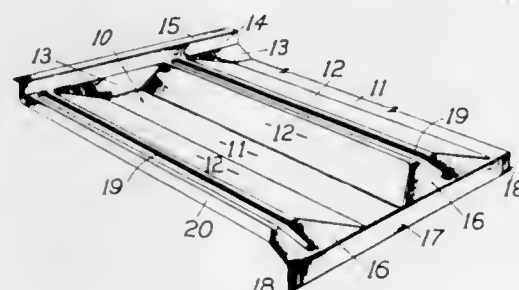
Claims priority, application New Zealand, Mar. 31, 1969,

155963

Int. Cl. E04d 3/362

U.S. Cl. 52—537

6 Claims



A roofing panel having a pattern of well-defined fluting extending across it with an upturned one edge and a downturned opposite edge extending across ends of the flutings characterized in that at least at one end of the pattern has bevelled or sloping areas.

3,629,989

## APPARATUS FOR WRAPPER INSERTS AND COVERINGS OF CUP-SHAPED CONTAINERS

Gunter Reinecke, Wuppertal-Elberfeld, Germany, assignor to Benz & Hilges G.m.b.H., Dusseldorf, Germany

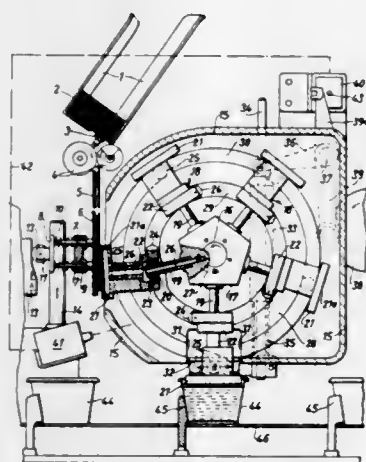
Filed Nov. 18, 1969, Ser. No. 877,737

Claims priority, application Germany, Nov. 29, 1968, P 18 11 677.3

Int. Cl. B65b 57/02, 7/28

U.S. Cl. 53—64

5 Claims



An apparatus for insertion of cover sheets and for covering up of cup-shaped containers, which comprises a pile of sheets

and of covers, respectively, and a removal device. A conveyor device is provided for setting individual workpieces into and on the containers, respectively. The conveyor device comprises at least two movement-controlled closure-applying units continuously revolving within a guide path closed on itself. The closure-applying units include closure-engaging members and the latter receive workpieces. Means are provided for controlling the closure-engaging members in such manner, that in feeding planes of the workpieces, extending tangentially to different paths, as well as of the containers, a joint engagement track making possible a workpiece change, is contained for the closure-engaging members.

3,629,990

## MECHANISM FOR FORMING SHRINK FILM PACKAGES

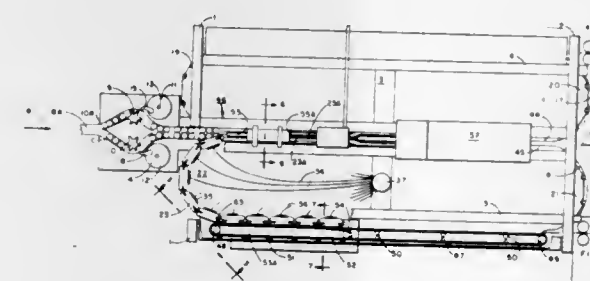
Rodney K. Calvert, Dunwoody; Arthur B. Viescas, Decatur, and Alton J. Fishback, Austell, all of Ga., assignors to The Mead Corporation

Filed Apr. 24, 1970, Ser. No. 31,688

Int. Cl. B65b 9/04, 47/10

U.S. Cl. 53—184

3 Claims



Two series of endless chains each comprising a plurality of traylike open half shells pivotally interconnected at their ends are arranged in close proximity to each other so that the working reaches of the chains are parallel and so that the open shells of one chain are disposed in opposed relation to the open shells of the other chain to form a series of cavities along the working reaches of the chains. A strip of heat-sealable shrink film is disposed along and held against the open faces of the half-shells of each of the chains and vacuum means is employed to draw the film into lining relation with each of the half-shells. An assembly of items to be packaged is inserted into the space between two opposed half-shells adjacent the entry end of the working reaches of both chains. After the half-shells of one reach come into biased engagement with the open half-shells of the other reach to envelope an assembly of items to be packaged, a jet of heated air is applied along the top and bottom edges of the shells to form top and bottom seals between the strips thereby to form a series of interconnected packages. After the packages are formed by heat sealing, the mating shells are moved in opposite directions away from each other and heated air is subsequently applied to each package so as to shrink the film somewhat thereby to preserve the integrity of the package. Preferably the film is of the nonoriented-type and is preheated before being drawn into the half-shells.

After a plurality of packages are formed in interconnected following relationship by the mechanism and method of this invention, the packages are severed one from another by any suitable means. One arrangement for severing interconnected packages is disclosed and claimed in U.S. Pat. application Ser. No. 17,459 filed Mar. 9, 1970. While the package itself may take several specific forms, a typical package is disclosed and claimed in U.S. Pat. application Ser. No. 49,270 filed Nov. 3, 1970 wherein a package having open ends is disclosed.

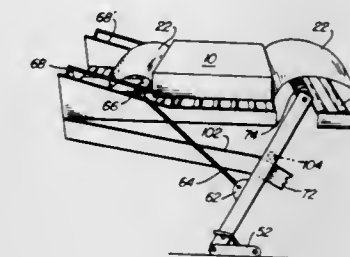
3,629,991  
BUNDLE-WRAPPING APPARATUS  
George H. Sundin, Duluth, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Oct. 2, 1969, Ser. No. 863,299

Int. Cl. B65b 11/10, 49/16

U.S. Cl. 53—209

7 Claims



A bundle-wrapping device is disclosed for wrapping paper about a bundle moving along a conveyor in the direction of movement of the bundle. The wrapping roller for wrapping the paper about the bundle is activated directly by the bundle moving along the conveyor.

3,629,992

## CONVEYOR ARRANGEMENT

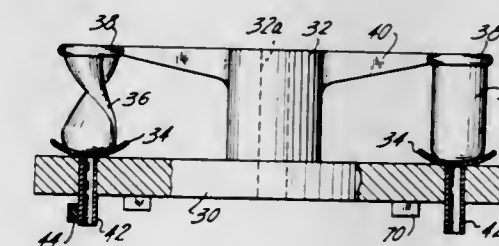
Howard Price, Kings Point, N.Y., and Seymour Wallick, Clifton, N.J., assignors to International Patents & Development Corporation, Kings Point, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,656

Int. Cl. E04b 2/00

U.S. Cl. 53—370

11 Claims



A conveyor arrangement in which a rotatable circular platform is indexed with respect to the discharge locations of refuse compactors. A Y-shaped structure beneath the circular platform carries a plurality of wheels which support the platform while, at the same time, permitting rotational motion thereof with substantially small frictional resistance. A motor and geared speed-reduction unit supported by the Y-shaped structural frame is mechanically coupled to the platform. A closure arrangement, extending angularly along a portion of the angular path of the platform, rotates the base of a flexible container bag for the purpose of closing the bag at its neck after having been filled with compacted refuse.

3,629,993

## APPARATUS FOR WRAPPING ARTICLES IN STRETCHABLE FILM

Albert H. Chant, Jr., Holland, Pa., assignor to J. B. Dove, Inc., Levittown, Pa.

Filed May 12, 1969, Ser. No. 823,736

Int. Cl. B65b 7/08, 51/10, 51/32

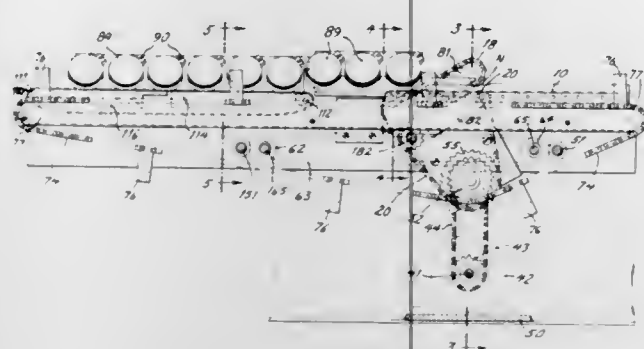
U.S. Cl. 53—379

10 Claims

Apparatus is disclosed for completing the wrapping of articles in heat-sealable stretchable plastic film. The articles are presented to the apparatus encircled in a tube of film, with portions of the tube projecting beyond each side of the article. These projecting portions are gripped at each side by



gripper chains and pulled diagonally downward in a substantially vertical plane to stretch the film tightly about the arti-



cle. The stretched film is then folded on to the underside of the article and heat sealed.

3,629,994

## CONDENSING UNIT AND METHOD OF USE

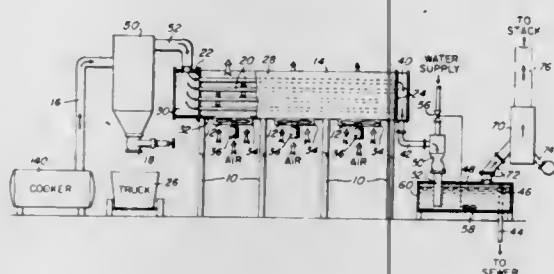
Royal R. Jones, Birmingham, Ala., assignor to The Cincinnati Butchers' Supply Company, Cincinnati, Ohio

Filed Mar. 30, 1970, Ser. No. 23,710

Int. Cl. B01d 50/00

U.S. Cl. 55-20

15 Claims



The condensing unit efficiently and effectively treats meat packing plant waste to obviate production of objectionably odorous gases, liquids, and solids which could otherwise pollute surrounding air and nearby watercourses; the treatment being characterized by a two-step condensing operation in which the second stage operates only in the event of overburdening of the first stage of operation.

3,629,995

## A METHOD FOR REDUCING MOISTURE CONTENT IN GAS

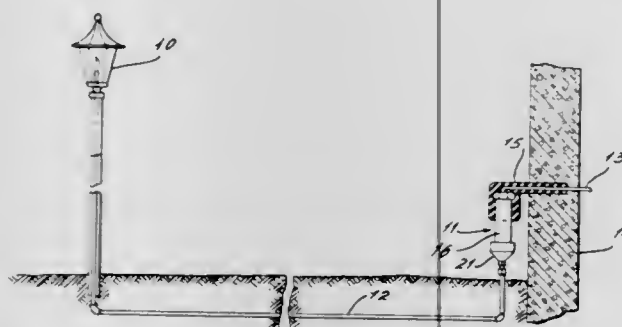
John Moten, Jr., University City, Mo., and Walter A. Kluthe, East St. Louis, Ill., assignors to Laclede Gas Company, St. Louis, Mo.

Filed Dec. 29, 1969, Ser. No. 888,403

Int. Cl. B01d 53/04

U.S. Cl. 55-33

6 Claims



A method for removing a portion of the moisture from gas streams by passing the gas stream over an efflorescent salt. The invention is particularly useful for natural gaslines from heated basements to outside appliances, such as gaslights,

barbecue pits and gasmeters. The efflorescent salt removes sufficient water from the gas in cold weather to keep the line from freezing or moisture condensing in it and the salt regenerates itself in warm outside temperatures by releasing its retained moisture to the gas stream which then can handle more moisture without freezing.

3,629,996

## CELLULOSICS FOR THE REMOVAL OF SULFUR DIOXIDE FROM FLUE GAS STREAMS

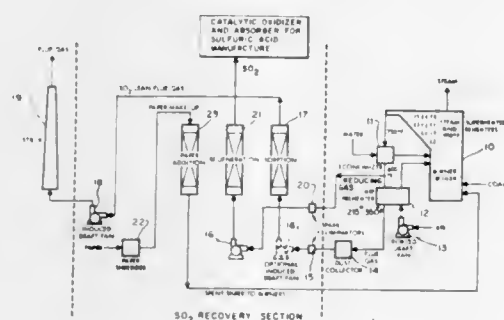
Robert A. Meyers, Encino; John S. Land, Hermosa Beach; Christopher C. Shih, Inglewood, and Jerry L. Lewis, Cypress, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 19, 1970, Ser. No. 12,770

Int. Cl. B01d 53/04, 47/00; A23k 1/00

U.S. Cl. 55-73

7 Claims



Sulfur dioxide contained in flue gases from a coal-burning, thermal generating plant are sorbed on finely divided cellulose such as shredded paper at temperatures in the range of 215° to 300° F. After the cellulose has been saturated with the sulfur dioxide, it is desorbed by flue gas at about 350°-450° F. The desorbed sulfur dioxide may be then conveniently forwarded to a plant for processing to sulfuric acid. Spent cellulose may be forwarded to the plant for burning or it may be further digested to carbohydrates.

3,629,997

## PROCESS FOR PRODUCING METHANOL-FORMALDEHYDE SOLUTION OF LOW-WATER CONTENT

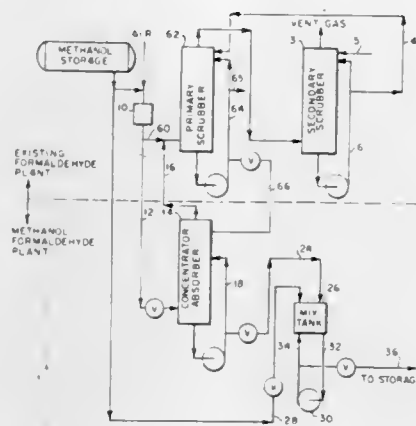
Charles William DeMuth, Unadilla, N.Y., assignor to Borden Inc., New York, N.Y.

Filed May 8, 1970, Ser. No. 35,847

Int. Cl. B01d 47/00

U.S. Cl. 55-89

14 Claims



A gaseous stream from a formaldehyde converter is introduced into a concentrator-absorber wherein the gaseous stream is scrubbed countercurrently with an aqueous formaldehyde solution from a water absorber of a conventional formaldehyde plant. The bottom stream withdrawn from the concentrator-absorber is recirculated to the top of the concentrator-absorber and a portion of this stream is withdrawn

and mixed with methanol to provide a methanol-formaldehyde solution of the desired concentration.

3,629,998

## POWDER POLYETHYLENE ADSORBENT

Masaaki Takehisa, Takasai-shi, Japan, assignor to Japan Atomic Research Institute

Filed Feb. 23, 1968, Ser. No. 707,856

Claims priority, application Japan, Mar. 2, 1967, 42/12834

Int. Cl. B01d 53/04

U.S. Cl. 55-71

14 Claims



Powder polyethylene produced by polymerizing ethylene in a gaseous phase or in a liquid phase or a gas-liquid mixed system, where the liquid comprises a solvent or solvents in which the polyethylene does not dissolve, by means of an ionizing radiation or a radical initiator at a temperature lower than the melting point of the polyethylene to be produced has unique surface properties and adsorbs vapors of various organic compounds and volatile fission products. Further, powder polyethylene which has undergone a modification treatment such as cross-linking, graft polymerization or coating of particles with other polymer materials serves similarly as an adsorbent.

3,629,999

## CLEAN AIR TARGET DEVICE

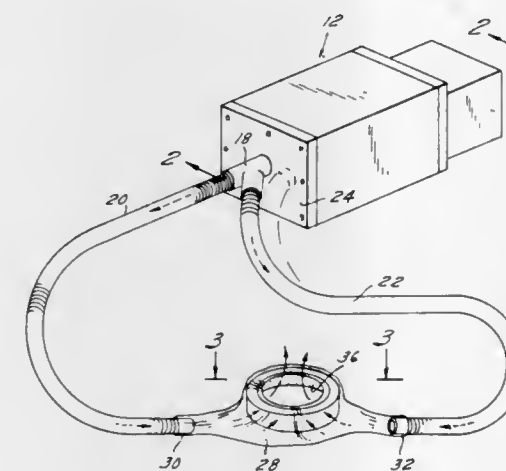
Robert Claude Marsh, Albuquerque, N. Mex., and James Edward Woods, Manhattan, Kans., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Aug. 20, 1969, Ser. No. 851,604

Int. Cl. B01d 46/00

U.S. Cl. 55-97

5 Claims



A unit for providing particulate control of a target area comprises means for generating an airflow, means for effec-

tuating a substantially contaminant-free conditioning of said airflow located in the path of said airflow, an annular diffuser having a radially projecting lip on the superior edge of the inner periphery of said diffuser, and an air plenum capable of uniformly directing said conditioned airflow against the outer surface of said diffuser. A method for providing particulate control of a target area comprises generating a decontaminated airflow and directing said airflow uniformly about the outer surface of an annular diffuser, said diffuser having a radially projecting lip on the superior edge of the inner periphery of said diffuser, whereby an object placed within the well of said diffuser is protected from internal and external contamination by a vertically flowing air barrier.

3,630,000

## ELECTROSTATIC AIR CLEANER

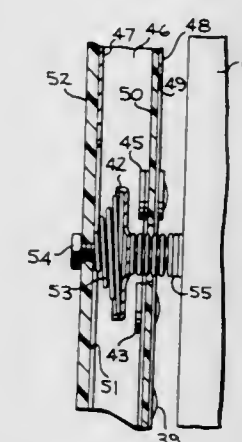
Donald M. Mullings, Yardley, Pa., assignor to General Electric Company

Filed Nov. 28, 1969, Ser. No. 880,749

Int. Cl. B03c 3/02

U.S. Cl. 55-139

1 Claim



An electrostatic air cleaner having a deenergizing or grounding device operative upon opening of a closure member to ground electrical components within the cleaner cabinet. The device includes at least two spaced contacts and a bridging element. One of the contacts is connected to ground and the other to a component within the cabinet. A spring biases the bridging element toward engagement with both contacts. An operator connected to the bridging element forces the bridging element out of engagement with the contacts when the closure member engages the operator upon closing of the closure member. The operator is resilient to compensate for variances but is less resilient than the spring so as to overcome the spring.

3,630,001

## ATMOSPHERIC CONTROL APPARATUS FOR A SEALED STORAGE STRUCTURE

Frank D. Hamerski, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Apr. 21, 1969, Ser. No. 817,874

Int. Cl. B01d 53/22; A01f 7/04

U.S. Cl. 55-158

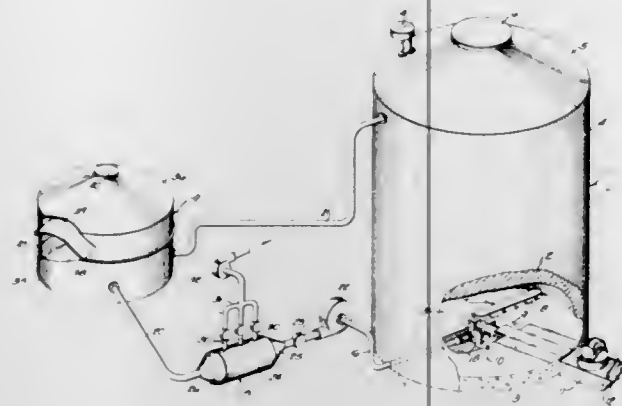
4 Claims

A sealed storage system such as a silo having a breathing system including a flexible pressure-responsive member having one surface exposed to the pressure within the silo and the opposite surface exposed to atmospheric pressure. An atmosphere control apparatus is provided and includes a gas separator through which gas from the structure is circulated. The separator includes a series of membranes which selectively separate oxygen from the gas so that substantially ox-



xygen-free gas is returned to the storage structure. The atmosphere control apparatus supplies the oxygen-free gas

fan is mounted on the wall of the engine compartment adjacent to the operator's platform for pulling air through a driven rotary screen and forcing the air to move through the



through a reservoir that also contains the silo breathing system.

3,630,002

## SEPARATOR CONTROL SYSTEM

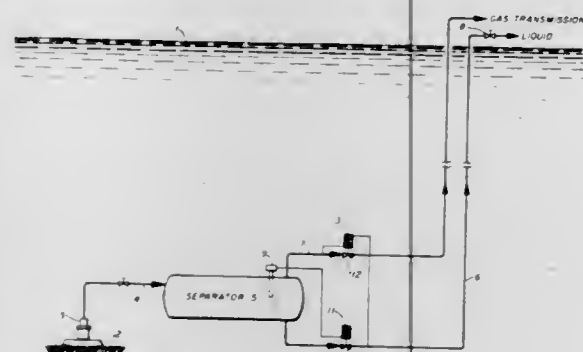
Bill S. Burrus, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Mar. 24, 1970, Ser. No. 22,224

Int. Cl. B01d 19/00

U.S. Cl. 55-164

5 Claims



A separator receiving the output of a subsea well is connected to gas and liquid transmission conduits for delivery of the fluids for subsequent use or processing. The transmission conduits are controlled by valves responsive to pressures of the system and the force of springs.

3,630,003

## COOLING ARRANGEMENT FOR COMBINE ENGINE

Robert Ashton, Islington, Ontario, and Wilbert D. Weber, Nashville, Ontario, both of Canada, assignors to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada

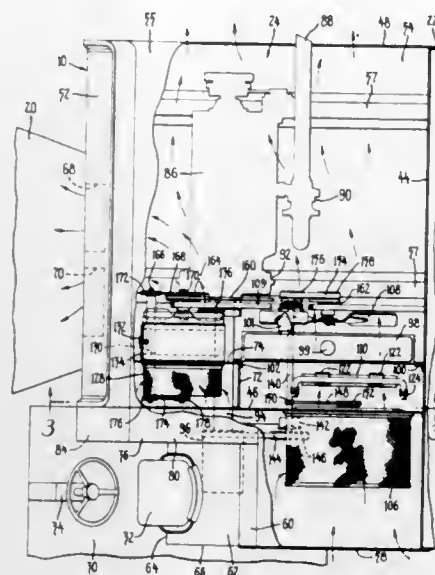
Filed Oct. 30, 1969, Ser. No. 872,629

Int. Cl. B01d 46/26

U.S. Cl. 55-268

6 Claims

A self-propelled harvester thresher having a grain tank, an engine compartment mounted on top the separator in front of the grain tank, an operator's platform mounted adjacent to one side of the engine compartment, an engine mounted in the engine compartment, a first driven rotary screen mounted on the side of the engine compartment adjacent to the operator's platform, a radiator mounted inside the engine compartment, and a first fan mounted adjacent to the radiator for pulling air through the screen and the radiator and forcing the air to move across the rear portion of the engine compartment and out through a grill in the side of the engine compartment away from the operator's platform. A second



forward portion of the engine compartment. Oil coolers for the hydraulic systems and condensers for air conditioners can be placed adjacent to the fans inside the engine compartment.

3,630,004

## CONTROL SYSTEM FOR BAG FILTERS

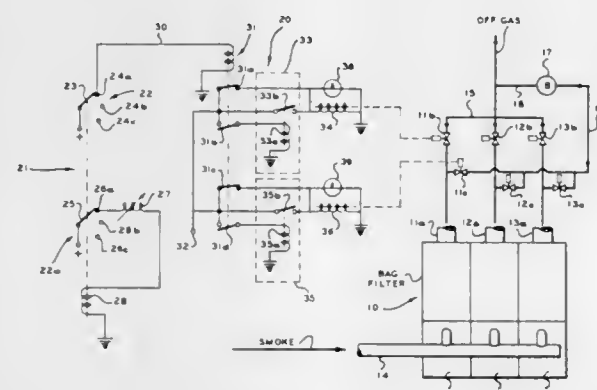
James G. Adair, Elgin, Ill., and Harold L. Boots, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Mar. 3, 1969, Ser. No. 803,848

Int. Cl. B01d 46/04

U.S. Cl. 55-273

4 Claims



A bag filter system has an off gas conduit communicating with each compartment. Each conduit includes a valve controlling the discharge of off gas and a valve regulating the introduction of repressuring gas to its associated compartment. The valves are sequentially controlled to close the off gas conduit of each compartment for a predetermined period and admit repressuring gas for a predetermined shorter period.

3,630,005

## VERTICALLY SECTIONED DUST COLLECTOR

Thomas V. Reinauer, Summit, N.J., assignor to Slick Industrial Company, Summit, N.J.

Filed Mar. 18, 1968, Ser. No. 713,864

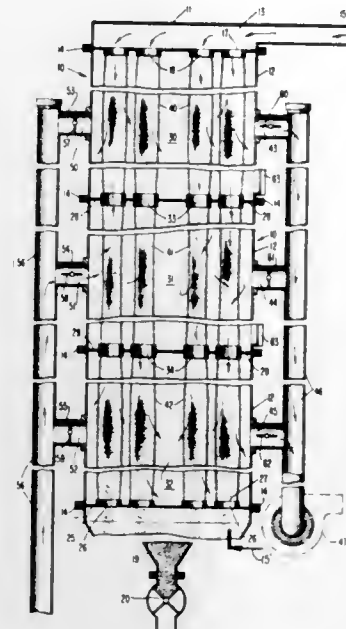
Int. Cl. B01d 46/04

U.S. Cl. 55-302

17 Claims

Apparatus for separating particulate matter from gaseous carriers formed of a plurality of discrete filter chambers

disposed in vertical superposed relation interconnected by a vertically oriented conduit member that is constituted, at



least in part, by permeable filter medium that forms a portion of the defining walls of each such chamber.

3,630,006

## SPIRAL CAPILLARY GAS CHROMATOGRAPHIC COLUMN

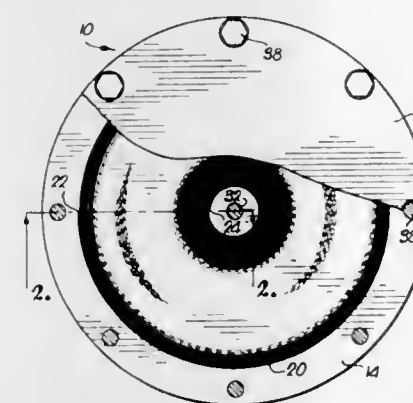
Antonio A. Sandoval, 3744 Benton Blvd., Kansas City, Mo.

Filed Nov. 5, 1969, Ser. No. 874,122

Int. Cl. B01d 15/08

U.S. Cl. 55-386

5 Claims



A capillary column for a gas chromatograph is presented by mutually cooperable surface portions of the complementary faces of a pair of separable members. At least one of the members has a pair of side-by-side grooves in the surface thereof whereby when the faces are disposed in interengagement the surface portions present a pair of groove capillary passages. One of the grooves serves as a separation groove while the other groove accommodates a reference standard. Inlet and outlet openings through one of the members communicate with opposite ends of the capillary passage and provides means for coupling the column with the inlet and outlet of a gas chromatograph. The reference groove provides a check for determining if any sample leaks from the separation groove and also greatly reduces the amount of leakage by equalizing the pressure on the separation groove. The members are easily disengaged to permit recoating of the partitioning material onto the grooved surface and can be quickly reassembled to present a fresh column.

3,630,007

## PLATE-SHAPED DISPOSABLE ACTIVE CHARCOAL FILTER

Gerhard Max Neumann, Berlin, Germany, assignor to Delbag-Luftfilter Gesellschaft mit beschränkter Haftung, Berlin, Germany

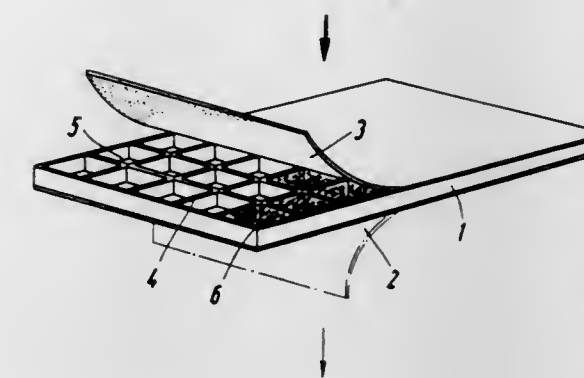
Filed Mar. 26, 1969, Ser. No. 810,716

Claims priority, application Germany, June 12, 1968, P 17 57 764.9

Int. Cl. B01d 39/00

U.S. Cl. 55-387

4 Claims



A disposable active charcoal filter has a frame open at both sides and subdivided into a plurality of compartments by intersecting partitions. The two open sides are covered by gas-permeable sheets and the space between the sheets is filled with active carbon.

3,630,008

## FILTER CELL SEALING AND RETAINING ARRANGEMENT

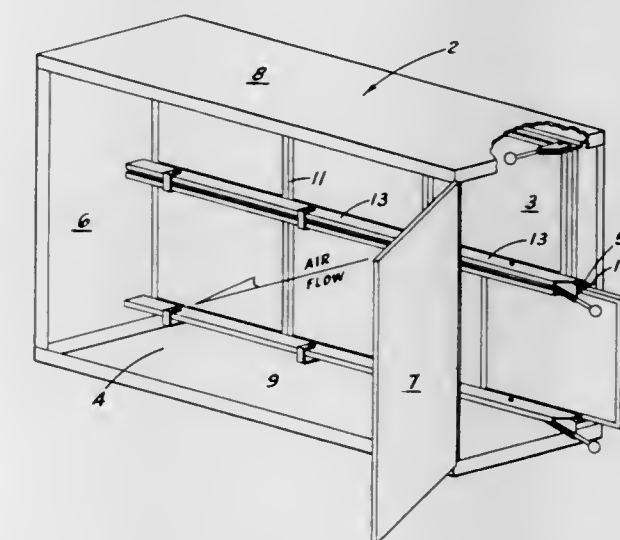
Alan E. Revell, and Wilson A. Welch, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Jefferson County, Ky.

Filed Oct. 23, 1969, Ser. No. 868,872

Int. Cl. B01d 25/22

U.S. Cl. 55-493

2 Claims



A sealing and retaining arrangement for a flow-through filter cell housing including a retaining bar slidably mounted on said housing for actuable movement in both a longitudinal and lateral direction, the filter cell housing having a longitudinally track mounted slidable hollow peripheral seal formed from several sections, at least one of which is compressible and oversize in length to bear firmly against the other.



3,630,009

**SELF-PROPELLED SWEET CORN HARVESTER**

Robert Ashton, Islington, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada  
Filed Oct. 30, 1969, Ser. No. 872,561

Int. Cl. A01d 45/02

U.S. Cl. 56—11.9

10 Claims



A self-propelled sweet corn harvester with a corn head having multiple snapping units with a pair of snapping rolls and a pair of gathering chains for each snapping unit, a tank for temporary storage of ears of unhusked green corn, a conveyor system to elevate the ears of corn from the corn head to the storage tank, and cleaning means including a fan, an upper beater, a lower beater and hoods for removing stalks and other trash from the ears of corn. The beaters are mounted above the storage tank for both vertical and horizontal adjustment. A conveyor system is provided for removing the cleaned and husked ears of green corn from the tank.

3,630,010

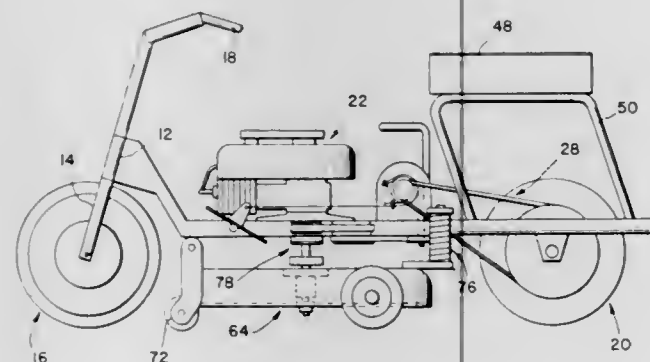
**MULTIUSE MINIBIKE**

James E. Rester, 105 Auburn Drive, Clinton, Miss.  
Filed July 10, 1970, Ser. No. 53,851

Int. Cl. A01d 35/26

U.S. Cl. 56—13.5

5 Claims



A multiple use minibike suitable for road or trail use, and having lawn and soil treating and cutting attachments therefore, together with selectively controllable speed and power transmission drive means for selective driving of the minibike and attachments.

3,630,011

**DICHONDRA HARVESTER**

Frank W. Dunn, Woodland, Calif., assignor to Northrup, King & Co., Minneapolis, Minn.

Filed July 13, 1970, Ser. No. 54,386

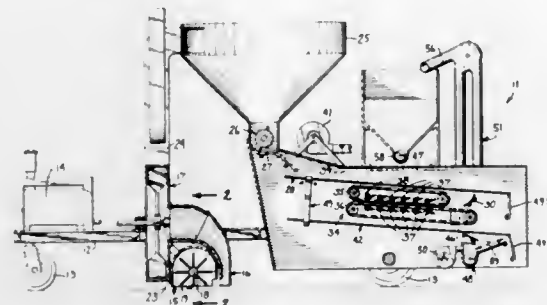
Int. Cl. A01d 41/08, 45/30

U.S. Cl. 56—126

20 Claims

The disclosure is directed to a seed harvester for dichondra. The harvester is a wheeled vehicle drawn by a tractor or

the like which passes over the dichondra crop and picks up seed bearing plant material by means of a rubber paddled beater. The plant material is carried upwardly to a cyclone separator, which removes and discharges dust and dirt while allowing heavier material to fall into a seed removing cylinder. The resulting seed and residual plant material and dirt are then dropped onto a first shaker screen having two grid configurations, the first of which allows ground up dirt and other fine material to fall through to be discharged. The



remaining material, including loosened seeds, moves onto the second grid and drops through onto a differential belt thresher which removes the remaining seed and grinds up residual material into fine particles. This residue is disposed of through the finer grid portion of a second multigrad screen, the seed passing onto a second grid and being exposed to a cleaning fan upon dropping therethrough. The seed undergoes a final screening before discharge into collection boxes.

3,630,012

**ASBESTOS FABRICATING PROCESS AND PRODUCTS THEREOF**

Horst C. G. H. Guertler, Cheadle Hulme, England, assignor to Rex Asbestwerke Graf von Rex KG Schwabisch Hall, Germany

Continuation-in-part of application Ser. No. 522,029, Jan. 21, 1966, now abandoned, Continuation-in-part of application Ser. No. 625,307, Mar. 23, 1967, now abandoned. This application Nov. 26, 1968, Ser. No. 779,264

Claims priority, application Great Britain, Jan. 25, 1965, 3170/65; 3171/65; Germany, Mar. 23, 1966, P 16 69 524.2

Int. Cl. A01d 43/00; C04b 43/04; D01d 5/14

U.S. Cl. 57—153

13 Claims

A dispersion of chrysotile asbestos in water with soap as dispersion medium is given an addition of sharpening agent consisting of aluminum sulfate or other acidic soap-precipitant substance in a quantity below the threshold at which the precipitant causes coagulation of asbestos. Preferably the added quantity of sharpening agent is 20 to 80 percent of its threshold quantity. This, for example, amounts to 50–200 g. of aluminum sulfate per kg. of dry soap content in a 2 percent asbestos dispersion. The sharpening agent is added in such a manner as to prevent local or partial coagulation. This is done by first dissolving the sharpening agent in the water subsequently used for preparing the asbestos dispersion, or by dissolving the sharpening agent in water and stirring the solution into the previously prepared aqueous dispersion. The addition improves storability and extrudability of the dispersion as well as the tensile strength of the asbestos strand or yarn made therefrom.

3,630,013

**TEXTURED YARN AND PROCESS FOR ITS MANUFACTURE**

Michel Buzano, Villeurbanne, France, assignor to Societe Rhodiacta, Paris, France

Filed June 2, 1969, Ser. No. 829,752

Claims priority, application France, June 6, 1968, 50070

Int. Cl. D02g 3/34, 1/02; D02j 1/06

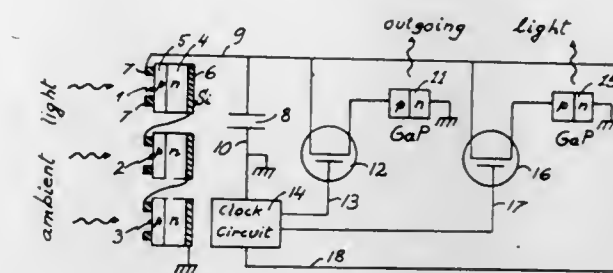
U.S. Cl. 57—140 R

18 Claims

The invention comprises textured continuous filament yarns of a synthetic thermoplastic material, especially a

polyester such as polyethylene terephthalate in which each filament comprises, on the microscopic scale, alternating zones whose diameter increases and decreases progressively between at least two different mean values, the zones of smaller diameter corresponding to zones of higher crystallinity index and higher molecular orientation and vice versa, each filament having a large apparent bulk, and the yarn as a whole having tridimensional crimp. Preferably the filaments have similar, though somewhat attenuated, differences along their length on a macroscopic scale, giving them a knop appearance. The yarns are made by partially stretching a multifilament yarn in the presence of a crack-producing agent, such as an aqueous lower alkanol at ambient temperature, giving the partially stretched yarns a thermal treatment in a relaxed condition, and subjecting them to a twist-set-untwist treatment, in which the heat setting step may also provide part of or the whole of the said thermal treatment.

tical contrast, and resulting in a self-powered display unit.



The contrast is enhanced by modulation of the outgoing light intensity.

3,630,014

**TIMEPIECE OSCILLATORS**

Pierre Maurice Jeannot, Bienne, and Michel Camille Girardin, Bellach, both of Switzerland, assignors to Certina Kurth Freres S.A., Grenchen, Switzerland

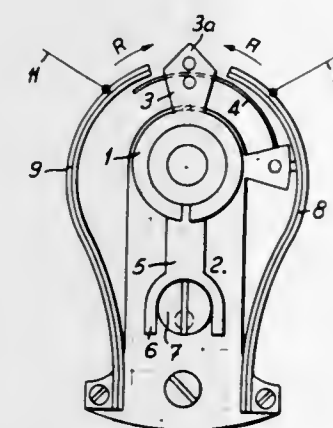
Filed Jan. 19, 1970, Ser. No. 3,901

Claims priority, application Switzerland, Jan. 24, 1969, 1056/69

Int. Cl. G04c 3/00; H02k 33/02; H03b 3/04

U.S. Cl. 58—23

7 Claims



Disclosed herein is a timepiece oscillator disposed in a fluidtight enclosure at a pressure below 1 mm. of mercury, preferably of the order of  $10^{-3}$  mm. The frequency of oscillation can be adjusted by bimetal strips operated by control means outside the enclosure. Means for maintaining and adjusting vibration of the oscillator can be included in the enclosure which forms a unit pluggable into a timepiece. For a mechanical watch, the fluidtight enclosure advantageously contains the entire movement.

3,630,015

**LIGHT TRANSFORMATION DEVICE**

Kurt Lehovc, 11 Woodlawn Drive, Williamstown, Mass.

Continuation-in-part of application Ser. No. 824,624, May 14, 1969, now abandoned. This application Jan. 20, 1970, Ser. No. 4,358

Int. Cl. G04b 19/30

U.S. Cl. 58—50

18 Claims

Incident light is transformed into electricity, which generates, or else modulates, outgoing light providing an op-

3,630,016

**REGULATING MECHANISM FOR A WATCH**

Hajime Fujihira, Funabashi, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

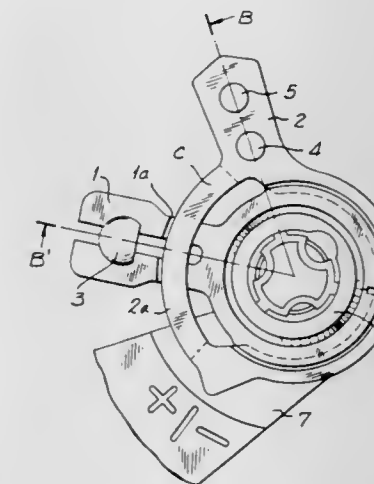
Filed May 11, 1970, Ser. No. 36,331

Claims priority, application Japan, May 24, 1969, 44/47637

Int. Cl. G04b 17/14

U.S. Cl. 58—109

1 Claim



A regulating mechanism for a watch is provided with a stud holder pivotally mounted under the guide of the outer circumference of the regulating mechanism, the stud holder being provided with a shallow slot on the arm thereof and the regulator having a thin outer circumference inserted in the aforesaid slot and turning under the guide of the circumference of the stud holder, the outer circumference of the slot the outer circumference of the stud holder and the inner circumference of the slot having different radii.

3,630,017

**APPARATUS FASTENING THE END OF A WATCH BALANCE SPRING**

Frederic Marti, Nyon, Switzerland, assignor to Portescap, LaChaux-de-Fonds, Switzerland

Filed Dec. 16, 1970, Ser. No. 98,729

Claims priority, application Switzerland, Dec. 17, 1969, 18999/69

Int. Cl. G04b 17/14

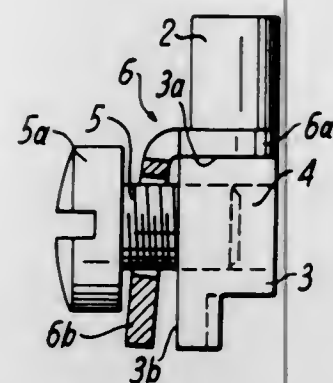
U.S. Cl. 58—113

9 Claims

In a watch having a balance spring and a balance cock, apparatus is provided for fastening the free end of the spring to the cock. The fastening apparatus includes a bearing block, pivotally mounted on the cock, having a generally vertically extending bearing surface for engagement with the spring. A resilient clamping member is mounted on the cock and includes a clamping arm positioned in spaced relation to the



bearing surface to define a space therebetween which receives the free end of the balance spring. A fastening screw extends through the clamping arm in threaded engagement with the bearing block and has a head portion engaged with



the clamping arm on the side thereof opposite the spring for urging the clamping arm towards the bearing surface when the screw is tightly threaded in the block to thereby clamp the spring between the clamping arm and the bearing surface.

3,630,018

## TIMEPIECE ESCAPEMENT

Aerschmann Nicholas, Geneva, Switzerland, assignor to Les Fabriques d'Assortiments Renunies S.A., Le Locle, Switzerland

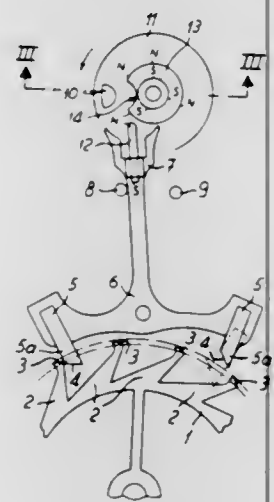
Filed Oct. 16, 1970, Ser. No. 81,402

Claims priority, application Switzerland, Oct. 22, 1969, 15745/69

Int. Cl. G04b 15/08, 15/00

U.S. Cl. 58-122

1 Claim



A lever escapement for timepieces includes a guard pin at one end of a pivotable lever, which guard pin at least in part is constituted by a magnet having a predetermined polarity at its free end. The safety roller cooperating with said guard pin is also constituted in part by a magnet the external part of the magnet facing the free end of the guard pin having the same polarity as the latter. The repulsion between the guard pin and the safety roller ensures the maintenance of the lever against a banking pin arranged to one side of the lever.

3,630,019

## HEAT-OPERATED PRIME MOVER WITH HYDROSTATIC POWER TRANSMISSION

Herwig Kress, Klocken 5, 7981 Oberzell, Germany

Filed Feb. 5, 1970, Ser. No. 8,883

Claims priority, application Germany, Feb. 6, 1969, P 19 05 787.5

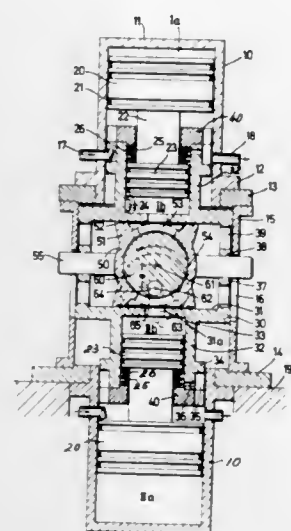
Int. Cl. F02b 41/00; F03g 7/06

U.S. Cl. 60-19

26 Claims

A thermal engine with hydrostatic power transfer having reciprocable piston means including working piston means

and hydrostatic piston means, in which an eccentrically journaled cylindrical journal is surrounded by an annular body which by at least one sealing surface seals at least one hydrostatic working chamber which is located on that side of the surface of the journal which faces toward said piston means, and in which said annular body has at least two oppositely located guiding extensions provided with sealing surfaces which guiding extensions sealingly slide on two sliding sur-



3,630,020

## SOLAR ORIENTATION DEVICE

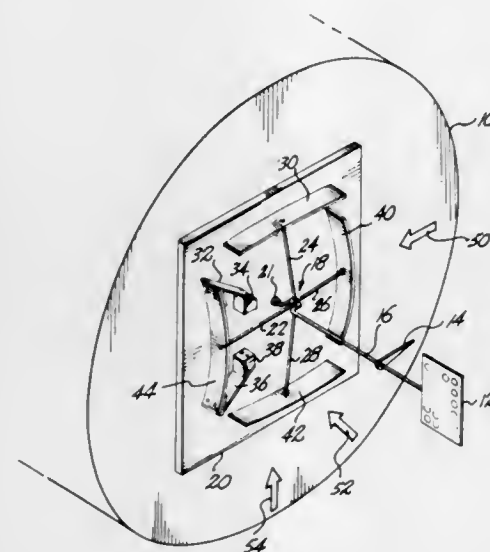
Thomas H. Chase, Houston, Tex., and Robert M. Weigel, Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 18, 1968, Ser. No. 722,291

Int. Cl. F03g 7/06

U.S. Cl. 60-23

4 Claims



responding to the direction of movement of the moving heat source.

3,630,021

## INTERNAL COMBUSTION ENGINE INCLUDING MEANS FOR REDUCING EMISSIONS

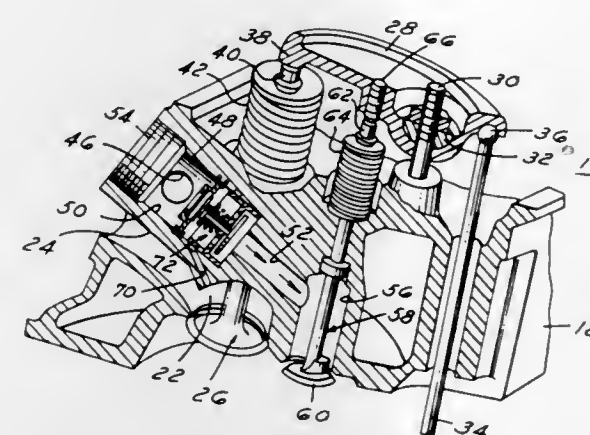
Irving N. Bishop, 32046 Bonnet Hill, Farmington, Mich.

Filed June 2, 1970, Ser. No. 42,643

Int. Cl. F01n 3/10

U.S. Cl. 60-30 R

11 Claims



An internal combustion engine having a combustion cylinder with a piston reciprocally mounted therein and a head positioned over the combustion chamber. The cylinder head has an exhaust passage positioned therein communicating with the combustion chamber and an exhaust valve positioned in the exhaust passage. Means are provided in the cylinder head and communicating with the exhaust passage and the combustion chamber for injecting air under pressure into the exhaust passage and into the combustion chamber during the expansion of the piston after the exhaust valve is opened and during the exhaust stroke. This means includes means for either continuously injecting air under pressure into the exhaust passage or for sequentially injecting air first into the exhaust passage and then into the combustion chamber subsequent to the opening of the exhaust valve.

3,630,022

## GAS TURBINE ENGINE POWER PLANTS

Albert Jubb, Kenilworth, Warwickshire, England, assignor to Rolls Royce Limited, Derby, England

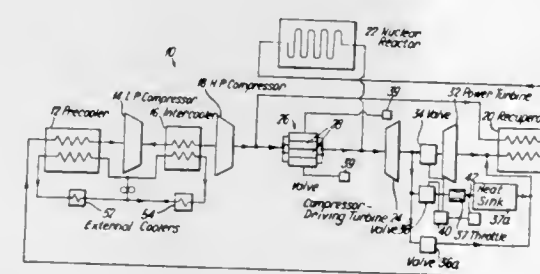
Filed Sept. 11, 1969, Ser. No. 857,026

Claims priority, application Great Britain, Sept. 14, 1968, 43,819/68

Int. Cl. F01k 13/02

U.S. Cl. 60-36

8 Claims



A closed-cycle gas turbine engine power plant employing a nuclear reactor to heat its working fluid, helium, is provided with a bypass valve whereby a variable amount of the helium compressed by the compressor or compressors may be caused to bypass the nuclear reactor and flow directly to the inlet of the turbine or turbines, thus enabling the turbine inlet

3,630,023

## FLUIDIC ENGINE CONTROL APPARATUS

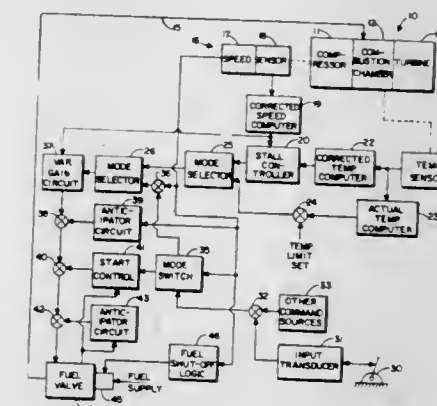
Jeffrey M. Lazar, South St. Paul, and Robert R. St. John, North St. Paul, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Oct. 24, 1968, Ser. No. 770,446

Int. Cl. F02c 9/04, 3/00

U.S. Cl. 60-39.28

14 Claims



A fluidic gas turbine engine control system comprising a speed error circuit, a temperature error circuit, a stall error circuit and a control circuit. The speed, temperature and stall error circuits provide error signals indicative of the difference between (1) engine speed and a reference speed, (2) actual engine temperature and a maximum temperature limit, and (3) an engine stall signal and a stall reference signal. The error signals are supplied to the control circuit which controls fuel flow to the engine in response to only that one of the signals which commands the smallest fuel flow.

3,630,024

## AIR SWIRLER FOR GAS TURBINE COMBUSTOR

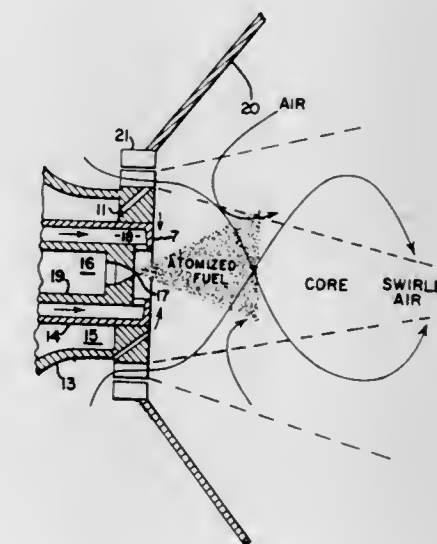
Edward P. Hopkins, Schenectady, N.Y., assignor to General Electric Company

Filed Feb. 2, 1970, Ser. No. 7,947

Int. Cl. F02c 3/22, 7/00

U.S. Cl. 60-39.69

4 Claims



An air swirler is provided in the head end of a gas turbine combustor such that, when reducing the smoke production,



the flame will be stabilized and proper mixing of the combustion air and fuel will occur. The proper amount of swirl and airflow must necessarily be provided. Also provided in the air swirler are air sweeper holes which direct part of the combustion air across the face of the fuel nozzle, thereby preventing the buildup of carbon particles. Yet a further provision in the air swirler are gaseous fuel holes such that gaseous fuel may be burned by directing the fuel into the air swirler slots so that it is properly mixed with the combustion air.

3,630,025

**CONTROL SYSTEM FOR HYDRAULIC DEVICES**

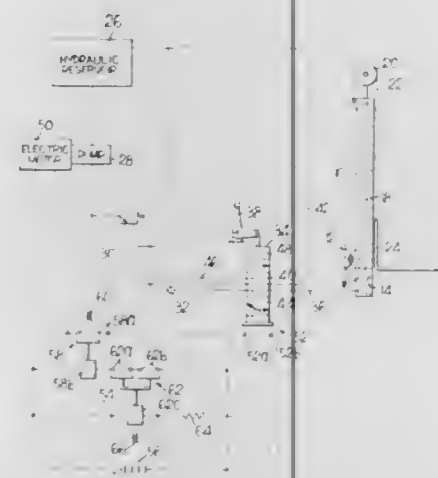
Luke F. Henry, Homewood, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed June 1, 1970, Ser. No. 42,199

Int. Cl. F15b 15/18

U.S. Cl. 60—52 HE

4 Claims



A control system for a hydraulic ram carried on a forklift truck comprises a manually operable control valve which controls fluid flow between a fluid reservoir and the ram. Moving the valve to open (raise) position permits fluid to flow from the reservoir to the ram and simultaneously closes an electric switch which effects, through a relay and a contactor, closure of the contacts of a motor controller which connect an electric pump motor to a battery. The pump supplies pressurized fluid from the reservoir to the ram. Closure of the switch also energizes a capacitor which discharges to maintain the relay energized and the motor controller contacts closed until the pump motor gets up to full speed, even though the valve is moved from open (raise) position and the electric switch is opened. By this means the motor controller contacts are prevented from opening on heavy inrush currents which occur while the motor is coming up to full speed and which would damage the contacts. As a further protection, the contacts are shunted by another capacitor which absorbs energy as the contacts open on normal line current conditions.

3,630,026

**HYDRAULIC PUMPS AND MOTORS**

Richard Joseph Ifield, Beecroft, New South Wales, Australia, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 15, 1969, Ser. No. 816,313

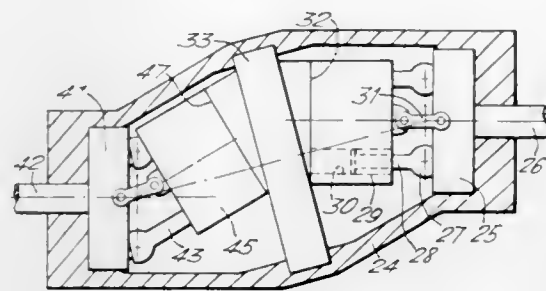
Int. Cl. F16d 31/02; F01b 13/04

U.S. Cl. 60—53

4 Claims

An hydraulic machine comprising a body, a member rotatably mounted in the body about a fixed axis, a plurality of pistons connected to the member by respective universal joints, a rotor having a plurality of bores within which the pistons are slidably engaged, the opposite end of the rotor from which the pistons enter being in facial contact with a

ported surface on a part which is angularly movable in the body, about an axis which is inclined to the axis of the member, and is also inclined with respect to a plane which is perpendicular to said surface, angular movement of the part



varying the strokes of the pistons, and the center of the surface coinciding with the axis of the rotation of the rotor, and being offset from the axis about which the part is angularly movable.

3,630,027

**HYDRAULIC LINEAR AMPLIFIER APPARATUS FOR POWER BRAKE STRUCTURES**

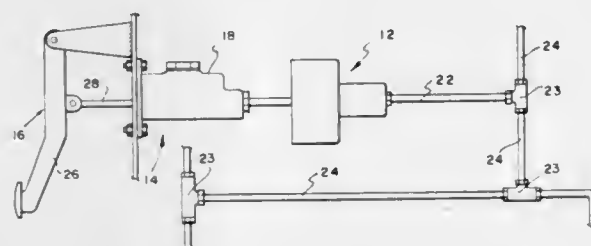
Andrew A. Lambert, 1768 Harding Street, Wichita, Kans.

Filed Aug. 18, 1969, Ser. No. 850,847

Int. Cl. F15b 7/00; F16k 31/12

U.S. Cl. 60—54.6 A

2 Claims



This invention is hydraulic linear amplifier apparatus operable through fluid or direct mechanical linkage structures to provide an increased hydraulic force for application against brakeshoe structures from a given available actuator force. More particularly, this invention is a hydraulic linear amplifier apparatus having a primary assembly operable through fluid pressure to actuate a secondary amplifier assembly through cooperating with control valve assemblies to progressively achieve an increased fluid force applied to operate the brakeshoe drum members.

3,630,028

**PRESSURE LEVEL CONTROL SYSTEM FOR A SOLID PROPELLANT ROCKET MOTOR**

Leonard H. Caveny, 23 Galston Drive RD #4, Trenton, N.J.

Continuation-in-part of application Ser. No. 720,923, Apr. 12, 1968, now abandoned. This application Dec. 1, 1969, Ser. No. 881,062

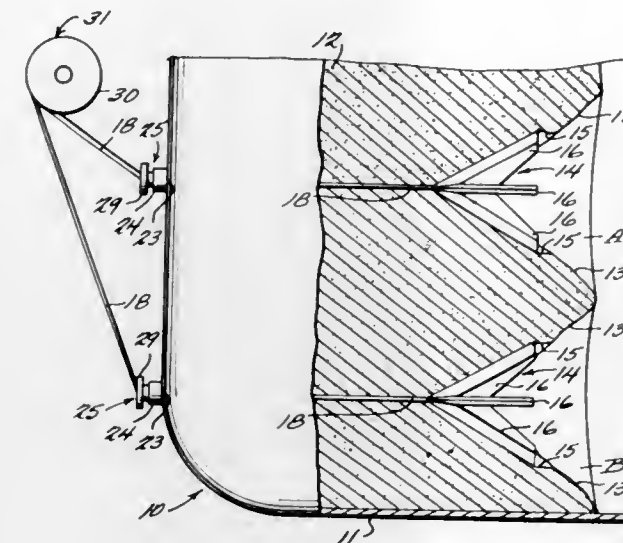
Int. Cl. F02k 9/04

U.S. Cl. 60—234

14 Claims

A system for controlling the operating pressure and thrust of a solid propellant rocket motor which includes a propel-

lant cutter that extends through the burning surface of the solid propellant to increase on command the burning surface



area and thereby increase the burning rate of the solid propellant.

3,630,029

**FUEL CONTROLS FOR REHEAT SYSTEMS OF GAS TURBINE ENGINES**

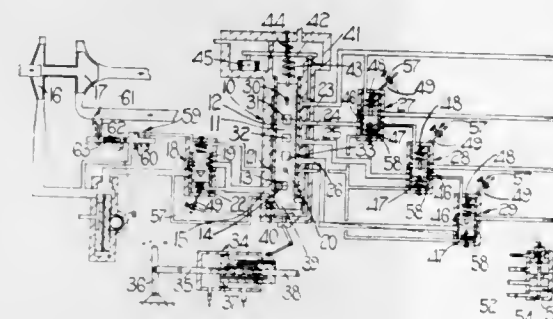
Trevor Stanley Smith, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 14, 1970, Ser. No. 2,905

Int. Cl. F02k 3/10

U.S. Cl. 60—243

16 Claims



The invention relates to an apparatus for controlling fuel flow to the burners of the reheat system of a gas turbine engine. The apparatus comprises a main control valve through which all the said fuel flow passes and which has a number of outlets from which fuel passes to associated burners. Control valves in all but one of the lines connecting the main control valve to the burners are arranged to operate in response to the fuel flow in the next preceding line so that fuel is supplied to the burners sequentially. The control valves include biasing means and this biasing is variable by a common actuating device responsive to pressure signals from the engine.

3,630,030

**LIQUID-ATTENUATED EXHAUST SYSTEM**

Wayne M. Wagner, Rosemount, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

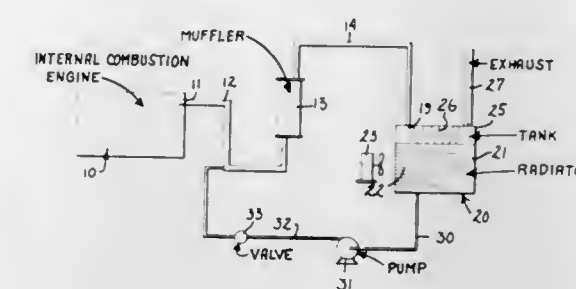
Filed Feb. 9, 1970, Ser. No. 9,536

Int. Cl. F01n 3/04

U.S. Cl. 60—274

6 Claims

Apparatus and method for injecting droplets of a liquid such as water into the exhaust pipe of an internal combustion engine, passing the mixture of exhaust gases and liquid droplets through a muffler, removing the liquid from the ex-



decreases the exhaust noise, cool the exhaust gases, and remove substantial quantities of solid particles.

3,630,031

**ANTIPOLLUTION SYSTEM FOR INTERNAL COMBUSTION ENGINES**

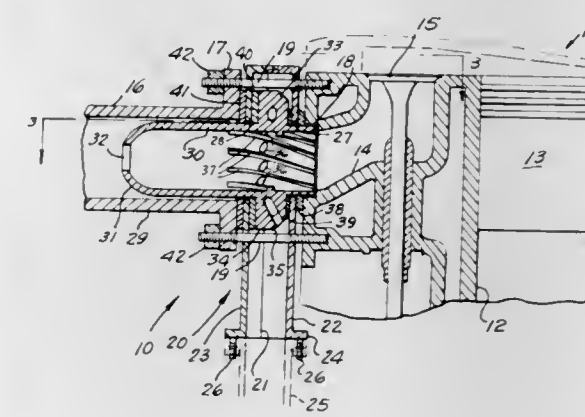
Lewis M. D. Grainger, Route 1, Glen Allen, Va.

Filed Apr. 10, 1970, Ser. No. 27,251

Int. Cl. F01n 3/10

U.S. Cl. 60—305

6 Claims



An antipollution system for internal combustion engines in which the air pollutants in the exhaust gases are completely burned to produce an exhaust gas from the engine which is substantially free of air-polluting materials. An air injector is positioned in the exhaust stream to provide the necessary oxygen to burn the pollutants. The exhaust gases are fed through an air injector and combustion chamber unit which is heated by the exhaust gases and remains at a relative high temperature while the engine is operating so as to complete the burning of all air-polluting materials contained in the exhaust gases in the presence of the supplied air. The air is forced-fed by any desired blower and optionally includes air extracted from the crankcase in engines so equipped.

3,630,032

**ANTIPOLLUTION SYSTEM FOR INTERNAL COMBUSTION ENGINES**

Lewis M. D. Grainger, Route 1, Glen Allen, Va.

Continuation of application Ser. No. 27,251, Apr. 10, 1970.

This application Sept. 4, 1970, Ser. No. 69,866

Int. Cl. F01n 3/10

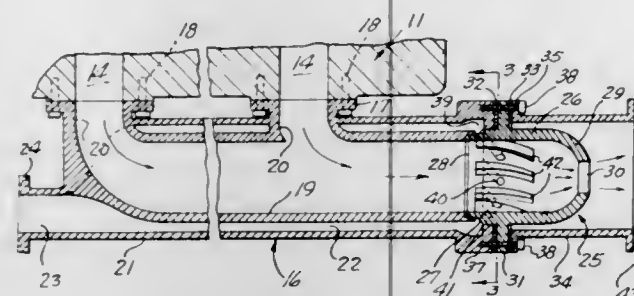
U.S. Cl. 60—308

6 Claims

An antipollution system for internal combustion engines in which the air pollutants in the exhaust gases are completely burned to produce an exhaust gas from the engine which is substantially free of air polluting materials. An air injector is positioned in the exhaust stream to provide the necessary oxygen to burn the pollutants. The exhaust gases are fed through an air injector and combustion chamber unit which



is heated by the exhaust gases and remains at a relatively high temperature while the engine is operating so as to complete the burning of all air polluting materials contained in the exhaust gases in the presences of the supplied air. The air is forced fed by any desired blower and optionally in-



cludes air extracted from the crank case in engines so equipped. The air may be preheated by contact with the exhaust manifold in one form of the invention and may be entrained with the exhaust gases before reaching the combustion chamber unit in another form of the invention.

3,630,033

## APPARATUS FOR CONTROLLING OIL SLICKS

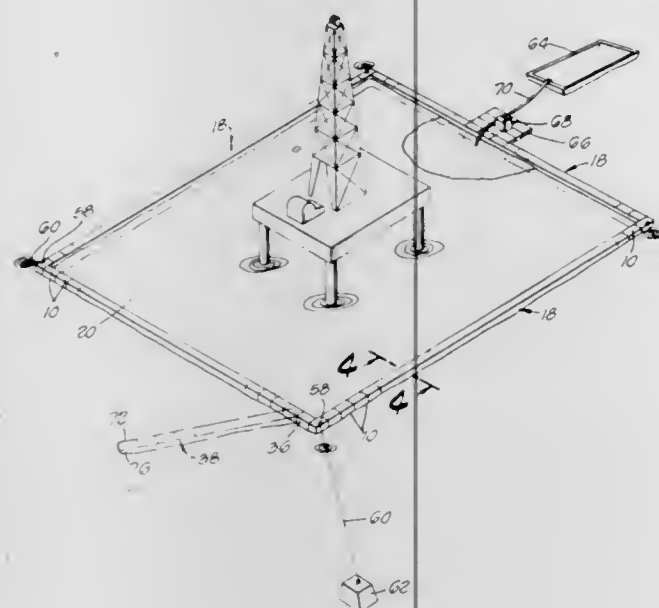
Ralph L. Tuttle, 7135 Hollywood Boulevard, Hollywood, Calif., and George T. Lister, 3511 Fernwood Avenue, Los Angeles, Calif.

Filed Apr. 30, 1970, Ser. No. 33,197

Int. Cl. E02b 15/04

U.S. Cl. 61-1 F

5 Claims



An apparatus for controlling oil slicks which incorporates a plurality of modular flotation tanks joined together to form a closed structure, with a large gate therein to allow the structure to be positioned around an oil slick and control curtains extending vertically downward from the structure beneath the surface of the water and around the oil slick.

3,630,034

## IRRIGATION CANAL TAPOFF SYSTEM

Carrol G. Whitlock, 841 Grand Drive, Moses Lake, Wash.

Filed Feb. 24, 1970, Ser. No. 13,393

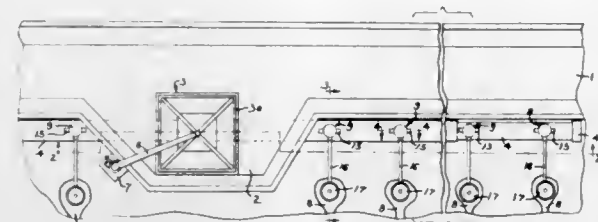
Int. Cl. E02b 13/00

U.S. Cl. 61-12

4 Claims

For tapping off water for a multiplicity of lateral rills from an irrigation canal, a weir is established in a basin in the canal whereby water can be drawn off and discharged

downwardly in the desired quantity. The water is fed from the weir outlet into an elongated main conduit which is fitted at short intervals with metering caps operable to deliver measured flow of water to conduits individual to the lateral rills at a constant rate. The gravity head of the water flowing to the lateral rills is governed by the fact that the total amount of water fed into the main conduit from the weir is sufficient



to keep it full at all times. With this system the individual conduits for the rills are buried in the ground and have their outlet ends entering the bottom of individual wells or cups at the heads of the rills, thus inserting actual delivery of the desired amount of water into each rill. The metering caps assure substantially exact supply to the individual lateral rills. The main conduit preferably is sectional and the sections are successively smaller as they are further away from the weir.

3,630,035

## BARRIER WHICH MAY BE USED FOR THE PROTECTION OF HARBOR INSTALLATIONS

Roland Charles Wanneroy, Paris, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber Colombes, Place de Valmy, Colombes, France

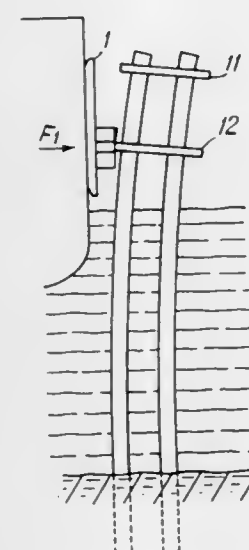
Filed Nov. 3, 1969, Ser. No. 873,272

Claims priority, application France, Nov. 13, 1968, 173622

Int. Cl. E02b 3/22

U.S. Cl. 61-46

5 Claims



A barrier, which may be used for the protection of harbor installations, is provided with a tiltable impact member and resilient means is arranged in horizontal and vertical planes in a mounting for the member so that the forces tending to tilt the barrier act in shear on the resilient means.

3,630,036

## ELONGATED ELEMENT TO BE DRIVEN INTO THE GROUND TOGETHER WITH A SHOE

Abraham Francois Van Weele, Waddinxveen, Netherlands, assignor to N.V. tot Aanneming van Werken voorheen H.J. Nederhorst Turfmarkt, Gouda, Netherlands

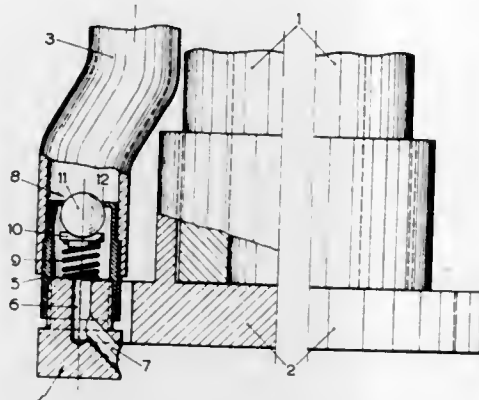
Filed Dec. 19, 1969, Ser. No. 886,700

Claims priority, application Netherlands, Dec. 20, 1968, July 15, 1969; 6818364, 6910827

Int. Cl. E02d 7/24

U.S. Cl. 61-53.74

3 Claims



An elongated element, such as a foundation pile or a tube for casting a concrete foundation pile in situ, adapted to be driven in the ground, in particular by vibration, together with a shoe, and comprising at least one supply pipe connected with the outer wall of the element, extending in the longitudinal direction of the same, terminating near the lower end of the element, and connectable at its top, through a supply valve, to a source of a pressure medium, in particular water under pressure. Each supply pipe, respectively, is provided at its lower end with means preventing a penetration of earth into the supply pipe substantially completely when the supply valve is closed, but allowing a discharge of the pressure medium from the supply pipe when the supply valve is open.

3,630,037

## ARCTIC PILES

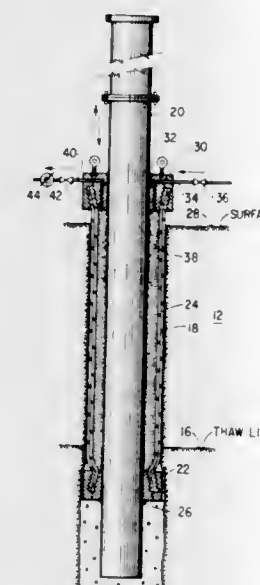
George C. Howard, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed July 15, 1970, Ser. No. 54,985

Int. Cl. E02d 5/60, 31/08

U.S. Cl. 61-54

12 Claims



Piles are used quite widely in the Arctic to support buildings and structures. However, in many areas the piles

are forced upwardly by the thawing and refreezing of the surrounding earth. I solve this problem of pile heaving by placing a rubberlike sleeve around the pile. The lower end of the rubber sleeve is fastened to the pile below the thaw zone. The upper end of the rubber sleeve is sealingly and slideably fitted about the pile above the surface. The cavity between the sleeve and the pile is filled with a viscous nonfreezing liquid. The heaving force which would ordinarily act on the pile now acts only on the rubber sleeve.

3,630,038

## METHOD FOR LAYING AN UNDERGROUND PIPELINE

Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Osaka, Japan

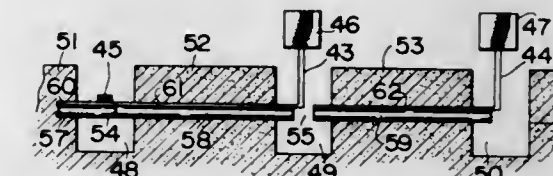
Filed Sept. 28, 1970, Ser. No. 75,918

Claims priority, application Japan, Oct. 16, 1969, 44/82717

Int. Cl. F16l 1/00; F24h 1/14; F16l 53/00

U.S. Cl. 61-72.1

5 Claims



A method for laying underground a long-distance pipeline, such as a transportation pipeline for heavy oil, which is used in a state laid underground and heated to a higher temperature than that of the earth by means of a heat-generating pipe utilizing skin effect current, attached to each pipe of said pipeline, at the working time, which comprises a combination of steps consisting of (1) a step of heating each pipe of the pipeline by passing alternating current through the heat-generating pipe utilizing skin effect current attached to said each pipe to elongate said each pipe, to a length between the length of the pipe at the temperature of environmental earth and the length of the pipe at the operation temperature, (2) a step of connecting each pipe thus elongated, and (3) a step of backfilling the earth on each pipe, whereby said pipeline is fixed by the earth pressure.

Thus, failure of pipe due to expansion stress can be prevented without attaching any expansion joint or bend.

3,630,039

## INDIVIDUAL COOLING DEVICE

Toshiyuki Hayashi, Soka, Japan, assignor to Midori Safety & Industry Co., Ltd., Tokyo, Japan

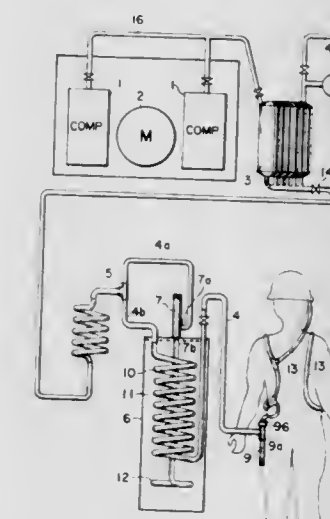
Filed Mar. 3, 1970, Ser. No. 16,040

Claims priority, application Japan, Mar. 10, 1969, Mar. 10, 1969, Mar. 10, 1969, May 17, 1969; 44/17535, 44/17536, 44/17537, 44/17538, 44/38212

Int. Cl. F25b 9/02

U.S. Cl. 62-5

5 Claims



Device for cooling particular individual workers in a hot workshop or other working place by means of the expansion



of air, a heat exchanger and the separation of portions at different temperatures.

3,630,040

## AIR CONDITIONER

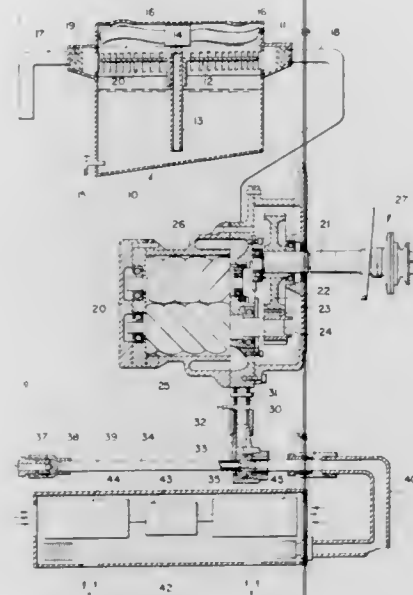
Fred A. Goldfarb, 143 Jewett Avenue, Jersey City, N.J.

Filed June 12, 1970, Ser. No. 45,606

Int. Cl. F25b 9/02

U.S. Cl. 62-5

8 Claims



An air conditioner for a vehicle having an air washer and filter for supplying moisturized clean air to a screw-type of compressor which compresses the air and feeds it to a vortex tube. The cold-air outlet from the vortex tube is connected to a heat exchanger to enable the cold air passed from the vortex tube to the heat exchanger to ultimately cool the vehicle cabin.

3,630,041

## THERMODYNAMIC REFRIGERATOR

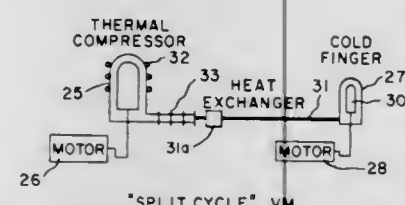
Alexander Daniels, Briarcliff Manor, and Frits Karel du Pre, White Plains, both of N.Y., assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Feb. 25, 1970, Ser. No. 14,040

Int. Cl. F25b 9/00

U.S. Cl. 62-6

12 Claims



A cryogenic refrigeration apparatus operable in accordance with a thermodynamic cycle such as the Vuilleumier cycle, wherein the hot and cold chambers are physically separated, and the corresponding hot and cold displacers are driven reciprocally by separate motors. Proper pressure variations and phase difference between the motions of the displacers and the gas transported are maintained preferably by synchronizing the speeds of the different motors.

### 3,630,042 METHOD AND SYSTEM FOR DESALINIZATION OF WATER

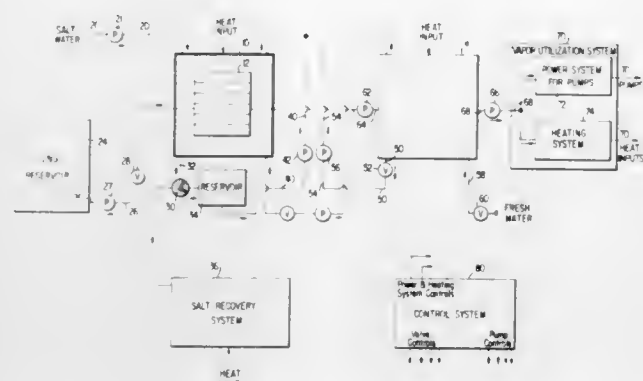
Robert E. Petsinger, Upper St. Clair, Pa., assignor to Ling Services, Pittsburgh, Pa.

Filed Feb. 7, 1969, Ser. No. 797,461

Int. Cl. B01d 9/04

U.S. Cl. 62-58

5 Claims



In a desalination system for water, a method and system are provided employing liquified natural gas as a source of refrigeration and as a fuel for various power and heat generation functions. In each of a series of stages, the input salt water mixture is purified by freezing and the still brine liquid drawn off, with the frozen water then melted and recovered. The recovered water is advanced through successive stages for similar processing from the last stage of which purified water is obtained.

3,630,043

## COLD TRANSPORTING DEVICE

Jan Mulder, Emmasingel, Eindhoven, Netherlands

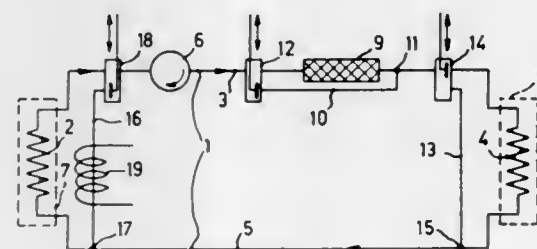
Continuation of application Ser. No. 830,440, Apr. 30, 1969.

This application May 18, 1970, Ser. No. 48,794

Int. Cl. F25d 17/02

U.S. Cl. 62-99

12 Claims



An apparatus and method of transporting cold from a source of cold to an object to be cooled, with a quantity of cold stored in a regenerator, which cold can subsequently be used during cooling the object in addition to the cold from the cold source, thereby temporarily providing a greater cooling capacity than can be supplied by the cold source alone.

3,630,044

## AUTOMOBILE AIR CONDITIONING SYSTEM

Don P. Dixon, 4926 Space Center Drive, San Antonio, Tex.

Filed June 29, 1970, Ser. No. 50,368

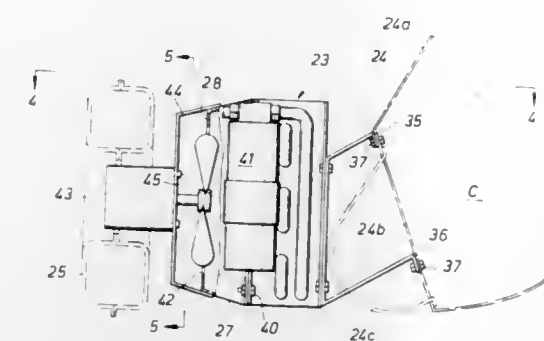
Int. Cl. B60h 3/04

U.S. Cl. 62-243

2 Claims

An air conditioning system for a "fast back" or "square back" Volkswagen automobile including a condenser as-

sembly supported behind the spare tire compartment by



means of brackets which are connected to the rear wall of the compartment.

3,630,045

## MACHINES FOR PRODUCING ICE

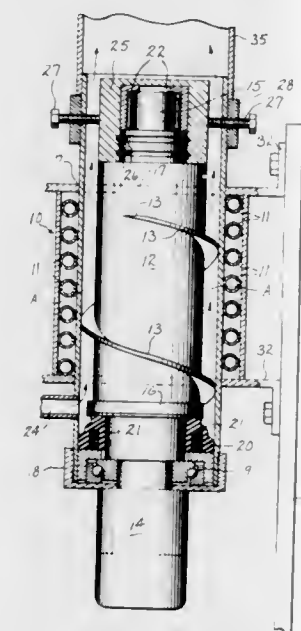
Howard L. Lunde, Harbor Road, Oconto, Wis.

Filed Apr. 24, 1970, Ser. No. 31,666

Int. Cl. F25c 1/14

U.S. Cl. 62-320

10 Claims



A machine for producing ice for use in cold drinks and the like which machine is adapted to accommodate interchangeable augers wherein the upper ends of the auger blades are located varying distances from the upper, discharge end of the freezing chamber so that the ice can be discharged from said chamber in varying degrees of hardness, depending upon its intended use, and utilizing interchangeable augers of varying diameters to form ice chunks or pieces of different desired thicknesses, and which machine is adapted to have an elongated tube secured thereon for delivery of the ice to a remote location.

3,630,046

## DAMPER CONTROL

Roger M. Boor, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 2, 1970, Ser. No. 7,498

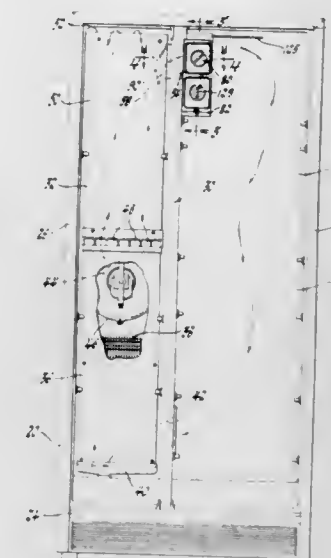
Int. Cl. F25d 17/04

U.S. Cl. 62-408

4 Claims

In the preferred form, there is provided a horizontal duct through a vertical partition wall between compartments of a refrigerator. A plastic damper control unit is slidably mounted in this duct and has a scoop-type vane projecting

into the air stream flowing from the evaporator compartment for diverting a proportion of the circulating air through the horizontal duct in the partition wall to the compartment on the opposite side of the wall. The opposite side of the wall is provided with a rotary control knob for moving the scoop vane to various positions providing rates of flow in propor-



tion to the position of the knob. The damper control is a part of a unit which includes a thermostat control switch having a thermosensitive bulb extending into the air stream of the air discharged from the duct for controlling the operation of the refrigerating system and the temperature of the evaporating means.

3,630,047

## CRYOGENIC COOLING APPARATUS

Frank Arnold Turton, Cofton, England, assignor to The Hydraulic Engineering Company Limited, Redditch, Worcestershire, England

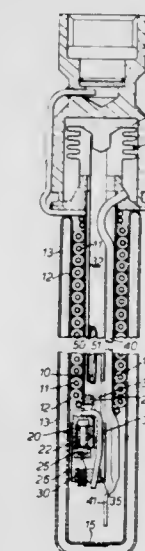
Filed Mar. 23, 1970, Ser. No. 21,602

Claims priority, application Great Britain, Mar. 25, 1969, 15,606/69

Int. Cl. F25b 19/00

U.S. Cl. 62-514

7 Claims



A cryogenic cooling apparatus includes a generally tubular heat exchanger affording two paths through one of which refrigerant from a supply under pressure is supplied to a pressure reducing nozzle, whereupon the low-pressure refrigerant returns through the other path, and a valve member cooperating with the nozzle to vary its effective area for au-



tomatically controlling the flow of refrigerant. The valve is controlled by a bellows through a hollow piston rod extending through at least the cold end part of the heat exchanger, and the hollow piston rod forms or carries a damping chamber containing particulate material, such as phosphor bronze balls or tungsten carbide powder for damping out vibrations of the valve member.

# ERRATUM

For Class 62—55 see:  
Patent No. 3,630,051

3,630,048

## EARRING WITH VERTICALLY ADJUSTABLE LOBE CONTACTING MEMBER

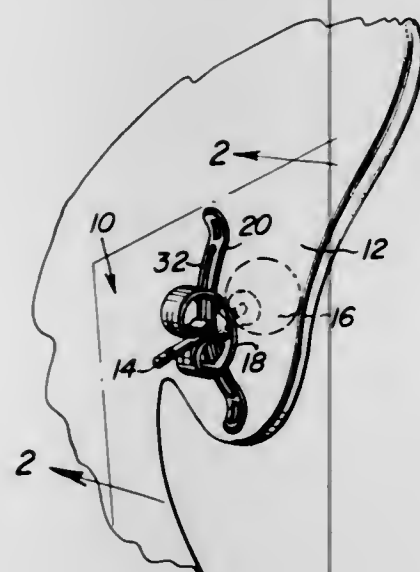
Aaron Masters, 1155 East Jersey Street, Elizabeth, N.J.

Filed Jan. 20, 1970, Ser. No. 4,267

Int. Cl. A44c 7/00

U.S. Cl. 63—12

6 Claims



A spring clip assembly is slidably mounted on an earring post and adapted for clamping into position along a selected point on the post. The clip has apertures therein to admit a bow-shaped arm which gently contacts the wearer's earlobe upon proper positioning of the spring clip. The bow-shaped arm has an elongated slot formed therein to allow its sliding displacement relative to the post so that the wearer can adjust the arm to a position affording the most even restraining force distribution on the lobe. By properly positioning the arm, the earring wearer is spared from painful force concentration.

3,630,049

## ELASTIC SHAFT COUPLING

Otto Feller, and Paul Vossieck, both of Burscheid, Germany, assignors to Goetzwerke Friedrich Goetze Aktiengesellschaft, Burscheid, Germany

Filed Mar. 16, 1970, Ser. No. 19,852

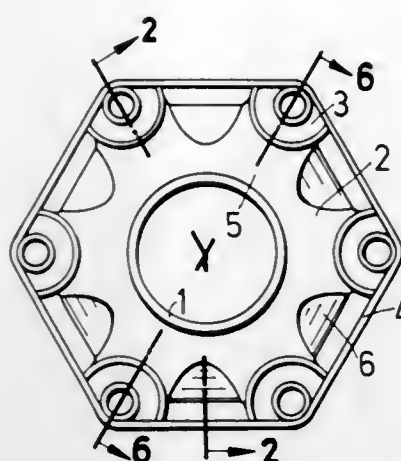
Int. Cl. F16d 3/78

U.S. Cl. 64—13

13 Claims

An elastic shaft coupling for joining two approximately aligned shafts to compensate for possible shaft-misalignments and to damp torsional vibrations. An annular body of rubber is supported on its inner diameter by a relatively rigid support body. About the outer diameter of the annular rubber body are arranged securement elements for effecting attachment of the coupling to and between the approximately

aligned shafts. A band encircles the body of rubber and presses the securement elements radially inwardly so that



3,630,050

## PATTERN MECHANISM FOR KNITTING MACHINES

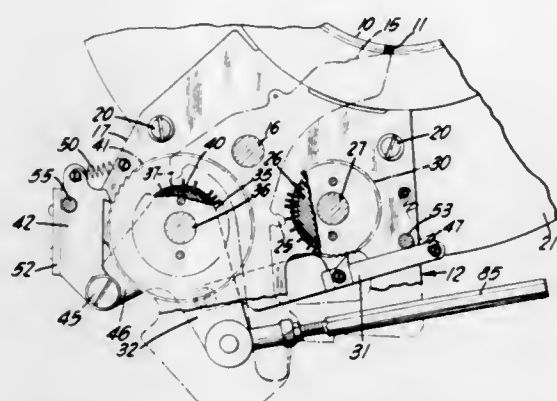
Stephen G. Guresh, Robeson, and Richard M. Janda, Reading, both of Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Apr. 1, 1970, Ser. No. 24,673

Int. Cl. D04b 15/74

U.S. Cl. 66—50 B

6 Claims



Jack selector control means for knitting machines having a rotatable cylinder for jacks and needles the selector control means including a first trick drum for operating the selectors to select the jacks and needles of the machine for operation, a second trick drum for individually moving the selectors from inactive to active positions to be operated by the first trick drum, indexing means for the first and second trick drums, means for activating the indexing means to index the trick drums and common means for actuating the indexing means in a plurality of indexing movements during a single rotation of the cylinder to index the first trick drum in each of the plurality of indexing movements and to index the second trick drum in only one of the plurality of indexing movements.

3,630,051

## COLD TRAP ICE-REMOVAL MEANS FOR VACUUM DRYING SYSTEMS

David H. Martin, Raleigh, N.C., assignor to Graham Manufacturing Company, Inc., Batavia, N.Y.

Filed Feb. 19, 1970, Ser. No. 12,610

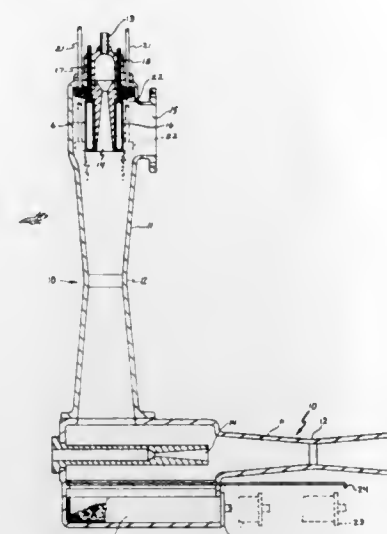
Int. Cl. B01d 5/00

U.S. Cl. 62—55.5

9 Claims

In abstract, a preferred embodiment of this invention is a deicing device for cold traps used to remove condensable

vapors from vacuum chambers. The invention is particularly beneficial in maintaining constant maximum system efficiency.



3,630,052

## RUNNER-CHECKER APPARATUS WITH VARIABLE-SPEED MECHANISM

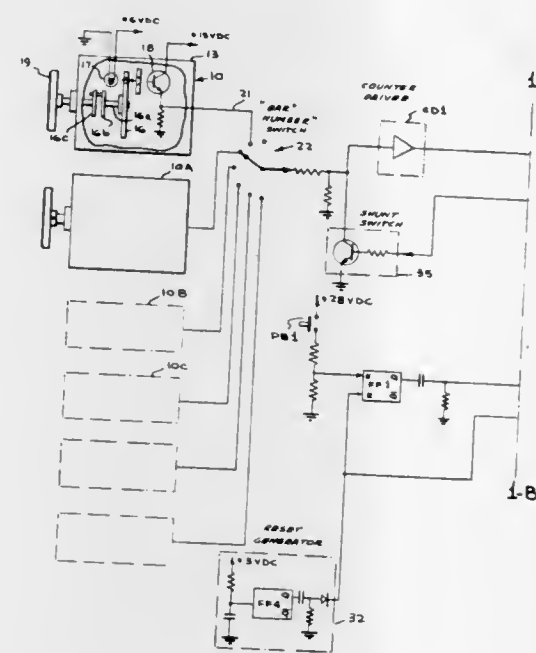
Raymond Baines Fertig, Ronceverte; Samuel Eugene Mitchell, Lewisburg; Lawrence Creigh Nickell, Ronceverte, and Ernest L. Eggleston, Alderson, all of W. Va., assignors to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.

Filed Oct. 15, 1970, Ser. No. 80,945

Int. Cl. D04b 27/00

U.S. Cl. 66—86

9 Claims



A runner checker for measuring and indicating the length of yarn being fed from the warp beam section of a warp-knitting machine, including a pulse generator mounted on each tension letoff controller assembly of a warp beam section to produce pulses related to unit lengths of warp yarn feed, a device connected to the pattern wheel drive shaft of the knitting machine for producing pulses related to pattern wheel rotation, and electronic circuitry responding to the pulses to indicate the yarn runner length in a rack of cloth. A variable speed-coupling is provided between the pulse generator and the drive wheel of the tension letoff controller.

3,630,053

## SAFETY LOCK

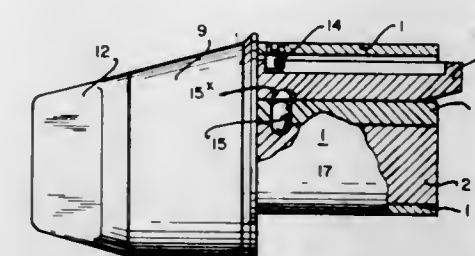
Edwin G. Krakauer, 2 Turf Lane, Roslyn Heights, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,604

Int. Cl. E05b 15/14, 27/06

U.S. Cl. 70—421

4 Claims



The casing of a lock holding a cylinder with the usual key-operated tumblers associated with the casing, and the usual key-receiving passageway in the cylinder for key operation of said tumblers, is provided with a safety combination against "picking" the lock, comprising a barlike element slidingly mounted in a passageway of the casing at the side of the cylinder, a bar-head and turn button carried by the barlike element and adapted to receive the finger end of a key, means limiting outward movement of the barlike element with the elements carried at its outer end, a safety lock tumbler movable in a passage in the casing and movable into a rounded seat in the cylinder wall, and into a like-rounded seat in the barlike element, in reverse movement, whereby in both outward and inward positions of the barlike element the cylinder is locked by said safety lock tumbler, and the cylinder face is blocked by the bar-head in the unlocking operation of the turn button, said safety lock tumbler locking the barlike member against outward movement from its "In" position until upon unlocking operation the key is returned to insert position with the cylinder.

3,630,054

## PROTECTING CASE

Henrikki Malminen, Joensuu, and Kaarlo Henrik Solitanner, Helsinki, both of Finland, assignors to Oy Wartsila AB, Helsinki, Finland

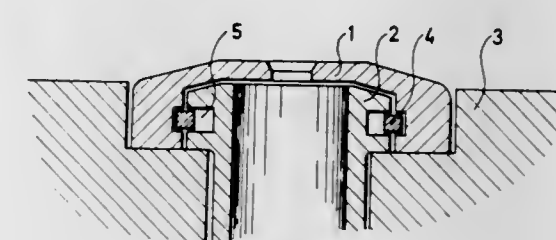
Filed May 26, 1969, Ser. No. 827,830

Claims priority, application Finland, May 25, 1968, 1468/68

Int. Cl. E05b 15/02

U.S. Cl. 70—452

4 Claims



A protecting case is disclosed for the outer end of a cylinder lock which is mounted for instance in a door. The protecting case is attached to the cylinder housing of said lock by means of a yielding locking member which when the case is pushed in place, the member yields or is kept aside, but which when the case has reached its proper position is released and enters into an attachment recess so that it preferably undetachably locks the case to the cylinder housing. A radially yielding locking ring is preferred as the locking member.



3,630,055

**WORKPIECE SHAPE CONTROL**

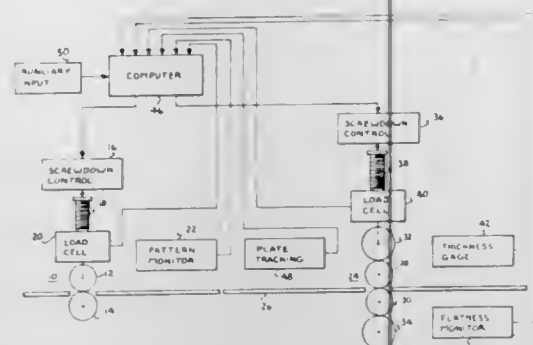
Donald J. Fapiano, Scotia, N.Y., and Allyn S. Norton, Jr., Charlottesville, Va., assignors to General Electric Company

Filed May 14, 1969, Ser. No. 824,491

Int. Cl. B21b 37/00

U.S. Cl. 72-6

9 Claims



A method of controlling the shape of a workpiece in a single-stand, multipass rolling mill when the final gage and crown are specified. The roll-separating force required on each reducing pass is calculated as a function of (1) roll elasticity, diameter, and crown and (2) workpiece crown, resistance to deformation, and width. The per unit target crown for each pass  $n$  is calculated by multiplying the per unit target crown for pass  $n+1$  (using the final per unit crown as the first pass  $n+1$  per unit target crown) by a crown-slope multiplier greater than one. The multiplier is a function of final width and final gage and is subject to change in response to observations of the shapes of previously rolled workpieces. Also disclosed is pattern control through adjustment of rolling force levels.

3,630,056

**METHOD AND ASSEMBLY FOR THE PRODUCTION BY HYDROFORMING OF PARTS OF LARGE SIZE, ESPECIALLY IN LENGTH**

Pierre Cuq, 6 Rue Limouzin, Firminy, France

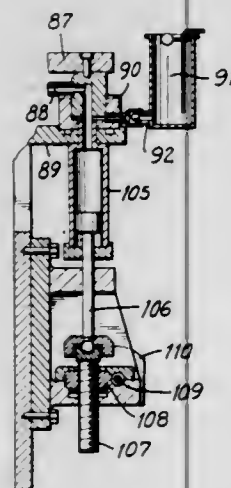
Filed July 1, 1969, Ser. No. 838,152

Claims priority, application France, July 4, 1968, Dec. 17, 1968, Apr. 9, 1969; 146, 257, 6909551

Int. Cl. B21d 26/04

U.S. Cl. 72-28

9 Claims



A method of forming blanks of stamped metal sheets, into a finished part by a combination of mechanical and hydraulic actions. The hydraulic action is strictly connected in synchronism and magnitude, according to a univocal relationship, with the mechanical action. This univocal relationship is defined by the variation of the internal volume of the

part as a function of its shortening, enabling the surface of the part to be maintained constant from the blank up to the finished part. An assembly for performing this method with any press of normal power is actuated by the press by a double-acting oleohydraulic transmission having a master cylinder and regulator. The assembly includes a frame of parallel plate and U-shaped binders for clamping the opening parts of the mold. Actuation of the assembly can be electrical, hydraulic or mechanical. The regulator is a rotary cam upon which the univocal relationship is registered and which is calibrated. The cam is phase-locked by levers, cogs or a hydraulic multiplier to the shortening jack. Several concentric jacks interconnected by cushions of oil constitute the bending ram for multidiameter shapes.

3,630,057

**PROCESS AND APPARATUS FOR MANUFACTURING COPPER-PLATED STEEL WIRE**

Harald Strohmeier, Kapfenberg, Austria, assignor to Gebr. Bohler Co. Aktiengesellschaft, Wien, Elisabethstr., Austria

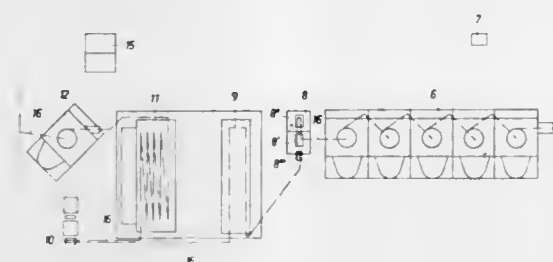
Filed Apr. 15, 1969, Ser. No. 816,304

Claims priority, application Austria, Apr. 19, 1968, A 3808/68

Int. Cl. B21b 45/00; B21c 9/00

U.S. Cl. 72-47

10 Claims



Drawing grease is applied to continuously advancing steel wire rod, which is subsequently drawn in succession through a plurality of drawing dies to form wire, which is continuously advanced along a predetermined path. Electric current is passed through the advancing wire along a predetermined portion of the path to heat and anneal the wire. The advancing wire, which has been annealed, is pickled in an electrolytic bath and is subsequently rinsed and thereafter subjected to a chemical copper-plating treatment in a bath consisting mainly of copper sulfate solution. Drawing grease is applied to the advancing copper-plated wire, which is subsequently drawn through at least one drawing die. The advancing wire which has been drawn is finally wound on spools.

3,630,058

**PROCESS AND APPARATUS FOR FORMING TUBES WITH SPIRAL CORRUGATIONS**

Vilmer H. Kiplinger, Concord; Marshall H. Hickey, Knoxville, both of Tenn., and Roy E. Reed, Jr., deceased, late of Concord, Tenn. (by Frances E. Reed, administratrix), assignors to The United States of America as represented by the Secretary of the Interior

Filed Jan. 27, 1970, Ser. No. 6,184

Int. Cl. B21d 15/04

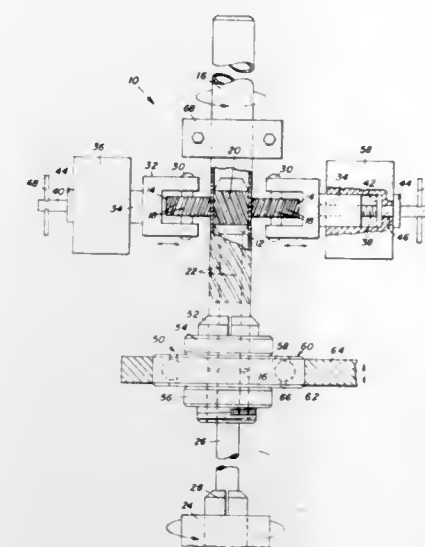
U.S. Cl. 72-96

11 Claims

A spirally corrugated heat exchange tube is formed from a smooth-walled tube. The smooth-walled tube is drawn over a rotating mandrel between spirally fluted rotary dies. As the

tube rotates with the mandrel, the newly corrugated portion is drawn away from the mandrel and dies, and a smooth-

bending component includes a resilient plastic female die bar and a cooperating metal male die bar and notching cutter and is mounted for pivotal movement on a vertical axis dur-



walled portion is advanced, forming continuous spiral corrugations along the length of the tube.

3,630,059

**METHOD OF AND MACHINE FOR SHAPING METAL TO FORM A FLANGE**

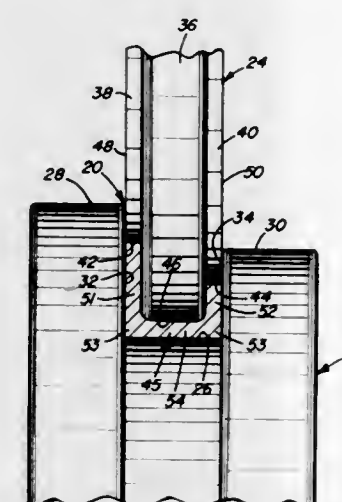
Neville T. Henkel, 9582 Labradore Lane, El Cajon, Calif.

Filed June 23, 1969, Ser. No. 835,493

Int. Cl. B21b 15/00; B21d 1/02

U.S. Cl. 72-177

12 Claims



A method of and a machine for forging sheet metal at bends therein, which method employs a machine which includes an element having a groove for receiving the heated metal to be forged and includes an element which extends into the groove, which latter element includes sections which engage several spaced portions of the metal to apply pressures on the metal to cause it to flow toward the bend. More specifically the method also comprehends first shaping the flat sheet metal to approximately its ultimate shape by cold working and thereafter heating the metal to its forgeable temperature before subjecting it to the aforementioned forging machine.

3,630,060

**APPARATUS FOR PROCESSING SHEET METAL**

Jerald G. Fleming, 2317 Waverly Drive South, Albany, Oreg.

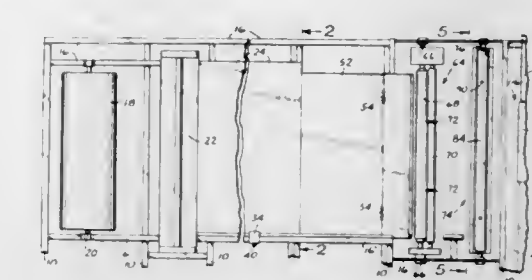
Filed June 5, 1969, Ser. No. 830,674

Int. Cl. B21b 1/00, 39/20

U.S. Cl. 72-203

16 Claims

A frame supports sheet metal vertically for movement sequentially through vertically disposed sheet metal shearing, rolling, bending, edge-forming and cutoff components. The



ing the bending operation. The forming and cutoff component is supported for vertical movement and for rotation to afford edge-forming selectively of vertical and horizontal edges of sheet metal.

3,630,061

**ROLLING MILL APPARATUS AND METHODS OF ROLLING METAL**

Alexander Ian Wilson, Sheffield, England, assignor to The Hille Engineering Company Limited, Sheffield, England

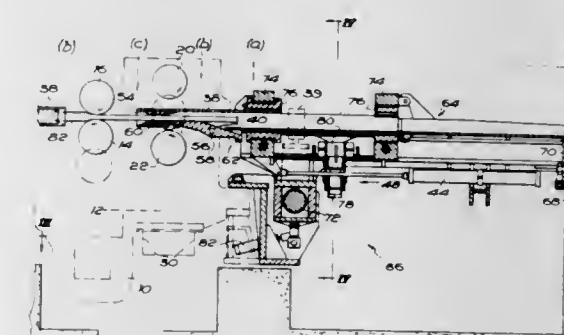
Filed Oct. 17, 1969, Ser. No. 867,226

Claims priority, application Great Britain, Oct. 23, 1968, 50,408/68

Int. Cl. B21b 39/14

U.S. Cl. 72-222

22 Claims



The invention relates to a method of and apparatus for rolling metal wherein the metal is passed to and fro between the rolls of at least one pair of rolls and is gripped alternately by gripping members mounted at opposite sides of the roll pass. The metal is first gripped in a first gripping member mounted for reciprocating movement towards and away from one side of the rolls and is thus entered into the pass by movement of said gripping member towards the rolls. The metal is then received at the other side of the pass in a second gripping member mounted on that side of the pass for reciprocating movement towards or away from the rolls; the metal moves lengthwise in the direction of rolling relative to the second gripping member until free of the rolls. The metal is thereupon gripped in said second gripping member and is then reentered between the rolls (into the same or another pass) by movement of the second gripping member back towards the rolls and is again received at the first mentioned side of the rolls in the first gripping member.



3,630,062

**METHOD OF MANUFACTURING FIN METAL TUBING**  
Masaharu Odaki; Takashi Konno; Tatsuya Mochizuki;  
Osamu Nakahara, and Makoto Hashimoto, all of Kawasaki-  
shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha

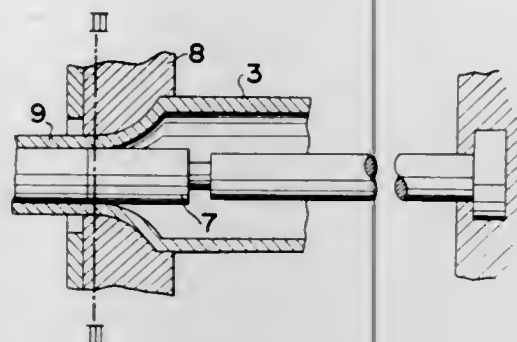
Filed July 9, 1969, Ser. No. 840,249

Claims priority, application Japan, July 13, 1968, 43/48845

Int. Cl. B21c 1/04; B21d 53/02

U.S. Cl. 72-278

10 Claims



An ordinary cylindrical metal tube is formed into an intermediate tubing having thicker wall portions at which fins are to be formed subsequently, and the intermediate tubing is then subjected to a cold drawing operation by using a finlike die and a cylindrical plug so as to form fins from the thicker wall portions.

3,630,063

**DEEP DRAWING HYDRAULIC PRESS**

Victor Marclger, Essen, Germany, assignor to S.T.D. Services Limited, Birmingham, England

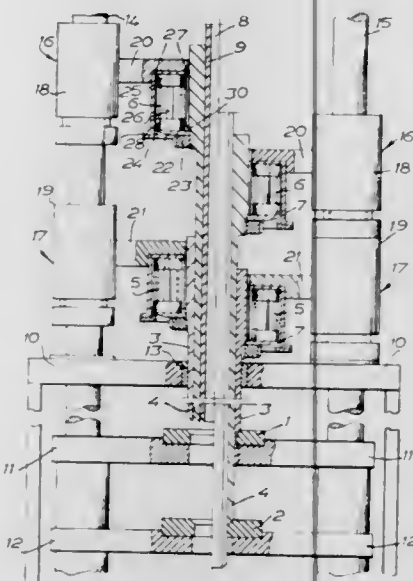
Filed July 16, 1969, Ser. No. 842,324

Claims priority, application Germany, July 17, 1968, P 17 52 800.6

Int. Cl. B21d 22/28

U.S. Cl. 72-349

5 Claims



The present invention relates to a deep drawing hydraulic press having a composite telescopic punch, which consists of an inner punch and at least one tubular punch concentrically surrounding the inner punch, in which press between the hydraulic driving mechanism and the tubular punches, flexible intermediate members standing under an initial tension and a force transmitting element are arranged, which during a drawing stroke of the press, produce a connection between the driving mechanism and the tubular punches, a stop being

provided in the forward path of the composite punches which shortly before the punch reaches a subsequent and smaller die, cuts off the hydraulic drive from the respective punch.

3,630,064

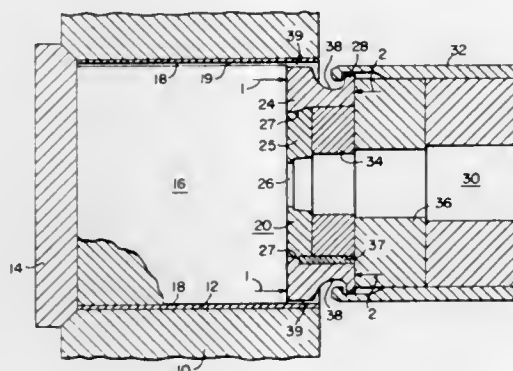
**FLEXING DIE MEMBER FOR INDIRECT EXTRUSION**  
Maurice W. Mahns, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 20, 1969, Ser. No. 867,492

Int. Cl. B21c 23/00, 3/00

U.S. Cl. 72-253

6 Claims



An extrusion process and apparatus in which a die member is provided with an annular recess in the periphery thereof. The recess permits radial expansion of the front portion thereof when the member and extrusion material are forced together under extrusion pressure, and radial contraction when the extrusion pressure is terminated.

3,630,065

**DIE CHANGING APPARATUS**

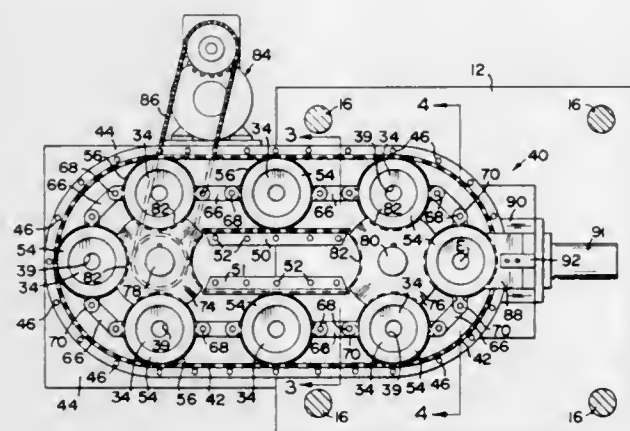
Alois J. Moos, Kew Gardens, N.Y., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Aug. 28, 1969, Ser. No. 853,675

Int. Cl. B21c 23/00

U.S. Cl. 72-263

7 Claims



Apparatus particularly suited for changing dies in extrusion presses having a ram movable along a path. The apparatus includes a guide track which intersects the path of movement of the press ram. A plurality of die holders are mounted for movement in the guide track. Means are provided for selectively driving the holders along the guide track to being desired ones into alignment with the ram and means are provided for locking the holders in position.

3,630,066

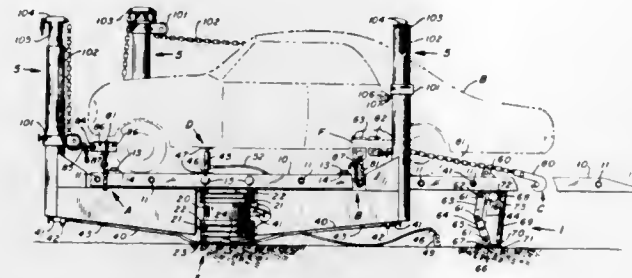
**APPARATUS FOR RETURNING VEHICLE BODY AND FRAME COMPONENTS TO THEIR ORIGINAL LOCATIONS DURING REPAIR AND SERVICING OF VEHICLES**

Finis L. Chisum, Star Route A, Box 1721 E, Spenard, Alaska  
Filed Mar. 27, 1969, Ser. No. 810,940

Int. Cl. B21d 11/04

U.S. Cl. 72-305

8 Claims



Apparatus is provided to apply pulling forces from any direction from any elevation around a vehicle being repaired and/or serviced. The apparatus is arranged so personnel using it are concerned with minimal physical lifting movements and minimal setup arrangements of the apparatus. Each embodiment of the apparatus utilizes at least one tower assembly equipped with an elongating subassembly to move a tension member, through directional change devices, as it remains secured to some portion of a vehicle, thereby undergoing at least one repositioning pull in a direction opposite to at least one prior force that previously caused some of the damage and/or misalignment. Depending on the magnitude of the restoring force required, the tower, other towers, and/or other structures may be secured together and/or to the vehicle as well, to create a firm basis for anchoring the apparatus and/or the vehicle as one or more reactive forces are controllably created. Depending on the anticipated use of the apparatus and the capital expenditures to be made, the apparatus is made available in different embodiments, ranging from a sole location of a tower to multiple locations of several towers related to overall reactive structures and/or vehicle ramps serving as mutual multiple holding or anchoring places of forces applied to the vehicle, as the elongating subassemblies of the towers are moved to create the restorative pulling forces.

3,630,067

**FLUID PRESSURE OPERATED HEAD FOR SETTING MANDREL RIVETS**

James N. Henshaw, Sutton Coldfield, England, assignor to USM Corporation, Flemington, N.J.

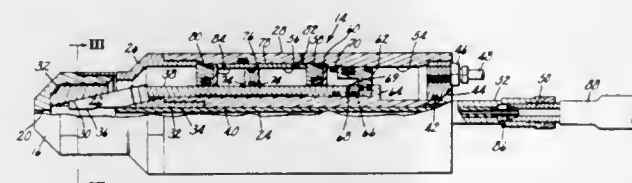
Filed Apr. 30, 1970, Ser. No. 33,273

Claims priority, application Great Britain, May 10, 1969, 23,895/69

Int. Cl. B21d 9/05, 31/00

U.S. Cl. 72-391

4 Claims



A fluid pressure operated tool, is disclosed for setting blind rivets by pulling and breaking their mandrels. In addition to

including means for ejecting the spent mandrel portion, the rivet head has mechanism for ensuring that its mandrel gripping jaw close prior to exerting substantial mandrel tension, open at the end of the mandrel pulling stroke, and allow reloading of the head with retention of the next mandrel rivet to be installed.

3,630,068

**HIGH COMPRESSION FOR STAKING TOOL**

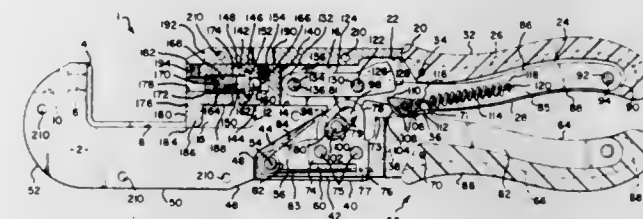
Edwin Floyd, Jr., P.O. Box 2201, Harrisburg, Pa.

Filed May 20, 1970, Ser. No. 39,692

Int. Cl. B21d 9/08; B21j 9/18

U.S. Cl. 72-410

8 Claims



A staking tool wherein staking dies are compressed by a toggle linkage having unequal arms pinned to each other about a common pivot point, the longer toggle arm being further provided with a cam matingly slidable on a cam follower pivoted in an arcuate motion by a manually actuated handle. The staking dies may be adjusted for selecting variable staking pressure, and a positive stop is provided to prevent undesired excessive staking compression.

3,630,069

**FEEDER FOR SMALL DIAMETER BARS**

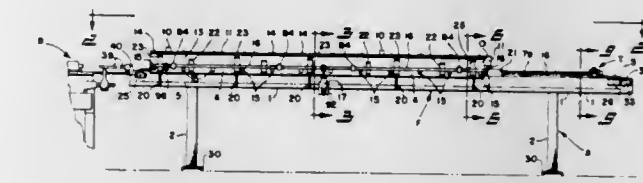
Frank F. White, Shaker Heights, Ohio, assignor to Automation Development Corporation, Mentor, Ohio

Filed Apr. 13, 1970, Ser. No. 27,735

Int. Cl. B23g 11/00

U.S. Cl. 72-420

22 Claims



A bar feeder especially designed to handle bars and tubes of widely varying diameters, including those of very small diameter, and having an escapement mechanism of simple inexpensive construction, an improved box beam frame construction and a novel feeding system wherein gripping jaws grip and locate the end of each bar near the beginning and end of each cycle to assist the feed fingers in gripping the bar and in releasing the remnant and to assure proper positioning of the bar relative to the conveyor. A novel retractable stop is provided to stop the pusher so that the remnant is gripped while the feed fingers are still a few inches from their retracted positions.

3,630,070

**RIVET UPSETTING TOOL**

Morton Mendels, Torrance, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed Mar. 11, 1970, Ser. No. 18,448

Int. Cl. B21j 15/38

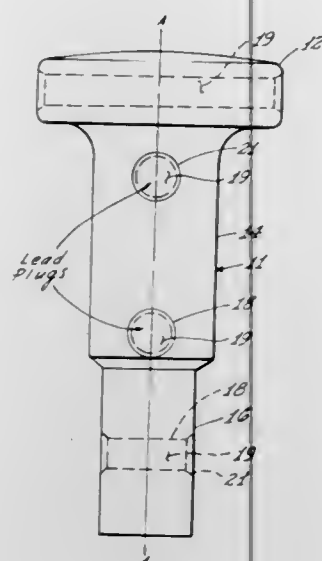
U.S. Cl. 72-479

5 Claims

Upsetting tools, fabricated of at least two dissimilar metals, especially useful in bucking rivets utilized in attaching com-



ponents to panels, metal plates and like articles, functioning to reduce the impact wave occurring in the tool and rever-



beration thereof and reducing the accompanying noise level originating in and emitting from the panel etc.

3,630,071

**FREE PISTON GAUGING APPARATUS**

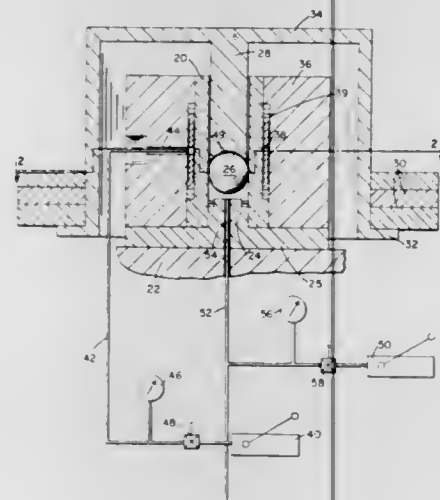
Donald Harwood Newhall, Norfolk, Mass., assignor to Harwood Engineering Company, Walpole, Mass.

Filed Apr. 30, 1969, Ser. No. 820,466

Int. Cl. G011 7/16, 27/00

U.S. Cl. 73-4 D

10 Claims



A free piston gauging apparatus having pressure cylinders and pistons with spherically formed cylinder wall engaging surfaces providing a line contact between the piston and cylinder wall. The apparatus includes a pressure cylinder closed at one end and open at the other end, a piston having a spherically shaped piston-to-cylinder contact surface which provides a line contact between the piston and cylinder wall, said piston being freely movable axially and in rotation within the cylinder and providing a sharp pressure drop across the transverse diameter of the spherically formed piston from the closed end to the open end of the cylinder, a ram extension of said piston, which may be separate or integral with the piston, loosely fitted into the open end of the cylinder, means for applying a loading force against the ram extension, a balancing pressure applied against the spherical piston through the closed end of the cylinder, and a gauge responsive to said balancing pressure.

The pressure cylinder may be jacketed for the application of external pressure which is adjustable with relation to the internal pressure to provide a controlled clearance between the cylinder and associated spherically formed piston.

Five embodiments of the invention are here shown. These embodiments include a simple free piston deadweight loading pressure calibrating gauge, and a force-measuring free piston gauge, each of these embodiments having a pressure cylinder and a spherical piston and ram assembly well adapted for the making of more accurate and reliable measurements than heretofore achieved. Two additional embodiments of the invention illustrate respectively a differential free piston pressure multiplying calibrating gauge and a differential area free piston deadweight loading pressure calibrating gauge, each having two opposed pressure cylinders with spherical pistons and a ram spacer, of which the pressure multiplying apparatus has an input loading cylinder and spherical piston of larger diameter than the balancing cylinder and piston, while the differential area deadweight loading apparatus has an input loading cylinder and spherical piston of smaller diameter than the balancing cylinder and piston. The last embodiment shown is a force-measuring gauge similar to that shown in FIGS. 3 and 4 of the drawings, of which the spherically formed cylinder wall engaging surfaces of the piston and the ram formed as an extension of the piston of smaller diameter are combined in a single element.

3,630,072

**HYDROCARBON EMISSIONS COMPUTER**

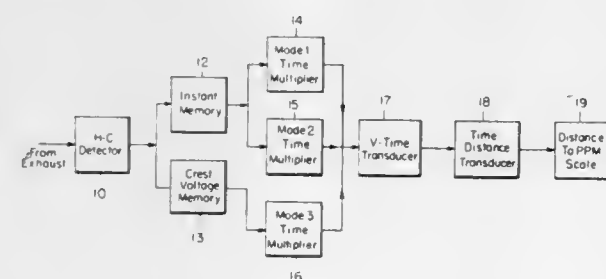
Alfred E. Traver, Great Neck, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,460

Int. Cl. G01n 23/02; G06g 7/48

U.S. Cl. 73-23

9 Claims



Method and apparatus for providing a hydrocarbon emission rating for an exhaust of an engine comprising means for adding hydrocarbon emission readings as they are generated during operation of the engine through a plurality of modes including acceleration, deceleration and cruise.

3,630,073

**TABLET MEASURING AND TESTING DEVICE**

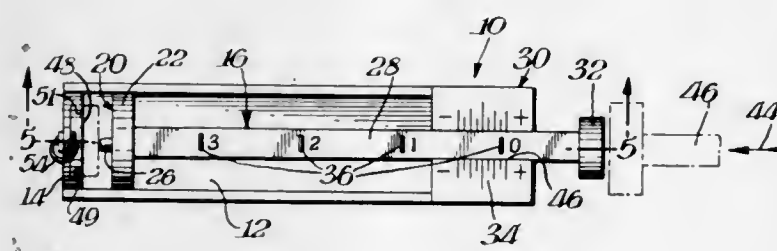
Frank Michel, Brooklyn, N.Y., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 11, 1970, Ser. No. 18,601

Int. Cl. G01n 3/42

U.S. Cl. 73-81

10 Claims



Tablets are measured and tested in a V-shaped channel by pushing a plunger against them in response to an external

calibrated force. An elongated projection on the head of the projection works in conjunction with a slot in the anvil to snap scored tablets accordingly supported at three points. The thickness of one or a row of tablets is measured by scale markings on the stem of the plunger. Brittleness and shock resistance can also be determined by rapid actuation of the device.

3,630,074

**RATE CONTROL FOR TOOLS**

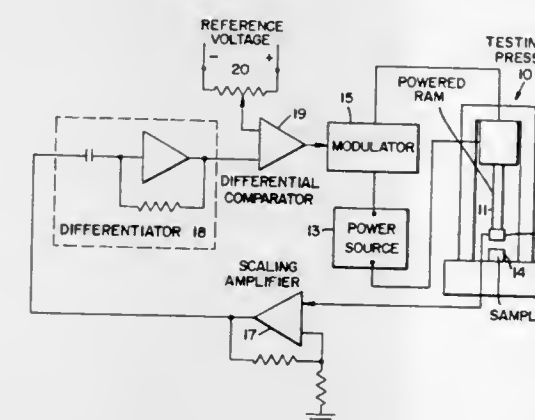
William Herbert Hartman, Fair Oaks, Calif., assignor to Research Derivatives Incorporated, Sacramento, Calif.

Filed Mar. 20, 1969, Ser. No. 808,732

Int. Cl. G01n 3/00

U.S. Cl. 73-90

10 Claims



The first time derivative of the output voltage of a measuring transducer in a machine, which is a measure of the velocity of some parameter affected by the machine, such as the machine displacement, is compared with a fixed voltage standard. For a given velocity, the derivative output is fixed and if equal to the fixed reference, exactly balances out in the differential voltage comparator. If a velocity error is present, the comparator produces an error signal which is then amplified in a servocontrol arrangement, to force the machine to minimize the error signal and maintain a uniform rate of travel.

3,630,075

**DOUBLE BEAM EXTENSOMETER**

Fred K. Rose, Chula Vista, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Apr. 20, 1970, Ser. No. 29,968

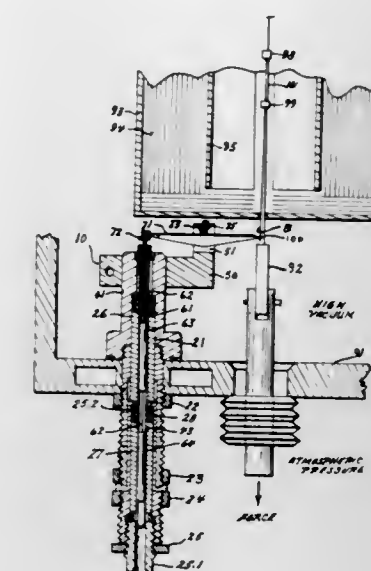
Int. Cl. G01n 3/08; G01b 5/00

U.S. Cl. 73-95

6 Claims

A double beam extensometer, for use in a tensile- or creep-testing machine, particularly well suited for accurately and directly measuring the gauge length strain of thin material specimen, including composites and filaments as thin as 0.001 inch to a temperature of 5,000° F. in a high vacuum. The extensometer includes a brass lower body that contains two linear variable differential transformer windings, a copper upper body to which is affixed a closed end austenitic stainless-steel tube which extends downwardly through the linear variable differential transformer windings, a copper beam support bracket that clamps to the upper body, and cores, core suspensions, beams, extension strips, and associated conventional components, such as power supply, control panel with oscillator-demodulator and recorder readout. As the specimen is strained by the applied load, the beams are displaced and cause differential movement of the cores in the linear variable differential transformers and,

therefore, difference in voltage as to each linear variable differential transformer. The difference in voltage is then read



directly as the gauge length strain undergone by the specimen.

3,630,076

**ENGINE ANALYZER**

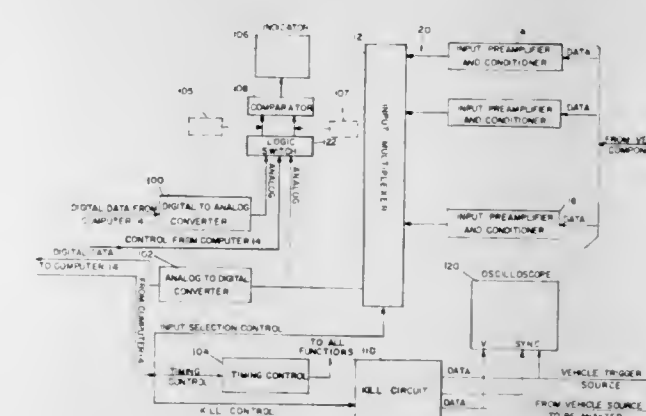
James E. Staudt, 206 Audubon Street, Hartselle, Ala.

Filed Dec. 31, 1969, Ser. No. 889,757

Int. Cl. G01m 15/00

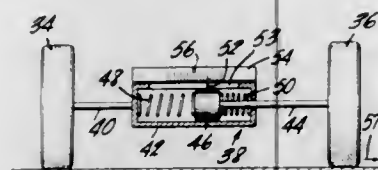
U.S. Cl. 73-117.3

7 Claims





which is an aleatory variable. The pseudocamber is measured for each tire, and those tires having a pseudocamber producing a lateral thrust, when the tires roll at 10 km./h. at normal load and pressure on level ground, beyond 0 percent to 6 percent and, preferably, 1 percent to 4 percent of the rated



load of tire, are rejected. The remaining tires are marked by any arbitrary symbols the meaning of which is understood by users, to indicate the direction of mounting on a rim. The tires are mounted on their respective rims so that the lateral thrust is outward on the front wheels and inward on the rear wheels.

3,630,078

**MAGNETIC SUSPENSION FLOWMETER**

Jean-Loup Bonnet, Verrieres-le-Buisson, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

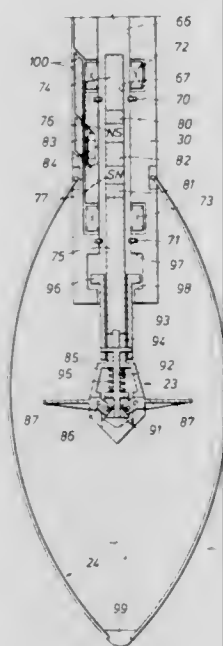
Filed Oct. 31, 1969, Ser. No. 872,971

Claims priority, application France, Mar. 6, 1969, 6906277

Int. Cl. E21b 47/00

U.S. Cl. 73-155

11 Claims



An illustrative embodiment of the present invention includes apparatus for making measurements of the rate of fluid flow in a producing well. The apparatus includes a body, a folding blade screw or spinner mounted on a shaft turning in the body and a blade-closing mechanism. The screw is mounted so that in operation its axis of rotation is suspended in a magnetic field which also provides an axial vibration to largely overcome the effects of static and dynamic friction on its motion.

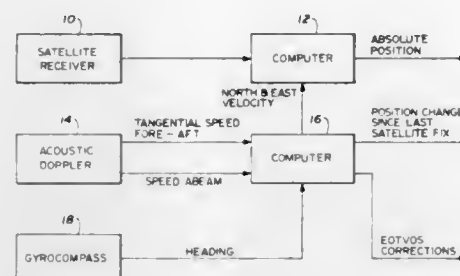
**3,630,079**  
**NAVIGATION METHOD AND APPARATUS UTILIZING MULTIPLE SENSORS**  
John Mark Hughes, Dallas, and David Raynold Reinhartsen, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 27, 1969, Ser. No. 819,508

Int. Cl. G01c 23/00

U.S. Cl. 73-178

20 Claims



The disclosure is directed to a navigation system for a vessel including a radio navigation system for generating signals representative of the absolute position of the vessel. A second independent system utilizing radio signals from an orbiting satellite also generates signals representative of the absolute position of the vessel. Other sensors including an acoustic doppler, navigation unit, a water speed indicator and a gyrocompass generate signals which can be combined to produce a signal representative of the position of the vessel relative to a reference location. A computer combines each of the signals according to certain weighting functions in order to generate a resultant output signal which to a minimum mean squared error sense provides extremely accurate and reliable position information for the vessel.

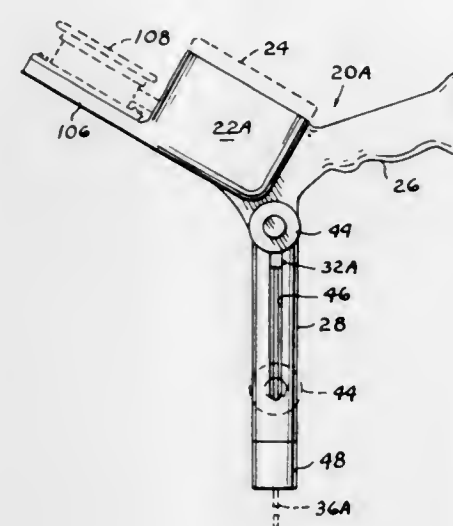
**3,630,080**  
**TEMPERATURE, PRESSURE AND FLOW RATE SENSING PROBE AND ASSOCIATED GAUGE PLUG**  
Julian S. Taylor, 8600 S. W. 8th, Oklahoma City, Okla.

Filed Nov. 13, 1969, Ser. No. 876,349

Int. Cl. G01p 5/16; G01k 1/14; G01l 19/14

U.S. Cl. 73-212

11 Claims



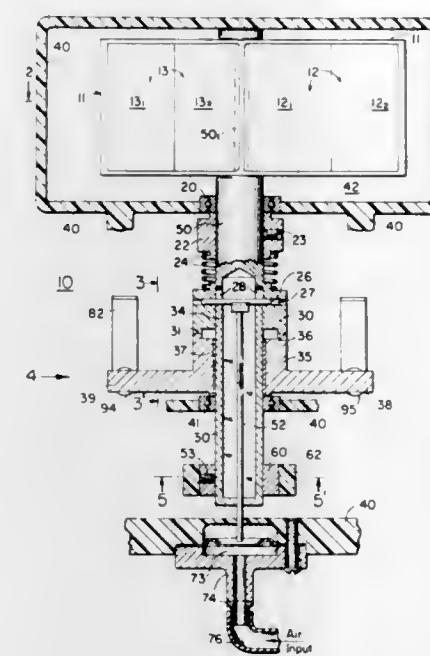
A handle-equipped instrument-supporting housing is provided with an elongated centrally bored stem having a socket at its free end for receiving an end portion of a gauge plug. A fluid sensing probe is telescopically received by the housing stem for entering the gauge plug when extended. Probes are provided for sensing temperature, pressure and flow.

**3,630,081**  
**MILK METERING APPARATUS**  
Kurt Nelson, Wappingers Falls, N.Y., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.  
Continuation-in-part of application Ser. No. 707,230, Feb. 21, 1968, now Patent No. 3,499,422. This application Jan. 6, 1970, Ser. No. 967

Int. Cl. G01f 3/28

U.S. Cl. 73-219

23 Claims



Milking apparatus includes a reciprocating milk metering tilt table which is coupled by a shaft and clutch assembly to fluidic digital sensors. In accordance with selected aspects of the present invention, fluidic logic is employed to control the tilt table motion; to supply a quantitative indication of the milk yielded by an animal during a milking cycle; and to signal completion of milking.

**3,630,082**  
**ROTOR MEASURING DEVICE FOR FLUIDS**  
Roland Francois Edouard Frayssinoux, 64 Boulevard Soult, Paris, 12eme, France

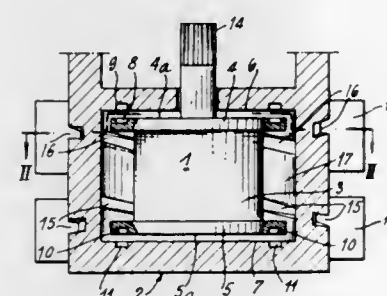
Filed June 1, 1970, Ser. No. 42,051

Claims priority, application France, May 30, 1969, 6917704

Int. Cl. G01f 1/00

U.S. Cl. 73-231 R

8 Claims



A rotor measuring device comprising a rotor rotating without any mechanical bearing in an injection box having inlet and outlet ports the axis thereof are both tangent to a virtual helix formed on the inner walls of the box, in such manner that contiguous close fluid streams will follow an helicoidal course around said body and further that the axis of said body will be set at the center of a vortex tube and said body be driven rotatively at a speed in relation to the fluid outflow.

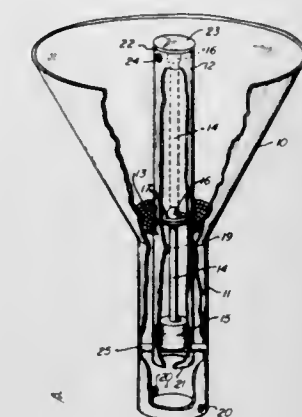
S93 O.G.—48

**3,630,083**  
**FILL-INDICATOR FUNNEL**  
Victor Gorans, 870 North Wheeler, St. Paul, Minn.  
Filed Apr. 6, 1970, Ser. No. 25,895

Int. Cl. G01f 23/06

U.S. Cl. 73-294

9 Claims



A funnel having a fill-indicator as an integral part thereof. The funnel has a tapered body portion with a spout projecting downwardly from the narrow or small end thereof. A tubular member is aligned within the spout and extends into the body portion. The lowermost termination of the tubular member is at a location within the lower half of the length of the spout but is preferably spaced in recess fashion from the lowermost end of the spout. The uppermost termination of the tubular member is at a location within the upper half of the body portion without extending beyond the wide mouth opening thereof. A filter screen is fixed transversely within the tapered body portion to the interior surface of that portion and to the exterior surface of the tubular member; and this filter screen is the sole support means extending between the tubular member and tapered body portion of the funnel. A rod is aligned within the tubular member and has a float fixed to its lower end and a visual level indicator fixed to its upper end. A guide member for longitudinal aligned movement of the rod within the tubular member is located within the tubular member at a position proximate to the small end or throat end of the tapered body portion. A minimum of structural elements are employed, with plural functions performed by most of the elements especially those forming the fill-indicator mechanism and those supporting or fixing it as an integral part of the funnel.

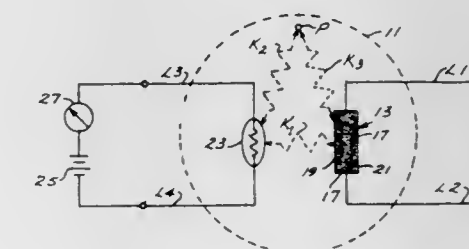
**3,630,084**  
**COMFORT INDEX INDICATOR**  
Lyle E. McBride, Jr., Norton, and Francis P. Buiting, Plainville, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 9, 1969, Ser. No. 856,256

Int. Cl. G01w 1/06; G01n 25/64; G01r 25/66

U.S. Cl. 73-336

3 Claims



Apparatus for measuring and indicating the comfort index of an ambient atmospheric environment subject to variations



in dewpoint and dry bulb temperature. A heat source is provided which includes means for maintaining it at a temperature which varies as a substantially linear function of the dewpoint. Thermally coupled both to the heat source and the environment and thermally responsive thereto is means, e.g., a thermistor, for indicating a temperature which is the sum of linear functions of the heat source temperature and dry bulb temperature, this means being approximately 0.122 times as responsive to variations in the heat source temperature as to variations in the dry bulb temperature. The temperature indicated thereby is the measured comfort index.

3,630,085

## APPARATUS FOR MEASURING TEMPERATURES

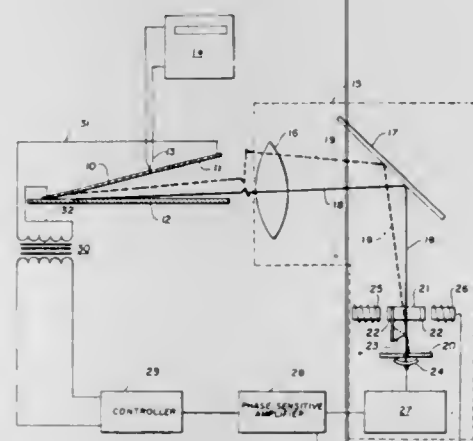
John E. Roney, Monroeville, and Donald M. Gerstner, Pittsburgh, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1970, Ser. No. 8,471

Int. Cl. G01j 5/52, 5/62

U.S. Cl. 73-355 EM

2 Claims



A body having a reflective surface whose temperature is adjustable is placed at an angle to a moving strand, such as steel strip, whose temperature is to be measured to form a wedge-shaped confined space which acts as a black body when the strand and body are at the same temperature. A radiant energy detector means alternately measures the radiant energy incident from a point on the reflective surface and from a point on the strand within the confined space and provides an electrical output which is a measure of the difference in the radiant energies incident from those points. This output is used to adjust the temperature of the body to the temperature of the strand whereby the strand temperature can be ascertained by direct measurement of the temperature of the body.

3,630,086

## CENTRIFUGAL-BALANCE GRAVITY GRADIOMETER

Leonard S. Wilk, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 22, 1970, Ser. No. 48,416

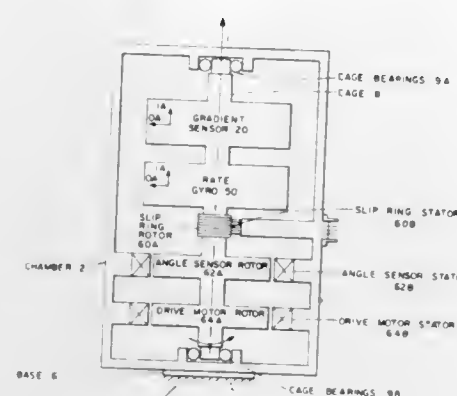
Int. Cl. G01v 7/04

U.S. Cl. 73-382

6 Claims

An improved gradiometer for accurately measuring gravity gradients without the need for prior calibration. Since calibration is not required, the instrument operates independent of any external standards or references, except time. Further, one instrument in one orientation can provide all the components of the gravity gradient. The gradiometer comprises a suitably configured gradient sensor mass within a case which, in turn, is mounted within a cage such that its input axis is aligned with the axis of rotation of the cage. The entire assemblage is contained within a chamber which is preferably mounted on a stabilized base. Forces are induced

on the sensor due to gravity gradients, causing the mass to move relative to its case. This motion is sensed and used to rotate the cage relative to the chamber. The angular rotation of the cage, in turn, causes the sensing device (specifically, its case) to rotate about an axis perpendicular to the inertia



reaction forces on the sensor which are in an opposite sense to the forces induced on the sensor by the gravity gradients. The sensor is thus dynamically balanced. The angular velocity of the cage is indicative of the magnitude and direction of the gravity gradients being measured.

3,630,087

## SUMMATION GAUGE

Colin William Ogden, Mansfield, and Alec Bailey, Arnold, both of England, assignors to Smith-Denis Limited, Nottingham, England

Filed Feb. 12, 1970, Ser. No. 10,935

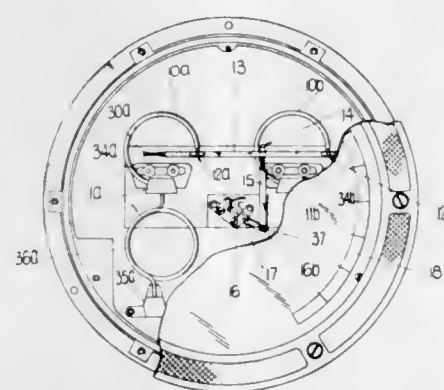
Claims priority, application Great Britain, June 13, 1969,

30,004/69

Int. Cl. G011 15/00

U.S. Cl. 73-412

8 Claims



A summation gauge which gives the sum, and/or the mean, of two fluid pressures which are applied respectively to two Bourdon tubes. The moving ends of these tubes are connected to opposite ends of a balance beam which, at a central point in its length, is connected to a gauge quadrant. In an elaboration of this gauge, for giving the sum, and/or the mean, of four separate pressures, the Bourdon tubes and their beams are duplicated. The two beams are connected, each at a central point in its length, to the opposite ends respectively of a main balance beam which is connected, at a central point in its length, to the quadrant.

3,630,088

## SAMPLE SUPPLY APPARATUS

Ronald Sawyer, Littlehampton, and Peter Bernard Stockwell, Biggin Hill, near Westerham, both of England, assignors to National Research Development Corporation, London, England

Filed Feb. 25, 1970, Ser. No. 13,969

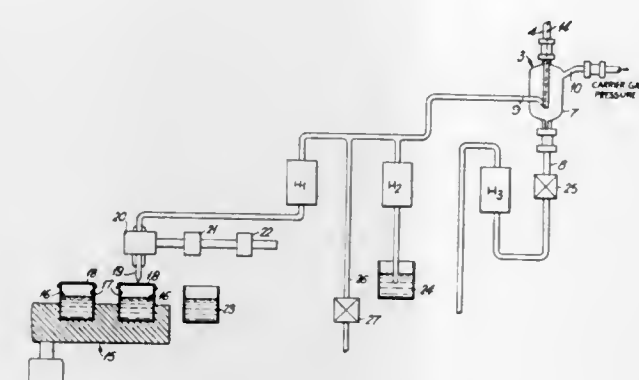
Claims priority, application Great Britain, Feb. 27, 1969,

10,550/69

Int. Cl. G01n 1/14

U.S. Cl. 73-423 R

3 Claims



A feed system for use with analytical apparatus in which liquid samples are supplied sequentially from a magazine of samples to a sample reservoir and thence to an analytical apparatus, arrangements being made for flushing the sample reservoir prior to each sample being supplied to it. A gas chromatographic apparatus in association with the feed system.

3,630,089

## PRESSURE VENTING INSTRUMENT CASING ASSEMBLY

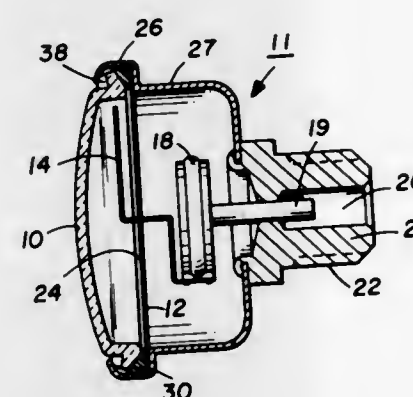
Robert D. Bissell, Orange, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 9, 1970, Ser. No. 17,838

Int. Cl. G011 19/14

U.S. Cl. 73-431

11 Claims



An instrument casing assembly for pressure gauges and the like providing controlled venting to atmosphere in event of overpressure buildup within the casing. Case engagement against the crystal exterior at selectively displaced peripheral locations compresses a resilient gasket to effect a watertight sealed enclosure. In the event of overpressure buildup from within, those crystal periphery portions intermediate locations held by the case flex outwardly to release the gasket seal thereat sufficiently to effect pressure venting.

3,630,090

## PROCESS AND APPARATUS FOR DETERMINING THE DISTRIBUTION OF PARTICLE SIZES IN GROUND MATERIAL

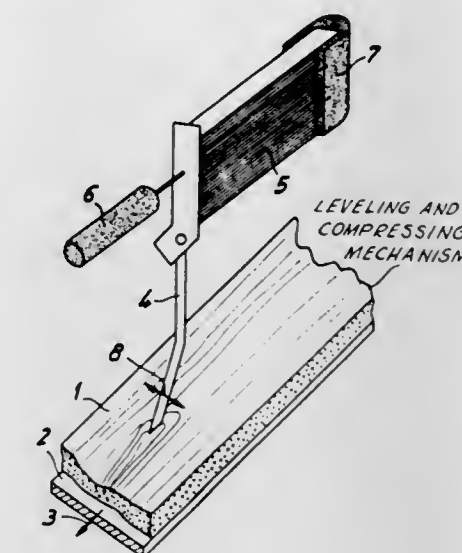
Otto Heinemann, Ennigerloh, Germany, assignor to Polysius AG, Neubeckum, Germany

Filed Apr. 28, 1969, Ser. No. 819,802

Int. Cl. G01n 15/02

U.S. Cl. 73-432 PS

3 Claims



The particle size distribution in ground material is determined by bringing into contact with a layer of the ground material a mechanical sensing element which is deflectable with at least one degree of freedom, while a relative movement of predetermined constant velocity between the sensing element and the ground material takes place in a direction transverse to the direction in which the sensing element is deflectable. The resulting mechanical deflections of the sensing element are converted into electrical pulses, each of which is produced by contact of an individual particle of the material with the sensing element. In the resulting train of pulses, the number of pulses whose amplitude exceeds a threshold value which occur during a predetermined measuring interval of time are counted.

3,630,091

## RATE AND/OR ACCELERATION SENSOR

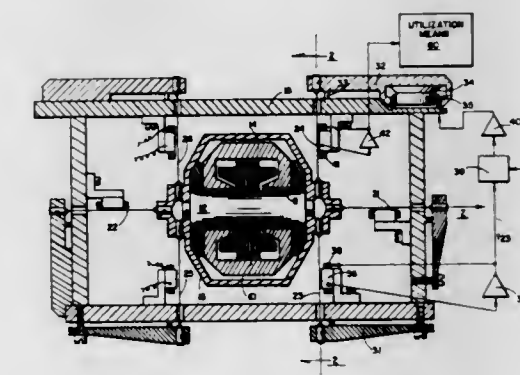
William M. Scarborough, Whittier, and Doyle E. Wilcox, Hacienda Heights, both of Calif., assignors to North American Rockwell Corporation

Filed June 1, 1970, Ser. No. 42,359

Int. Cl. G01p 15/10

U.S. Cl. 73-517 AV

10 Claims



The invention is directed to a proof body such as a gyroscope in which the spin axis is constrained to the housing or vehicle by five pairs of orthogonally disposed wire pairs.



The tension force each wire exerts on the gyroscope is sensed by determining the frequency of transverse vibration in each wire. The acceleration along three orthogonal axes and the rate of turn about two axes is obtained by processing the vibration-frequency data so as to solve the relationship:  $Tension = K(\text{frequency})^2$ , for each wire. A tension control servo means is utilized for comparing the vibration frequency of the wire opposite a tension transducer with a precision reference frequency. The resulting error signal is used to activate the tension transducer so as to maintain a constant frequency (and tension) in the opposite wire under all acceleration and rate conditions. Consequently, the strain in the opposite wire of each pair will remain constant and the axes orientation of the gyroscope will remain fixed while the other wire of each pair will be vibrating at a frequency which will be proportional to the forces acting on the gyroscope.

Means are provided for sensing this frequency and for providing an output signal which is proportional to the acting force. An accelerometer proof mass can be substituted for the gyroscope as a proof body with a resultant loss in rate sensing.

3,630,092

**STARTER FOR INTERNAL-COMBUSTION ENGINE**

Tsuyoshi Matsumoto, and Yoshio Kusajima, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

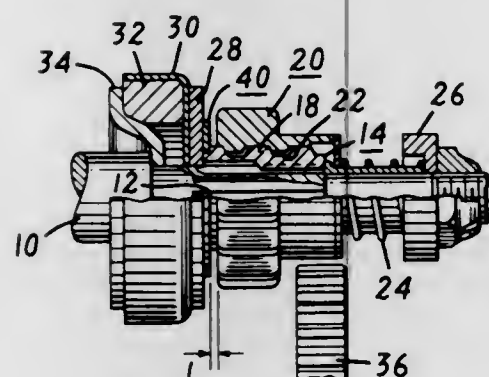
Filed Jan. 22, 1970, Ser. No. 4,832

Claims priority, application Japan, Jan. 23, 1969, 44/5915

Int. Cl. F02n 11/00

U.S. Cl. 74-7

7 Claims



In Bendix-type starters, the stop disc has bent portions axially extending perpendicularly to its plane on the periphery of its concentric opening and is attached to the holder for the pinion by having the pinion's sleeve snugly fitted into the opening. The pinion and sleeve include the respective helical splines provided with lopped ends adapted to abut against the free edges of the bent portions on the disc. This prevents the pinion from striking against its holder ensuring that the engine is always started.

3,630,093

**SPRING BRAKE RELEASE MEANS**

Robert J. Morse; Gilbert A. Pataky, and Gilbert B. Pumphrey, all of Elyria, Ohio, assignors to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Filed Jan. 16, 1970, Ser. No. 3,470

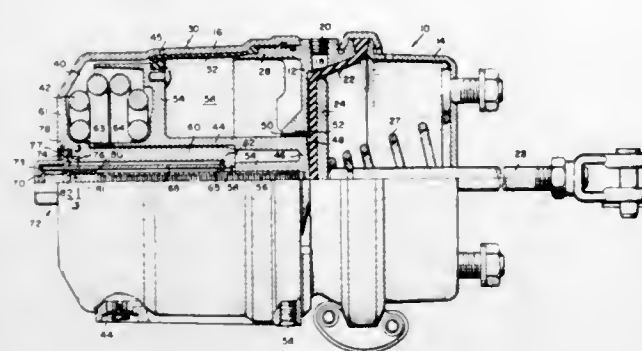
Int. Cl. F16h 27/02

U.S. Cl. 74-89.15

6 Claims

Mechanical release means for a spring-applied actuator comprising a threaded rod carried by the actuator and extending rearwardly into a fixed cylindrical socket of greater diameter than the rod and having a shoulder at the forward end of the socket, a rotatable hexagonal sleeve extending into the socket and engaging a hexagonal nut threaded onto

the rod, the outer end of the sleeve being engaged by a cup-shaped, hexagonal cover member having an annular flange rotatably secured to the actuator housing, the cover member being rotatable so as to rotate the sleeve and drive the nut



against the shoulder to draw the rod and actuator against the opposing force of the spring, the cover member serving also to exclude dirt and moisture from the housing. The release means including jam-type lock means releasable by mere rotation of the cover in a brake-releasing direction.

3,630,094

**DRIVE MECHANISM ENGAGING MEANS**

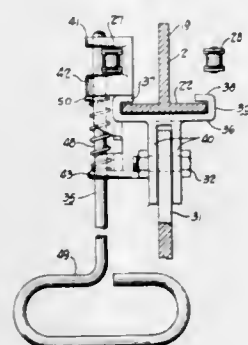
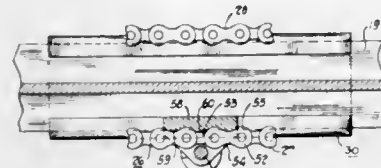
Alvin J. Carli, Sebring, Ohio, assignor to The Alliance Manufacturing Company, Inc.

Filed Dec. 22, 1969, Ser. No. 886,984

Int. Cl. F16h 27/02

U.S. Cl. 74-89.21

13 Claims



A drive mechanism engaging means is disclosed which may be used for a garage door operator to engage and disengage a chain as an example of a flexible drive member which is driven from a motor and speed-reducing drive train. The engaging means selectively engages and disengages a drive carriage from the chain so that in the event of electrical power failure, for example, the load carriage may be disengaged from the chain so that the garage door, which is fixed to the load carriage, may be manually operated to open and close the door. The engaging means may be actuated by a handle to be moved against a yieldable spring to stress the spring and thus release the load carriage from connection with the chain. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,630,095

**VARIABLE-SPEED TRANSMISSION**

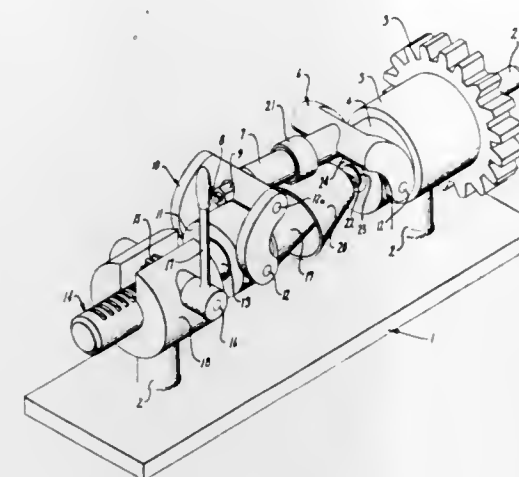
David Stephen Eakin, 3656 Garnet St. Apt. 212, Torrance, Calif.

Filed May 1, 1970, Ser. No. 33,613

Int. Cl. F16h 15/16, 15/50

U.S. Cl. 74-191

9 Claims



A variable-speed transmission employing a hollow outer cone disposed for hooplike spinning around an axially sliding inner cone. A driving roller is arranged for a restricted orbital rotation about the longitudinal axes of the cone and keeps the mating surfaces in constant contact. The two cones may have the same taper so that when the inner cone is completely inside the outer cone the driving roller merely freewheels around the surface of the outer cone and no motion is imparted to it. As the inner cone is withdrawn an increasing speed of rotation is imparted to the outer cone by the roller spinning it around on the varying diameter of the inner cone in the manner of a hoop. The outer member may also be cylindrical as well as conical.

3,630,096

**DRIVE-TENSIONING APPARATUS**

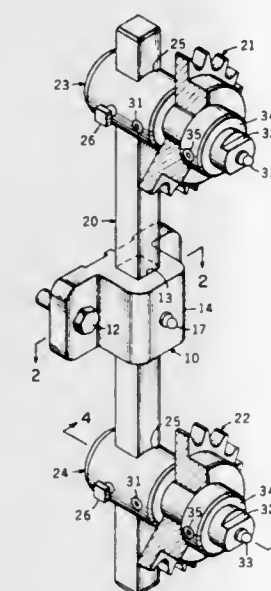
Carl T. Brewer, 1533 S. 7th Street, St. Louis, Mo.

Filed Aug. 21, 1970, Ser. No. 65,786

Int. Cl. F16h 7/12

U.S. Cl. 74-242.1 A

12 Claims



This drive-tensioning apparatus includes a base and a floating arm slidably mounted to the base. Rotatable idler elements are mounted at each end of the arm and each rotatable

element is engageable with an outer face of the flexible drive element. The idler elements are spaced apart a distance less than the transverse distance between opposed taut and slack portions of a continuous drive element so that the slack portion of said element is tensioned by one or the other of said idler elements, depending on the direction of the drive and the floating arm is automatically relocated when the drive is reversed. The spacing between idler elements may be adjusted to suit specific drive systems. The arm is noncircular in section and the base includes a compatible aperture receiving the arm to permit vertical reciprocation of the arm but preclude axial rotation of the arm relative to the base.

3,630,097

**BUSH CHAIN**

Tatsuo Kuratomi, 4-2-18 Hamatake, Chigasaki, Japan

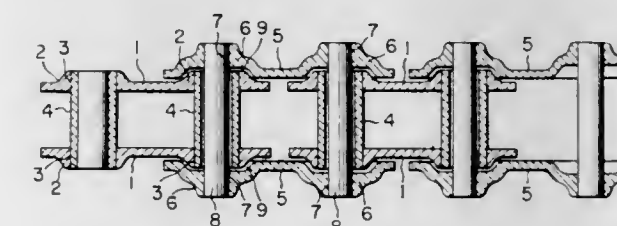
Filed Nov. 14, 1969, Ser. No. 876,725

Claims priority, application Japan, Mar. 24, 1969, 44/22200

Int. Cl. F16g 13/02

U.S. Cl. 74-245 R

4 Claims



A bush chain comprising inner links having two bush portions and holes therein; and outer links having also two bush portions and holes therein; bush portions and holes of said cylindrical pin bearings in said inner and outer links, said bearings having surfaces longer than the thickness of said links, a sleeve fixed in said holes of said inner links in alignment with said outer links; a pin fixed in the holes of said outer links at both ends to said bush portions of said outer links; the bearing surfaces of the holes of the bush portions of the inner links and of the holes of the bush portions of the outer links being longer than the thickness of said inner and outer links.

3,630,098

**THERMOPLASTIC GEAR WHEELS**

David F. Oxley, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

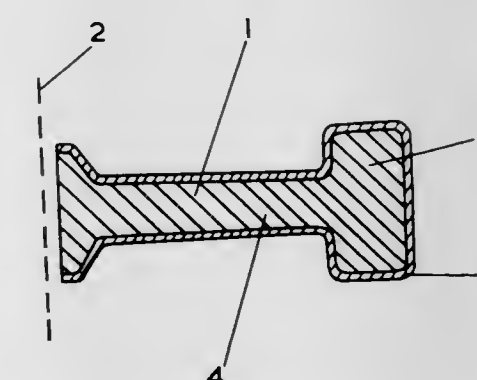
Filed Feb. 27, 1970, Ser. No. 15,116

Claims priority, application Great Britain, Mar. 26, 1969, 15,752/69

Int. Cl. F16h 55/12, 57/04

U.S. Cl. 74-439

10 Claims



A laminar gear wheel consisting of a core of a polyamide and surface skins of a polyamide containing a lubricant.



3,630,099

**RACK AND PINION STEERING GEAR APPARATUS FOR A VEHICLE**

Takeomi Miyoshi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

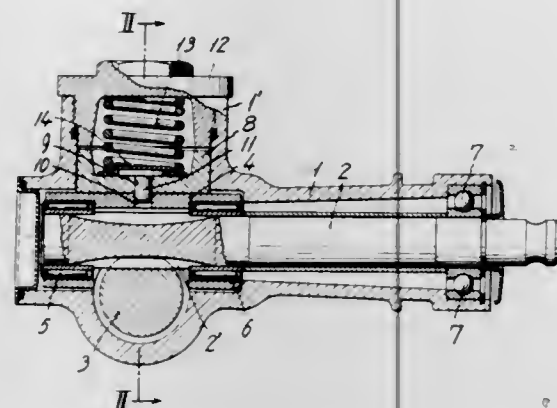
Filed Apr. 16, 1970, Ser. No. 29,019

Claims priority, application Japan, Apr. 19, 1969, 44/35507

Int. Cl. B62d 1/20; F16h 1/04

U.S. Cl. 74-498

6 Claims



A vehicle steering gear apparatus comprises a pinion shaft in mesh with a rack, the pinion shaft being connectable to a steering wheel and the rack to a tie rod of a steering mechanism. The pinion shaft is supported at one end by a bearing that permits pivotal movement of the pinion shaft thereabout, and at its other end the pinion shaft is supported by a pair of bearings in a tube for axial, slidable movement. A spring acts on the tube between the pair of bearings to urge the pinion into pressure contact with the rack.

3,630,100

**VEHICLE PEDAL**

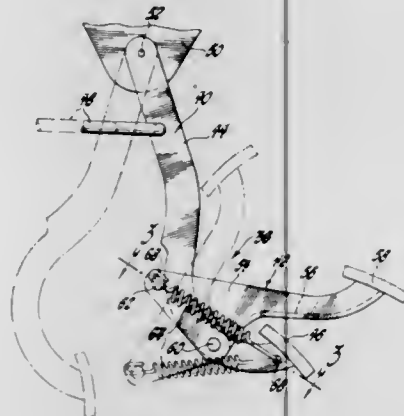
Henry Lemak, Huntington Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 10, 1970, Ser. No. 53,860

Int. Cl. G05g 1/16

U.S. Cl. 74-562

3 Claims



A dual-position vehicle pedal including a primary pedal pivotally mounted on the vehicle body and connected to a vehicle-operating system for actuation thereof in response to pressure on a primary bearing surface of the primary pedal and further including a secondary pedal pivotally mounted on the primary pedal for movement between an extended position wherein a secondary bearing surface thereon overlies the primary bearing surface to thereby extend the reach of the primary pedal and a normal retracted position exposing the primary bearing surface.

3,630,101  
**ROTARY TIMING DISC**

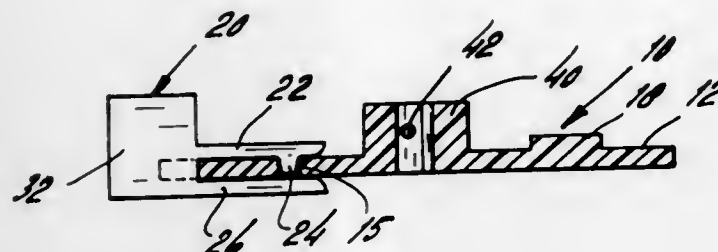
Dalbro R. Nixon, Jr., Chesapeake; David J. McIlhenny, Suffolk, and Marvin L. Harrell, Portsmouth, all of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed Jan. 20, 1971, Ser. No. 108,018

Int. Cl. F16h 54/04

U.S. Cl. 74-568 T

11 Claims



Rotary timing discs used in aerosol dispensers, particularly discs having adjustable time increment lugs mounted in their periphery, so as to contact a limit switch, or the like. As the disc rotates, the lugs contact the limit switch, activating an electrical circuit, which dispenses the aerosol bomb at the preselected time interval.

3,630,102

**WASHING MACHINE DRIVE**

Preben Knud Larsen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

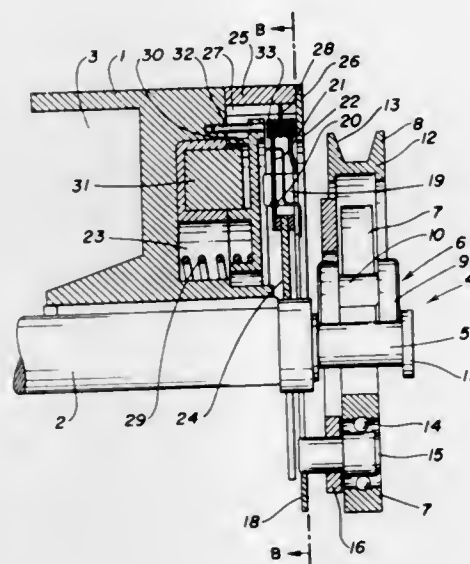
Filed Mar. 18, 1970, Ser. No. 20,506

Claims priority, application Germany, Apr. 2, 1969, P 19 16 961.0

Int. Cl. F16h 3/44

U.S. Cl. 74-789

4 Claims



The invention relates to a washing machine drive comprising a motor and a planetary gear set having friction wheel gears. Clutch means are provided whereby two speeds, which are a spinning speed and a washing speed, are obtained by locking the planetary gear carrier to the sun gear or the casing. The clutch is operative in axial directions but is constructed so as to prevent axially directed forces from being transmitted to the friction wheels of the planetary gear set.

3,630,103

**METHOD AND A DEVICE FOR SETTING TEETH OF BAND AND DISK SAWS**

Vladimire Viktorovich Idel, Gorkovsko, oblasti, ulitsa Graftio, 15, kv. 6, Zavolzhie, U.S.S.R.

Filed Feb. 11, 1970, Ser. No. 10,392

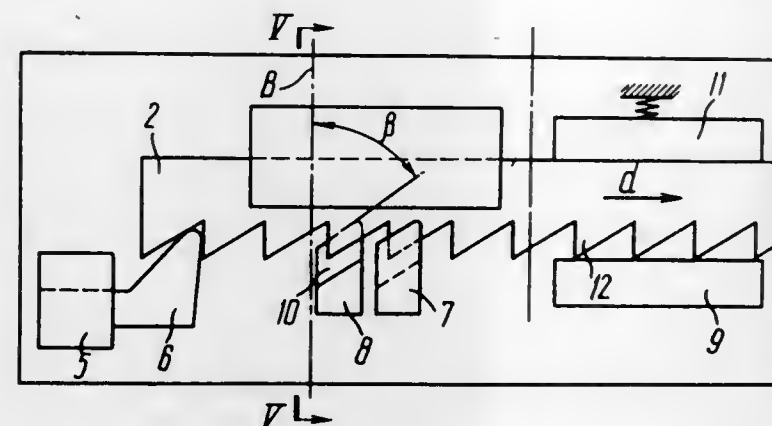
Claims priority, application U.S.S.R., Feb. 19, 1969, 1304934

Mar. 4, 1969, 1308951

Int. Cl. B23d 63/00

U.S. Cl. 76-112

7 Claims



There is proposed a method for setting teeth of band and disk saws, whose essence resides in that impacts are imparted to one edge of each tooth in the direction of its bending away, and a device for effecting this method, wherein striking members having their working surfaces inclined to the side surface of the saw are arranged in such a manner that said working surfaces are inclined also to the plane of cross section of the saw, said plane lying perpendicular to the straight line connecting two apices of the neighboring working teeth of the saw.

3,630,104

**MEASURING DEVICES**

Richard Morton Milner, Watford, England, assignor to National Research Development Corporation, London, England

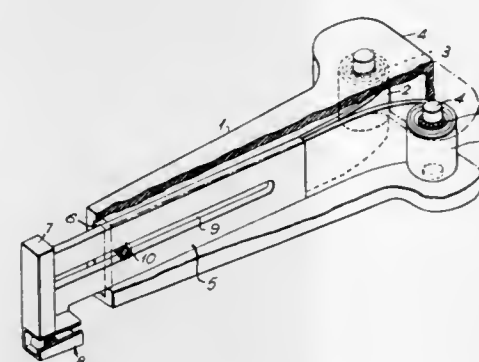
Filed Jan. 27, 1970, Ser. No. 6,068

Claims priority, application Great Britain, Jan. 28, 1969, 4,650/69

Int. Cl. G01h 5/04

U.S. Cl. 81-3 J

1 Claim



A tension control device for use with a measuring tape, which device comprises a housing containing spring means connected between a fixed part of the housing and tape clamping means carried by the housing but movable relative thereto, the spring means being adapted to exert a substantially constant tension when extended by relative movement of the tape clamping means, the tape clamping means being adapted for releasable securement to a tape at any point along its length, and the housing being formed to provide a handle.

3,630,105

**WIRE-STRIPPING MACHINE**

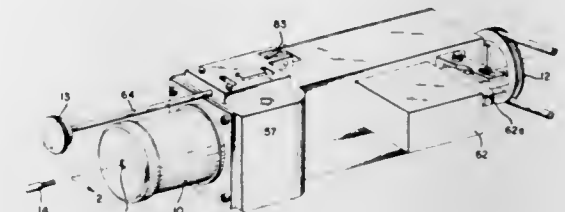
George William Rider, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 15, 1970, Ser. No. 37,717

Int. Cl. H02g 1/12

U.S. Cl. 81-9.51

9 Claims



A wire-stripping machine has an improved iris-type blade assembly which is continuously rotating. A wire to be stripped is inserted in the iris which is then closed to cut the insulation. When the wire is withdrawn the end of the insulation is stripped. The four cutter blades each have two apertures. Four blade holders have projections which engage an aperture in two blades. The blade holders are driven in slots in a cap radial to the axis of rotation of the assembly. By driving the blade holders inwardly and outwardly in the slots the iris formed by the blades is closed into cutting engagement with the wire to be stripped.

3,630,106

**SOCKET WRENCH**

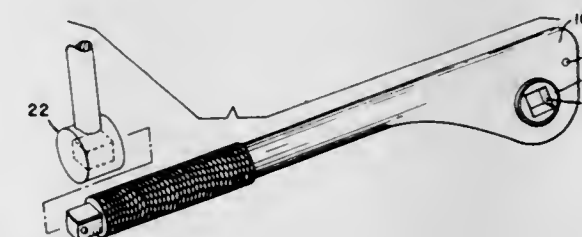
Oliver D. Olinger, 5130 Roeder Road, San Jose, Calif.

Filed Nov. 19, 1969, Ser. No. 878,092

Int. Cl. B25b 17/00

U.S. Cl. 81-57.29

1 Claim



A wrench having a rotatable work engaging member provided with gear teeth meshing with a worm that is attached to a shaft, said shaft having a handle at one end thereof. The gear and worm are housed in a housing that is formed of sheet metal by bending the sheet metal around the shaft and closing the open sides of the sheet metal by welding, brazing or the like. The shaft is provided with a bearing surface engaging one end of the housing. The other end of the shaft is provided with a bearing groove for engaging a pin attached to the housing to prevent lengthwise motion of the shaft and worm.

3,630,107

**KEEPER ACCESSORY FOR HOLDING A FASTENER SEATED IN A WRENCH SOCKET**

Harry A. Carr, 2934 El Caminito, La Crescenta, Calif.

Filed Feb. 9, 1970, Ser. No. 9,809

Int. Cl. B25b 13/02

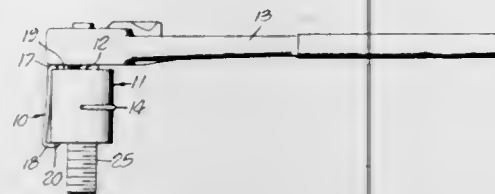
U.S. Cl. 81-125

8 Claims

A keeper accessory for use on a wrench socket to hold a fastener frictionally and rigidly captive within the socket. The accessory is designed for attachment to a twelve point socket without need for alteration in the socket. The one-piece accessory includes a hook embracing the rim edge of the



fastener end and positioned to press resiliently against one face of the fastener to hold the latter captive while being



manipulated into and out of alignment with another fastener part. The accessory preferably includes a second hook for locking it assembled to a socket.

3,630,108

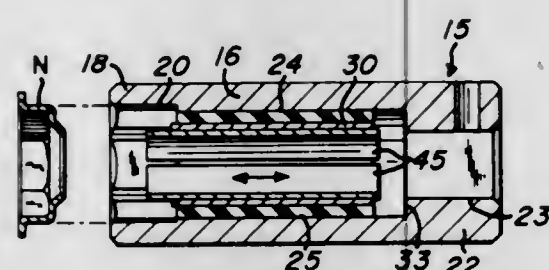
## MAGNETIC TOOL

George B. Stillwagon, Jr., Dayton, Ohio, assignor to Gardner-Denver Company, Dayton, Ohio  
Original application Feb. 5, 1968, Ser. No. 703,021, now Patent No. 3,538,792. Divided and this application May 11, 1970, Ser. No. 36,289

Int. Cl. B25b 13/02, 15/00

U.S. Cl. 81-125

8 Claims



A fastener-driving magnetic tool has an annular inner pole piece and an annular outer pole piece concentrically spaced with an annular thickness-orientated elastomeric strip magnet disposed therebetween. The inner pole piece is in radially expanding comprising relation against the magnet for retaining both the magnet and the inner pole piece, and an axially adjustable inner pole piece extension member or a non-magnetic tube member is disposed within the inner pole piece.

3,630,109

## PORTABLE FACING AND GROOVING MACHINE

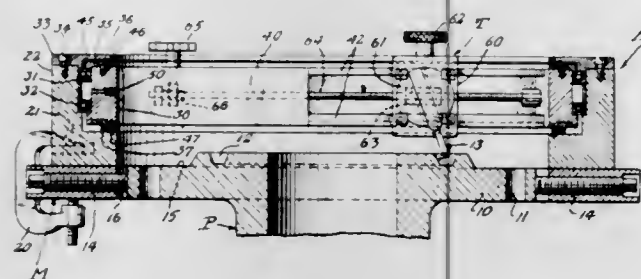
Harry T. MacMichael, Secane, and William A. McNamara, Ridley Park, both of Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Feb. 16, 1970, Ser. No. 11,648

Int. Cl. B23b 5/16

U.S. Cl. 82-4 C

10 Claims



An annular tool or device for facing or grooving flanges adapted to fixedly mount thereon comprising an inner rotatable

housing means with ring gear attached thereto and a tool arm rigidly attached at two points carrying a toolholder means for holding a metal-cutting tool and means for rotating the inner rotatable housing within an annular fixed housing so as to cause the tool to face or groove the flange.

3,630,110

## COPYING LATHE

Jules Louis Jeanneret, 13-21 Rue Henri Gelin, Niort, France

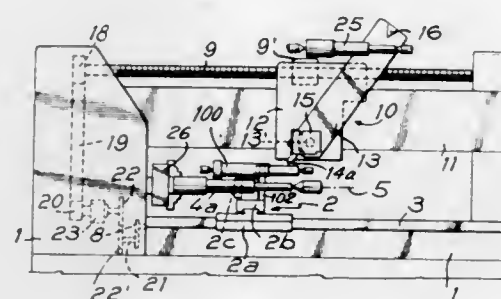
Filed June 17, 1968, Ser. No. 737,418

Claims priority, application France, June 20, 1967, 111097

Int. Cl. B23b 3/28

U.S. Cl. 82-14 R

10 Claims



A copying lathe having at least one combined copying assembly for machining a workpiece in accordance with an established contour, comprising a transversally movable slide mounted on a slide bar which is swivably mounted on a longitudinally displaceable carriage, the longitudinal position of the carriage being controlled by a first feeler which cooperates with a first said established contour which is to be copied and which contour is fixed to the bed of the lathe to thereby move said carriage, said slide also cooperating with a second said established contour mounted adjacent a second feeler mounted on the carriage, said slide being moved transversally to the axis of the workpiece by means which are independent of the means which moves the carriage.

3,630,111

## MACHINING ASSEMBLY

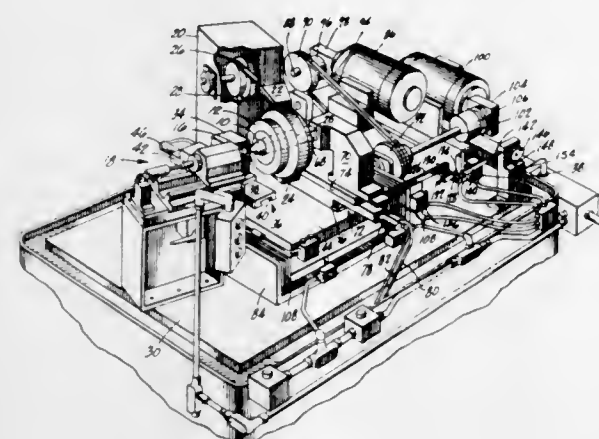
Lloyd Hartford; Herbert Waxman, both of Northridge, and William I. Caldwell, Canoga Park, all of Calif., assignors to CCI Aerospace Corporation, Van Nuys, Calif.

Filed Oct. 21, 1968, Ser. No. 769,199

Int. Cl. B23b 5/36, 19/02

U.S. Cl. 82-15

14 Claims



A method and apparatus for producing a shell body of revolution with a substantially constant wall thickness comprising: Preparing the shell by accurately machining a surface concentric and perpendicular to the axis of the shell surface,

the machined surface facilitating accurate alignment of the shell within the machining apparatus, cutting both the inside and outside surfaces of the shell simultaneously with the cutters at a fixed separation to maintain constant wall thickness; controlling the rotational velocity of the shell during machining with respect to the transverse movement of the cutters to maintain constant surface cutting speed by means of a pivotal eccentric cam operating upon at least one potentiometer.

3,630,112

## MACHINE TOOL CENTER

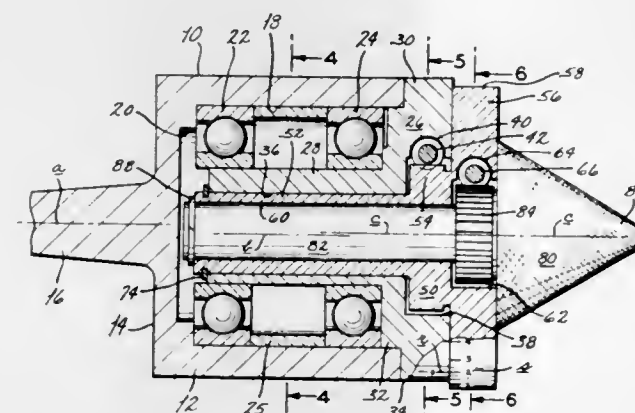
Kenneth J. Sudholt, 3801 Fair Oaks Drive, Granite City, Ill.

Filed Sept. 4, 1969, Ser. No. 855,306

Int. Cl. B23b 23/04

U.S. Cl. 82-33 R

9 Claims



A machine tool center includes a housing in which an outer sleeve is journaled by means of bearings. The outer sleeve is provided with an eccentric bore which receives an inner sleeve also having an eccentric bore, the eccentricities of the bores relative to outer surfaces of their respective sleeves being equal to that the sleeves may be turned such that the eccentricities offset each other and thus position the axial centerline of the inner sleeve bore coincident to the axis of rotation for the bearing. The inner sleeve bore receives a workpiece supporting element having a knurled conical point adapted to fit nonrotatively within the center hole at the end of a shaft or other workpiece. Worm screws are provided for both locking the sleeves and supporting element against rotation relative to one another and for rotating them relative to one another. A graduated scale on the inner sleeve indicates the magnitude of eccentricity for the conical point relative to the axis of rotation for the bearings. Once the outer sleeve is adjusted to the eccentricity corresponding to the eccentricity of the hole in the end of the workpiece, the high spot on the workpiece is brought around to a position opposite the eccentricity by rotating the conical point relative to the inner sleeve. In that position the outer surface of the workpiece will run true when the workpiece is turned from its other end.

3,630,113

## APPARATUS FOR CUTTING HELICALLY WOUND TUBES

Ernest Winston Ronai, 56 Linden Ways, Sydney, New South Wales, Australia

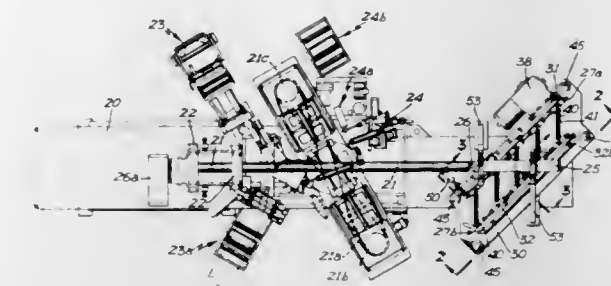
Filed Feb. 5, 1970, Ser. No. 8,965

Int. Cl. B23b 37/00

U.S. Cl. 82-53.1

10 Claims

This invention relates generally to tube cutoff equipment,



mechanism having a plurality of uniformly spaced straightedge cutting knives mounted thereon.

3,630,114

## POLYMERIC FILAMENT SHEET SLITTING

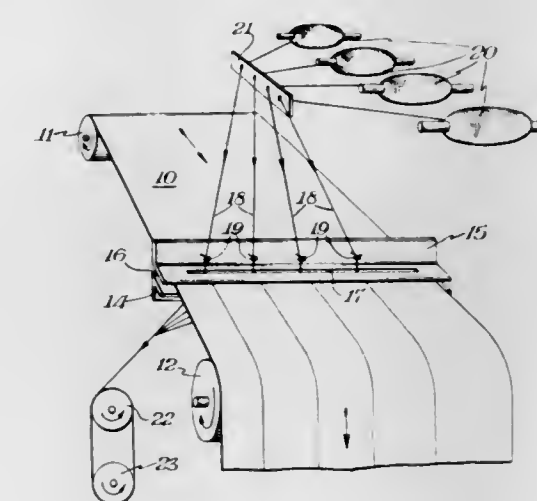
William W. Bunting, Jr., Wilmington, Del., and Robert E. Buskirk, Pennsville, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 15, 1970, Ser. No. 28,775

Int. Cl. B26d 5/00

U.S. Cl. 83-23

10 Claims



Process and apparatus for the slitting of polymeric, poromeric, elastomeric and regenerated cellulose films, non-woven webs embodying polymeric threads, filaments or staple fibers, and the like, and the slit product thereof, wherein the sheet material is advanced against a polymeric filament cutting means drawn therethrough.

3,630,115

## AUTOMATIC COMPENSATION FEED, SPEED-CONTROLLED COPIER

Arnold G. Ulmer, Endicott, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed May 22, 1970, Ser. No. 39,625

Int. Cl. B26d 5/20

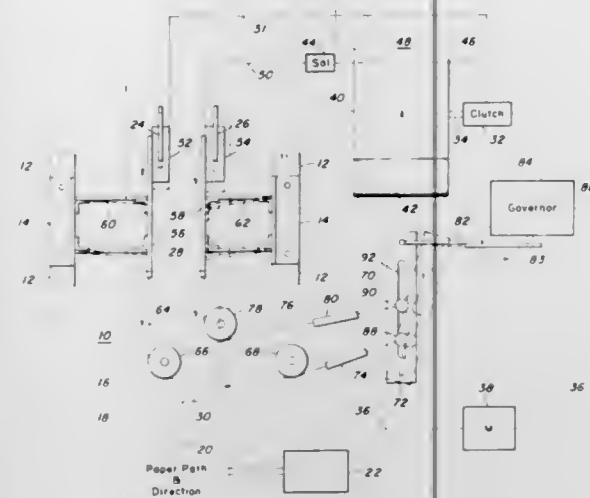
U.S. Cl. 83-72

6 Claims

The response times of the magnetic clutch drive and the cutting knife solenoid of an automatic roll feed diazocopying machine which tend to adversely affect each length of cut copy paper with respect to the corresponding original with changes in paper feed speed, are continuously taken into account or corrected by an automatic paper feed speed responsive control mechanism over the entire speed range of the common copying drive system of the machine. The control mechanism selectively and differentially advances the original front edge sensor switch, and the rear edge sensor switch, as the speed of the originals increases, for example;



so that any tendency for the cut copy paper lengths to vary with respect to the lengths of the corresponding originals due pair of a plurality of pairs of preformed strands alternately



to the paper feed speed increase, is effectively automatically corrected by a governor that is continuously responsive to such speed.

### 3,630,116 RIVET

Robert Henry Travell Harper, Knebworth, England, assignor to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England

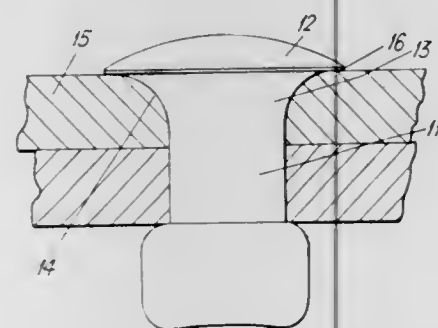
Filed Dec. 10, 1969, Ser. No. 883,964

Claims priority, application Great Britain, Jan. 9, 1969, 1,474/69

Int. Cl. F16b 19/06

U.S. Cl. 85—37

3 Claims



A rivet is provided of which the head is convex but of a height considerably reduced in comparison with that of a conventional hemispherical head, and the necessary thickness of head metal is obtained in the regions of the head periphery by flaring out the rivet shank in a smooth curve to meet the convex head at the head periphery, at which periphery there is a very short cylindrical surface instead of a sharp edge. At a distance one-third of the way out from the normal shank diameter to the maximum head diameter the full depth of the head, including the portion due to the flare out of the shank, is approximately equal to the depth of a conventional countersunk rivet head at the same diameter.

### 3,630,117

#### METHOD AND APPARATUS FOR MAKING NETLIKE STRUCTURES FROM PREFORMED STRANDS

Warren H. Guy, Glen Mills, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 16, 1969, Ser. No. 825,211

Int. Cl. D04g 1/00

U.S. Cl. 87—12

10 Claims

Method and apparatus for making netlike structures from preformed strands by repeatedly revolving strands of each

with relatively moving the strands of such pairs of strands into positions as to arrange the strands into different pairs.

### 3,630,118 TWO-STEP AMMUNITION FEEDER

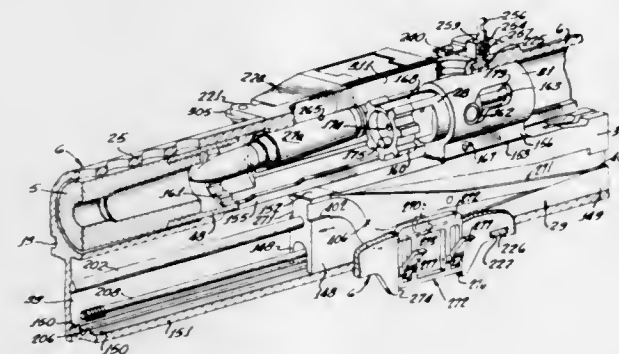
Eugene M. Stoner, 2292 No. Carriage Lane, Port Clinton, Ohio

Filed Sept. 5, 1969, Ser. No. 855,492

Int. Cl. F41d 9/02

U.S. Cl. 89—33 C

9 Claims



An automatic gun is provided with a reciprocating bolt carrier having cam surfaces extending along its exterior for reciprocating a follower which operates an ammunition feed mechanism. A lower cam surface is formed directly on the bolt carrier and an upper cam surface is formed on the upper surface of an elongated ramp pivotally mounted on the bolt carrier. The ramp is movable between two positions to cause the follower to follow the lower cam surface when the bolt carrier moves forwardly and to follow the upper cam surface when the carrier reverses. The slope of the cam surfaces is such that the follower moves through its total downward return stroke when engaging the forward portion of the lower cam surface and then is gradually advanced upwardly during the remainder of its contact with the lower cam surface and throughout its entire contact with the upper cam surface.

### 3,630,119 GAS-OPERATED TOGGLE ACTION WEAPON

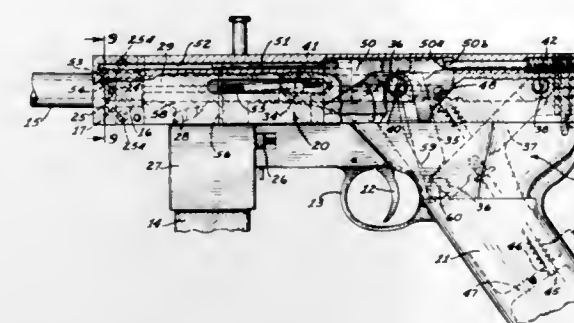
Walter E. Perrine, 1822 North 24th Street, Phoenix, Ariz.

Filed Dec. 4, 1969, Ser. No. 882,009

Int. Cl. F41d 5/04

U.S. Cl. 89—189

7 Claims



A gas-operated, toggle action pistol, in which the toggle recedes into the handle and counteracts the effect of recoil.

### 3,630,120 SWINGING APPARATUS

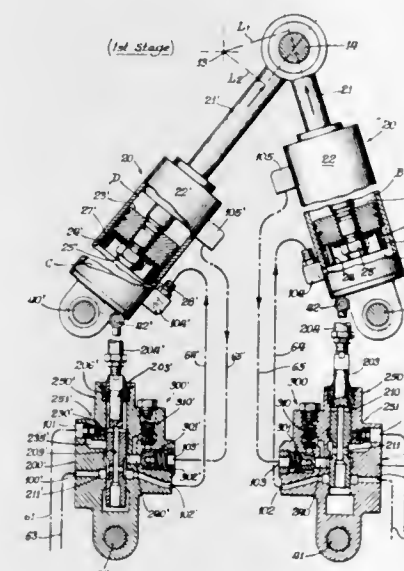
Ernest C. Carlson, Schwetzingen, Germany; Andrew Brudnak, Jr., Oak Lawn; Rudolph E. Yeh, Elmhurst, and Ronald F. Sardiga, Chicago, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Continuation of application Ser. No. 794,637, Jan. 28, 1969, now abandoned. This application May 4, 1970, Ser. No. 34,227

Int. Cl. F15b 11/16

U.S. Cl. 91—411 R

26 Claims



An apparatus for converting rectilinear motion to rotational motion about a first axis having two pivotal members fixed about and rotatable with respect to each other and to the first axis, two hydraulic motors interconnected between said pivotal members, a source of fluid power supply connected to each hydraulic motor by conduit means, directional flow control means for selectively delivering fluid power to the hydraulic motors, sequence valve means for sensing the position of the hydraulic motors and for directing flow to aid in obtaining a relatively constant torque output and angular velocity, bleeder valve means for reducing hydraulic input energy when the pivotal member is near the end of its rotation and for maintaining a maximum velocity potential throughout the rotational movement, and relief valve means for additionally controlling torque output.

### 3,630,121 EXCAVATING MACHINES

Kjell Anton Landaeus, Lund, and Karl Oscar Olsson, Eslov, both of Sweden, assignors to Akermans Verkstad Aktiebolag, Eslov, Sweden

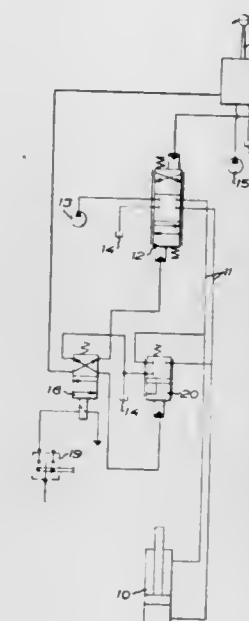
Filed Nov. 18, 1969, Ser. No. 877,633

Claims priority, application Sweden, Nov. 29, 1968, 16290/68

Int. Cl. F15b 11/08, 13/043

U.S. Cl. 91—437

4 Claims



A hydraulic system including a hydraulic cylinder operated by a pressure-actuated servo-controlled operating valve and a crossover valve to interconnect the fluid lines leading to the hydraulic cylinder operated by an electrically controlled valve interposed in a pressure line leading to the operating valve.

### 3,630,122

#### METHOD AND MEANS FOR PRODUCING BLANKS

Louis Jean Chambon, Paris, France, assignor to Societe d'Etudes de Machines Speciales, Paris, France

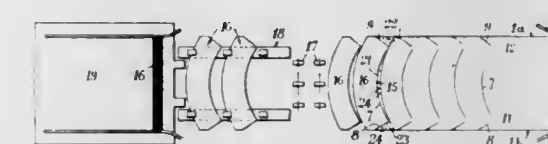
Filed Mar. 24, 1970, Ser. No. 22,340

Claims priority, application France, Mar. 28, 1969, 69 09455

Int. Cl. B26d 1/56

U.S. Cl. 93—36 M

5 Claims



This apparatus for cutting blanks intended for the manufacture of frustoconical containers is characterized in that it comprises a first pair of rotary cutting rollers provided with knife blades adapted to form in said strip a first transverse central arcuate cut line corresponding to the minor base of the developed frustoconical surface of said containers, together with a pair of small lateral radial cut lines intersecting the edges of the strip but leaving two small uncut portions in the strip between said small radial cut lines and said first central arcuate cut line, and another pair of rotary cutting rollers provided with a knife blade adapted to form in said strip another transverse central arcuate cut line corresponding to the major base of said developed frustoconical surface, said other arcuate cut line extending from one edge to the other edge of the strip and through said previously uncut portions, in order to sever a complete blank from the strip.



3,630,123

## CONTAINER INSERT APPARATUS

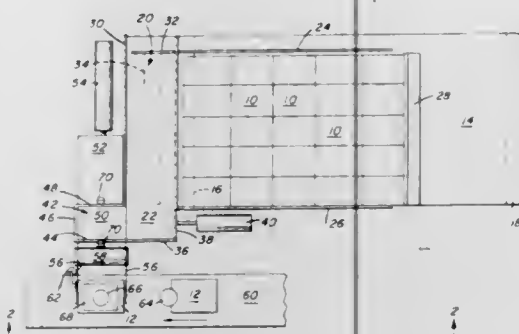
Edward E. Ames, Hilton; Charles L. Cooke, and Kenneth N. Ross, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 14, 1969, Ser. No. 841,275

Int. Cl. B31b 11/74, 1/62, 1/06

U.S. Cl. 93—37 R

14 Claims



Apparatus for supplying, controlling, and inserting container inserts which are lightweight and relatively unstable when stacked. Polystyrene inserts are supplied in multiple stacks and are aligned and supported to prevent misalignment during feeding to the containers. A movable wall supports and aligns the stack of inserts as it is moved to a feeding hopper. Individual inserts are removed from the bottom of the stack in the feeding hopper and are passed over an adhesive applicator. The individual insert is then pressed into a waiting container.

3,630,124

## CONVERSION ATTACHMENT FOR A CONVENTIONAL NONWINDOW ENVELOPE MACHINE

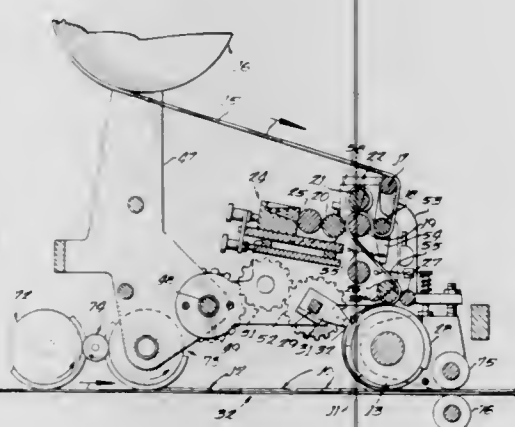
Ernst C. Sauerman, Chicago, Ill., assignor to Gaw-O'Hara Envelope Co., Chicago, Ill.

Filed Jan. 30, 1970, Ser. No. 7,521

Int. Cl. B31b 1/62, 1/82, 39/74

U.S. Cl. 93—61 A

1 Claim



An attachment for converting a conventional nonwindow envelope machine into one in which a web of patching material is partially severed for providing either a window transparency or a liner for an envelope forming individual patches, said patches being gummed for attachment to the interior of an envelope blank and the partially severed web fed to the circumference or filler plate of a rotating vacuum cylinder where the individual gummed patches are completely severed and each carried into contact with and affixed to an envelope blank, the cylinder having multiple scoring blades for providing the envelope blanks with score lines for subsequent folding of its flaps to complete the envelope.

3,630,125

## APPARATUS FOR REGULATING THE SEAL GUM WIDTH ON ENVELOPE AND BAG MACHINERY

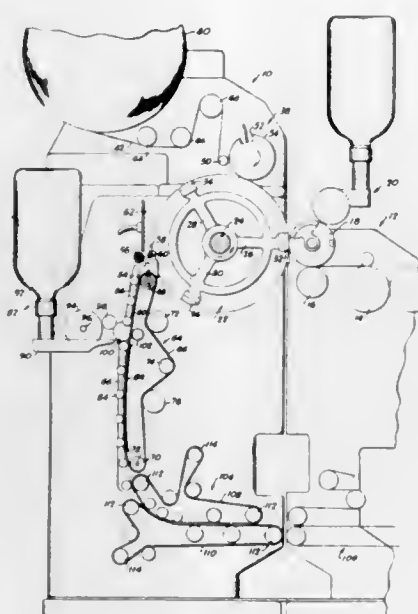
Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed May 14, 1970, Ser. No. 37,203

Int. Cl. B31b 21/74, 1/62, 1/96

U.S. Cl. 93—62

8 Claims



Apparatus for applying gum or adhesive to the seal flap of an envelope includes a collator vacuum cylinder that feeds the envelope blanks at a predetermined speed relative to the drive shaft of the envelope machine to a collator roll. The collator roll is driven at a speed arranged to move the envelope blanks into overlapped relation as a band onto a gumming belt conveyor. The gumming belt conveyor and the gumming roll drive mechanism are driven at a speed to maintain the envelope blanks in the band in preselected overlapped relation while adhesive is applied to the exposed flap portion of the envelope blanks by the gumming apparatus. The collator roll, gumming belt conveyor and the gumming roll drive mechanisms are driven in timed relation to each other and are drivingly connected to each other. The collator vacuum cylinder is driven at a fixed ratio relative to the main drive shaft. The input shaft of a variable speed drive mechanism is drivingly connected to the collator vacuum cylinder and the variable speed drive mechanism output shaft is drivingly connected to the apparatus for driving the collator rolls, gumming belt conveyor and the gumming roll drive mechanism. With this arrangement the speed of the collator roll, gumming belt and gumming roll drive mechanism may be changed relative to the speed of the collator vacuum cylinder and thus vary the overlapped relationship of the envelope blanks and the width of the strip of seal gum applied to the seal flap portion of the envelope blank.

3,630,126

## APPARATUS FOR CUTTING TUBES

Ernest Winston Ronai, 56 Linden Way, Castlecrag, New South Wales 2068, Australia

Filed Aug. 18, 1969, Ser. No. 850,767

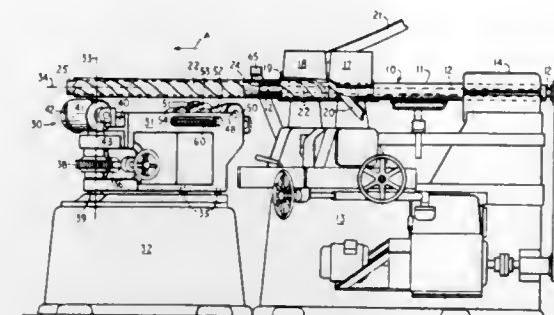
Int. Cl. B31c 3/00, 11/00; B23b 5/14

U.S. Cl. 93—80

15 Claims

Method and apparatus for cutting continuous tubing which has been helically wound from a strip or strips of sheet material into tubular sections of uniform length by means of a rotary helical cutter which is periodically applied to the tubing, the point of cutter contact moving longitudinally along the cutting mandrel at the same speed as the tubing and the helical cutter blade being maintained at the point of

contact at an angle perpendicular to the axis of the tubing being cut, to produce a cut around the complete circum-



ference of the tubing at right angles to the tubing axis and form tube unit of a predetermined length.

3,630,127

## TAMPING MACHINE

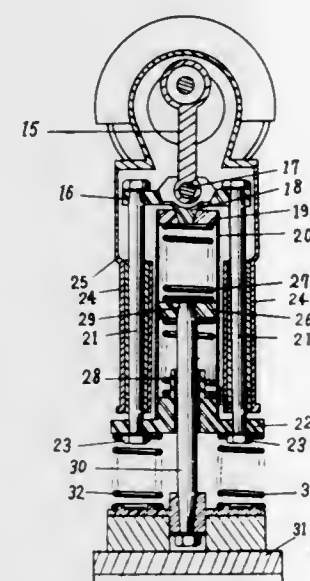
Masahiro Yamato, Kawaguchi, Saitama, Japan, assignor to Hiroshi Matsumoto, Tajima Urawa Saitama, Japan

Filed May 21, 1969, Ser. No. 826,616

Int. Cl. E01c 19/30

U.S. Cl. 94—49

2 Claims



A tamping machine comprises a crank drive for operating a connecting rod, a pair of piston rods driven by the connecting rod and slidably received by the machine housing, a movable cylinder loosely mounted inside the machine housing, socket joint means for engaging the top end of the movable cylinder with the connecting rod, the forward or lower end of the piston rods being removably engaged with the lower end of the movable cylinder, and a percussion piston biased against the two ends of the cylinder and having a ram-rod which has at the lower end thereof the tamping foot. The cylinder can be disassembled from the machine housing by disengaging it from the piston rods at the lower end of the former. The machine has further cushion springs for absorbing shock blows and a rod for supporting the machine and preventing turning of the tamping foot.

3,630,128

## AUTOMATIC CHANGEOVER DEVICE TO FLASHLIGHT PHOTOGRAPHY FOR CAMERA OR SHUTTER

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed Aug. 21, 1969, Ser. No. 851,957

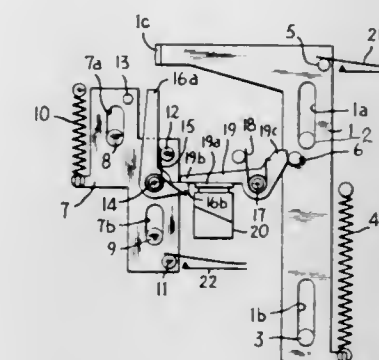
Claims priority, application Japan, Aug. 28, 1968, 43/61205

Aug. 23, 1968, 43/59849

Int. Cl. G03b 7/00

U.S. Cl. 95—10 C

11 Claims



Camera shutter release mechanism automatically changes from daylight exposure to flash exposure when the brightness of the subject to be photographed is below a selected value. However, if the flash device is not in operative condition, no changeover to flash photography is effected regardless of the light value. A pilot lamp indicates the inoperative condition of the flash device.

3,630,129

## CAMERA MECHANISM FOR ACTUATING MECHANICALLY FIREABLE FLASH UNITS

Alex T. Gow, Dunstable, England, and Helmut Ettischer, Ruit, Wurttemberg, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

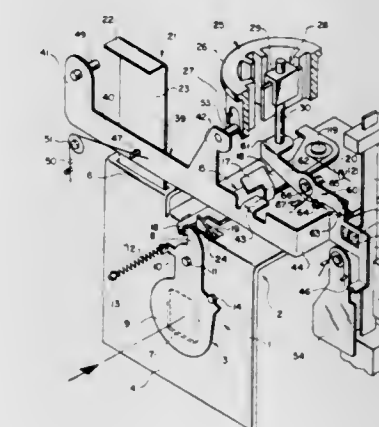
Filed Nov. 20, 1970, Ser. No. 91,409

Claims priority, application Germany, Nov. 22, 1969, P 19 58 699.3

Int. Cl. F21k 5/02; G03b 15/04

U.S. Cl. 95—11.5 R

2 Claims



A camera mechanism is provided with a single multipurpose member adapted to (1) disable flash mode assemblies during daylight operation; (2) position an actuator bar in ready-for-firing engagement with a mounted, mechanically actuable flash unit; (3) act in coupling the shutter driver and an actuator member to actuate the flash unit in synchronism with shutter operation; (4) control the signaling of an inoperative flashlamp indicator; and (5) retract the actuator member to facilitate reorientation of multilamp flash units.



3,630,130

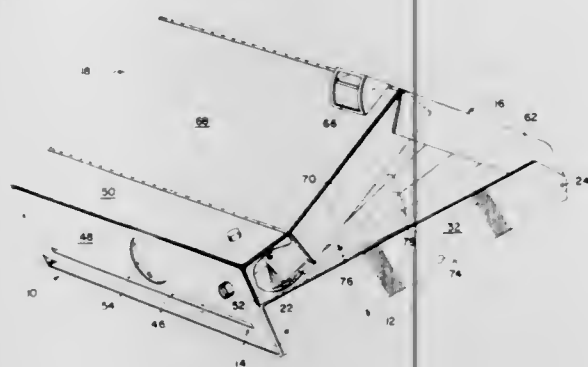
**FOLDING CAMERA**

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Continuation of application Ser. No. 663,719, Aug. 28, 1967, now abandoned. This application Mar. 21, 1969, Ser. No. 809,143

Int. Cl. G03b 19/10

U.S. Cl. 95—11

29 Claims



A camera is disclosed comprising a housing including four sections joined for pivotal movement about parallel axes between operative and folded positions, a lens and shutter enclosed in one housing section, a mirror in a second housing section, a focal plane plate for locating a recording medium for exposure in a third housing section and an opaque elastic envelope coupled between the three housing sections providing a lighttight chamber through which light is transmitted from the lens via the mirror to the recording medium.

3,630,131

**FLASHBULB INDEXING MECHANISM**

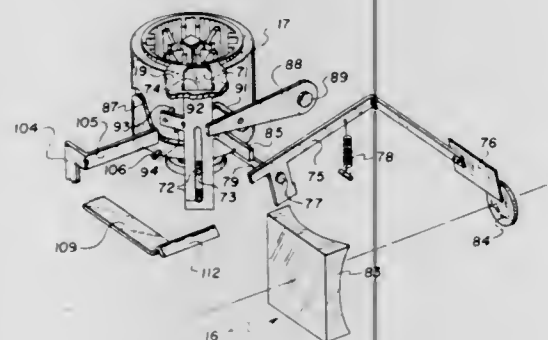
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,567

Int. Cl. G03b 15/035

U.S. Cl. 95—11

9 Claims



A camera adapted to use a so-called flashcube or other multiple flashbulb unit is provided with an indexing mechanism which operates automatically prior to each film exposure to index the flashbulb unit until the mechanism detects the arrival of an unfired lamp at a predetermined firing position. If no unfired lamp is available, an appropriate signal is provided automatically to alert the camera operator to that fact.

3,630,132

**PHOTOGRAPHIC FILM PACK**

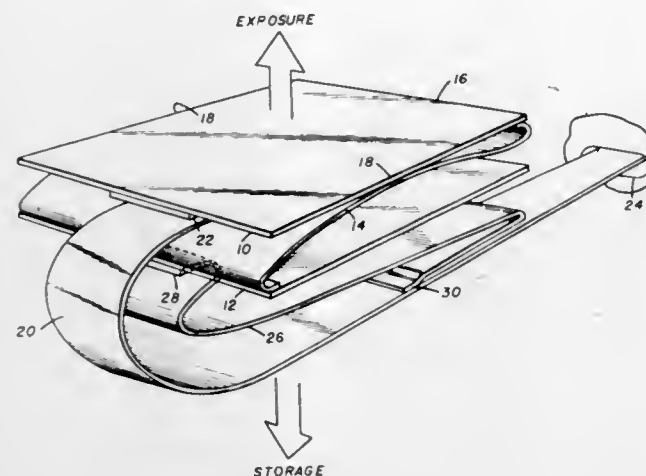
Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 3, 1970, Ser. No. 43,069

Int. Cl. G03b 17/50

U.S. Cl. 95—22

9 Claims



A pack embodying conventional photographic film, in the form of a strip thereof, has such strip so folded and joined that the various exposure sections of the film strip may be successively uncovered in the exposure aperture of the pack, by means of respective pull tabs. The exposed film sections are successively drawn into a storage section within the pack by means of the pull tabs; and such film is stored in the pack in strip form to facilitate subsequent handling thereof. The pack may be employed in cameras of the instant processing-type.

3,630,133

**SINGLE-LENS REFLEX CAMERA HAVING A DEVICE FOR INDICATING ADJUSTED EXPOSURE VALUE IN THE FINDER**

Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

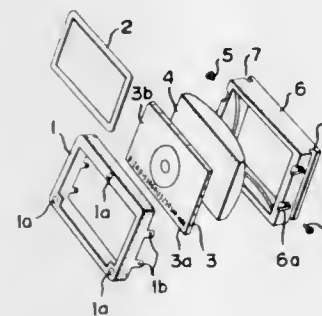
Filed May 9, 1968, Ser. No. 727,865

Claims priority, application Japan, June 6, 1967, 42/48022

Int. Cl. G03b 19/12

U.S. Cl. 95—42

9 Claims



A single-lens reflex camera is provided with at least two interchangeable viewfinders wherein exposure factors, such as shutter speed, aperture opening and the like, may be observed along the edges of the viewing screen. With one viewfinder positioned on the mirror box of the camera, an inverse image of the object is observed, and with the other viewfinder in place, an erected image of the object is observed. A viewing screen is provided with exposure indicia so arranged that an erected image of the indicia is observed in both of the viewfinders.

3,630,134

**DEVICE FOR INDICATING EXPOSURE FACTORS IN THE VIEWFINDER OF A SINGLE LENS REFLEX CAMERA**

Shigeyo Nakamura, Yokohama-Shi, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

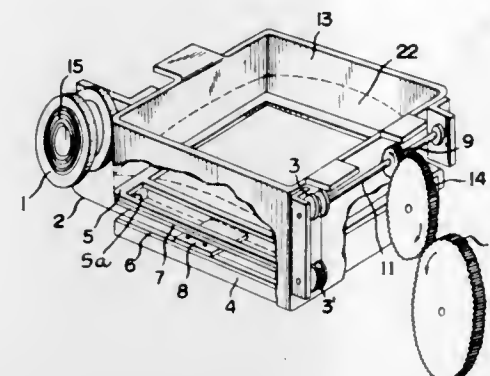
Filed Aug. 20, 1968, Ser. No. 766,354

Claims priority, application Japan, Aug. 28, 1967, 42/73223

Int. Cl. G03b 19/12

U.S. Cl. 95—42

4 Claims



An arrangement is provided for a single lens reflex camera for indicating exposure factors in the viewfinder of the camera. The focusing screen of the camera is provided with a ledge or step portion along one side and a member for indicating the exposure factor is movable along the step portion by a thin cable or thread. The thread is moved by a pulley and reel arrangement driven by the exposure-factor-setting mechanism of the camera. Illumination of the exposure indicia is provided by the viewing mirror, and may also be provided by an auxiliary reflecting member for reflecting the light rays coming directly from the center of the exit pupil of the objective lens.

3,630,135

**FOLDING-TYPE WAIST LEVEL FINDER**

Akihiko Sato, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

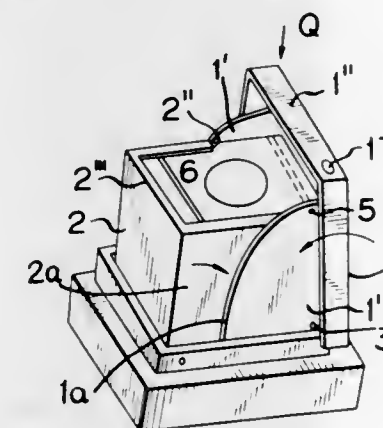
Filed Oct. 1, 1968, Ser. No. 764,259

Claims priority, application Japan, Oct. 13, 1967, 42/88971

Int. Cl. G03b 11/04

U.S. Cl. 95—47

3 Claims



A collapsible or foldable viewing hood is provided for a single lens reflex camera. The viewing hood includes a front cover and a rear cover which are adapted to fold together through a camming arrangement upon rotation of the front cover. A magnifying lens carried in a frame and pivotally supported on the front cover, is folded into the front cover

by a camming action of the rear cover. Latches are provided for the cover and for the magnifier frame to retain the folded assembly against the bias of spring elements provided for the covers and the magnifier frame.

3,630,136

**EXPOSURE TIME ADJUSTING DEVICE FOR ELECTRIC SHUTTERS**

Kiyoshi Kitai, Tokyo, Japan, assignor to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

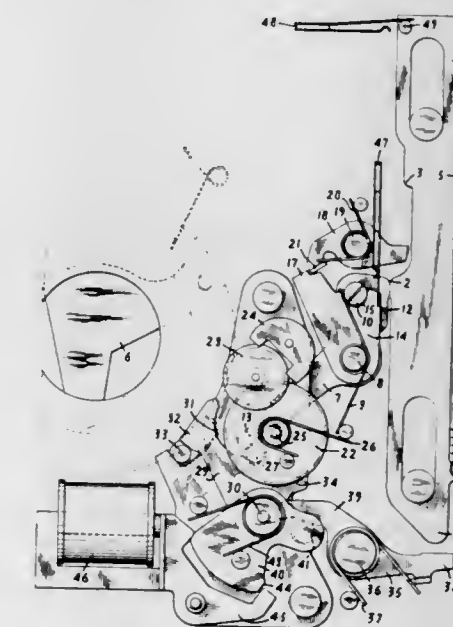
Filed June 18, 1969, Ser. No. 834,331

Claims priority, application Japan, June 19, 1968, 43/42169

Int. Cl. G03b 9/00

U.S. Cl. 95—53 R

6 Claims



A shutter apparatus having an electrical timing circuit for controlling the open time of the shutter has an adjustable linkage in the shutter drive mechanism. The starting position of the shutter may be varied in order to make the delay time in opening of the shutter equal to the delay time in closing of the shutter.

3,630,137

**CAMERA HAVING SHUTTER SPEED CONTROLLED BY LENS APERTURE**

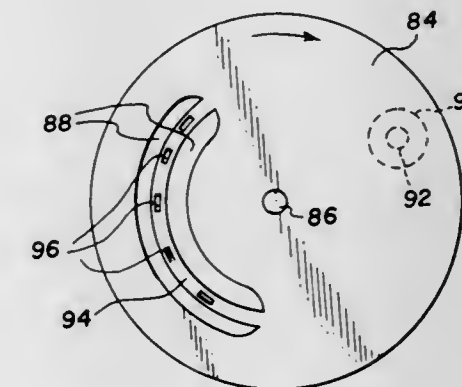
Allen G. Stimson, and Carl H. Zirngible, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 7, 1969, Ser. No. 839,594

Int. Cl. G03b 9/10

U.S. Cl. 95—58

4 Claims



A camera has an adjustable lens aperture and a shutter member movable in a given path across the optical axis. The



shutter member has an aperture for selectively passing light admitted by the lens aperture for exposing the film. The shutter member, has an elongated opaque member extending across the shutter aperture and aligned with the lens aperture, the width of the opaque member being substantially equal to the minimum adjustment of the lens aperture. The opaque member has a plurality of cutouts for passing light to the film as the shutter aperture moves past the lens aperture.

3,630,138

# AIR-CONDITIONING SYSTEM WITH POSITIVE PRESSURIZATION

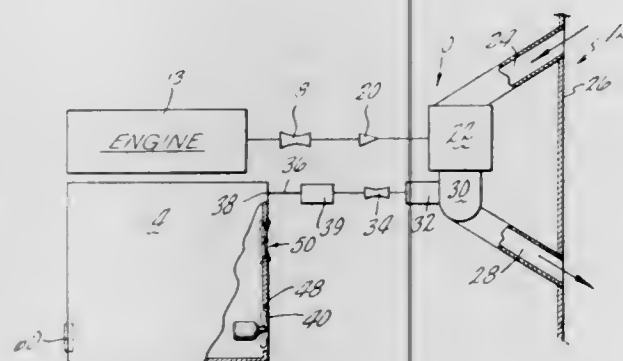
Jens Martin Anders Marcussen, West Haven, and Kenneth Martin Rosen, Guilford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 26, 1970, Ser. No. 84,090

Int. Cl. B64d 13/04

U.S. Cl. 98—1.5

14 Claims



An air-conditioning system in which conditioned air is being provided to a compartment by a choked air-conditioning system having minimum and maximum mass flow rates and wherein an undersized capacity fan operating in a pressure drop condition is placed in the outlet of the compartment to insure compartment pressurization despite leakage within the anticipated range within the operational flow range of the air conditioner, and which fan will operate to create a pressure rise to pump air through the compartment upon discontinued use of the air-conditioning system, and further, wherein a pressure relief valve is utilized in parallel flow relation with the fan to protect compartment structural integrity and to maintain compartment pressure changes within the limits of human comfort.

3,630,139

# COUNTERBALANCING DEVICE

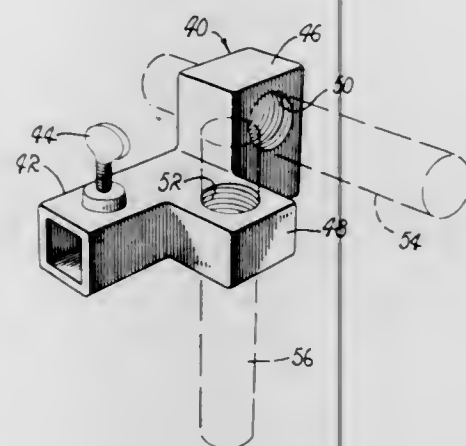
Kenneth J. Wehrle, 2849 Forist Lane, Mercede, Calif.

Filed Mar. 17, 1969, Ser. No. 807,564

Int. Cl. A47j 37/04; F16f 15/22

U.S. Cl. 99—421 H

1 Claim



A counterbalancing device for a cooking object eccentrically mounted on a rotatably driven barbeque spit including a

hub axially positionable on the spit and adapted to be locked thereon. Affixed to the hub are a pair of bosses formed with screw-threaded bores having axes which are substantially mutually perpendicular. Threaded in the bores are elongated screw-threaded weights axially adjustable by turning for precisely adjusting the weights to compensate for any imbalance of the cooking object.

3,630,140

# PANCAKE-BAKING MACHINE

Paul Marrie, Dijon, France, assignor to Societe A Responsabilite Limitee dite: Etude, Quetigny, (Cote d'Or), France

Filed May 26, 1970, Ser. No. 40,567

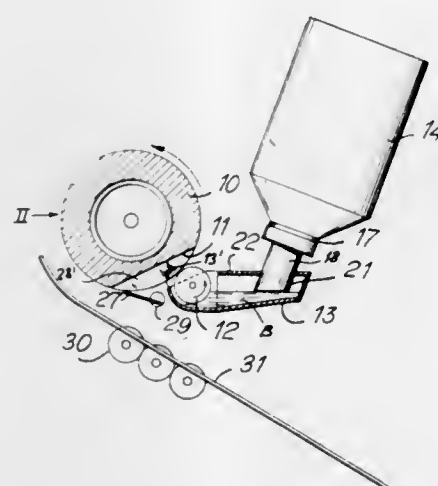
Claims priority, application France, May 28, 1969, 6917401

Apr. 24, 1970, 7015150

Int. Cl. A21b 1/48

U.S. Cl. 99—423

16 Claims



Batter from an upwardly open pan is picked up by a rotating transfer roller and spread over an adjoining heated cylinder rotating codirectionally therewith. The cylinder has a peripheral recess, serving to interrupt the transfer of the batter, and is provided near its nadir with a scraper for detaching the baked pancake from its periphery and depositing it on a conveyor or chute.

3,630,141

# TABLEWARE JUICE DISPENSER

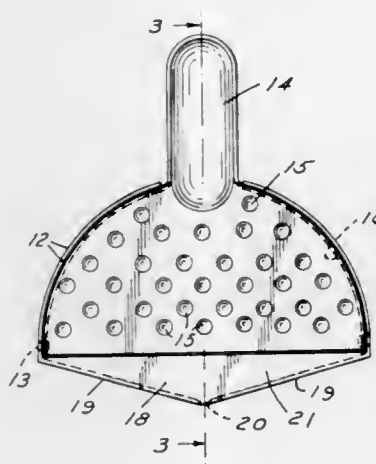
Mahmoud Amin Elshazly, 132 Schmitz Terrace, Mt. Arlington, N.J.

Filed Mar. 31, 1970, Ser. No. 24,145

Int. Cl. B30b 7/00

U.S. Cl. 100—234

1 Claim



A piece of table silverware designed to supplement the usual silverware such as knife, fork and spoon and useful for neatly dispensing the juice from a lemon wedge. A pair of

hinged jaws are of a size and shape corresponding to the diverging faces of a lemon wedge. Each jaw has an extension, one for the thumb and the other for the finger, and there is a pan at the hinge side of the jaws for collecting the juice when the jaws are squeezed, the pan being closed except at a nozzle which directs the juice to the desired place.

## ERRATUM

For Class 100—118 see:  
Patent No. 3,630,158

3,630,142

# ELECTROMAGNETIC DRIVE FOR PRINT HAMMERS

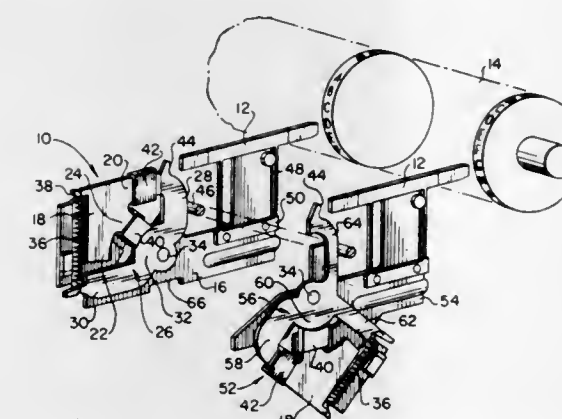
Thomas C. Fuls, Eaton, and Mushi Soraya, Dayton, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 25, 1969, Ser. No. 852,653

Int. Cl. H01f 7/04

U.S. Cl. 101—93 R

2 Claims



A transducer having a permanent magnet which holds a rotatable armature against the bias of a spring when the transducer is in a ready, or home, position. A coil, when energized, neutralizes the holding effect of the permanent magnet, permitting the spring to move the armature to an operative position, where it strikes a print hammer with which the transducer may be associated. The transducer is designed to produce switched magnetic fields to hold the armature in either the ready position or the operative position, making the transducer bistable. The armature is reset to the home position by an external mechanical return bar.

3,630,143

# ELECTRICALLY OPERATED MARKING DEVICE

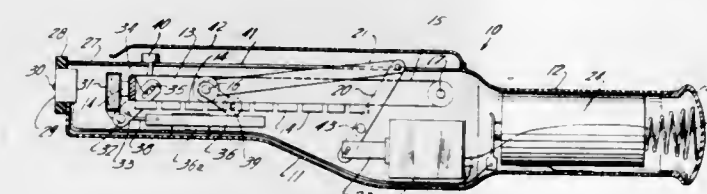
Howard Price, Whitestone; Bela Szilagyi, Flushing, both of N.Y., and International Patents & Development Corp.

Continuation of application Ser. No. 732,649, May 28, 1968, now abandoned. This application Apr. 2, 1970, Ser. No. 23,085

Int. Cl. B41j 27/02, 1/20

U.S. Cl. 101—103

3 Claims



Marking device with settable characters electrically operated for stamping preset characters on the articles to be

marked. A switch for operating the device is actuated upon placing the marking device on the article to be marked.

3,630,144

# TYPE CARRIER TOOTHED BELT

Fritz Hilpert, Boblingen, Germany, and Guenter Schacht, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

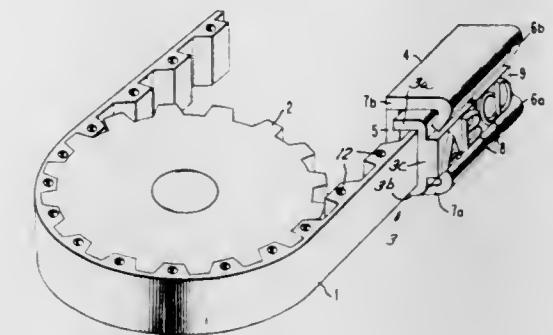
Filed Apr. 29, 1969, Ser. No. 820,163

Claims priority, application Germany, May 14, 1968, P 17 74 268.6

Int. Cl. B41j 1/20

U.S. Cl. 101—111

2 Claims



On each tooth of the belt one type carrier is pivotally mounted by means of one pin each. The type carrier, which preferably accommodates two type characters, is U-shaped, embracing the belt with a certain amount of play. The play, which exists both in a vertical direction and in the direction of firing of the print hammers, permits an accurate alignment of each type carrier in the guide provided in the printer station.

3,630,145

# ANGULAR AND AXIAL ADJUSTMENT MECHANISM FOR A PRINTING CYLINDER

Pierre Leuenberger, Nantes, France, assignor to Creusot-Loire, Seine, France

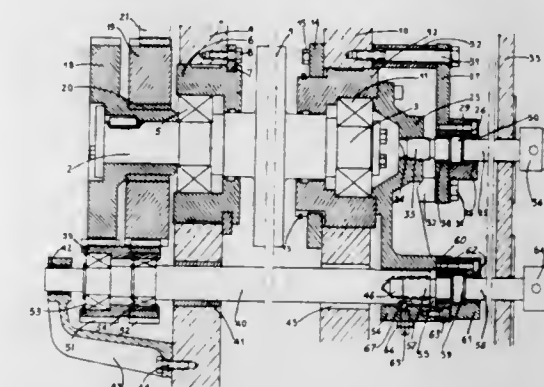
Filed June 9, 1970, Ser. No. 44,802

Claims priority, application France, July 4, 1969, 6922715

Int. Cl. B41f 13/14

U.S. Cl. 101—248

2 Claims



A printing cylinder having angular and axial adjustment facility, axial adjustment being by way of a movable trunnion and angular adjustment being by way of a helical gearwheel loose relative to a second gearwheel in a drive train, a double gear loose about a control shaft but axially fast thereto being operable to effect relative angular displacement of the gearwheels and the control shaft being axially fast relative to the movable trunnion.



3,630,146

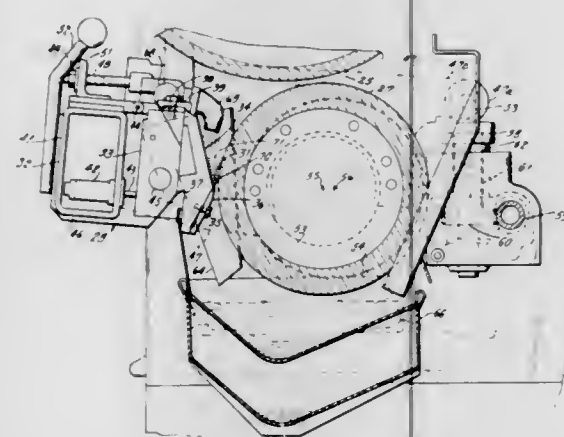
**INTERRUPTABLE INKING CYLINDER AND SCRAPER BLADE FORMING OPEN ENDED FOUNTAIN TROUGH**

Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.  
Continuation of application Ser. No. 693,899, Dec. 27, 1967, now abandoned. This application Feb. 4, 1970, Ser. No. 11,619

Int. Cl. B41f 31/04, 31/36

U.S. Cl. 101—351

10 Claims



Printing apparatus is constructed with an open-ended troughlike fountain defined by an anilox inking cylinder, a scraper blade, and a rigid support for the scraper blade. A plurality of fluid-operated power cylinders mounted directly to a common elongated manifold urge the scraper blade against the inking cylinder. A pan positioned below the fountain is shaped to catch ink flowing out of the fountain through the open ends thereof and direct such ink to the inlet of a pump which then directs the ink to a nozzle positioned above the fountain at a point midway between the ends thereof. The blade is constructed of a nonmetallic material to reduce wear of the anilox roll and improve uniformity of the ink film. Automatic means responsive to stopping of the printing cylinder moves the pressure cylinder away from the printing cylinder and also moves the entire troughlike fountain including the inking cylinder, away from the printing cylinder. An idler motor for the inking cylinder is connectable to drive all three cylinders for use in making proof prints.

3,630,147

**METHOD OF MANUFACTURING PRINTING PLATES HAVING A REPLICA PATTERN**

Fumio Hirai, 31-3, Minamihiraki, Osaka, Japan

Filed Feb. 20, 1968, Ser. No. 706,974

Claims priority, application Japan, Feb. 21, 1967, 42/11058

Int. Cl. B41c; B41n

U.S. Cl. 101—401.1

6 Claims

Disclosure is made of an embodiment of the present invention which comprises using a prototype in the form of a natural or carved object, overlaying a thin deformable material of paper or synthetic resin on the surface of said prototype to fix its surface pattern on said thin deformable material for use as a prototype plate, spraying onto this prototype plate a coloring matter from a direction of an acute angle to form an emphasized rugged-surface pattern, and photographing this prototype plate on a photographic printing plate, which is printed on a gelatinous film for being attached to an etch-workable metal so that it can be etched with an etching solution thereby obtaining a printing plate with a replica pattern and also decorative plates with said replica pattern.

3,630,148

**WASHING ARRANGEMENT FOR THE BLANKET CYLINDER OF AN OFFSET PRINTING MACHINE**

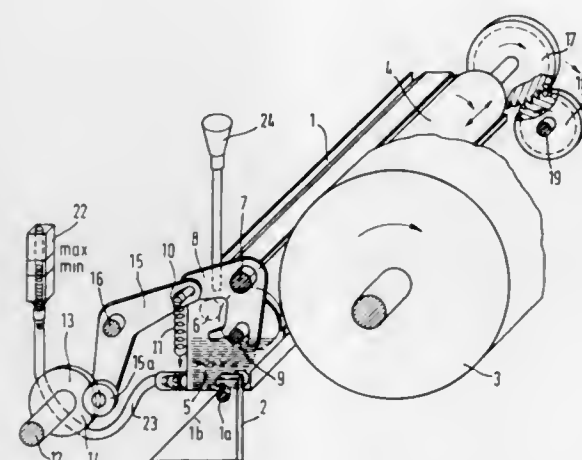
Heinz Schinke, Unterkirnach; Hermann Raible, and Dieter Ludin, both of St. Georgen, all of Germany, assignors to Math. Bauerle GmbH, St. Georgen, Germany  
Filed Jan. 21, 1969, Ser. No. 792,317

Claims priority, application Austria, Jan. 23, 1968, A655/68

Int. Cl. B41f 35/06

10 Claims U.S. Cl. 101—425

6 Claims



The washing roller of an offset printing machine is moved into circumferential engagement with the rotating blanket cylinder of the machine when the latter is to be washed, and a gear on the washing roller is thereby engaged with a gear rotated about a fixed axis on the machine frame for rotating the engaged portions of the roller and of the cylinder in opposite directions while they are also oscillated axially relative to each other and supplied with washing liquid.

3,630,149

**LITHOGRAPHIC PRINTING PROCESS**

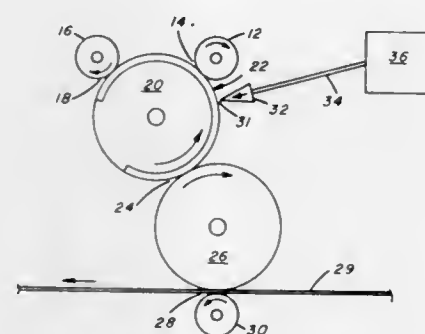
Doyle O. Etter, and David J. De Marle, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,385

Int. Cl. B41m 1/06; B41f 9/18

U.S. Cl. 101—450

9 Claims



Directing gas, e.g., air, at the surface of a lithographic plate (in an amount insufficient to dry the plate) after the image transfer step but before wetting and inking in the next press cycle, provides an additional means for controlling print density and increasing press latitude.

3,630,150

**ACTUATING MECHANISM**

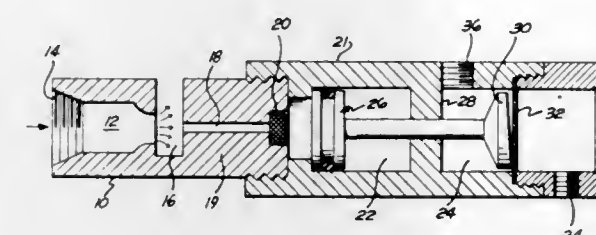
Edward L. Rakowsky, Kinnelon, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,487

Int. Cl. F42c 5/00

U.S. Cl. 102—70

2 Claims



An actuating mechanism in which a source of fluid is directed against an end wall of a rigid body portion having an open cavity formed therein to create pressure waves of fluid which pass through the length of the cavity to the closed end thereof to cause a temperature rise at the closed end. This temperature rise is utilized to ignite an explosive device which, in turn, is utilized to accomplish work.

3,630,151

**MANUALLY ACTUATED FLUIDIC IGNITER**

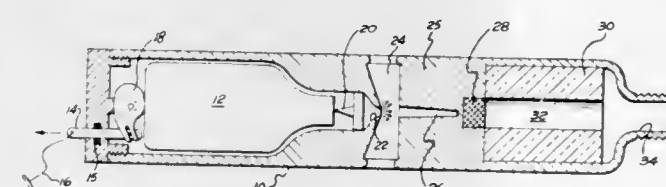
Edward L. Rakowsky, Kinnelon, N.J., assignor to The Singer Company, New York, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,610

Int. Cl. F42c 5/00

U.S. Cl. 102—70

4 Claims



An igniter in which an enclosed source of compressed fluid is disposed in a housing, and is opened by a manually actuated lever. The resulting flow of fluid is directed towards an intermediate wall formed in the housing and into a cavity formed in the intermediate wall to create pressure waves of fluid which pass through the cavity and result in a temperature rise at the closed end of the cavity. An explosive is disposed in heat exchange relation with the closed end of the cavity and is adapted to be ignited by the temperature rise.

3,630,152

**SAFETY FUSE WITH TIME AND IMPACT ACTION**

Claes G. Arnell, Torshälla, Sweden, assignor to Forsvarets Färdigverks, Eskilstuna, Sweden

Filed May 11, 1970, Ser. No. 36,170

Claims priority, application Sweden, May 19, 1969, 7026/69

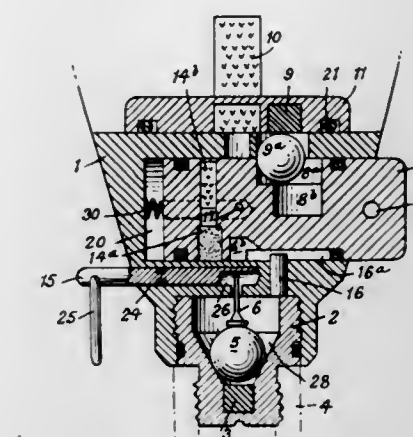
Int. Cl. F42c 9/10

U.S. Cl. 102—72

4 Claims

A safety fuse, preferably usable for light grenades and shells having combined time and impact action, comprising a main piston containing elements of the ignition chain, said piston being displaced radially in a bore in the fuse casing by a driving spring, the time of this movement being prolonged by the vacuum created behind the ring-tightened piston, said vacuum being adjustable by leak holes having an arbitrary diameter. The fuse also contains a delay-composition-con-

taining piston that is movable toward a fixed firing pin in a direction at an angle to the main piston. The delay piston has



stopping means preventing its movement as long as the main piston has not reached its outward, fully armed position.

3,630,153

**VEHICLE-ENCLOSED RAILWAY TRANSPORTATION SYSTEM**

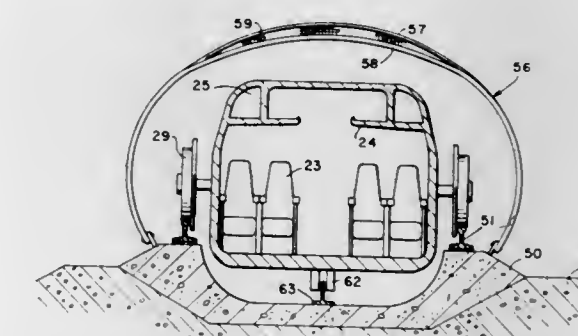
Henry L. Guimarin, Fort Worth, Tex., assignor to Whoosh, Inc., Fort Worth, Tex.

Filed May 5, 1969, Ser. No. 821,690

Int. Cl. B61b 13/10; B01g 7/02; F24f 7/02

U.S. Cl. 104—138

13 Claims



The system consists of a streamlined multicar vehicle and a complementary rail guideway. The vehicle is an elongated train of one or more cars of unitized tubular construction, having tapered nose and tail portions. The cars are supported on wheeled trucks, the wheels extending from the sides of the body in a manner that the body is effectively suspended between the supporting wheels to provide a low vehicle center of gravity. The guideway includes a ferroconcrete rail-supporting base structure having relatively high rigidity and a shroud defining, with the base structure, a continuous enclosure for the vehicle. An induction motor propulsion system includes primary windings mounted on the vehicle coacting with a secondary conducting plate secured to the guideway.

3,630,154

**RACK-AND-PINION-ACTUATED RAILWAY HOPPER CAR GATE**

William D. Mundinger, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Sept. 22, 1969, Ser. No. 859,680

Int. Cl. B61d 7/18, 7/22, 7/26

U.S. Cl. 105—282 P

7 Claims

The discharge end of a hopper positioned on a railway hopper car is provided with a closure gate. The closure gate



is movable between open and closed positions by means of a pinion and rack arrangement. The rack arrangement extends perpendicularly to one side of the hopper and is suitably suspended from the under side of the railway car structure.



During the movement of the gate to its open position it is entirely supported at one end on the rack arrangement by means of a pair of hangers connected to the gate and slidable on the rack arrangement so that the trailing or rear end of the gate is suspended thereon.

3,630,155

**RAILROAD CONTAINER BRACKET STRUCTURE**

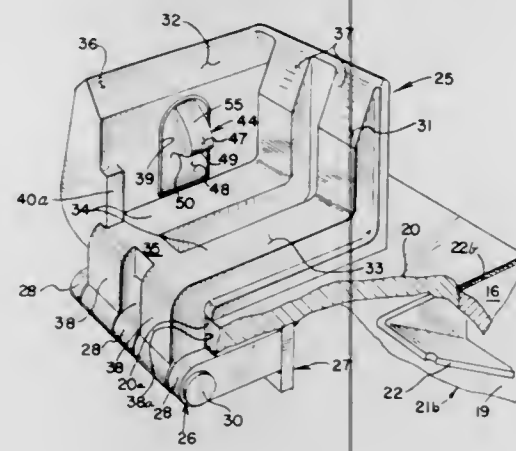
Walter J. Marulic, Gary, Ind., and Ray L. Ferris, Thornton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,665

Int. Cl. B61d 45/00; B65j 1/22

U.S. Cl. 105—366 D

11 Claims



This invention pertains to a railroad car container bracket mounted on transverse sideplate means attached periodically to the sides of the railroad car deck. The bracket is pivoted on an axis transverse to the longitudinal centerline of the car and constructed in such a manner as to prevent longitudinal, transverse, and vertical movement of a container. When the brackets are in position supporting the four bottom corners of a container the bracket will transmit impact forces to the deck of the railway car in a unique manner which shields the bracket pivot pin from damaging shearing forces. The bracket also contains a spring-loaded pivot latch which prevents dislodgement of the container in a vertical direction, especially when the container is empty and subjected to high-wind loading which tends to tip an empty container from the deck of the container car.

3,630,156

**COLLAPSIBLE TABLE**

William N. Woodruff, 8022 North 10th Ave., Phoenix, Ariz.

Filed Feb. 11, 1970, Ser. No. 10,466

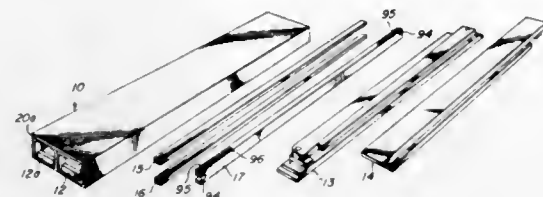
Int. Cl. A47b 3/04

U.S. Cl. 108—34

7 Claims

A collapsible table is described utilizing a continuous sheet of flexible material for a top and having a plurality of slats secured therebeneath. The slats in combination with the flexible top permit the top to be folded with the slats on the out-

side for convenient storage. A pair of end bars are positioned at each end of the top and include locking bars. Sideplates having legs pivotally secured thereto are placed in abutting



relationship to the abutting surfaces the legs are positioned so that when they are pivoted to their unfolded position, they contact the locking surfaces, thereby securing the sideplates and end bars to provide a sturdy table configuration.

3,630,157

**PALLET**

Ture Janneson Ortenblad, Brodragatan 30, S-412 74, Goteborg, Sweden

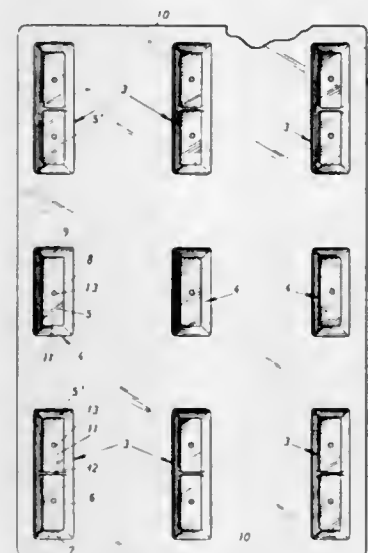
Filed June 3, 1969, Ser. No. 829,881

Claims priority, application Sweden, Feb. 6, 1969, 1633/69

Int. Cl. B65d 19/18

U.S. Cl. 108—53

4 Claims



An improved loading pallet is constructed with a carrier platform of compression moldable or castable material having a plurality of boxlike recesses, the sidewalls of which converge toward the bottom of each recess. The pallets are adapted to be stacked for storage or shipment with the boxlike recesses of each pallet being received within the recesses of the pallet immediately below and receiving the recesses of the pallet immediately above.

3,630,158

**CONTINUOUS PRESS, ESPECIALLY FOR SQUEEZING FRUITS**

Dirk Doornhof, Maartensdijk, Netherlands, assignor to Ensink N.V. Machinefabriek En Ijzergieterij, Netherlands

Filed Oct. 9, 1970, Ser. No. 79,522

Claims priority, application Netherlands, Oct. 16, 1969, 69

15656

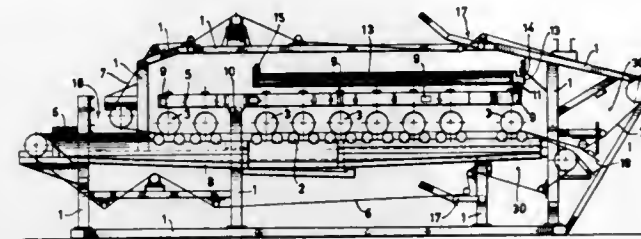
Int. Cl. B30b 9/24

U.S. Cl. 100—118

4 Claims

A continuous press, especially for squeezing fruits with two endless pressing belts and a plurality of rotatable pressing rollers, each cooperating with two supporting rollers thereunder on either side, arranged with a small number in a first train and a greater number in a main train on a supporting frame,

said supporting frame being supported between the first and main train in such a way that it can pivot about a horizontal axis, with a pressing member being provided in order to exert



(almost independently of the position of the supporting frame) a rather great force on the free end of the main train part of the supporting frame.

3,630,159

**BASE FOR A PORTABLE SEWING MACHINE CARRYING CASE**

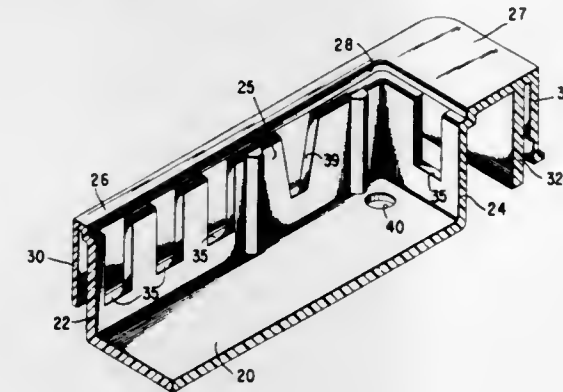
George L. Zilg, Dunellen, N.J., assignor to The Singer Company, New York, N.Y.

Filed Apr. 22, 1970, Ser. No. 30,857

Int. Cl. B05b 75/00

U.S. Cl. 112—258

5 Claims



A base for a sewing machine carrying case is provided. The base is an open-topped boxlike structure which supports the sewing machine and has apertures formed in at least one of the interior walls thereof for reducing the noise produced by operation of the sewing machine.

3,630,160

**METAL-JOINT-OPENING DEVICE**

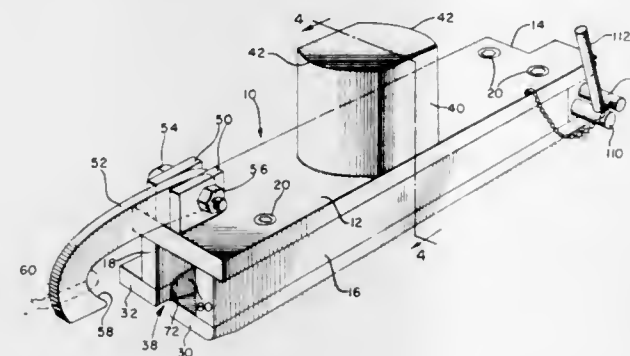
Carl C. Perkins, Jr., Prairie Village, Kans., assignor to Butler Manufacturing Company, Grandview, Mo.

Filed Nov. 24, 1969, Ser. No. 879,357

Int. Cl. B21d 39/00

U.S. Cl. 113—1 K

15 Claims



A rigid body means defines a slot extending longitudinally thereof for receiving a metal joint. A first cam means is sup-

ported by the body means at one side of the slot and defines a continuous cam surface extending longitudinally of the cam means, said surface having portions of different slope disposed at points spaced longitudinally thereof. This first cam means includes a sharp entry edge. A second cam means is supported by the body means in spaced aligned relationship to the first body means and includes a sharp entry edge. The second cam means is mounted on a rotatable shaft having an operating handle secured thereto which is engageable with a retainer pin received in a hole in the body means to limit rotation of the shaft which carries the second cam means.

3,630,161

**MULTIPLE PURPOSE FLOATING CONCRETE RING**

Hans Christer Georgii, Rindogatan, Stockholm, Sweden, assignor to Aktiebolaget Hydro Betong, Stockholm, Sweden

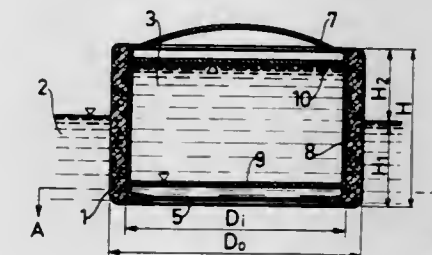
Filed May 6, 1969, Ser. No. 822,151

Claims priority, application Sweden, May 17, 1968, 6754/68

Int. Cl. B63b 35/02

U.S. Cl. 114—0.5 T

8 Claims



A concrete structure usable in water for a large number of various purposes, as for instance for transporting and/or storing liquids having a lower density than that of the water, for protecting a given water surface against wave motions, as a floating or bottom-fixed support foundation for other structures in the water, for mooring other structures floating in the water, etc. includes a cylindrical concrete shell, which is preferably open at both its ends and has a total displacement in the water exceeding its total deadweight and is disposed in the water with its axis of symmetry substantially vertical. The wall structure of the cylindrical concrete shell includes a large number of cells usable as ballast and trim tanks for controlling the attitude and the buoyancy of the concrete shell in the water. The concrete shell or ring can be arranged floating in the water at the water surface or submerged to rest upon the sea bottom with a force determined by the amount of ballast filled into the ballast and trim tanks. When used for transporting and/or storing a liquid having a lower density than that of water, the cargo liquid is disposed in a floating position upon the water in the space enclosed by the cylindrical concrete shell.

3,630,162

**METHOD AND MEANS FOR REDUCING THE PROPELLING RESISTANCE OF VESSELS**

Torbjorn H. Lundell, Grimstagan 75, Vallinby, Sweden

Filed Feb. 17, 1969, Ser. No. 799,858

Claims priority, application Sweden, Feb. 19, 1968,

2163/1968

Int. Cl. B63b 1/06; B63h 25/46

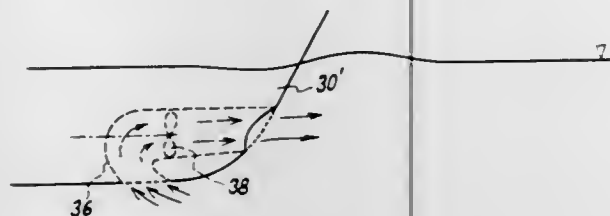
U.S. Cl. 114—57

10 Claims

A method and apparatus for reducing the resistance or drag of a vessel by affecting the flow condition of the water flowing toward the stem. A flow or stream of water is positively driven forward from the stem of the vessel by a flow device in such a direction and in such a condition of motion



that it imparts to the water flowing along the vessel, by superposition, a resulting flow and wave condition of such a



character that the resistance to the propelling of the vessel is reduced.

3,630,163

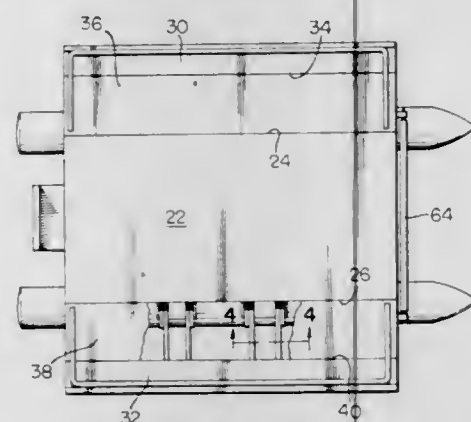
**BOAT HAVING LATERALLY ADJUSTABLE DECK**  
Edward J. Williams, 236 Oak Knoll S.E., Warren, Ohio

Filed Aug. 4, 1969, Ser. No. 847,214

Int. Cl. B63b 1/10

U.S. Cl. 114-61

4 Claims



The invention relates to a boat, especially to a pontoon-type boat, and is particularly characterized in that the deck of the boat is adjustable in the lateral direction between narrow and wide widths. The adjustment is accomplished by providing the deck with side sections, each of which can be moved from an inner position to an outer position and by providing leaf members to fill the gaps in the deck when the side sections are adjusted outwardly.

3,630,164

**STEERING AND PROPULSION OF MARINE VESSELS**

Ewan Christian Brew Corlett, Basingstoke, England, assignor to Hydroconic Limited, Basingstoke, England

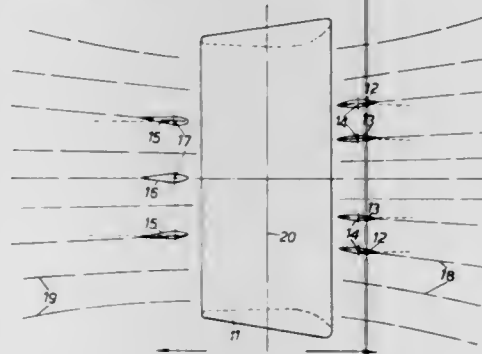
Filed Jan. 20, 1970, Ser. No. 4,332

Claims priority, application Great Britain, Feb. 26, 1969, 10,296/69

Int. Cl. B63h 25/06

U.S. Cl. 114-163

4 Claims



A ship's propulsion and steering assembly is provided in which a propeller works within a propulsion nozzle of the type having recirculation of flow outside the nozzle from exit

to entry at low or zero speeds of advance. Steering is provided by four shutter rudders mounted at the nozzle entry and three at the exit. In the straight ahead condition of steering, the outboard pair of the rudder blades at the entry have their leading edges toed out at an angle in the range 3° to 7° while the inboard pair are toed out at an angle of 1° to 3°. The outboard pair of rudder blades at the nozzle exit have their trailing edges toed out at an angle of 1° to 3°.

3,630,165

**TOW FOR SWIMMERS**

Bernd Bottger, 208 Pinneberg Stettiner Str. 6, Pinneberg, Germany

Filed Sept. 23, 1969, Ser. No. 860,295

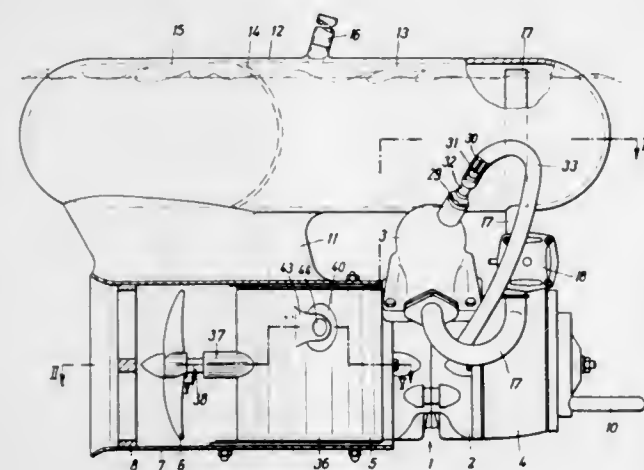
Claims priority, application Germany, Sept. 23, 1968, P 17

18 291.8

Int. Cl. B63b 35/00

U.S. Cl. 115-6.1

7 Claims



This invention relates to a tow for swimmers which includes an internal combustion engine carried by a float, the essential novel feature consisting in suspending the engine from underneath the float and providing means for sealing it from the water and supplying combustion air to the engine from the interior of the float which is connected with atmosphere.

3,630,166

**WATERPROOF CLICKER UNIT FOR FISHING REEL**

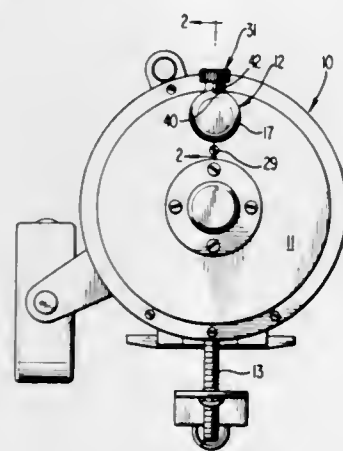
Franklin D. Riddle, and Robert Kenneth Crossland, both of Greenville, S.C., assignors to Southern Machinery Company, Greer, S.C.

Filed Mar. 30, 1970, Ser. No. 23,941

Int. Cl. G08b 3/00

U.S. Cl. 116-67

10 Claims



A clicker unit includes a small body having a pressed fit in an opening provided in one end plate of a fishing reel. A

spring-urged plunger assembly is contained movably in said body including a clicker element adapted to engage spaced recesses in a rotating plate carried by the reel spool. A sealed rotary means is provided on the body of the clicker unit to move the clicker plunger assembly between "on" and "off" positions.

3,630,167

**DIFFERENTIAL PRESSURE INDICATOR WITH LIGHT GUIDES**

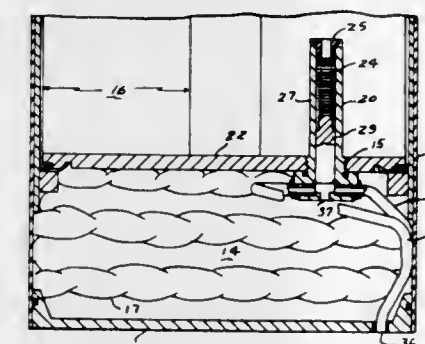
Edward G. Schultz, Jr., Richmond, Ind., and Paul F. Metz, Fairfield, Ohio, assignors to The United States of America as represented by the United States Air Force

Filed Apr. 2, 1970, Ser. No. 25,062

Int. Cl. G011 19/12, 13/02

U.S. Cl. 116-70

2 Claims



A differential pressure-sensing device positioned in an interior wall between two chambers and having two light guides leading from the pressure-sensing device through an external wall of one of the chambers. A shutter pin in the pressure-sensing device has one end attached to a bellows communicating with one of the chambers with the pressure in the other chamber acting against the end of the shutter pin. The shutter pin is movable across a light path between the two light guides so that light directed through one guide at the external wall can be seen through the other light guide when the desired differential pressure is maintained and light is blocked when the pressure difference is not at the desired level.

3,630,168

**INERTIA-OPERATED INDICATING APPARATUS**

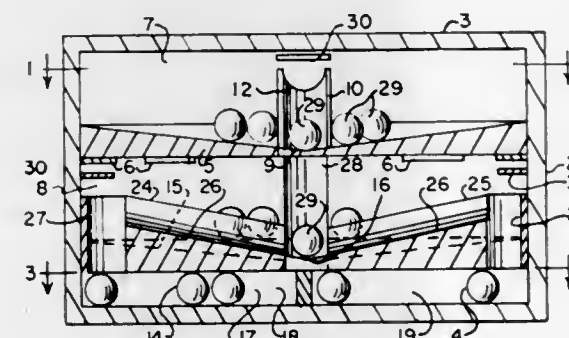
Foster C. Findlay, 909 Shattuck Road, Saginaw, Mich.

Filed Feb. 17, 1970, Ser. No. 12,009

Int. Cl. G01d 21/00

U.S. Cl. 116-114

10 Claims



Inertia-operated apparatus for indicating unusually high rates of acceleration, deceleration and turning of a vehicle

comprises a hollow body having three vertically stacked chambers, the upper and intermediate chambers having upwardly concave floors on which balls may be supported in such manner that one ball always is located at the center of the floor. The upper chamber includes a pair of ramps extending radially in opposite directions from the center of the floor and the intermediate chamber has a pair of ramps extending radially in opposite directions from the center of the floor, the ramps of the upper and intermediate chambers being normal to one another. At the upper end of each ramp is an opening which communicates with the lower chamber, and the lower chamber is provided with partitions to form four compartments, there being one compartment in communication with each of the openings in the ramps.

3,630,169

**STALL WARNING INDICATOR**

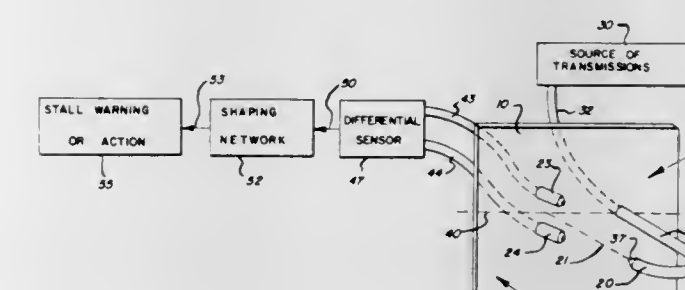
Victor B. Corey, Bellevue, Wash., assignor to Sundstrand Data Control, Inc.

Filed June 1, 1970, Ser. No. 41,886

Int. Cl. G01f 15/00

U.S. Cl. 116-117 D

7 Claims



A stall warning indicator having no moving parts is mounted on a leading edge of an aircraft wing, near the point of stagnation of airflow when a stall condition occurs. The indicator includes a transmitter emitting transmissions, as a continuous acoustic wave or a jet airstream, which are received by a pair of detectors connected to a differential sensor. When the stagnation point passes the axis of the transmissions, the differential sensor produces a signal to warn of an impending stall.

3,630,170

**TAPE AMOUNT INDICATOR FOR TAPE RECORDERS**

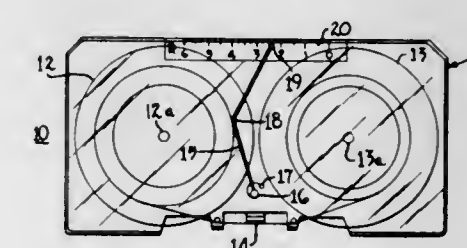
Nicholas Christo, Boonton, N.J., assignor to Continental Commerce Corporation, Englewood, N.J.

Filed Apr. 14, 1970, Ser. No. 29,106

Int. Cl. G01d 21/00

U.S. Cl. 116-114

4 Claims



The present invention relates to a transparent cartridge or cassette-type tape container device which is adapted to be inserted for recording or playback into a tape recorder and in which a predetermined length of tape is stored preferably on a pair of reels, the improvement residing in the provision of



an indicator supported in the container at one end and having a pointer at the other end thereof. The pointer sweeps along a scale which is either formed on the container device or which is in the form of a strip secured to the container device. The movement of the indicator is caused by the varying amount of the tape on one of the reels as sensed by the indicator with a portion thereof abutting against the tape on the reel.

3,630,171

## TABLET-DISPENSING DEVICE

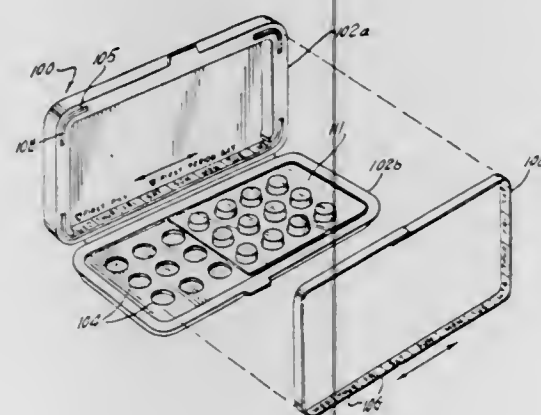
Charles M. Huck, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation

Original application Mar. 8, 1968, Ser. No. 711,683. Divided and this application Sept. 29, 1969, Ser. No. 871,994

Int. Cl. G09f 9/00

U.S. Cl. 116—121

1 Claim



A preferred embodiment of a series of tablet dispensers is disclosed having a base containing seven columns of tablet locations and a cylindrical member rotatably mounted in the base and containing on its surface seven series of indicia of time. Each series is axially disposed and includes an indicia for each day of the week arranged sequentially with respect to time. The indicia of each series are spaced so that each indicia is registerable with a column of tablet locations. The seven series of such indicia are arranged circumferentially of the cylindrical member and each series begins with an indicia representing a different day of the week.

In using the dispenser, the cylindrical member is rotated until the day on which the first tablet is to be taken registers with the first column of tablet locations. When the indicia representing the appropriate day is registered with the first column of tablet locations, the indicia representing subsequent days register with the other columns of tablet locations.

3,630,172

## DIET REMINDER MANIKIN

Marcel Neumann, 7240 Lowell, Lincolnwood, Ill., and Burton L. Siegal, Skokie, Ill., assignors to said Neumann, by said Siegal

Filed July 15, 1970, Ser. No. 54,873

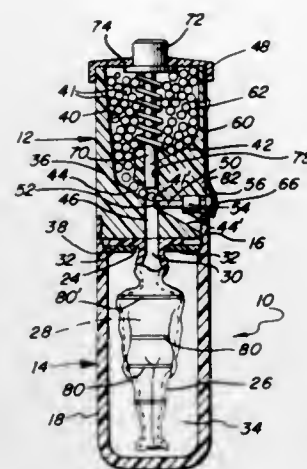
Int. Cl. G01d 21/00

U.S. Cl. 116—114

16 Claims

A structure comprising a manikin enclosed in a suitable enclosure is capable of manipulation by the user each time that a number of calories of food or grams of carbohydrate has been consumed by the user. The manipulation may take the form of dropping balls into the hollow of the manikin, or releasing a small amount of colored liquid to flow into the manikin or moving a colored member to change the appearance of the manikin. In each case the manipulation is performed during the day in such degrees that normal food intake by the user with orthodox manipulation will not result in any distortion or out-of-the-ordinary appearance of the

manikin. An excess of manipulation on the other hand will make a visible change from the normal in the appearance of the manikin. This provides a reminder for the normal food consumption of the dieting user, but also provides a



psychological reminder of the results of excess. For example, the manikin will appear bloated, or excessively colored, etc., if the user indulges in excess food and is religious in manipulating the manikin for each increment of intake.

3,630,173

## APPARATUS FOR COVERING THE SIDE FACES OF A PARTIALLY FINISHED CAKE WITH CRUMBLINGS

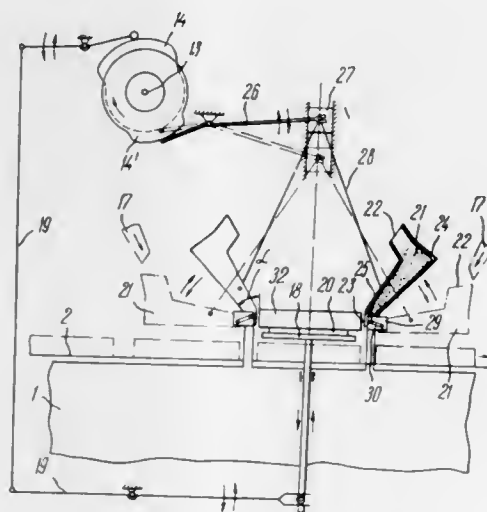
Oleg Grigorievich Lunin, Zeleny prospekt, 10/32, Korpus 27, kv. 17, Moscow, U.S.S.R.

Filed Nov. 10, 1969, Ser. No. 875,123

Int. Cl. A23g 3/20; 107 27/54

U.S. Cl. 118—16

7 Claims



A device for covering the side faces of partially finished cakes with crumbings, used in installations for making multilayer cakes, comprises a lifting-and-lowering table, a hopper with a vibrating hopper and two boxes. The boxes are somewhat spaced from each other and have inlets and outlets in the walls of the boxes. When the boxes are in operating position the outlets for the crumbings are to the side face of the cake.

3,630,174

## UNIT FOR PROVIDING ENVIRONMENTAL CONTROL OF ANIMALS

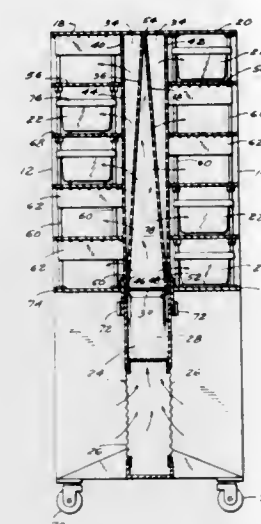
Robert S. Runkle, Allendale, N.J., and Robert Claude Marsh, Albuquerque, N. Mex., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Feb. 24, 1969, Ser. No. 801,652

Int. Cl. A01k 1/00

U.S. Cl. 119—15

4 Claims



A housing unit for providing environmental control of animals which subjects confined animals to a uniform laminar airflow. Airborne cross-contamination from adjacent confined animals is prevented by means of unidirectional airflow and by baffles, which inhibit the formation of undesired turbulences and eddies and prevent passage of heavy particulate matter from adjoining cages.

3,630,175

## FLUID HEATER

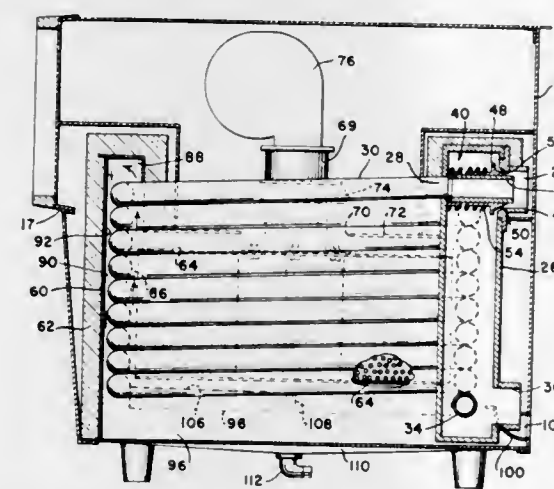
Edward A. Reid, Jr., and Robert G. Venendall, both of Columbus, Ohio, assignors to Columbia Gas System Service Corporation, New York, N.Y.

Filed Feb. 2, 1970, Ser. No. 7,445

Int. Cl. F22b 27/08

U.S. Cl. 122—250 R

21 Claims



A swimming pool heater having an infrared gas burner therein for supplying radiant heat to pool water flowing in a tubular heat exchanger adjacent the burner plate. The heat exchanger is arranged in a heater housing to define therewith a flow path adjacent the tubes for the products of combustion from the burner whereby additional heat by convection is supplied to the tubes from the exhaust gases. The input end of the heat exchanger includes a valve member adapted to maintain a predetermined rate of flow of water through the tubes and to bypass excess water back to the pool.

3,630,176

## TUBE FURNACE FOR HEATING

Takehiko Sato, Yokkaichi, and Saburo Fukui, Hiroshima, both of Japan, assignors to Mitsubishi Jukogyo K.K. and Mitsubishi Petrochemical K.K., Tokyo, Japan

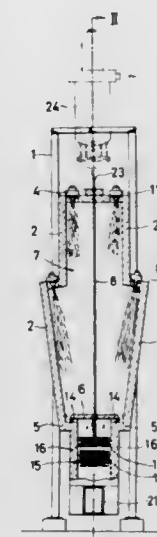
Filed July 8, 1970, Ser. No. 53,178

Claims priority, application Japan, July 17, 1969, 44/56630

Int. Cl. F22b 21/24

U.S. Cl. 122—356

4 Claims



A heating furnace for gases or liquids characterized in that a radiant section and a convection section are located, respectively, in the upper and lower spaces inside the furnace, the radiant section and the convection section being separated from each other by a heat-insulating reflecting plate which is formed with passages for combustion gas, pipes disposed in a zigzag or coiled fashion are vertically suspended in the radiant section and a plurality of downwardly directed burners are mounted on the ceiling and the sidewalls of the radiant section, the pipes in the radiant section being communicated at one ends with the end of pipes disposed in the convection section and led at the other ends out of the furnace through the ceiling, and an exhaust port for the flue gas is formed open through the lower part or through a side of the convection section.

3,630,177

## SPEED CONTROL FOR INTERNAL COMBUSTION ENGINE

Gerhard Engel, Stuttgart-Zuffenhausen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

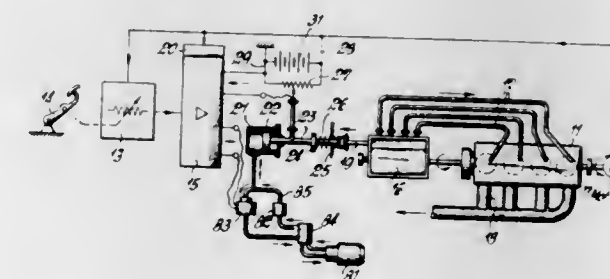
Filed Oct. 3, 1969, Ser. No. 863,439

Claims priority, application Germany, Oct. 12, 1968, P 18 02 859.6

Int. Cl. F02b 3/00

U.S. Cl. 123—32 EA

14 Claims



The position of a regulator rod controls the amount of fuel during each operating cycle by an injection pump. The posi-



tion of the rod depends on hydraulic pressure which in turn is controlled by means of an electric valve. The electric valve responds to a control signal which is furnished by a multistage closed loop control circuit in dependence on the difference between a first feedback signal signifying the position of the regulator rod and a desired fuel injection signal varying in dependence both on the motor speed and the position of the accelerator pedal.

3,630,178

# ENGINE HAVING MIGRATING COMBUSTION CHAMBER

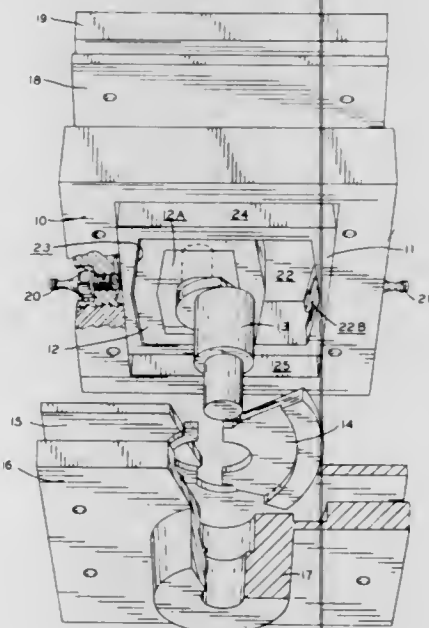
Frederick L. Erickson, 2610 Basworth Drive, Fort Wayne, Ind.

Filed June 1, 1970, Ser. No. 42,074

Int. Cl. F02b 59/00, 75/32

U.S. Cl. 123—50

12 Claims



An internal combustion engine having no connecting rod and comprising a stationary power block housing, a combustion chamber member, a working piston, and a crankshaft is disclosed wherein the reciprocating combustion chamber member contains two combustion chambers separated by a slidable double acting working piston. The working piston is connected through a rotatable bearing to a crankshaft crank pin which guides the working piston and each point on it through a circular motion relative to the power block housing. Two additional variable volume chambers are formed outside the combustion chamber member and between that member and the power block housing which allow for unique gas transferring which increases engine performance while diminishing the exhaust gas pollutants. Novel porting arrangements between the combustion chambers and the variable volume chambers are also disclosed.

3,630,179

# METERED MECHANICAL TAPPET

Morris V. Dadd, Muskegon, Mich., assignor to Johnson Products, Inc., Muskegon, Mich.

Filed Apr. 20, 1970, Ser. No. 30,152

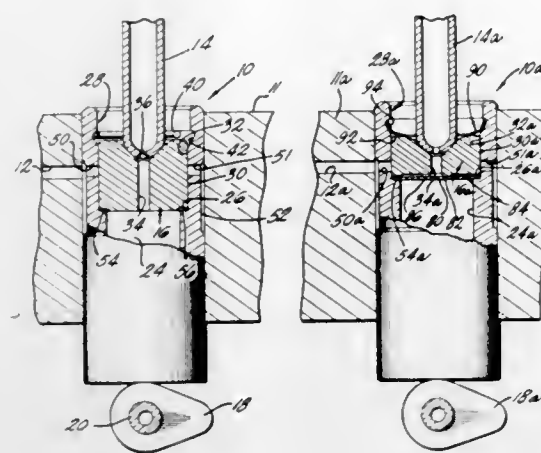
Int. Cl. F01L 1/14; F01m 9/10

U.S. Cl. 123—90.35

9 Claims

A mechanical metering tappet which controls the oil pressure in the hollow push rod for supplying oil to overhead oiling systems of internal combustion engines by restricting the flow of the oil to the push rod. In one embodiment, this is accomplished by utilizing the diametral clearance of the push rod seat within its supporting cavity as the passageway for the oil from the crankcase to the reservoir. In another embodiment,

the diametral clearance of the push rod seat is utilized to permit flow of oil but a metering disc used in conjunction with a specially configured bottom surface of the seat provides the metering function. In both embodiments, the oil inlet hole in the tappet body is positioned above the tappet support shoulder for the push rod seat.



3,630,180

# DEVICE FOR BALANCED HOMOGENIZATION OF AIR AND LIQUID FUEL MIXTURES IN INTERNAL COMBUSTION ENGINES

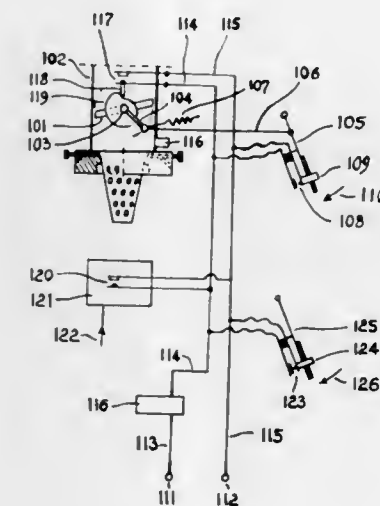
Rene Bouteleux, 5 rue, Dulong, Rouen, Seine Maritime, France

Filed June 2, 1969, Ser. No. 829,218

Int. Cl. F02m 7/22

U.S. Cl. 123—97 B

3 Claims



The carburetor of an internal combustion engine of a motor vehicle has an idle-running jet and an air-fuel homogenizing chamber, an electrically operated fuel-admitting valve for the idle-running jet and a cam on the shaft of the air throttle of the carburetor, also an electric contact for actuating the fuel-admitting valve in connection with the clutch pedal of the wheels. The accelerator pedal of the vehicle has also an electric contact, whereby the two contacts are arranged electrically in parallel for opening the fuel-admitting valve and whereby the contact controlled by the cam closes as soon as the air throttle opens and remains closed for any opening position of the air throttle.

3,630,181

# IGNITION DISTRIBUTOR FOR MOTOR VEHICLES

Helmut Orlich, Wolfsburg; Christoph Voges, Algermissen über Hildesheim; Gunter Buchmüller, Wolfsburg, and Horst Reinert, Fallersleben, all of Germany, assignors to Messrs. Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Continuation of application Ser. No. 784,660, Dec. 18, 1968, now abandoned. This application Oct. 14, 1970, Ser. No. 80,743

80,743

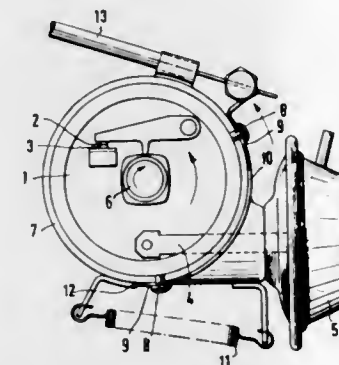
Claims priority, application Germany, Dec. 23, 1967,

P 15 76 694.6

Int. Cl. F02p 5/04

U.S. Cl. 123—117 A

10 Claims



The vacuum governor box is mounted free to move on the distributor housing. Linkage connected to the accelerator pedal moves the box in dependence on the position of the pedal so as to advance the spark, or begin to advance it, at a time before the throttle valve moves from its idling position.

3,630,182

# ANTIPOLLUTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

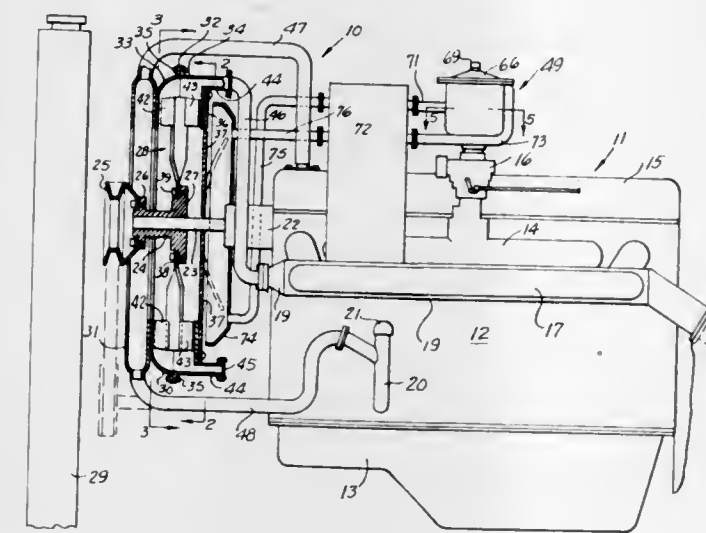
Lewis M. D. Grainger, Route # 1, Glen Allen, Va.

Filed June 17, 1970, Ser. No. 46,938

Int. Cl. F02f 9/02; F02m 25/06, 23/06

U.S. Cl. 123—119 B

5 Claims



An antipollution system for internal combustion engines in which a blower-forming part of the fan blade of the engine draws fumes from the crankcase of the engine and feeds the fumes along with fresh air through a heat exchanger to heat the gases and then to an oil bath air cleaner air intake of the carburetor. A portion of the fumes and air are fed to an exhaust-gas-pollution-burning device.

3,630,183

# DIESEL ENGINE MANIFOLD AIR PREHEATER

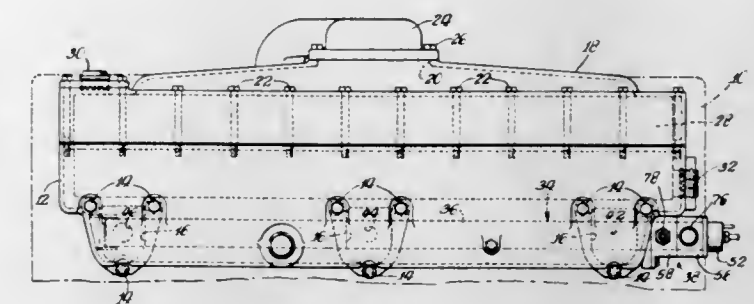
Jack Hoffman, Carmel, Ind., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Jan. 26, 1970, Ser. No. 5,606

Int. Cl. F02m 31/04; F02n 17/02

U.S. Cl. 123—122 G

3 Claims



An air preheater preferably associated with an intercooler mounted and lengthwise of air intake manifold; and including an elongated burner tube mounted in and lengthwise of the manifold and provided with a plurality of longitudinally spaced apertures, and a burner head assembly at one end of the burner tube.

3,630,184

# GLOW PLUG

Karl Wolf, Stuttgart-Sonnenberg; Helmut Weyl, Bietigheim, and Otto Beesch, Stuttgart-Sonnenberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

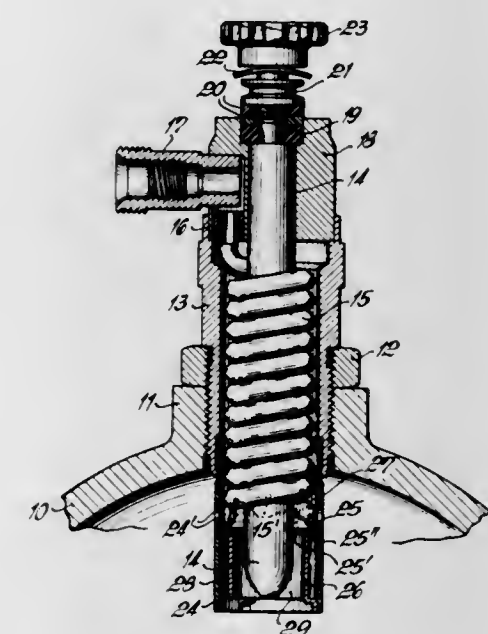
Filed Jan. 16, 1970, Ser. No. 3,386

Claims priority, application Germany, Jan. 28, 1969, P 19 03 999.7

Int. Cl. F02m 57/00

U.S. Cl. 123—145

9 Claims



A glow plug has an elongated tubular housing and a convoluted tubular member located in and extending axially through this housing. A leading end portion of the tubular member is located proximal to the front end of the tubular housing. Fuel outlet means is provided in the front end portion and fuel inlet means are provided in the tubular member rearwardly of the outlet means. A glow pin extends through the center of the helix constituted by front tubular member and is electrically energizable for thereby indirectly heating fuel passing through the tubular member from the inlet



means to the outlet means so that such fuel issues from the outlet means as flammable fuel vapor.

3,630,185

## IGNITION-TIMING APPARATUS

Gunter Struber, Stuttgart, and Jurgen Wesemeyer, Stuttgart-Vaihingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

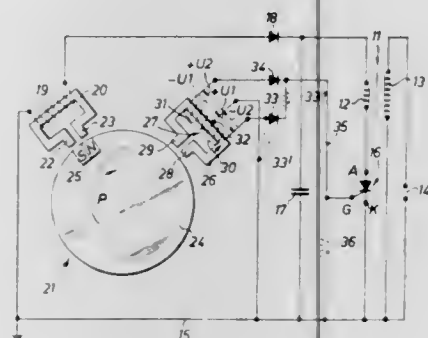
Filed Feb. 9, 1970, Ser. No. 9,782

Claims priority, application Germany, Feb. 13, 1969, P 19 07 067.8

Int. Cl. F02p 3/06

U.S. Cl. 123-148 E

10 Claims



Two electrically different windings are successively influenced by a magnetic flux and generate different successive voltage pulses, of which the first generated pulse has a lower peak value. The pulses are transmitted to the control electrode of an electronic switch which controls an ignition coil and a spark plug. At low-starting speeds, the first voltage pulses are below the threshold voltage of the switch so that the spark is caused later by the second voltage pulse. At the high-normal speed of the combustion engine, the first voltage pulse exceeds the threshold voltage, and the spark is earlier produced.

3,630,186

## ARCHERY BOW WITH PROJECTILE

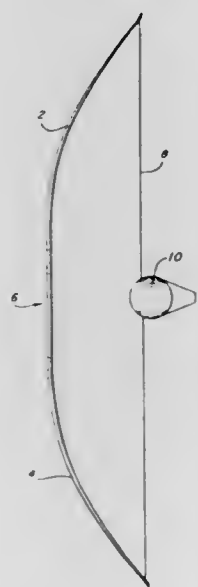
Walter John Babyn, 91 Watson Ave., Toronto 9, Ontario, Canada

Filed Apr. 27, 1970, Ser. No. 32,168

Int. Cl. F41b 5/00

U.S. Cl. 124-23

6 Claims



A bow and missile device, the bow having a central opening integrally therein, so that a missile when impelled by the bowstring passes through the central opening. The missile is

of spherical or other solid configuration, and has a pair of wings affixed to a slit in the missile so that the wings may be folded around the bow string and be grasped by the user to facilitate propelling the missile by means of the bowstring, through the central opening in the bow.

3,630,187

## TRUEING DEVICE FOR GRINDING DISCS

Engelbert Vossebrecher, Hückeswagen, Germany, assignor to W. Ferd. Klingelberg & Sohne, Germany

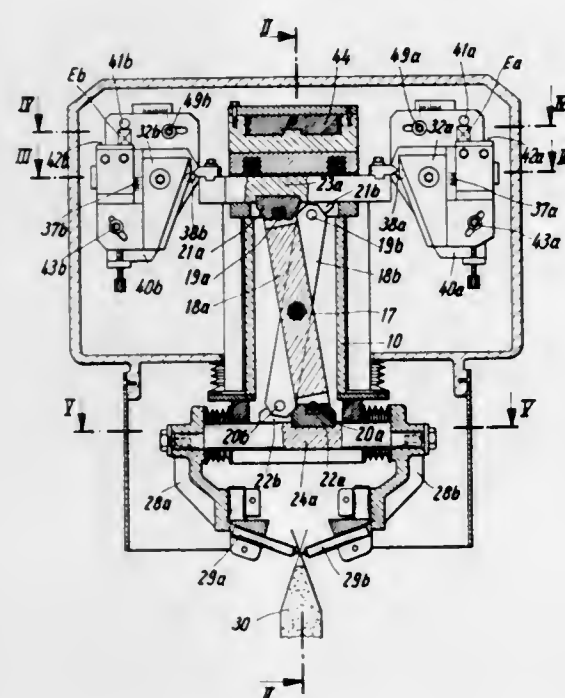
Filed June 30, 1970, Ser. No. 51,192

Claims priority, application Germany, July 4, 1969, P 19 34 035.3

Int. Cl. B24b 53/08

U.S. Cl. 125-11 P

10 Claims



An apparatus for dressing a grinding disc and, in particular, for dressing the flanks of a grinding disc for a worm or thread grinding machine. The apparatus has a stationary frame and a carriage is movable in the frame radially of the disc. A pair of opposed dressing elements are carried on the disc end of the carriage and slide thereon axially of the disc. A pair of slides on the other end of the carriage move parallel to the direction of movement of the dressing elements. Levers pivoted in the carriage connect each slide with a respective dressing element and each slide has a feeler on one end engageable with a templet in the frame. The edge of each feeler is a knife edge curved in a plane normal to the direction of travel of the carriage. Each templet has a knife edge for engagement with the edge of a respective feeler and extending at an angle to the edge of the respective feeler. Each templet is adjustable in the frame laterally with respect to the direction of travel of the carriage and angularly about a pair of axes extending angularly to each other and to the direction of travel of the carriage. The feelers are, preferably, adjustable on the slides in the direction in which the feeler edges extend.

3,630,188

## CHARCOAL COOKING GRILL

Hugh Ross, 820 Camp Horne Road, Pittsburgh, Pa.

Filed Feb. 12, 1970, Ser. No. 10,734

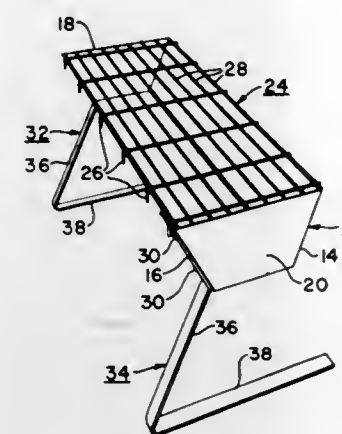
Int. Cl. A47j 37/00; F24b 3/00

U.S. Cl. 126-25 R

1 Claim

A charcoal cooking grill comprising an elongated trough for receiving charcoal and having a grill fitted over its top. Connected to the trough is a single set of legs, each having an inclined, generally vertical portion and a horizontally extend-

ing dogleg portion which rests on a supporting surface. With this arrangement, the grill may be fitted into the opening in a home fireplace without removing a grate from the hearth, the



dogleg portions of the legs fitting under the grate. Furthermore, a pair of such grills may be fitted within the hearth in tandem without removing the grill.

3,630,189

## STOVE

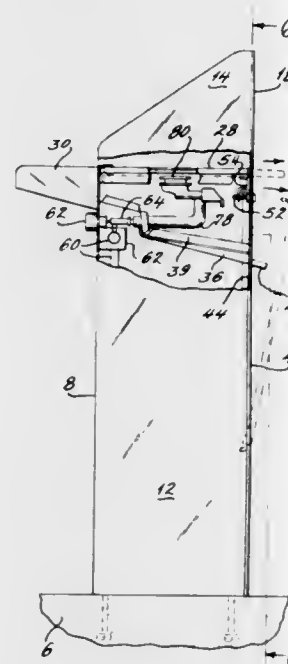
Ralph R. Hodges, and Adrian F. Bauer, both of Belleville, Ill., assignors to Empire Stove Company, Belleville, Ill.

Filed Mar. 2, 1970, Ser. No. 15,769

Int. Cl. A47j 37/00; F24c 3/00

U.S. Cl. 126-41 R

8 Claims



A stove includes a cabinet having a grill extending across its upper end and burners below the grill. The burners are supplied with a combustible gas through a supply conduit having a solenoid shutoff valve and adjustable control valves thereon. The solenoid valve is energized by a battery and a coin-operated timer switch is interposed between the battery and the coil of the solenoid valve. The cabinet has a removable access panel which provides access to the various components in the interior thereof. The grill is mounted in slideways, and its end is normally blocked by the access panel. However, when the access panel is removed, the grill can be withdrawn from the cabinet. A grease tray is mounted within the cabinet beneath the grill and burners, and that tray slopes downwardly toward the access panel and terminates at a discharge spout which projects through the access panel.

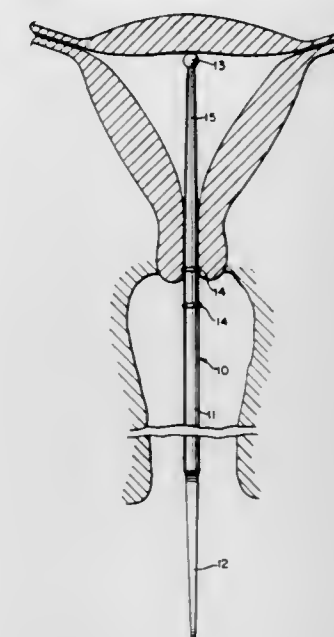
3,630,190  
INTRAUTERINE PROBE  
Samuel A. Baker, Great Neck, N.Y., assignor to Julius Schmid Inc., New York, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,245

Int. Cl. A61b 5/10

U.S. Cl. 128-2

5 Claims



A presterilized intrauterine probe manufactured from a biologically inert plastic material is described which device is particularly adapted to probe the cervical canal and uterus to determine whether the uterus is anteverted or retroverted and to determine the distance between the cervical os and the fundus of the uterus. This intrauterine probe comprises a flexible stem portion having annular calibrated means and handle means at the proximal end of said stem portion.

3,630,191

## APPARATUS AND METHOD FOR FILLING CAPILLARY TUBING WITH FLUIDS

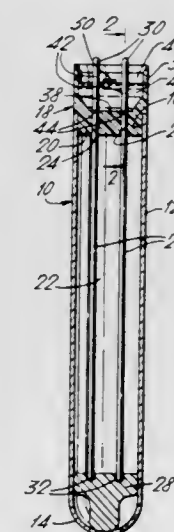
Saul R. Gilford, Oberlin, Ohio, assignor to Gilford Instrument Laboratories, Inc., Oberlin, Ohio

Continuation-in-part of application Ser. No. 803,031, Feb. 27, 1969, now abandoned. This application May 15, 1969, Ser. No. 830,185

Int. Cl. A61b 5/00; A61m 1/00

U.S. Cl. 128-2

21 Claims



A plurality of lengths of evacuated capillary tubing having their ends sealed is mounted in a container with one end protruding from the closure of the container. The closure has a well formed by an upper collar, the small upper sections of



the lengths of tubing extending through the closure and the well and being scored at the bottom of the well above the transverse wall or plug thereat. When used, blood or the like fluid is deposited in the well, the upper end of each protruding section of the lengths is given a lateral strain so that the portion breaks off under the surface of the fluid, and the vacuum in the hollow bore of the length of capillary tubing draws the fluid into itself. The lateral strain is effected manually or by means of a cap engaged on the closure and having an extension entering the well.

3,630,192

## INSTRUMENT FOR INTERNAL ORGAN BIOPSY

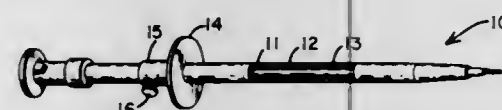
Khosrow Jamshidi, 3146 Minnehaha Ave., Minneapolis, Minn.

Filed July 14, 1969, Ser. No. 841,276

Int. Cl. A61b 10/00, 17/36

U.S. Cl. 128-2 B

10 Claims



Biopsy needle means particularly adapted for the withdrawal of tissue through a cannula forced through or along an unnatural route into the interior of a live body or organ such as thyroid, spleen, or a tumor mass, the means comprising, in combination, a biopsy needle including a generally hollow axially flexible elongated needle having a generally uniform cylindrical configuration with an internal core of substantially constant internal diameter extending throughout the major portion of the axial length of the needle, said needle having a tapered distal tip with a cutting surface formed along the edges of the tip, the needle having substantial axial flexure, stylet means having an external configuration generally matching the configuration of said core and arranged to be received within the core of said hollow needle, the stylet means comprising a rigid shaft having a closed sharp tip arranged to extend distally from the tapered distal tip when the stylet is received within the core of the hollow needle. In addition, the biopsy needle means is provided with a sheath which has substantial axial flexure for accommodating relative motion of various organs within the body, and reducing or eliminating the occurrences of bleeding complications.

3,630,193

## THERAPEUTIC BATHING CABINET

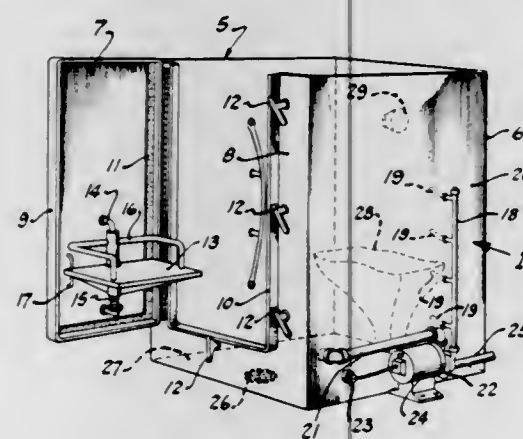
Joyce M. Lancaster, P. O. Box 442, Wagoner, Okla.

Filed Mar. 10, 1970, Ser. No. 18,034

Int. Cl. A61h 9/00

U.S. Cl. 128-66

6 Claims



A rectangular open top cabinet having a rectangular door hinged on one side thereof. The aforesaid door is provided with a spring-loaded seat on the inside thereof for a person using the cabinet. The cabinet is provided with a vertically disposed water supply pipe having a plurality of outlets in

one end of the cabinet for providing recirculating water. The just-mentioned pipe is connected to a valve to which is also connected a water-circulating pipe having its outlet in the lower end of the aforesaid cabinet. Flow of water from the water filling pipe is controlled by a sensing device that is connected to an electrically operated water pump that is also connected to the aforesaid valve of this invention. A manually operated control faucet, for controlling the temperature of the water entering the aforesaid cabinet and the pressure under which the water flows, is located so that it can be operated by either the person in the cabinet or by an attendant outside the cabinet. A drain outlet in the bottom of the cabinet and a molded seat secured to one wall of the cabinet completes the construction of this invention.

3,630,194

## ORTHOPEDIC BANDAGE

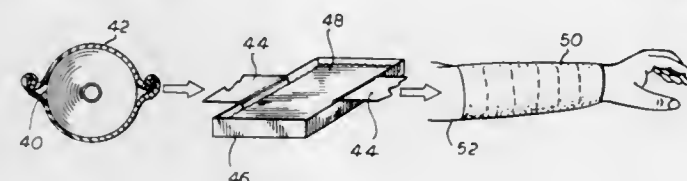
Franklin Boardman, Englishtown, N.J., assignor to Johnson & Johnson

Filed May 22, 1970, Ser. No. 39,754

Int. Cl. A61l 15/07

U.S. Cl. 128-90

25 Claims



This orthopedic bandage for immobilizing or supporting portions of the body comprises a flexible carrier such as cotton gauze supporting a solid, water-soluble vinyl monomer selected from the group consisting of diacetone acrylamide and N-isopropyl acrylamide and mixtures thereof. Other monomers and fillers including polymeric and reactive substances may optionally be added to achieve particular properties or results. The bandage is preferably prepared for use by dipping in water in the presence of a catalyst for initiating polymerization of the vinyl monomer and then wrapping the body portion to be immobilized. In the preferred practice the initiator is a part of the bandage and may either be mixed with the monomer or coated on the surface of the bandage.

3,630,195

## INFUSION TUBE HOLDER AND METHOD

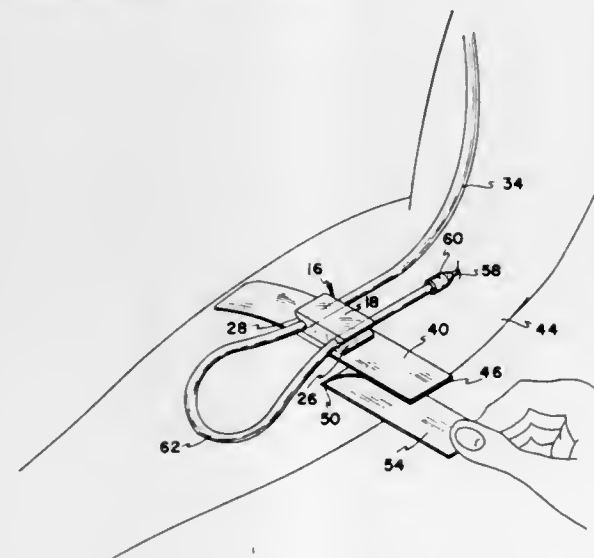
Louis S. Santomieri, Benicia, Calif., assignor to Deseret Pharmaceutical Company, Inc., Sandy, Utah

Filed Feb. 4, 1970, Ser. No. 8,573

Int. Cl. A61m 25/02, 05/00

U.S. Cl. 128-133

3 Claims



Method and apparatus adhesively holding a looped infusion tube adjacent a venipuncture site, the apparatus includ-

ing a generally flat body member carried upon an adhesive strip and opposed tube receiving recesses.

3,630,196

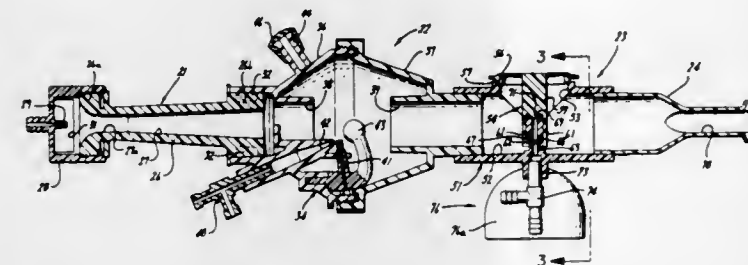
MANUAL POSITIVE PRESSURE BREATHING DEVICE  
Forrest M. Bird, 212 N. W. Cerritos, Palm Springs, Calif., and Henry L. Pohndorf, 1227 Brewster Drive, El Cerrito, Calif.

Filed Aug. 22, 1969, Ser. No. 852,186

Int. Cl. A62b 7/02

U.S. Cl. 128-145.8

8 Claims



A manual positive pressure breathing device in which the mainstream gas flow is in axial alignment to provide a laminar flow and utilizing a nebulizer and a manually operated exhalation valve which is located adjacent to the patient's airway.

3,630,197

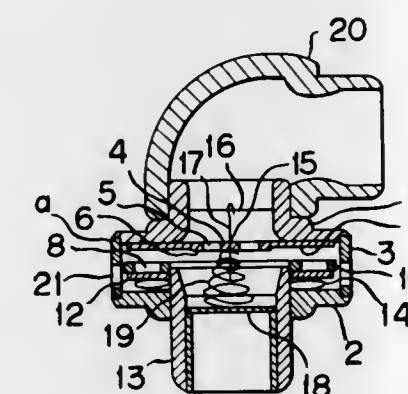
RESPIRATORY VALVE OF NONREBREATHING TYPE  
FOR USE IN ANAESTHESIA APPARATUS  
Tukiko Hirano, No. 139-1, Shimo-Fukuman, Hachiman-cho, Tokushima-shi, Tokushima-ken, Japan

Filed Nov. 29, 1968, Ser. No. 780,105

Int. Cl. A61m 17/00

U.S. Cl. 128-188

10 Claims



This respiratory valve of nonrebreathing type consists of a one-way inspiratory valve for gas coming from the gas-feeding mouth and an expiratory valve capable to close gas exhaust induction holes in an expiratory valve seat when pressed by the spring, both provided in a valve casing which includes at one end a gas-feeding mouth connected with an anesthesia apparatus and at the other end a delivery mouth to be connected with a patient. When the patient inhales the inspiratory valve opens while the expiratory valve closes so that the anesthetic gas is fed to the patient from the apparatus, and when the patient exhales the inspiratory valve closes while the expiratory valve opens to release the breathing out into the open.

3,630,198

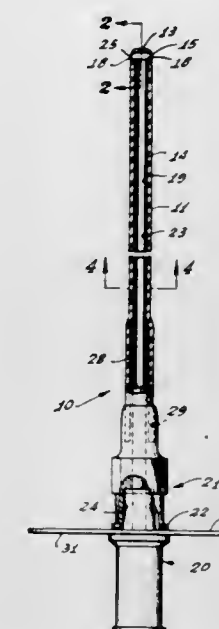
## CATHETER PLACEMENT DEVICE

Melvyn L. Henkin, 19640 Greenbriar Drive, Tarzana, Calif.  
Filed June 23, 1969, Ser. No. 835,560

Int. Cl. A61m 5/00

U.S. Cl. 128-215

4 Claims



A catheter placement device including a Teflon catheter with an imperforate, generally hemispherical tip and two laterally opening ports adjacent the tip, the catheter being telescoped onto a cannula which bears against an annular internal shoulder behind the tip and communicates with the ports. The device is gripped by handles attached either directly to a hub on the cannula or to an adapter releasably connected to the hub, and is inserted through a shallow incision made with a disposable introducer formed in one piece with a troughlike pointed shank and an integral grip which centers the thrust of insertion on the shank. A capillary tube and a syringe are included as alternative sensing devices for communicating through the cannula with the ports to determine when a change in condition occurs during placement.

3,630,199

## UNITIZED INJECTION SYSTEM

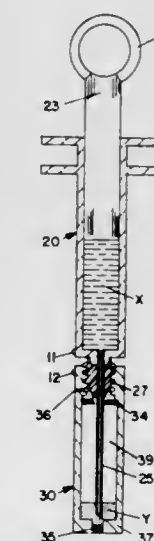
Louis P. Gangarosa, 3055 Eton Ct., Augusta, Ga.; Eugene J. Gangarosa, 5305 Greencastle Way, Stone Mountain, Ga., and Parker E. Mahan, 2344 Burnt Creek Road, Decatur, Ga.

Filed May 26, 1970, Ser. No. 40,663

Int. Cl. A61m 5/00

U.S. Cl. 128-218 M

6 Claims



A disposable syringe including a barrel having one medicinal solution therein and a cannula extending



therefrom, and a vial removably attached to the barrel and receiving the cannula for isolated storage of a second medicament. With the barrel and vial in assembled, storage position, the syringe cannula tip is imbedded in a plug fixedly attached to the bottom wall of the vial, thereby preventing intermixing of the substances. However, when the parts are manipulated to a mixing position the cannula tip is withdrawn from the plug and air is introduced into the vial, thereby permitting a quantitative mixing of the substances under favorable pressure conditions. After mixing the syringe is removed completely from the vial, used in the regular manner, and the entire system thrown away.

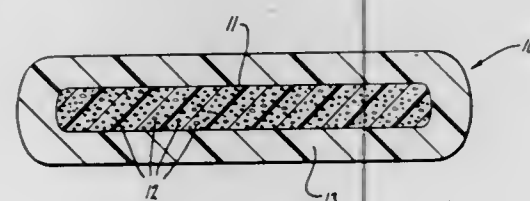
### 3,630,200 OCULAR INSERT

Takeru Higuchi, Lawrence, Kans., assignor to ALZA Corporation

Filed June 9, 1969, Ser. No. 831,481  
Int. Cl. A61m 31/00

U.S. Cl. 128—260

22 Claims



Drug dispensing ocular insert for insertion into the cul-de-sac of the conjunctiva between the sclera of the eyeball and the lid to dispense drug to the eye over a prolonged period of time is rendered more compatible with the eye and surrounding tissues by fabricating the insert of an inner core containing the drug and a soft hydrophilic outer layer.

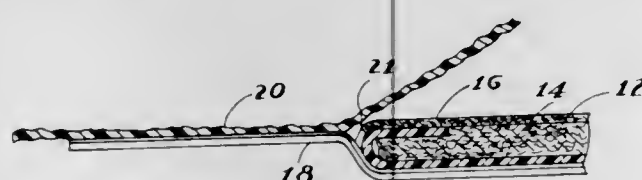
### 3,630,201 FASTENING ARRANGEMENT FOR DISPOSABLE DIAPERS

Dan D. Endres, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 11, 1969, Ser. No. 848,995  
Int. Cl. A61f 13/16

U.S. Cl. 128—287

8 Claims



A disposable diaper of the type having an impervious thin film backing is provided with integral fasteners comprising narrow strips of pressure-sensitive tape characterized by particularly advantageous properties. The tape has an adhesive mass strength of over 400 gms. per 3/4 inch width, a tensile strength in the long direction of the strip of at least 10 lbs. per inch of width, and an Elmendorf tear of at least 150 grams in the cross direction of the strip. One end of the strip is attached to the thin film backing of the diaper and adheres thereto so firmly that it will tear a 1 mil thick film rather than release. The other end of the strip extends beyond the diaper edges and is covered with a protective release sheet which adheres to the adhesive with an attachment force of from about 50 to about 300 gms. per 3/4 inch of width. This latter force is sufficient to retain the protective sheet on the strip during processing and handling but will permit stripping the

sheet off the adhesive without damaging the adhesive, the film backing, or the strip itself when the diaper is ready for use.

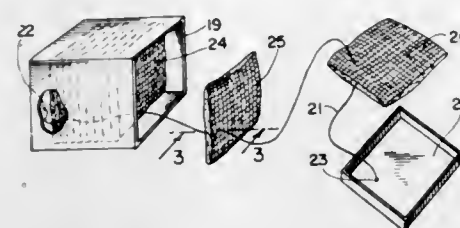
### 3,630,202 SYSTEM FOR HANDLING SURGICAL SPONGES

Sidney Robert Small, 11633 San Vicente Blvd., Suite 104, Los Angeles, Calif.

Filed Oct. 3, 1969, Ser. No. 863,469  
Int. Cl. A61f 13/00

U.S. Cl. 128—296

4 Claims



A system for handling surgical sponges in order to assure removal of those used during a surgical operation without the necessity of counting includes a line such as a flexible thin steel or nylon wire to which a plurality of sponges are serially coupled. A portion of the line is at all times held exterior to the incision, the sponges themselves being captive on the line. Sufficient line slack is available to permit a surgeon to utilize and manipulate the sponges within the incision without separation of the sponges from the line. Removal of all of the sponges used in the surgery is assured by tracing the location of the sponges from the exterior portion of the line and removing them with the line prior to closure.

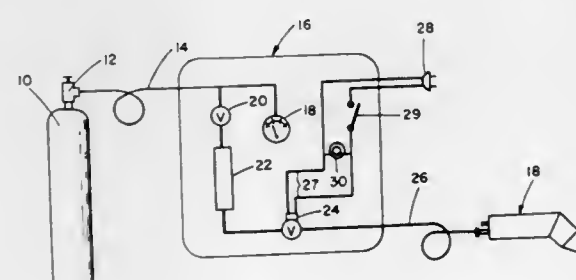
### 3,630,203 CRYOGENIC BIOLOGICAL APPARATUS

Martin S. Sellinger, Livingston, N.J.; Robert B. Currie, Bethlehem, Pa., and Henry F. Villaume, Intervale, N.H., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 11, 1969, Ser. No. 884,071  
Int. Cl. A61b 17/36

U.S. Cl. 128—303.1

9 Claims



A spray-type cryogenic probe including a dual stream, cryogenic liquifier for converting stored gas into an ultracold liquid which is ejected from the probe in a fine, controlled stream to freeze tissue.

### 3,630,204 BLADE FOR BONE REAMER

Meyer Fishbein, 12020 Saltair Pl., Los Angeles, Calif.

Filed June 24, 1970, Ser. No. 49,301

Int. Cl. A61b 17/32; B23b 51/10; B23d 77/00

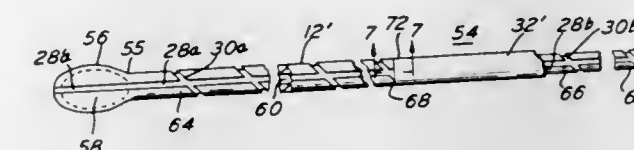
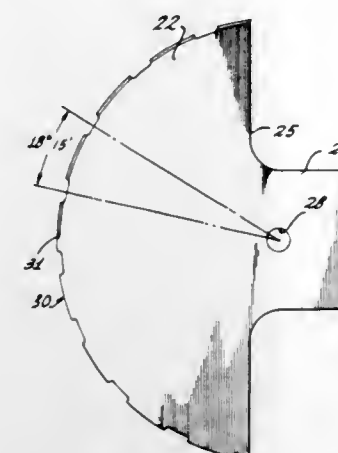
U.S. Cl. 128—305

5 Claims

A bone-cutting blade with a convex scraper edge, rotatable about an axis which is in the plane of the blade and which intersects the midpoint of the convex scraper edge, the convex scraper edge having spaced notches therein, alternating with

arcuate blade edge segments, with segments one side of the midpoint of the arcuate blade corresponding in position

are inserted into the urethra of the subject with the first end of the element received and retained within the bladder, the member is partially withdrawn from about the element to an



extent allowing the urethra to be flushed by the draining urine while still remaining in position over the second end portion of the element to receive the urine into the member for external disposal.

### 3,630,207 PERICARDIAL CATHETER

Paul Kahn, and Mogens L. Bramson, both of San Francisco, Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Aug. 8, 1969, Ser. No. 848,510  
Int. Cl. A61m 27/00

U.S. Cl. 128—350 R

7 Claims

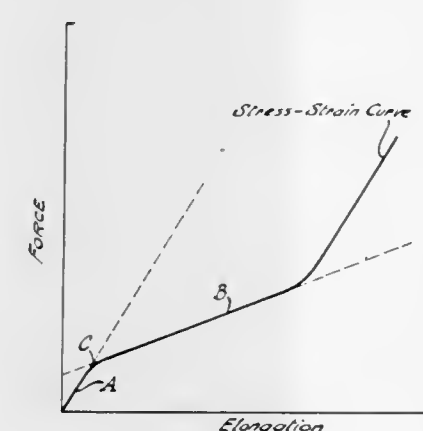
### 3,630,205 POLYPROPYLENE MONOFILAMENT SUTURES

Gregory J. Listner, Kendall Park, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed July 31, 1969, Ser. No. 846,412  
Int. Cl. A61l 17/00

U.S. Cl. 128—335.5

3 Claims



A flexible, uniform monofilament of isotactic polypropylene having an improved hand and an ultimate elongation greater than 35 percent is prepared by extruding isotactic polypropylene having a weight average molecular weight between 299,000 and 316,000 to form a monofilament, stretching said monofilament at 300° F. to about 6.6 times its original length, and subsequently permitting the stretched monofilament to contract to between 91 percent and 76 percent of its stretched length.

### 3,630,206 BLADDER CATHETER

Bruce Gingold, 4046 Ford Road, Philadelphia, Pa.

Filed Jan. 2, 1970, Ser. No. 259

Int. Cl. A61m 25/00

U.S. Cl. 128—349 B

10 Claims

A bladder catheter for males including an elongated flexible core element having first and second end portions and an outer surface provided with one or more grooves extending along said element, means at the first end portion of said element for being received and retained within the bladder of a subject to be treated, and a flexible tubular member with an opening therethrough for being received about said core element, whereby after said element with its member about it

The pericardial catheter has a main tube, flat in cross section, open at one end and closed at the other. The top wall is flat and the bottom wall is generally flat, having a plurality of openings near to but spaced from the closed end. A plurality of lengthwise extending ridges lie between successive openings and on each end of them. A round collapse-prevention member is inside the main tube and has an outer diameter at least as great as the inner distance between the top and bottom walls.

### 3,630,208 BRASSIERES

Irene E. Werth, 5032 North 60th St., Milwaukee, Wis., and Zella J. Balow, 3810 Nimitz, Eau Claire, Wis.

Filed July 9, 1969, Ser. No. 840,314

Int. Cl. A41c 3/10

U.S. Cl. 128—484

1 Claim

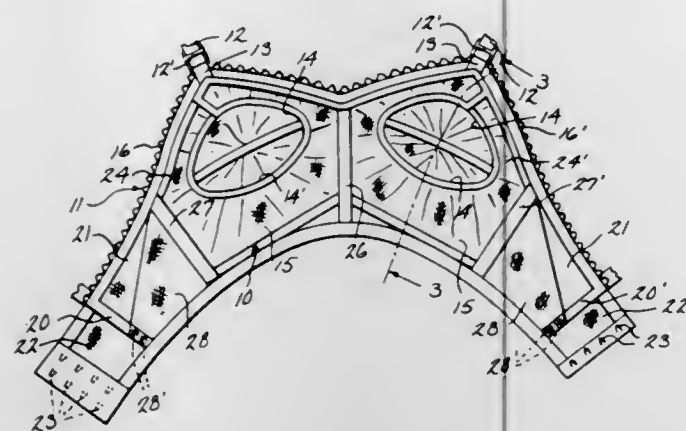
An insert liner adapted to be detachably or permanently secured in a brassiere, said insert being provided with cutout portions through which a portion of the wearer's breasts project, said breast-encircling insert lining providing support beneath the breasts to create a desired uplift of the breasts as





well as distributing the weight uniformly to alleviate the strain on the shoulder straps and promoting the comfort as

means may be a valve device subject to the suction produced by the puff and arranged to control the opening of a smoke passage additional to a constantly open smoke passage. The



well as the appearance of the wearer, said insert being readily adaptable for use in existing brassieres as well as in either strapless or strap-type brassieres and other garments.

3,630,209

## FEED CONTROL SYSTEM FOR COMBINE

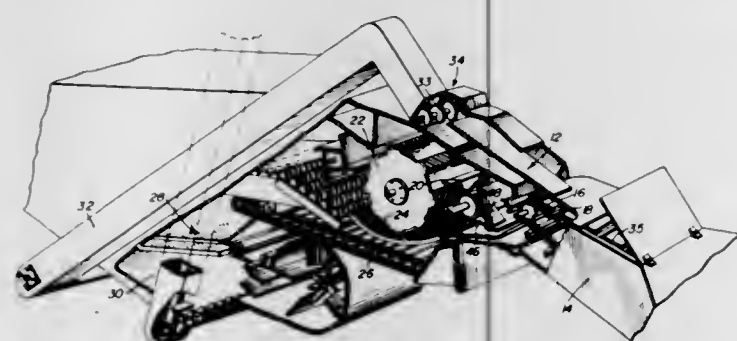
Stewart F. Metzger, Route #4, and Wallace T. Dirks, 1723 Nixon Ave., both of Nampa, Idaho

Filed Jan. 8, 1970, Ser. No. 1,375

Int. Cl. A01f 12/52

U.S. Cl. 130-27 F

2 Claims



A mechanism for improving the efficiency of threshing in a combine between a feed conveyor chain and a threshing cylinder. The mechanism includes a paddle wheel disposed between the chain and the cylinder for smoothly force feeding material from the chain onto the rasp bar surface of the cylinder. The housing of the conveyor chain has a door formed on the upper end thereof for permitting the return of incompletely threshed material onto the conveyor chain. This allows the mixing of the incompletely threshed material with the unprocessed material riding on the conveyor chain thereby substantially decreasing the likelihood of damage to incompletely threshed material as it becomes redelivered to the threshing cylinder via the paddle wheel.

3,630,210

## SMOKING ARTICLES

Fred Haslam, Southampton, England, assignor to Brown and Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 19, 1969, Ser. No. 859,388

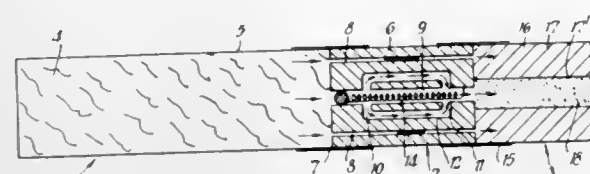
Claims priority, application Great Britain, Nov. 27, 1968, 56,325/68

Int. Cl. A24d 01/04; A24f 07/04

U.S. Cl. 131-261 B

3 Claims

A smoking article or attachment is provided with means by which a puff is divided automatically into a first portion and at least one later portion and the smoke portions produced are differentially and/or separately filtered. The puff-dividing



constantly open passage opens into a high-density filter region and the additional passage into a lower-density filter region.

3,630,211

## EYE SHADOW POWDER DISPENSER

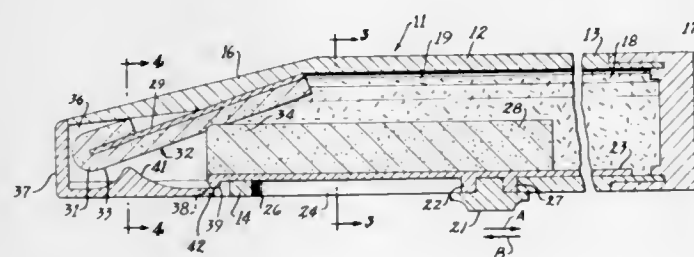
David Seidler, 69-10 108th St., Forest Hills, N.Y.

Filed Jan. 6, 1970, Ser. No. 866

Int. Cl. A45d 40/30

U.S. Cl. 132-88.5

2 Claims



A dispensing device for use in connection with applying a flowable material to a surface such as an eyelid, has a walled casing structure closed at one end thereby holding the particular material and open at the other so as to form an exit passage for the material. Means operable to open and close the exit passage and means for dispensing and applying the material, comprise an applicator that moves in opposite directions by moving means so as to receive the material some of which is applied to the surface and wiper means operable to remove any excess material from the applicator prior to application to said surface.

3,630,212

## PREVENTION AND REMOVAL OF SULFUR DEPOSITS DURING THE PIPELINE TRANSPORTATION OF A SULFUR-OIL SLURRY

Godfrey Q. Martin, Moraga, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed May 26, 1969, Ser. No. 827,937

Int. Cl. B08b 9/02

U.S. Cl. 134-22 C

12 Claims

Method of preventing and removing sulfur deposition on the interior of pipe walls during the transportation of sulfur liquid-hydrocarbon slurries through pipelines by intermittently purging the lines with a neat liquid hydrocarbon under conditions capable of recovering and solubilizing any deposited sulfur on the pipe walls and thereafter repeating the cycle.

3,630,213

## WEB TRANSPORT APPARATUS

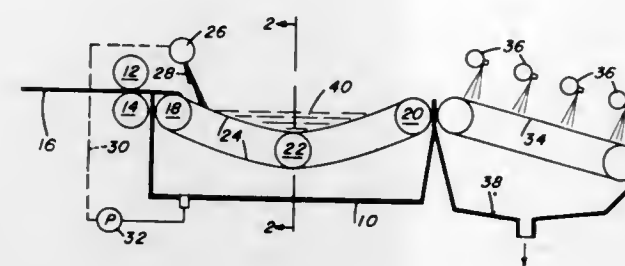
Frederick H. Bruno; Raymond J. Camp, and Thomas H. Farrell, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1969, Ser. No. 863,531

Int. Cl. B65h 5/02; B65g 37/00; B08b 11/02

U.S. Cl. 134-64

10 Claims



Web transport apparatus for positively driving a web having a soft and tacky emulsion surface when wet, through a processing bath by contacting only the rear web surface after the web is wet. The apparatus comprises a horizontally arranged fluid-containing tank with a pair of input rolls disposed along one side of and above the tank which are arranged to form a nip to drive the web into the tank. A pair of horizontally spaced belt support rolls are horizontally disposed in the tank with the first belt support roll adjacent said input rolls and the second belt support roll being disposed adjacent the side of said tank opposite from the first belt support roll. A horizontal belt idler roll is disposed in the tank between the belt support rolls and has an upper surface disposed below the upper surfaces of the belt support rolls. A web-carrying endless belt member is disposed in the tank and extends substantially across the width thereof in one direction, and around the belt support rolls and the lower surface of the idler roll in the other direction. The belt member has sufficient slack in the length thereof so that the upper span may be depressed below the upper surfaces of the belt support rolls. A first fluid supply is disposed above the first belt support roll and is arranged to apply a curtain of activator fluid to the web on the upper surface of the belt. The belt cooperates with the ends of the tank to form a flow path between at least one edge of the belt and the tank. The flow path is arranged, with respect to the flow from the first fluid supply, to limit the flow from the top of the belt whereby a pool of liquid is formed on the top span of the belt and the weight of the liquid pool depresses the belt into driving engagement with the driven roll. A second fluid supply is disposed above the second belt support roll and is arranged to apply a curtain of washoff fluid to the web beyond the end of the belt and outside of the tank. Apparatus is arranged outside of the tank adjacent the second belt support roll for washing and drying the web.

3,630,214

## FRANGIBLE COUPLING

Kenneth A. Levering, North Adams, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 2, 1970, Ser. No. 233

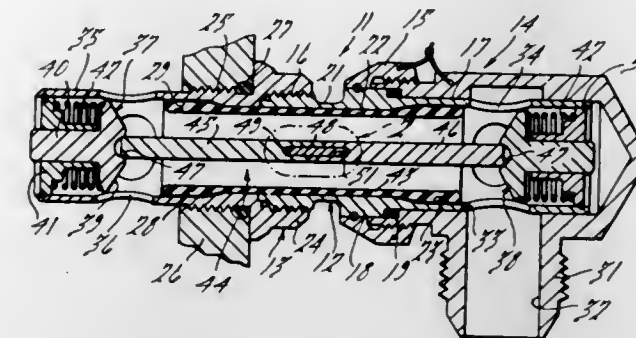
Int. Cl. F16k 17/40

U.S. Cl. 137-68

7 Claims

A fluid coupling which connects parts such as an aircraft fuel cell and hose, and yields in case of a crash to prevent fluid from escaping. The coupling has a pair of poppet valves spring urged toward their closed positions, and held open by a collapsible rod. The coupling has a frangible neck and a stretchable rubber liner the ends of which act as valve seats.

Breaking of the frangible neck will cause the rod to release the valves, permitting them to close. In one embodiment,



shearpins connect two parts of the coupling so that tensile forces created by a crash will likewise release the valves.

3,630,215

## HYDRAULIC GOVERNOR

Masanori Okimoto, Hiroshima-shi, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

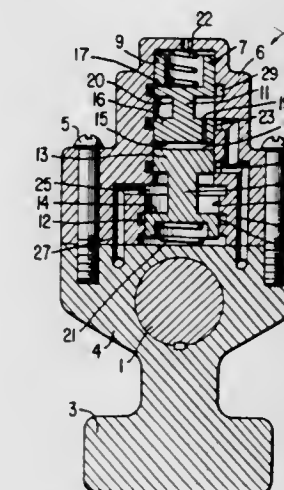
Filed Oct. 28, 1969, Ser. No. 870,029

Claims priority, application Japan, Oct. 30, 1968, 43/95129

Int. Cl. G05d 13/30

U.S. Cl. 137-54

4 Claims



A hydraulic governor having a plurality of valve elements wherein one valve element produces a governor pressure inversely proportional to the centrifugal force operating this valve element, which governor pressure acts on a pressure receiving surface of another valve and the governor pressure generated by the latter valve element is balanced with the centrifugal force operating the latter valve element. This governor eliminates the instability of control of the line pressure in response to the change of the governor pressure produced by the governor.

3,630,216

## CONDITION-SENSING SAFETY VALVE DEVICES

Warner M. Kelly, Houston, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Apr. 8, 1970, Ser. No. 26,628

Int. Cl. F16k 17/00

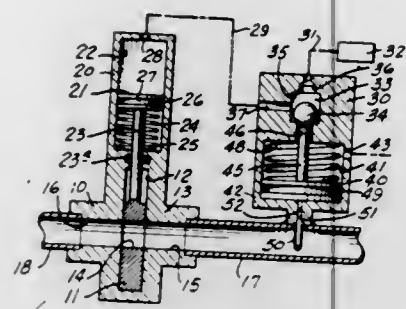
U.S. Cl. 137-67

10 Claims

An abrasion, corrosion or erosion-sensitive pilot control for a fluid-operated flow-controlling safety valve in a flow line through which abrasive, corrosive or erosive fluids are flowing disposed in said flow line in the path of such fluids for actuating the valve to cut off flow upon the occurrence of a predetermined condition of corrosion, erosion or abrasion



in the flow line to prevent further flow through the flow line. A hollow probe sealing off a closed chamber admits the pressure of the flowing fluids in the flow line to said chamber when its integrity is destroyed to actuate a valve for directing



operating fluid from a source of pressure to the valve operator or motor to move the valve to closed position. A pressure-operable valve or a resiliently operable valve may be used for shutting off the flow out through the flow line.

3,630,217

### LIQUID ADDITIVE DISPENSER USING A FLUIDIC DEVICE

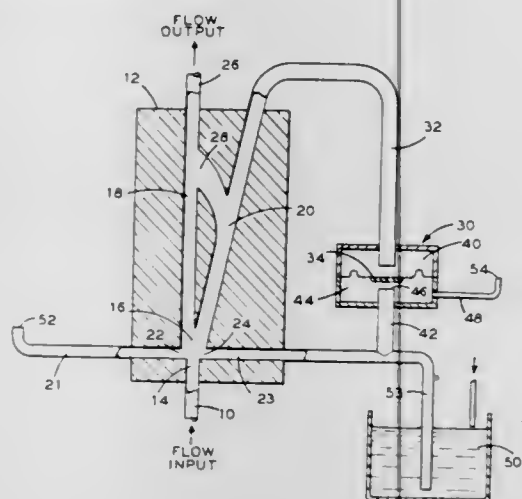
Edward H. Bell, Clinton, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 13, 1970, Ser. No. 27,911

Int. Cl. F15c 3/04

U.S. Cl. 137—81.5

8 Claims



A monostable element designed to be vacuum-switched supports interconnecting passages wherein a stream of pressurized fluid can flow through a selectable one of said interconnecting passages, the path of the stream of pressurized fluid being determined by two control passageways for alternately switching the fluid stream from one of the passages to the other, and pressure control means coupled to one of the control passageways to selectively feed a liquid additive through said control passageway to mix with the stream of pressurized fluid.

3,630,218

### HOLDING VALVE

John T. Parrett, Benton Harbor, Mich., assignor to Koehring Company

Filed Mar. 20, 1970, Ser. No. 21,255

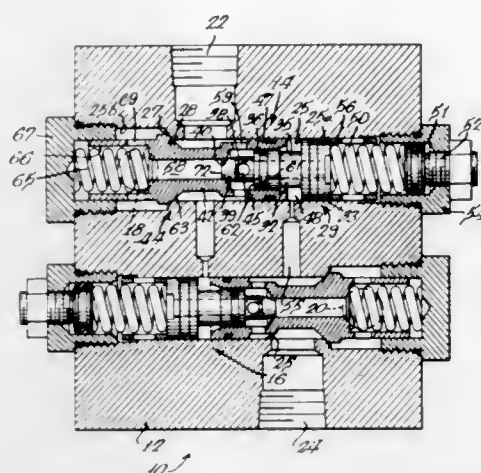
Int. Cl. F16k 17/08

U.S. Cl. 137—87

15 Claims

A counterbalance holding valve assembly for controlling the flow of fluid from a piston and cylinder device and thereby controlling movement of the piston and cylinder device including a first stage counterbalance valve having a

low sensitivity for throttling flow in a controlled fashion from the piston and cylinder device and a second stage valve having greater sensitivity than the first stage valve that also functions to control discharge flow from the cylinder device to increase the flow capacity of the counterbalance valve assembly without sacrificing stability and uniform load lower-



ing, with the first stage valve having a relatively small flow area and the second stage valve having a relatively large flow area with the valves being constructed so that the first stage valve opens at lower control pressures and the second stage valve opens later as the pressure in the piston and cylinder device increases.

3,630,219

### HIGH-VOLTAGE FUSE HAVING COMPOSITE FUSIBLE ELEMENT STRUCTURE

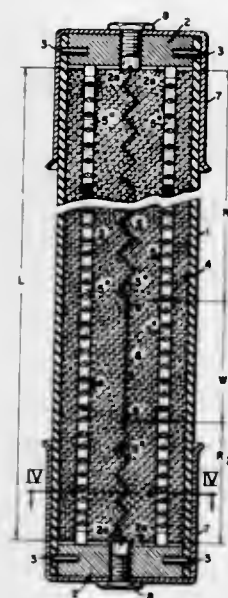
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Oct. 20, 1970, Ser. No. 82,330

Int. Cl. H01h 85/04

U.S. Cl. 337—161

9 Claims



A current-limiting fuse having a composite fusible element structure which includes a wire section for interrupting overload currents, and a ribbon section having series necks for interrupting major fault currents, or short circuit currents. The wire section is straight and is connected in series with the ribbon section and the ribbon section is formed by a strip of zig-zag-shaped relatively hard and resilient silver forming a self-supporting extension spring tending to maintain the wire section under axial stress.

3,630,220

### HEAT-SENSITIVE VALVE

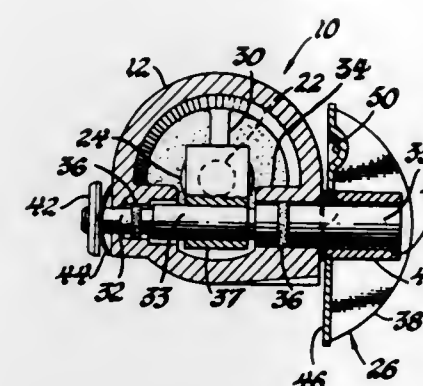
Lowell F. Nelson, Muskegon, Mich., assignor to Enterprise Brass Works, Muskegon, Mich.

Filed Feb. 9, 1970, Ser. No. 9,690

Int. Cl. F16k 17/38

U.S. Cl. 137—77

5 Claims



A heat-responsive flow valve including a valve body having coaxial inlet and outlet ports, a stop disc carried by a spring-biased axially oriented plunger, an operator shaft extending across and through the valve body and carrying a cam which depresses the spring-biased plunger when rotated. Rotation of the operator shaft is accomplished by means of a handle which is secured to the shaft by a low-melting point solder bond. The handle may be rotated to an open position and latched in that position by means of a detent mechanism. Should a high-temperature condition exist, the solder bond melts and permits the shaft to rotate independently of the handle thereby closing the valve.

3,630,221

### FLOAT-CONTROLLED VALVE ASSEMBLY HAVING BOTTLE-TYPE FLOAT

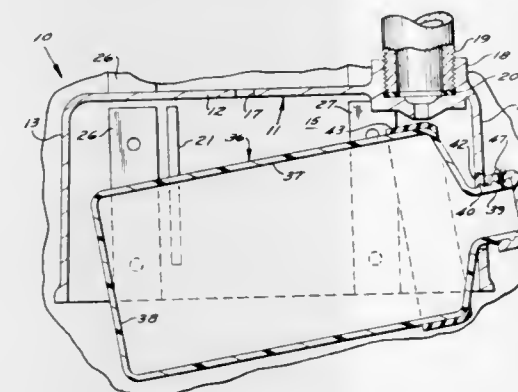
Robert M. Wilson, Battle Creek, Mich., assignor to Dare Products Incorporated, Battle Creek, Mich.

Filed Oct. 1, 1970, Ser. No. 77,187

Int. Cl. F16k 31/18

U.S. Cl. 137—448

8 Claims



A float valve structure is provided comprising a housing in the form of an inverted tub having a water inlet provided at the top and an aperture at one end. A bottle, preferably tubular, is provided for use as a float, the bottle having a constricted neck extending through the aperture in the end of the housing and having a cap affixed to the end of the mouth of the bottle and engaging the outer surface of the housing, thereby restraining the neck of the bottle within the housing aperture while permitting the bottle to pivot up and down as determined by the water level. A ring of a resilient sealing material, as for example, a rubberband, is annularly mounted

at the portion of the bottle which engages the inlet orifice, thereby providing a sealing means. The bottle, when of cylindrical shape, is permitted to engage in rotational movement about its axis, thereby continually renewing the sealing surface of the sealing band and preventing undue wearing in any single area.

3,630,222

### APPARATUS FOR SWITCHING FROM LEAN GAS TO RICH GAS BURNING IN A COKE OVEN BATTERY

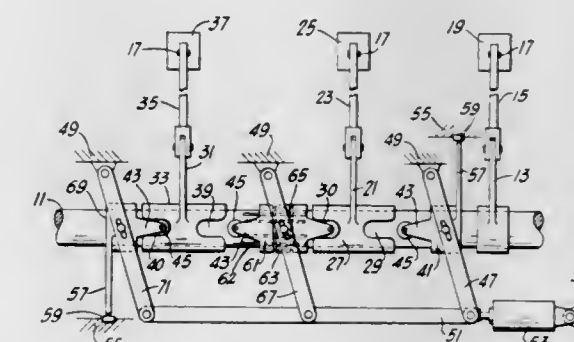
Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Mar. 20, 1970, Ser. No. 21,434

Int. Cl. F16k 11/00; C10f 1/05

U.S. Cl. 137—309

5 Claims



A main drive shaft is provided with a plurality of sleeves, some of which are provided with arms for operating the rods for the lean gas, air lid, and waste heat valves of the coke oven battery. Other sleeves are linked to a fluid-actuated cylinder-piston assembly that moves the other sleeves into coaction with the first sleeves, and thereby interlock them and prevent inadvertent actuation of the valves.

3,630,223

### TAPS FOR WATER AND OTHER FLUIDS

Edward Moey Schaverien, 6 Canons Drive, Edware, Middlesex, England

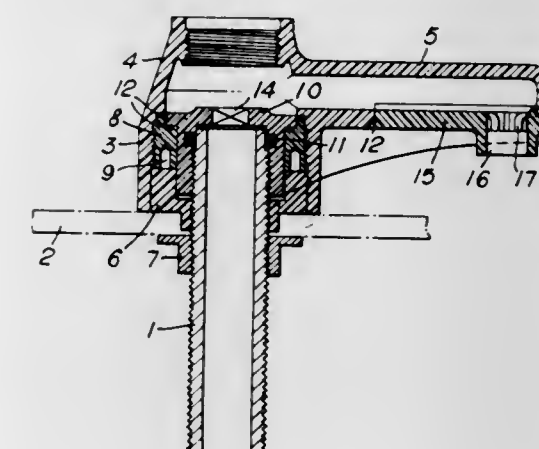
Filed June 13, 1969, Ser. No. 832,981

Claims priority, application Great Britain, June 28, 1968, 30,974/68

Int. Cl. F16k 27/00

U.S. Cl. 137—327

5 Claims



A substantially cylindrical tap body for water and other fluids has an integral sideways-extending spout, and is open at one end to receive a separately formed tap headwork. The opposite end of the chamber, also open for fitting to a supply pipe houses internally a screwed-in component in cooperative engagement with a sleeve internally screw-threaded for screwing on to a supply pipe.



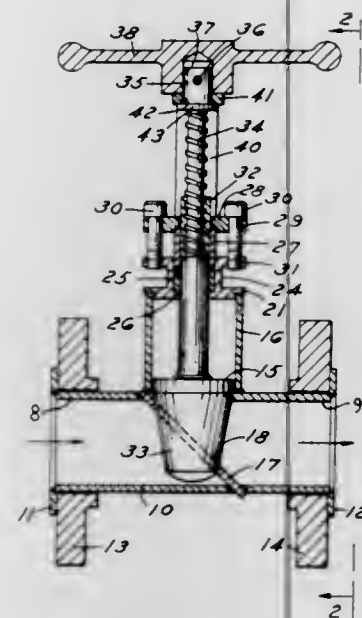
3,630,224  
VALVE

Charles F. Kalvelage, 1535 Fairholme Road, Grosse Pointe, Mich.

Filed Oct. 3, 1969, Ser. No. 863,432  
Int. Cl. F16k 27/12, 25/00, 1/34

U.S. Cl. 137—375

12 Claims U.S. Cl. 137—575



A valve made as a hybrid valve partially from standard shapes of exotic metals which will withstand corrosive chemicals and partially from castings, or as a casting from a corrosion-resistant material, and which includes an elliptical valve hole that forms a valve seat that is contained in a plate that is inclined to the flow of fluid through the valve. The valve further includes a solid tapered or conical plug that closes off flow by entering the elliptical hole, and seating therein, along an axis perpendicular to the axis of fluid flow through the valve.

## 3,630,225

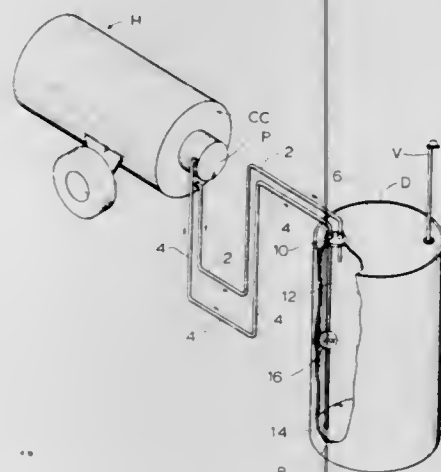
## PORTABLE HEATING SYSTEM AND ACCESSORY FUEL TANK

Paul Chitel, 355 St. Clair Ave. W., Apt. 704, Toronto, Ontario, Canada

Filed Jan. 26, 1970, Ser. No. 5,668  
Int. Cl. F23e 15/04

U.S. Cl. 137—565

4 Claims



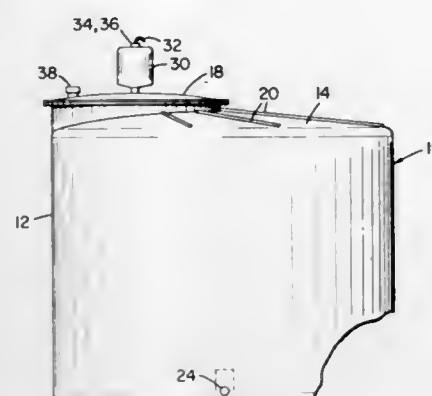
An accessory oil tank for a portable oil heat system having an internal pipe with an external connection through which oil is drawn from the tank by means of a pump; the internal pipe being provided with a check valve which closes to prevent oil flow therethrough when the pump is not drawing oil.

3,630,226  
ANAEROBIC STORAGE APPARATUS

Elton R. Develter, Corning, Calif., assignor to Maywood Packing Company, Corning, Calif.

Filed Nov. 21, 1969, Ser. No. 878,695  
Int. Cl. B65d 87/02

13 Claims



Perishable foods are placed in airtight container that is filled with an edible, biodegradable solution under the exclusion of air for treating, e.g. pickling foods such as vegetables and fruits. Means are provided for withdrawing gases generated in the container from an uppermost, interior point of the container and for replacing the withdrawn volume of gas with additional solution stored in a separate reservoir. Upon termination of the food-treating process the solution is discarded and decomposes under atmospheric conditions, thereby preventing undesirable pollution of the environment. The treated food product is removed from the container and further processed.

## 3,630,227

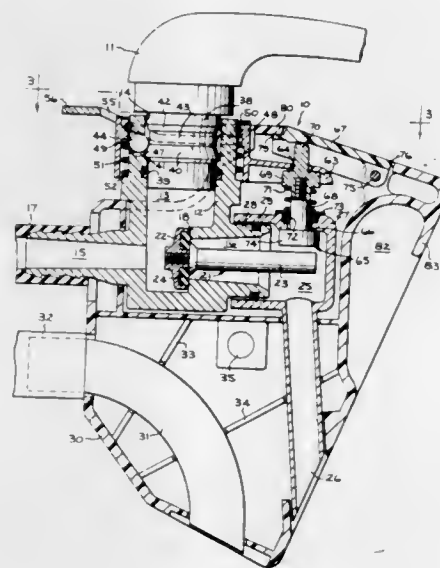
## ASSEMBLY FOR COUPLING A WASHING MACHINE TO A FAUCET

Marlin L. Race, Elm Grove, Wis., assignor to General Electric Company

Filed Dec. 19, 1969, Ser. No. 886,677  
Int. Cl. B05b 1/22

U.S. Cl. 137—583

9 Claims



A coupling assembly is provided for connecting hoses of a washing machine to a water faucet. The assembly is provided with a lever-actuated quick-release connector that joins the assembly to the faucet. A linkage arrangement between the lever of the connector and a normally closed valve within the assembly translates manual actuation of the lever to the valve

whereby the valve is opened to relieve liquid pressure within the assembly to thereby prevent undesirable splash-out when the assembly is removed from the faucet. The valve within the assembly is also linked to a manually depressible dispensing mechanism whereby water may be selectively dispensed from a discharge passageway out of the assembly when the assembly is operatively engaged to the faucet.

## 3,630,228

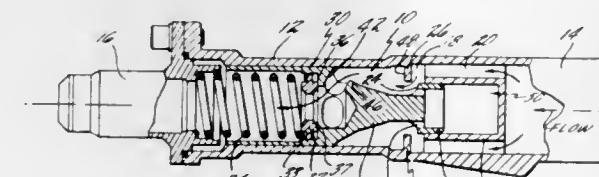
## WATER REGULATOR AND CHECK VALVE FOR A JET ENGINE

Albert H. Turner, East Hampton, and Charles R. Kleza, Wethersfield, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 31, 1969, Ser. No. 889,424  
Int. Cl. G05d 16/10

U.S. Cl. 137—614.18

7 Claims



A water regulator and check valve for a jet engine water injection system which is of a simple and uncomplex construction. The water regulator and check valve construction is of an uncomplex construction in that there is substantially one moving part within the regulator.

## 3,630,229

## QUIET FLUID FLOW REGULATOR

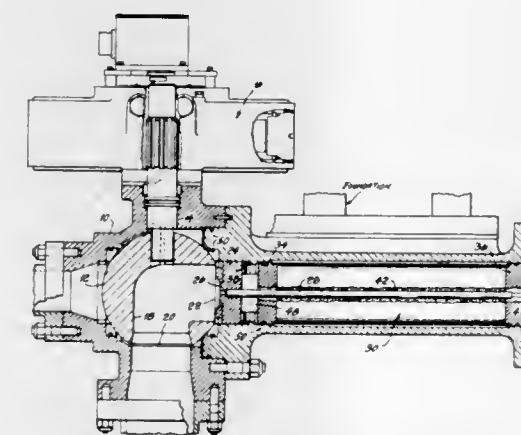
Wayn A. Nagel, Alexandria, Va., and William H. Stoddard, North Stonington, Conn., assignors to The United States of America as represented by the Secretary of the Navy

Filed Apr. 9, 1970, Ser. No. 27,013

Int. Cl. F16k 47/02

U.S. Cl. 137—625.3

12 Claims



A device for quietly throttling the flow of a fluid stream comprising a plurality of parallel frictionally resistant tubes inserted into the fluid flow path and ball valve means at one end of the tubes. A pressure equalized, biased seal maintains constant pressure against the ball of the valve means to prevent leakage around the ball. Vibration-absorbing packing surrounds the space between and around the tubes. Each tube is internally rounded at its entry end and flared at its exit end.

## 3,630,230

## FLUID VALVE WITH CONTROLLED AXIAL THRUST

Kurt Stahle, Heimsheim/Leonberg, Germany, assignor to Jos. Schneider &amp; Co., Bad Kreuznach, Germany

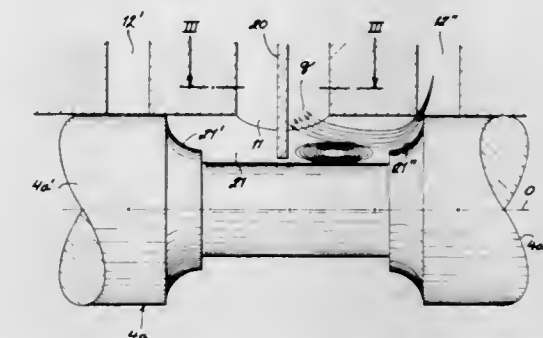
Continuation-in-part of application Ser. No. 758,325, Sept. 9, 1968, now Patent No. 3,543,648. This application July 17, 1970, Ser. No. 55,783

Claims priority, application Germany, Oct. 21, 1969, P 19 52 811.1

Int. Cl. F16k 11/07

U.S. Cl. 137—625.4

7 Claims



To control the axial thrust due to dynamic pressures reacting upon the piston of a fluid valve when the latter moves toward an open-valve position, a fixed barrier is interposed between two oppositely facing lands of a pair of piston heads at least one of which has an edge alternately blocking and unblocking an inlet port for the fluid. The baffle may be divided into two or more ring segments separated by small gaps from one another and from the piston surface.

## 3,630,231

## MULTIWAY SWITCH VALVE

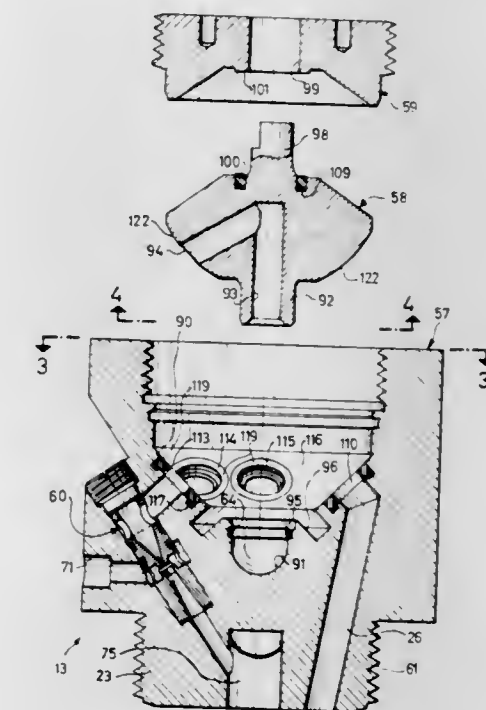
Franz Georg Miller, Hofingen, Germany, assignor to Techap F. G. Miller Techn.-Chem.-Apparatebau Programmsteuergerate und Anlagen Stellglieder, Hofingen, Germany

Filed Feb. 6, 1970, Ser. No. 9,273

Int. Cl. F16k 11/00

U.S. Cl. 137—625.16

12 Claims



A multiway switch valve having a housing that includes a chamber and a plurality of channels merging into said chamber and terminating in coupling nipples at the outside of the valve; a channelled valve plug rotatably held in said chamber and adapted to assume a plurality of positions to interconnect selected ones of said channels, said plug has a sealing face in the shape of a spherical section; packing rings



surrounding each channel opening in said chamber to provide a continuous fluidtight seal between said openings and said sealing face.

### 3,630,232 FLOW DIVERTER

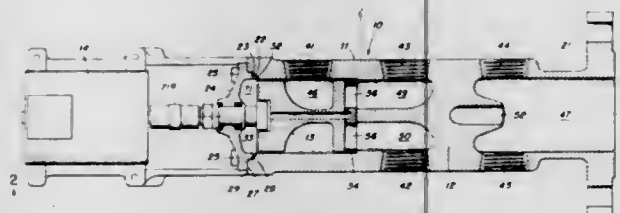
Floyd Hasselriis, Astoria, and William M. Teller, Scarborough, both of N.Y., assignors to American Hydrotherm Corporation

Filed Apr. 2, 1970, Ser. No. 25,038

Int. Cl. F16k 11/00

U.S. Cl. 137-625.41

10 Claims



A flow diverter particularly suited for diverting the flow of a heat transfer liquid to be employed in user equipment to either a heater, cooler or neither, to control the temperature thereof, comprising a housing including an intermediate wall or partition dividing the housing into two chambers. The wall is provided with three passages, one connecting the first and second chambers and the remaining two connecting the first chamber to two outlet ports to be connected to heater and cooler inlets, respectively. The first chamber is provided with an inlet port to be connected to the outlet of user equipment and a flow-diverting element for selectively connecting the passages in fluid flow communication with the first chamber. The second chamber is provided with two inlet ports to be connected to heater and cooler outlets, respectively, and an outlet port to be connected to the inlet of user equipment. The flow control element is constructed so as to balance the pressure forces on the top and bottom thereof thereby essentially eliminating the frictional forces which resist movement of the flow diverting element.

### 3,630,233 POWER STEERING SYSTEM

Koji Miyamoto, Tokyo, Japan, assignor to Kayabakogyo Kabushiki Kaisha

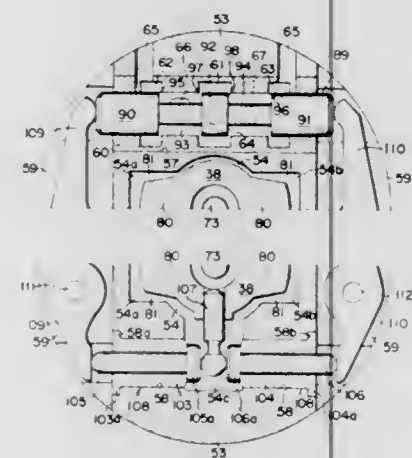
Filed Feb. 4, 1970, Ser. No. 8,484

Claims priority, application Japan, Dec. 28, 1969, 44/123690

Int. Cl. F16k 11/07; F15b 13/16

U.S. Cl. 137-625.69

6 Claims



A power steering system has a power cylinder assembly for turning the steering road wheels of a vehicle and a valve

mechanism which is actuated in response to the steering action. The valve mechanism comprises a valve housing coupled to the power cylinder assembly, a valve spool fitted into the valve housing, a pair of head levers pivotally fixed on both sides of the valve spool in such a manner that the one ends of said pair of head levers may firmly press against both ends of the valve spool respectively, and lever rods slidably fitted into the valve housing in such a manner that free ends of the lever rods may firmly press against the other ends of the pair of head levers. The lever rods are coupled to a guide pin extending from an input shaft which in turn is coupled to the steering wheel, and the input shaft is coupled through a torsion bar to the valve housing so that in response to the relative angular displacement between the input shaft and the valve housing upon steering, the valve spool is shifted through the guide pin, the lever rods and the pair of head levers, whereby the working liquid under pressure is selectively forced into one of the right and left pressure chambers in the power cylinder assembly, thereby turning the steering road wheels.

### 3,630,234 MANUALLY OPERATED DUAL PRESSURE DELIVERY CONTROL VALVE

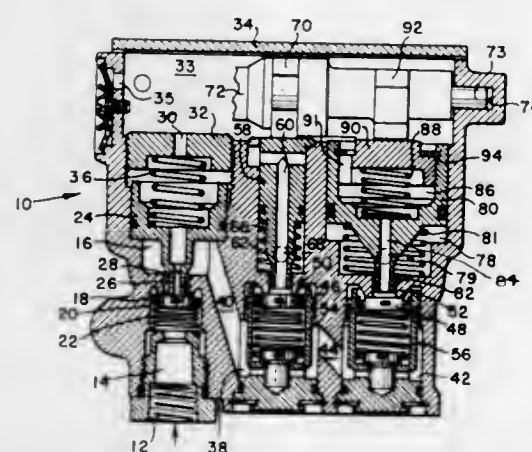
David A. Hoffman, Elyria, Ohio, assignor to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Filed Jan. 9, 1970, Ser. No. 1,754

Int. Cl. G05d 16/10; F16k 11/14

U.S. Cl. 137-630.2

1 Claim



A manually operated fluid pressure control valve including a camshaft movable by a handle among a plurality of positions, said camshaft carrying cams engageable with valve-operating plungers in preselected relationship to move normally closed valve elements to open position, at least one of said valve elements responding to pressure-reducing mechanism on the delivery side of said element whereby said control valve delivers from a common source of fluid pressure fluid at different pressures simultaneously or separately in response to movement of said handle.

### 3,630,235 HYDRAULIC SHOCK DAMPENER

Bruce A. Wiley, Carpentersville; Chester J. Witt, Deerfield, and Sigmund P. Skoli, Elmwood Park, all of Ill., assignors to Mojonnier Bros. Co., Chicago, Ill.

Filed Oct. 30, 1969, Ser. No. 872,632

Int. Cl. F16l 55/04

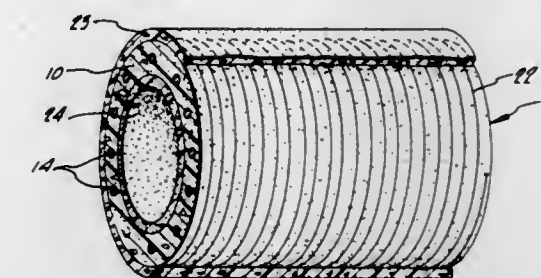
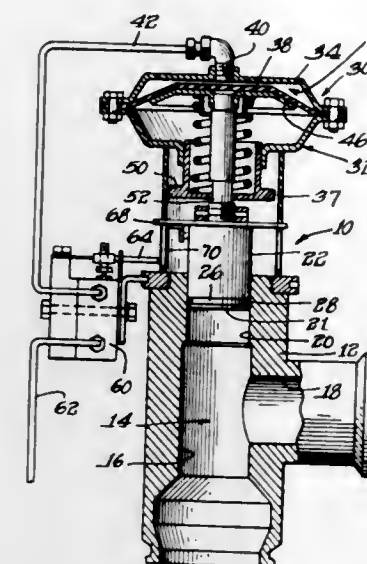
U.S. Cl. 138-31

2 Claims

A hydraulic shock dampening device for use in fluid lines where changes in direction of the fluid flow are to be induced. The device includes a body member having a fluid passage therein defined by intersecting inlet and outlet branches, and a retractable piston member disposed prox-

mate the intersection of said branches and coaxial with the inlet branch such that fluid entering the body will impinge initially upon said piston with said piston retracting to absorb

pressure which the pipe can withstand. The pipe may also be reinforced with longitudinally placed resin coated aluminum bars. Both the reinforcing wire and bars are coated with resin



while at an elevated temperature to avoid any substantial detrimental reaction between the aluminum and polyester resin.

### 3,630,238 METHOD AND APPARATUS OF MAKING A SELVAGE IN A LOOM

Edgar H. Strauss, Ruti/ZH, Switzerland, assignor to Ruti Machinery Works, Ltd., formerly Caspar Honegger, Zurich, Switzerland

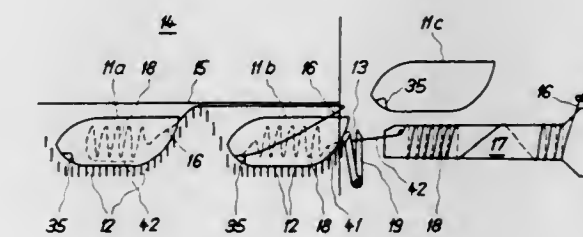
Filed Feb. 9, 1970, Ser. No. 9,739

Claims priority, application Switzerland, Feb. 20, 1969, 2573/69

Int. Cl. D03d 47/26

U.S. Cl. 139-12

9 Claims



### 3,630,236 CONTINUOUS MINI-FLOW IRRIGATION DEVICE

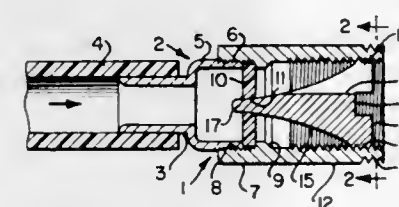
Richard E. Diggs, 210 North River St. P.O. Box 588, Carthage, Mo.

Filed June 29, 1970, Ser. No. 50,806

Int. Cl. F15d 11/02

U.S. Cl. 138-45

11 Claims



A continuous mini-flow irrigation device wherein a metering cone having a metering slot therein is adjustably inserted through a resilient washer for adjustably metering flow through the irrigation device. Full flow through the device is achieved when the metering cone is fully inserted through the washer, which insures that the metering slot will not become plugged with debris and further wherein under varying pressure conditions the washer will be deformed into the metering slot to maintain a uniform continuous flow from the irrigation device.

A method of making a selvage in a wave-type loom, wherein weft threads of predetermined length are passed, always in the same arrangement, to a plurality of shuttles prior to their successive entry into the sheds formed during the weaving operation and are withdrawn from the shuttles again during their passage through the sheds, which comprises cutting the weft threads behind each second shuttle of the shuttles which follow directly one after the other when the shuttles enter the sheds, and withdrawing the threads alternately from the rear and front ends of the shuttles for the purpose of inserting the weft threads into each of the sheds. Also an apparatus for carrying out this method is disclosed.

### 3,630,237 POLYESTER CONCRETE PIPE

William R. Varnell, and Mance R. Mitchell, both of San Antonio, Tex., assignors to Concrete Development Corporation, San Antonio, Tex.

Original application Nov. 13, 1967, Ser. No. 685,239, now Patent No. 3,506,752, which is a continuation-in-part of Ser. No. 366,332, May 11, 1964, abandoned, Ser. No.

429,516, Feb. 1, 1965, abandoned, and Ser. No.

659,830, July 6, 1967, abandoned. Divided and this

application Feb. 9, 1970, Ser. No. 9,693

Int. Cl. F16l 9/08

U.S. Cl. 138-176

2 Claims

Concrete pipe is made from a mixture of polyester resin and aggregate, and may be wrapped with resin coated aluminum reinforcing wire in tension to increase the internal

### 3,630,239 LETOFF FOR LOOMS

Felix E. Hooper, and Carlos Lee Owens, both of Greenville, S.C., assignors to Southern Machinery Company, Greer, S.C.

Filed Jan. 26, 1970, Ser. No. 5,720

Int. Cl. D03d 49/06

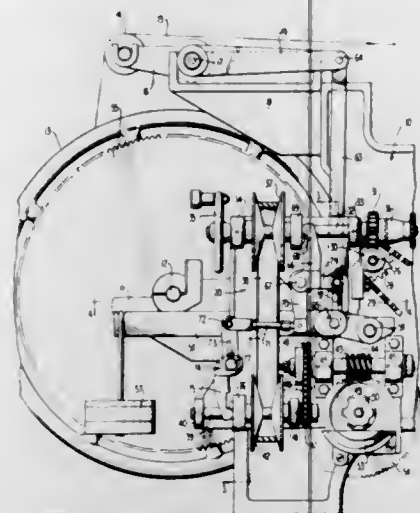
U.S. Cl. 139-110

3 Claims

A constant warp tension letoff features an improved power path between the input shaft and letoff shaft which allows a considerable lessening of the force and tension which the transmission belt must exert on the variable cone pulleys of the letoff. A double-lead worm and gear at the letoff shaft reduces the torque which must be transmitted through the



belt and cone pulley transmission. An improved weight lever mounting eliminates twisting of the weight lever which tends



to cause binding. Excessive meshing of the lower worm and gear caused by heavy belt tension is eliminated.

3,630,240

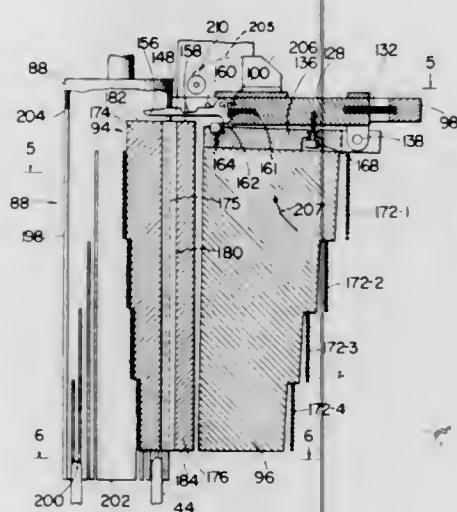
**WINDING AND TRANSFER APPARATUS FOR DYNAMOELECTRIC MACHINE STATOR COILS**  
Robert J. Eminger, and Buddy S. Stuckey, both of Ft. Wayne, Ind., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Sept. 18, 1969, Ser. No. 859,148

Int. Cl. B21f 3/02; H02k 15/04

U.S. Cl. 140—92.1

23 Claims



Apparatus for winding stator coils and for transferring the wound coils to a transfer device which includes a plurality of spaced, parallel, elongated blade elements defining slots therebetween, at least two of the slots respectively receiving the opposite sides of a coil. A coil form assembly is provided having first and second parts adapted to have a coil wound thereon. The coil form parts are mounted for relative movement between an expanded winding position, and a collapsed coil-transferring position. One of the parts has side portions for respectively forming the opposite sides of a coil wound thereon which are received in the transfer device slots, the side portions having recesses therein for removably receiving two of the blade elements with the opposite sides of the coil being received in the respective slots defined by the two blade elements and by respectively adjacent blade elements. The coil form parts are spring biased toward their collapsed position, and a latch is provided for holding the parts in their

expanded position. The transfer device is arranged for movement between an inactive position in which it is removed from the form, and a coil-transferring position in which at least two of the blade elements are received within the recesses in the one coil form part. A part on the transfer device engages the latch in response to movement of the transfer device to its coil-transferring position, thereby actuating the latch to release the parts to permit their movement to their collapsed position, so to permit removal of the transfer device with the coil thereon from the coil form.

3,630,241

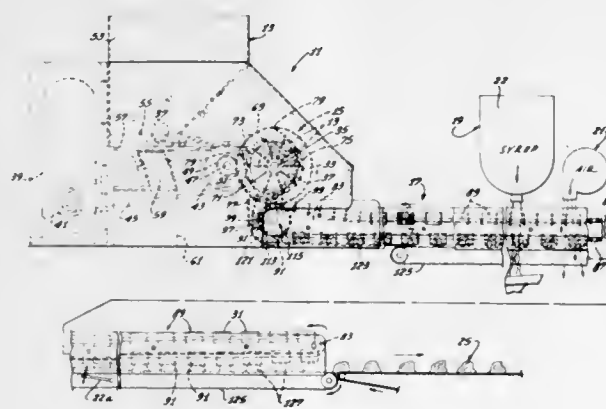
**APPARATUS FOR HANDLING MATERIAL INCLUDING A ROTOR WITH A PLURALITY OF COMPARTMENTS**  
Robert F. Jones, Los Angeles, Calif., assignor to Hoffman Manufacturing Company, Glendale, Calif.

Original application May 2, 1968, Ser. No. 726,153, now Patent No. 3,495,550, dated Feb. 17, 1970. Divided and this application Feb. 16, 1970, Ser. No. 11,657

Int. Cl. B65b 43/42

U.S. Cl. 141—163

4 Claims



A method and machine for making a coated candy cluster. In a preferred form of the invention, the machine includes a rotatable rotor having a plurality of compartments. The rotor rotates the compartments between a filling station in which cluster material is deposited in the compartments and a discharge station at which the cluster material is discharged from the rotor onto a conveyor. Metering means responsive to rotation of the rotor control the amount of cluster material deposited in each of the compartments. The conveyor conveys the discharge cluster material to an enrober which coats the cluster material with chocolate or other suitable coating material.

3,630,242

**APPARATUS FOR AUTOMATIC FILLING OF LIQUID CONTAINERS HAVING SEMIRIGID WALLS**

Warren J. Schieser, Columbus, and John P. Connors, Lancaster, both of Ohio, assignors to Corco Inc., Columbus, Ohio

Original application Apr. 1, 1968, Ser. No. 717,704, now Patent No. 3,529,399, dated Sept. 22, 1970. Divided and this application Mar. 18, 1970, Ser. No. 20,782

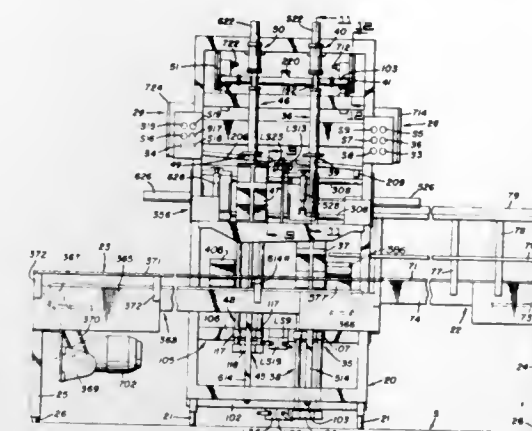
Int. Cl. B65b 1/30; B67c 3/02

U.S. Cl. 141—95

29 Claims

This container-filling apparatus fills containers in an automatically controlled, sequential operation which assures positive control over filling of the containers with a desired volumetric quantity of the liquid. Each container is supported during the filling operation for proper orientation of the fill opening and for support of the container's sidewalls. Filling is accomplished by insertion of a liquid-dispensing nozzle through the fill opening at the initiation of a fill operation and subsequent relative separating movement of the container and nozzle at a rate which maintains the discharge orifice of the dispensing nozzle immersed in the liquid to

prevent foaming of the liquid. The container is filled in accordance with volumetric capacity limits with the volume of liquid dispensed into each container being determined by a



flowmeter incorporating an electromagnetic transducer thereby minimizing the possibility of liquid contamination through avoidance of direct physical contact between the liquid and external indicating components of the flowmeter.

3,630,243

**TREE-BUNCHING MECHANISM AND TREE-SKIDDER VEHICLE INCORPORATING THE SAME**

Douglas D. Hamilton, Mount Royal, Quebec, and Domenico Benedetto, Montreal, Quebec, both of Canada, assignors to Paper Company, Montreal, Quebec; Quebec North Shore Paper Company, Montreal, Quebec and Abitibi St. Anne Paper Ltd., Beaufort, Quebec, Canada, part interest to each

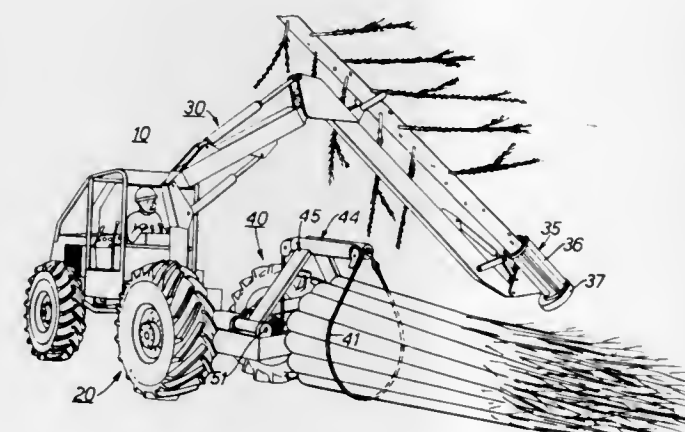
Filed Oct. 23, 1969, Ser. No. 868,725

Claims priority, application Canada, Oct. 23, 1968, 033,299

Int. Cl. A01g 23/02

U.S. Cl. 144—3 D

16 Claims



A tree-handling vehicle including a knuckle boom pivotally mounted on an articulated vehicle for slewing about a vertical axis and incorporating a felling head on the free end of the boom comprising the combination of a grapple and a shear rigidly secured to a common frame pivotally attached to the boom. A log-handling unit or tree-bunching mechanism, as it may also be referred to, is mounted on the trailing chassis of the articulated vehicle and includes a pair of L-shaped arms at least one of which is pivotally attached to the vehicle and having a flexible cable detachably secured to one arm and the other is attached to a drum of a winch mounted on the vehicle. The cable passes over self-aligning sheaves pivotally mounted on the other of the two arms. The arms are movable relative to one another to open and close the noose and the size of such noose is varied by winding in or paying out the cable.

3,630,244

**SAW APPARATUS WITH Laterally ADJUSTABLE SAWS**

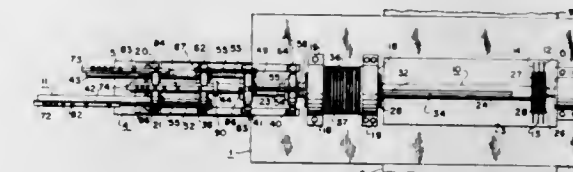
Jeff Y. Cromeens, Mesquite, and Thomas F. Clyde, Garland, both of Tex., assignors to Industrial Woodworking Machine Co., Inc., Garland, Tex.

Filed Mar. 27, 1970, Ser. No. 24,788

Int. Cl. B27b 5/34

U.S. Cl. 143—37 B

33 Claims



A saw apparatus having an arbor assembly and coating actuating means, the assembly comprising a plurality of saws secured to the adjacent ends of telescopic shafts of progressively inward increasing length supported by and having slidable connection with a longer rotatable axle by common driving means. Preferably, the slidable connection includes coating keys and keyways extending longitudinally of the drive means, shafts and axle with adjacent keyways being relatively staggered and spaced progressively outward toward the saws. The actuating means may include pressure fluid cylinders, having piston rods projecting toward the saws and attached to the opposite adjacent ends of the saw shafts with the cylinders and rods of the longer shafts being movable with the reciprocation of the rods and cylinders of the intermediate shafts and the piston rod of the shortest shaft, and thrust members for movably supporting said cylinders of said longer saw shafts and all of said piston rods as well as permitting relative reciprocation of the latter cylinders.

3,630,245

**TUBULAR POWER SAW**

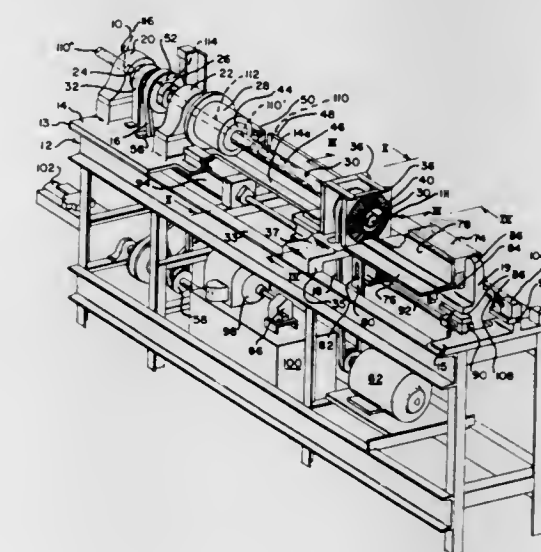
Robert J. Monahan, Sewickley, Pa., assignor to William A. Bayer, Pittsburgh, Pa.

Filed Feb. 13, 1970, Ser. No. 11,352

Int. Cl. B27b 5/12, 33/18

U.S. Cl. 143—85

12 Claims



I disclose a cutting apparatus the combination comprising a base, an elongated tubular inner cutter, extending parallel to the base and rotatably supported in cantilever fashion from said base, a tubular outer cutter rotatably mounted on the base and substantially concentrically of said inner cutter but spaced longitudinally from the point of cantilever support



of said inner cutter, means for rotating said cutters, and means for feeding an elongated workpiece from which a tubuliform member is to be cut to said inner and outer cutters, said longitudinal spacing approximating the anticipated length of said workpiece.

3,630,246

**MODIFIED SKIDDER AND FELLING HEAD**

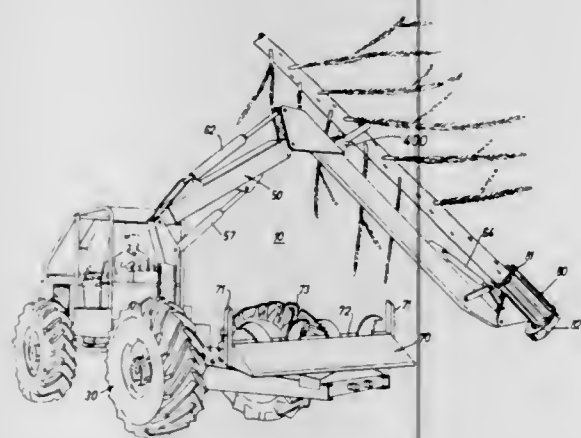
Douglas D. Hamilton, Mount Royal, Canada, assignor to Canadian International Paper Company; Quebec North Shore Paper Company, Montreal, Quebec and Abitibi St. Anne Paper Ltd., Beupre, Quebec, Canada, part interest to each

Continuation of application Ser. No. 695,453, Jan. 3, 1968, now abandoned. This application Apr. 17, 1970, Ser. No. 28,241

Int. Cl. A01g 23/02

U.S. Cl. 144—3 D

8 Claims



A vehicle for use, in field logging operations, which includes a self-propelled tractor unit having an extendible and retractable boom pivotally mounted for slewing about a vertical axis and including a felling head mounted on the boom, such felling head including a grapple for grasping a standing tree and a shear for severing the grasped tree. The vehicle also includes a bunk assembly having tongs movable selectively for anchoring the butt end of trees thereto so that the vehicle can skid the anchored trees to a selected site. The boom is movable and positioned such that a standing tree can be severed by the felling head and thereafter loaded onto the bunk while being continuously engaged by the grapple.

3,630,247

**SPIRAL TRACK MACHINE FOR TRIMMING PROJECTIONS FROM GLOBULAR ARTICLES**

James P. Cox, Burnaby, British Columbia, Canada, assignor to John Inglis Frozen Foods Company, Modesto, Calif.

Original application Feb. 21, 1968, Ser. No. 707,152, now Patent No. 3,538,969, dated Nov. 10, 1970. Divided and this application July 6, 1970, Ser. No. 52,562

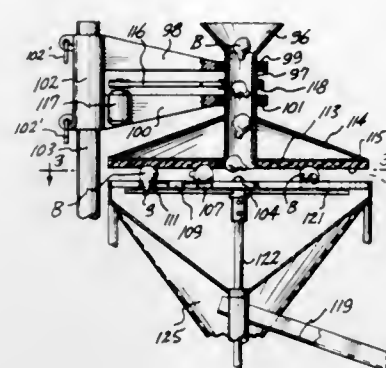
Int. Cl. A23n 15/02

U.S. Cl. 146—81

2 Claims

By engagement of pad means with the upper side of a globular article, it is rolled along guideways in a compound rotation, which periodically moves a projection of the article through the slot of the guideways. Such compound rotation is effected by forming the guideways as generally parallel curved convolutions forming a spiral path and moving pad means above such guideways in a direction generally

lengthwise of the slot. The pad means is a circular pad which rotates above the spiral guideways. Knife blades are rotated



3,630,248

**SLICING MACHINE FOR DIVERSELY CUTTING VEGETABLES AND THE LIKE**

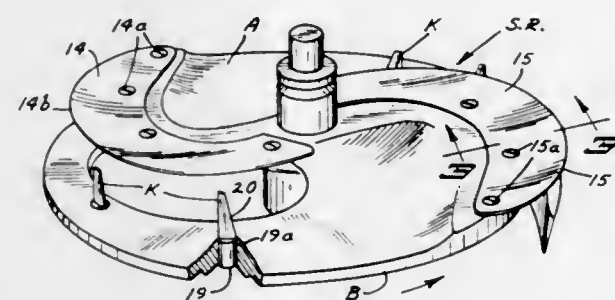
Maynard P. Hanson, 2511 McKinley St., N.E., Minneapolis, Minn.

Filed Apr. 3, 1970, Ser. No. 25,337

Int. Cl. B26d 4/28

U.S. Cl. 146—124

7 Claims



The slicing machine of the invention combines in broad general aspects, the combination of a driven rotary slicing rotor with a substantially concentrically disposed housing closely related therewith and for the most part having a closed bottom with a tangential discharge passage for the sliced material extending therethrough. The rotor of the machine has a body constituting two or more spiraled volutes having peripheral edges which extend concentrically of the housing. At the separated edges of the volutes from the body, spiraled, curvilinear knife-edge cutting elements are removably attached extending from points close to the axis or hub of the device outwardly to the peripheral edge of each volute and spaced some distance above the adjacent edge of the other volute. A plurality and variety of arrangements of upwardly extending vertical cutting knives are supported from and mounted upon a plurality of volutes extending above the tops thereof and in predetermined spiral arrangements relative to the first-mentioned cutting edges, to produce simultaneous vertical cutting along predetermined lines and radial distances from the axis of the rotor. Depending upon the arrangement and structure of the cutting knives, as illustrated, elongate shredded or string material may be produced in the slicing operation, or in the alternative, production of diced, rectangular wedges, or cubical granular particles may be attained.

3,630,249

**CHOPPER CONSTRUCTION**

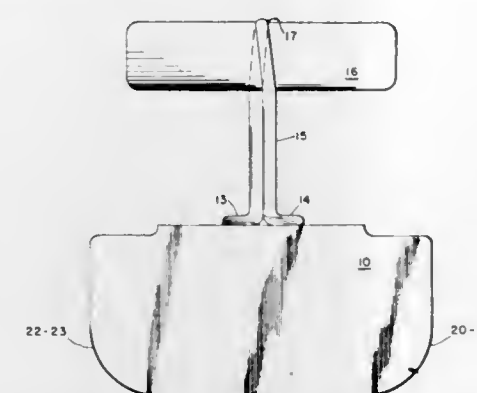
Elizabeth C. Brunwin, At Water Branch, 3517 Dover St., Los Angeles, Calif.

Filed Feb. 20, 1970, Ser. No. 13,065

Int. Cl. A47j 43/28; B26b 3/04

U.S. Cl. 146—203

2 Claims



A twin blade chopper formed from a single piece of sheet metal with a handle and a shank, said shank being looped or reeved diametrically in a groove in the handle. The shank flows back from the diametrical groove in contiguous relation to spotwelds on a bright or saddle of the twin chopper blades. The outboard sides of the blades are chamfered to provide cutting edges and the ends of the chopper blades are open and rounded to permit the chopper to rock, if desired.

3,630,250

**AMMONIUM NITRATE EXPLOSIVE COMPOSITION**

Joseph R. Hradel, Mount Pleasant, Mich., and Harold E. Staadt, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Original application Jan. 5, 1959, Ser. No. 784,881. Divided and this application Apr. 21, 1969, Ser. No. 818,087

Int. Cl. C06b 1/04

U.S. Cl. 149—21

13 Claims

An explosive composition is provided which contains a distinct particulate ammonium nitrate phase and a distinct aqueous phase saturated with ammonium nitrate.

3,630,251

**CLOTHESPIN RECEPTACLE**

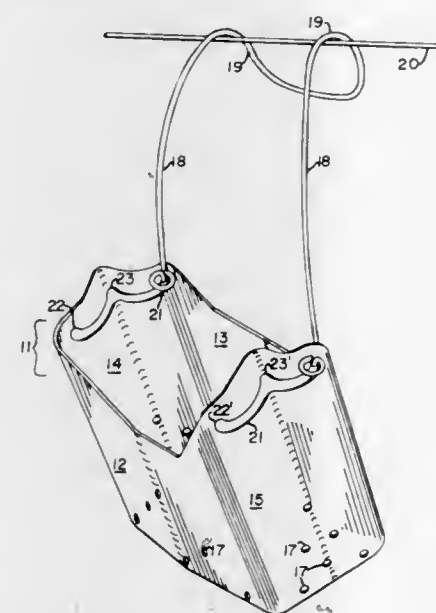
Mallia Ross, 4207-A Ave. H., Austin, Tex.

Filed July 15, 1969, Ser. No. 841,887

Int. Cl. B65d 1/38, 25/32

U.S. Cl. 150—1.8

1 Claim



A wipe-clean plastic clothespin receptacle adapted to contain both clothespins and small articles of clothing, and pro-

vided with an adjustable tilt support handle adapted to hook over and slide along the user's clothesline.

3,630,252

**STUD FASTENER ASSEMBLY WITH INTEGRAL LOCKRING**

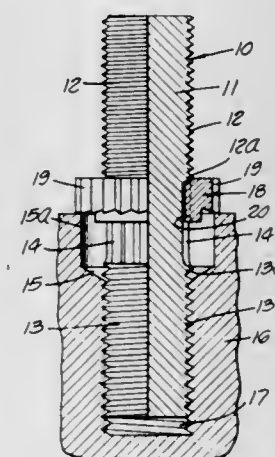
Jose Rosan, Sr., San Juan Capistrano, and Jose Rosan, Jr., Newport Beach, both of Calif., assignors to Rosan Engineering Corp., Newport, Calif., by said Jose Rosan, Jr.

Filed Apr. 27, 1970, Ser. No. 32,081

Int. Cl. F16b 39/02

U.S. Cl. 151—41.73

6 Claims



A stud fastener assembly having both ends thereof threaded and a lockring in slidable but captive engagement between the said threaded ends so that said lockring is not disengageable therefrom and a method of making the same whereby the lockring is slipped onto the stud fastener subsequent to threading one end thereof and thereafter threading the opposite end of said fastener.

3,630,253

**INTERFERENCE FASTENER**

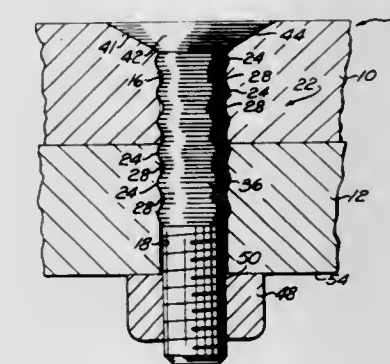
Russell G. Sherman, Santa Monica, Calif., assignor to The Lamson & Sessions Company, Cleveland, Ohio

Filed Oct. 22, 1969, Ser. No. 868,429

Int. Cl. F16b 39/00

U.S. Cl. 151—41.73

1 Claim



An improved interference fastener includes a metallic shank having waves for interfering with the inner surfaces of holes formed in metallic members to be interconnected by the fastener. The waves have an amplitude of between 0.001 and 0.004 of an inch and include a series of protuberances or crests which interfere with the metallic members. This interference improves fatigue life by prestressing the members around the holes to thereby reduce the variation in stress or load span to which this area is effectively subjected when a varying or alternating load is applied in the members. In ad-



dition, the interference retards relative movement between the fastener and the members. The waves also provide a series of circular recesses or troughs having bottom or innermost portions which are spaced from the members to reduce metal-to-metal contact between the fastener and the members.

3,630,254

**DUAL-PURPOSE TIRE FOR DRY OR ICY ROADS**

Ludwig Stadelmann, Schopperstrasse 14, Altdorf, Nuremberg, Germany

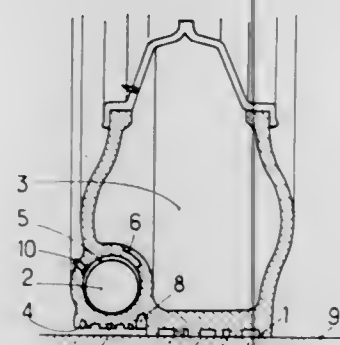
Filed Nov. 18, 1969, Ser. No. 877,692

Claims priority, application Germany, Nov. 30, 1968, P 18 09 842.5

Int. Cl. B60c 11/00

U.S. Cl. 152—209

5 Claims



The invention concerns a dual-purpose tire which can be used on both dry and snow-covered or icy roads, being made up of a monobloc casing comprising, in addition to its main tube, a second, smaller tube having a tread with points, these two tubes being inflated separately, so that the tread with points can by selection be brought level with or set back from the tread of the main tube.

3,630,255

**TRACTION BELT ASSEMBLY**

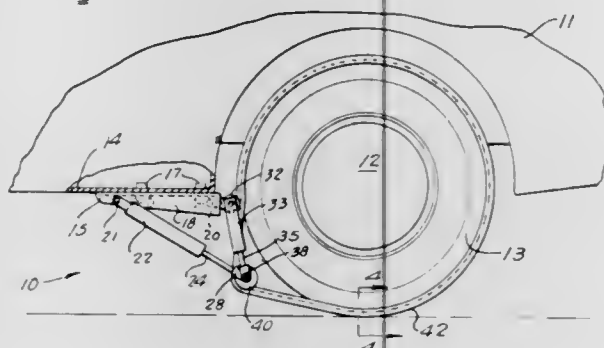
Carl P. Wonderley, Box 112, Grottoes, Va.

Filed Jan. 6, 1970, Ser. No. 943

Int. Cl. B60c 27/10

U.S. Cl. 152—215

4 Claims



A traction belt assembly for motor vehicles useful for increasing the traction of the motor vehicle in mud, snow and icing conditions. The traction belt encompasses the tire and has a tension roller engaged therewith to maintain a constant tension on the belt. The roller is supported by spring-biased arms to permit it to float while tensioning the belt. The belt is provided with flanges along its opposite side edges to maintain its contact with the tire and is optionally provided with carbide studs for increased traction.

3,630,256

**PROTECTIVE MESH**

Walter Siepmann; Walter Siepmann, Jr., both of Haus Mohmetal; Hans-Juergen Vogt, Kulbe, and Herbert Sobota, Unter-Hagen, all of Germany, assignors to Siepmann-Werke KG, Beleecke am Moehne, Germany

Continuation-in-part of application Ser. No. 786,931, Dec. 26, 1968. This application Jan. 10, 1969, Ser. No. 790,226

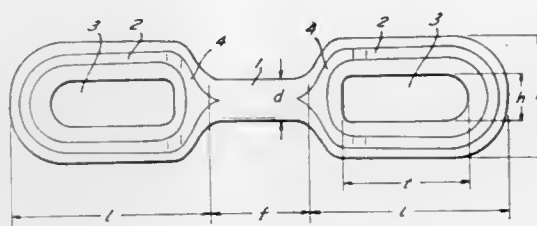
Claims priority, application Germany, June 25, 1968,

P 17 55 805.3; application Italy, Dec. 9, 1968, 41820 A/68

Int. Cl. B60c 27/00

U.S. Cl. 152—222

29 Claims



A protective mesh for vehicle tires and the like consists of a plurality of one-piece members each of which has at least two closed loop portions and a connecting portion connecting the same. Each loop portion has an opening so dimensioned as to permit sliding insertion of a loop portion of another member only when the loop portions of the respective members have a predetermined orientation with reference to one another. Each loop portion has two integral sections one of which is closer to and the other of which is farther from the associated connecting portion and the general planes of at least the aforementioned other sections are located in at least substantial parallelism with one another. Each connecting portion of each of the members extends through and is at least in part slidably accommodated in a loop portion of at least one other of the plurality of members so that all of the members are connected movable with reference to each other and constitute a protective mesh.

3,630,257

**WHEEL FRAME WITH MOLDED PLASTIC TONGUES**

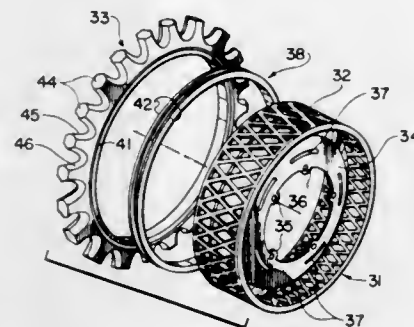
Nandor Goldberger, 37-15 Parsons Blvd., Flushing, N.Y.

Filed Sept. 15, 1970, Ser. No. 72,346

Int. Cl. B60c 11/06

U.S. Cl. 152—301

6 Claims



A finned lug wheel frame assembly is provided wherein the frame has openings extending about the periphery of the same, and upon which plastic rings bearing a series of tongues or lug portions are mounted. The tongues or lugs extend about the plastic ring alternately with spaces and these spaces are cut to provide opposed beveled faces and fins upon the lugs from which road gatherings of mud, water and snow can be readily expelled with the release of the lug portions from the ground surface. The lugs are generally of hexagonal section and tapering from their base outwardly and inwardly to their outer end leaving a flat hexagonal shape road contact face. The rows of lugs and their integral rings are laterally spaced upon the rim so as to provide openings

through which road gatherings may be passed into the rim upon engagement with the road surface and outwardly of the rim by centrifugal action so as to keep the tire and rim free of such road gatherings.

3,630,258

**TIRE HAVING PLYS MADE OF FIBERGLASS AND NYLON**

Lawrence R. Sperberg, 6740 Fiesta Drive, El Paso, Tex.

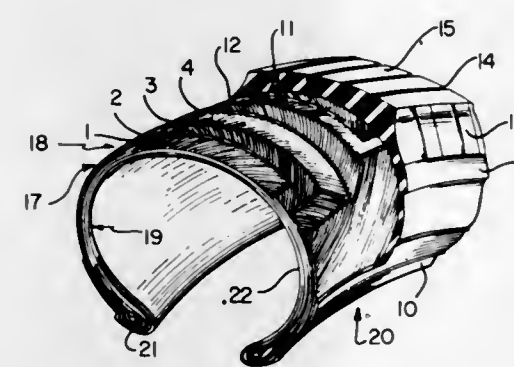
Continuation-in-part of application Ser. No. 504,768, Oct. 24, 1965, now Patent No. 3,397,729. This application July 9,

1968, Ser. No. 743,345

Int. Cl. B60c 9/10

U.S. Cl. 152—356

3 Claims



A bias-constructed tire having a carcass built of several plies with the innermost ply being made of fiberglass tire cord material and the outermost ply being made of polyamide tire cord material as the principal reinforcing fiber.

3,630,259

**SYNTHETIC YARN COATED WITH A SPIN FINISH AND PROCESS FOR PRODUCING THE SAME**

Edmond P. Brignac, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 838,001, June 16, 1969, now abandoned, Continuation of application Ser.

No. 523,970, Feb. 1, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 332,837, Dec. 23, 1963, now abandoned. This application Nov. 24, 1969, Ser. No. 879,560

Int. Cl. B60c 9/00

U.S. Cl. 152—359

9 Claims

Spin finish for yarns to be bonded to rubber includes polyvinyl alcohol and microcrystalline or emulsifiable polyethylene wax. The wax has a melting point of at least 50° C. and a penetration at 77° F. of between 1 and 10 in accordance with ASTM test method D-1321-55T.

3,630,260

**TIRE CHANGER**

Carl Harold Bailey, Bergland, Mich., assignor to Copper Range Company, New York, N.Y.

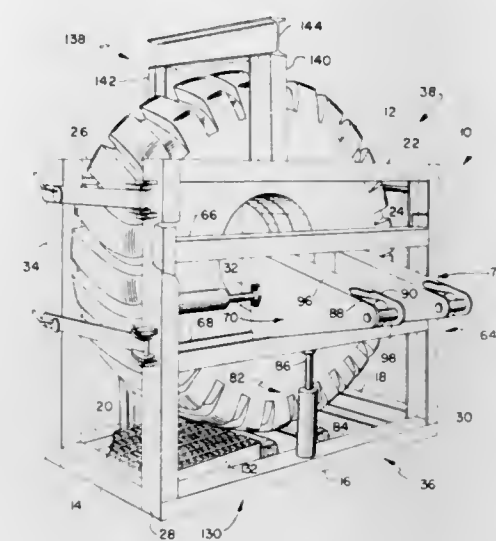
Filed Apr. 8, 1970, Ser. No. 26,612

Int. Cl. B60c 25/06

U.S. Cl. 157—1.26

9 Claims

In a tire mounting and demounting apparatus, a carriage is slidably mounted to an enclosure adapted for reception of an upright tire assembly. A plurality of individually actuatable rams are mounted to the enclosure and carriage, particular rams being adapted for positioning of the carriage within the enclosure and other rams being adapted for selective engagement and disengagement of the tire assembly. In the demounting of a wheel from a tire, the positioning rams are actuated individually until the engagement rams and the wheel is in spaced relation. Thereafter, the engagement rams



are actuated selectively for engagement and disengagement with the wheel, in consequence the adhesive bond between the wheel and tire is broken and removal of the wheel from the tire is facilitated.

3,630,261

**FRICTIONAL ANTIROTATION DEVICE**

Paul R. Gley, Hillsdale, N.J., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

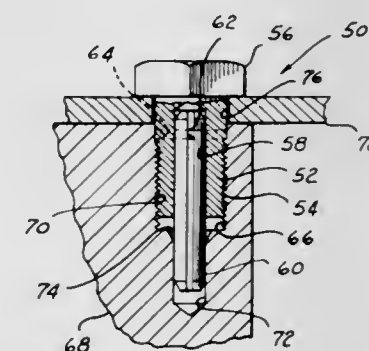
Continuation of application Ser. No. 708,565, Feb. 27, 1968, now abandoned. This application Dec. 11, 1969, Ser. No.

880,504

Int. Cl. F16b 39/00

U.S. Cl. 151—70

23 Claims



A fastener assembly in which a nut is adapted to be threaded onto a stud so as to travel along the length thereof from a point of initial engagement of the threads and in which interengageable means on the stud and on the nut and independent of the threads provide a relatively high frictional antirotation force from a point adjacent the point of initial engagement and over the length of travel of the nut on the stud, thus securely to hold two members in assembled relationship.

3,630,262

**METHOD AND APPARATUS FOR PRODUCING AN IMPROVED ANHYDROUS CAUSTIC PRODUCT**

Stanley J. Macek, South Holland, Ill., assignor to Whiting Corporation

Filed July 22, 1969, Ser. No. 843,676

Int. Cl. B01d 1/28; F26b 7/00; B01d 1/00, 1/16

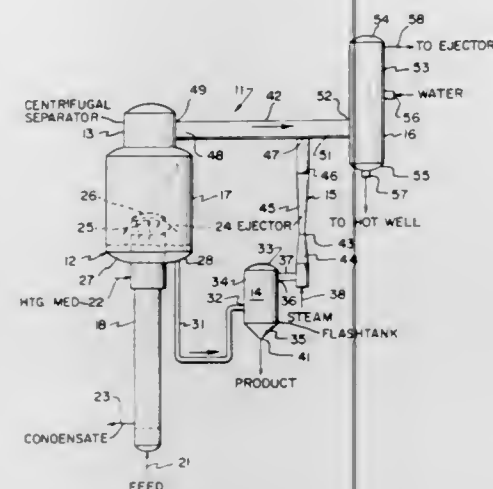
U.S. Cl. 159—2

7 Claims

An improved dehydration method and apparatus for producing an anhydrous caustic product having a water content of 0.5 percent by weight or less. Caustic feed is heated



to a temperature from about 600° to 700° F. and the water content removed therefrom in a two-stage vaporization process wherein the first stage is conducted in an evaporating



chamber maintained at an absolute pressure of from 2 to 20 inches of mercury and the second stage is conducted in a flash tank maintained at an absolute pressure of below 5 inches of mercury, and preferably below 2 inches of mercury.

3,630,263

## EVAPORATION OF LIQUOR

John Moseley Davies, Amersham, England, assignor to Parkson Industrial Equipment Company Limited, Dartford, Kent, England

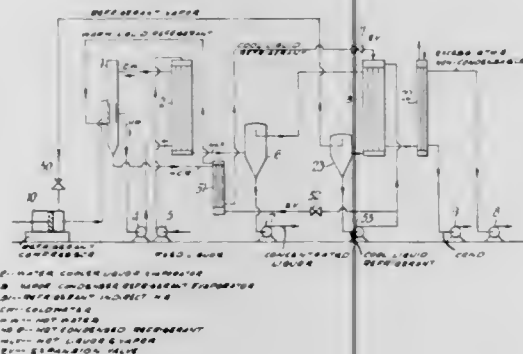
Filed Mar. 10, 1970, Ser. No. 18,140

Claims priority, application Great Britain, Mar. 12, 1969, 13,126/69

Int. Cl. B01d 1/26, 1/100, 3/00

U.S. Cl. 159—17 VS

7 Claims



Liquid water, is directly heated in a first heat exchanger by a hot immiscible H.E. fluid and the heated water is then passed to a second heat-exchanger where it indirectly heats a liquor to be evaporated. Vapor separated from the liquor passes to a third heat-exchanger and there in condensing evaporates at least some of a refrigerant which is the immiscible fluid. The refrigerant vapor is compressed and supplied to one or both of the first and second heat exchangers where it directly contacts said liquid water and is condensed, after which the condensed refrigerant is returned to the third heat exchanger partially evaporated there and the released vapor returned to the compressor. The refrigerant may be in an emulsion of refrigerant in water.

3,630,264

## VENETIAN BLIND TILTING APPARATUS

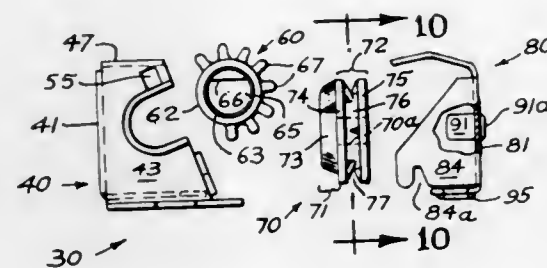
Victor Debs, Staten Island, N.Y.; James J. Kapeller, Jr., East Rutherford; George Neira, Teaneck, and Leo Abate, Wayne, all of N.J., assignors to Levolor Lorentzen, Inc., Hoboken, N.J.

Filed Nov. 24, 1969, Ser. No. 879,204

Int. Cl. E06b 9/304, 9/26

U.S. Cl. 160—177

16 Claims



The arrangement includes a channel-mounted tilter that has front and rear shells which confront each other mouth-to-mouth and enclose a worm, a gear and a cord pulley. The rear shell is affixed to the head channel of the blind, with the expanse of the mouth of the shell extending lengthwise of the head channel. The front shell is readily attachable to and detachable from the rear shell.

3,630,265

## UPHOLSTERY SUPPORTS

Raymond Biggs, Middleton Junction, Manchester, England, assignor to Vitafoam Limited

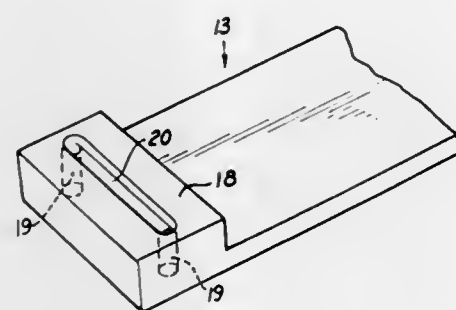
Filed Sept. 2, 1969, Ser. No. 854,383

Claims priority, application Great Britain, Jan. 1, 1969, 131/69

Int. Cl. A47h 3/00

U.S. Cl. 160—382

3 Claims



The invention is concerned with upholstery supports such as webbing straps or platformlike supports; more particularly with the provision of providing improved attachment locations in such supports. The upholstery support according to the invention is moulded from suitable material such as rubber and incorporates attachment locations each being in the form of a thickened portion having one or more holes to accommodate part of an attachment means such as a hook, and these being a recess in the thickened portion in the region of the hole or holes in which part of the attachment means will lie so that, in use, loading on the support is distributed across a substantial part of the thickened portion. The invention is also directed to a method of producing such a support by a moulding technique in an appropriately formed mould.

3,630,266

## CONTINUOUS CASTING PROCESS

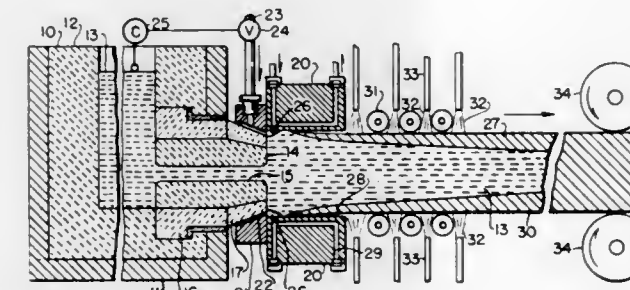
Leonard Watts, Cedarhurst, N.Y., assignor to Technicon Corporation, Tarrytown, N.Y.

Continuation of application Ser. No. 628,348, Apr. 4, 1967, now abandoned. This application Nov. 21, 1969, Ser. No. 878,956

Int. Cl. B22d 1/110

U.S. Cl. 164—73

7 Claims



In continuous casting wherein molten metal to be continuously cast flows from a casting nozzle into a cooled mold from which a billet with at least an outer shell solidified is withdrawn, a gas is injected under pressure about the casting nozzle into the mold to form a gas pocket about the casting nozzle in molten metal within the mold, the gas escaping between the forming billet and the mold.

3,630,267

## METHOD OF CONTROLLING THE TEMPERATURE OF MOLTEN FERROUS METAL

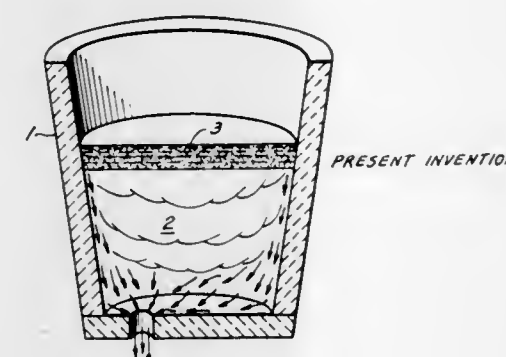
Joseph W. Hlinka; Andrew P. Smith, both of Bethlehem, and Andrew J. Slabikovsky, Allentown, all of Pa., assignors to Bethlehem Steel Corporation

Filed May 18, 1970, Ser. No. 40,468

Int. Cl. B22d 1/110; C21c 7/00

U.S. Cl. 164—82

7 Claims



A method of controlling the temperature of molten ferrous metal poured from a bottom pour transfer ladle over an extended period of time. A thick layer of molten slag is placed on the surface of the molten metal to suppress the formation of convection currents in the ladle. A formula provides the relationship between pouring time and the minimum thickness of the molten slag layer required to obtain a substantially constant temperature of the metal discharged from the ladle.

3,630,268

## FOUNDRY MOLDING MACHINE WITH MEANS TO ALTERNATELY INDEX COPE AND DRAG FLASKS BETWEEN MOLDING AND CLOSING UNITS

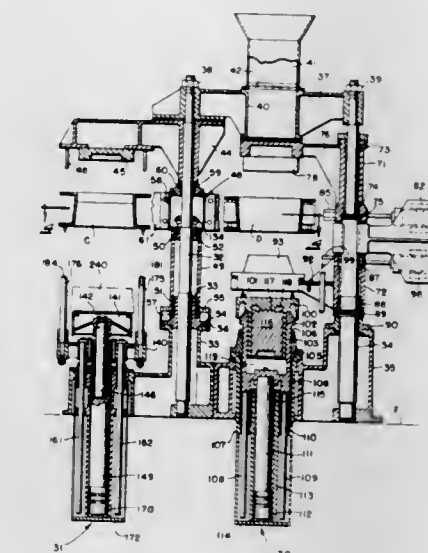
Edmond K. Hatch, Brecksville, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Sept. 8, 1969, Ser. No. 856,034

Int. Cl. B22c 1/110, 15/34, 17/00

U.S. Cl. 164—181

31 Claims



A foundry molding machine utilizing one cope and one drag flask alternately indexed between a jolt-squeeze molding station and a stripping and closing station, the drag being inverted during the index and molded upside down; a shuttle for the cope and drag patterns as well as a sand chute and squeeze board is provided at the molding station while the stripping and closing station automatically opens the specially built drag flask for stripping and supporting the same for coring before assembling with the cope to form a flaskless mold which is then removed from the machine.

3,630,269

## CONTINUOUS CASTING CUTOFF APPARATUS

Hans Bieri, Oberrick, Switzerland, assignor to Erik Olsson AG, Zurich, Switzerland

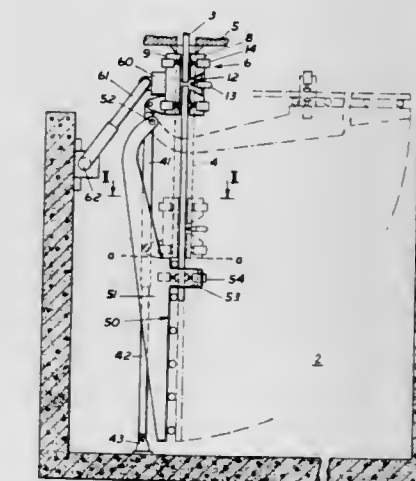
Filed Mar. 10, 1969, Ser. No. 805,761

Claims priority, application Switzerland, Mar. 11, 1968, 3578/68

Int. Cl. B22d 1/112

U.S. Cl. 164—263

12 Claims



There is disclosed an apparatus for severing a continuously formed casting into sections. It comprises a carriage having a cutting torch movable transversely across the casting while it



travels with the casting. The carriage travels along a guideway in the direction of the length of the casting, and it has two sets of clamps, one set being operable to engage the casting at one side of the cut, and the other being operable to engage the severed section. Provision is made to maintain the carriage centered in the guideway, but to permit controlled lateral movement where an irregularity in the casting requires it. For a vertical cutoff carriage, provision is made to transfer the severed section to a vertical frame which swings upwardly to a horizontal position for discharge of the severed piece.

3,630,270

### COOLING DEVICE FOR CONTINUOUS CASTING APPARATUS

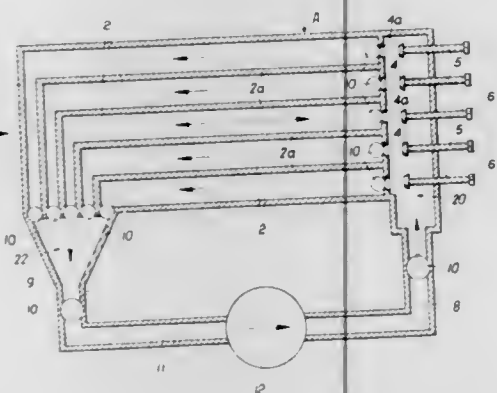
Alfred Adamec, and Roland Leder, both of Vienna, Austria, assignors to Wiener Schwachstromwerke Gesellschaft m.b.H., Vienna, Austria

Filed June 3, 1969, Ser. No. 830,057

Claims priority, application Austria, June 5, 1968, A 5334/68 Int. Cl. B22d 11/12

U.S. Cl. 164—283

7 Claims



A cooling device for a continuous casting mold is arranged to provide a plurality of coolant flow paths extending in parallel relationship with the axis of the path of the casting through the mold. Valve means and connecting passageways are provided in the flow paths for adjustably regulating the flow of the coolant through the flow paths. An inlet chamber and the outlet chamber for the flow paths can be interconnected to provide a continuous cycling of the coolant through the device.

3,630,271

### HEAT STORAGE DEVICE USING FUSIBLE MATERIAL

Herbert M. Brody, Carteret, N.J., assignor to American Standard Inc., New York, N.Y.

Filed July 6, 1970, Ser. No. 52,467

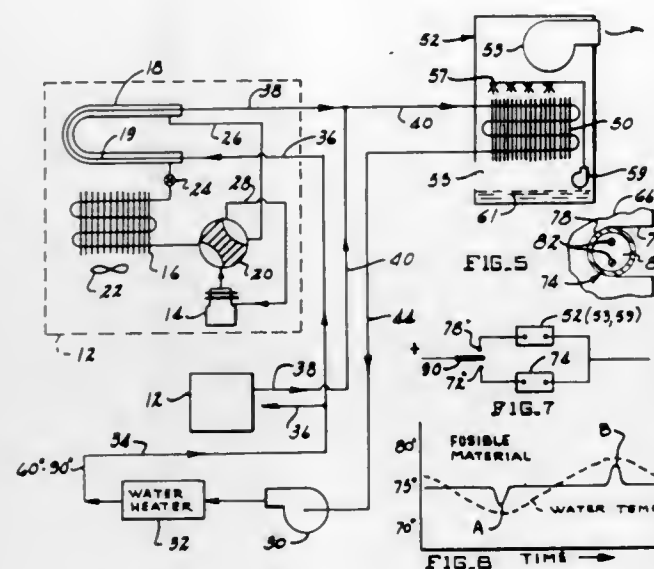
Int. Cl. F24f 3/00

U.S. Cl. 165—22

7 Claims

A multiroom heating-cooling system of the type wherein a water loop extends through a plurality of room air-conditioning units to exchange heat therewith, the improvement comprising a novel heat storage mechanism for absorbing heat from the water loop during daytime operations and giving

back the absorbed heat to the water loop during nighttime operations, thereby reducing the amount of heat energy



3,630,272

### COMPOUND THERMAL SYSTEM FOR CLOSED CYCLE ENGINES

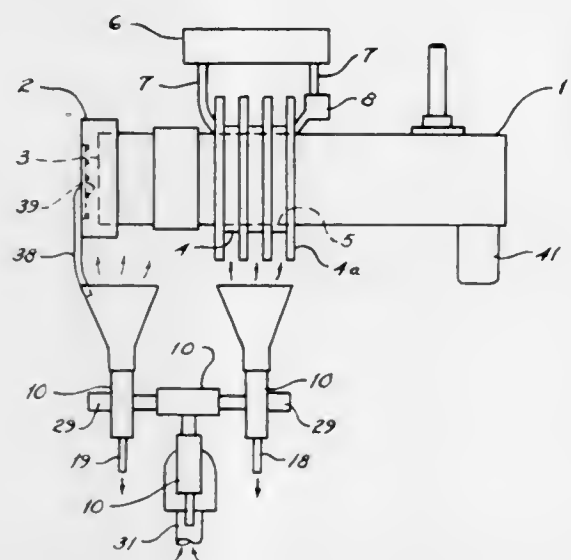
Donald A. Kelly, 58-06 69th Pl., Maspeth, New York, N.Y.

Filed Jan. 27, 1970, Ser. No. 6,116

Int. Cl. B60h 3/00

U.S. Cl. 165—44

10 Claims



The compound thermal system for C. C. E.'s is intended to provide a versatile and reliable heating and cooling method for closed cycle engines, by adopting two separate thermal arrangements which are coordinated for optimum thermal exchange at minimum air pollution levels.

The basic heating means consists of a conventional gas or oil burner unit set to burn at a constant rate for minimizing toxic emissions.

The basic cooling means consists of a specially formed liquid coolant jacket in direct contact with the cold surfaces of the engine.

The second thermal means consists of airflow temperature splitters—or vortex tubes arranged in series array with the hot and cold airflows directed over the hot and cold engine areas respectively.

The hot airflow from the series vortex tubes is used primarily to raise the combustion temperature of the conven-

tional fuel burner unit in support of the complete combustion process.

3,630,273

### AIR-COOLED CONDENSER

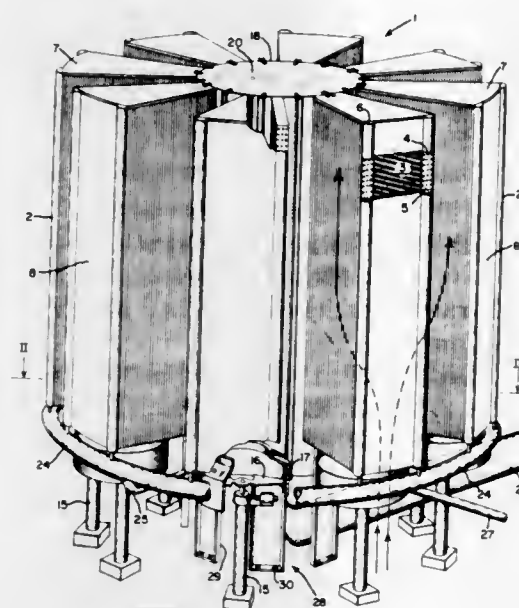
Paul G. La Haye, and David P. Flitner, both of Cape Elizabeth, Maine, assignors to General Electric Company

Filed Jan. 14, 1970, Ser. No. 2,842

Int. Cl. F28b 3/00

U.S. Cl. 165—111

8 Claims



An air-cooled vapor-condensing plant having a plurality of individual air condenser modules joined together so that their inlet tube sheets together form a central vapor header, and also serve as primary structural members. Vapor enters the central vapor header, flows outwardly through heat exchange tubes where it is condensed by air flowing over the tubes.

3,630,274

### HEAT EXCHANGER PROVIDED WITH A THERMAL BARRIER

Kornelis Lievense, Spijkenisse, Netherlands, assignor to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer

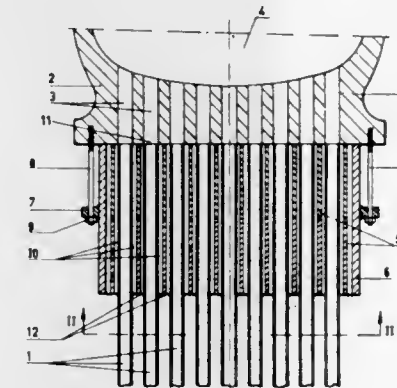
Filed May 21, 1969, Ser. No. 826,307

Claims priority, application Netherlands, May 30, 1968, 6807673

Int. Cl. F23f 13/00

U.S. Cl. 165—135

3 Claims



Heat exchanger for producing steam mainly formed by a casing in which a bundle of steam tubes is provided, attached

between tube sheets and inside of which casing liquid metal such as sodium flows around these tubes as a heat-transferring medium, the transition area from tubes to tube sheet in this casing being provided with a thermal barrier to reduce the heat transfer from the sodium to the tube sheet and to the tubes near their attachment to the tube sheet, this thermal barrier being formed by a number of tubular spaces enclosing one or more tubes of the tube bundle along a part of their length(s) which tubular spaces are formed by a number of baffles together forming a grid and are closed on the one side by the tube sheet and on the other side are in open connection with the inner space of the rest of the heat exchanger casing.

3,630,275

### APPARATUS FOR CONDENSING STEAM

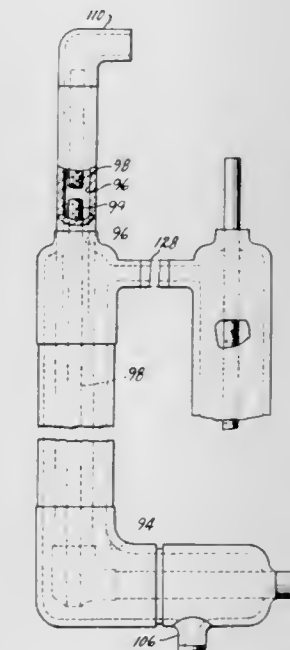
Adrian A. Beaulieu, West Bridgewater; James L. McKenney, Norwell; James W. Megley, Milton, and Lawrence M. Munroe, Dover, all of Mass., assignors to Beaulieu-Munroe Corporation, Boston, Mass.

Original application Oct. 19, 1965, Ser. No. 497,961, now Patent No. 3,422,248, dated Jan. 14, 1969. Divided and this application Dec. 20, 1968, Ser. No. 785,674

Int. Cl. F28d 7/10

U.S. Cl. 165—154

2 Claims



Apparatus for condensing steam comprising an elongated chamber, said chamber having an ingress and an egress opening, and a spray tube having a plurality of apertures therein extending into said chamber in concentricity therewith from one end thereof whereby liquid entering said tube is sprayed outwardly therefrom into the chamber.

3,630,276

### SHELL-SIDE LIQUID METAL BOILER

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Gerald M. Kikin, Pasadena; Maurice L. Peelgren, Altadena; Wayne M. Phillips, La Crescenta, and Jerry P. Davis, La Canada, all of Calif.

Filed Feb. 10, 1970, Ser. No. 10,161

Int. Cl. F28f 9/22; F22

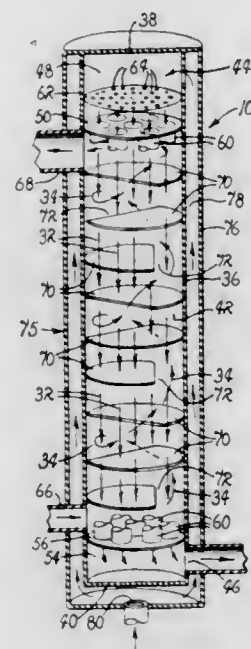
U.S. Cl. 165—158

1 Claim

A shell-side liquid metal boiler including a tube and shell heat exchanger particularly suited for use in effecting a heat exchange between continuously flowing primary and secondary fluids within a two-loop Rankine cycle power system, characterized by a plurality of tubular conduits through which there is delivered a heated primary fluid, and a boiler



shell circumscribing the conduits defining a boiler chamber within which shell-side boiling of the secondary fluid is achieved, a feature of the invention being the provision of a plurality of mutually spaced, angularly related baffle plates mounted within the boiler and defining a tortuous path hav-



ing both crossflow and spiral-flow path components, whereby the secondary fluid is permitted to circulate about the surfaces of the tubular conduits for achieving a heat exchange through shell-side boiling of the liquid metal within the boiler chamber.

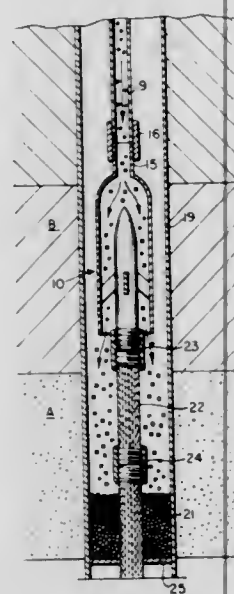
### 3,630,277 WELL GRAVELLING TOOL

Dallas C. Smith, Galliano, La., assignor to Jack D. McCartney, Jr.

Filed Dec. 4, 1969, Ser. No. 882,164  
Int. Cl. E21b 43/04

U.S. Cl. 166—51

4 Claims



Apparatus for dispersing and packing gravel within the annulus of a tubular member positioned within a well comprising the combination of a drill pipe string and a well graveling tool operatively communicated therewith. The well graveling tool per se comprises a pair of concentric members, a smaller diameter member mounted within a larger diameter tubular member, the difference between the diameters being sufficient to provide an annular opening which is communicated

to the opening through the drill pipe string. The drill pipe string and well graveling tool are operatively engageable e.g., via threadable connections, one member with the other, and the well graveling tool in turn is engageable, e.g., via threadable connection, of opposite cast, with a tubular member located within the bottom of the well to seal the interior of the latter from entry of fluid or gravel. Gravel can be discharged downwardly from the surface through the drill pipe string and well graveling tool to fill the annulus of the well inside the casing, and outside the tubular element. Fluid can then be forced down into the well via the drill pipe string and well graveling tool, under pressure, to pack the gravel. Upon release of the pressure, additional gravel can be added and, after setting, any excess gravel can be returned to the surface with reverse circulated fluid which descends down the annulus between the casing and drill pipe string, and ascends through the well graveling tool and drill pipe string.

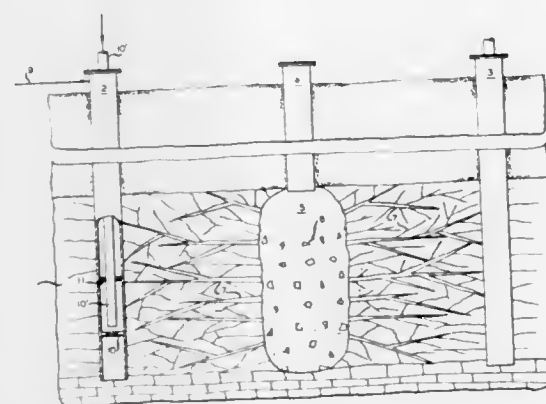
### 3,630,278 METHOD FOR STRENGTHENING RESERVOIR FRACTURES

Harry W. Parker, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 7, 1968, Ser. No. 773,989  
Int. Cl. E21b 43/24, 43/26

U.S. Cl. 166—259

9 Claims



Hydrocarbons are produced from hydrocarbon bearing formations, including oil shale, in situ through fractures communicating with production wells by injecting combustion supporting materials such as an oxygen-containing gas substantially completely throughout the fractures and then initiating in situ combustion (supported by the injected gas) at an extremity of the fractures prescribed by either injection or production wells or a subterranean detonation zone or cavity and directing the resultant in situ combustion front along the axis of the fractures and maintaining combustion at a level sufficient to fuse the formation adjacent the fractures whereby the resistance of the fractures to collapse under compressive stress is increased. Collapse of fractures treated in this manner under the influence of formation expansion promoted by subsequent temperature elevation accompanying retorting is substantially retarded. Therefore the strengthened fractures can be employed to facilitate heat transfer throughout the formation.

### 3,630,279 EXPLOSIVE FRACTURING METHOD

Clarence R. Fast; George C. Howard, and Morton A. Mallinger, all of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

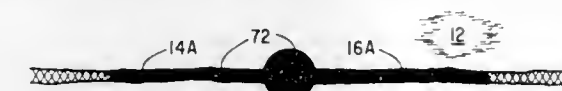
Filed Oct. 27, 1969, Ser. No. 869,715  
Int. Cl. E21b 43/26

U.S. Cl. 166—281

4 Claims

This is a method for increasing the permeability of an underground formation adjacent a well bore. The first step is to

plug existing fractures in the formation from the interwell area to a location near the well bore. Next, the bore of the well and the fracture immediately adjacent to the bore are



filled with a liquid explosive which is stemmed. Then the explosive is detonated, forming new fractures into the previously unfractured portion of the formation.

### 3,630,280 METHOD AND COMPOSITION FOR TREATING SUBTERRANEAN FORMATIONS

Paul W. Fischer, Whittier, and John W. Scheffel, Fullerton, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 13, 1970, Ser. No. 63,633  
Int. Cl. E21b 33/138, 43/26

U.S. Cl. 166—283

22 Claims

A water-insoluble particulate composition having controlled slow oil-solubility is disclosed. The composition is comprised of solid particles of a homogeneous mixture of (1) about 4 to 8 weight percent of a high molecular weight ethylene-vinyl acetate copolymer containing about 15 to 20 weight percent vinyl acetate and exhibiting a melt index of about 1 to 5 grams per 10 minutes, (2) about 3 to 10 weight percent of a low molecular weight ethylene-vinyl acetate copolymer containing about 15 to 20 weight percent vinyl acetate and exhibiting a melt index of about 100 to 600 grams per 10 minutes, and (3) about 86 to 92 weight percent of a paraffin wax having a melting point between about 135° and 170° F. Also disclosed is a process employing this particulate composition in drilling wells into subterranean formations having a temperature between about 125° and 155° F., and in fracturing and treating such formations.

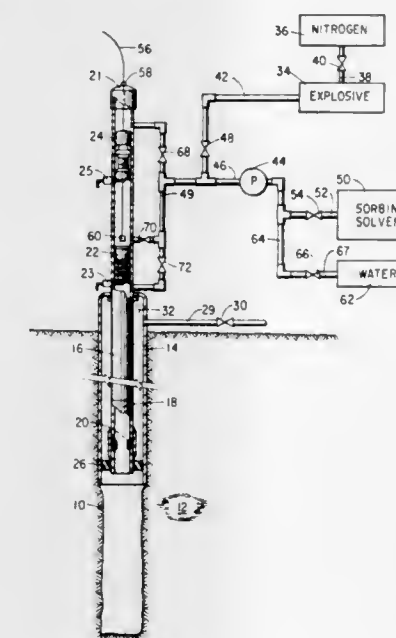
### 3,630,281 EXPLOSIVE FRACTURING OF PETROLEUM BEARING FORMATIONS

Clarence R. Fast; George C. Howard, and Morton A. Mallinger, all of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Nov. 12, 1969, Ser. No. 875,843  
Int. Cl. E21b 43/26

U.S. Cl. 166—290

8 Claims



This is a method for increasing the permeability of an underground formation adjacent a well bore by explosive frac-

turing. In one embodiment an explosive slurry, having selected fracturing fluid characteristics, is used to hydraulically fracture the formation and such explosive slurry is subsequently detonated. In another embodiment a sorbent solvent slug is injected down the tubing preceding the injection of the explosive slurry and a second such sorbent solvent immediately follows the explosive slurry. This avoids trapping of air or other gas and therefore prevents premature ignition or detonation of the explosive fracturing fluid.

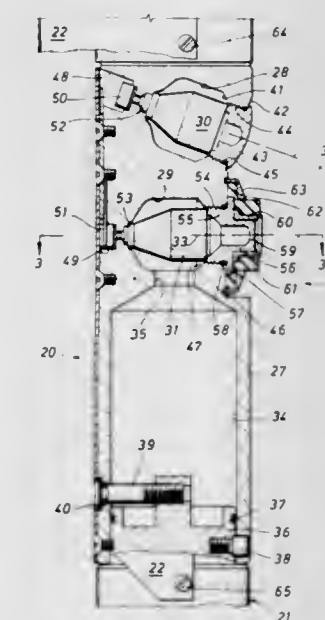
### 3,630,282 METHODS AND APPARATUS FOR PERFORATING EARTH FORMATIONS

C P Lanmon, II, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 20, 1970, Ser. No. 38,953  
Int. Cl. E21b 43/117

U.S. Cl. 166—297

25 Claims



This application discloses new and improved methods for perforating earth formations and then cleaning debris and the like from such perforations. To practice the present invention, a new and improved perforator is provided with one or more pairs of like or similar perforating devices operatively arranged for producing perforations in an earth formation which are selectively directed so that each pair of perforations will be in fluid communication with each other. An enclosed low-pressure chamber is coupled to one of the perforating devices in each set and a seal is arranged around the perforating axis of this perforating device for at least limiting the direct entrance of well bore fluids into the perforation produced thereby. In this manner, upon operation of each pair of the perforating devices, well bore fluids will be drawn into the perforation produced by the other perforating device and be swept through the intercommunicating perforations into the low-pressure chamber for cleaning debris and loose formation materials from the perforations.

### 3,630,283 METHOD OF PRODUCING PARTICLES OF ROCK IN A SUBTERRANEAN SITU

Carroll Field Knutson, and Charles Robert Boardman, both of P. O. Box 15090, Las Vegas, Nev.

Filed Apr. 17, 1970, Ser. No. 29,589  
Int. Cl. E21b 43/26

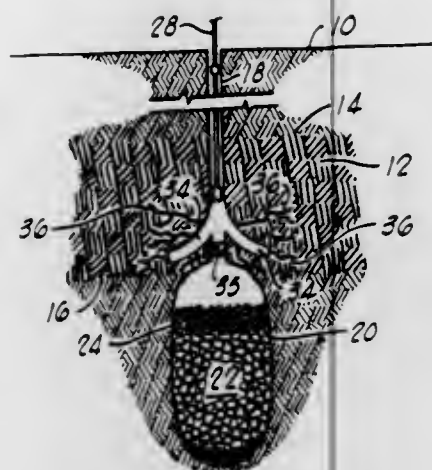
U.S. Cl. 166—299

4 Claims

The method of producing an accumulation of broken rock in a subterranean situs which includes the steps of forming a system of fractures of predetermined minimum width in the earth above a cavity and selectively emplacing an explosive in the fractures. The selectivity of the explosive emplacement



is with respect to the vertical width of the fractures in which the explosive is placed, and is achieved by control of the mobility of the explosive, primarily, but not necessarily exclusively, through control of the explosive viscosity. After em-



placement of the explosive in selected horizontally extending fractures of a critical minimum vertical thickness, the explosive is detonated to spall fractured rock into the subjacent cavity.

3,630,284

# METHOD FOR TREATMENT OF FLUID-BEARING FORMATIONS

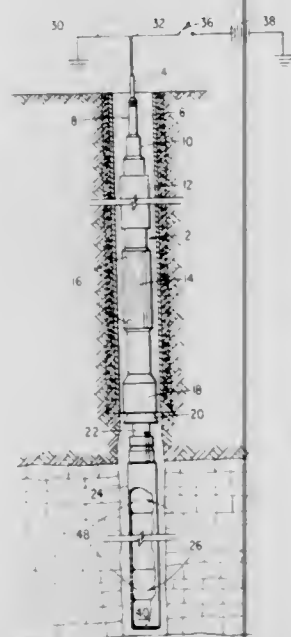
Clarence R. Fast; Morton A. Mallinger, both of Tulsa, Okla., and Donald J. O'Connor, Seymour, Ind., assignors to Amoco Production Company, Tulsa, Okla.

Filed Apr. 2, 1970, Ser. No. 25,064

Int. Cl. E21b 43/26

U.S. Cl. 166—299

5 Claims



By the process of this invention, underground formations can be fractured through a series of steps comprising first building up pressure in a confined zone with a slow burning propellant sufficient to initiate the fracture. Thereafter, fast burning propellant present in the total charge is ignited to supply large volumes of gas at a pressure sufficient to extend the initiated fracture.

3,630,285  
ACIDIZING HIGH-TEMPERATURE WELLS  
Edwin E. Claytor, Jr., and Loyd W. Jones, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed May 22, 1970, Ser. No. 39,868

Int. Cl. E21b 43/27

U.S. Cl. 166—300

10 Claims

A high-temperature earth formation is acidized by injecting down a well and into the formation a water-soluble ester of an organic carboxylic acid which forms a calcium salt which is also water-soluble. The formation should be at a temperature of at least about 200° F., and preferably at least about 300° F. Water may be injected before, after, or with the ester. The well is preferably shut-in after injecting the ester to permit more complete hydrolysis of the ester before the well is returned to its usual operation. Various combinations of esters or combinations of esters and free acids can be used. The ester may be injected as a solution in aqueous or nonaqueous solvents. Preferred esters are methyl formate and ethyl acetate.

3,630,286

# PROCESS FOR REMOVING WATER FROM A BOREHOLE USING POLYMERIC FOAMING AGENT

Leonard John Persinski, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Sept. 28, 1970, Ser. No. 76,217

Int. Cl. E21b 21/00

U.S. Cl. 166—309

4 Claims

An improved process for removing water from boreholes and the like comprising using as a foaming agent a copolymer of acrylamide and diacetone acrylamide.

## ERRATUM

For Class 168—28 see:  
Patent No. 3,630,289

3,630,287

# FIRE-EXTINGUISHING APPARATUS FOR OVENS AND THE LIKE

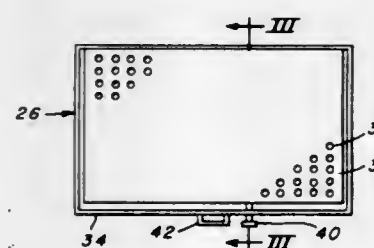
Arnold S. Gold, 1325 Woodland Drive, Monroeville, Pa.

Filed May 20, 1970, Ser. No. 39,063

Int. Cl. A62c 3/00

U.S. Cl. 169—2 R

5 Claims



Fire-extinguishing apparatus, particularly adapted for use in extinguishing grease fires in cooking ovens and the like, characterized in that the fire extinguishing apparatus is built-in and becomes part of the oven itself so that upon occurrence of a fire it is necessary only for a housewife or other person using the oven to depress a button to actuate the extinguisher, either electrically or mechanically, to put out a fire within the oven.

3,630,288

# FIRE PROTECTION DEVICE FOR VEHICLES

Adolphe Tiberti, 6 Rue Roubo, Paris 11e; Antoine Nobilio, 37 Blvd. de Reuilly, Paris 12e, and Abraham Kotyk, 14 Avenue de la Republique, 94 Creteil, all of France

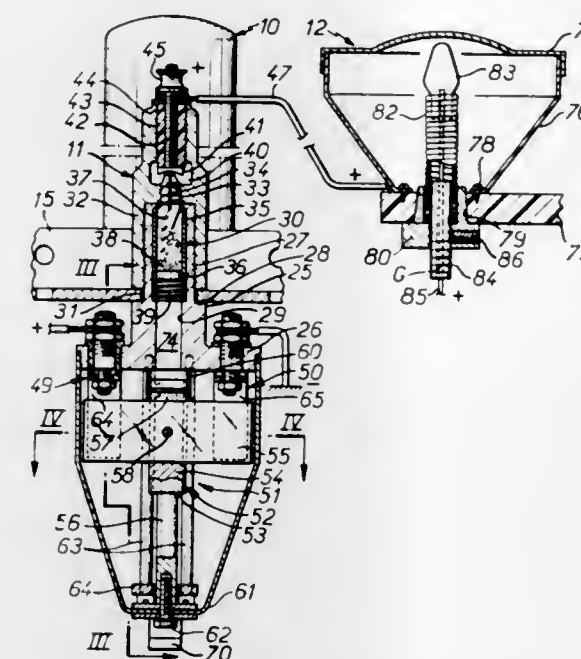
Filed Dec. 23, 1969, Ser. No. 887,624

Claims priority, application France, Dec. 24, 1968, 180342

Int. Cl. A62c 3/00

U.S. Cl. 169—2 A

12 Claims



A fire protection device is mounted in an automobile and includes a switch responsive to a severe shock caused in an accident. An explosive cartridge is electrically connected to the switch for detonation and is mounted in a hollow body. A shaft having one end normally adjacent to the hollow portion of the body supports a switch blade normally connected in the ignition circuit and is adapted to engage a lever for operating a fire extinguisher. The shaft is slidably mounted and guided for movement between several columns. In response to a severe shock the explosion of the cartridge causes the shaft to move from its normal position thereby simultaneously opening the ignition circuit and actuating a fire extinguisher. All the elements but for the shock responsive switch are preferably mounted on a single support on the body of the automobile.

3,630,289

METHOD OF PROVIDING AND APPLYING A HORSESHOE AND HORSESHOE PROVIDED AND APPLIED IN ACCORDANCE WITH SAID METHOD  
Ake Wilhelm Norberg, Valhallavagen 49, 114 22, Stockholm, Sweden

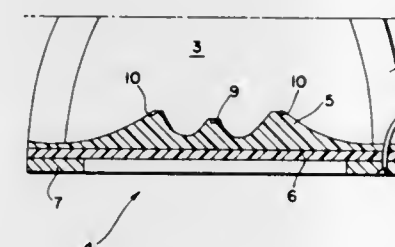
Filed Nov. 25, 1969, Ser. No. 879,875

Claims priority, application Sweden, Dec. 9, 1968, 16822/68

Int. Cl. A01H 07/02

U.S. Cl. 168—28

10 Claims



A padded horseshoe comprising a polymeric hoof pad completely filling the cavities between the frog and the horn

wall underneath a horse hoof and a wear shoe, said horseshoe nailed to said hoof.

3,630,290

# HYDRAULIC POWER LIFT SYSTEM FOR TRACTOR AND IMPLEMENT

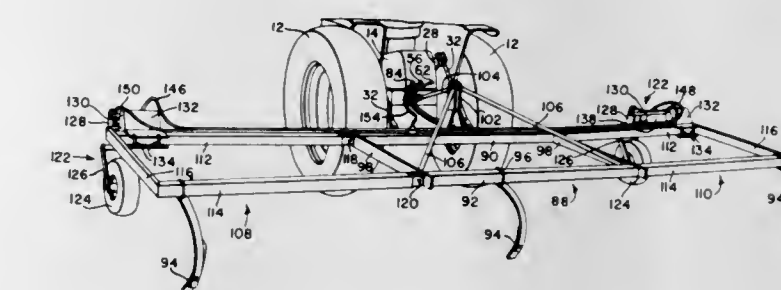
Lamar Williams; Kenneth Earl Murphy, both of Cedar Falls, and Richard Wayne Hook, Des Moines, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 28, 1969, Ser. No. 819,649

Int. Cl. A01b 63/112, 63/122

U.S. Cl. 172—7

25 Claims



An integrally mounted agricultural implement is provided with a pair of outrigger frames pivotally connected to a center frame for independent vertical movement. The outrigger frames are raised and lowered by vertically adjustable wheels operated by hydraulic cylinders. The hydraulic cylinders on the outrigger frames are connected in series with each other and in series with the tractor rockshaft cylinder. The lift system increases the lift capacity of the tractor, permits the use of wider integral implements, permits wide integral implements to follow the ground contour, and retains full draft control of the entire implement.

3,630,291

# DISC HARROW

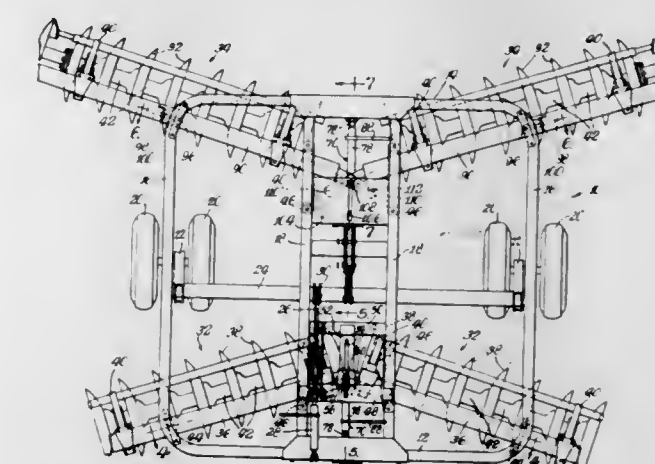
George E. Womble, Kewanee, and Lorin H. Schwartz, Kankakee, both of Ill., assignors to Kewanee Machinery & Conveyor Co., Kewanee, Ill.

Filed June 18, 1970, Ser. No. 47,339

Int. Cl. A01b 7/00, 21/08

U.S. Cl. 172—581

8 Claims



A disc harrow including a generally rectangular frame structure having front and rear pairs of disc gangs supported thereon, the front disc gangs having intermediate portions supported for longitudinal sliding movement and inner ends connected to a common connecting pin movable longitudinally of the frame structure, the rear disc gangs including intermediate portions pivotally connected to the frame structure adjacent the rearward corners thereof and inner end portions having elongated slots receiving a common connect-



ing pin movable longitudinally of the harrow, and adjustment means associated with each of the connecting pins for selective movement thereof to vary the angular relationship between the disc gangs and the longitudinal axis of the harrow.

3,630,292

**VIBRATORY HAMMER DRILL**

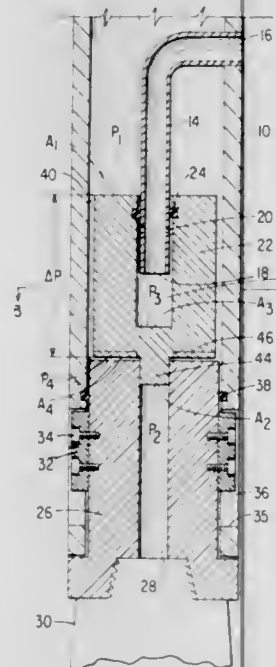
Renic P. Vincent, deceased, late of Tulsa, Okla. (by Meta Luella Vincent, administratrix), assignor to Amoco Production Company, Tulsa, Okla.

Filed Mar. 9, 1970, Ser. No. 17,409

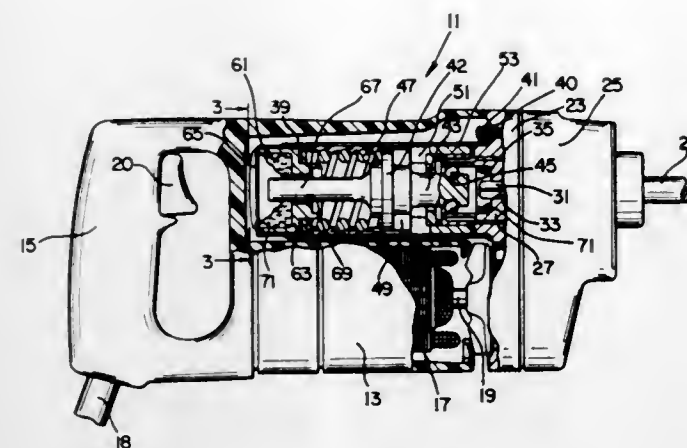
Int. Cl. B23g 5/00; E21c 7/00

U.S. Cl. 173-17

8 Claims



hammer mechanism adapted to deliver a series of longitudinal hammer blows to the rear end of the tool bit. The



hammer mechanism is constructed in a novel manner to insure distribution of lubricating grease throughout.

3,630,294

**SELF-EXCITED OSCILLATOR**

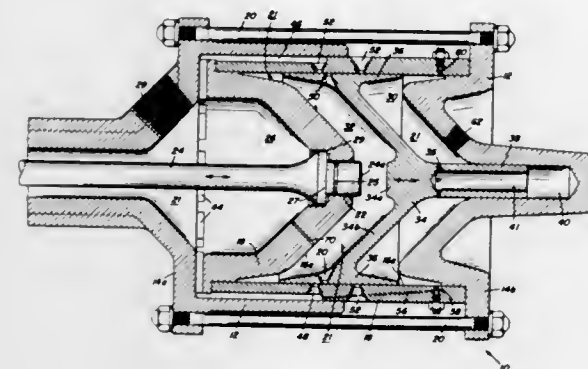
John V. Bouyoucos, and Boyd A. Wise, both of Monroe County, N.Y., assignors to General Dynamics Corporation

Filed Jan. 5, 1970, Ser. No. 667

Int. Cl. E21b 1/00; B25d 9/00

U.S. Cl. 173-136

10 Claims



This invention relates to a fluid-actuated percussion tool for applying repeated blows to a drill bit in the drilling of wells. The tool is connected to the lower end of the drill string just above the bit. The tool includes a hammer slideably mounted within the housing and an axially hollow anvil fitted within the housing below the lower end of the hammer. The hammer has a bore extending from the upper end which seats over a center guide tube which is in communication with the exterior of the tool. The lower end of the hammer is closed and forms a valve which seats with the upper end of the anvil. Differential areas and changing pressures on the hammer cause it to reciprocate and repeatedly strike the anvil.

3,630,293

**CLOSED LUBRICATION SYSTEM**

Robert G. Moores, Jr., Cockeysville, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Oct. 2, 1970, Ser. No. 77,643

Int. Cl. B25d 11/00

U.S. Cl. 173-117

8 Claims

A portable electric device comprising a housing having an electric motor disposed therein. The motor includes a rotatable shaft carried by bearings supported upon the housing. The motor shaft rotates an output member which carries a rotatable tool bit. In addition, the motor shaft actuates a

A self-excited pneumatic oscillator is described which includes a reciprocating hammer member adapted to impact an anvil. The hammer is disposed in a housing structure which includes a porting arrangement. As the hammer moves towards engagement with the anvil, it in sequence opens a discharge port and then an intake port in communication with a source of pressurized air. The space between the front surface of the hammer and an extended housing section which supports the anvil defines an active cavity. The space between the housing and the rear surface of the hammer defines a passive spring cavity. The hammer and these cavities define a system which is acoustically resonant and oscillates at a frequency determined by the dimensions and masses thereof to convert the flow of pressurized air into reciprocating motion of the hammer and provides isolation (minimizing pressure fluctuations) between the oscillator and the air source.

3,630,295

**STEERING APPARATUS FOR SOIL-BURROWING MOLE**

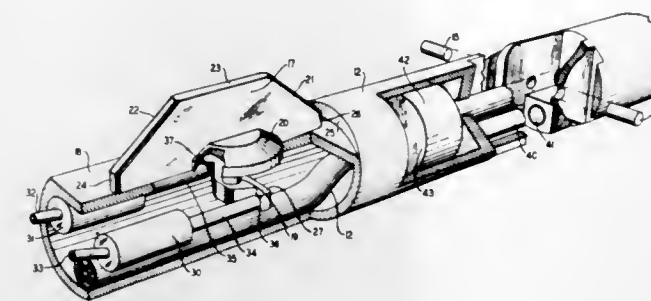
James C. Coyne, New Providence, and Robert G. McCoy, Whippany, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 10, 1969, Ser. No. 883,786

Int. Cl. E21b 7/04

U.S. Cl. 175-73

6 Claims



This application discloses a steering scheme for an earth-burrowing device. The scheme involves an articulatable tail with an active fin or fins. The fin stabilizes the device in steering situations where control would otherwise be lost, by permitting simultaneous steering and roll actions. In one embodiment, the fin protrudes a fixed distance into the soil stream but is pivoted perpendicular to the tail sleeve so that its angle of attack provides variable direction and speed of roll. In another, two retractable fins are used to impart respectively clockwise and counterclockwise rotation.

3,630,296

**WELL BORE SIDEWALL SAMPLER TOOL**

Luther Bullard, Casper, Wyo., assignor to Western Tool Corporation

Filed Dec. 30, 1969, Ser. No. 889,090

Int. Cl. E21b 9/34

U.S. Cl. 175-77

6 Claims



A well bore sidewall sampling tool comprises a casing secured to the end of a drill pipe and mounting therein a sample core cutter head carrying a flexible collection receptacle. An actuating mechanism within the casing, operated by fluid pressure applied through the drill pipe, extends the cutter head outwardly into sampling engagement with the sidewall of the well bore. The drill pipe is lifted to cause the head to bite into and dig a channel in the sidewall and obtain a sample therefrom.

3,630,297

**DEVICE FOR BORING TRENCH SHAFTS**

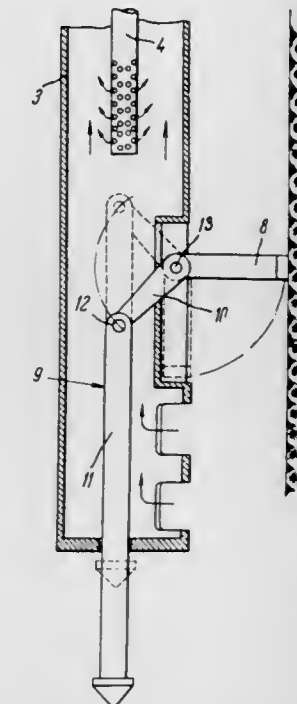
Petr Stepanovich Neporozhny, 3 Frunzenskaya ulitsa, 7, kv. 18; Evgeny Pavlovich Kravtsov, B. Dekabrskaya ulitsa, 3, kv. 20, both of Moscow; Semen Ilich Milkovitsky, ulitsa Nikolsko-Botanicheskaya, 2, kv. 10, and Roman Nikiforovich Tkachenko, ulitsa Rognedinskaya, 3, kv. 4, both of Kiev, all of U.S.S.R.

Filed Jan. 5, 1970, Ser. No. 613

Int. Cl. E21c 9/00, 11/00

U.S. Cl. 175-220

2 Claims



An apparatus for boring trench shafts in which the frame of a drill cat supports a boom from which a guide is suspended and the guide is rigidly connected at its upper end with the frame. A pilot member is mounted adjacent the lower end of the guide and is extensible in the direction of the trenching.

3,630,298

**ELECTRICAL WEIGH SCALE WITH DIGITAL CUTOFF SYSTEM**

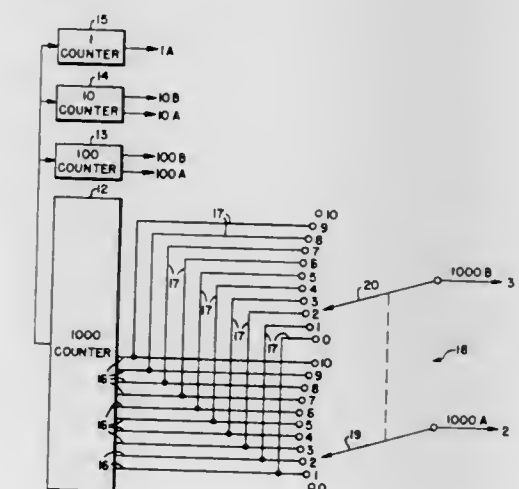
Robert F. Orr, and William C. Susor, both of Toledo, Ohio, assignors to The Reliance Electric and Engineering Company, Toledo, Ohio

Original application Dec. 16, 1968, Ser. No. 783,831. Divided and this application Aug. 14, 1970, Ser. No. 63,734

Int. Cl. G01g 23/37, 19/417, 23/365

U.S. Cl. 177-46

3 Claims



A digital cutoff system comprising a weighing scale, means for producing digital signals in accordance with load upon



the scale, means for selecting a desired weight, and coincidence means for detecting coincidence between the digital signals and the desired weight and for detecting in at least one number place an additional digital signal greater than the desired digital signal in the number place. The additional digital signal forces the coincidence means to produce a cut-off signal even though the digital signals are greater than the desired weight.

3,630,299

### PLATFORM WEIGHING SCALE AND LOADING ADAPTER THEREFOR

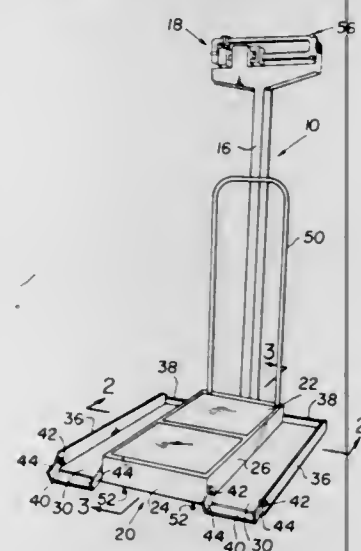
Raoul H. Albagli, Jamaica, N.Y., assignor to Scale Electronics Development Inc., Wantagh, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,673

Int. Cl. G01g 21/22

U.S. Cl. 177-145

9 Claims



A portable adapter for weighing scale having a platform wherein the portable adapter has a top surface positioning upon the platform to form a part of the scale and for movement therewith. The adapter structure also includes tracks and ramps such that when the same is positioned upon a weighing scale, the scale is converted to enable a wheelchair and patient to be moved upon the scale for simultaneous weighing.

3,630,300

### ADJUSTABLE TRUSS FOR TORSION BALANCES

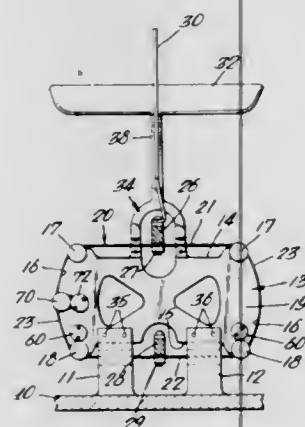
Warren D. Weinstein, Huntington Station, L.I., N.Y., assignor to Henry Troemner Inc., Philadelphia, Pa.

Filed Mar. 25, 1969, Ser. No. 810,286

Int. Cl. G01g 1/24

U.S. Cl. 177-196

15 Claims



A torsion balance has a pair of load pans carried by trusses disposed between opposite ends of a pair of vertically spaced

balancing beams which pivot on a central support truss. Each truss has a torsion band with an upper active run stretched between fixed upper corner spools and a lower active run stretched between movable lower corner spools. The lower corner spools engage cams which are rotated to vary the distance between the upper and lower active runs of the band to adjust the sensitivity of the balance to eccentric loads on its pans.

3,630,301

### CONVERTIBLE SNOW MOTORCYCLE

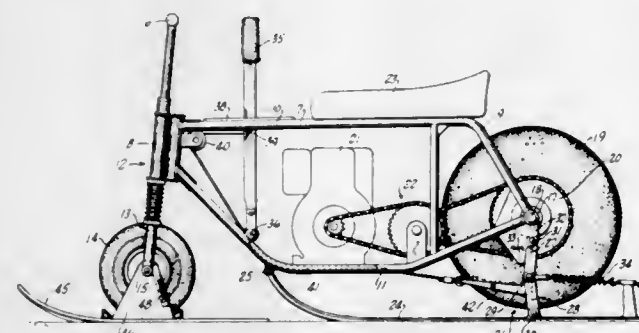
Jon M. Henricks, Route 22, Long Grove, Ill.

Filed Feb. 4, 1970, Ser. No. 8,621

Int. Cl. B62m 29/00; B62k 13/00

U.S. Cl. 180-6 A

8 Claims



A riding-type vehicle supported at its front by a steerable ski and at its rear selectively by either a second ski or a pair of power-driven wheels with large balloon tires, as determined by the rider.

3,630,302

### ARTICULATED VEHICLE HAVING CONTOUR CONTROL

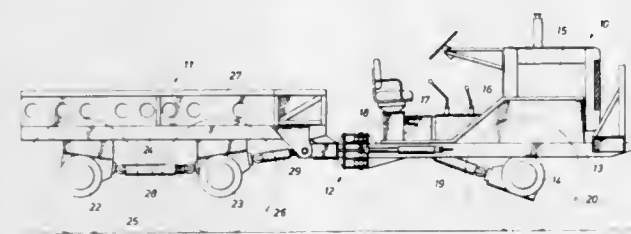
John G. Holland, Sr., 648 Rocky River, Houston, Tex.

Filed Dec. 10, 1969, Ser. No. 883,701

Int. Cl. B62d 59/00

U.S. Cl. 180-12

12 Claims



In accordance with an illustrative embodiment of the present invention, an articulated vehicle comprises a front motorized unit and a rear load-carrying unit connected together by a coupling that provides a vertical steering axis, a longitudinal horizontal roll axis and a transverse horizontal pivot axis to enable the wheels of said units to conform to the contour of the terrain over which said vehicle passes, and motor means reactive in a vertical plane and with respect to said horizontal pivot axis for selectively forcing said wheels to conform to the contour of said terrain.

3,630,303

### FRONT SUSPENSION FOR A FRONT DRIVE VEHICLE

Armand Froumajou, Pontoise, France, assignor to Automobiles Peugeot, Paris and Regie National des Usines Renault, Billancourt, France, part interest to each

Filed Feb. 25, 1969, Ser. No. 802,171

Claims priority, application France, May 15, 1968, 151820

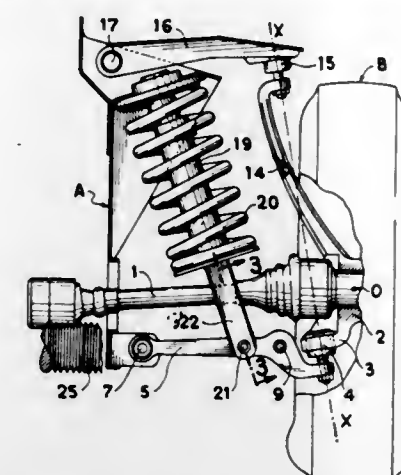
Int. Cl. B60k 17/30; B60g 3/20

U.S. Cl. 180-43

4 Claims

A front suspension for a front drive vehicle having lower and upper wishbones and a damping support device including

a hydraulic jack and a coaxial coil spring. The lower part of the hydraulic jack is connected to the transverse support arm arrangement comprising a door lock mechanism for each of said doors.



of the lower wishbone through a yoke whereby the hydraulic device straddles the transmission shaft of the vehicle. The pivot centers of the rear arm of the lower wishbone are on a line perpendicular to the wheel plane and the pivot centers of the steering link rod connecting the swivel axle unit of the wheel to the steering rack are on a line making an obtuse angle with the wheel plane.

3,630,304

### OPTIMAL CONTROL SYSTEM FOR AN ELECTRIC MOTOR DRIVEN VEHICLE

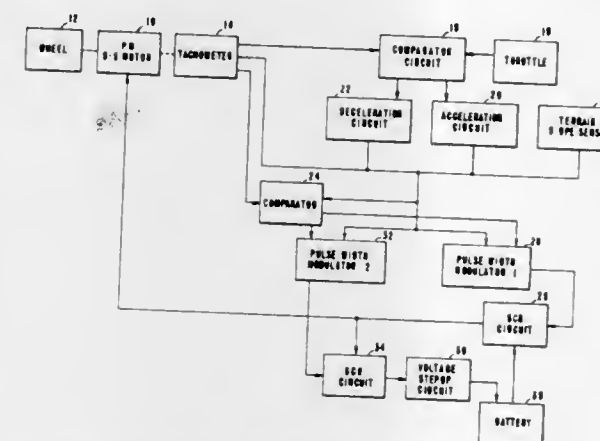
Yilmaz E. Sahinkaya, Monrovia, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 28, 1969, Ser. No. 880,831

Int. Cl. H02p 5/00; B601 7/12

U.S. Cl. 180-105 E

14 Claims



Operating conditions experienced by a battery-operated vehicle driven by one or more permanent magnet or separately excited DC motors are sensed and converted into a control signal. The control signal is applied to a pulse width modulator which controls the conduction periods of SCR's in such a way that the average motor armature voltage is proportional to the control signal. In a motoring mode the pulse width modulator operates SCR's to supply current from the battery to the motor armature circuit. This mode usually occurs when the vehicle is moving uphill or accelerating on a level terrain. In a generating mode the pulse width modulator operates SCR's to supply current from the motor armature circuit to the battery. This occurs when the vehicle is moving downhill or is decelerating on a level terrain. The required mode of operation is accomplished automatically by the action of a motor armature current direction sensing circuit.

3,630,305

### VEHICLE DOOR LOCK ARRANGEMENT

Kenichi Kazaoka, Asahi-machi, Kariya-shi, Japan, assignor to Aisin Seiki Company Limited, Kariya-shi, Aichi-ken, Japan

Filed Feb. 24, 1969, Ser. No. 801,637

Claims priority, application Japan, Feb. 23, 1968, 43/11120

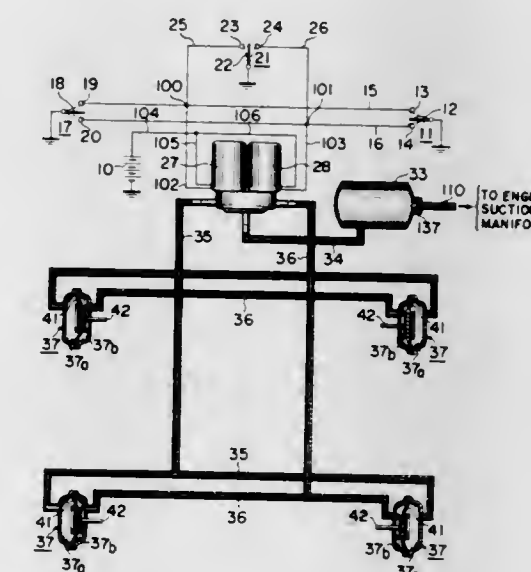
Int. Cl. B60j 5/00

U.S. Cl. 180-113

12 Claims

This invention relates to a door lock arrangement for an automotive vehicle having a plurality of vehicle doors, said

Each of the door lock mechanisms comprises a mechanical latching means consisting of a ratchet wheel and a ratchet pawl; and a pneumatic cylinders. Each of the door lock mechanisms is mounted on one of the vehicle doors. All the pneumatic cylinders are connected to a negative pneumatic pressure source such as the engine suction manifold. The cylinder space of each of the pneumatic cylinders is divided into two. The pneumatic communication of these two cylinder chambers is controlled by an electromagnetic valve assembly which is capable of being actuated by means of any



one of a plurality of electric switches, at least one of which is manually operated by the vehicle driver and a separate one of which is actuated by a vehicle running sensing means such as a speed change lever.

3,630,306

### IGNITION-CONTROLLED MECHANISM FOR BLOCKING AUTOMOTIVE FUEL LINE

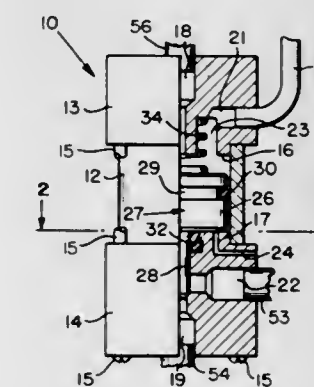
Victor Shur, Henrietta, N.Y., assignor to Ralph T. Cerame, Rochester, N.Y., a part interest

Filed Dec. 17, 1969, Ser. No. 885,666

Int. Cl. B60r 25/04

U.S. Cl. 180-114

9 Claims



A first valve in the fuel line of an automotive vehicle is normally spring loaded to closed position in which it blocks the fuel line, when the vehicle's ignition is turned off. The valve is connected to the manifold of the vehicle's engine to be drawn by vacuum to open position, when the engine is running. A second valve, which is closed when the vehicle's ignition key is in ON position, but which is opened, when the ignition key is turned OFF, causes the manifold vacuum merely to suck in air, without opening the first valve, when the engine is turned over, with the ignition OFF so that a would-be thief, without a key to turn on the ignition, cannot start the vehicle.

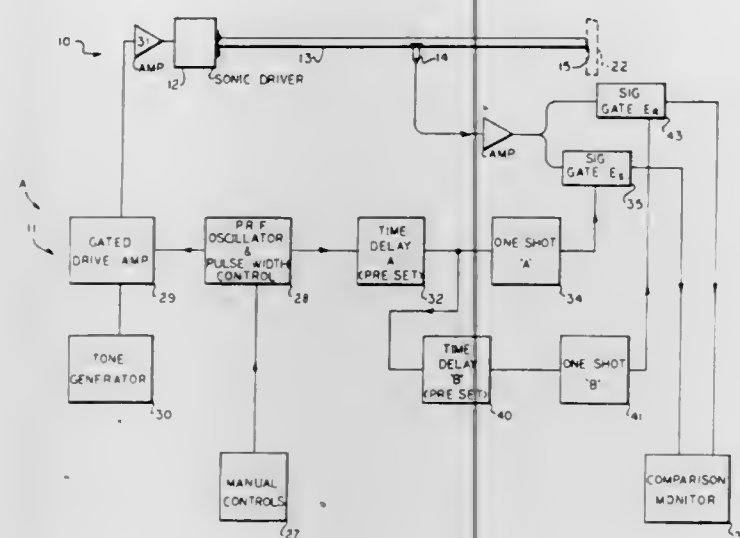


### 3,630,307 MECHANISM AND METHOD FOR MEASURING SOUND ABSORPTION

Edwin C. Kamps, San Diego; Irwin A. Glibbery, Chula Vista, both of Calif., and Billy G. Cook, Booneville, Ark., assignors to Rohr Corporation, San Diego, Calif.  
Filed Aug. 1, 1969, Ser. No. 846,732  
Int. Cl. G01v 1/06

U.S. Cl. 181—5

10 Claims



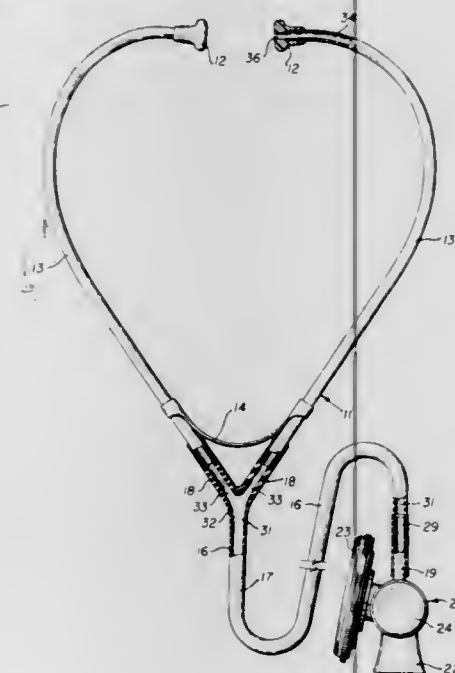
An electromagnetic tone generator transmits a tone burst comprising sound waves of known wavelength and intensity into one end of a tube, the other end of which tube is fitted against the surface of a material which reflects the sound waves back along the interior of the tube with a reduction in intensity proportional to their loss of acoustical energy. A microphone is exposed interiorly of the tube at a known distance from each end of the tube. Electronic time delay and gate circuitry feed into a monitoring circuit the electrical oscillations from the microphone produced by a selected series of clear sound waves of the original and the reflected sound bursts for a comparison of amplitudes.

### 3,630,308 STETHOSCOPE

Abe Ravin, 45 South Dahlia Street, Denver, Colo.  
Filed May 28, 1969, Ser. No. 828,507  
Int. Cl. A61b 7/02

U.S. Cl. 181—24

11 Claims



A stethoscope for improved auscultation providing small bell and diaphragm chest pieces selectively interconnectable

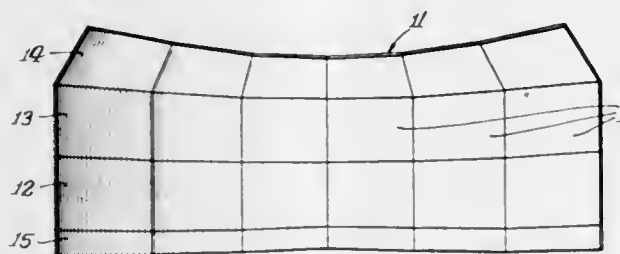
to an air column channel having binaural branch ear tube components leading to the earpieces. Sound losses and attenuation are minimized by avoidance of abrupt changes in the volume and flow direction for the air columns and by a pivoting selector permitting direct flow connection of either chestpiece to the earpieces through a shorter air channel. Earpieces are movable to adjusted positions with respect to the ear tubes for improved fit, and the ear tube components are provided with tension adjustment features and are further pivotally mounted to facilitate storage.

### 3,630,309 PORTABLE SHELL

Jerry A. Wenger; Daryl D. Douglas, and Erich Harfmann, all of Owatonna, Minn., assignors to Wenger Corporation  
Filed June 10, 1969, Ser. No. 831,917  
Int. Cl. E04b 1/99

U.S. Cl. 181—30

27 Claims



A portable acoustical shell structure arranged for reflecting sound. The shell structure arranged for reflecting sound. The shell structure is freestanding and is portably carried on a base which may be provided with suitable casters. The shell structure comprises a plurality of panels which are selectively disposed in an extended sound-reflecting arrangement or in different storage arrangements as desired. The panels are movably connected to the frame of the structure for facilitated rearrangement. The uppermost panel is adjustably mounted for controlling height of the shell structures and direction of projection of the sound. A plurality of the shell structures may be used in side-by-side arrangement to define sound-reflecting walls, or shells, such as choral and symphonic shells.

### 3,630,310 SOUND-ABSORBING FENCE

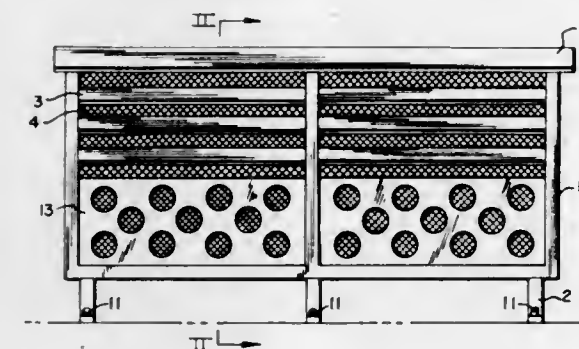
Kurt Federer, Rapperswil, Switzerland, assignor to U. F. Chemical Corporation, Woodside, N.Y.  
Filed Oct. 6, 1970, Ser. No. 78,492

Claims priority, application Switzerland, Oct. 17, 1969, 15610/69

Int. Cl. E01f 7/00; E04b 1/74

U.S. Cl. 181—33 G

8 Claims



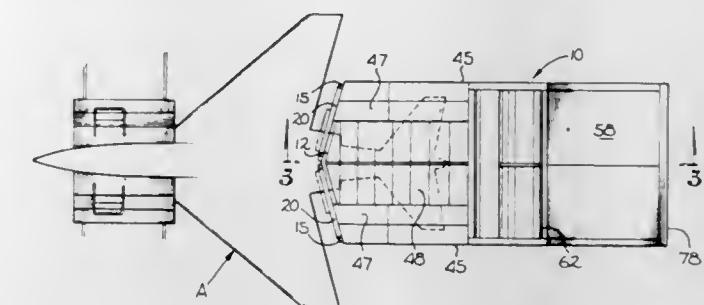
Sideline noise generated by airplanes on a runway, and noise generated by vehicles on a road may be contained by a fence essentially consisting of a supporting framework, a solid upright backing panel on the framework, and a layer of sound-absorbing foamed urea-formaldehyde or other plastic

### 3,630,313 NOISE SUPPRESSOR SYSTEM

Cloyd D. Smith, 14928 La Cumbre Drive, Pacific, Calif.  
Filed Nov. 5, 1969, Ser. No. 874,259  
Int. Cl. B64f 1/26; F01n 1/14

U.S. Cl. 181—33 HB

10 Claims



### 3,630,311 JET ENGINE NOZZLE SYSTEM FOR NOISE SUPPRESSION

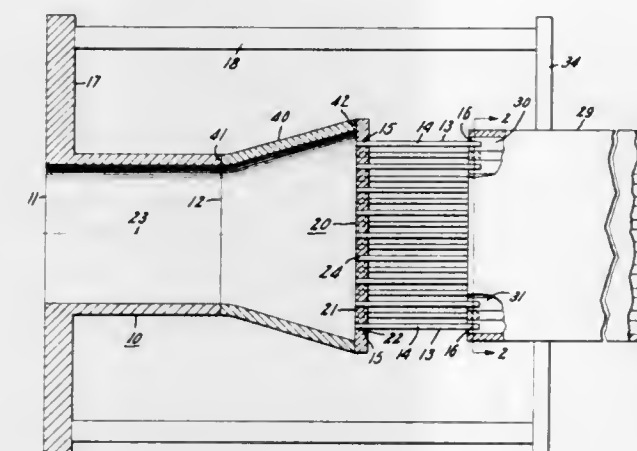
Henry T. Nagamatsu, Schenectady, and Russell E. Sheer, Jr., Cohoes, both of N.Y., assignors to General Electric Company

Filed July 31, 1969, Ser. No. 857,260

Int. Cl. F01n 1/14; B64d 33/06

U.S. Cl. 181—33 HC

3 Claims



A plurality of secondary nozzles or tubes and a plurality of shrouds, each coupled to the outlet of a respective tube, are aligned with the axis of a primary nozzle and coupled thereto to provide a nozzle system of short axial length in which noise emission is substantially reduced over what would be emitted by the exhaust from the primary nozzle in the absence of such tubes and shrouds.

### 3,630,312 SOUND ABSORPTIVE HONEYCOMB SANDWICH PANEL WITH MULTILAYER, POROUS, STRUCTURAL FACING

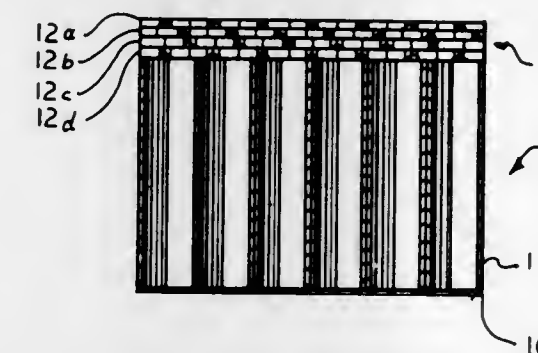
James R. Woodward, El Cajon, Calif., and Billy G. Cook, Booneville, Ark., assignors to Rohr Corporation, San Diego, Calif.

Filed Nov. 7, 1969, Ser. No. 874,904

Int. Cl. E04b 1/84

U.S. Cl. 181—33

3 Claims



A sound absorptive honeycomb sandwich panel has a honeycomb core and a light sheet metal backing applied to one end thereof, and has also a porous facing comprising a plurality of layers of foraminous material of substantial structural strength with the layers arranged in random, closely superposed relation, applied to the other end thereof. The multilayer facing, the backing and the core are all integrally interconnected to form the sandwich panel.

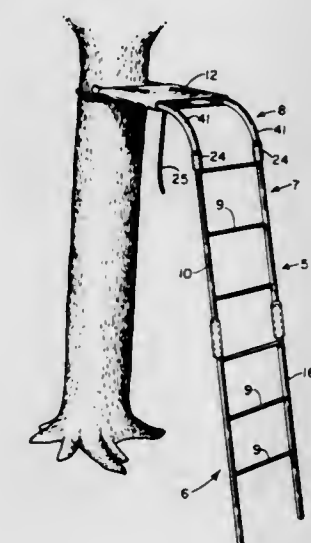
### 3,630,315 SEAT SCAFFOLD

Robert A. Meyer, 133 No. California St., Hastings, Nebr.  
Filed Sept. 8, 1970, Ser. No. 70,266  
Int. Cl. E04g 3/16

U.S. Cl. 182—142

11 Claims

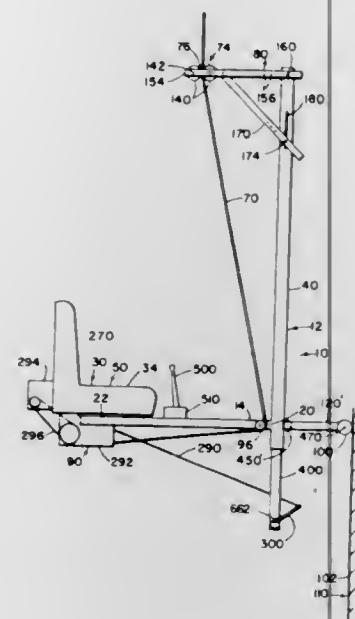
A scaffold suspended from a single cable and having an operator-supporting area substantially spaced rearwardly from its forward side, a cable guide means attached to an upper part of the frame of the scaffold and disposed a substantial and preferably adjustable distance from a forward



A lightweight, portable hunting stand including two or more ladderlike sections and an upper curved platform section upon which the hunter sits. The lower section rests upon the ground and the upper section leans against a tree trunk.



side of the frame and toward a position above the position of the operator, whereby the downward force of the weight of the operator is partially counterbalanced, wheel means on the forward side of the frame and below the operator's position.



tion for engaging the outer surface of a building so as to counteract the remainder of the downward force of the operator on the frame, the wheels being adjustably positionable greater and lesser distances to the right and left of the frame respectively, a winch on the frame attaching the cable.

3,630,316

#### LUBRICATING DEVICE FOR ENCLOSED MOTOR COMPRESSOR UNITS

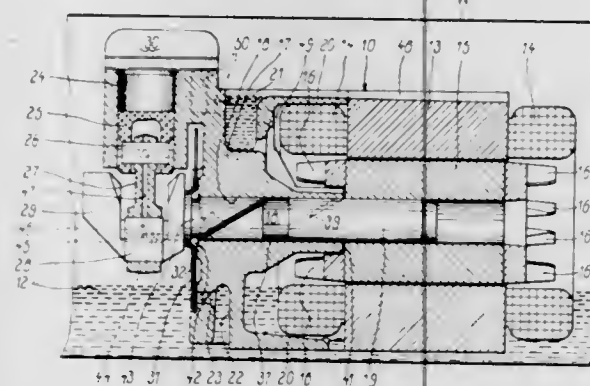
Pietro Sillano, and Silvano Perlino, both of Pavia, Italy, assignors to Necchi Societa per Azioni, Pavia, Italy

Filed Mar. 4, 1970, Ser. No. 16,388

Claims priority, application Italy, Mar. 7, 1969, 32406 A/69  
Int. Cl. F16n 17/00

U.S. Cl. 184—6.16

3 Claims



An assembly for lubricating an enclosed horizontal compressor motor comprising a disc mounted on the motor shaft adjacent a flat surface containing a groove which communicates with a lower oil reservoir and an upper sump, from which sump lubricant flows into a recess in said motor shaft and thence through oppositely extending helical grooves in said motor shaft to rotor cooling fins which spray lubricant onto stator coils and through ducts in said motor shaft and in a piston connected to said motor shaft to lubricate a piston cylinder.

#### 3,630,317 ARRANGEMENT FOR STABILIZATION OF TRUCKS

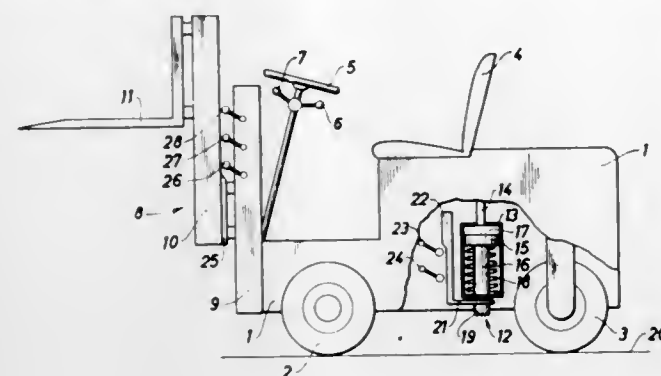
Knut Folke Jacobsson, Kulorgatan 49, 421 65, Vastra Frolunda, Sweden

Filed Oct. 24, 1969, Ser. No. 869,208

Claims priority, application Sweden, Oct. 16, 1968, 13924/68  
Int. Cl. B66b 9/20

U.S. Cl. 187—9

5 Claims



A truck equipped with lifting means at the front end thereof, has means for stabilizing the horizontal position of the truck and means controlled by the movement of said lifting means for activating or deactivating said stabilizing means.

3,630,318

#### SOLID-STATE ELEVATOR-CONTROL SYSTEM

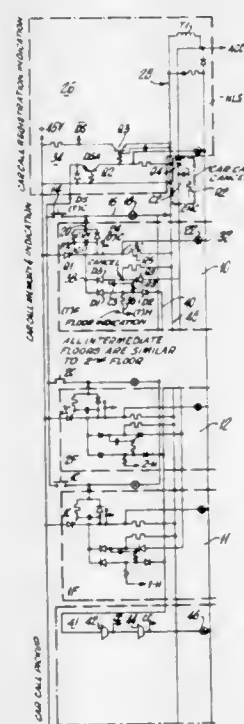
James H. Stichweh, Princeton, Ind.; Stephen A. Hornung, Neuilly-sur-Seine, France, and Paul Duckwall, III, Louisville, Ky., assignors to M. K. White Company, Inc., Louisville, Ky.

Filed Feb. 13, 1970, Ser. No. 11,042

Int. Cl. B66b 3/00

U.S. Cl. 187—29 R

24 Claims



A system for registering service calls in an automatic elevator-control system is disclosed wherein a single-wire connection is made between the car and the hall call selectors, and the indicator lights located in a centrally located control panel. That circuit includes a switch in the form of a silicon-controlled rectifier which provides sufficiently high current to operate several such indicator lamps as well as providing sufficient current to the call above and call below indicating and driving circuits. Also disclosed is a system for deriving

control signals for the call above and below circuits which comprises means for comparing the position of the elevator car with a signal derived from the service call registering circuit to direct a control signal to actuate the desired circuit in accord with the relative position of the designated car position and its present position.

3,630,319

#### ELEVATOR AND DOOR AND LOADING MECHANISMS THEREFOR

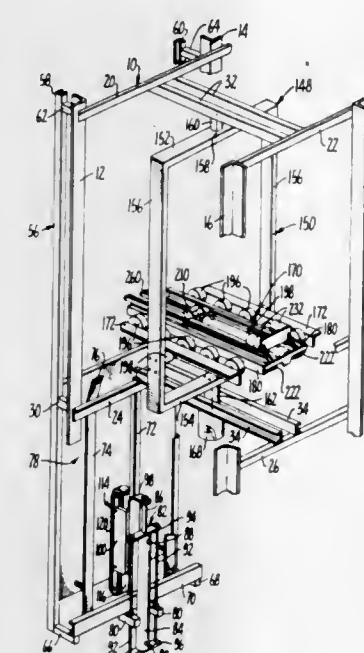
Harold Marvin Peterson, San Francisco, and Scott F. Andersen, Fairfax, both of Calif., assignors to San Francisco Elevator Company, Inc., San Francisco, Calif.

Filed Dec. 12, 1969, Ser. No. 884,652

Int. Cl. B66b 13/12

U.S. Cl. 187—58

3 Claims



A dumbwaiter-type elevator capable of being employed in an elevator shaft having hatchways disposed at peripherally spaced locations therearound. To accommodate the peripherally spaced hatchways the elevator car is provided with a rotatable load-supporting carriage and self-contained driving and indexing mechanisms for the carriage. The carriage is provided with selectively extensible and retractable load-transferring mechanism to accommodate the smooth transition of a load between the hatchways and the car and maintain the load in a level condition while in the car. The car also carries powered closure members which are movable between open and closed conditions relative to the load-supporting carriage. The hatchways are provided with doors and a selectively operable mechanism is provided to move the doors between open and closed conditions responsive to corresponding movement of the closure members. A common hydraulic power circuit carried by the car powers all mechanisms supported on the car and, through the operation of the closure member, also powers the hatchway doors.

3,630,320

#### BRAKE DISK AND SUPPORT MEANS THEREFOR

Heinz Lochmann, Kuckucksweg 5, Oberstedten, Taunus, Germany

Filed July 28, 1969, Ser. No. 845,241

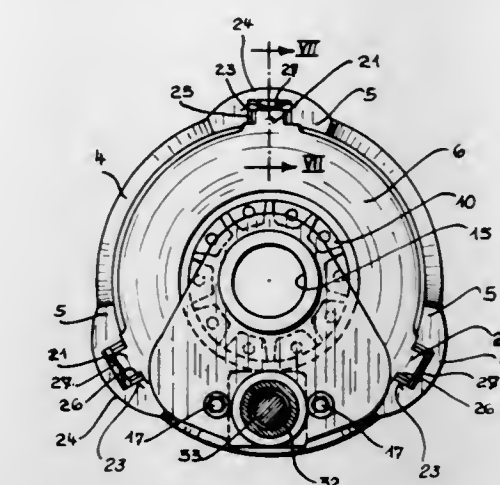
Int. Cl. B60t 1/06

U.S. Cl. 188—18 A

6 Claims

A disk brake is disclosed for a rotating element mounted on an axle journaled in an axle housing. The rotating element, e.g. a wheel, windlass or winch drum, is provided with a brake-disk carrier having a plurality of angularly spaced axial projections reaching in the direction of the axle housing. The disk and these projections are provided with grooves and mating lugs enabling axial movement of the disk, the

grooves being bridged to prevent distortion. One brake shoe is mounted on the axle housing and confronts the disk surface.



face remote therefrom while the other brakeshoe is shiftably actuable disposed in a structure offset from the axle housing but secured thereto.

3,630,321

#### SURGE BRAKE DAMPER

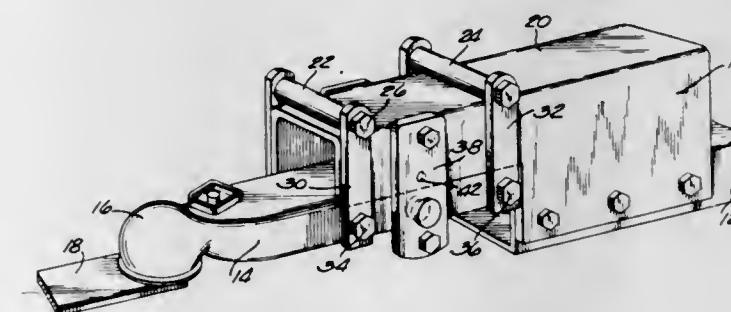
Harold S. Hollnagel, 918 Laramie Lane, Milwaukee, Wis.

Filed June 5, 1970, Ser. No. 43,662

Int. Cl. B60t 7/20

U.S. Cl. 188—112

4 Claims



In use, there is frequent relative motion between the surge brake actuator housing (and the associated trailer) and the hitch bar. The arms fixed to the housing hold the friction pads against the hitch bar to damp the relative motion. This damping replaces or supplements the hydraulic shock absorber usually associated with surge brake units. The loading applied to the friction pads is adjustable to control the rate of brake application.

3,630,322

#### DYNAMIC BRAKE

James L. Keely, Wayzata, and Larry D. Quanrud, Minneapolis, both of Minn., assignors to Washington Scientific Industries Inc., Long Lake, Minn.

Filed July 27, 1970, Ser. No. 58,253

Int. Cl. B60t 7/12

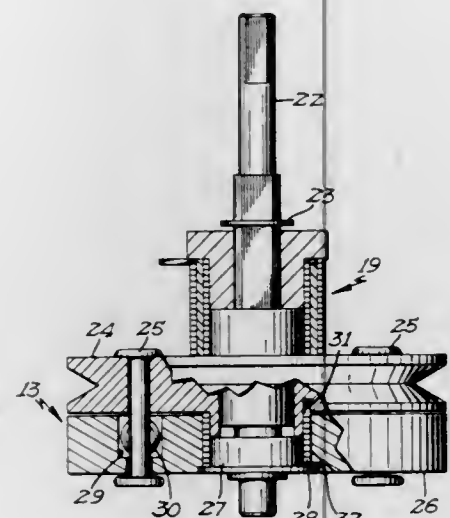
U.S. Cl. 188—135

4 Claims

A dynamic-braking apparatus adapted to halt film movement in a microfilm viewer such that individual film frames may be easily selected. Particularly useful at high-film speeds, this braking apparatus comprises a pulley to receive braking torque and a weight which is connected to the pulley by a torsion spring. The braking force on the pulley is opposed by the inertial force of the weight, causing end displacement of the spring, resulting in its contraction and its transmission of braking torque to the shaft from which the film is being fed. The degree and rate of brake torque transmission are further controlled by means of a further connec-



tion between the pulley and the weight which allows only limited relative movement between the parts. Compression



springs are provided to prevent "noise" and to insure return of the torsion spring to an equilibrium position.

3,630,323

**BRAKEDRUM AND HUB ASSEMBLY**

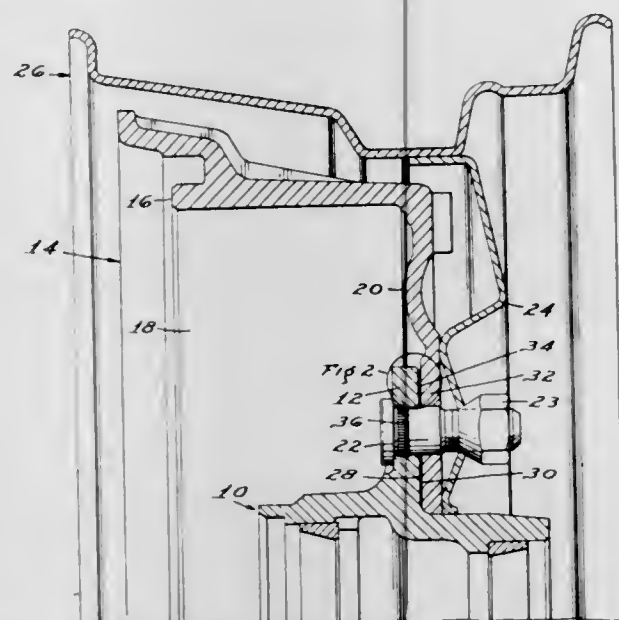
Daniel J. Hickie, Williamston, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Oct. 31, 1968, Ser. No. 772,250

Int. Cl. F16d 65/10

U.S. Cl. 188—218 R

2 Claims



An assembly of an automotive vehicle wheel hub and brakedrum and method of assembly wherein the mutually engaging mounting surfaces of the hub and drum, located in the annular zone where the drum is attached to the hub by the usual hub wheel mounting bolts, having interposed between them when properly aligned a plastic material which fills the voids between the surfaces and hardens to rigid material. This filler material eliminates distortion of the drum when the hub and drum assembly are mounted to a wheel and subjected to the clamping stress of the mounting bolts, thereby eliminating roughness, chattering and/or noise when the wheel brakes are applied.

3,630,324

**MOVEMENT CUSHIONING DEVICE**

Elvin L. Stretten, and Ivan J. Stretten, both of Union Lake, Mich., assignors to Dallas Industries, Inc., Troy, Mich.

Filed Dec. 12, 1969, Ser. No. 884,558

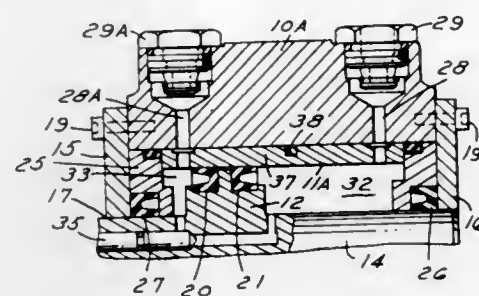
Int. Cl. F16f 9/02

U.S. Cl. 188—312

2 Claims

A movement cushioning device using compressed air having a piston dividing a cylinder into two sealed chambers and

two piston rods on the piston extending in opposite directions from the piston and outwardly of the cylinder; the piston having a metering orifice providing the only air communication between the chambers, and means for introducing compressed air to one or both of the chambers. Imposed force on



a piston rod moving the piston against the compressed air in one chamber with piston travel being restrictively allowed by the rate of throttled airflow of the metering orifice. A throttle pin is threaded in one piston rod for selectively occluding the metering orifice to provide various airflow rates from one chamber to another.

3,630,325

**SUPPORT SYSTEM FOR MOVABLE CONDUCTORS**

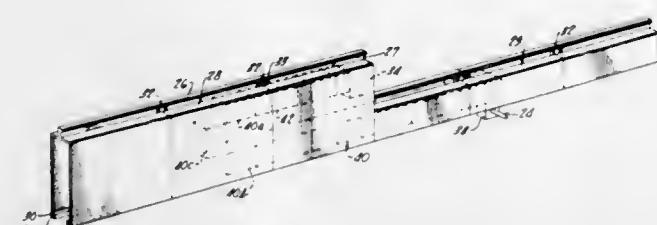
James A. Corl, San Carlos, and Stephen B. Sprague, San Jose, both of Calif., assignors to Insul-8 Corp., San Carlos, Calif.

Filed Dec. 16, 1969, Ser. No. 885,427

Int. Cl. H02g 11/00

U.S. Cl. 191—12 C

17 Claims



A segmented plastic tube having integral hinges is folded in two sections joined by a 180° loop and extended between a fixed station and a station movable with a piece of equipment along a predetermined path. Flexible conductors and conduits for providing power and fluids to the equipment extend between the stations and are confined and supported within the tube as the movable station and tube are slid within a supporting housing.

3,630,326

**ACCELERATOR AND BRAKE PEDAL COMBINATION**

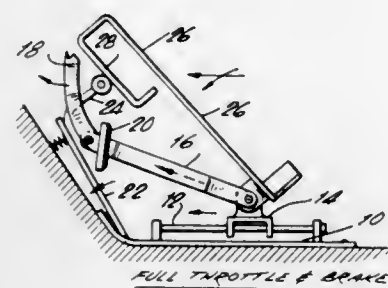
Yukinori Kawaguchi, 2740 Nakookoo St., Honolulu, Hawaii

Filed July 27, 1970, Ser. No. 58,397

Int. Cl. B60k 29/02

U.S. Cl. 192—3 S

1 Claim



A foot mounted attachment for a vehicle which replaces separate accelerator and brake pedals. With one foot in the

attachment, the vehicle can be accelerated or braked, depending upon the foot position.

3,630,327

**BRAKING AND COUPLING MECHANISM**

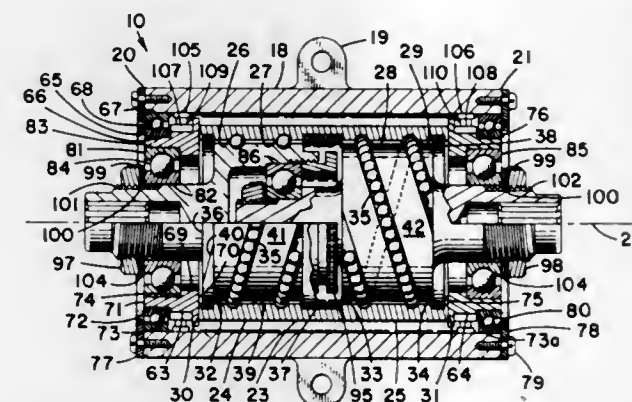
Roy A. Nelson, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Aug. 24, 1970, Ser. No. 66,419

Int. Cl. F16d 57/10

U.S. Cl. 192—8 R

18 Claims



A mechanism for connecting a reversible, rotary driving means to a load to be positioned thereby and employing a sleeve having opposite end portions engaged by oppositely directed threads or the like with input and output members that are rotatable but not translatable relative to each other. Forces imposed on the sleeve and originating in torques imposed on the input and/or output members urge the sleeve ends into braking contact with one or the other of a pair of annular members, each of which members is located at a respective end of the sleeve and is free to rotate only in a direction opposite to that in which the other of such members is free to rotate. Several modifications of the invention are disclosed.

3,630,328

**LINEAR ACTUATOR WITH BRAKING DEVICE**

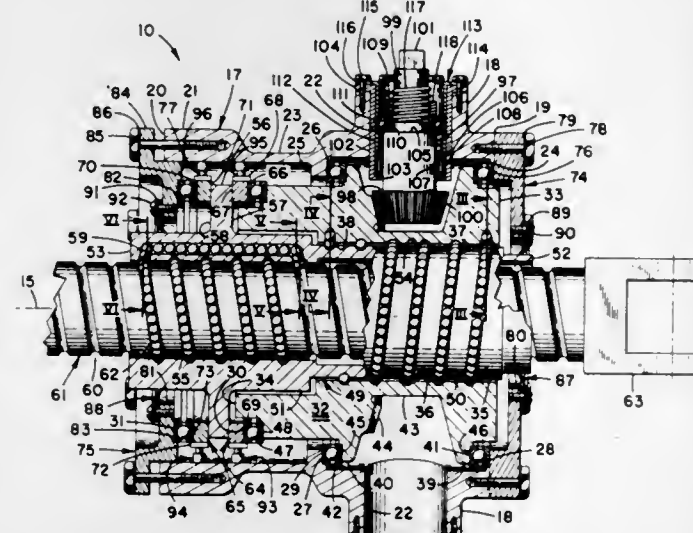
Roy A. Nelson, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Aug. 24, 1970, Ser. No. 66,423

Int. Cl. B60t 7/14; F16h 1/16

U.S. Cl. 192—8 R

11 Claims



An actuator for connecting a reversible, rotary driving means to a load to be linearly moved and positioned thereby and employing a sleeve having a flange externally formed on one end portion thereof and having an external thread or the like on the opposite end portion. An internal thread or the like, directed oppositely to the external thread, is formed in the sleeve end portion having the external flange. The sleeve

is coaxially positioned within and its external thread engaged with a generally cylindrical structure. A threaded shaft is coaxially positioned within and its thread engaged with the sleeve internal thread. Forces imposed on the sleeve and originating in torques imposed on the cylindrical structure or shaft urge the sleeve flange into braking contact with one or the other of a pair of annular members, each of which members is located at a respective side of the sleeve flange and is free to rotate only in a direction opposite to that in which the other of such members is free to rotate.

3,630,329

**BRAKING AND COUPLING DEVICE**

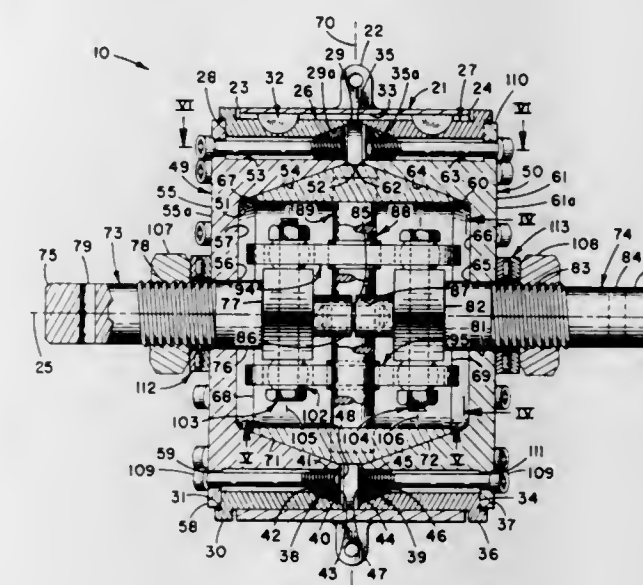
Roy A. Nelson, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Aug. 24, 1970, Ser. No. 66,509

Int. Cl. F16d 67/10

U.S. Cl. 192—8 R

13 Claims



A mechanism for connecting a reversible, rotary driving means to a load to be moved and positioned thereby and employing a sleeve connected with input and output members by means comprising a pair of pins and a pair of bellcranks. A pair of cylindrical members, each member of the pair having a recess occupying substantially all of one end, an external flange which is coplanar with the other end, and a centrally located aperture therethrough, is coaxially positioned within a supporting structure that is fixedly mounted on a fixed structure. The cylindrical member ends containing the recesses mutually confront each other. The sleeve is coaxially positioned within the supporting structure with opposite end portions of the sleeve extending within the cylindrical member recesses. The input member extends through one cylindrical member aperture, and the output member extends through the other cylindrical member aperture. Forces imposed on the sleeve and originating in torques imposed on the input and/or output members urge the sleeve into braking contact with one or the other of the cylindrical members, each of which cylindrical members is free to rotate only in a direction opposite to that in which the other of such member is free to rotate.

3,630,330

**OVERRUNNING ROLLER CLUTCH**

Wolfgang Pflugner, Herzogenaurach, Germany, assignor to Industriewerk Schaeffler, OHG, Herzogenaurach, Germany

Filed May 12, 1970, Ser. No. 36,560

Claims priority, application Germany, June 11, 1969, G 69

23 286.6

Int. Cl. F16d 41/07

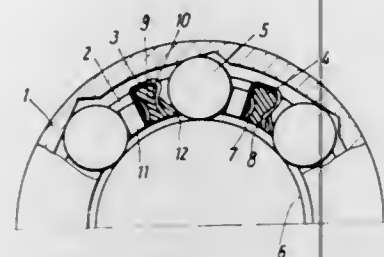
U.S. Cl. 192—45

4 Claims

A novel grip overrunning roller clutch consisting of an inner or outer race provided with camming surfaces and a



cage connected thereto to secure it against rotation relative to the race, the cage being provided with crossbars on which spring elements are mounted by holding clips which surround



the radially directed lateral surfaces of the crossbars and which make the grip rollers resilient in the circumferential direction.

3,630,331

### VISCOUS SHEAR CLUTCH WITH FREE-FLOATING DAMPER RING

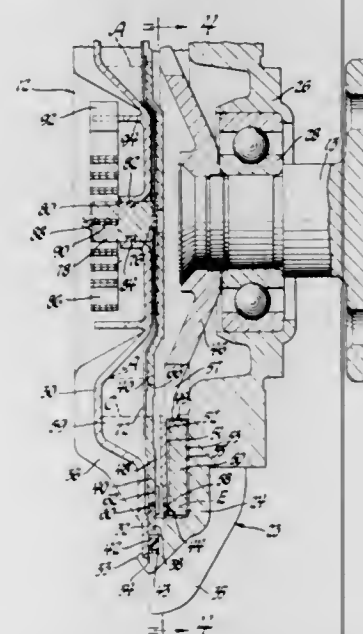
James W. Bradbury, Middletown, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1970, Ser. No. 32,105

Int. Cl. F16d 35/00

U.S. Cl. 192—58 B

6 Claims



A viscous fluid clutch including relatively rotatable first, second and third drive members having two (2) fluid shear spaces therebetween which are cooperable with a fluid medium in the shear spaces to provide a resultant variable speed differential between the first and third members, an annular reservoir for at times storing the fluid medium, a temperature-responsive valve for controlling the flow of the fluid medium from the annular reservoir through an inlet port to the fluid shear spaces, continually open outlet ports and cooperating pump elements or wipers for forcing the fluid medium from the fluid shear spaces to the reservoir, the second or intermediate drive member being a loose ring member having a fluid shear or "slip-speed" relationship along each face thereof with the adjacent respective first and third drive members for prolonging the operational life of the fluid medium.

3,630,332

### TRANSVERSE FRICTION CLUTCH

John H. Price, 163 Frey Lane, Belleville, Ill.

Filed Sept. 2, 1969, Ser. No. 854,708

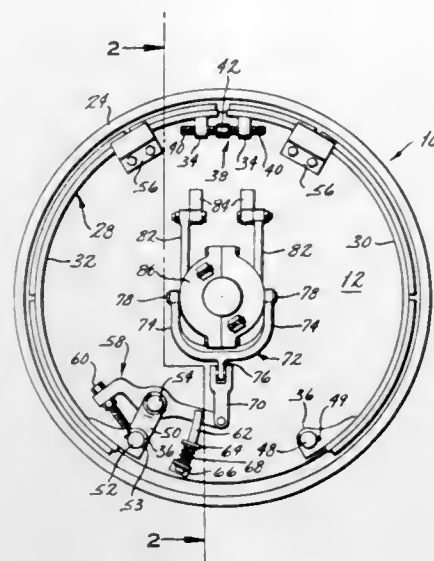
Int. Cl. F16d 13/14, 13/75

U.S. Cl. 192—77

10 Claims

A C-shaped clutch friction means includes at least two arcuate bands having high-friction linings mounted on their

outer arcuate surfaces. The bands each have a first end adapted to pivotally receive a link and a second end having a bolt-receiving bracket. The bands are joined together at their



second ends by a bolt which threadably engages the bolt-receiving brackets so that the bands are free to swivel about the longitudinal axis of the bolt.

3,630,333

### CLUTCH WITH DIAPHRAGM AND CLIP SPRINGS FOR PARALLEL

Paul J. Schiefer, Sherman Oaks, and James D. McFarland, Jr., Chatsworth, both of Calif., assignors to Schiefer Manufacturing Company, Monterey Park, Calif.

Filed Jan. 2, 1970, Ser. No. 265

Int. Cl. F16l 23/20

U.S. Cl. 192—99 A

10 Claims



The diaphragm of a diaphragm clutch is urged toward its engagement position by assist springs to overcome the effect of centrifugal force which tends to keep the diaphragm in its disengaged position. The assist springs are coupled to the diaphragm and the clutch cover to prevent their displacement by centrifugal force. To this end, a hook-shaped portion of each assist spring engages the inside of a pair of pivot rings for the diaphragm to secure the assist springs at one end. The other end of each assist spring is received in a hole

in the clutch cover. For rigidity, the clutch cover is adapted for full 360° register with a flywheel and employs reinforcing ribs proximate the anchor points on the clutch cover of the drive straps which carry the pressure plate.

3,630,334

### EMBOSSING APPARATUS FOR CURVED CONTAINER SURFACES

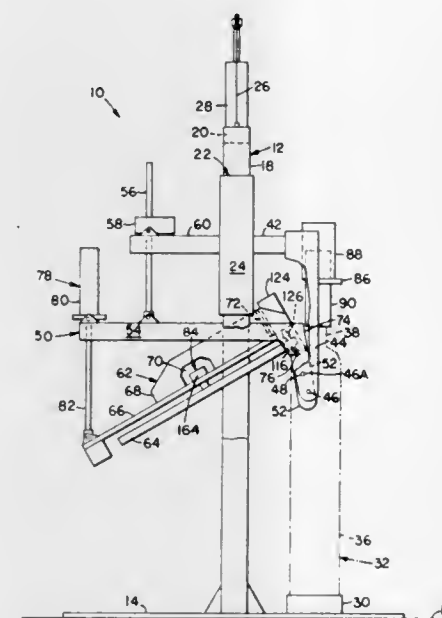
John J. Connolly, deceased, late of Millbrae, Calif. (by Marie Z. Connolly, administratrix), and Richard B. Newhall, El Cerrito, Calif., assignors to Coyne Cylinder Company, San Francisco, Calif.

Filed May 9, 1969, Ser. No. 824,031

Int. Cl. B41j 1/30; B41f 17/18; B44b 5/00

U.S. Cl. 197—6.7

15 Claims



An embossing apparatus particularly well adapted for embossing symbols on relatively thin walled hollow articles such as containers. An embossing tool is mounted in a holder and its embossing section is rolled over the outer container surface while subjected to low impact forces from an impacting gun. The container is movable in a first direction to permit the embossing of the symbols in a row and the holder allows movement of the embossing section of the tool in a second, transverse direction for the embossing of the symbols in parallel, spaced rows. Means are provided to permit the automatic embossing of symbol sequences such as words.

3,630,335

### PRINTING MEANS WITH PLURAL HELICAL SETS OF TYPE

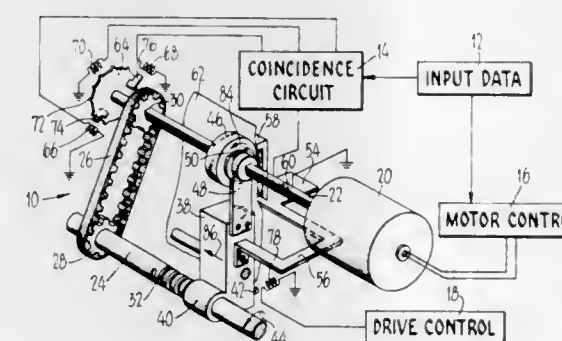
Leland D. Chamness, Castro Valley, Calif., assignor to The Singer Company

Continuation of application Ser. No. 724,880, Apr. 29, 1968, now abandoned. This application July 22, 1970, Ser. No. 64,036

Int. Cl. B41j 1/32

U.S. Cl. 197—49

7 Claims



A font wheel having a plurality of character types arranged in predetermined groups of helixlike patterns is mounted for

continuous rotation about its axis and for continuous translation along its axis adjacent a sheet of paper on which selected characters are to be printed in a row along the axial direction of translation. A print hammer disposed behind the paper travels axially with the font wheel and is driven toward the paper and font wheel at selective times to cause printing of selected characters in response to input data and font wheel position signals. Horizontal spacing between adjacent printed characters is dependent upon groups of character types included in the selected character to be printed.

3,630,336

### PROPORTIONAL SPACING PRINTER INCORPORATING WORD UNDERSCORE CONTROL

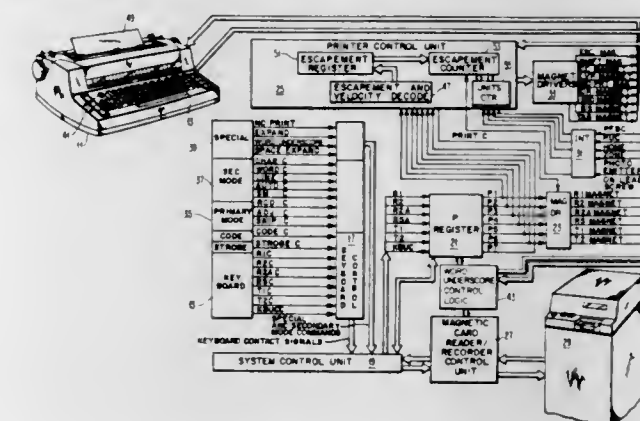
Carl F. Johnson, and William R. McCray, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,816

Int. Cl. B41j 29/26

U.S. Cl. 197—113

6 Claims



A proportional spacing typewriting system incorporating electronic logic to control forward and reverse printer escapement in accordance with the width of characters printed. A secondary medium is utilized to record keyed characters and also to control printing. Printer backspacing is effected by reading a previously recorded character from the secondary medium corresponding to the character representation immediately preceding the print point in order to determine the escapement value of that character and thereafter by controlling the reverse escapement of the printer by a corresponding amount. Word underscore control logic recognizes interword characters and causes the printer to reverse escape over a complete word so that underscore characters can thereafter be printed under the previously printed characters of the word. The control logic insures that the underscore characters so printed properly align with the rightmost portion of the last character of the underscored word by causing the printer to backspace a proper amount immediately prior to printing the last underscore character. A special word underscore code is recorded on the secondary medium when the keyed characters are recorded. The code can thereafter be recognized on subsequent payout to effect word underscore operations. Additional logic recognizes sequences of backspace codes and underscore codes on the medium as a word underscore operation during payout. Special error control circuits facilitate operator control and understanding of system operations.

3,630,337

### RIBBON FEED AND REVERSING MECHANISM FOR TYPEWRITERS

Edward Victor Byers, 17 Cavendish Crescent, The Park, England

Filed Dec. 18, 1969, Ser. No. 886,262

Claims priority, application Great Britain, Dec. 20, 1968, 60,540/68

Int. Cl. B41j 33/46

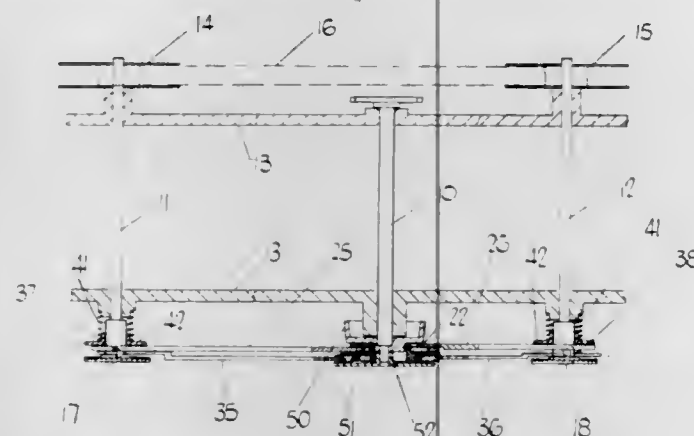
U.S. Cl. 197—162

4 Claims

A typewriter is provided with ribbon feed and reversing mechanism whereby when one ribbon spool becomes empty



and the other correspondingly becomes full, the resistance to rotation of one or other spool causes the drive to be reversed so that as typing proceeds the ribbon is progressively wound back from the full spool to the empty one. There is a driving spindle which is rotated to and fro as the carriage makes its alternative typing and return traverses and racks one or other of two spool spindles through pawl and ratchet mechanisms. The driving spindle carries a cam which rotates inside an oscillatable member, and if the latter is prevented from rotating, oscillates the latter to operate the pawl and ratchet mechanisms. Upon one of these mechanisms encountering undue resistance to operation due to resistance of its spool to



rotation, the oscillatable member is stepped round by the cam from one alternative position to another. The eccentric member carries an eccentric device which operates within a female member to displace the latter. Each pawl and ratchet mechanism is provided with a bluffing device, and according to the displaced position of the female member one or other of these devices is rendered operative to bluff its associated pawl and ratchet mechanism (thereby discontinuing the drive to the associated spool spindle) and the other of these bluffing devices is rendered inoperative to bluff the associated pawl and ratchet mechanism and the drive is thereby transferred to the other spool spindle.

3,630,338

## SPECIMEN-ANALYZING APPARATUS

Rudolf Oberli, Langenthal, Switzerland, assignor to Greener Electronic AG, Langenthal, Switzerland

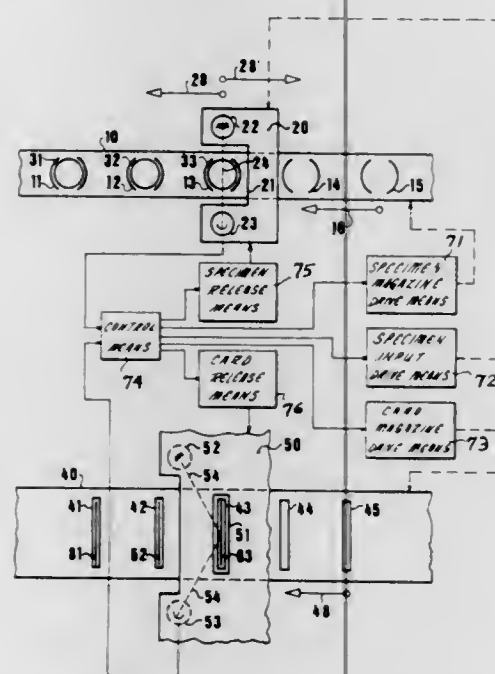
Filed Sept. 2, 1970, Ser. No. 68,934

Claims priority, application Switzerland, Sept. 5, 1969, 13475/69

Int. Cl. B65g

U.S. Cl. 198-1

11 Claims



Automatic specimen-analyzing apparatus for performing selected analyses of specimens in accordance with informa-

tion contained on origin cards associated therewith, respectively, characterized in that improved means are provided for correlating with the successive supply of the specimen containers into storage locations in a specimen magazine the supply of the corresponding origin cards into card storage locations in a card magazine. Detector means are provided for determining whether or not a given location of each magazine is in a filled condition. When these given locations are determined to be correctly filled, the magazines are displaced in a step-by-step manner relative to the supply means associated therewith to permit a specimen container and the corresponding origin card to be deposited in the storage locations immediately following said given locations.

3,630,339

## CONVEYOR WITH SUSPENDED RECEPTACLES

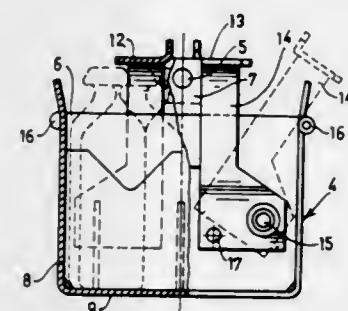
Johannes Bernardus Van der Winden, Amstelveen, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed Apr. 2, 1970, Ser. No. 24,996

Int. Cl. B65g 17/16

U.S. Cl. 198-145

5 Claims



A conveyor for a treatment apparatus such as a hydrostatic cooker, said conveyor carrying swingably suspended receptacles for bottles, jars or the like containers. In order to keep the containers immovably in the receptacles, the latter have confining means consisting of at least one tiltable covering lath on top of the receptacle and vertical partitions within the receptacle, said partitions being positioned according to a specific configuration.

3,630,340

## REINFORCED CONVEYOR BELTS

Henri Jacques Bouzat, Ferrand; Roland Joug, Nohanet, and Bernard Ragout, Clermont-Ferrand, all of France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colomber, Colombes, France

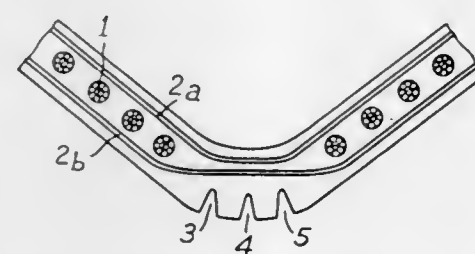
Filed July 7, 1969, Ser. No. 839,505

Claims priority, application France, July 8, 1968, 158388

Int. Cl. B65g 15/40, 15/34

U.S. Cl. 198-201

4 Claims



This invention relates to reinforced conveyor belts, of the kind which are to assume a V-shape in use. According to the invention, a belt is provided with a reinforcement comprising a layer of parallel longitudinal elements interrupted in the central zone of flexure and also of two layers of parallel elements perpendicular to the axis of the belt, said latter layers being located on either side of the first-mentioned layer and

closely adjacent one another in the central zone of flexure that is not provided with longitudinal elements.

resilient clip which is adapted to receive and hold the boxlike member containing its multiple compartments. The mounting

3,630,341

## TRANSPORT CONVEYOR STRUCTURE

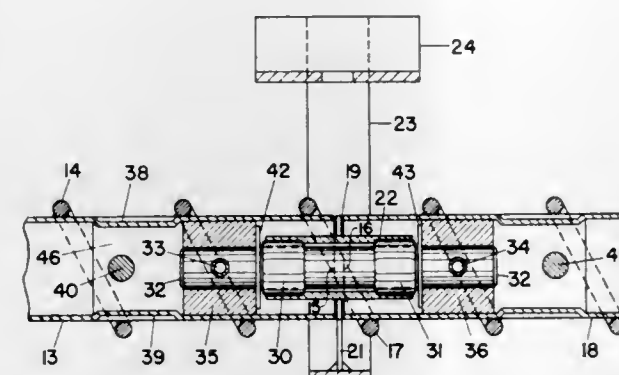
Steve Theodore Golden, 258 Banner Ave., Ventura, Calif.

Filed Jan. 12, 1970, Ser. No. 2,246

Int. Cl. B65g 33/00

U.S. Cl. 198-213

8 Claims



A screw conveyor of the axially rotatable rail-type has cylindrical sections connected internally in end-to-end relation and with narrow transition gaps in the propelling screws of the sections at their junctions. A reversible motor drives the assembled conveyor sections which are supported by means of thin suspension members interposed between the ends of adjacent sections.

3,630,342

## VIBRATORY OR RECIPROCATORY CONVEYOR OR SCREENING APPARATUS

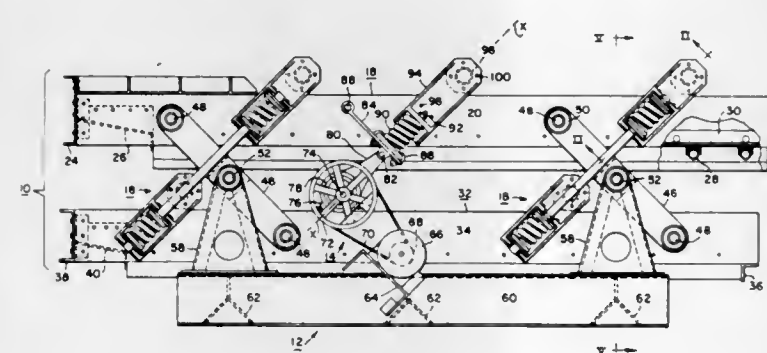
Ostap Danyluke, 151 Ridgely Road, Newtown Square, Pa.

Filed Nov. 20, 1969, Ser. No. 878,339

Int. Cl. B65g 27/00

U.S. Cl. 198-220 AC

4 Claims



A vibratory conveyor or screening apparatus of the multiple, parallel deck type is provided with a set of damping devices each including a plurality of springs twice subjected to compression in response to movement of the deck members through each complete cycle of operation.

3,630,343

## MULTIPLE CONTAINER HOLDER AND TISSUE DISPENSER HAVING A DETACHABLE SUPPORT MEANS

Benjamin Wohl, 11 Berndale Drive, Westport, Conn.

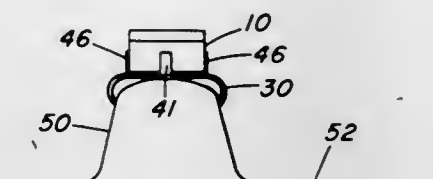
Filed Apr. 16, 1970, Ser. No. 29,198

Int. Cl. B60r 11/00; B65d 83/00

U.S. Cl. 206-19.5 R

7 Claims

A boxlike structure is provided having a removable lid with openings therein to accommodate the housing of a plurality of containers such as a tissue dispenser, a litter plurality of container, storage boxes, etc. A resilient C-shaped clamp has elongated resilient U-shaped members mounted thereon by a



and retaining action of the C-shaped clip is particularly suitable for mounting the multiple container holder on top of the tunnel hump of an automobile.

3,630,344

## BOX CONSTRUCTION

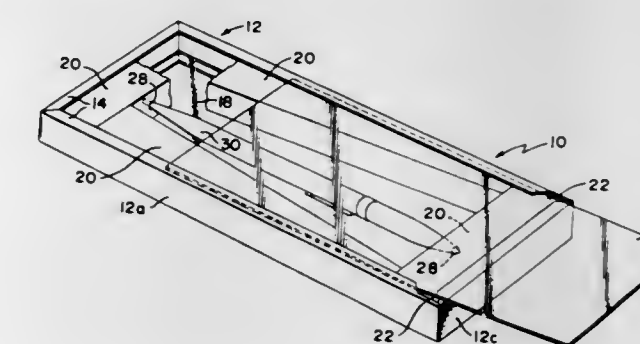
George G. Bergh, and Robert G. Bergh, both of North Attleboro, Mass., assignors to Bergh Bros. Co., Inc., Attleboro Falls, Mass.

Filed Aug. 22, 1969, Ser. No. 852,206

Int. Cl. B65d 25/10, 43/12

U.S. Cl. 206-45.14

3 Claims



A box construction including a wall member surrounding a first panel member. The wall member is provided with flanges extending inwardly on either side of the first panel member, the latter being held against one of the flanges by locating members. A second panel member is slideably inserted between the other of the flanges and the locating members. A second panel member cooperates with the wall member and the first panel member to fully enclose the interior of the box.

3,630,345

## FILM SPOOL WITH A SUPPORT FOR THE ROLL OF FILM

Hans-Robert Schmidt, Cologne-Flittard, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

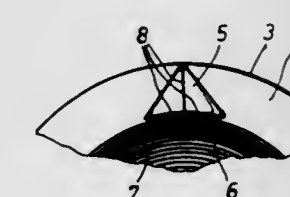
Filed July 9, 1969, Ser. No. 840,298

Claims priority, application Germany, July 29, 1968, A 30183

Int. Cl. B65d 85/67

U.S. Cl. 206-53

3 Claims



A film spool having an axial core and a radial flange at each end of the core is provided with camlike projections on the inner radial faces of the flanges. The projections are triangular in shape with an inwardly facing surface parallel to the core and an upper surface tapering from the flange so



that a strip wound in a roll on the spool is easily deflected inwardly of the flange and snaps under the projections.

The inwardly directed surfaces of the projections may be adapted to the curvature of the core surface.

3,630,346

## COMPONENTS FOR MAKING A STRIP PACKAGE

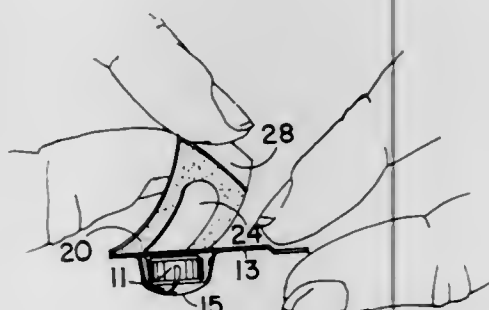
Carl B. Burnside, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of application Ser. No. 636,451, May 5, 1967, now abandoned. This application June 1, 1970, Ser. No. 42,527

Int. Cl. B65d 83/04

U.S. Cl. 206—56 AB

3 Claims



A method of packaging small articles in individual plastic blisters with the containers being integrally connected to form a strip package. The backside or label of the strip package is prepared by removing portions of a protective paper or foil cover to expose areas of a pressure-sensitive adhesive which is then positioned over the blisters to form the strip package.

3,630,347

## SKID-SENSING DEVICES

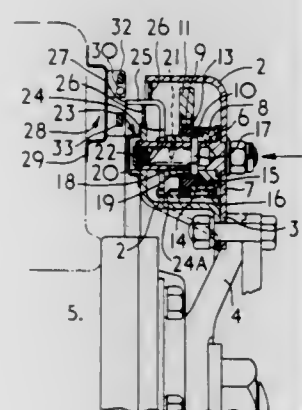
John Walter Davis, c/o Fort Dunlop Erdington, Birmingham 24, England

Continuation of application Ser. No. 722,964, Apr. 22, 1968. This application Oct. 16, 1970, Ser. No. 81,501

Int. Cl. H01h 29/02

U.S. Cl. 200—61.46

42 Claims



A skid-sensing device for a vehicle antiskid braking system, comprising an annular flywheel mounted for rotation within an annular housing, the housing being arranged to extend coaxially around a rotatable drive shaft of a vehicle for rotation therewith, and sensing means responsive to overrunning of the flywheel, of which the following is a specification.

### 3,630,348 PACKAGE COMPRISING PAPER CONTAINING A FORMALDEHYDE RELEASING THERMOSETTING RESIN

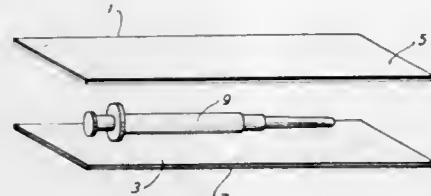
Ronald L. Benson, Lunenburg; Christo Antonio, East Princeton, both of Mass., and John H. Brewer, Towson, Md., assignors to Fitchburg Paper Company, by said Benson and Antonio and Bicton Dickinson and Company, by said Brewer

Filed July 16, 1968, Ser. No. 745,308

Int. Cl. A61b 19/02

U.S. Cl. 206—63.2 R

2 Claims



A package having a wall, or sheet contained therein, impregnated or coated with a formaldehyde containing uncured resin having pH in the range of 4-9 so that formaldehyde is gradually released upon cure to sterilized articles within the package.

3,630,349

## GRINDING WHEEL PACKAGE AND METHOD OF PACKAGING THEM

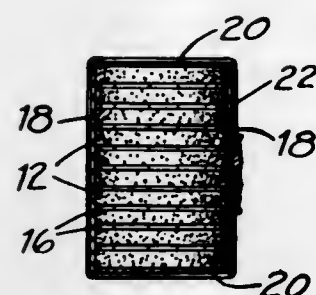
Franz F. Rechberger, Hamilton, Ontario, Canada, assignor to Norton Company, Worcester, Mass.

Filed Feb. 16, 1970, Ser. No. 11,386

Int. Cl. B65d 71/00

U.S. Cl. 206—65 B

4 Claims



A package for grinding wheels and method for assembly thereof in the form of an elongated square wheel supporting container for holding one or more axially aligned grinding wheels of substantially the same diameter therein and having square end covers within opposite ends of the container, and tensioned tied strands of strapping extending across the end covers and axially along the center of each side of the container opposite a line of contact between the inside walls of the container and the wheels. Disclosed also, is a method of packaging grinding wheels by stacking and centering them upon an end cover. A square container of sufficient length is slipped over the stack endwise and another end cover is placed over the exposed end of the stack of wheels to fit within the tube. Strapping is then stretched tightly across the outside of the end covers and along the center of each side of the container to force the wheels together and each side of the container into contact with the periphery of each of the wheels.

3,630,350

## CONTAINER CARRIER PACKAGE

Herbert S. Bolton, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 31, 1969, Ser. No. 889,500

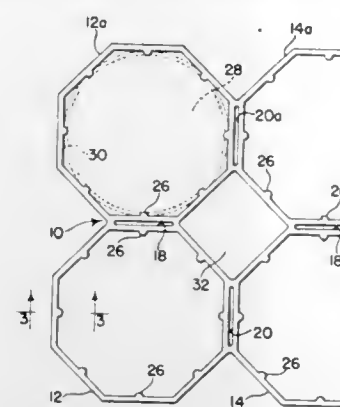
Int. Cl. B65d 21/02, 71/00, 85/62

U.S. Cl. 206—65 C

8 Claims

A container package unit having an injection molded plastic carrier member including a plurality of integrally or

separably interconnected polygonal retainer elements forming an apertured skeleton framework with the sides of the retainer elements, or inward projections thereon, snapped



beneath top outward beads of associated containers to retain and support the same for transport as a multiunit container package.

3,630,351

## METHODS OF UPGRADING ALUMINA-BEARING MATERIALS

Richard W. Uhinck, Columbia Station, Ohio, assignor to Gibbsite Corporation of America, Rochester, N.Y.

Filed Mar. 3, 1969, Ser. No. 804,023

Int. Cl. B03b 1/04

U.S. Cl. 209—5

22 Claims

A continuous method of separating associated gibbsite ( $\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$ ) from the siliceous material contained in gibbsite-bearing sands and alumina-bearing ores characterized by a reagent to a slurry of the raw material for the purpose of promoting separation and settling of slurring the sand or ore with water and a reagent in an amount sufficient to cause separation of the siliceous material from the alumina and to permit settling of heavy siliceous material from the slurry. The reagent is selected from the group consisting of sodium hypochlorite, sodium pyrophosphate and ammonium hydroxide, and trisodium phosphate, wherein sodium hypochlorite is preferred.

3,630,352

## MAGNETIC DISPERSION HEAD AND DRYER

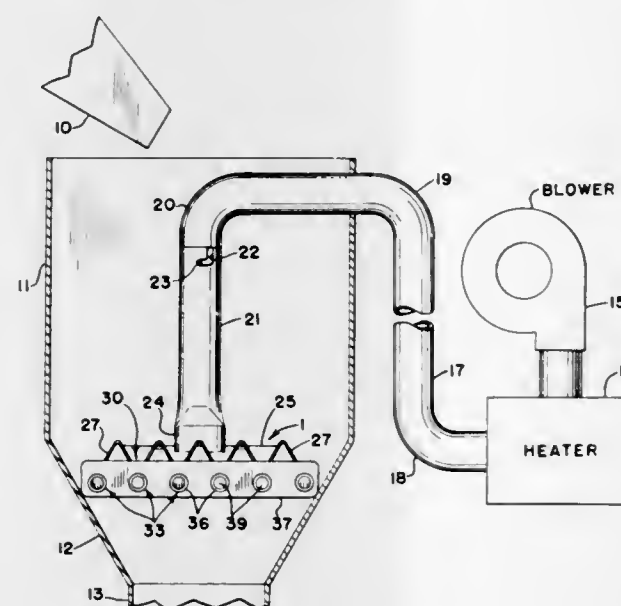
Albert Reynolds Morse, Beachwood, Ohio, assignor to IMS Company, Cleveland, Ohio

Filed Nov. 4, 1968, Ser. No. 773,130

Int. Cl. B03b 1/02

U.S. Cl. 209—11

2 Claims



An apparatus is disclosed for drying a flow of granular nonmagnetic material which includes a low percentage of

magnetically permeable contaminants to be segregated from the nonmagnetic material. The apparatus includes means for introducing heated air into each of a plurality of paths provided for the flow. Means are disclosed for providing a magnetic field for each of the plurality of flow paths for effectively segregating the magnetically permeable material from the nonmagnetic material. The means for dispersing and drying the flowing material includes a plurality of spaced, horizontally disposed, inverted, generally V-shaped diverter members, the spaces between the diverter members forming the paths for the flow of material. The means for providing the magnetic field includes a plurality of generally cylindrical permanent magnets in spaced axial alignment within each of a series of spaced parallel capped stainless steel tubes. Adjacent permanent magnets have like polarity juxtaposed to prevent bridging of the magnetically permeable particles across the flow paths between the tubes.

3,630,353

## METHOD FOR SEPARATION OF FINES FROM HOT BROKEN SINTER

Horst Seidel, Biscofsheim, and Fred Cappel, Neu-Isenburg 11, both of Germany, assignors to Dravo Corporation, Pittsburgh, Pa.

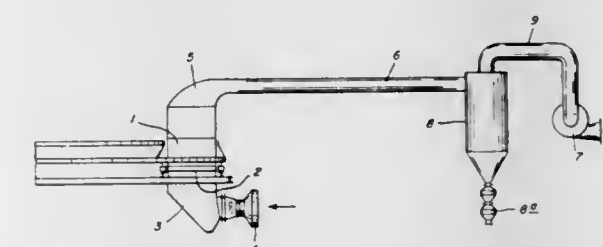
Filed Mar. 26, 1969, Ser. No. 810,628

Claims priority, application Germany, Mar. 30, 1968, P 17 58 081.3

Int. Cl. B07b 4/08

U.S. Cl. 209—11

3 Claims



The invention is directed to the removal of granular fines or dust from broken sinter cake, before delivery thereof to a blast furnace, by subjecting the broken cake, during passage from the sinter breakers to the cooling area, to a pressurized upward blast of air which carries the sinter fines through an exhaust hood and suitable conveyor conduit into a precipitator which removes the fines for return to the sinter machine and discharges the air to the atmosphere.

3,630,354

## CARD STORAGE, TRANSFER AND POSITIONING DEVICE FOR USE IN CONJUNCTION WITH CARD RETRIEVAL APPARATUS

Richard C. O'Brien, Dayton, Ohio, assignor to OK Partnership, Cincinnati, Ohio

Filed Apr. 23, 1970, Ser. No. 48,572

Int. Cl. B07c 1/20

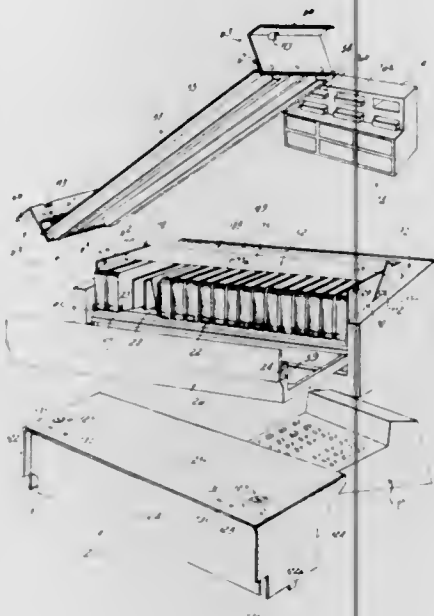
U.S. Cl. 209—80.5

5 Claims

An improved accessory device for increasing the effective card storage capacity of retrieval systems in which edge-notched coded cards are randomly stored in face-to-face upstanding relation on a platen in a card selector apparatus. The accessory device includes a two-piece card tray having a substantially planar bottom panel against which the code-notched edges of the cards rest when stored face-to-face in a vertical disposition, and a retaining structure at least partially surrounding the upstanding cards. The retaining structure is positionable between engaged and disengaged positions relative to the bottom panel, thereby facilitating transfer of the



cards between the tray and the selector. The retaining structure, when engaged with the bottom panel, cooperates therewith to store the cards in the tray. Alternatively, and when the retaining structure is in the course of being positioned between its engaged and disengaged positions relative to the panel, the retaining structure functions to transfer the



cards between a position of support on the bottom panel and a position of support in the card selector. Also included are structural features for improving the positioning of cards and locking the retaining structure both relative to the selector, when the cards are in the selector and positioned by the retaining structure.

3,630,355

# SUCTION CLEANING APPARATUS FOR DISCRETE CONVEYOR LOADS

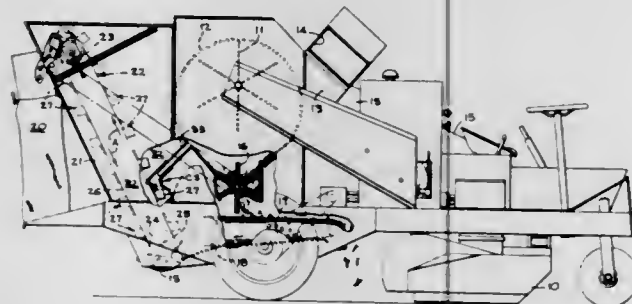
William M. Christensen, Altamonte Springs, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed May 15, 1969, Ser. No. 824,952

Int. Cl. B07b 4/08

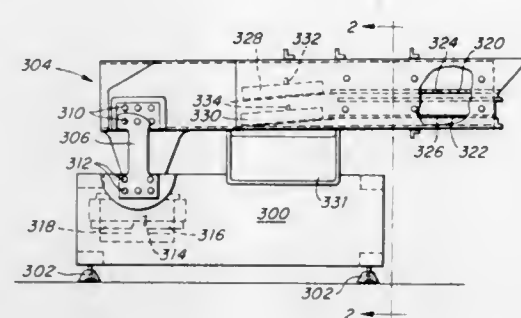
U.S. Cl. 209-137

4 Claims



A nut harvester has an elevator housing with a bucket conveyor therein. A suction duct has an inlet opening adjacent the conveyor. The conveyor buckets, which have vented bottoms, pass through a throat one at a time as they approach the duct inlet, and a flexible flap stretches over the bucket to define with the throat and bucket a chamber at the inlet opening through which debris from the bucket is drawn.

3,630,356  
VIBRATING SCREEN WITH SPRING BEAM  
Max Isaacson, 420 West Nottingham Road, Dayton, Ohio  
Continuation-in-part of application Ser. No. 685,544, Nov. 27, 1964, now abandoned. This application May 2, 1969, Ser. No. 821,215  
Int. Cl. B07g 1/30, 1/46  
U.S. Cl. 209-256 2 Claims



A separating and feeding means comprising a body mounted by spring beams to a base member, the body having a plurality of screens mounted thereon which separate larger from smaller particles, the screens being arranged in vertical separation from one another. Vibration-applying means are arranged to oscillate said body and screens about the virtual pivot axis of the spring beams to cause the particles to move linearly along the screen. In one embodiment a movable guide vane is mounted on the body to direct the flow of material from one screen to a discharge chute, with a similar guide vane being provided for the other screen or screens, said chutes being interconnected so that the same type of part can be discharged to the same physical location regardless of the relative sizing of the particles. In another embodiment an opening is provided through the lower section of the body and through the lower screen leading to a multiexit discharge chute, with a guide vane located within the chute to direct the particle flow selectively to an exit.

3,630,357

# STOP MOTION SCREENING APPARATUS AND METHOD

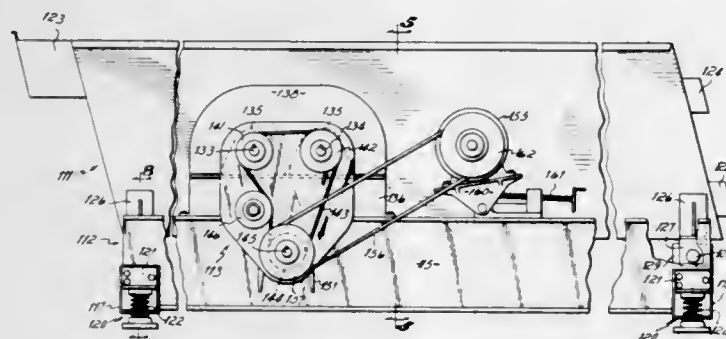
Arthur C. Nolte, Cincinnati, Ohio, assignor to The Orville Simpson Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 724,482, Apr. 26, 1968, now abandoned. This application June 17, 1969, Ser. No. 833,926

Int. Cl. B07b 1/38

U.S. Cl. 209-326

13 Claims



A method of screening to separate particulate materials into particle groups of different sizes or other characteristics. The screen is moved by a vibratory force which is of substantially constant frequency, but which has an amplitude that regularly and repetitively varies between a maximum and a minimum of essentially zero, so that the screen is momentarily stopped at periodic intervals several times a minute. The vibratory force is desirably a reaction force established by two closely spaced unbalances masses rotating in the same direction but at slightly different rates. The reaction force

establishes a circular or elliptical motion, in the vertical plane, of points on the screen.

The apparatus includes a screen in a screen frame which supports a pair of closely spaced, centrally located shafts, each carrying an eccentric weight. Drive means rotate the eccentrics in the same direction of rotation but at rates that differ by about 1-15 percent. A beat results from the unequal rates of rotation. The beat has a frequency equal to the difference of the speeds of two rotating shafts, preferably 10-200 beats per minute. The faster rotating shaft should operate at a speed not greater than about 1,600 r.p.m.

3,630,358  
METHOD AND APPARATUS FOR REMOVING  
SUSPENDED MATERIAL FROM UNDERGROUND MINE  
WATER

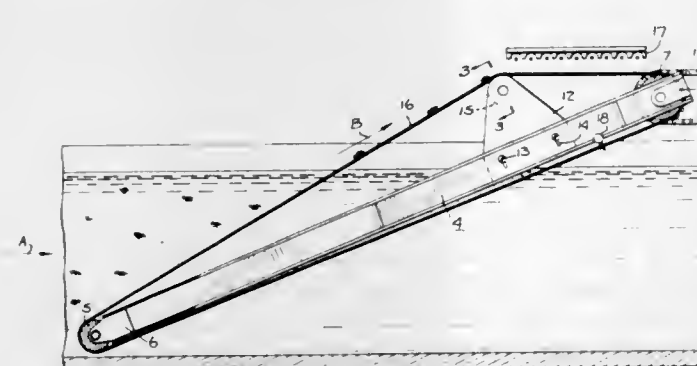
Frank E. Ralph, Butte, Mont., assignor to The Anaconda Company, New York, N.Y.

Filed Jan. 27, 1970, Ser. No. 6,247

Int. Cl. B01d 37/00

U.S. Cl. 210-67

7 Claims



An apparatus and method is provided for continuously removing undesirable suspended material from a continuous stream of underground mine water by thermally decomposing the material to a residue and passing the residue back into the moving stream of underground mine water.

3,630,359

# MULTIPLE-DRUM INTERCEPTOR

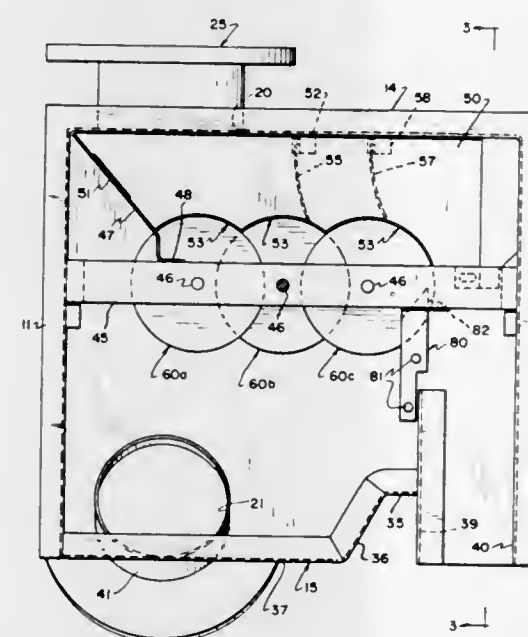
Pei Tai Pan, and Hugh McCauley Harper, both of Beloit, Wis., assignors to Fairbanks Morse Inc., New York, N.Y.

Filed July 25, 1969, Ser. No. 844,911

Int. Cl. B01d 33/06

U.S. Cl. 210-73

25 Claims



There is disclosed herein a novel system for the phased separation of the solid and liquid fractions of a solid-liquid

sewage waste mixture disposed at a point contiguous to the point of origin of the mixture and between the point of origin and point of final treatment of the mixture. More particularly, there is provided a series of rotatable drum interceptors for intercepting and sequentially separating the solid fractions from the liquid fractions of a solid-liquid sewage mixture before substantial dissolution or disintegration of the solid fractions can occur whereby the resulting solid fractions are substantially separated from the liquid fractions and more readily disposed of separately from the liquid fractions.

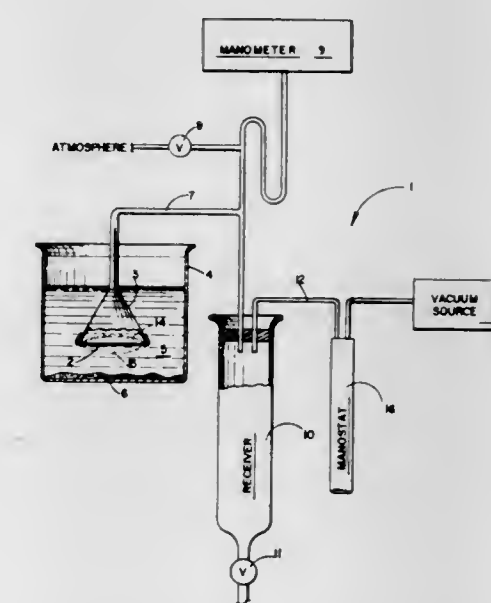
3,630,360  
FILTERING SYSTEM FOR FINE SUSPENSIONS  
Noah S. Davis, Northridge; John B. Cramer, Palmdale, and Wilbur A. Lester, Rolling Hills Estates, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Apr. 8, 1969, Ser. No. 814,305

Int. Cl. B01d 29/38

U.S. Cl. 210-82

2 Claims



A relatively fine mesh flexible filter is placed in a container filled with a suspension of fine solids in a liquid. The liquid is forced through the filter by a relatively low differential pressure, such as an open container and a vacuum source. Before the filter becomes completely clogged by the solids, a small backflow is induced through the filter by reversing the pressure differential across the filter. The reverse flow causes the filter to flex so that the relatively thin layer of material is removed simultaneously. When using a vacuum system, this can be obtained by breaking the vacuum above the container to allow the small hydraulic head to back flush the filter. When the vacuum source is reconnected, the filtering process is resumed. This cycle is repeated until all the liquid has been filtered. In certain applications, the filtrate is the desired product, in others the filter cake, and in still others both the cake and the filtrate are required.

3,630,361  
FILTER-MELTER FOR COOKING FAT  
Richard T. Keating, 715 South 25th Avenue, Bellwood, Ill.  
Filed June 27, 1969, Ser. No. 837,260  
Int. Cl. B01d 35/16, 35/18

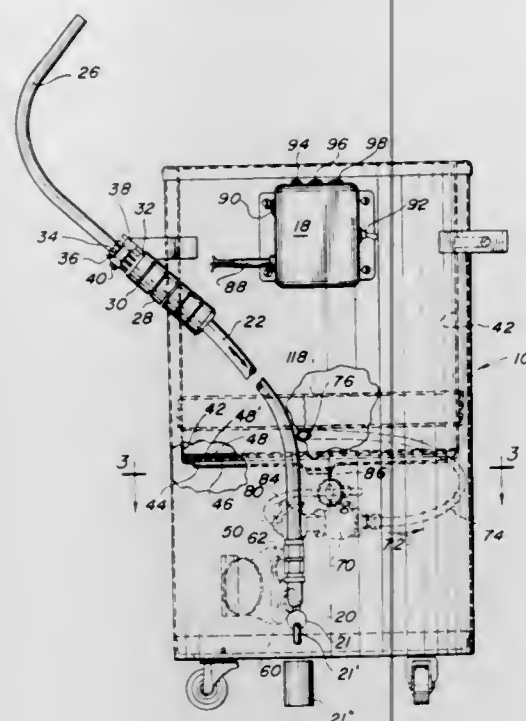
U.S. Cl. 210-85

7 Claims

A combined filter and melter, for use with food fryers, having a heated circulatory and filter system adapted to remove used cooking fat from a fryer, subject it to a filtering, decolorizing and deodorizing treatment, and return the reconstituted fat to the fryer. Plugging of the circulatory system due to residual fat accumulations is prevented and makeup or new fat or shortening in solid form can be added and properly melted for ultimate return to the fryer. In one embodiment the conduits, pump and valves of the circulatory



system and the upstream side of the filter zone are provided with controlled heaters and means included to indicate when any solid fat in the system or filter zone is melted and circula-



tion and/or filtering can begin. The liquid fat entering the filter zone is directed tangentially to the interior wall thereof to break up and disperse any particulate solid filter medium that may be used in the filter zone.

3,630,362

## SELF-CLEANING FILTER SYSTEMS

Robert B. Matthews, Ilford, Essex, England, assignor to The Plessey Company Limited, Ilford, England

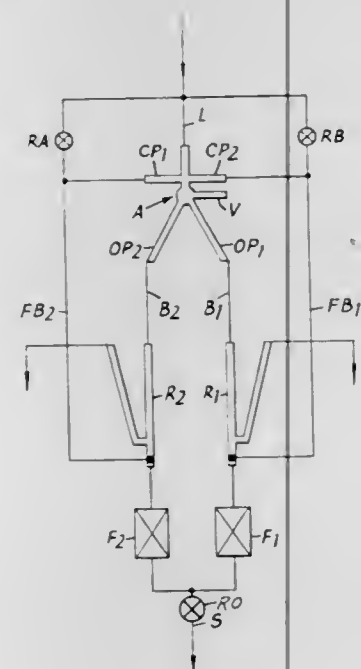
Filed May 8, 1969, Ser. No. 823,090

Claims priority, application Great Britain, May 23, 1968, 24,603/68

Int. Cl. B01d 29/38

U.S. Cl. 210-108

3 Claims



To ensure, by purely fluidic means, the alternate use of two filter units, one being in the main fluid path while the other is being reconditioned by back flushing with filtered liquid, two parallel branch paths are interposed between the main-flow inlet of a bistable fluidic device and a service outlet each branch including a filter and having a reverse-flow

switch interposed between the bistable, which has two control jets, and the filter so as to conduct flow from the bistable to the filter but divert flow from the filter into a spill path, the switching of the bistable device being controlled by connecting the inlet of each control jet in parallel to the inlet of the appropriate filter and, via a restrictor to the fluid inlet of the system.

3,630,363

## AUTOMATIC VALVE ASSEMBLY FOR SWIMMING POOL TYPE FILTER

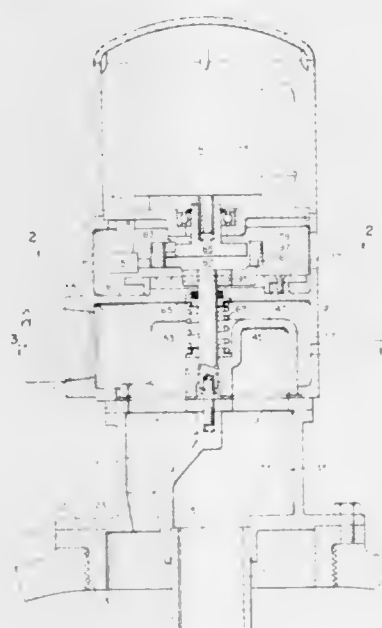
Floyd M. Nash, and Joel T. Hicks, both of Little Rock, Ark., assignors to Jacuzzi Bros., Incorporated

Filed Aug. 7, 1969, Ser. No. 848,195

Int. Cl. B01d 23/24

U.S. Cl. 210-108

6 Claims



An automatic filter valve assembly for a swimming pool type filter system, in which a rotary valve in pressure engagement with an orifice plate to provide a filtering position and a backwash position, includes means responsive to the accumulation of sediment in the filter, for raising the valve from its engagement with the orifice plate, rotating it to a backwash determining position, following which, a timing means, after a time period adequate for backwashing, restores the valve to its former filter position. Pushbutton means is provided for manually determining additional positions of the valve assembly.

3,630,364

## HAND-MANIPULATED, PARTICLE-REMOVING DEVICE FOR AQUARIUMS

Timothy B. Johnston, Granada Hills, Calif., assignor to Aquaria, Inc., Los Angeles, Calif.

Filed Apr. 1, 1970, Ser. No. 24,504

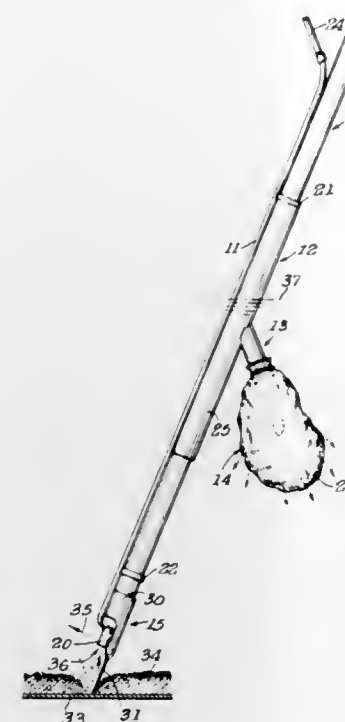
Int. Cl. E04h 3/20

U.S. Cl. 210-169

5 Claims

An elongated tubular body terminating in a nozzle at its lower end, an air outlet at its upper end, and an elongated lateral opening therein; a tube for compressed air substantially coextensive with said body and having its lower air-discharging end opening into the body adjacent the nozzle thereof; a longitudinal adjustable sleeve on the body provided with a downwardly directed tubular extension in communication with the mentioned lateral opening in the body for discharging water-borne particles received from the nozzle end thereof when immersed in the water of an aquarium, the discharged air entering the body and, in the form of bubbles, percolating upwardly through the water in said body and, finally, venting from the upper end of the body; a longitudinally adjustable scraper fitting on the nozzle end of the

body for loosening accumulations of matter desired to be removed so particles thereof are buoyed upwardly and into the influence of the upwardly percolating air bubbles and



carried thereby toward the mentioned downwardly directed extension, and a filter bag on the end of said extension to receive and pass water entering the same while intercepting particles of matter entering therein.

3,630,365

## TRANSPORTABLE LIQUID WASTE TREATMENT PLANT

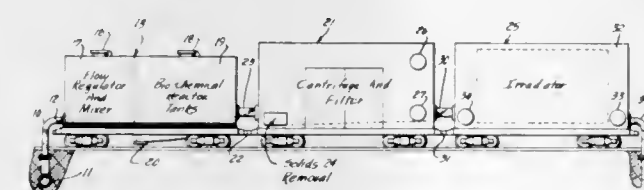
David D. Woodbridge, Eau Gallie; Thomas A. Nevin, Indian Harbor Beach; William R. Garrett, Melbourne, and Leland A. Mann, Eau Gallie, all of Fla., assignors to Energy Systems, Inc., Melbourne, Fla.

Filed June 11, 1969, Ser. No. 839,136

Int. Cl. C02c 1/02

U.S. Cl. 210-152

7 Claims



Transportable liquid waste treatment apparatus is adapted for movement from place to place and for temporary or permanent connection to a sewage system, or the like, for the treatment of sewage and other liquid waste. The basis apparatus has transportable means for converting and separating solids from the liquid waste and for irradiating the remaining fluid with a gamma radiation source prior to discharging the irradiated effluent.

3,630,366

## ROTATING BIOLOGICAL WASTE TREATMENT SYSTEM

Robert H. Joost, Oconomowoc, Wis., assignor to Environmental Pollution Control Co., Inc., Oconomowoc, Wis.

Filed Oct. 30, 1969, Ser. No. 872,609

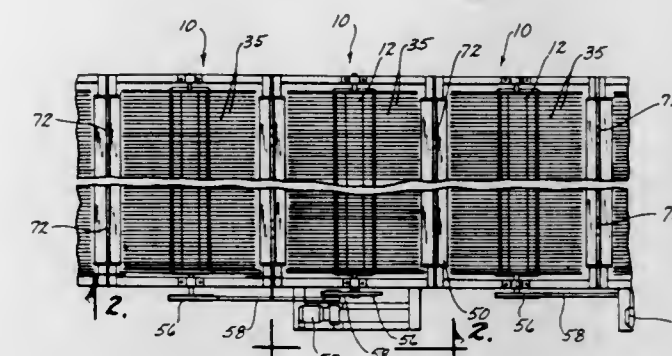
Int. Cl. C02c 1/02

U.S. Cl. 210-150

10 Claims

A rotary disc waste treatment unit having a semicylindrical tank into which liquid waste material is fed. An axial sleeve

shaft has end plugs to which end plates are threadably bolted and which in turn carry stub shafts received in bearing supports on opposite sides of the tank. A plurality of radially extending channel members are provided with inner and outer bolt means extending through the channel members, end plates, styrofoam discs and alternately disposed styrofoam ring spacers; the inner ends of the channel members engaging the end plates while the outer ends are in mating contact



with the outer styrofoam discs. A series of rotary disc units may be secured together with weirs in between to control the flow of fluid from one waste unit to the next and all of the rotary disc units may be driven by a common motor at a low rate of speed to give maximum exposure of the waste material on the discs to the atmosphere. The styrofoam disc and spacer rings are sufficiently buoyant to offset the weight of the rotary disc units and minimize the power requirements.

3,630,367

## BOTTOM AQUARIUM FILTER

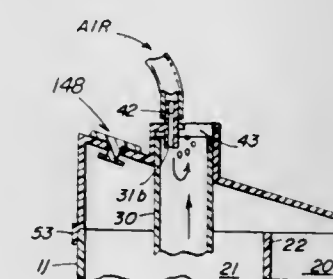
Allan H. Willinger, Maywood, N.J., assignor to Aquariums Incorporated, Maywood, N.J.

Continuation-in-part of application Ser. No. 581,208, Sept. 22, 1966, now Patent No. 3,477,588. This application June 11, 1969, Ser. No. 832,172

Int. Cl. E04h 3/20

U.S. Cl. 210-169

11 Claims



A bottom aquarium filter for an aquarium tank having contaminated and decontaminated water therein, said filter comprising in combination a container having an inlet compartment in fluid flow relation with said tank and a filtration compartment in fluid flow relation with said inlet compartment, said filtration compartment adaptable to contain a mass of filtering material and having a first opening for the ingress of air into said filtration compartment and egress of decontamination out of said filtration compartment, said inlet compartment having inlet means through which contaminated water from the tank may flow and venting means associated with said filter.



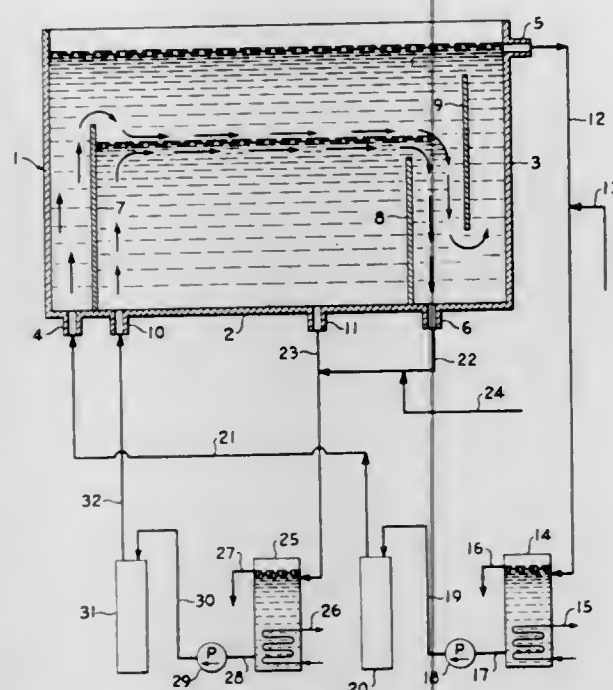
3,630,368

## CONTINUOUS SKIMMER APPARATUS

Sung Ki Lee, Niagara, N.Y., assignor to Hooker Chemicals Corporation, Niagara Falls, N.Y.  
Continuation of application Ser. No. 786,950, Dec. 26, 1968, now abandoned. This application June 19, 1970, Ser. No. 48,938

Int. Cl. B01d 21/10

U.S. Cl. 210-181



There is provided an apparatus for the continuous skimming of the interface of two phases therein comprising a housing having a bottom and at least one sidewall; weir means within said housing including one pair of overflow weir members of which the top of the first weir member is above the top of the second weir member; a first and a second outlet within said housing wherein said first outlet is in the upper region of said housing and said second outlet is in the lower region of said housing, and disposed such that said second weir member is between said first weir member and both said first and said second outlets; and a first inlet within said housing spaced apart from said first outlet and from said second outlet, and disposed such that said second weir member is between said first inlet and said first outlet.

3,630,369

## MOP CLEANING DEVICE

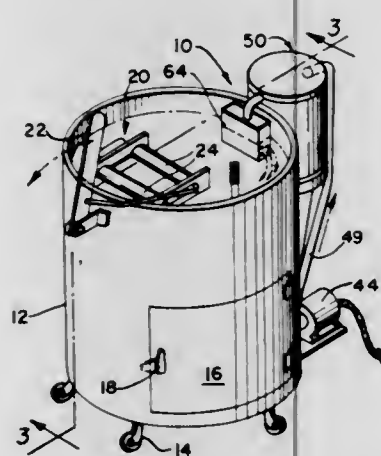
Cecil Patrick Nichols, 5223 Devonshire Drive S.E., Washington, D.C.

Filed May 15, 1970, Ser. No. 37,569

Int. Cl. B01d 35/02, 21/02

U.S. Cl. 210-152

12 Claims



A mop cleaning device wherein a supply of cleaning fluid is circulated through a container while sediment is separated from the fluid. A sloped wall extends from an upper portion

of the container to a lower portion thereof, with a discharge opening extending through the wall, whereby heavy sediment from the cleaning fluid is collected on the wall and discharged through the opening.

3,630,370

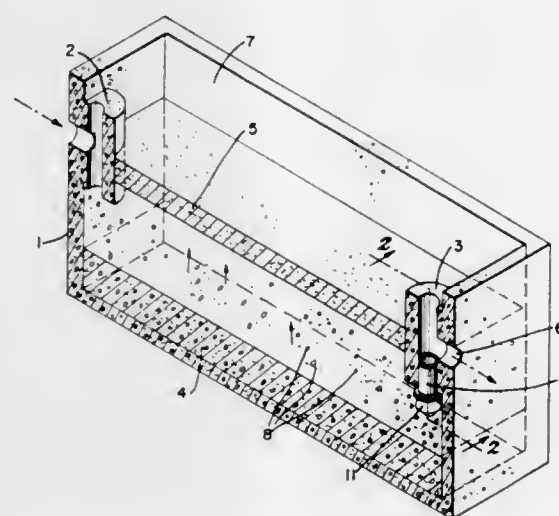
## SEPTIC SOLIDS RETAINER

James K. Quina, Coral Gables, Fla., assignor to Royal Palm Beach Colony, Inc., Miami, Fla.  
Continuation of application Ser. No. 811,785, Apr. 1, 1969, now abandoned. This application Mar. 16, 1970, Ser. No. 20,080

Int. Cl. B01d 21/24

U.S. Cl. 210-170

12 Claims



A septic solids retainer incorporated into a septic tank in such a manner as to retain solids by preventing the normal tank circulation from occurring within the outlet chamber.

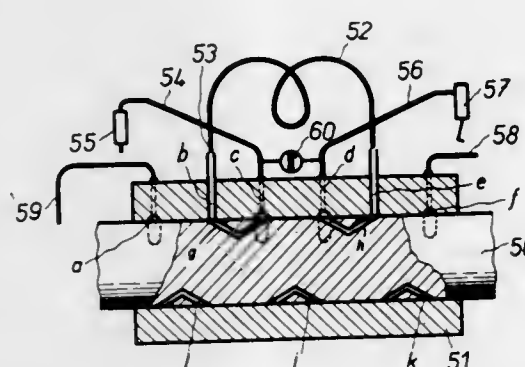
3,630,371

## VALVE MEANS FOR CHROMATOGRAPHIC APPARATUS

Jiri Hrdina, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia  
Continuation of application Ser. No. 498,034, Oct. 19, 1965, now abandoned. This application Aug. 4, 1969, Ser. No. 849,585 Claims Priority, application Czechoslovakia, 6171/64  
Int. Cl. B01d 15/08

U.S. Cl. 210-198

3 Claims



Chromatographic apparatus including valve means for controlling flow through the apparatus. The valve means connects the carrier liquid, the sample liquid, the column and the pump and includes a housing with a rotary core. Passages are provided in the housing. These passages communicate with the various components of the apparatus. The rotary core of the valve includes passages communicating between pairs of passages in the housing. By selectively rotating the core from one position to another communication between

3,630,374

## OIL FILTER CARTRIDGE

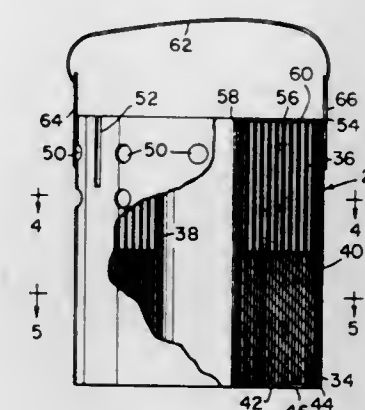
Joseph John Russo, 9191 Torresdale Avenue, Philadelphia, Pa.

Filed Oct. 8, 1969, Ser. No. 864,915

Int. Cl. B01d 29/06, 27/08

U.S. Cl. 210-232

4 Claims



An oil filter cartridge including a coarse filter element and a fine filter element in vertically juxtaposed relation, each wound about a common central core and enclosed with a cylindrical cardboard cover, the said cover being provided with slits to permit easy insertion of the coarse and fine filter filtering elements and the said cover further being provided with openings to permit the passage of oil therethrough at predetermined locations.

3,630,375

## THROWAWAY FILTER CARTRIDGE

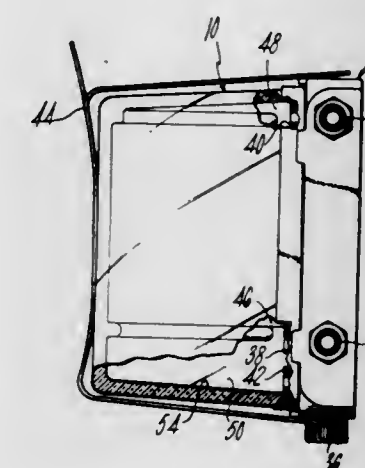
David H. Hodgkins, Manchester, Conn., assignor to Stanadyne, Inc., Wilson, Conn.

Filed June 15, 1970, Ser. No. 46,213

Int. Cl. B01d 29/00

U.S. Cl. 210-299

4 Claims



There is disclosed a throwaway fuel oil filter cartridge suited for vertical mounting having a base wall with three ported abutments. The upper one of the ported abutments communicates with the filter's outlet chamber and the other pair communicates with the filter's enlarged inlet chamber. The enlarged inlet chamber serves as a settling basin and a plenum chamber for incoming fuel, and one of the ports communicating therewith is positioned vertically below the other. The three ported abutments provide a tripod mount for the cartridge and the lower one serves as a drain for water which can be operated while the engine is running and prevents fuel line freezeup by maintaining the level of the water below the inlet passage to the filter.

the housing passages can be altered to provide the desired flow paths.

3,630,372

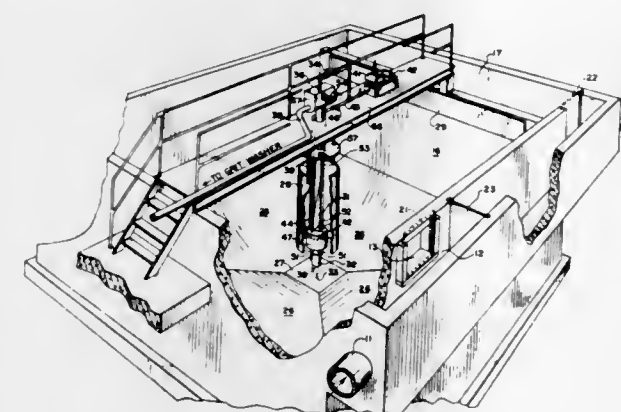
GRIT CHAMBER STIRRED BY EDUCTOR TUBE  
ENCLOSING VERTICALLY ADJUSTABLE GRIT LIFT  
Francis S. Weir, Aurora, and Douglas E. Dreier, North Aurora, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 13, 1970, Ser. No. 36,773

Int. Cl. B01d 12/00, 43/00

U.S. Cl. 210-197

4 Claims



In a grit chamber the rolling action which allows selective settling of grit is maintained by a centrally located draft tube actuated by air liberation near the bottom thereof. Grit accumulating at the bottom of a hopper concentric with the draft tube is removed by an airlift extending along the axis of the draft tube and having its bottom section vertically adjustable to compensate for varying grit depth.

3,630,373

## PUMP AND IMPELLER UNIT

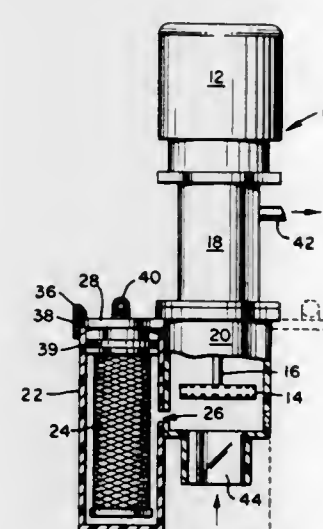
Alfred E. Grazen, West Hartford, Conn., assignor to Electro-Metals, Inc., East Hampton, Conn.

Filed June 10, 1969, Ser. No. 831,932

Int. Cl. B01d 35/02

U.S. Cl. 210-232

5 Claims



A pump and impeller unit which utilizes a double vaned impeller to eliminate the need for pump shaft seals, and also utilizing simple construction of filter cartridge assembly in relation to pump body to facilitate maintenance and replacement of the filter and the unit.



3,630,376

## OIL SLICK REMOVING VESSEL

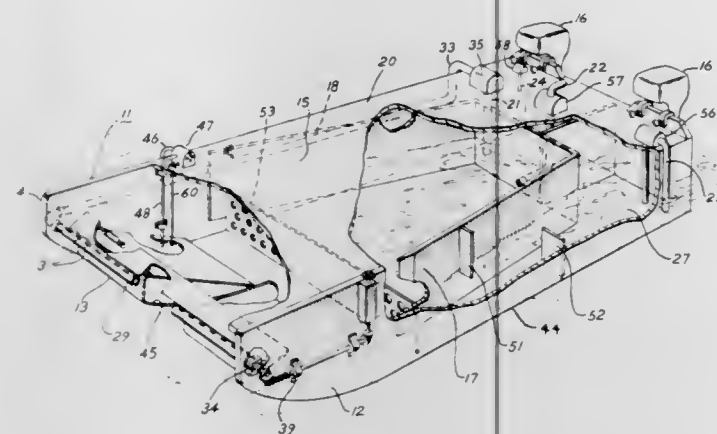
Larry D. Price, 2656 S. Union, Blue Island, Ill.

Filed Nov. 3, 1969, Ser. No. 873,153

Int. Cl. E02b 15/04; B01d 21/24

U.S. Cl. 210-242

6 Claims



A vessel is disclosed for removing floating oil and other waste matter from the surface of water, such as from lakes, harbors, rivers or seas. An elongated pipe having a plurality of spaced slits for permitting water to flow therethrough is positioned along the forward portion of the vessel. A pump provides water under pressure to the pipe. Means for adjusting the pitch of the vessel and the depth at which the pipe is positioned are also provided.

3,630,377

## SEWAGE FILTER UNIT

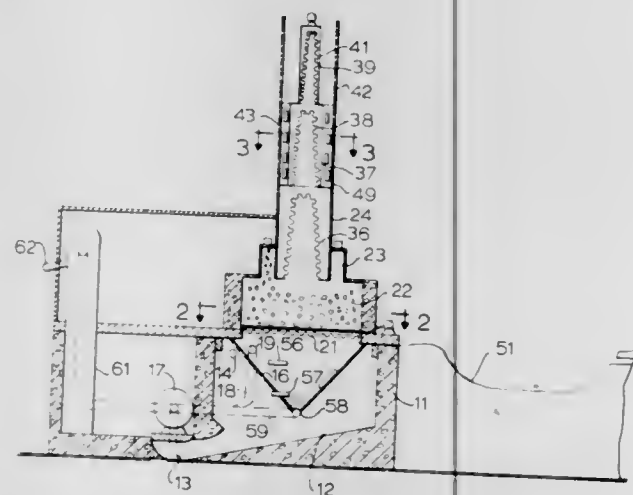
Frederick J. Brooks, San Rafael, Calif., assignor to Astrotronic Research, Ltd., North Vancouver, B. C., Canada

Filed June 11, 1969, Ser. No. 832,052

Int. Cl. B01d 23/10, 29/28

U.S. Cl. 210-152

5 Claims



Sewage is delivered into a sump under sufficient pressure to counterbalance the hydrostatic pressure of a superimposed vertical series of filters. Water rises through the series of filters while the solids remain in the sump or are removed in the filters. An ultrasonic device destroys bacteria. The outflow of liquid is free of solid contamination and bacteria. Solid components from the sump are burned.

3,630,378

## NOVEL WATER TREATING AND STORAGE APPARATUS

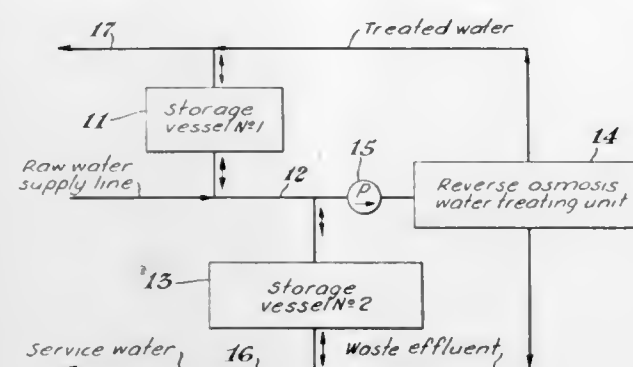
William C. Bauman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 24, 1968, Ser. No. 731,981

Int. Cl. B01d 31/00

U.S. Cl. 210-257

10 Claims



A novel water treating apparatus is disclosed having a unique capability of in combination treating and storing the treated water, supplying at instantaneous demand needs and at line pressure treated water and/or service water and continuously replenishing the supply of treated water without the need for elaborate or special timing devices, switches, valving arrangements, etc. The apparatus is especially useful in softening or desalting water by reverse osmosis, electrodialysis and the like.

3,630,379

## STEP RING CENTRIFUGE SCREEN

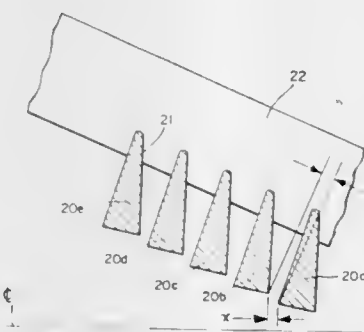
Thomas Davy Sharples, Atherton, Calif., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 7, 1970, Ser. No. 61,885

Int. Cl. B01d 25/16, 33/00

U.S. Cl. 210-369

5 Claims



A frustoconically shaped centrifuge screen is formed from a plurality of annular sections, the sections being spaced, apart and increasing in diameter in a direction from the smaller end of the screen to the larger end thereof. The innermost surface of each section is flat, nonplanar with, and located outwardly of that of the preceding section so as to form a stepped diverging axial passage for a mixture introduced into the smaller end of the screen as it rotates about its axis, allowing liquid to pass radially between sections, while solids axially spill from one section to the next.

3,630,380

## ROTARY VACUUM DRUM FILTERS

August C. Barnebl, Stamford, and Franz Bliem, Norwalk, both of Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Aug. 28, 1969, Ser. No. 853,842

Int. Cl. B01d 33/06

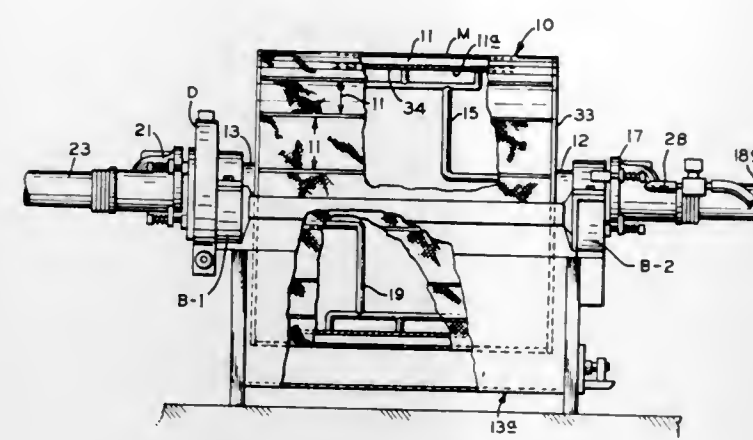
U.S. Cl. 210-404

33 Claims

A rotary vacuum drum filter wherein the external filter compartments are provided with both leading and trailing fil-

trate drainage pipes, and separate vacuum control means are provided for each set of pipes, functioning and timed relative

cover plate, having ports communicating with the inlet and outlet, is bonded to the open end of the housing and the ex-



to each other in such a manner as to attain optimum filtrate drainage from the compartments.

3,630,381

## DEVICE FOR SEALING OFF THE FILTER PRESS CAVITY BETWEEN TWO FILTER PRESS ELEMENTS, PREFERABLY TWO REVOLVING FILTER PRESS BANDS OR BELTS OF A FILTER PRESS

Hans Gujer, Glattalstrasse 149, Rumlang, Zurich, and Karl Koller, Zurich, both of Switzerland, assignors to said Gujer, by said Koller

Filed July 1, 1969, Ser. No. 838,293

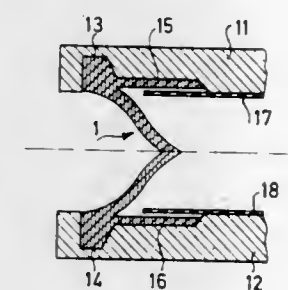
Claims priority, application Switzerland, July 7, 1968,

9846/68 Oct. 8, 1968, 14992/68

Int. Cl. B01d 33/04

U.S. Cl. 210-400

18 Claims



An installation or device is disclosed for sealing off the filter press cavity between two filter press elements, preferably two revolving filter press bands of a filter press. Elastic sealing strips are disposed between the filter press surfaces at least at two opposite sides of the filter press cavity. The sealing strips have a V-shaped cross section with extensions pointing outwardly at the free ends of the shanks of the V, with the extensions engaging in suitable grooves in the sides of the filter press element.

3,630,382

## LIQUID FILTER CARTRIDGE AND A METHOD AND APPARATUS FOR MAKING THE SAME

David H. Hodgkins, Manchester, Conn., assignor to Standard Screw Company, Wilson, Conn.

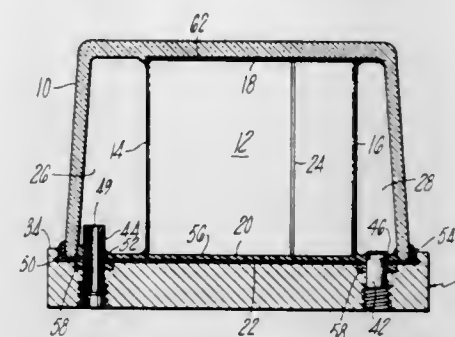
Filed Mar. 10, 1969, Ser. No. 809,059

Int. Cl. B01d 27/06

U.S. Cl. 210-443

8 Claims

An accordion pleated filter element is disposed in a cup-shaped housing and sealed to the adjacent walls of the housing dividing the interior thereof into an inlet and outlet. A



3,630,383

## GUTTER GUARD

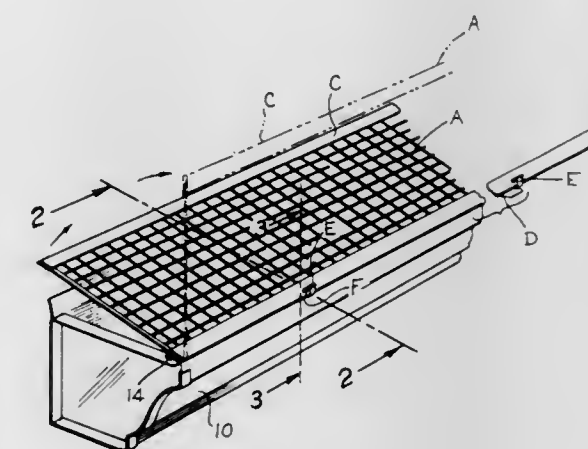
Charles H. Reeves, P.O. Box 11607, Northside Station, Atlanta, Ga.

Filed Dec. 16, 1969, Ser. No. 885,563

Int. Cl. B01d 23/00

U.S. Cl. 210-474

1 Claim



A guard for a gutter having an outer flange extending inwardly toward a roof has a substantially U-shaped clip for locking same upon the flange, a looped member carried by an upper portion of the clip extending over the flange, and an aperture adjacent a hem carried by an elongated screen section forming a hinge for opening the gutter easily for cleaning.

3,630,384

## FILTER BED ELEMENT FOR USE IN MELT-SPINNING

Haruhiko Toda, Mihara-shi, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Oct. 8, 1969, Ser. No. 864,844

Claims priority, application Japan, Oct. 24, 1968, 43/77474

Int. Cl. B01d 39/00

U.S. Cl. 210-506

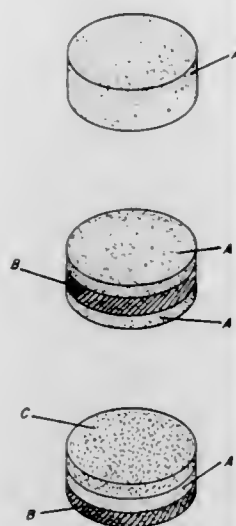
8 Claims

A filter bed element for use in melt-spinning, which consists of a filter sand which has previously been molded using



as a binder a synthetic high polymer having a melting point

This device is of such construction so as to simulate a man having a bowl portion on top of the head and also a bowl



equal to or lower than that of the synthetic high polymer to be filtered.

3,630,385

#### SUPPORT FOR TOOLS AND SMALL ARTICLES

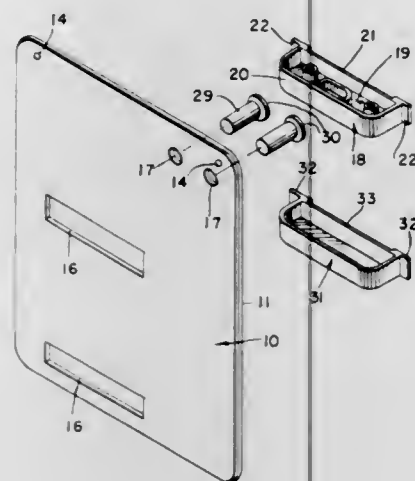
Anne M. Searcy, Thomasville, Ga., assignor to Handy Anne, Inc., Thomasville, Ga.

Filed June 25, 1970, Ser. No. 49,840

Int. Cl. A47f 5/08

U.S. Cl. 211-88

2 Claims



A support for hand tools and small articles features a wall-mounted support panel and readily detachable tray and support elements which require no separate fasteners for attaching the same to the panel. The device knocks down readily for packaging.

3,630,386

#### ASH TRAY

William V. Gale, and Joan L. Gale, both of 1309 Glenn, Pasadena, Tex.

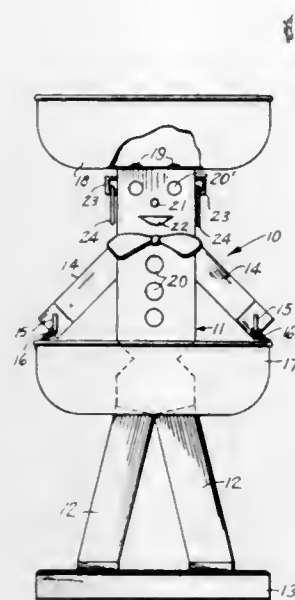
Filed June 17, 1970, Ser. No. 46,954

Int. Cl. A47f 3/14

U.S. Cl. 211-133

1 Claim

A versatile and ornamental device for use as an ashtray, a nut bowl, a candy bowl or for use as a utility tray for holding jewelry or other articles.



portion being suspended from the arms, the bowls being used for any desired purpose.

3,630,387

#### FILE SUPPORT STRUCTURE

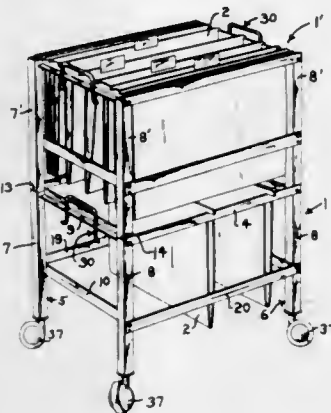
Norvin J. Wehner, Kansas City, Mo., assignor to Cramer Industries, Inc., Kansas City, Mo.

Filed Feb. 16, 1970, Ser. No. 11,700

Int. Cl. A47f 5/10

U.S. Cl. 211-178 R

1 Claim



A collapsible file support structure for the vertical filing of file wrappers or similar objects wherein the collapsible file support structure has a pair of longitudinally spaced end frame members, each having a pair of upright members and rigid bracing members extending therebetween and a pair of laterally spaced longitudinal support bars extending between and having their ends pivotally secured to the upright members of each of the frames adjacent upper ends thereof. Locking bars extend parallel with the support bars and are pivotally secured at each end to the upright members of the frames spaced from the lower ends of the upright members, and fastening members secure the locking bars to the upright members whereby the file support structure may be selectively positioned in an upright position or a collapsed position. Roller means are mounted in lower ends of each of the upright members for movably supporting the file support structure.

3,630,388

#### CUSHIONING ARRANGEMENT FOR RAILWAY CAR

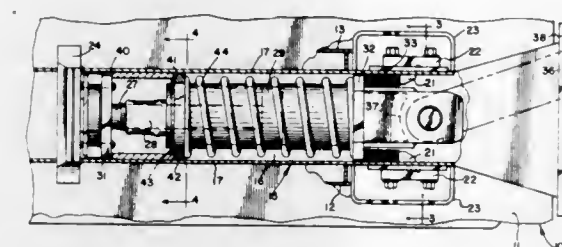
Willis H. Knippel, Palos Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 8, 1969, Ser. No. 883,087 The portion of the term of the patent subsequent to Aug. 17, 1988, has been disclaimed.

Int. Cl. B61g 9/16

U.S. Cl. 213-8

7 Claims



A railway car underframe includes at each end thereof an end-of-car cushioning installation including a hydraulic cushion which is movable between neutral, draft and buff positions during impacts on the coupler. The arrangement includes a cushion pocket having a piston rod anchored therein against longitudinal movement and includes a stop which in the buff position is engaged by a sliding collar slidingly supported on the cushioned cylinder and which is retained against the stop by means of a coil spring held captive on the cylinder. Under conditions of draft impact the cushioned cylinder during longitudinal movement compresses a plurality of spring leaves supported in the pocket and the collar is moved longitudinally away from the stop arrangement.

3,630,389

#### MATERIAL-HANDLING APPARATUS

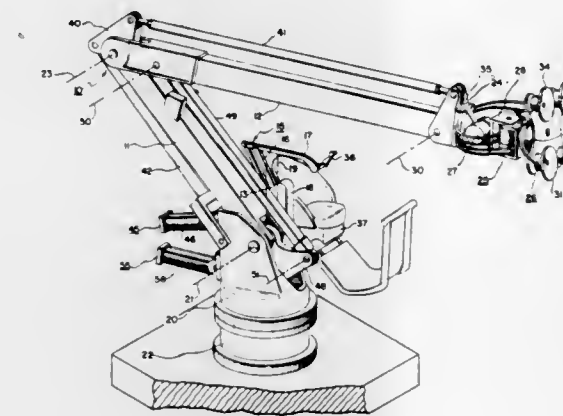
George S. Schmidt, Schenectady, and Donald R. Wilt, Albany, both of N.Y., assignors to General Electric Company

Filed Sept. 30, 1970, Ser. No. 76,814

Int. Cl. B25j 3/02

U.S. Cl. 214-1 CM

5 Claims



An articulated boom having an upper arm element and a lower arm element is secured to a support member at one end thereof to pivot about a first horizontal axis and has an end effector assembly at the other end thereof. The upper arm element and the lower arm elements are pivotally connected about a second horizontal axis. An intermediate member and a lower arm support member are provided for moving the lower arm element about the second horizontal axis. The intermediate member is pivotal about the first horizontal axis and the lower arm support member is pivotally connected at its ends to the lower arm elements and the intermediate member. An actuator pivotally connected between the support member and the intermediate member causes the upper arm element to swing about the second horizontal axis. Another actuator pivotally connected between the upper arm element and the support member

pivotally swings the upper arm element about the first horizontal axis.

3,630,390

#### CONTAINER-LOADING CRANE ARRANGEMENT

Hans Tax, Potsdamer Strasse 3, and Rudiger Franke, 8 Munich 23, both of Germany, assignors to said Tax, by said Franke

Filed Feb. 2, 1970, Ser. No. 7,446

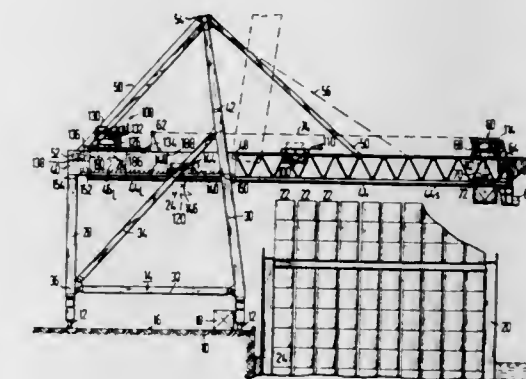
Claims priority, application Germany, Feb. 16, 1970, P 19 06

212.5

Int. Cl. B63b 27/12

U.S. Cl. 214-14

12 Claims



A crane for loading and unloading a containership and for transferring the containers between the ship and land vehicles is equipped with normally stationary hoists on the portions of its beam which are above water and above land respectively. The containers lifted by one hoist and lowered by the other are transferred between the hoists on the platform of a carriage traveling horizontally on the crane beam and automatically controlled by limit switches. Two carriages and two hoists on the land side of the crane can normally be served adequately by one hoist on the sea side of the crane without interference if the two carriages travel on different levels, and the hoist on the land side cooperating with the higher carriage is farther removed from the hoist on the sea side than the other hoist on the land side.

3,630,391

#### WORK GRIPPER

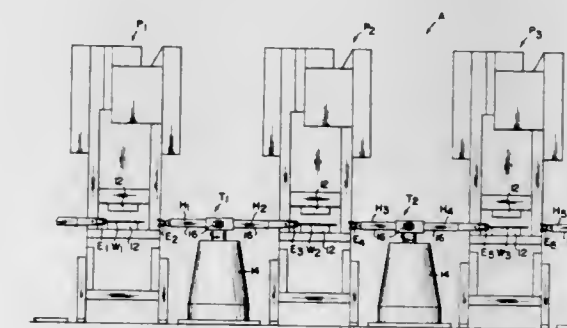
Walter W. Wilson, Levittown, Pa., assignor to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Jan. 28, 1969, Ser. No. 794,523

Int. Cl. B66c 1/42; B55j 9/00

U.S. Cl. 214-1 BB

13 Claims

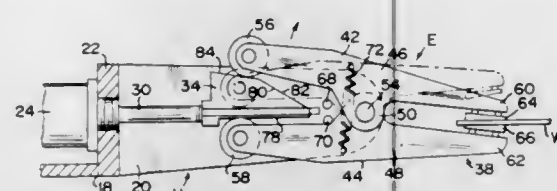


A work handling assembly especially adapted for automated equipment comprising a movable arm, piston means supported on said arm, and removable cam means supported on the piston means, the arm including guide means for controlling the line of movement of said cam means. Also supported on the arm is a work engaging means including an ac-



tuating end and an opposed actuated end adapted to engage a workpiece; the actuating end being in line with the line of

inclined rotating cylindrical tube through which the disclike articles pass in attaining the desired relationship.



movement of said cam means and engaged thereby for controlled movement of the work engaging means actuated end.

3,630,392

# ROD STACKING AND HANDLING APPARATUS

Bernard G. Cintract, Boulogne, and Rene G. Sevin, Garges-Les-Gonesses, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

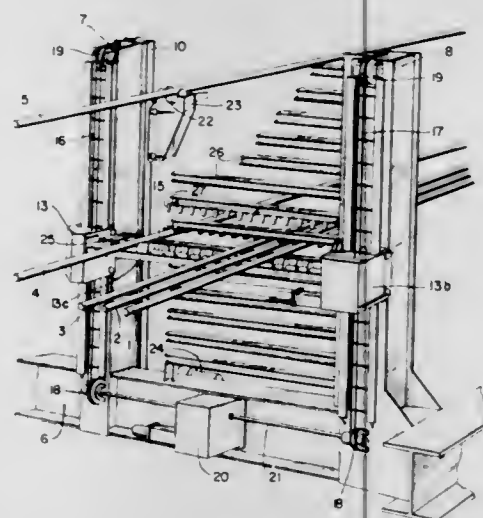
Filed Apr. 13, 1970, Ser. No. 27,939

Claims priority, application France, Nov. 12, 1969, 6938751

Int. Cl. E21b 19/14

U.S. Cl. 214-1 P

14 Claims



Apparatus for the stacking and withdrawal of horizontal rods, comprising a plurality of horizontally aligned finger bars for supporting the rods in horizontal relation, each of the finger bars having a free end, a conveyor for receiving a rod in the horizontal position and for moving it vertically to a position adjacent the free ends of selected bars and a pair of screw conveyors in horizontal alignment that are movable upwardly for engaging the rod and for moving it laterally onto the selected bars. The conveyors cooperate with spacing combs on the bars which maintain the rods in a predetermined spaced relation on the bars when the conveyors are moved away from the bars.

3,630,393

# APPARATUS FOR ORIENTING DISCLIKE ARTICLES

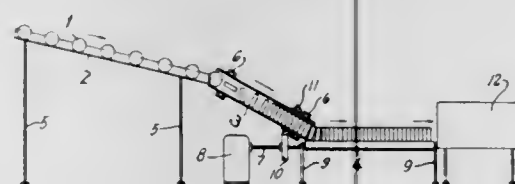
Sadakatsu Yamamuro, Iwata, Japan, assignor to The Toyo Bearing Manufacturing Company Limited, Osaka, Japan

Continuation-in-part of application Ser. No. 734,347, June 4, 1968, now abandoned. This application July 9, 1970, Ser. No. 53,641

Int. Cl. B65g 57/08

U.S. Cl. 214-7

8 Claims



Apparatus for orienting disclike articles into a substantially straight line side-by-side relationship which includes an

inclined rotating cylindrical tube through which the disclike articles pass in attaining the desired relationship.

3,630,394

# CAM LEVER FOR ARTICLE HANDLING TRAY

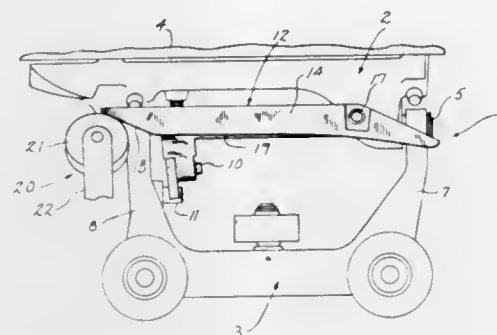
Gary W. Kingzett, Milwaukee, Wis., assignor to A-T-O Inc., Butler, Wis.

Filed Oct. 22, 1969, Ser. No. 868,557

Int. Cl. B65g 47/38

U.S. Cl. 214-62 A

3 Claims



A conveyor carriage for a commodity sorting system that has a tray pivotally mounted to a supporting truck and a releasable latch mechanism that normally holds the tray in a horizontal load carrying position. A cam member is pivoted on the underside of the tray which includes two distinct inclined surfaces. The first surface is a short incline at the leading part of the member that is disposed at a relatively steep angle with respect to the direction of movement of the carriage, and the second surface presents a curve which has its leading portion tangential to the direction of movement of the tray and then descends in an increasing slope along the rest of its length. A tray tipping tilt arm is mounted in the path of travel of the carriage to engage the cam member and raise it for first releasing the latch mechanism, and then tilting the tray with a controlled acceleration that facilitates discharge of commodities from the tray.

3,630,395

# ARRANGEMENT OF REAR HOISTS FOR MOTOR VEHICLES

Sten Magnus Bunge, Jakobsberg, Sweden, assignor to AB Hydro-Lift, Eskilstuna, Sweden

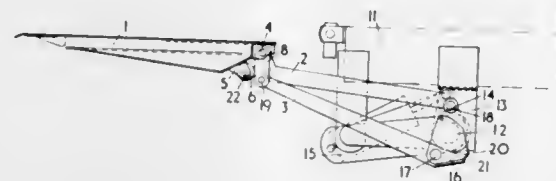
Filed Mar. 16, 1970, Ser. No. 19,783

Claims priority, application Sweden, Oct. 21, 1969, 14390

Int. Cl. B60p 1/44

U.S. Cl. 214-77 P

6 Claims



A hoist platform at the rear of a vehicle is mounted at the free ends of two pairs of arms forming a "parallelogram" linkage for raising and lowering the platform in a horizontal position. A linkage connected to the inner ends of one pair of arms causes the platform to tip down at ground level to facilitate loading. An adjustable cam is provided on the platform, the cam engaging the linkage, so that the platform can be made horizontal when the vehicle is on a slope.

3,630,396

# SELF-CLEANING BACK HOE

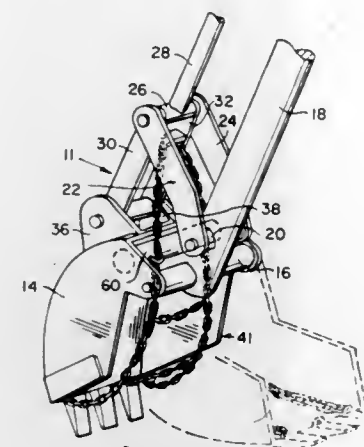
Gerald W. Womack, 545 South "C" Street, Tracy, Calif.

Filed Feb. 5, 1970, Ser. No. 8,930

Int. Cl. E02f 3/00

U.S. Cl. 214-146 E

6 Claims



A chain arrangement is provided in operative association with a back hoe bucket and bucket-positioning mechanism in such a manner that the chain arrangement is positioned on the bottom of the bucket when scooping operations are being carried out and is propelled outwardly of said bucket when the contents of the bucket are being dumped.

3,630,397

# SIDE SHIFTING STORAGE AND TRANSFER APPARATUS

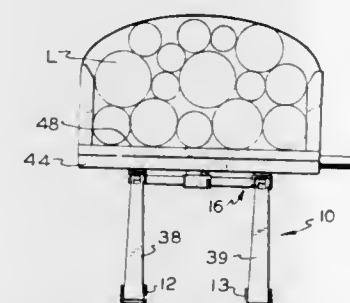
Dossie M. Batson, Milwaukie, Oreg., assignor to Nelson Equipment Company, Portland, Oreg.

Filed Sept. 2, 1969, Ser. No. 854,590

Int. Cl. B65g 67/12

U.S. Cl. 214-146.5

11 Claims



A load storage and transfer apparatus for storing a load on transfer bunks near ground level, and transferring the load to a vehicle by first elevating the bunks and then side-shifting them to transfer the load to a vehicle load support. The transfer bunks are mounted for limited vertical tilting movement and for horizontal pivoting movement to facilitate transfer of the load to the vehicle and removal of the loaded vehicle from alongside the transfer bunks without clearance between the vehicle and transfer bunks.

3,630,398

# FULCRUM SPAR LOG CRANE

Peter J. Cervenak, Seattle, Wash., assignor to Nicholson Manufacturing Company, Seattle, Wash.

Continuation of application Ser. No. 600,871, Dec. 12, 1966, now abandoned. This application May 27, 1970, Ser. No. 41,708

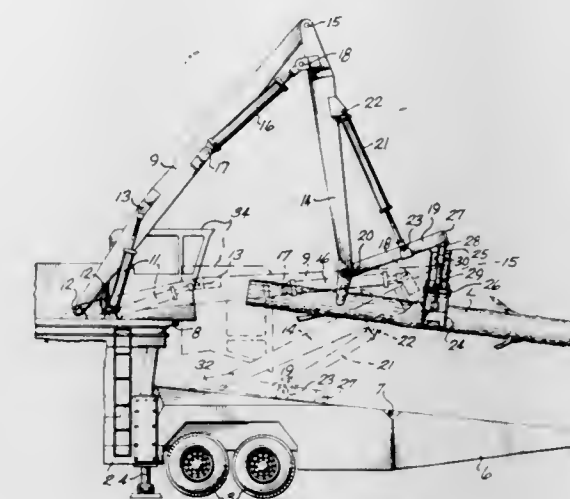
Int. Cl. B66c 1/28

U.S. Cl. 214-147 AS

7 Claims

An articulated boom includes a main spar having one end pivotally mounted by a turntable for elevational swinging of

an intermediate fulcrum spar having one end pivotally mounted on the swinging end of the main spar and its opposite end forming a log engaging fulcrum, and an auxiliary grab-mounting spar having one end pivoted to the fulcrum spar at a location spaced from its fulcrum end. A grab is



pivotally mounted on the grab-mounting spar at a location spaced from the pivot connecting the grab-mounting spar and the fulcrum spar. The connected spars are swung relative to each other by fluid pressure jacks. The auxiliary spar is mounted on the upper and outer side of the fulcrum spar so that the three spars can be folded in zigzag relationship.

3,630,399

# LOG LOADER WITH IMPROVED LINKAGE ARRANGEMENT

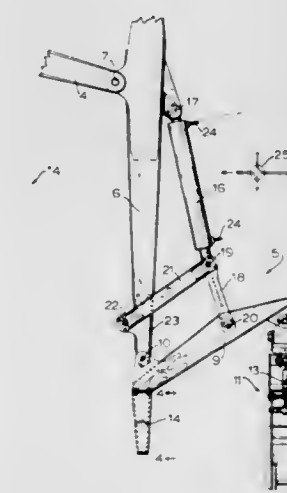
John R. Hanitz, Green Bay, Wis., assignor to Northwest Engineering Company, Green Bay, Wis.

Filed Dec. 18, 1969, Ser. No. 886,207

Int. Cl. B66c 1/44

U.S. Cl. 214-147 AS

5 Claims



A logging machine has a boom with a log loader at its outer end. A grapple arm has a grapple and heel at opposite ends, and the end of the arm adjacent the heel is pivoted to a boom handle. A rectangular link structure includes at least a portion of the arm and handle, and also includes compression and tension links. The rectangular link structure is actuated to move the grapple and heel by a cylinder connecting the link structure with the boom handle.



3,630,400

**METHOD OF LOADING A HOPPER OF A SUCTION DREDGER WITH SAND**

Jan De Koning, Amsterdam, Netherlands, assignor to N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal," Binnenweg, Rotterdam, Netherlands

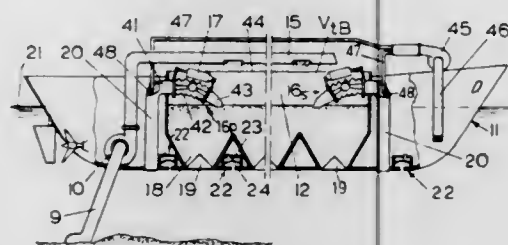
Filed Nov. 5, 1969, Ser. No. 874,212

Claims priority, application Netherlands, Nov. 8, 1968, 68.15921

Int. Cl. B63b 27/00

U.S. Cl. 214-152

2 Claims



In loading a hopper of a floating suction dredger with sand a suspension of sand and water is pumped into the hopper. After the hopper is filled up to its maximum permissible carrying capacity in a first loading step additional suspension is pumped into the hopper in a second loading step during simultaneously draining off by lowering drain means in dependence on the weight of the load of the hopper for maintaining the suction dredger substantially loaded at its maximum permissible carrying capacity.

3,630,401

**BALL RETRIEVER**

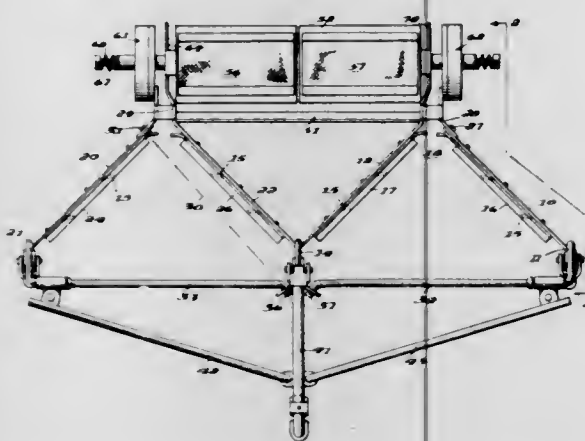
August W. Gustafson, and Edna L. Gustafson, both of 350 Pasadena Place, Corpus Christi, Tex.

Filed July 6, 1970, Ser. No. 52,183

Int. Cl. B60p 1/00

U.S. Cl. 214-356

3 Claims



Apparatus for gathering balls such as golf balls lying on a practice field. A wheel which assists in supporting the apparatus for rolling movement cooperates with a fixed disc and lifts the balls and delivers them into a receptacle carried by the apparatus.

3,630,402

**CRANE FOR HANDLING CONTAINERS**

Robert R. Young, Danville, Calif., assignor to Kaiser Industries Corporation, Oakland, Calif.

Continuation-in-part of application Ser. No. 717,174, Mar. 29, 1968, now Patent No. 3,543,952. This application July 16, 1969, Ser. No. 842,158

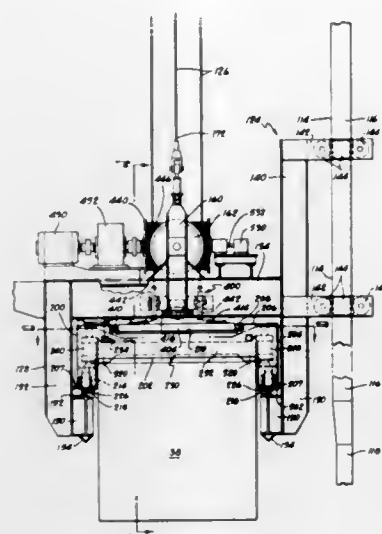
Int. Cl. B66f 9/14

U.S. Cl. 214-730

15 Claims

Apparatus for handling large heavy containers and similar loads and especially for transferring the same among the

compartments of a vertical array of compartments and a separate transfer station and more particularly a crane for picking up and depositing such loads outside of a compart-





3,630,408

**PROTECTIVE BEAD FOR A CONTAINER OPENING**

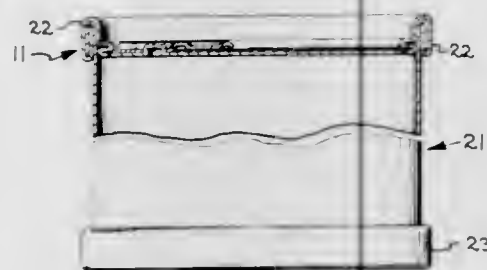
William F. Elser, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Continuation of application Ser. No. 808,022, Mar. 17, 1969, now abandoned. This application July 21, 1970, Ser. No. 56,801

Int. Cl. B65d 17/20, 17/54

U.S. Cl. 220-54

4 Claims



This application discloses a metallic convenience closure of the full panel tear-out type for a container body, in which the closure upstanding sidewall which perimetricaly surrounds the central closure panel is provided with an inwardly extending protective bead. This bead is spaced above and extends generally parallel to the closure central panel. The score line which circumscribes the removable portion of the closure panel is located entirely radially outwardly of the bead, and therefore the sharp edge which is formed along such score line when the removable portion is removed is in noncutting relationship with the hand of a person manually emptying the contents of the associated container. The closure is provided with a removal tab, the nose of which is located in the space between the closure panel and the protective bead. The protective bead also serves to radially stiffen the associated container, and a closure with such bead may be used to particular advantage with a semirigid container body, e.g., a composite, laminated container body deriving its strength principally from one or more cylindrically wound fiberboard plys or laminations.

3,630,409

**DISPENSER HAVING A CONVEYOR BELT FORMING A PLURALITY OF DELIVERY SECTIONS**

William Lovell Robinson, Northolt, England, assignor to Electric Shop Developments Limited, London, England

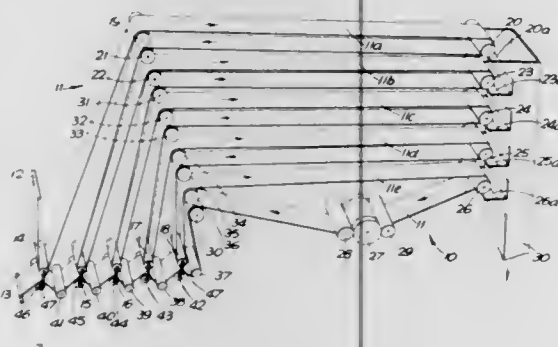
Filed Feb. 3, 1970, Ser. No. 8,296

Claims priority, application Great Britain, Feb. 4, 1969, 6,026/69

Int. Cl. B65h 7/04

U.S. Cl. 221-18

6 Claims



Apparatus for dispensing articles having a conveyor belt forming a plurality of delivery sections arranged such that only one delivery section at a time moves to dispense articles when the conveyor belt is driven.

3,630,410

**ARTICLE DISPENSER WITH PLURAL SPRING INTERLOCK**

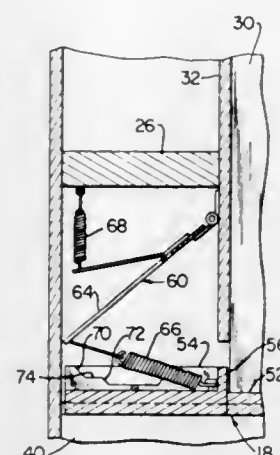
Robert E. Hendrickson, Carbondale, Colo., and William R. Slattery, Route 1, Box 139, Glenwood Springs, Colo.

Filed June 6, 1969, Ser. No. 831,026

Int. Cl. B65g 59/06

U.S. Cl. 221-125

3 Claims



Manually operated storage and dispensing cabinet for articles and packages characterized by a plurality of slidable drawers, each manually movable from a position beneath a stack or tier of articles or packages in the cabinet to a dispensing position outside of the cabinet, incorporating drawer interlock mechanism which permits only one drawer to be withdrawn at a time to its dispensing position during a manual operation, and a counter operated in response to movement of the withdrawn drawer; also incorporates a lock for each drawer which prevents its withdrawal after the last article or package resting on same has been dispensed, whereby the counter is precluded from recording in the event an attempt is made to withdraw an empty drawer which otherwise would effect an erroneous count of articles and packages actually moved to their dispensed positions.

3,630,411

**SEED DISPENSER AND METHOD**

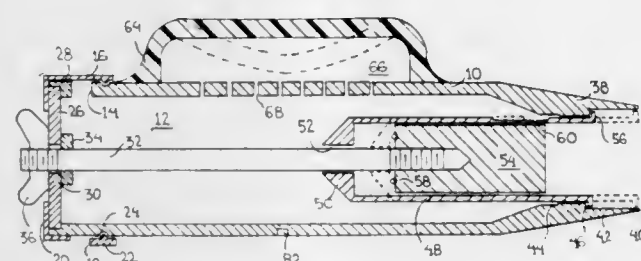
Clarence V. Petty, Box 272, and Alden G. Weakly, Box 264, both of Newport, N.Y.

Filed Sept. 8, 1969, Ser. No. 856,124

Int. Cl. G07f 7/00

U.S. Cl. 221-264

9 Claims



A device, operative in response to a pneumatic squeeze bulb, to select a discreet number of seeds and eject them under influence of a pneumatic ejection pressure. Also a sequential method of pneumatically positioning and ejecting a seed.

3,630,412

**METHOD AND APPARATUS FOR GENERATING AEROSOLS**

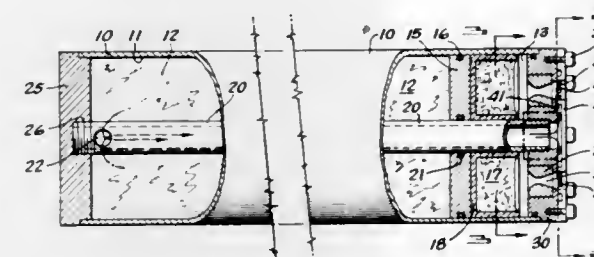
Erwin L. Capener, San Jose, Calif., and Lionel A. Dickinson, Accokeek, Md., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Apr. 8, 1970, Ser. No. 26,645

Int. Cl. B67b 7/00

U.S. Cl. 222-1

5 Claims



An aerosol is generated in the atmosphere by the use of a rocket wherein the internal pressure generated by combustion of a propellant is employed to force an aerosol-forming material carried within the rocket into contact with the stream of gases exiting from the rocket at velocities of at least Mach 1. The aerosol-forming material is injected through orifices into the said gas stream at pressures which are well above those prevailing in said stream at the injection point, thereby providing a high-pressure drop across the injector orifices.

3,630,413

**DEVICE FOR MANUALLY OR AUTOMATICALLY INFLATING A LIFE PRESERVER**

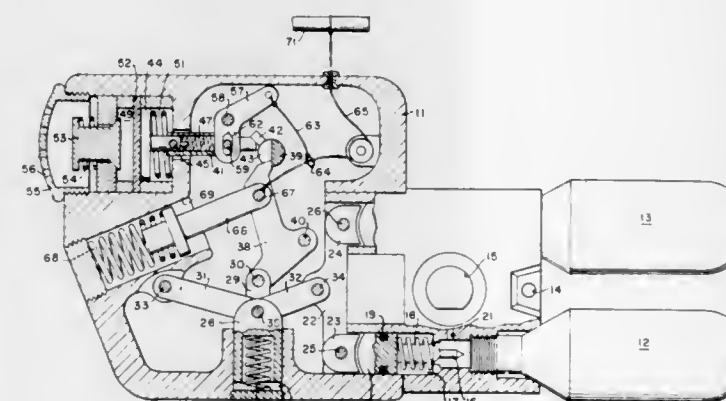
Orville L. Beckes, Washington, and Sherman E. Dare, Wheatland, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy

Filed Apr. 1, 1970, Ser. No. 24,574

Int. Cl. B67b 7/24

U.S. Cl. 222-5

4 Claims



A device for manually or automatically puncturing one or more carbon dioxide cartridges for use in inflating a life preserver. A water-soluble disk is used to prevent movement of a spring-biased piston, and upon dissolving of this water-soluble disk, the spring-biased cylinder moves to withdraw a stop thereby permitting actuation of toggle linkage to drive one or more plungers which puncture one or more carbon dioxide cartridges. A one-way valve which is actuated by water pressure is provided to prevent high humidity or water spray from dissolving the water-soluble disk. A cable is also provided which can be used to actuate the toggle linkage to puncture the carbon dioxide cartridges.

3,630,414

**DEVICE FOR FEEDING A BAKING APPARATUS FOR GREEN PELLETS**

Paul Victor Parmentier, Grivegnée, Belgium, assignor to Centre National De Recherches Metallurgiques, Brussels, Belgium

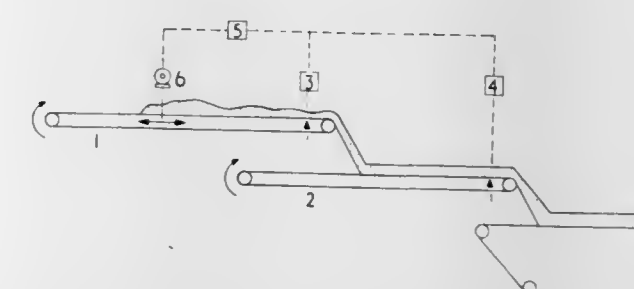
Filed July 1, 1969, Ser. No. 838,246

Claims priority, application Belgium, July 3, 1968, 717,560

Int. Cl. G01f 1/00

U.S. Cl. 222-55

2 Claims



The invention relates to the feeding of baking apparatus with green pellets, for instance of iron ore, supplied by pelletizing apparatus the output of which may fluctuate. The green pellets coming from the pelletizing apparatus, optionally after screening, is fed to a movable belt conveyor discharging to a fixed belt conveyor which in turn discharges to the baking apparatus. Measuring apparatus measures the mass flow rates of the green pellets discharging from both conveyors. The movable conveyor is moved parallel to the conveying direction of the fixed conveyor at a velocity proportional to the difference between the mass flow rates so that the depth of the layer of green pellets on the fixed conveyor is approximately constant.

3,630,415

**DEVICE FOR STORING A PLURALITY OF PRODUCTS SEPARATELY AND DISPENSING THEM SIMULTANEOUSLY**

Bruno Morane, Paris; Charles Paoletti, Aulnay Sous Bois; Manlio Maurelli, Vaujours; Louis Merrien, Fontenay Sous Bois, and Robert Sathicq, Villepinte, all of France, assignors to L'Oreal, Paris, France

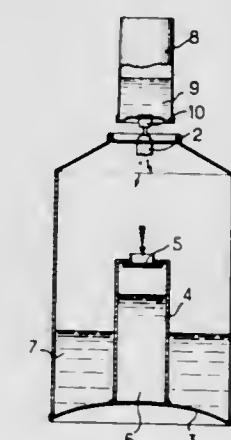
Filed Dec. 1, 1969, Ser. No. 881,079

Claims priority, application France, Feb. 7, 1969, 6902858

Int. Cl. B67d 5/56

U.S. Cl. 222-129

11 Claims



A device for storing a plurality of products separately and dispensing them simultaneously comprises an outer jacket, at least one fragile inner container and means for applying fluid pressure to said container to implode it.

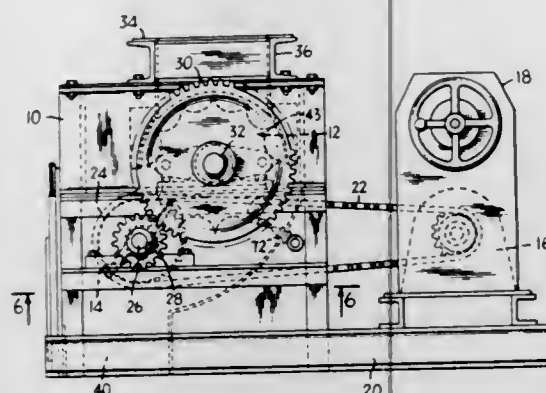


3,630,416

**ROTARY VOLUMETRIC FEEDING APPARATUS**  
Edward Bernard Weisselberg, Westwood County, and William Frederick Lamp, Bergen County, both of N.J., assignors to Wyssmont Company, Inc., Fort Lee, N.J.  
Filed Feb. 5, 1970, Ser. No. 8,771  
Int. Cl. B65d 3/00

U.S. Cl. 222-220

6 Claims



In rotary volumetric feeding apparatus, including a housing having openings for receiving and discharging material, a rotatable peripherally pocketed drum within the housing for feeding the material between the openings and an evacuation rotor for evacuating the pockets at a point adjacent the discharge opening, improvements are provided for spray cleaning the pockets, adjusting the clearances between the housing and the drum to accommodate materials of varying sizes, force-feeding material to the drum and for continuously maintaining the blades of wire-bladed evacuating rotors in a tightened condition.

3,630,417

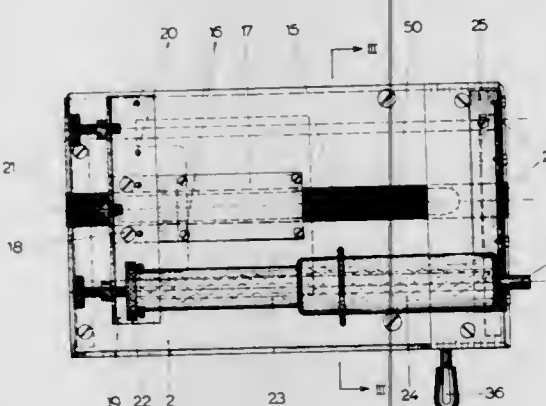
**MOTOR-DRIVEN FLUID-METERING DEVICE, IN PARTICULAR INFUSION PUMP FOR THE OPERATION OF ONE OR MORE HYPODERMIC SYRINGES**  
Hendrik Antoon Lorentz De Haas, Loenersloot, Netherlands, assignor to Berg & Burg N. V., Breukelen, Netherlands  
Filed Mar. 18, 1970, Ser. No. 20,740

Claims priority, application Netherlands, Mar. 20, 1969, 6904268

Int. Cl. G01f 1/02

U.S. Cl. 222-333

10 Claims



An infusion pump for the operation of one or more hypodermic syringes for medical injection purposes in which a slide member operatively connected to the syringes for discharging the latter is mounted in the frame of the device for movement between two end positions and is driven by an electric driving motor through a clutch and a speed reduction transmission which comprises a chain or rope drive having two wheels mounted adjacent both ends of the frame and two further wheels mounted on the slide member, and a chain or rope having its two ends secured to the two ends of the frame

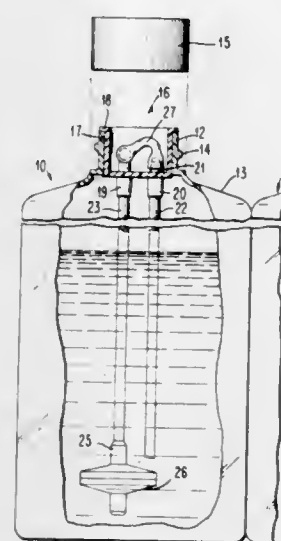
and passing from one frame end successively about one slide member mounted wheel; the frame-mounted wheel at this frame end, the opposite frame-mounted wheel at the other frame end, and the other slide member mounted wheel towards said latter frame end, one of the two frame mounted wheels being coupled to the clutch.

3,630,418

**DISPENSER FOR SUPPLYING LIQUID BY SUCTION**  
Theodore Bilichniansky, Hopewell Jct., N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.  
Filed Feb. 11, 1970, Ser. No. 10,548  
Int. Cl. B67d 5/60

U.S. Cl. 222-464

15 Claims



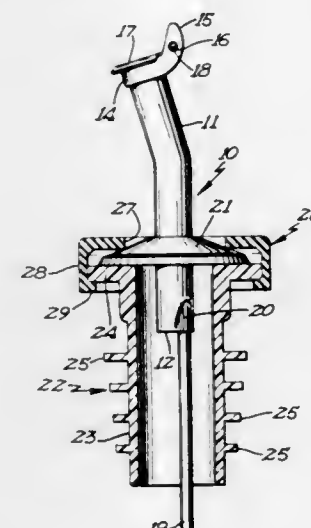
A dispenser including a container body having a mouth. A permanent liquid seal across the mouth has a pair of ducts approaching the bottom of the container and opening thereinto. The ducts extend upwardly through the seal, having their upper ends spaced apart. Before use, a short length of flexible tubing interconnects the upper ends of the ducts to prevent leakage and spillage. One end of the tubing may be disconnected and then connected to a suction inlet so that the connected one of the pair of ducts becomes an aspirating tube and the other provides an air inlet. Multiple container bodies may be supported together.

3,630,419

**MOUNTING MEANS FOR POURER DISPENSERS**  
Patrick L. Pierce, 8100 North Virginia Circle, Minneapolis, Minn.  
Filed Oct. 2, 1970, Ser. No. 77,419  
Int. Cl. B67d 3/00

U.S. Cl. 222-478

5 Claims



A nonmetallic coupling member and a nonmetallic closure member are used to sealingly mount a conventional metal

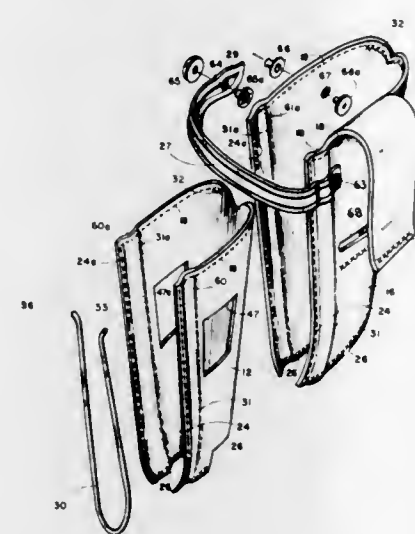
3,630,420

HOLSTER

John E. Bianchi, Bradbury, Calif., assignor to Bianchi Leather Products, Inc., Monrovia, Calif.  
Filed Feb. 16, 1970, Ser. No. 11,679  
Int. Cl. F41b 13/04

U.S. Cl. 224-2 B

6 Claims



This disclosure involves an open-front holster for revolvers including an inner liner and an outer facing which encase the barrel and cylinder portions of the revolver. The facing and liner portions extending along the sides of the barrel are joined together at their ends to enclose the tip of the muzzle. The facing and liner edges extending along each side of the barrel and chamber are separately jointed to retain the respective legs of a U-shaped spring, so that the base of the spring is adjacent to the tip of the revolver barrel and the ends of the spring legs are adjacent to the chamber, thereby forming a spring-supported slot along the length of the barrel and chamber through which by deflection of the spring the revolver may be drawn.

When the holster is worn in a normal hip position, the revolver may be drawn out of the holster by grasping the exposed handle and moving the gun laterally straightforward out of the holster. A safety strap passes across the open end of the slot near the top of the holster to hold the gun from being unintentionally moved forward out of the holster.

The inner liner has a pair of generally rectangular cutouts where the liner passes over the sides of the cylinder, thereby forming a recess wherein the cylinder portions extending from the gun frame are surrounded by the edges of the liner cutouts, preventing the revolver from being withdrawn from the holster by force or movement along the axis of the barrel.

3,630,421

**DISPENSING DEVICE FOR ROLLED SHEET MATERIAL**  
Edward Waltz, Grand Rapids, Mich., assignor to The E. O. Bulman Manufacturing Company, Inc., Grand Rapids, Mich.

Original application Feb. 9, 1967, Ser. No. 614,874, now Patent No. 3,555,060. Divided and this application Sept. 15, 1969, Ser. No. 871,078

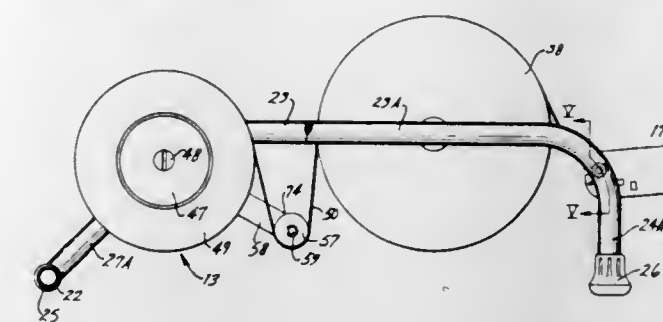
Int. Cl. B26f 3/02

U.S. Cl. 225-21

4 Claims

The apron taper has a frame structure upon which a roll of sheet material is rotatably supported so that said material can be unwound from the roll and passed over a cutting edge

mounted on the frame for separation of a portion of the material from the remainder of the roll. One or more rolls of tape having adhesive material thereon are rotatably supported upon the frame and guided to engage the sheet material, preferably adjacent an edge thereof, so that the tape and sheet material are caused to adhere to each other automatically as the sheet material is removed from its roll.



3,630,422

INTERMITTENT FILM MOTION MECHANISM

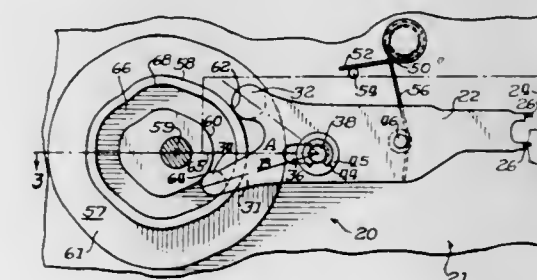
George F. Krtous, Chicago, and Edward G. Thurston, Urbana, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jan. 14, 1970, Ser. No. 2,759

Int. Cl. G03b 1/22

U.S. Cl. 226-62

11 Claims



An intermittent film motion mechanism having a shuttle with first and second cam followers on the shuttle, a film engaging member fixed to the shuttle, a cam engageable with the shuttle through the first and second cam followers, resilient means to continuously urge the shuttle against the cam, and a pivot pin for the shuttle located between the cam followers and the film engaging member. The cam has an outer cam surface with which the first cam follower is engaged, and a groove located interiorly of the outer cam surface, the groove having an inner cam surface with which said second cam follower is engaged, and the inner cam surface having a contour differing from said outer cam surface.

3,630,423

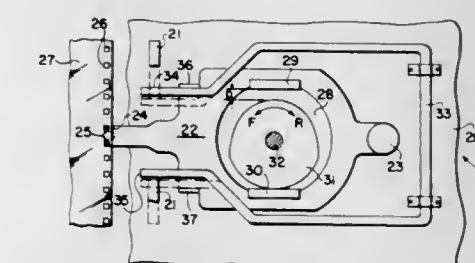
**MOTION PICTURE FILM TRANSPORT MECHANISM**  
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1969, Ser. No. 888,228

Int. Cl. G03b 1/22

U.S. Cl. 226-51

21 Claims



A reversible intermittent advance mechanism of the cam-claw variety is provided for use in cinematograph projection



apparatus. Means are provided for assuring that the claw is positively driven by the cam in both the forward and reverse projection modes.

Basically, the invention comprises a disc cam having a periphery of varying radius of curvature, with respect to its axis of rotation, and of constant diameter. A claw is provided having an interior opening and having a pair of contact shoes diametrically positioned about the periphery of said opening.

The cam is positioned between said contact shoes and in engagement with only one of said shoes for any direction of rotation of said cam. Spring means are provided for maintaining contact between either of said contact shoes and said cam; said spring means being adapted to bias a preselected one of said contact shoes into engagement with said cam depending upon the direction of rotation of said cam.

Reversal of the direction of advance is accomplished by adjusting the spring means so as to bring the other of said pair of contact shoes into engagement with said cam and by also reversing the direction of rotation of said cam.

3,630,424

## DRILLED NON-PORTED VACUUM DRUM

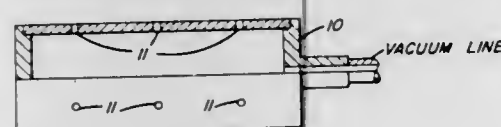
John A. Rau, Portland, Oreg., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 17, 1970, Ser. No. 46,946

Int. Cl. B65h 17/30

U.S. Cl. 226—95

9 Claims



A vacuum drum for gripping and feeding a web has its periphery provided with a pattern of drilled holes each having a diameter of 0.060 inches or less, said pattern of holes having a distribution such that  $nd^2/V$  is not less than 0.05 or more than 0.15

where

$d$ =hole diameter (inches)

$n$ =number of holes per square foot of drum surface

$V$ =vacuum measured with drum uncovered (inches of Hg).

Such a drum requires no porting and will accommodate webs of varying widths, some of which may not completely cover all holes in the drum surface.

3,630,425

## ELECTRODE WIRE ADVANCE FOR ARC WELDING

Gunter Wilkens, Kelkheim, Taunus, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany

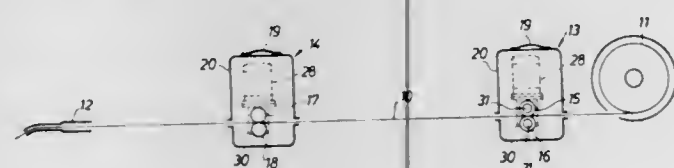
Filed Apr. 17, 1969, Ser. No. 816,984

Claims priority, application Germany, Apr. 20, 1969, P 17 65 255.4

Int. Cl. B65h 17/20

U.S. Cl. 226—108

5 Claims



An electrode wire advance for arc welding utilizes an electrode wire supplied through a flexible hose and acted upon by two drives. One wire drive pushes or unwinds the wire and is connected thereto by a coupling. The other wire drive pulls the wire from its hose and pushes it to the torch.

### 3,630,426 TRAIN OF FEED ROLLS FOR PAPER, PLASTICS OR TEXTILE WEBS

Herbert Rieger, and Friedrich Franz Brockmüller, both of Westphalia, Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Germany

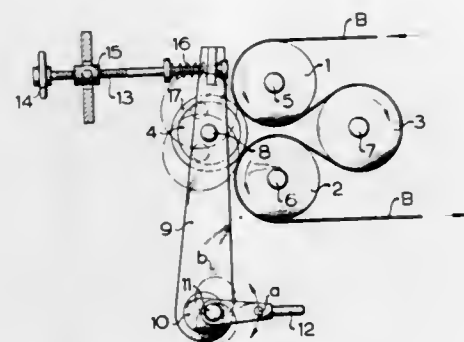
Filed Dec. 25, 1969, Ser. No. 879,840

Claims priority, application Germany, Dec. 2, 1968, P 18 12 226.4

Int. Cl. B65h 77/00

U.S. Cl. 226—177

10 Claims



A train of feed rolls for webs of material comprises a run-on roll, a runoff roll and an intermediate roll about all of which the web can be slung, and an adjustable pressure roll adapted to be selectively applied to the web to pass the latter against the periphery of the run-on roll or runoff roll or both said rolls simultaneously.

3,630,427

## RIVETING TOOL

Kenneth J. Stokes, Kidderminster, England, assignor to G.K.N. Screws & Fasteners Limited, Smethwick, Warley, England

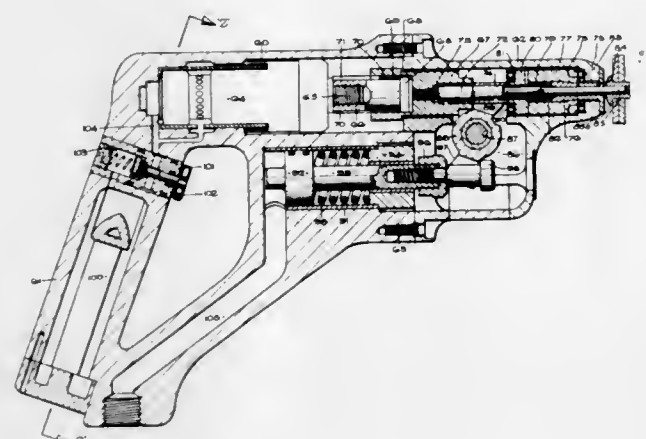
Filed Aug. 26, 1968, Ser. No. 755,313

Claims priority, application Great Britain, Aug. 10, 1968, 38,321/68

Int. Cl. B21j 15/18

U.S. Cl. 227—59

4 Claims



A tool for use in a method of riveting two sheets together using a tubular rivet with an enlarged flange at one end and a mandrel having a shank and a head at one end of the shank with the head being provided with a drill point and comprising the steps of placing the rivet upon the shank of the mandrel and driving the mandrel so that its head pierces an aperture in the sheets to be joined, forcing the rivet into said aperture and then applying a retractive force to the mandrel to withdraw the mandrel and cause its enlarged head to ex-

pand the end of the rivet radially outwardly. The tool comprises a body containing a collet for gripping the mandrel, a motor for rotating the collet to drive the mandrel and a pneumatic device to act upon the collet to provide retractive force for withdrawing the mandrel.

3,630,428

## STAPLING MACHINE

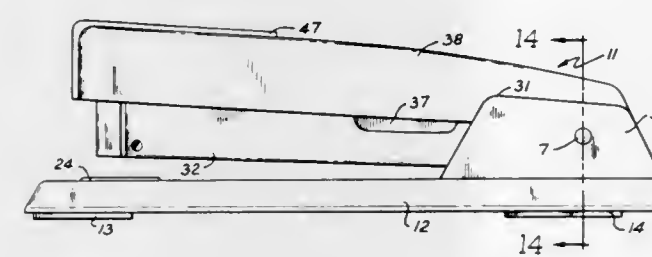
Nathaniel M. Olney, New York, and John J. Power, Westbury, both of N.Y., assignors to Swingline Inc., Long Island City, N.Y.

Filed May 1, 1970, Ser. No. 34,213

Int. Cl. B25c 5/02

U.S. Cl. 227—128

13 Claims



A stapling machine having a base, an anvil upon the base, an invertible magazine having a staple discharge opening and staple feeding means pivotally connected to the base, a cover overlying the magazine and pivotally connected to the base and magazine, a cap overlying the cover and also pivotally connected to the base, and an indicia bearing member connected to the cap. The anvil of the machine is supported within a recess provided in the base and is held firmly in downward position within the recess by one end of a leaf spring. The anvil is formed with chamfers on its leading and trailing edges and on its underside and provided with selectively engageable pinning and clinching portions. The magazine and associated structures are connected to the base by a pin passing through a pair of spaced ears which are each formed with upwardly and forwardly extending top portions and the topmost portion of each of the ears is in horizontal alignment with the staple discharge opening of the magazine when the magazine is in inverted position on the base. Each of the ears also bears an inwardly and laterally extending portion adjacent the base which ears are abutable with the sides of the magazine when the magazine is in normal position upon the base. Upon the pin which connects the magazine and associated structure with the ears there is a member formed with a pair of laterally disposed spacer elements thereupon which serve to space the magazine an associated structures from the sides of the ears and to prevent unwanted lateral movement thereupon. The indicia bearing member overlies fastening cap and is formed with fastening elements which connect with corresponding fastening elements of the cap.

3,630,429

## APPARATUS FOR PRODUCING COMPOSITE METALLIC WIRE

Yoshio Matsuda, and Shigenobu Ozaki, both of Itami-shi, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

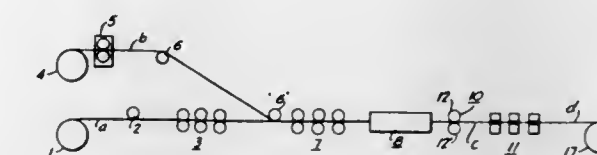
Original application Apr. 15, 1965, Ser. No. 448,411, now Patent No. 3,443,305, dated May 13, 1969. Divided and this application Mar. 24, 1969, Ser. No. 809,597

Int. Cl. B23k 21/00; B23p 3/02

U.S. Cl. 228—3

9 Claims

Apparatus to produce a composite wire wherein a pair of pressure bonding calibrated rollers rotatably disposed adjacent one relative to another are provided to form at their point of tangential proximity pressure bonding, oppositely opposed concavities with conjugate concavities formed ad-



jacently thereof, the former concavities to engage and circumferentially compress the outer deposited metallic

### 3,630,430 QUICKLY ERECTED SCOOP-TYPE CARTON

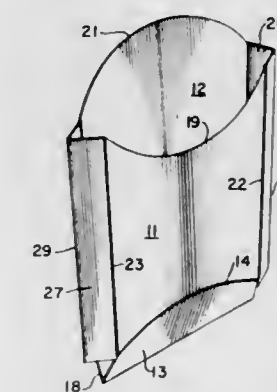
Glenn E. Struble, Fairfield, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,621

Int. Cl. B65d 5/36

U.S. Cl. 229—16 B

6 Claims



A box for quick erection in the shape of a scoop made with application of glue in parallel strips parallel to the blank edges and with an arcuate bottom having curved score lines and tapered sides to the box in assembled form.

3,630,431

## VALVE-DISCHARGE DISC CENTRIFUGE

Yoshinori Oka, Yokohama, and Ryuichi Takahashi, Tokyo, both of Japan, assignors to Mitsubishi Kakoki Kaisha Ltd., Tokyo, Japan

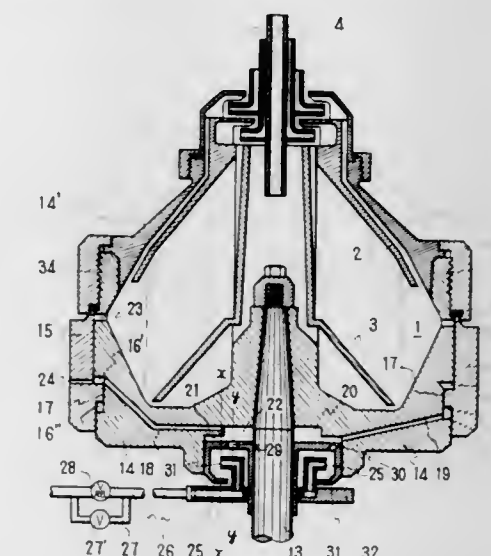
Filed Mar. 10, 1970, Ser. No. 18,228

Claims priority, application Japan, June 18, 1969, 44/47637

Int. Cl. B04b 11/00

U.S. Cl. 233—20 A

7 Claims



The solids discharge openings in the radially outermost wall of a disc centrifuge bowl can be opened and closed by



means of a valve ring axially moved by hydraulic pressure in annular chambers separated in a circumferential groove of said outermost wall by a collar on the valve ring. The chambers are about as far from the axis of rotation as the farthest portion of the bowl cavity, and the necessary valve operating force is therefore generated by centrifugal forces in very small chambers. Either one or both chambers are supplied with water to open and close the discharge openings, the radial widths of the chambers being different.

3,630,432

## APPARATUS FOR SEPARATING A LIQUID MIXTURE

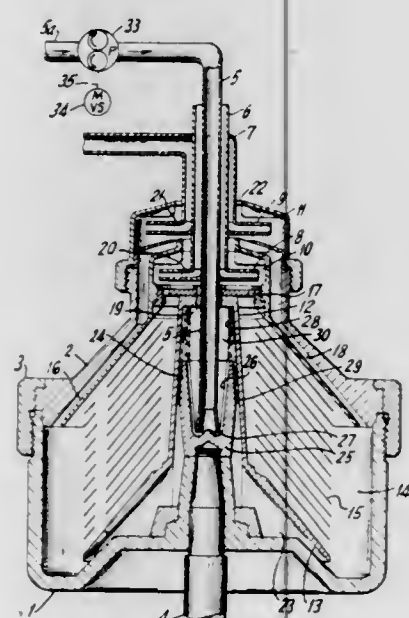
Jakob Murkes, Bandhagen, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed June 3, 1969, Ser. No. 829,858

Claims priority, application Sweden, June 6, 1968, 7575/68

Int. Cl. B04b 11/00

U.S. Cl. 233-45



The liquid mixture to be separated, such as oil and water, is supplied by a rotary displacement pump having a variable speed drive for controlling the supply rate, and the mixture entering the pump is supplied in its entirety to a centrifugal separator having an inlet arranged to bring the supplied mixture into rotation by means of a smooth surface of revolution concentric to the rotation axis of the separator. In this way, the apparatus avoids the risk of breaking the liquid droplets of the mixture and thereby impairing the separating effect.

3,630,433

## PUNCHED TAPE-CONTROLLED CARD PUNCHER

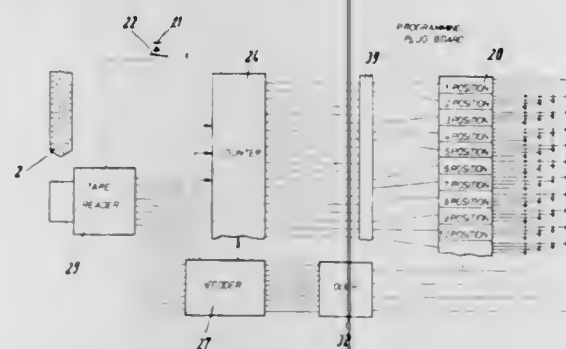
Gerhard Ritzerfeld, Schorlemer Allee 14, Berlin, 33, Germany

Filed July 18, 1969, Ser. No. 842,958

Claims priority, application Germany, July 19, 1968, P 17 74 580.1

Int. Cl. G06k 1/18

U.S. Cl. 234-15



A card-punching arrangement in which information stored on punched tape is transferred to lines of a card punched by

a card puncher. Signals from a tape reader are applied to a coding circuit for translating the code from the tape into a code suitable for recording on the card. A counter with forward and reverse counting features is connected to a card puncher by way of a programmable selector in the form of a plugboard to facilitate variation in the program. The information stored on the tape and recorded on card stock may include all of the symbols found on the conventional keyboard of a typewriter.

3,630,434

## VOTING MACHINE WITH PUNCH CARD ATTACHMENT

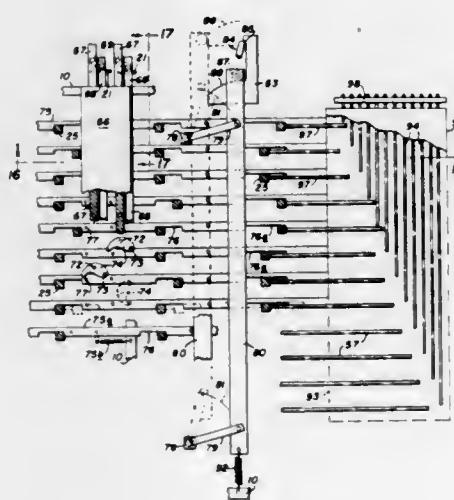
Cothburn M. O'Neal, Arlington, Tex., assignor to AccuVote International, Inc.

Original application May 27, 1968, Ser. No. 740,415. Divided and this application May 8, 1970, Ser. No. 35,671

Int. Cl. G06k 1/08

U.S. Cl. 234-116

2 Claims



A compact, lightweight, manually operated voting machine with provisions for straight ticket, selective and write-in voting, and for choosing two or more candidates from a list of several running at large; with provision for recording each voter's choice on a punch card for computer counting, and including a mechanical counter automatically totaling the votes for each candidate for confirmation of the punch card count.

3,630,435

## AEROTRACK, AIR-NAVIGATION TRIANGULATION COMPUTER

Jack B. Titus, 132 Elliott, Mather Air Force Base, Calif.

Filed May 25, 1970, Ser. No. 40,062

Int. Cl. G06c 27/00

U.S. Cl. 235-78

11 Claims



An air-navigation computer including a base disc element inscribed with a logarithmic scale, and movably mounted trig ring, compass indicator, combined master cursor and relative bearing indicator and wind direction pointer elements rotatably supported on the top surface of the base disc element. The compass indicator and wind direction pointer are slaved to the combined master cursor and relative bearing indicator, and a secondary cursor is rotatably mounted to the bottom of the base disc element.

3,630,436

## MECHANICAL COUNTER

Manuel Claude Sanz, Grand-Lancy, Geneva, and Rene Weber, Geneva, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

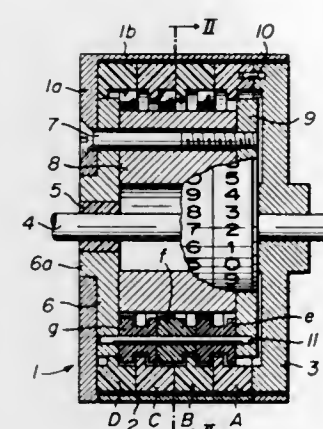
Filed Oct. 14, 1970, Ser. No. 80,705

Claims priority, application Switzerland, Oct. 17, 1969, 15537/69

Int. Cl. G06c 15/26

U.S. Cl. 235-136

13 Claims



A mechanical counter capable of showing values changing continuously and at a high rate of speed, which comprises a series of numbered drums containing e.g. six groups of 10 figures moving angularly in front of a reading window. Each drum after the first has a toothed internal gear, and each drum preceding the last has a pair of circular cams for causing periodic movement of the subsequent drum and then locking it between movement periods. This transfer movement is effected by one of a series of gear means, mounted such that each gear means consists of a first gear continuously engaged with the toothed rim of a given drum, and second and third gears each having a pitch twice that of said first gear and having their teeth alternately aligned with teeth of said first gear, so that the second and third gears are alternately moved and locked by said pair of cams. Each cam has e.g. three arcuate projections, each projection of one cam being opposite an empty space of the other cam.

3,630,437

## METHOD AND APPARATUS FOR REMOTELY CALIBRATING SENSOR INSTRUMENTS

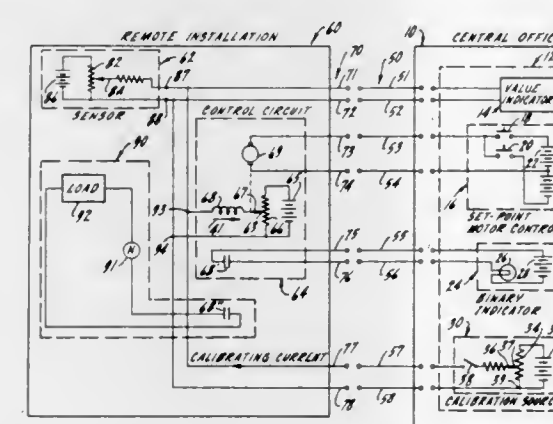
James R. Swanson, Glenview, Ill., assignor to Powers Regulator Company, Skokie, Ill.

Filed Jan. 30, 1970, Ser. No. 6,985

Int. Cl. G05d 23/19

U.S. Cl. 236-51

3 Claims



There is disclosed a method and an apparatus for carrying out the method for calibrating the set-point of a control system comprising a sensor for providing a signal indicative of a variable condition, and a control operable in response to

departure of the variable condition from a setpoint, the method comprising the steps of: combining a calibrating signal with the sensor signal; adjusting the calibrating signal so that the total or resultant signal at the output to the sensor is equal to a value corresponding to the desired set-point value; adjusting the set-point setting until the control means provides an output signal indicative of equivalence of the set-point and the resultant signal and removing the calibrating signal.

3,630,438

## ANESTHETIC VAPORIZER

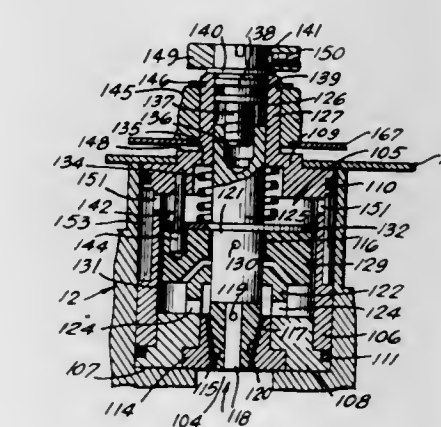
Allan M. Bickford, Huntington Station, N.Y., assignor to The Foregger Company, Inc., Roslyn Heights, N.Y.

Original application July 20, 1965, Ser. No. 473,300, now Patent No. 3,420,232, dated Jan. 7, 1969. Divided and this application Sept. 17, 1968, Ser. No. 824,015

Int. Cl. F16k 25/00

U.S. Cl. 236-93

5 Claims



A gas control valve for an anesthetic vaporizer which compensates for temperature over a wide range to maintain a constant volume percentage of vaporized anesthetic in a fluid mixture despite changes in temperature or in rate of flow of the mixture.

3,630,439

## TRACK CONSTRUCTION FOR DRY KILN

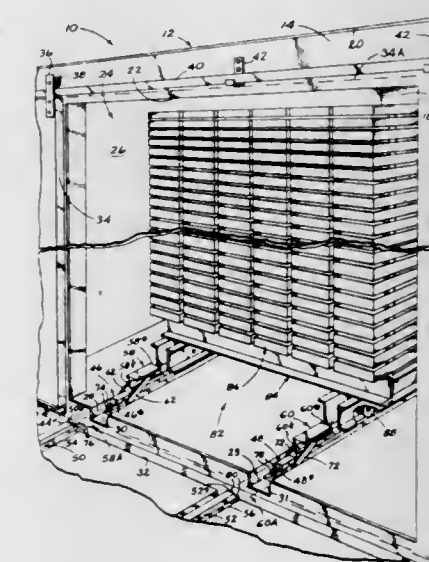
Franklin W. Cook, Portland, Oreg., assignor to F. W. Cook & Associates, Inc., Portland, Oreg.

Filed Feb. 13, 1970, Ser. No. 11,059

Int. Cl. E01b 5/02

U.S. Cl. 238-10 R

9 Claims



Track construction for a dry kiln and the like including a pair of spaced-apart axially aligned stationary rails disposed on opposite sides of an access opening in the kiln. A movable rail is mounted on one of the stationary rails for swinging



between one position fitted between the stationary rails, and another position overlying the one stationary rail. Such construction enables selective positioning of the movable rail to accommodate either movement of a lumber cart into and out of the kiln, or movement of a door into and out of a position closing and sealing the access opening.

3,630,440

**EXTRACT-O-LIFTER**

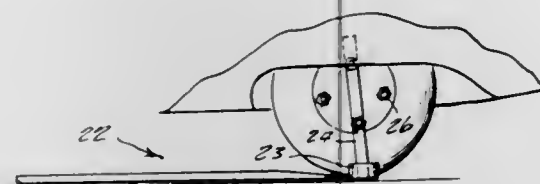
Ralf K. Sams, 10 Burbank Street, Yonkers, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,843

Int. Cl. E01b 23/00; B60t 3/00

U.S. Cl. 238-14

3 Claims



A friction plate for placement under an automotive vehicle wheel so to gain traction when on ice or snow, the device comprising a woven mat with downward extending ice nails to hold against the ice, and upwardly extending nail heads for engaging the tire.

3,630,441

**ELECTROSTATIC SPRAYING APPARATUS**

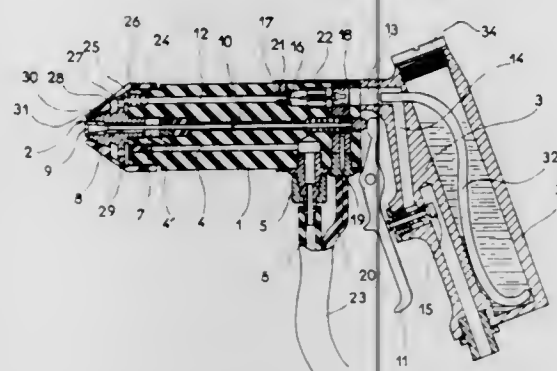
Noel Felici, Grenoble; Roger Tholome, Corenc, and Felix Garcin, Grenoble, all of France, assignors to Tunzini-Sames, Grenoble, France

Continuation of application Ser. No. 797,996, Feb. 10, 1969, now abandoned. This application Oct. 30, 1970, Ser. No. 85,820

Int. Cl. B05b 5/00

U.S. Cl. 239-15

35 Claims



A spray gun comprising a spray nozzle and a high-voltage generator consisting of a passage for conveying a gaseous fluid toward said nozzle, an electrode for imparting electric charges to said gaseous fluid, and a convergent-divergent portion in said passage downstream of said electrode for imparting a supersonic speed to the gaseous fluid carrying the electric charge. The gun comprises means for transmitting electric charges from the gaseous fluid to the nozzle.

3,630,442

**ELECTROSTATIC COATING METHOD AND APPARATUS**

Richard O. Probst, Indianapolis, Ind., assignor to Randburg Electro-Coating Corp., Indianapolis, Ind.

Filed June 16, 1969, Ser. No. 833,401

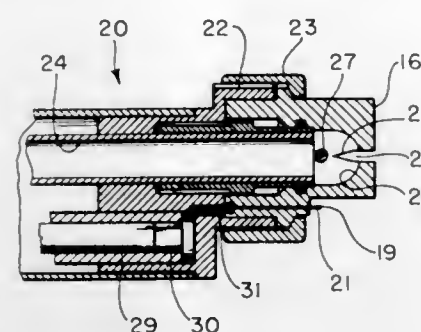
Int. Cl. B05b 5/00; F23d 11/28

U.S. Cl. 239-15

7 Claims

A method and apparatus for electrostatically applying solid particles to an article employs a nozzle forming the solid par-

ticles into a pattern and directing them at the article, preferably in a relatively flat, fanlike spray. The forward portion of the nozzle is formed of insulating material and includes an ionizing electrode. An electrostatic field is



established between the article and an electrode that creates a single highly ionized zone offset from and rearwardly of the spray. The percentage of solid particles which are sprayed but remain undeposited is reduced using this method and apparatus.

3,630,443

**LIQUID DISCHARGE NOZZLE WITH INVERTED CONE DISCHARGE PATTERN**

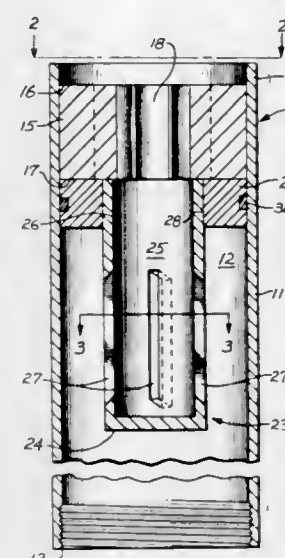
John O. Hrubby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Original application Dec. 9, 1968, Ser. No. 784,541, now Patent No. 3,558,053, which is a continuation-in-part of application Ser. No. 691,111, Dec. 8, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 492,389, Oct. 4, 1965, now abandoned. Divided and this application July 6, 1970, Ser. No. 52,579

Int. Cl. B05b 17/08

U.S. Cl. 239-17

19 Claims



An aerating liquid discharge nozzle containing no moving parts and including a hollow body defining a liquid inlet at one end and an outlet opening at the other end. The body has an internal duct arranged in communication with both the inlet and outlet ends of the body. A plug, having substantial length between opposite end surfaces, is disposed across the chamber adjacent the body outlet end and has a hole therethrough coaxially of the duct, which hole is substantially smaller in area than the area of the duct. A tube extends axially of the body within the duct and has an open upper end adjacent the plug, a closed lower end, and an inner chamber defined between the upper and lower ends of the tube. A plurality of slots extend through the sidewalls of the tube and are spaced apart around the circumference of the tube. Liquid introduced into the tube through the slots flow

spirally around and along the interior of the tube to the plug hole and to the exterior of the nozzle through the hole.

3,630,444

**TRAJECTORY FLOW CONTROL APPARATUS**

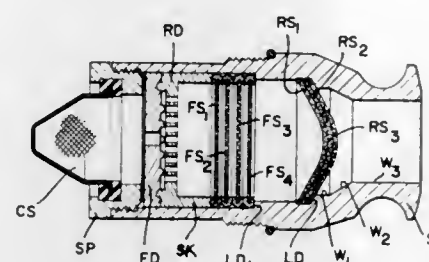
Walter Raymond Nelson, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Mar. 31, 1970, Ser. No. 24,246

Int. Cl. E03b 9/20

U.S. Cl. 239-29

8 Claims



Covers a spout or a spout end which produces a trajectory stream, i.e., an upwardly directed stream, that is smooth and substantially splashless at normal fluid flow rates notwithstanding changes in the pressure of the fluid traversing the structure. The structure maintains the trajectory stream substantially smooth considerable splashless without the usual or conventional pressure regulator. The volume and path of the water can be maintained over an assigned trajectory path within a basin or lavatory.

The spout end includes a fluid control device consisting of two tandem arranged disks, one made of rubber and flexible, the other being a rigid disk made of plastic or metal. Structurally, the first disk includes a plurality of substantially identical cylindrical parallel apertures together with a considerable number of flexible projections. The second disk includes a greater number of substantially identical but smaller cylindrical parallel apertures.

In addition to the two-disk structure, the mechanism also includes a conical disk upstream of the fluid control device, a plurality of flat screens downstream of the fluid control device, and a plurality of spherical or concave screens downstream of the flat screens.

3,630,445

**WALL-MOUNTED DRINKING FOUNTAIN**

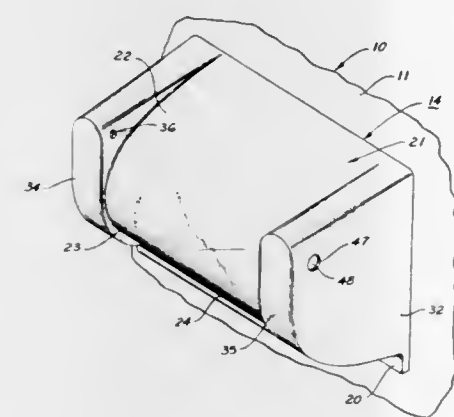
Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Fountain Company, Berkeley, Calif.

Filed July 23, 1970, Ser. No. 57,461

Int. Cl. E03b 9/20

U.S. Cl. 239-29

12 Claims



A wall-mounted water fountain having a convex two-dimensional curvilinear surface area of generally parabolic configuration bordered at the ends thereof with raised ridges respectively provided with ports each of which is adapted to have a valve-controlled stream of water discharge therefrom.

The trajectory of the water streams issuing from the ports causes them to impinge upon the upper section of the curvilinear surface which carries the water downwardly and through a drain opening located along the lower section of the surface and into a receiver disposed within the hollow interior of the fountain. Substantially all the functional components of the fountain are concealed within the hollow interior thereof so as to minimize the likelihood of vandalism and general misuse of the fountain.

3,630,446

**INSECTICIDE-RELEASING SHAPED BODIES AND PROCESS FOR PRODUCING THEM**

Willy Roth, Strengelbach, and Anna Elisabeth Keller, Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 24, 1968, Ser. No. 786,553

Claims priority, application Switzerland, Dec. 29, 1967, 18371/67

Int. Cl. A61k 27/12

U.S. Cl. 239-60

8 Claims

A shaped solid body is described which contains insecticidal organic phosphate adsorbed on a solid adsorbent, the adsorbate being so distributed in a solid hydrocarbon base of porous texture that a major portion of the insecticide can be gradually released in vapor form from the surface of the body into the surrounding atmosphere; a process for the production of such bodies is also described. O,O-dimethyl-O-(2,2-dichlorovinyl) phosphate is preferred as the insecticidal component in such bodies.

3,630,447

**SEDIMENT-RESISTING SPRAY OUTLET**

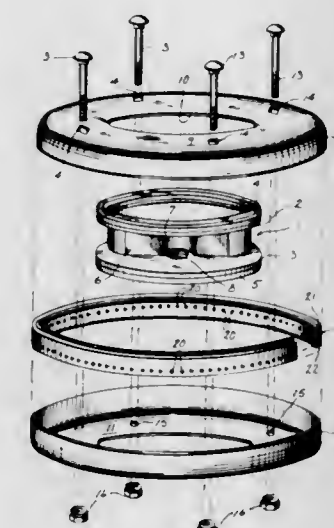
E. Allen Smart, and Frank Hessler, both of Wauwatosa, Wis., assignors to Bradley Washfountain Co., Menomonee Falls, Wis.

Filed Apr. 20, 1970, Ser. No. 29,897

Int. Cl. B05b 15/02; F23d 11/34

U.S. Cl. 239-107

7 Claims



A circular spray head is shown that has a fluid chamber formed by clamping upper and lower dished plates against the top and bottom of a central hub. The periphery of the upper-plate curves downward to form the upper lip of an outlet opening that extends completely around and forms a part of the rim of the fluid chamber. The periphery of the lower plate extends upward to form the lower lip of this outlet opening. A ring-shaped fluid distributor having a plurality of successive, circumferentially spaced spray openings located along its length is inserted and maintained in the outlet opening. The fluid distributor is made of a resilient material which deforms slightly in response to fluid pressure to dislodge mineral deposits and keep the spray openings clean.



### 3,630,448 OVERHEAD SPRAY SYSTEM

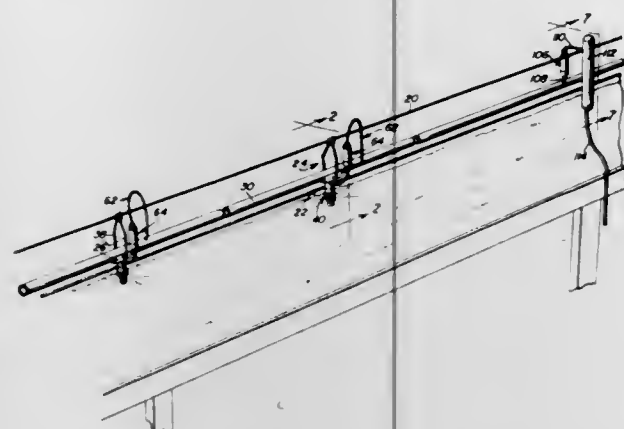
Richard D. Chapin, 368 North Colorado Avenue, Watertown, N.Y.

Continuation-in-part of application Ser. No. 847,210, Aug. 4, 1969. This application Jan. 7, 1970, Ser. No. 1,158

Int. Cl. B05b 1/14

U.S. Cl. 239-111

8 Claims



A watering system for long runs, normally greenhouse benches or the like, comprising an overhead installation including a tensioned suspension cable from which a series of support cradles are suspended by hangers. The support cradles seat an elongated water main across the aligned upper portions thereof in a self-leveling manner, and at the same time support a series of downwardly directed nozzles which in turn incorporate independent shutoff means. Each nozzle is communicated with the main through a valve which automatically terminates flow of water to the valve upon a drop in pressure below a predetermined point. A pressure-release valve is communicated with the main itself for effecting a fluid discharge therefrom and a pressure release upon a dropping of the pressure to a predetermined point.

### 3,630,449 NOZZLE FOR ROCKET ENGINE

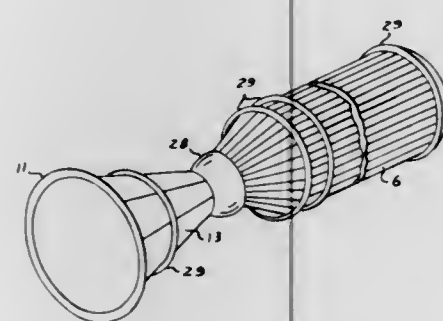
Stanley D. Butler, Woodland Hills, Calif., assignor to The United States of America as represented by the Secretary of the United States Air Force

Filed May 11, 1970, Ser. No. 36,162

Int. Cl. B64d 33/04

U.S. Cl. 239-127.1

1 Claim



An improved structure and method of making are provided for cooling the conical nozzle of a rocket engine. The nozzle is constituted of a number of curved segments welded together along their side edges to form the cone member. In order to provide for cooling the metal of each segment, the latter is laid as a flat plate on the bed of a planing machine and by means of a gang-cutting tool, grooves are cut in the plate across its entire width. Thereafter a flat-facing sheet of metal is diffusion bonded to the grooved plate to leave closed channels across the plate composite. The plate is then curved to proper shape and the abutting edges are welded together so as to leave channels extending lengthwise of the member. These channels are made to coincide with similar channels

formed along the combustion chamber. In the event of a jet engine powered by a mixture of gases, an auxiliary conduit is taken from one of the gas supply lines and forced through the channels for cooling purposes and finally returned to the source of the gas.

### 3,630,450 SPRINKLING APPARATUS

Christian Stephany, Erbach, and Johannes Katzer, Neu-ulm, both of Germany, assignors to Messrs. Kress u. Kastner GmbH, Ulm, Germany

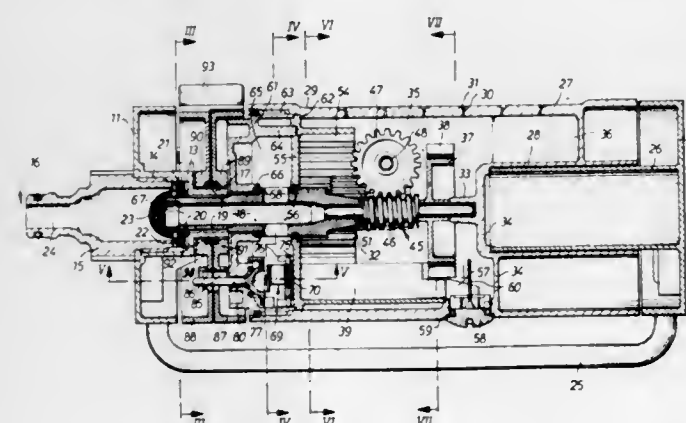
Filed Mar. 2, 1970, Ser. No. 15,638

Claims priority, application Germany, Mar. 11, 1969, P 19 12 315.0

Int. Cl. B05b 3/16

U.S. Cl. 239-242

32 Claims



A sprinkling apparatus which has a very compact shape and comprises a turbine which is alternately rotated in opposite directions by the liquid to be sprayed and is located together with a reduction gearing and a control device for the turbine within a substantially cylindrical housing the peripheral wall of which is provided with spray nozzles and which is pivoted back and forth by the turbine and the pivoting range of which is freely adjustable manually.

### 3,630,451 FLUIDIC CONTROLLED SPRINKLER

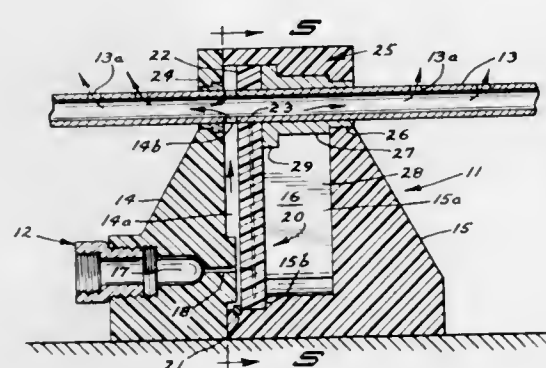
James L. Farmer, Rte. 2, Box 381, Prior Lake, Minn.

Filed Aug. 13, 1969, Ser. No. 849,733

Int. Cl. B05b 3/16

U.S. Cl. 239-242

6 Claims



A fluid sprinkler or the like which includes a spray bar device with means for oscillating the spray bar which means includes an impeller attached to the bar with a fluidic control circuit arranged to direct fluid to alternate sides of the impeller and thereby control the motion of the spray bar. An inlet is provided for attaching the device to a garden hose or the like and a portion of the inlet fluid is utilized to control the impeller and the spray bar oscillation with the remainder of the inlet fluid passing directly into the controlled spray bar.

### 3,630,452 VARIABLE-AREA EXHAUST NOZZLES FOR GAS TURBINE ENGINES

William Thomas Monaghan, Sandiacre, Nottingham, England, assignor to Rolls Royce Limited, Derby, England

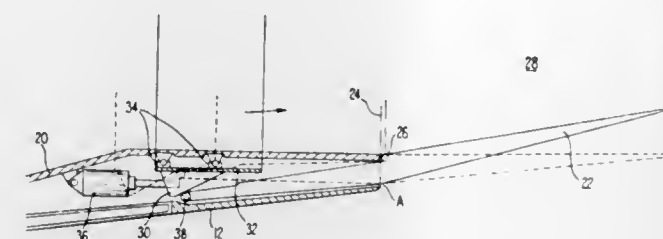
Filed Sept. 11, 1969, Ser. No. 856,942

Claims priority, application Great Britain, Sept. 14, 1968, 43,830/68

Int. Cl. B64c 15/06

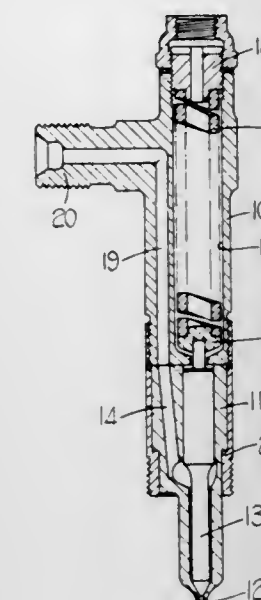
U.S. Cl. 239-265.39

1 Claim



In a gas turbine engine, a variable-area exhaust nozzle is provided and consists of a plurality of flaps arranged in side-by-side sealing relationship with each other; each flap is hinged about the circumference of the downstream end of the engine in axially overlapping relationship therewith so as to permit rocking of the flaps such that their ends move about the axis of their respective hinges, cam means being provided to effect such rocking; the flaps are mounted so that their respective surfaces will form substantially continuous inner and outer flow surfaces.

further including a drilling through which liquid fuel can flow through the body to the nozzle head. In order to provide the



### 3,630,455 SPOUT END APPARATUS

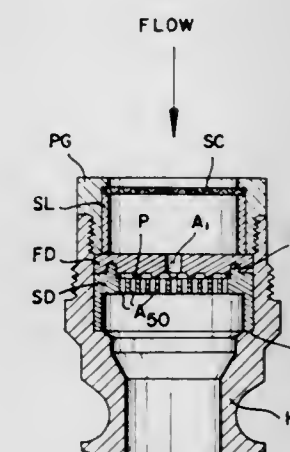
Richard Grant Parkison, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Mar. 31, 1970, Ser. No. 24,248

Int. Cl. B05b 1/30

U.S. Cl. 239-535

19 Claims



### 3,630,453 ADJUSTABLE ELONGATED SPRAY NOZZLE

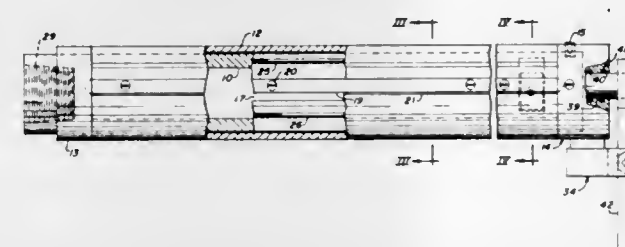
John R. Lane, and Kenneth A. Walley, both of Pittsburgh, Calif., assignors to United States Steel Corporation

Filed Feb. 20, 1970, Ser. No. 13,244

Int. Cl. A62c 31/00

U.S. Cl. 239-437

3 Claims



Two concentric, longitudinally slotted tubes form an adjustable elongated spray nozzle. When the nozzle becomes clogged, it can be flushed by manipulating an adjusting handle external to the apparatus.

### 3,630,454 LIQUID FUEL INJECTION NOZZLES

Dorian Farrar Mowbray, Burnham, England, assignor to C.A.V. Limited, Birmingham, England

Filed Apr. 10, 1970, Ser. No. 27,246

Claims priority, application Great Britain, Apr. 24, 1969, 21,010/69

Int. Cl. B05b 1/30

U.S. Cl. 239-533

1 Claim

A liquid fuel injection nozzle having a cylindrical body and to which is secured a nozzle head, the nozzle head containing a valve member and being spring loaded by means of a spring disposed within a bore formed in the nozzle body and

Covers a fluid flow control device or pressure regulator suitable for a spout end structure for a plumbing fixture. The equipment includes two tandem arranged disks which may be inserted into the spout end structure. The first disk, which is made of rubber and is flexible, includes an upstream surface which is flat and a downstream surface which includes a considerable number of flexible projections. The first disk also includes a plurality of substantially identical cylindrical parallel apertures through which the fluid flows. The second or downstream disk, which is a rigid disk made of plastic or metal, includes a greater number of substantially identical but smaller cylindrical parallel apertures. The two disks are positioned closely adjacent to each other so that, in the absence of pressure or under low-pressure conditions, the projections on the first disk barely contact the adjacent surface of the second disk. As the fluid pressure applied to the first disk rises above a predetermined value or varies above that level, the projections on the first disk will be somewhat flattened and driven pursuant to the increased pressure against the second disk. Consequently, the flattening of those projections caused by increased pressure will proportionally reduce the fluid flow passageways so that fluid emission



through the second disk and through the spout end will remain substantially unchanged, notwithstanding the change or rapid rate of change of pressure of the applied fluid.

3,630,456

**METHOD OF MANUFACTURING FIBERBOARD**

Andre Mark, 54 Cours Lafayette, 69 Lyon, France

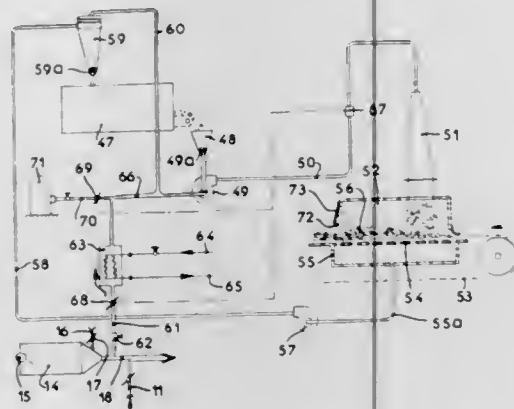
Filed May 22, 1969, Ser. No. 826,994

Claims priority, application France, May 22, 1968, 50040

Int. Cl. B02c 21/00; B29 5/00

U.S. Cl. 241-18

3 Claims



A relatively dry, oxygen-poor, heated fluid is provided for conveying wood fibers through the drying cycle subsequent to crushing the wood chips and for also conveying and distributing the wood fibers from the drying cycle onto a mat-forming wire. The primary source of the fluid is the combustion gases from a burner. Secondary fluids including ambient air, recirculated gases from the drying cycle and inert gases may be introduced to cool the fluid to the desired temperature and provide the fluid with the correct amounts of oxygen and water vapor. In reducing the temperature of the fluid, heat may be extracted by suitable heat exchanges and utilized for auxiliary purposes. The gases used in the process are maintained below 350° C., the oxygen content of the gases is maintained below 17 percent and the water vapor content of the gases is maintained below 100 grams per kilogram of dry gases.

3,630,457

**REGULATION OF THE SUPPLY OF RAW MATERIAL TO A CLOSED CIRCUIT GRINDING MILL SYSTEM**

Ivan Forman; Karel Kreysa, and Zorro Vasicek, all of Brno, Czechoslovakia, assignors to Vyzkumny ustav stavebnich hmot, Brno, Czechoslovakia

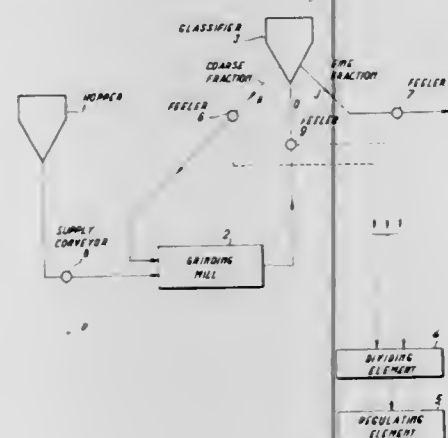
Filed Oct. 7, 1969, Ser. No. 864,398

Claims priority, application Czechoslovakia, Oct. 24, 1968, 7321/68

Int. Cl. B02c 25/00

U.S. Cl. 241-34

2 Claims



The amount of raw material, supplied for grinding to a closed-circuit grinding mill system, comprising a device for

feeding the raw material to the grinding mill, a classifier of the ground material, structure for returning coarse material to the grinding mill for repeated grinding, and the respective conveying tracks for the treated material, is adjusted in dependence on the ratio of the weight amount of the fine output from the classifier and of the weight amount of the coarse material returned from the classifier for repeated grinding, whereby the amount of raw material supplied is limited in dependence on a predetermined maximum content of the grinding mill.

3,630,458

**TURBOPULP REFINING BLENDER AND CLASSIFIER**

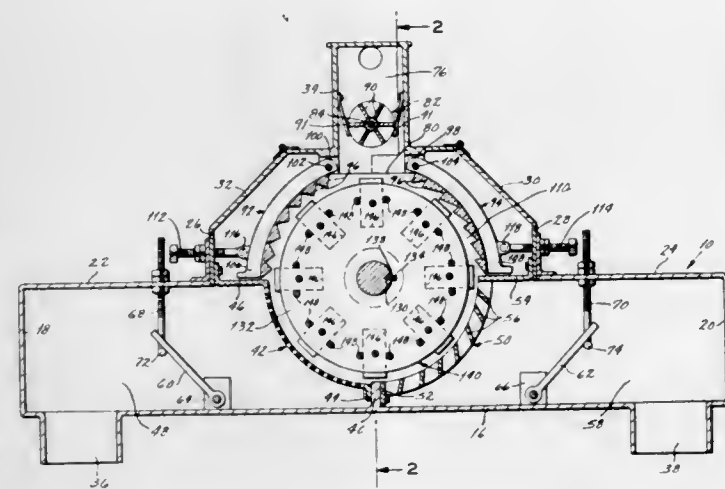
Lloyd D. Smiley, 2915 North Market Street, St. Louis, Mo.

Filed Feb. 10, 1969, Ser. No. 797,959

Int. Cl. B02c 13/09, 13/13, 13/284

U.S. Cl. 241-46.06

8 Claims



The turbopulp-refining blender and classifier is comprised of a refining chamber having an inlet port and a plurality of blades detachably mounted by securing means on a rotor which is rotatably mounted within the refining chamber. The blades have beveled cutting edges on their opposite ends and are each positioned on the rotor with one end disposed outwardly with respect to the rotational axis of the rotor and with the opposite end pointing inwardly with respect to the rotational axis of the rotor. The refining chamber includes adjustable walls adapted to be moved inwardly and outwardly with respect to the rotor.

3,630,459

**LINING FOR CYLINDRICAL MILLS**

Pierre Marie Arsene Slegten, 158 Avenue du Prince d'Orange, 1180 Brussels, Belgium

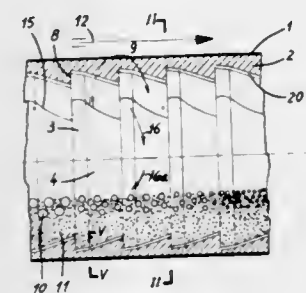
Filed Mar. 5, 1970, Ser. No. 16,828

Claims priority, application Belgium, Mar. 5, 1969, 729,390

Int. Cl. B02c 17/22

U.S. Cl. 241-183

12 Claims



The improvement provides a lining for a cylindrical ball or tube mill partly filled with grinding media, which lining has an inside surface bounding a series of trunco-conical volumes which each have a flare towards the mill inlet, the

generatrices of any two consecutive truncated cones forming different angles with the mill axis and therefore, producing small-flare truncated cones alternating with large-flare truncated cones, the minor base of the small-flare cones coinciding with the major base of the large-flare cones, the minor base of the large-flare cones meeting the major base of the small-flare cones in an annular surface which is substantially perpendicular to the mill axis; at the limit, said small-flare cones may be cylinders.

3,630,460

**PAPER SHREDDER**

Albert Goldhammer, D773 Bodensee, Postfach 128, Nussdorf, Bodensee, Germany

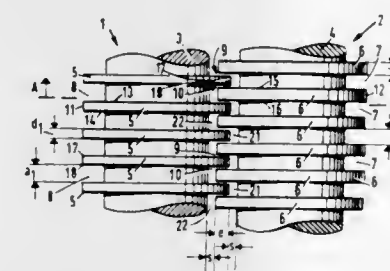
Filed Oct. 20, 1969, Ser. No. 867,664

Claims priority, application Germany, Nov. 9, 1968, P 18 08 155.5

Int. Cl. B02c 4/08, 4/30

U.S. Cl. 241-236

8 Claims



A shredding apparatus for paper and the like is defined by a pair of spaced, parallel counterrotating rolls provided with spaced-apart, cylindrical and overlapping shredding discs. The discs do not come into contact, for friction-free operation of the shredder and have sharp corners and a high friction surface finish for engaging inserted paper. The paper is stretched and thereby torn or shredded as it is engaged by the discs and passes between the rolls.

3,630,461

**SUPPLY REEL FOR CONTINUOUS LAYING OF PIPELINES**

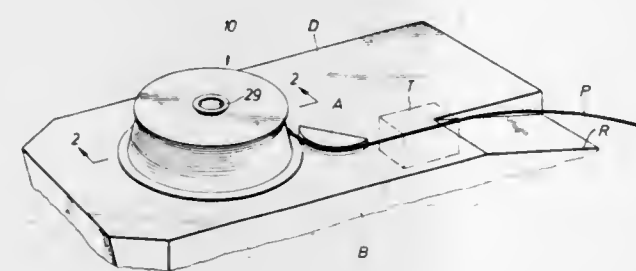
Daniel E. Sugasti, New Orleans, La.; Larry Rayner Russell, and Fred W. Schaejbe, both of Houston, Tex., assignors to Fluor Ocean Services, Inc., Houston, Tex.

Filed Jan. 26, 1970, Ser. No. 5,840

Int. Cl. B65h 75/00

U.S. Cl. 242-54

8 Claims



A reel mountable for rotation about a vertical axis on a supporting base for supplying long continuous lengths of relatively large diameter pipe for continuous laying of pipelines, particularly marine pipelines, said reel comprising an upwardly and inwardly tapering frustoconical hub and upper and lower horizontally disposed flanges.

3,630,462

**WEB-WINDING APPARATUS**

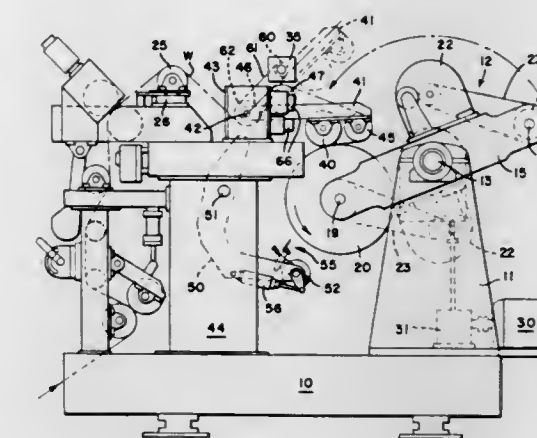
John E. Nordgren, Fulton, N.Y., and Hans Wirth, Milwaukee, Wis., assignors to The Black Clawson Company, Hamilton, Ohio

Filed Oct. 31, 1969, Ser. No. 872,873

Int. Cl. B65h 75/34

U.S. Cl. 242-64

9 Claims



Web-winding apparatus including a reel on which a roll being wound is contacted by a rider roll, and a potentiometer associated with the rider roll monitors the roll buildup and controls a DC-indexing motor to rotate the winding roll away from the rider roll to maintain substantially constant pressure between the rider roll and the winding roll. A control circuit controls the acceleration and deceleration of the indexing motor as the rolls are being changed to permit web tension to be maintained constant.

3,630,463

**WEB-TENSION CONTROL APPARATUS**

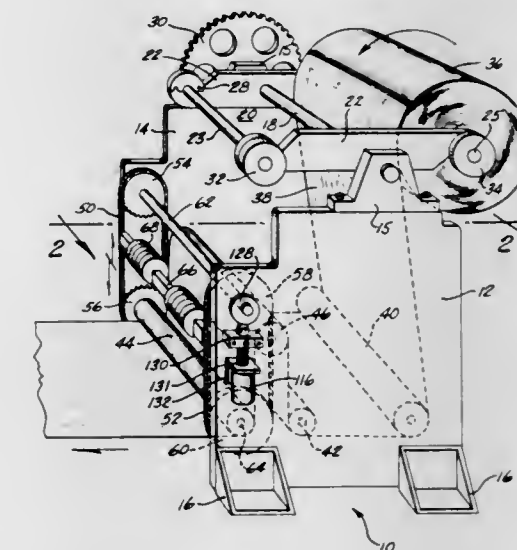
Victor J. Mistele, Colgate, Wis., assignor to Faustel, Inc., Butler, Wis.

Filed Sept. 22, 1969, Ser. No. 859,864

Int. Cl. B65h 25/22

U.S. Cl. 242-75.43

13 Claims



A web-tension control apparatus for maintaining tension in a web being unwound from a roll in an unwind stand. The stand has a brake for retarding rotation of the roll and a sensory means, such as a dancer roll, for sensing the tension of the web being unwound. The apparatus includes control means for generating an operating signal level and a signal means operable by the sensory means for altering the operating signal level to establish a range of tension regulating signals for application to the brake. The operating signal level provided by the control means may also be altered, responsive to the sensory means to change the range of the tension-regulating signals.

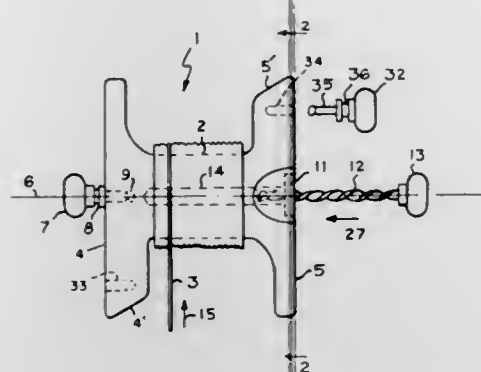


### 3,630,464 REEL DEVICE

William E. Fagan, 337 Trapelo Road, Belmont, Mass.  
Filed Oct. 30, 1968, Ser. No. 771,946  
Int. Cl. B65h 75/40

U.S. Cl. 242—96

9 Claims



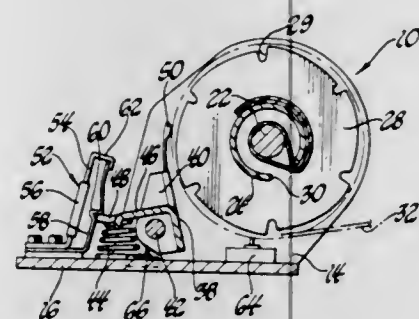
A reel for a line includes two handles located along the axis of the reel, and adapted to be grasped by an operator's left and right hand respectively; at least one of the handles is attached to the reel by a mechanism such that movement of that handle along the axis of the reel drives the reel in rotation about the axis so that the line is wound onto or played off of the reel.

### 3,630,465 ROTARY RETRACTING DEVICE

John S. Cucheran, Pleasant Ridge, Mich., assignor to Jim Robbins Seat Belt Co., Mt. Clemens, Mich.  
Filed July 14, 1969, Ser. No. 841,531  
Int. Cl. A62b 35/00

U.S. Cl. 242—107.4

9 Claims



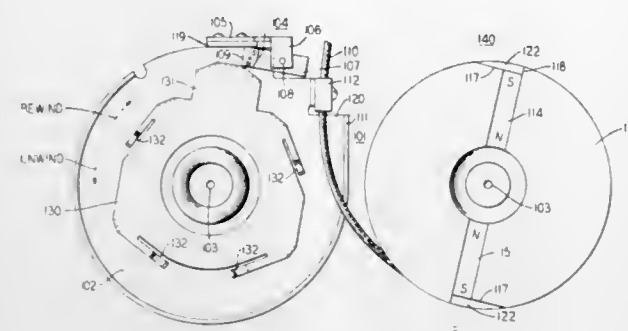
A retracting reel assembly including a cylinder with circular ratchet members secured to each end thereof for winding and unwinding a seat belt about the cylinder and a locking pawl movable into locking engagement with the ratchet members to prevent unwinding of the seat belt. The locking pawl is held out of locking engagement with the ratchet members by mechanical engagement with a catch in a leaf spring and the position of the leaf spring is controlled by a bimetallic strip. An electrical circuit is included to control the bimetallic strip so that the locking pawl is held out of locking engagement with the ratchet members for a predetermined time after the seat belt is moved in the unwinding direction whereby the seat belt may be extended and jockeyed back and forth by further extension and retraction until in the proper position before the locking pawl engages the ratchet members to prevent further unwinding of the seat belt.

### 3,630,466 LATCH MECHANISM FOR A RETRACTILE CORD REEL

Willfred J. Kindermann, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Nov. 6, 1969, Ser. No. 874,454  
Int. Cl. B65h 75/48

U.S. Cl. 242—107.7

6 Claims

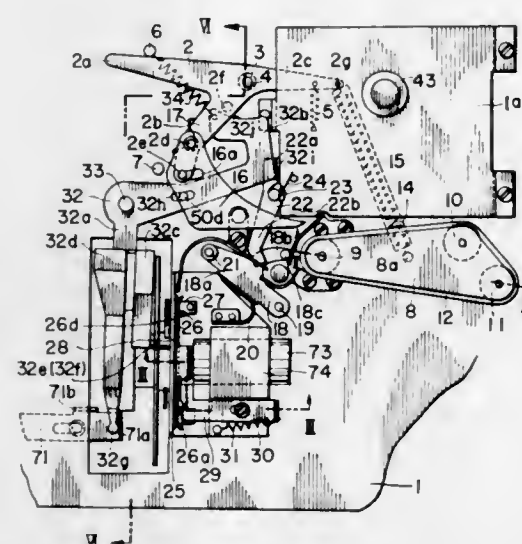


In a spring-loaded retractile cord arrangement for an electrical appliance or telephone handset, a magnetically actuated catch mechanism is employed to arrest the cord at any preselected position without requiring the user to work against spring tension while holding the cord in that preselected position. Inadvertent locking during the rewind cycle is prevented by inhibiting the latch mechanism with a cam arrangement.

### 3,630,467 AUTOMATIC FILM-REWINDING DEVICE FOR PROJECTOR

Tadao Hayami, and Atsutada Nakatani, both of Tokyo, Japan, assignors to Kabushiki Kaisha Koparu  
Filed Mar. 26, 1970, Ser. No. 22,834  
Claims priority, application Japan, Mar. 31, 1969, 44/24614  
Int. Cl. B65h 59/38; G03b 1/04; G11b 15/32  
U.S. Cl. 242—186

4 Claims



In a sprocketless-type projector, the film having been wound around a takeup reel can be automatically rewound on a supply reel upon completion of the projection without changing the direction of rotation of the driving motor and without virtually changing the path followed by the film during the projection, by the provision of an automatic film-rewinding device structure and operative so that the members adapted to be actuated by the tension produced in the film between the claw and the supply reel to which the terminal end of the film is fixed cause both the pressure plate and the

claw to retreat from the film face and at the same time cause the swingable plate having two idlers to effect reverse shifting of its position to switch over the transmission of rotation of the motor from the state of being effected through only one of the two idlers to the state of being effected through both these two idlers to thereby transmit the rotation of the motor to the shutter shaft coupled to the shaft of the supply reel.

### 3,630,468 FILM HANDLING APPARATUS

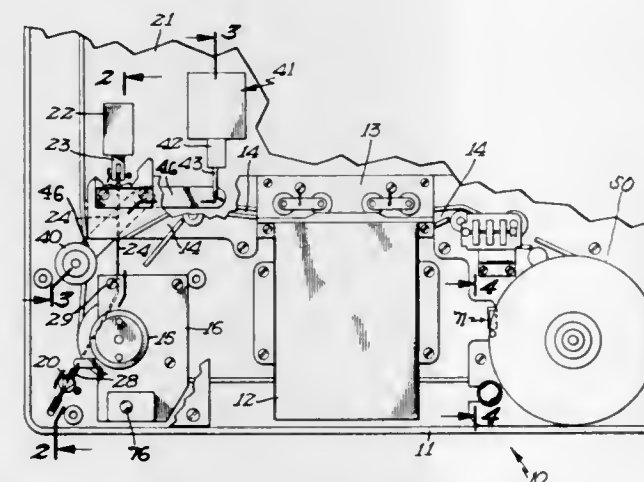
William K. Christoffersen, Minneapolis; James L. Keely, Wayzata, and William T. Owens, Jr., Long Lake, all of Minn., assignors to Washington Scientific Industries, Inc., Long Lake, Minn.

Filed July 27, 1970, Ser. No. 58,311

Int. Cl. G03b 1/04; G11b 15/32

U.S. Cl. 242—195

7 Claims



A sensing switch, when opened, provides a signal to stop the film threading operation and when closed provides a signal to unlatch a supply reel. A single-pole, single-throw switch is mounted adjacent a takeup reel and is opened by the forced motion of a movable flange on the takeup reel, such forced motion resulting from a film leader, whose width is larger than the biased dimension between the movable flange and a fixed flange being driven between them by a drive-out roller. Opening the switch causes a solenoid to be deenergized which allows the drive-out roller to move away from the leader. When the leader is removed from the takeup reel because of a rewind operation, the switch is closed, activating a solenoid which removes a latch from a plate upon which the supply reel is mounted, permitting the reel to be removed.

### 3,630,469 WEB TRANSPORT SYSTEM

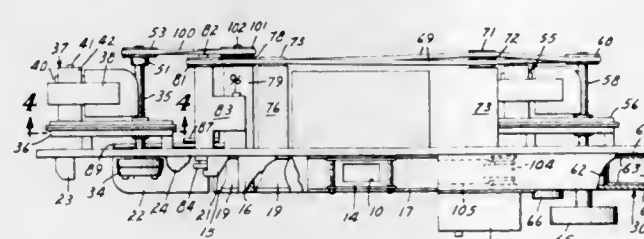
Thomas A. Turgeon, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 24, 1970, Ser. No. 31,683

Int. Cl. B11b 15/32; G03b 1/04

U.S. Cl. 242—203

11 Claims



A drive system for use with a recording web, i.e., tape or microfilm, to move the web past a station, viewing or record-

ing, and for registering with the station a desired portion of the web. The drive system comprises a single-phase induction motor having an axially movable rotor and drive shaft which couples and uncouples with a speed reduction mechanism connected to a drive shaft for a supply reel, and a similar motor and speed reduction mechanism connected to the drive shaft for a takeup reel. The motors are controlled by a three-position switch to energize one motor or the other. When either motor is energized the rotor of that motor couples with the associated speed reduction mechanism to drive the attached reel and to wind the web thereon. Upon deenergization of the motor the rotating rotor with its high angular momentum is uncoupled from the driven speed reduction mechanism causing the drive shaft to stop abruptly due to the frictional retarding forces in both the speed reduction mechanisms. A counter is utilized to determine the position of the web with respect to the station and a drive system connects the takeup reel with the supply reel such that manual adjustment of the takeup reel in either direction affords incremental movement of the web relative to the station along the web path.

### 3,630,470 VERTICAL TAKEOFF AND LANDING VEHICLE

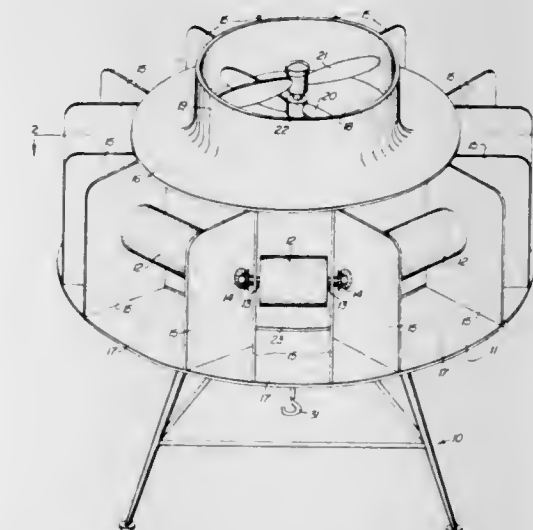
Frederick Thomas Elliott, Paze Inc. APO 96307, San Francisco, Calif.

Filed Feb. 13, 1970, Ser. No. 11,066

Int. Cl. B64c 27/00

U.S. Cl. 244—21

10 Claims



A vertical takeoff and landing vehicle utilizing the Magnus effect to lift the vehicle vertically through a fluid medium, usually air but conceivably other gaseous atmospheres as well as water. A plurality of horizontal, rotatable cylinders are arranged, preferably in opposite pairs, about the surface of a normally horizontal support member near the perimeter thereof. Drive means are provided for rotating the cylinders simultaneously in an upward and outward direction toward the periphery of the support member. A cover member is disposed above the cylinders to define a plenum chamber therewith. The cover member has a center aperture provided with means to draw a stream of fluid into the plenum chamber and force it laterally across the upper and lower surfaces of the rotating cylinders. If desired, drive means can be provided for moving the vehicle in a lateral direction.



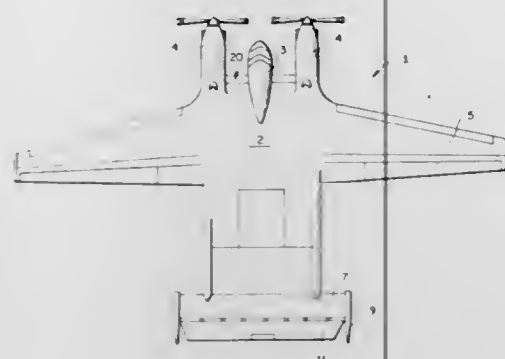
3,630,471

## NOSE SLAT FUSELAGE LIFTING BODY

Charles G. Fredericks, Silver Spring, Md., assignor to Occidental Aircraft Corporation, Washington, D.C.  
Filed Mar. 7, 1969, Ser. No. 805,185  
Int. Cl. B64c 1/00

U.S. Cl. 244-36

8 Claims



Combined airfoil lifting fuselage and airfoil wing short takeoff and landing aircraft have lift promoting nose slats spaced forward and above a leading edge of the fuselage.

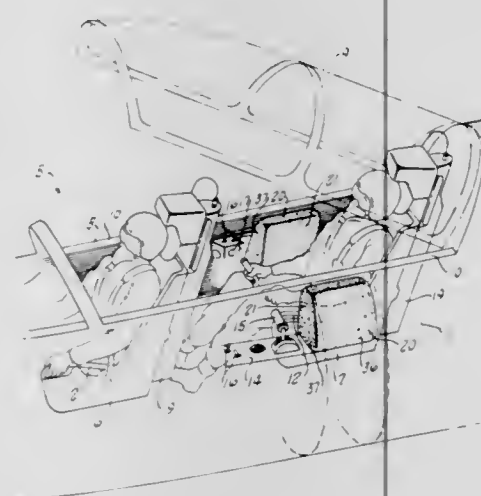
3,630,472

## PROTECTION DEVICE FOR OCCUPANT OF AIRCRAFT EJECTION SEAT

Carl Evert Axenborg, Linköping, Sweden, assignor to Saab-Scania Aktiebolag, Linköping, Sweden  
Filed July 6, 1970, Ser. No. 52,412  
Claims priority, application Sweden, July 7, 1969, 9575/69  
Int. Cl. B64d 25/04

U.S. Cl. 244-122

4 Claims



In an aircraft having an ejection seat and having a recess in its cabin defined by an overhanging wall, a collapsed bladder is arranged in the recess to provide an unobtrusive cushion for normal flight. The bladder is rapidly inflated just prior to ejection, whereupon it forcefully displaces the seat occupant's limb to a position safe for ejection and fills the recess to prevent the airman from inserting a body member therein. Quick inflation expedients are disclosed, operable in an automatic ejection sequence.

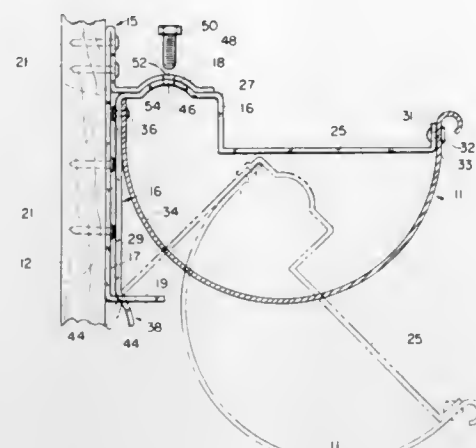
3,630,473

## GUTTER SUPPORT

Robert D. Landis, 98 Emerald Drive, W. Seneca, N.Y.  
Filed Apr. 3, 1970, Ser. No. 25,433  
Int. Cl. E04d 13/06

U.S. Cl. 248-48.2

5 Claims



A support for an eaves trough including a mounting bracket attachable to a building and a member attachable to the eaves trough; the member being releasably supported by the bracket for vertical pivotal movement from a lower assembling position to an upper position wherein the eaves trough is disposed in its normal operative position relative to the building. The member is automatically locked in its upper position when moved thereto.

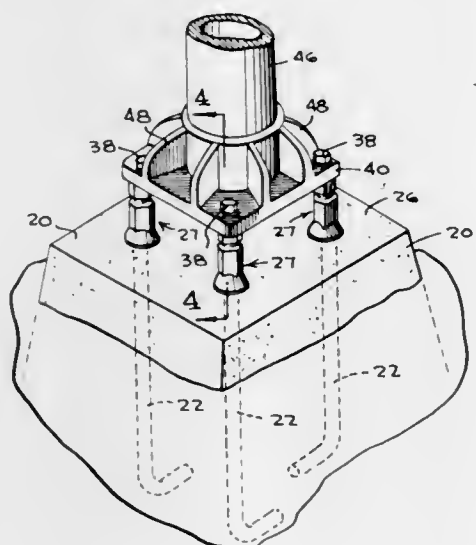
3,630,474

## BREAKAWAY POLE SUPPORT STRUCTURE

Ray C. Minor, Abingdon, Va., assignor to Kearney-National Inc., New York, N.Y.  
Continuation-in-part of application Ser. No. 12,358, Feb. 18, 1970, now abandoned. This application Aug. 18, 1970, Ser. No. 64,699  
Int. Cl. E04b 1/41

U.S. Cl. 248-158

7 Claims



A breakaway support system for a light pole in which a pole base is connected by four elongated breakaway connector members each formed with a tapered conical flange base threaded onto bolts of a foundation with an elongated body portion extending from the base for connection to the base member of a pole with the body portion being divided by an annular circumferential recess providing a weakening along

which a break occurs in the event the pole is subjected to a predetermined force.

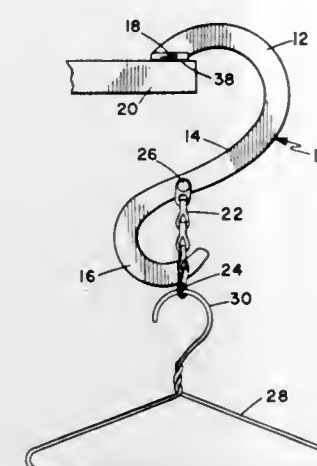
3,630,475

## INVERTIBLE HANGER CARRIER

James H. Barry, 7123 Olivetas, La Jolla, Calif.  
Filed Dec. 15, 1969, Ser. No. 885,249  
Int. Cl. A47f 5/00

U.S. Cl. 248-215

1 Claim



A multiple use hanger carrier with a larger hook at one end for placement on a person's shoulder, and a smaller hook at the other end for placement on a clothes pole or the like, these hooks being at opposite sides of a scroll-shaped central shank portion which also carries a multiapertured pendant or chain to support a plurality of ordinary coat hangers or the like. Either hook can be used to suspend the item from a counter edge or shelf.

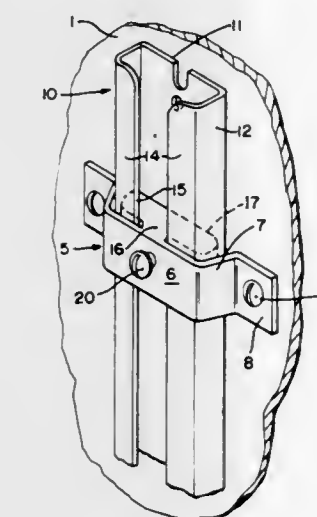
3,630,476

## ADJUSTABLE MIRROR SUPPORT

Vincent J. Lococo, 2006 Gladstone Ave., Louisville, Ky.  
Filed Mar. 9, 1970, Ser. No. 17,707  
Int. Cl. A47g 1/24

U.S. Cl. 248-476

3 Claims



An adjustable mirror support of the 3-element horizontal - bracket/vertical - channel/clamping - means type, comprising:

- A. a vertical rearwardly-open U-shaped channel;
- B. a horizontal forwardly-open U-shaped bracket, through which the channel extends vertically;
- C. channel-bracket clamping means including
  1. clamping flanges, horizontally inturned from the side walls of the channel to extend toward each other with their end edges spaced transversely apart to define a long vertical slot,
  2. a post, having rear and front ends and forwardly

diverging sidewalls, mounted at its rear end or the inner bight face of the bracket with its sidewalls diverging forwardly into the slot of the channel and terminating within the channel in a pair of clamping flanges, which are horizontally outturned at an obtuse angle and which provide rearwardly facing clamping surfaces, and

3. screw threaded means on the bracket for moving the channel forwardly from an unclamped position to a clamped position, wherein,

a. in the clamped position, the channel's clamping flanges engage the bracket's clamping flanges while the slot-forming edges of the channel's flanges extend so closely adjacent the front end portions of the forwardly diverging sidewalls of the bracket post as to prevent any significant transverse play therebetween, and thereby center the channel on the bracket, and

b. in the unclamped position, the channel's clamping flanges are spaced rearwardly from the bracket's clamping flanges while the slot-forming edges of the channel's clamping flanges are transversely spaced from the rear end portion of the forwardly diverging sidewalls of the bracket post sufficiently to permit significant transverse play between the channel and the bracket and thereby allow nonbinding movement of the channel relative to the bracket.

3,630,477

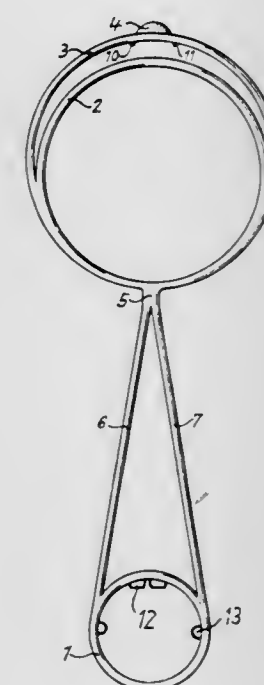
## BOTTLE SUSPENSION HARNESS

Reinhard Stadler, Wormserstrasse 3, Karlsruhe, Germany  
Filed July 7, 1970, Ser. No. 52,815  
Claims priority, application Germany, Mar. 17, 1970, P 20 12 501.3

Int. Cl. A61b 19/00

U.S. Cl. 248-318

11 Claims



The invention is concerned with a flat-molded flexible harness of plastics material for supporting bottles, particularly transfusion bottles, in an inverted position in which two interconnected portions are provided for supporting the neck and body of the bottle and a hanger is molded integrally with the body-supporting portion.



3,630,478

**SEAT STRUCTURE FOR AGRICULTURAL TRACTOR**

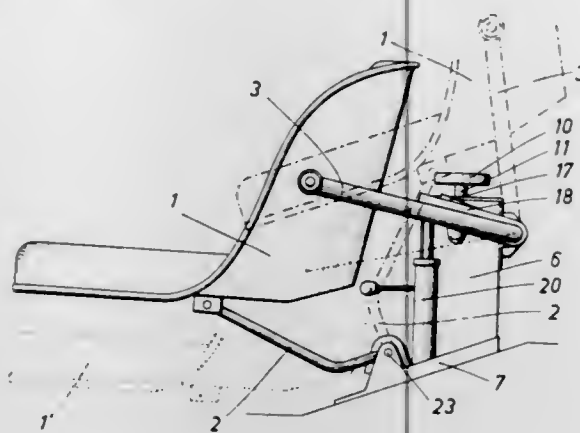
Otto Klepp, Buchengasse 111-113, Vienna, Austria

Filed May 15, 1970, Ser. No. 37,758

Int. Cl. A47c 7/00

U.S. Cl. 248—376

8 Claims



A housing has a rear wall, which is remote from a seat bucket, an upper spring abutment, and two extensions extending laterally away from said spring abutment. Generally vertical compression spring means engage said spring abutment. A linkage having the configuration of a four-bar linkage comprises lower links and an approximately U-shaped element which comprises upper links and a web, which connects said upper links and is rotatably mounted in said rear wall and carries a nose extending through said window and two forwardly directed bearing arms, which bear on said extensions. Said linkage supports said seat bucket on said compression spring means. A locking hook is mounted in said housing and biased by a biasing spring to a locking position, in which said spring housing overlies said nose and prevents an upward pivotal movement of said lower links and seat bucket beyond a predetermined seating position. A lever is manually operable to move said locking hook out of said locking position against the force of said biasing spring.

3,630,479

**MONOLITHIC SLAB FOR ROOFS, FLOORS, PLATFORMS, AND THE LIKE**

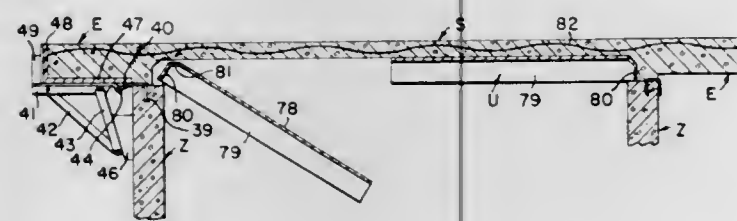
Jack E. Sullivan, Fort Lauderdale, Fla., assignor to Futura Roofs, Inc., Margate, Fla.

Continuation-in-part of application Ser. No. 797,937, Feb. 10, 1969, now abandoned. This application Apr. 23, 1969, Ser. No. 818,517

Int. Cl. E04g 11/00

U.S. Cl. 249—19

5 Claims



The means and method herein described may be used to produce upon supporting walls an elevated monolithic slab of concrete or the like, to serve as roofs, gabled or flat, for building structures generally, for floors of buildings, for platforms, etc. Use is made of a simplified form structure comprising a plurality of reusable form units, all alike, assembled side by side and end to end, to be erected upon supporting walls therefor and upon a temporary intermediate supporting means, in such a way as to permit pouring of fluid concrete thereover and thereinto to produce, when set, a slab which rests directly upon the tops of such walls. As part of the

monolithic slab thus produced, built-in joists or trusses may be formed upon its underside concurrently in the single concrete-pouring operation involved. All form units are so interfitted as to remain fixedly in operative positions, minus any fastening means therefor, thereby facilitating a subsequent dismantling of the form structure, unit by unit, for removal and repeated use elsewhere.

3,630,480

**MOLD ASSEMBLY FOR CASTING INGOTS**

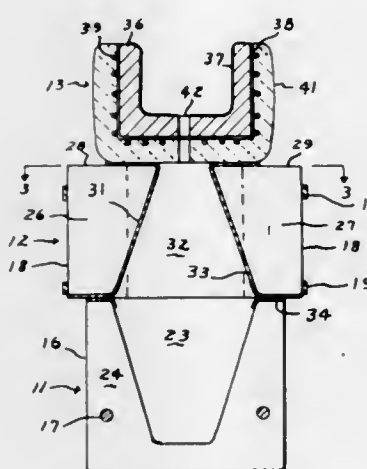
Shingo Inouye, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Aug. 27, 1970, Ser. No. 67,449

Int. Cl. B22d 7/10

U.S. Cl. 249—106

5 Claims



In a mold assembly there is provided an improved hot top comprising a plurality of wedge-shaped fire bricks or refractories which, when positioned and held together, form a refractory body having a frustum-shaped opening therein. An asbestos cloth lines the opening and extends outwardly therefrom, resting on the fire brick surfaces around the upper and lower ends of the opening. The hot top is positioned on an open mold so that the cavity in the mold and the lower and larger end of the hot top opening communicate with one another, and the asbestos cloth extending outwardly from the lower end of the hot top opening rests on an asbestos ribbon or tape covering the upper mold surface adjacent its cavity and extending a short distance into the cavity. A tundish is also provided that is positioned on the hot top. The tundish comprises a metal container having its interior surface covered with a continuous layer of a ceramic material and its outer surface covered with an electrical insulating material. Heating means in the form of resistance wire is wound around the insulating material and connected to a source of electric current. A refractory cement covers the insulating material and the resistance wire. When the tundish is in position, a bottom opening formed therein communicates with the smaller end of the opening in the hot top.

3,630,481

**DRIP-RATE CONTROL APPARATUS FOR INTRAVENOUS ADMINISTRATION**

John B. McGay, 1551 South Yorktown Place, Tulsa, Okla.

Continuation-in-part of application Ser. No. 852,243, Aug. 21, 1969, now Patent No. 3,570,531, and a continuation-in-part of 48,040, June 22, 1970. This application July 21, 1970, Ser. No. 56,907

Int. Cl. F16k 7/06

U.S. Cl. 251—6

3 Claims

A wedge-type pinch roller is formed of a resilient material and includes a peripheral opening capable of controlling the flow of flexible tubing used in intravenous administration sets. Movement of the roller element, in one position, relative to the flexible tubing pinches the tubing to effectuate in

3,630,483  
VALVES

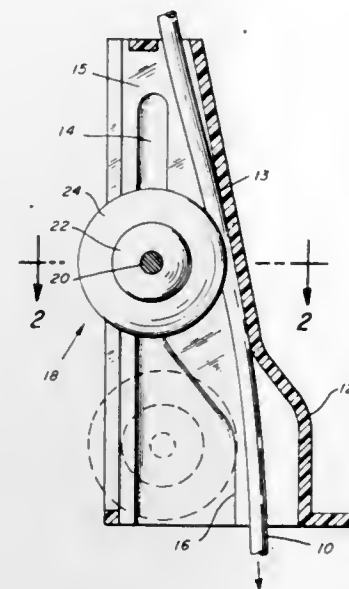
Carlos R. Canalizo, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Mar. 11, 1970, Ser. No. 18,629

Int. Cl. F16k 5/20

U.S. Cl. 251—174

15 Claims



position either changes said drip rate or closes the peripheral opening because of the resilient nature of the pinch roller and hence shuts off flow in the tubing.

3,630,482

**SOLENOID-OPERATED VALVE HAVING A PLASTIC SOLENOID GUIDE TUBE**

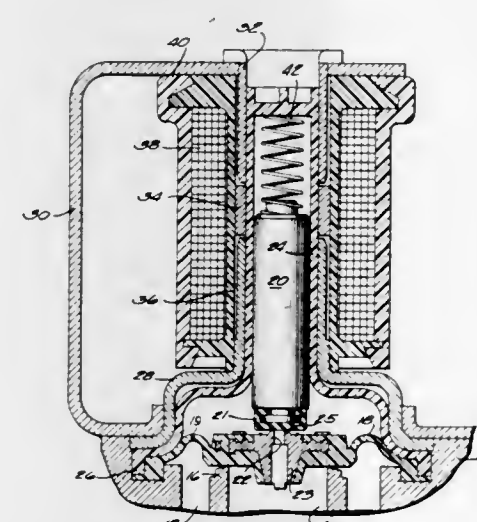
Wilbert E. Beller, Park Ridge, Ill., assignor to Controls Company of America, Melrose Park, Ill.

Continuation-in-part of application Ser. No. 830,597, June 5, 1969, now abandoned. This application Dec. 17, 1969, Ser. No. 885,907

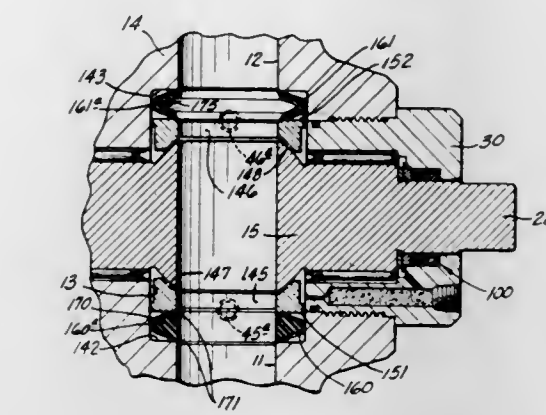
Int. Cl. F16k 31/06

U.S. Cl. 251—30

1 Claim



The pilot-operated diaphragm valve is controlled by a solenoid-actuated plunger guided in a plastic tube having a very thin wall to minimize the loss of magnetic coupling while providing freedom from corrosion and electrolysis with reduced wear and substantial reduction or elimination of vibration buzz or hum. The plastic guide is supported throughout its thin wall length by upper and lower flux sleeves of magnetic material separated by a nonmagnetic material which in this case is a portion of the plastic coil bobbin but can alternatively be any nonmagnetic material. The extended lip on the plastic tube helps seal the diaphragm and prevents extrusion of the diaphragm under high pressure. The flat valve face seating on the rigid valve seat insert in the diaphragm alleviates centering problems and allows increased clearance between the plunger and tube.



3,630,484

**RESTRICTOR VALVE**

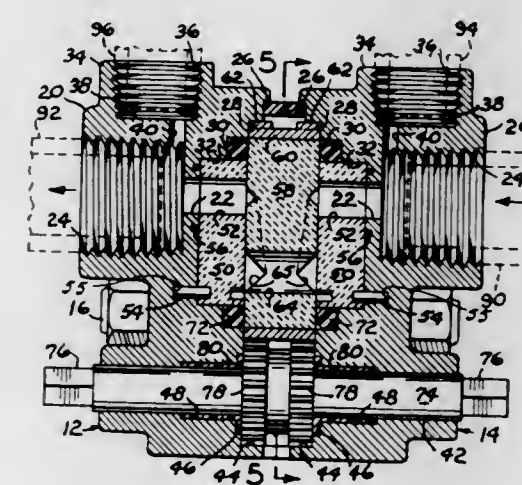
Julian S. Taylor, 8600 S.W. 8, Oklahoma City, Okla.

Filed Mar. 3, 1970, Ser. No. 16,165

Int. Cl. F16k 5/12

U.S. Cl. 251—208

4 Claims



In a restrictor valve, having a flow passage, a pair of aligned orifice plates are positioned in the housing to define an intermediate portion of the flow passage. A central disk, interposed between the pair of plates, is provided with an opening mating and mismating with the flow passage upon axial rotation of the disk. Externally operated gear means, extending through the housing, engages the periphery of the disk for axial rotation of the latter.



3,630,485

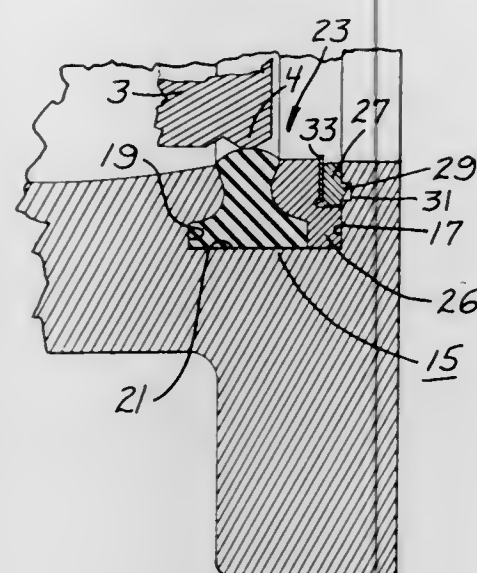
**BUTTERFLY VALVE SEAT**

Hubert L. Williams, Hinsdale, Ill., assignor to Crane Co., Chicago, Ill.

Filed May 25, 1970, Ser. No. 40,241

Int. Cl. F16k 1/226; F15j 15/16

U.S. Cl. 251-307



A seat structure for butterfly valves in which shim means are inserted between two body rings to adjustably compress a resilient seat axially to thereby effect the desired radial clearance between the internal diameter of the seat and the disc closure member.

3,630,486

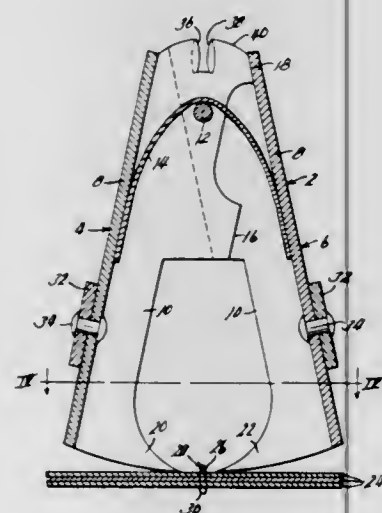
**BROKEN STAPLE REMOVER**

Joseph A. Foite, 10601 West 89th Street, Overland Park, Kans.

Filed May 28, 1969, Ser. No. 828,646

Int. Cl. B25c 11/00

U.S. Cl. 254-28



A device for removing broken portions of wire staples of the type used to secure together sheets of paper or the like, said device comprising a pair of overlying planar arms pivoted together on an axis normal thereto, said arms having cooperating notches formed in matching edges thereof generally radially of said pivot, whereby relative pivotal movement of said arms moves said notches from a position of registry, at which they may be engaged over the projecting portion of a broken staple, to an out-of-registry position to grip said wire between the edges thereof, whereupon said arms may be used as a pulling tool to withdraw the broken staple portion from the sheets in which it is engaged.

5 Claims U.S. Cl. 254-88

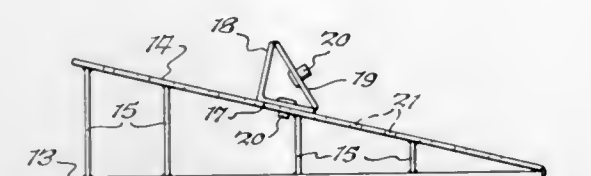
3,630,487

**WHEEL-RAISING DEVICE**

Lester E. Wechter, Jr., 404 Collins Avenue, West Seneca, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,813

Int. Cl. B66f 19/00



A wheel-raising device comprising a base member, a ramp member joined at one end to the base member, a plurality of spaced-apart vertical supporting members positioned between the base and ramp, and a wheel-blocking member positioned on the ramp. The height to which the wheel is raised is adjustable in both relatively large and small ranges. The wheel-blocking member is releasably positioned at various locations along the ramp member, and the orientation of the blocking member at each location can be changed to vary the angle between the ramp and the wheel-contacting surface of the blocking member. The base, ramp, and supporting member can be fixedly attached to each other or, alternatively, pivotally connected whereby the device is collapsible for storage.

8 Claims

3,630,488

**SELF-LOWERING MECHANISM**

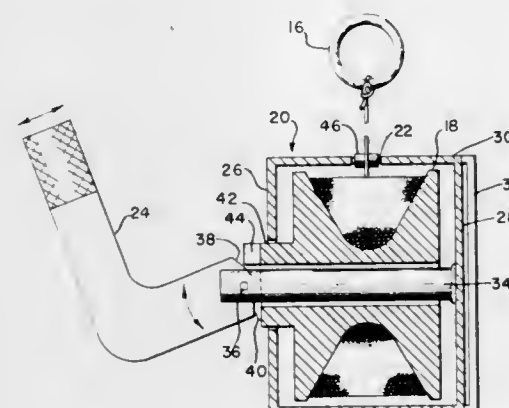
Anton Stangl, 27 Egremont Road, Brighton, Mass.

Filed Oct. 6, 1969, Ser. No. 863,904

Int. Cl. A62b 1/08

U.S. Cl. 254-154

3 Claims



A reel of flexible wire, or the like, is rotatably mounted on a reel within a housing strapped to the body. A hand-operated lever is pivoted to a fixed shaft and is indexed into and out of engagement with a shoulder stop on the reel for controlling the rate of descent of the wearer when the wire end is secured to a fixed object. The device is useful as a portable fire escape mechanism or the like.

3,630,489

**SNOW FENCE POST HOLDER**

Hubert Cordell, Sr., 946 Fife Avenue, Wilmington, Ohio

Filed May 6, 1970, Ser. No. 34,937

Int. Cl. E04h 12/22

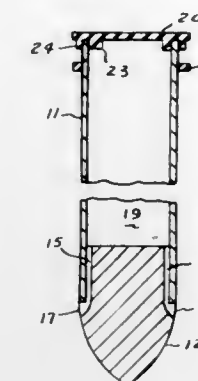
U.S. Cl. 256-12.5

1 Claim

A pointed cast-iron tip, to facilitate driving into the ground, having drain passages, is fitted into the end of a section of pipe. The pipe provides lateral support to the inserted post and the tip provides drain passages for water and verti-

cal support for the post. A cover prevents the entry of foreign material into the holder when it is not holding a post.

tending brace members are pivotally mounted at their lower ends to the base members by shear bolts and at their upper ends to the legs for quick detachment therefrom enabling the



Holders are permanently positioned by driving them in the ground at the predetermined post intervals of the snow fence.

3,630,490

**SIDE-MOUNTED SUPPORT**

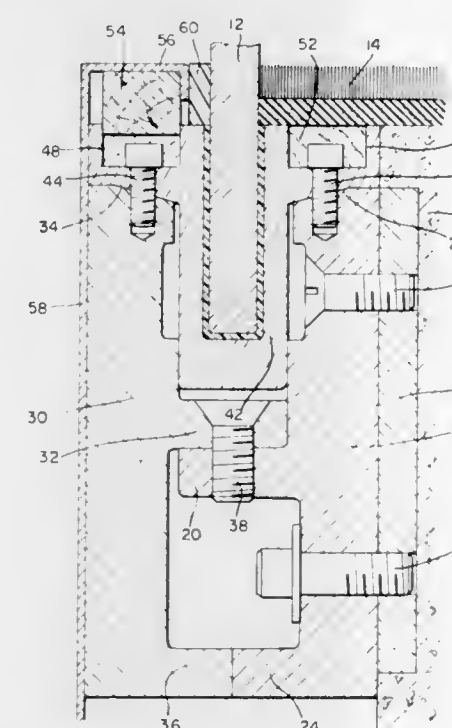
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed June 17, 1970, Ser. No. 47,022

Int. Cl. E04h 17/16

U.S. Cl. 256-24

4 Claims



Mounting means is provided for a glass panel which is part of a handrail unit; the mounting means being adapted for flush mounting on the overhung side of the structure which supports the mounting means so that the top edge thereof is flush with the upper surface of the supporting structure.

3,630,491

**COLLAPSIBLE SAFETY BARRICADES**

Guy S. Puccio, Lancaster, N.Y., assignor to Pu-Ro Products, Inc., Bowmansville, N.Y.

Continuation-in-part of application Ser. No. 815,105, Apr. 10, 1969, now abandoned. This application Mar. 26, 1970,

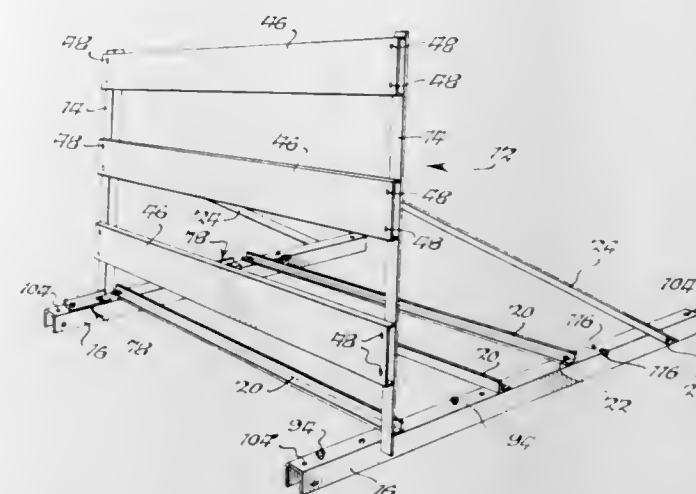
Ser. No. 22,760

Int. Cl. E01f 13/00

U.S. Cl. 256-64

10 Claims

A pair of upright legs having horizontal panels extending therebetween are pivotally mounted at their lower ends to horizontally extending members. The panels are provided with reflective faces having markings thereon. Diagonally ex-



legs and brace members to be swung into a collapsed inoperative position. Link members are employed to connect adjacent barricades together to form a continuous barricade system of any desired length.

3,630,492

**MIXING APPARATUS**

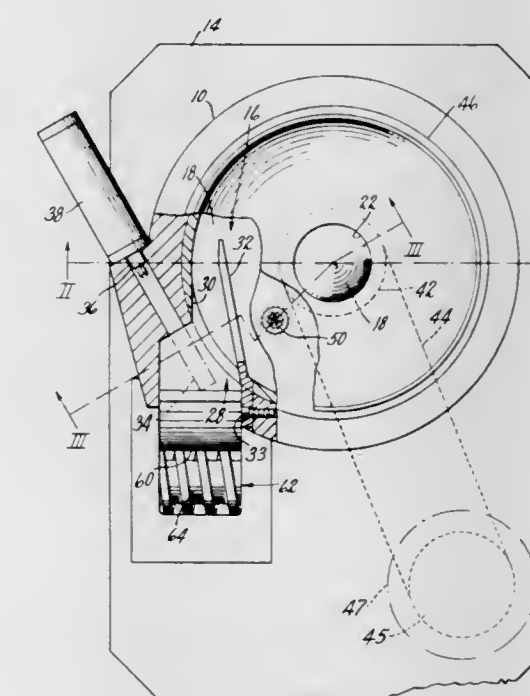
Manfred Hubner, New Haven, Conn., assignor to USM Corporation, Boston, Mass.

Filed Sept. 4, 1970, Ser. No. 69,530

Int. Cl. B01f 7/26

U.S. Cl. 259-8

10 Claims



A mixing device comprising a rotor, on the center of which dry ingredients are deposited for mixing by external agitation, and a stator spaced from the rotor forming a chamber in which liquid ingredients are introduced, wetting the dry ingredients moved along a face of the rotor by centrifugal force forming a viscous mass which is mixed by internal shear forces in the chamber.



3,630,493

**AUTOMATIC MACHINES FOR THE BATCHWISE PRODUCTION OF ICE CREAM**

Poerio Carpigiani, Bologna, Italy, assignor to Apaw S.A., Fribourg, Switzerland

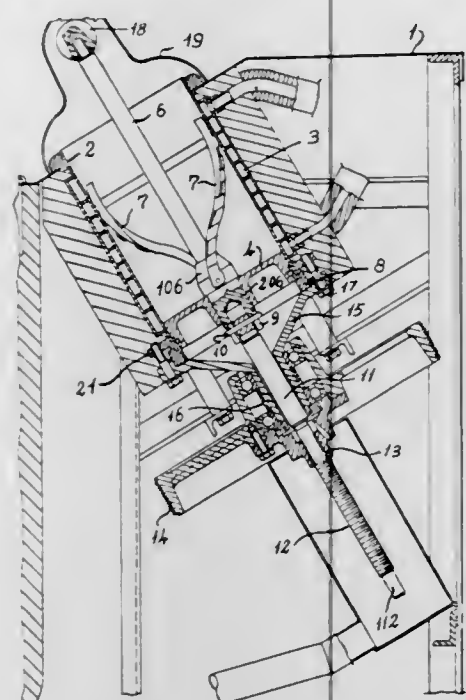
Filed Oct. 13, 1969, Ser. No. 865,602

Claims priority, application Italy, Oct. 22, 1968, 7416 A/68

Int. Cl. B01f 7/00

U.S. Cl. 259-106

5 Claims



The invention relates to machines for batchwise mixing, especially small ice cream machines comprising a fixed container or freezing can with a slidable bottom plate and a rotatable dasher, and means for lifting said slidable bottom plate, together with the ice cream resting on it, by reversing the dasher-revolving direction and lowering the bottom plate by resuming the driving of the machine in a dasher-revolving direction.

3,630,494

**MIXING DEVICE**

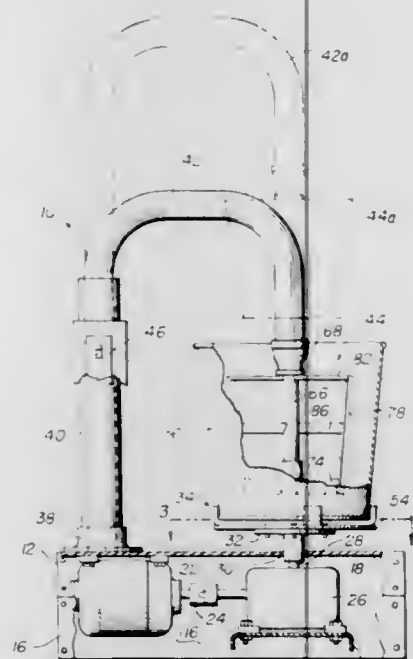
Robert J. Patton, 2812 Poplar Drive, Springfield, Ohio

Filed July 13, 1970, Ser. No. 54,096

Int. Cl. B28c 5/18

U.S. Cl. 259-177 R

6 Claims



Mortar is mixed in an ordinary bucket mounted on a rotatable support and a nonrotatable mixing blade located in the bucket. The bucket is supported on a base by a power operated support member and gripped thereto by an inertia

operated chuck. In operation, the bucket can be removed without manipulation of the chuck even while the support is rotating. A mixing blade is mounted on a vertically movable bracket and can be manually raised or lowered relative to the bucket, and when raised may be pivoted away therefrom. The mixing device is primarily intended for use in mixing mortar, for which purpose an electric drive motor with a gear reducer is provided for rotating the vessel at approximately 40 revolutions per minute.

3,630,495

**MIXER UNIT**

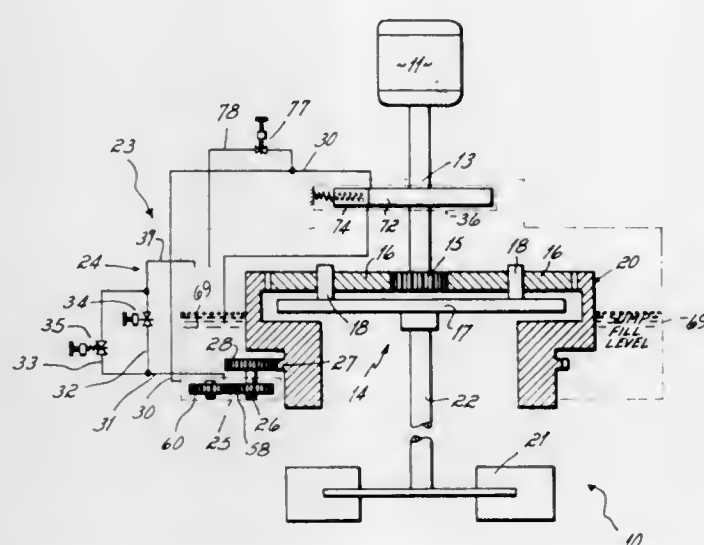
Walter N. Carroll, P. O. Box 11129, Cincinnati, Ohio

Filed Nov. 12, 1970, Ser. No. 88,662

Int. Cl. B01f 3/14

U.S. Cl. 259-182

11 Claims



A variable speed mixer compensates for variations in the viscosity of a material being mixed. An electric motor drives a differential with two outputs. One output is connected to a mixer shaft and another to a variable impedance. The variable impedance varies the speed of the mixer shaft in response to the load on the shaft, thereby maintaining the torque applied to the shaft at a constant level and controlling the differential to provide a constant load on the electric motor.

3,630,496

**GAS-CLEANING APPARATUS**

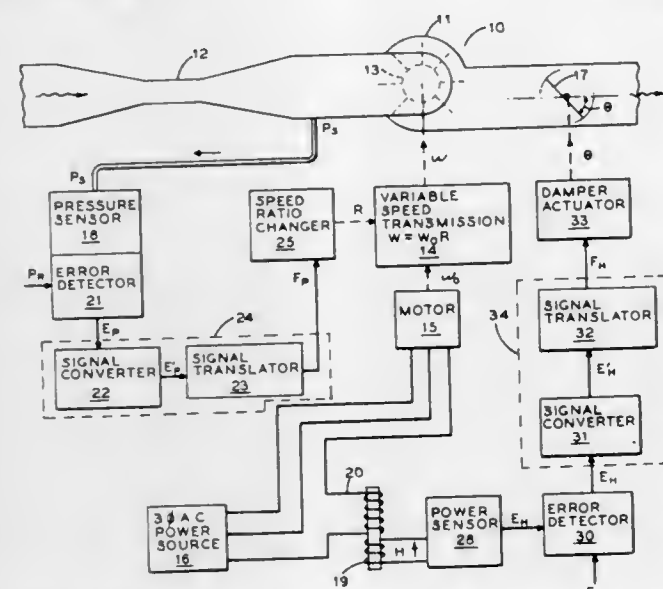
Thomas B. Hurst, Akron, and Roy G. Winklepleck, Hudson, both of Ohio, assignors to The Babcock &amp; Wilcox Company, New York, N.Y.

Filed Jan. 26, 1968, Ser. No. 700,844

Int. Cl. B01f 3/04

U.S. Cl. 261-26

10 Claims



A gas-cleaning apparatus in which the speed and power level of an induced draft fan are jointly regulated to maintain

a constant gas volume flow rate through a venturi scrubber connected in series with the fan, and to thereby maintain a substantially constant pressure drop across the venturi scrubber for improved gas cleaning action therein.

3,630,497

**AIR-FUEL METERING SYSTEM**

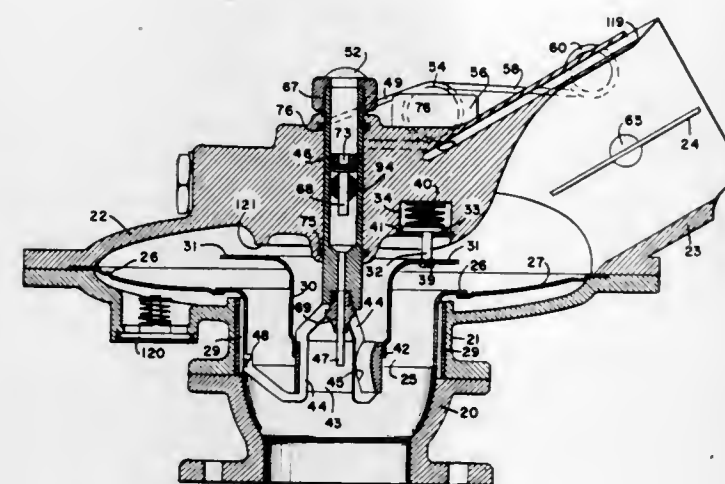
Joseph A. Basile, Jr., Baton Rouge, La., assignor to Associated Consultants, Inc., Baton Rouge, La.

Filed Feb. 26, 1969, Ser. No. 802,558

Int. Cl. F02m 7/04

U.S. Cl. 261-50 A

8 Claims



The fuel discharge jet of a carburetor is supported by the lower end of a vertically adjustable fuel supply tube in which is affixed a cam contoured to cooperate with a member of a fuel valve actuator in a relation in which descent of the tube progressively widens the port area of the valve and increases the volumetric supply of fuel to the mixing chamber, which latter is contained within the confines of a cylindrical skirt, open at upper and lower ends, which skirt is part with a horizontal ring of a primary air valve, the ring adapted to close upwardly against a seat on the inside of the cover section incident to closing movement of the throttle valve which acts through spring tension means to elevate the fuel tube to fuel shutoff position and concurrently raise the ring of a secondary air valve into lifting position against the underside of the ring of the primary air valve achieving the closing of both rings together and the ring of the primary air valve against its seat and incidentally compress springs in the carburetor lid section which bias the primary valve to open position, the secondary air valve having a cylindrical skirt of greater diameter than the skirt of the primary valve and forming therewith a supplemental annular air channel open at its lower portion to the manifold and at its upper portion to throttle-controlled incoming air when the two rings are separated, there being spider arms affixed to the lower end of the fuel tube connected to the skirt of the secondary valve for lifting the secondary valve and subsequently entraining with the secondary valve the primary valve to close both valves when the throttle valve shall have been closed.

3,630,498

**APPARATUS FOR GASIFYING AND DEGASIFYING A LIQUID**

George D. Bielinski, Green Bay, Wis., assignor to Namco Corporation, Green Bay, Wis.

Filed July 31, 1968, Ser. No. 749,188

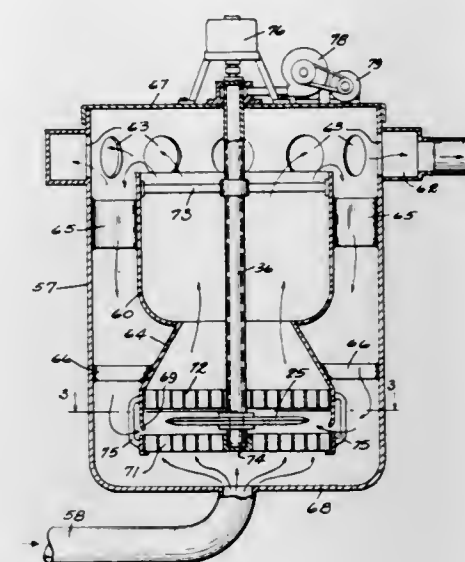
Int. Cl. B01f 3/04

U.S. Cl. 261-87

7 Claims

This disclosure relates to apparatus for gasifying and degasifying liquid. The gasifying apparatus introduces tiny gas bubbles into the liquid in vast quantities to surcharge the liquid with adsorbed gas greatly in excess of the capacity of the liquid to absorb said gas. The bubbles are introduced in a

cavitation technique in which the bubbles are shattered into myriad tiny bubbles so small that they will remain in suspension in the liquid for long periods of time where they will be readily available for absorption into the liquid as its chemical



and biological demand requires. The degasifying apparatus uses a reverse cavitation principle to withdraw gas from the liquid in the form of larger bubbles which will rise to the surface to discharge the gas from the liquid.

3,630,499

**BURNER**

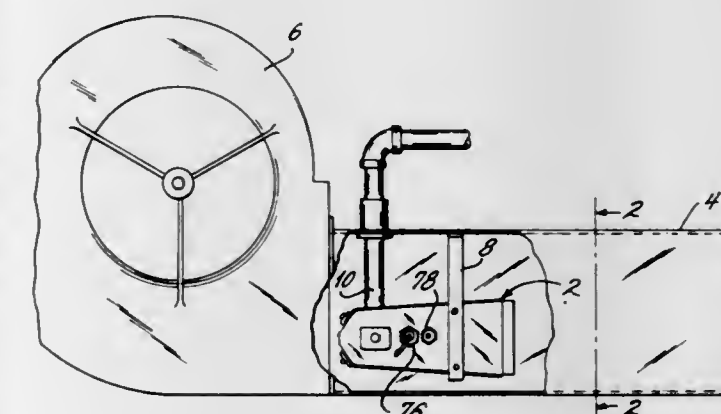
Frederick A. Kramer, Jr., 2040 Conway Road, St. Louis County, Mo.

Filed Oct. 31, 1969, Ser. No. 873,025

Int. Cl. F23i 9/04

U.S. Cl. 263-19 A

15 Claims



A burner having opposed walls defining a combustion chamber is disposed in an airstream with the combustion chamber opening downstream. At the upstream end of the walls, orifices of a gas manifold open into the combustion chamber. The opposed walls are each composed of a plurality of segments which are secured together along side flanges so that the intervening bight portions of the segments form a continuous wall surface. Slots extend across the segments, terminating at the side flanges thereof, and the slots on some of the opposed wall segments are staggered with respect to one another and with respect to the orifices so that air introduced through them forms vortices within the combustion chamber about the orifices. Outer walls form air supply chambers with the back faces in the combustion chamber walls and the air supply chambers are fed with combustion air from the airstream through an inlet opening upstream.



3,630,500

## REGENERATIVE HEAT EXCHANGER

Willibald Kraus, Grebenstein, Germany, assignor to Rhein-stahl Henschel Aktiengesellschaft, Kassel, Germany

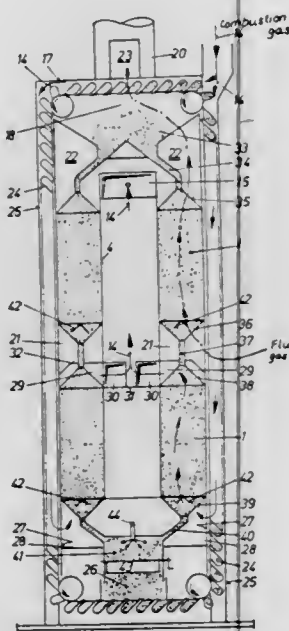
Filed Feb. 9, 1970, Ser. No. 9,492

Claims priority, application Germany, Feb. 8, 1969, P 19 06 348.0

Int. Cl. F28d 15/00

U.S. Cl. 263-19 B

10 Claims



A regenerative heat exchanger operable with a circulating pourable charge, which comprises pourable charge receiving columns having gas-permeable walls and being arranged one above the other while the upper column is passed through by a heat-releasing medium in cross counterflow and the lower column is passed through by a heat absorbing medium in cross counterflow, the columns which extend perpendicularly between two or more coaxial hollow cylinders or passages of a polygonal shape have a rectangular cross section and are substantially evenly spaced along said hollow cylinders, flow-guiding inserts being provided in the space between said columns and extending from wall to wall of said columns while guiding the heat-releasing medium and the heat-absorbing medium at an acute or right angle with regard to the direction of flow of the pourable charge in said columns.

3,630,501

## THERMAL TREATMENT OF POWDER

Hubert A. Shabaker, Media, Pa., assignor to Air Products and Chemicals, Inc., Philadelphia, Pa.

Filed Aug. 21, 1970, Ser. No. 65,770

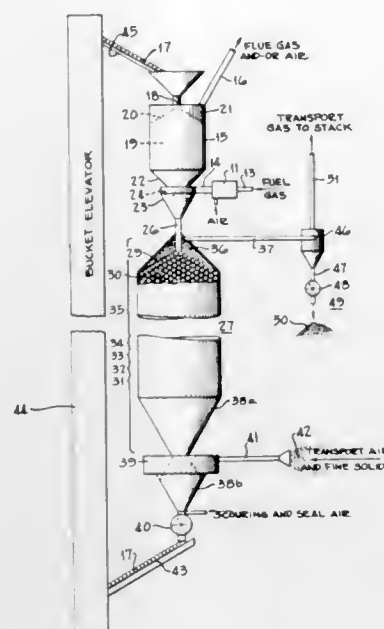
Int. Cl. F27b 15/00

U.S. Cl. 263-19 B

7 Claims

Large uniformly sized inert ceramic balls are heated by combustion gases in a heating zone and then form a gravitating bed of hot ceramic balls in a reaction zone. The heat is transferred to particles of powder suspended in a gas moving upwardly countercurrently through the gravitating bed. The balls serve as a heat sink for narrowing the range of temperature for any endothermic reaction or exothermic reaction. Thus, the temperature of each particle of the suspended powder is carefully scheduled. The temperature range is kept advantageously narrow in each zone in which a thermal reaction occurs. When raw kaolin is the suspended powder, meta kaolin is formed endothermally near the bottom of the gravitating bed. Deexothermed kaolin is formed higher in the

bed at about 1,000° C. and the upflowing deexothermed kaolin powder further increases the temperature of the balls.



thus decreasing the amount of heat input required in the heating zone for continuous calcination of the kaolin.

3,630,502

## APPARATUS FOR THE THERMAL TREATMENT OF SOLIDS

Werner Schmidt, Frankfurt, Germany, assignor to Dravo Corporation, Pittsburgh, Pa.

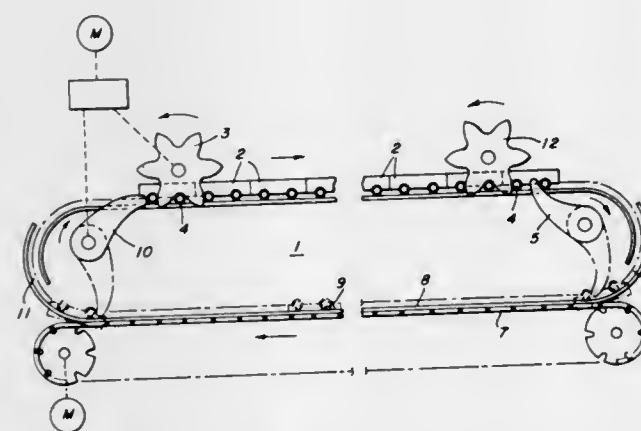
Filed Apr. 9, 1970, Ser. No. 26,989

Claims priority, application Germany, Apr. 18, 1969, P 19 19 668.0

Int. Cl. F27b 9/00

U.S. Cl. 263-28

6 Claims



Apparatus for the thermal treatment of solids in straight-traveling grates including a working path extending through a sintering machine where grate trucks are passed therethrough at one speed, and a conveying device for carrying the grate units back to the working path at a speed much greater than the work speed. An acceleration device is positioned at the end of the work path and is shaped to transfer a grate truck to the conveying device while at the same time accelerating the truck to the speed of the conveying device. A deceleration device positioned at the end of the conveying device transfers a grate truck to the work path while decelerating it to the work path speed.

3,630,503

## INTERLOCKING TILE STRUCTURE

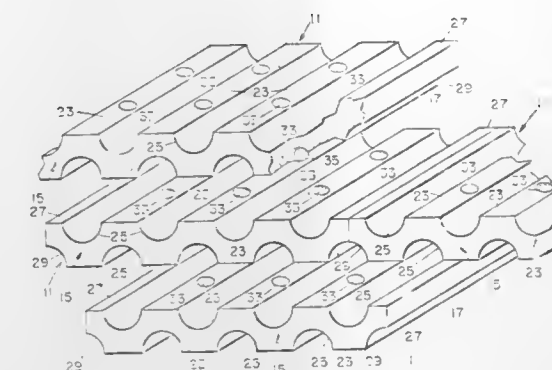
Carlisle O. Byrd, Jr., Houston, Tex., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Oct. 15, 1969, Ser. No. 866,557

Int. Cl. F23i 15/02

U.S. Cl. 263-51

5 Claims



An interlocking heat exchange structure comprises a plurality of grooved tiles stacked to provide passageways through the structure. The overlapping faces of the tiles are provided with aligned recesses or sockets. Keys slightly smaller than, but substantially conforming to the dimension and shape of, said sockets are positioned therein for tying the structure together.

3,630,504

## METHOD OF CALCINATION AND HYDRATION AND UNIT THEREFOR

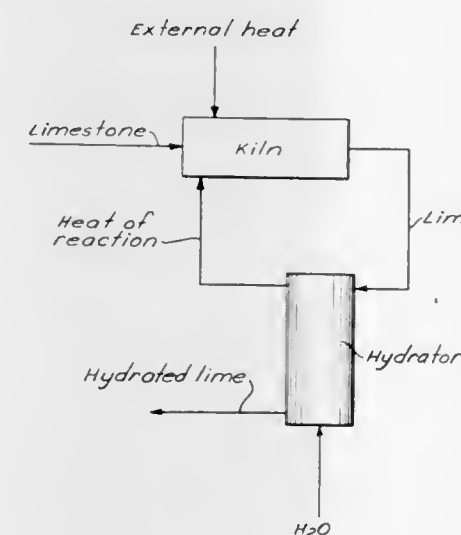
Jack B. Reynolds, Ludington, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1970, Ser. No. 732

Int. Cl. C04b 1/02

U.S. Cl. 263-53 R

3 Claims



An improved method of calcining and hydrating limestone wherein the heat of hydration of lime is recycled to calcine further limestone to lime. By so doing, the amount of external heat necessary for calcination is significantly reduced. A combined kiln-hydrator unit containing a calcination chamber, a hydration chamber with heat diffuser and product conduit therebetween, which can be employed in the present method, is also disclosed.

3,630,505

## SILVER RECOVERY

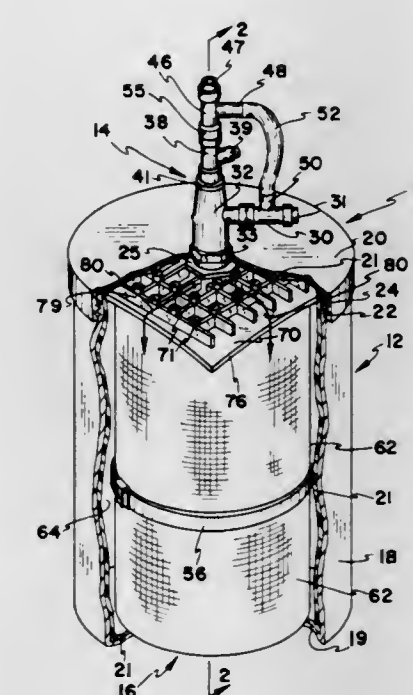
Byron R. MacKay, 2952 Robidoux Road, Sandy, Utah

Filed Mar. 9, 1970, Ser. No. 17,836

Int. Cl. C22b 3/02

U.S. Cl. 266-22

3 Claims



Equipment and methods for recovering silver from a silver-containing solution. The equipment comprises a container and a connector having an influent liquid passage and an effluent liquid passage. A recovery element made of a metal above silver in the electromotive force series fits within the container to form a metallic replacement cell. The metal forming the element is arranged in a woven matrix, such as, for example, galvanized window screen, which is wound around its axis which is common with the axis of the container to form a hollow cylinder having an inside surface and an outside surface and which is pervious only transversely in respect to the container. One of the passages is in liquid communication with the inside surface of the element, and the other passage is in liquid communication with the outside surface of the element. The solution precipitates silver in exchange for the metal of the woven matrix, without clogging of the cell.

3,630,506

## RAIL-CUTTING MACHINE

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed Nov. 13, 1969, Ser. No. 877,194

Claims priority, application Austria, Nov. 26, 1968, A 11,506/68

Int. Cl. B23k 7/04

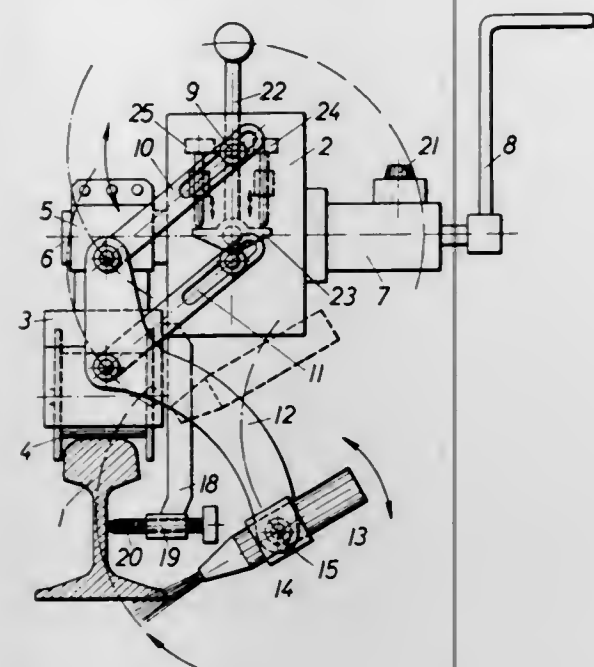
U.S. Cl. 266-23 HH

7 Claims

In a rail-cutting machine, a blowtorch is so guided for pivotal movement in relation to the rail in a plane transverse



thereof that the blowtorch remains at a constant distance from the rail while moving through a convex cutting path



corresponding to the concave section defined in this plane by the rail base, web and head.

3,630,507

## SUPPORTING APPARATUS FOR VESSELS

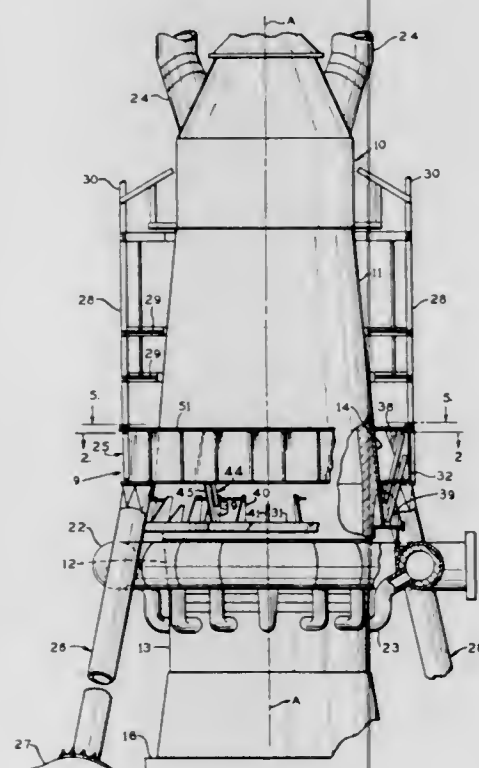
Melvin J. Greaves, Cleveland, and Tage Werner, Rocky River, both of Ohio, assignors to Arthur G. McKee & Company, Cleveland, Ohio

Continuation-in-part of application Ser. No. 778,883, Aug. 29, 1968, which is a division of application Ser. No. 520,945, now Patent No. 3,431,691. This application Mar. 28, 1969, Ser. No. 811,527

Int. Cl. C21b 7/00

U.S. Cl. 266-25

45 Claims



Apparatus for supporting a vessel, such as a blast furnace having a shell, comprising a main frame that surrounds the shell and is connected to and at least partially supports the shell by members that are under longitudinal stresses that can fluctuate but do not undergo stress reversal during normal operations of the vessel. A compression ring or auxiliary

frame member surrounds the vessel and is fixed to the frame to stabilize it. Stabilizing tie means, all preferably essentially in the same horizontal plane, are disposed around the periphery of the shell and are connected to the shell and the frames. The supporting apparatus for the vessel also includes diverging legs rigidly connected to the main frame; during construction the lower ends of these legs are supported off center from the centers of the legs to enable the lower ends of the legs to deflect outwardly by amounts corresponding to the amounts that they would deflect when loaded with the vessel.

3,630,508

## VERTICAL SHAFT FURNACE SYSTEM

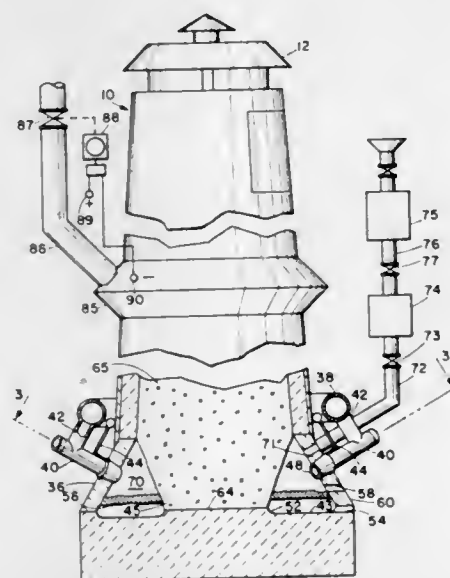
Kenneth W. Stookey, Markle, Ind., assignor to Torrax Systems, Inc., North Tonawanda, N.Y.

Continuation-in-part of application Ser. No. 531,244, Mar. 2, 1966, now abandoned, and a continuation-in-part of 719,300, Mar. 25, 1968, now Patent No. 3,511,194. This application Sept. 5, 1969, Ser. No. 855,516

Int. Cl. C21b 7/00

U.S. Cl. 266-25

10 Claims



A vertical shaft furnace in which the burden or charge is supported at the base of the furnace with an open annular space surrounding the charged material within the hearth, one or more angularly or tangentially disposed downwardly inclined tuyeres for introducing preheated air, with or without added fuel, into the annular space, a bypass line which connects with the base to vent the open annular space and thereby control the degree of heating and location of heating of the burden or charge according to its location within the vertical furnace, the bypass line including valve means for controlling the outlet flow through the bypass line in accordance with the prevailing conditions of the operations, an intermediate takeoff in the vertical shaft furnace for removing volatiles and gaseous byproducts at subatmospheric pressures for subsequent processing or treatment, and valved means for introducing fluxes or other additives into the annular space at the hearth on a controlled or metered continuous basis.

3,630,509

## TREATMENT OF MOLTEN MATERIAL

David Robson Glyn Davies, Greenlands, Henley-on-Thames, and Leslie Joseph Shaw, Glossop, both of England, assignors to Spray Steelmaking Ltd., London, England

Filed Apr. 18, 1969, Ser. No. 817,315

Claims priority, application Great Britain, Apr. 19, 1968, 18,505/68

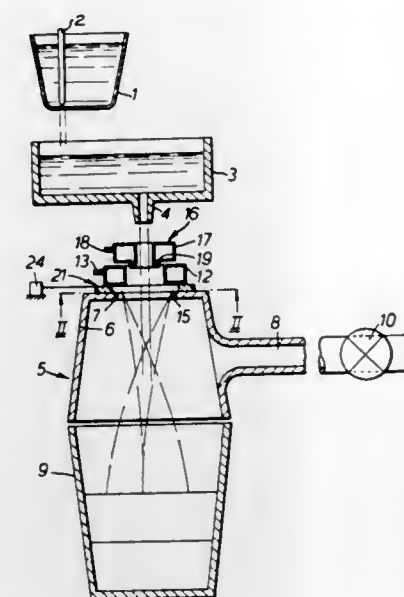
Int. Cl. C21c 7/00

U.S. Cl. 266-34 R

9 Claims

The invention is directed to means for removing accretions from the gas discharge nozzle or nozzles of apparatus for

treating molten materials in which a freely falling stream of the molten material is shattered by a flow of gas directed at the stream. The accretion-removing means may comprise scrapers movable either continuously or intermittently across



the face of the orifices of the or each gas discharge nozzles. Alternatively, the accretions may be removed or may be prevented from forming by a high-frequency vibrator connected to the gas discharge device.

3,630,510

## APPARATUS FOR MAKING MICROFICHE

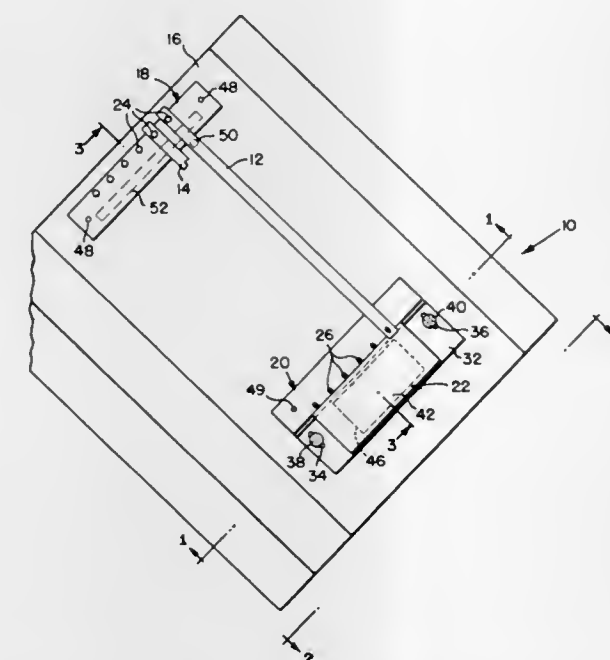
Augustus W. Griswold, Rochester, and Boris W. Haritonoff, Geneseo, both of N.Y., assignors to Atlantic Microfilm Corporation, Spring Valley, N.Y.

Filed Apr. 27, 1970, Ser. No. 32,307

Int. Cl. B23q 3/18; B25b 5/00; B25f 1/02

U.S. Cl. 269-14

19 Claims



Apparatus for accurately positioning in alignment and in registration, a plurality of microfilm strips each provided with a leading-end perforation and a trailing-end perforation, comprising a set of leading-end pins and a set of trailing-end pins. The pins of one set are sufficiently smaller in diameter than the pins of the other set, such that any distortion occurring in any of the strips mounted thereon will occur only adjacent one end thereof, i.e. at the end adjacent the smaller diameter pins. The pins define a microfilm strip plane, to which the leading-end pins are perpendicular while the trail-

ing-end pins slant toward the leading-end pins, whereby each strip can be made taut by pushing the trailing-end thereof down on the slanted pin. One set only of the pins is adjustable, for varying the spacing separating the two sets of pins. A stripper is mounted adjacent one set of pins for simultaneously and easily removing all microfilm strips mounted on the pins.

3,630,511

## JOINT-FORMING APPARATUS

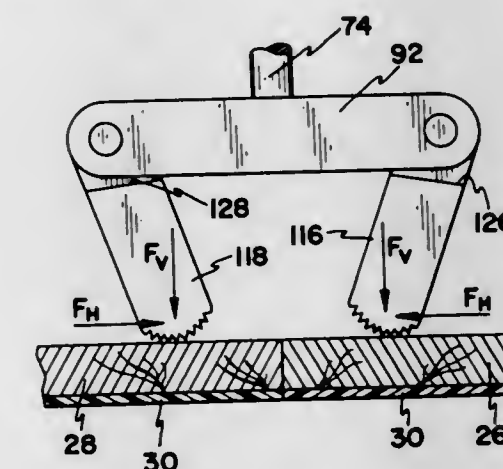
Ralph M. Evans, Glendale, and Alton L. Fritz, Phoenix, both of Ariz., assignors to Royal Industries, Inc., Pasadena, Calif.

Filed July 28, 1969, Ser. No. 845,334

Int. Cl. B23b 41/00; B23q 3/00

U.S. Cl. 269-43

17 Claims



A joint-forming apparatus and method for bringing side-by-side workpieces into tight contiguity and joining the workpieces to present an even face-joint, the apparatus including a force-applying clamp mechanism which is longitudinally positionable at any one of a variety of positions along an elevated support beam and having spaced, power-displaceable gripping eccentrics which are pivotally carried by a bracket and actuated by a power cylinder to grip opposed workpieces and to draw the workpieces together in face-to-face alignment and into edge-to-edge tight contiguity in response to reciprocation of the eccentrics essentially normal to the gripped workpiece surfaces accompanied by pivoting of the eccentrics. Drill guide structure is provided which is adapted to be fixedly positioned over the contiguous joint of the workpieces to guide a drilling tool in fabricating screw-receiving angular blind bores across the joint at precise locations.

3,630,512

## CLAMPING DEVICE, PARTICULARLY FOR A MACHINE TOOL

Paul Paret, 24 Rue Marbeuf, Grenoble, France

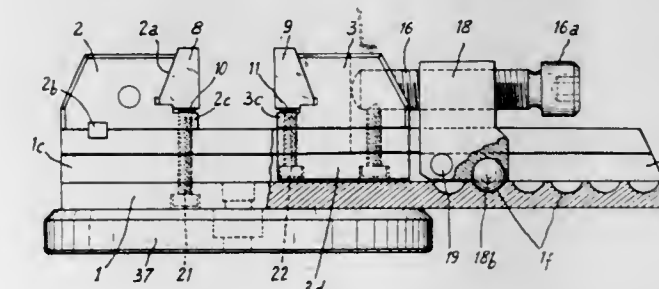
Filed Sept. 18, 1969, Ser. No. 858,931

Claims priority, application France, Sept. 25, 1968, 167468

Int. Cl. B25b 1/12

U.S. Cl. 269-138

2 Claims



The invention concerns a clamping device, particularly for a machine tool, and is characterized by the relatively fixed



and relatively movable jaws of the device having projecting shoulders which are situated below floating faceplates and which support those faceplates. Each shoulder provides a foundation for a resilient element inserted between each faceplate and its associated shoulder and receives at least one fixing element for respectively attaching the relatively fixed jaw to the vise base and the relatively movable jaw to a member movable towards and away from the relatively fixed jaw.

3,630,513

## AUTOMATIC TIPPING MACHINE

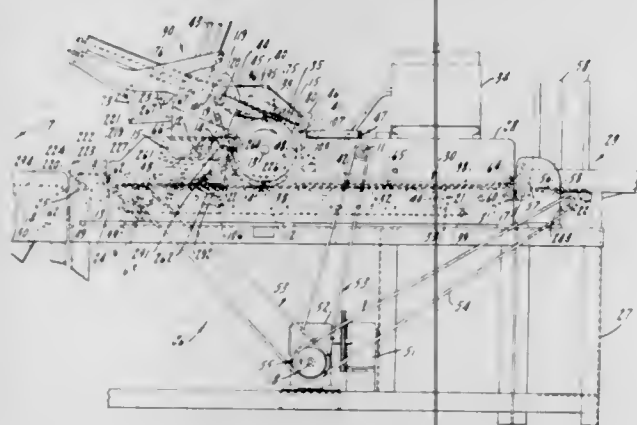
William W. Davidson, Jr., 26 Bogart Avenue, Port Washington, L.I., N.Y.; Alfred Anderson, Elmhurst, and Eugene A. Anderson, Lombard, both of Ill., assignors to said William W. Davidson, Jr., by said Alfred Anderson and Eugene A. Anderson

Filed Mar. 12, 1969, Ser. No. 806,600

Int. Cl. B42b 1/00

U.S. Cl. 270—53

48 Claims



A sample, or printed form, applicator machine for affixing printed forms, or samples of a wide variety of products, to brochures, signatures, envelopes or other carrier sheets, wherein a carrier sheet feeder feeds individual carrier sheets in timed relationship onto a conveyor, which positions them and carries them through the machine. Above the carrier sheet conveyor is a sample (or printed form) feeding mechanism which feeds individual samples (or printed forms) to a sample conveyor in timed relationship to the feeding of carrier sheets, and including means whereby each sample (or printed form) is positioned in a predetermined manner with respect to the carrier sheet to which it is to be affixed; and then as the sample (or printed form) is carried toward the carrier sheet by a sample transfer mechanism, a glue-applying mechanism is actuated to apply a predetermined amount of glue to the underside of the sample (or printed form) at a predetermined position on the sample or to the top of the carrier sheet at a predetermined position on the carrier sheet. The sample transfer mechanism affixes the sample to the carrier sheet at a predetermined position on the carrier and the carrier then progresses onward to a delivery means, or alternatively through another apparatus such as a folder, and/or slitter, which performs additional operations upon the sample carrying carrier sheet. A number of interdependent detection systems are employed whereby the failure of any element of the machine to perform its intended function properly is detected and appropriately compensated for prior to subsequent operational steps; so that either samples or carrier sheets which are improperly fed, or for which no counterpart has been properly fed, are automatically removed from the machine in reusable form, without the application of glue, without stopping the operation of the machine, and in such a manner as to greatly

reduce the likelihood of the apparatus jamming up or malfunctioning. The operation of the apparatus is cyclic and is capable of automatically delivering carrier sheets with samples (or printed forms) affixed thereto, and thereafter folded one or more times if desired, at a rate of many thousands per hour.

3,630,514

## SHEET-FEEDING APPARATUS

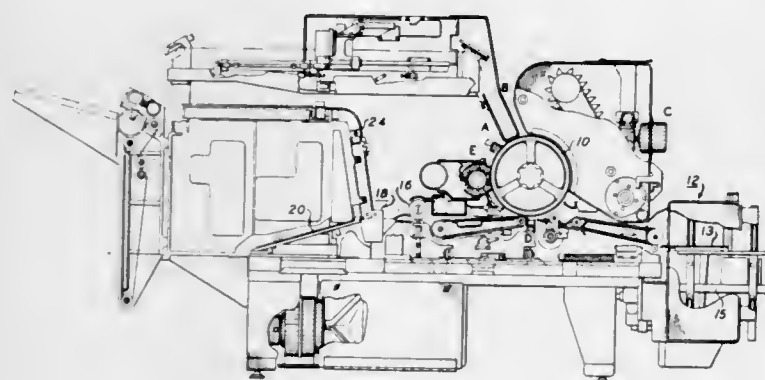
George D. Del Vecchio, North Rose; Edward A. Schwartz, Fairport, and Larry H. Warren, East Rochester, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed June 2, 1969, Ser. No. 829,365

Int. Cl. B65h 45/18

U.S. Cl. 270—83

5 Claims



Apparatus for selectively directing sheet material from a first sheet feed path along a second or third sheet feed path. The apparatus includes a selectively shiftable interference member to direct the sheet material along either the second or third path. The interference member may also be selectively moved in relation to the movement of the leading edge of a sheet fed along the third path so that it may be folded and then directed along the second path.

3,630,515

## DOCUMENT-HANDLING APPARATUS

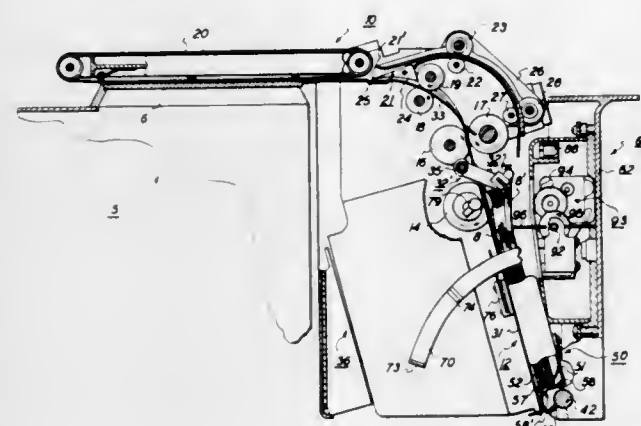
Lowell W. Knapp, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 21, 1970, Ser. No. 74,036

Int. Cl. B65h 31/38

U.S. Cl. 271—4

5 Claims



A recirculating document-handling system in which documents are fed in seriatim from a supply to an operating station and returned to the supply for either recycling or removal. The system incorporates a tray to hold the document supply, a feeder for feeding one document at a time

from the bottom of the supply to the operating station and back to the tray, a bail bar to maintain documents returning to the tray segregated from other documents awaiting feeding, at least until the supply of such other documents is used up; and a cover for the tray. The cover includes a rotatable wheel having one or more flexible paddles disposed to wipe against documents in the tray to settle documents returning to the tray against the bail bar, and drive means to turn the paddle wheel.

3,630,516

## SHEET-FEEDING APPARATUS

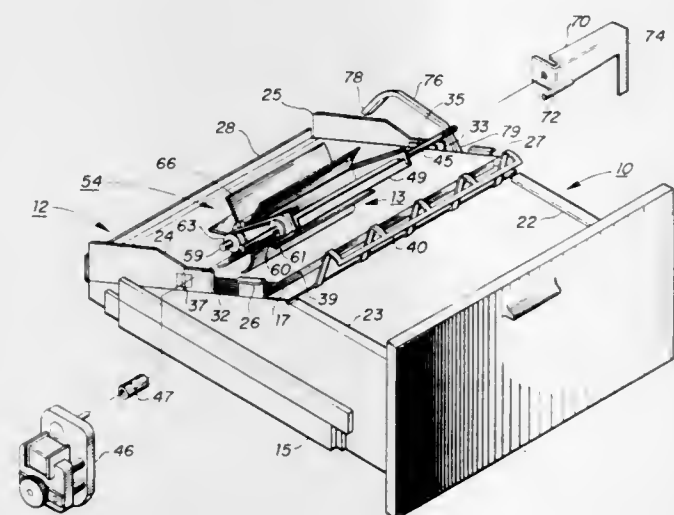
Byung S. Hong, San Diego, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed Mar. 23, 1970, Ser. No. 21,827

Int. Cl. B65h 3/02

U.S. Cl. 271—36

6 Claims



An apparatus for feeding individual sheets of paper or the like from the top of a stack upon demand is disclosed. The device includes a "paddle wheel" feeding device which comprises a plurality of flexible blades extending radially outwardly from an axle or hub. The blades are placed in contact with the surface of the upper sheet of a stack and, upon rotation of the hub, sweep the top sheet toward a receiving means. The paddle wheel is caused to rotate by a drive motor whenever a sheet is to be fed. Once the sheet reaches the receiving means, the motor is disengaged. A one-way clutch permits the paddle wheel to be rotated by the sheet as it is withdrawn by the receiving means. The paddle wheel is preferably mounted on a pivoting mechanism to accommodate varying stack heights. Preferably, means are included to remove the paddle wheel from the upper surface of the stack during stack replenishment.

3,630,517

## COUNTER STACKER

Albert G. Enskat, Barrington, Ill., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jan. 12, 1970, Ser. No. 2,223

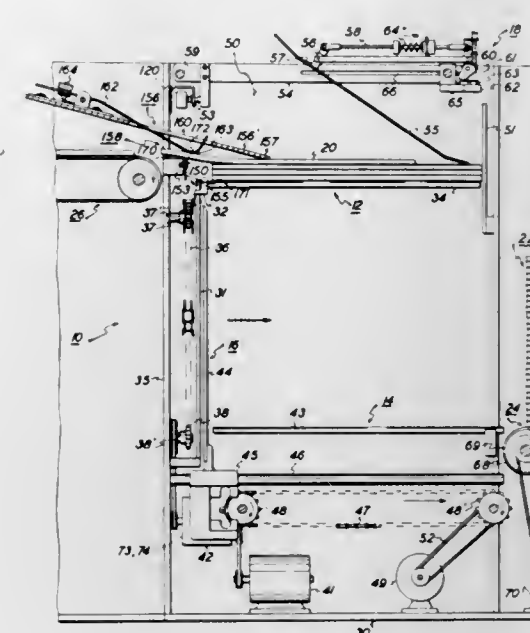
Int. Cl. B65h 31/10

U.S. Cl. 271—88

3 Claims

An article stacker including a movable elevator upon which articles may be stacked, stack transfer means adapted following predetermined descent of the elevator to intercept and remove a completed stack from the elevator to enable the completed stack to be ejected from the stacker and the elevator reset for the next stack, stack ejector means adapted when actuated to move the completed stack along the stack transfer means and out of the stacker, and control means for the elevator and the ejector means adapted to lower the elevator as a stack builds up thereon, and, following transfer of the completed stack from the elevator to the transfer

means, to actuate the ejector means to remove the completed stack, the control means including means to



quickly return the elevator to the stack-start position following ejection of the completed stack from the stacker.

3,630,518

## SHEET-FEEDING DEVICES

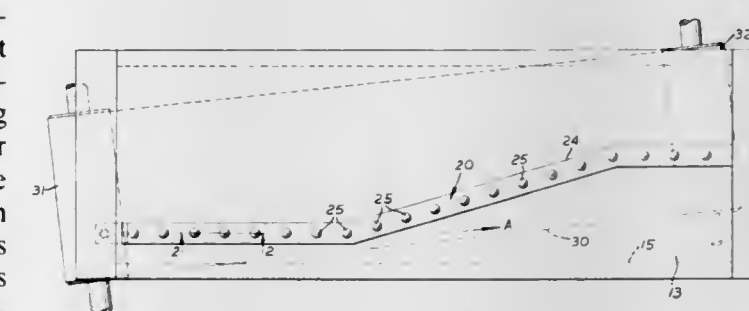
Leslie John Street, Bristol, England, assignor to Parnall & Sons Limited, Birmingham, England

Filed June 16, 1969, Ser. No. 833,316

Int. Cl. B65h 9/16

U.S. Cl. 271—49

14 Claims



A sheet-feeding device comprising a feed path between a pair of superimposed plates and an intervening aligned surface wherein the sheets are transported along the feed path and towards aligning surface by at least one row of balls wherein the latter are rotated by a common driving belt, the axis of movement of the latter being preferably angularly adjustable relevant to the aligning surface.

3,630,519

## DOCUMENT FEED APPARATUS

Merton R. Spear, Jr., Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,821

Int. Cl. B65h 9/04

U.S. Cl. 271—53

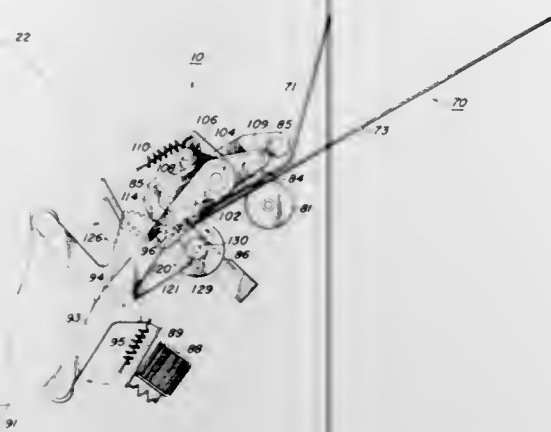
1 Claim

Document feed apparatus for feeding documents onto a moving copy drum in proper registration and at a proper interval to enable the document to be secured on the copy drum. The documents are fed into a chute which advances



them to a gate where they are held until ready to be received by the copy drum. At this time the gate is lifted and docu-

disposed on an upper horizontal wire stretched between two vertical posts. The bottom ring is slidably disposed on a lower



ment advanced by feed rolls in response to cam-actuated devices timed with the movement of the copy drum.

3,630,520

## GAME WITH BUCKING ANIMAL

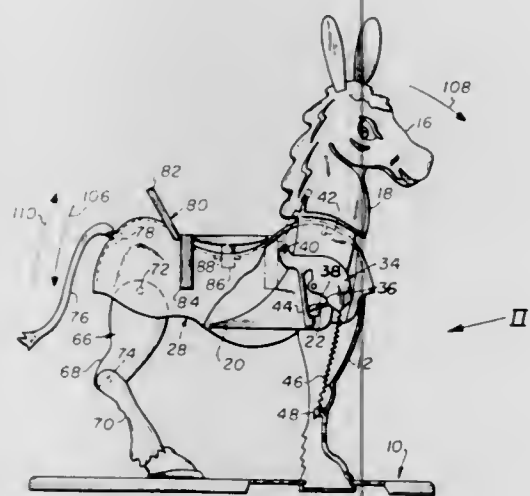
Julius Cooper, New Hyde Park, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed June 1, 1970, Ser. No. 41,969

Int. Cl. A63f 9/00

U.S. Cl. 273-1 R

11 Claims



The body portion of a mule figure is pivotally supported on a base member and held in a generally horizontal position by a spring-biased detent. The addition of weights to the body overcomes the force of the detent causing the unsupported body to drop. The head portion, of the mule is also pivoted to the base and is held in a latched position against the bias of a second spring. When the body drops, it releases the latch which causes the head portion to accelerate due to its spring. A kicker member on the head portion engages the body portion causing it to accelerate along with the head portion thus simulating a bucking motion which throws off the weights.

3,630,521

## BASEBALL BATTING PRACTICE DEVICE

John Lingbeek, and Helen Dorothy Lingbeek, both of Mammoth Spring, Ark.

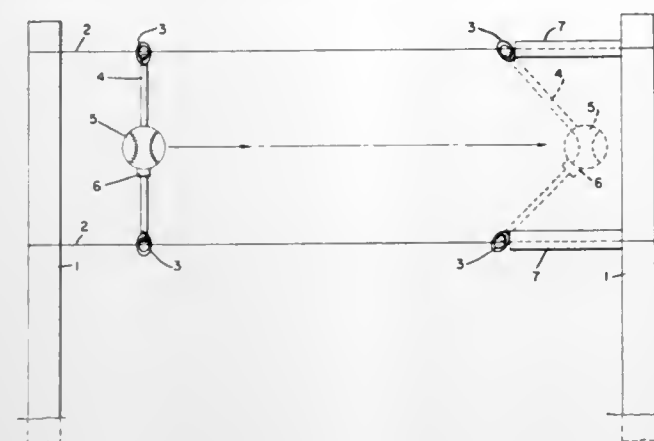
Filed Dec. 9, 1968, Ser. No. 783,457

Int. Cl. A63j 5/00

U.S. Cl. 273-26

2 Claims

A baseball batting practice device including a ball mounted in a position to be struck by a batter. The ball is slidably disposed on a short vertical elastic cord. Each end of this cord is provided with a ring. The top ring is slidably



wire which is parallel to the upper one. The vertical elastic cord has a stop to limit downward sliding of the ball.

3,630,522

## ELECTRONIC TACTICAL GAME

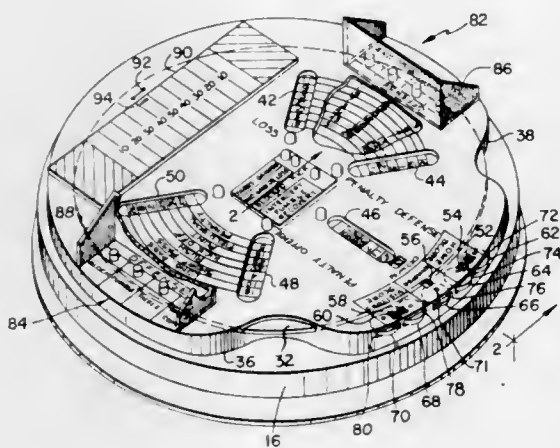
Merwyn S. Bear, 15 Hodgdon Terrace, West Roxbury, Mass.

Filed Apr. 3, 1970, Ser. No. 25,310

Int. Cl. A63f 7/06

U.S. Cl. 273-94 R

10 Claims



A board formed with a plurality of openings and having indicia of a game illustrated on the upper surface thereof is affixed to a platform which is rotatably mounted to a base. A rotatable computing wheel having a plurality of alphanumeric characters in arcuate rows and radial columns printed on the upper surface thereof is interposed between the board and platform, selected columns of alphanumeric characters being visible through the openings. Indicators in juxtaposition with selected openings oscillate in response to signals as at the output of a random function generator which is controlled by offensive and defensive switch matrices. Completion of a game maneuver, each game maneuver being specified by offensive and defensive switch positions, is evidenced when the indicators cease to oscillate, the outcome of a maneuver being determined by interpolation of selected indicators and visible alphanumeric characters.

3,630,523

## RACKET AND STRING HOLDING ELEMENTS

Jean Rene Lacoste, 1 Avenue du Marechal Maunoury, Paris, France

Filed Apr. 23, 1969, Ser. No. 818,551

Claims priority, application France, May 8, 1968, 151008

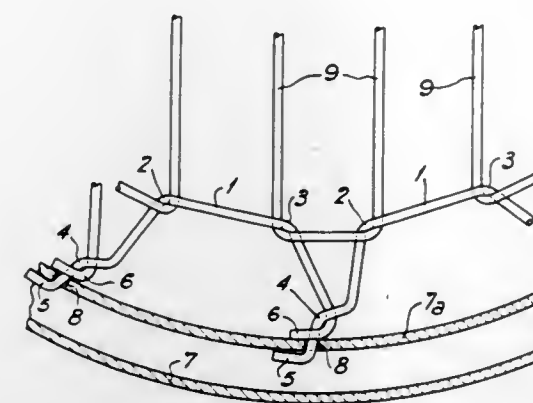
Int. Cl. A63b 51/00

U.S. Cl. 273-73 D

4 Claims

A tennis racket having string apertures in the frame and string holding elements positionable in the apertures. The

string holding elements are composed of bent wire and have two distinct ends. One end is formed into a lug and is placed



in the frame aperture. The other end is a hook which is secured to the lug end of an adjacent string holding element.

3,630,524

## RACING GAME WITH SELECTIVELY ACTUATED LANE SWITCHING MEMBERS

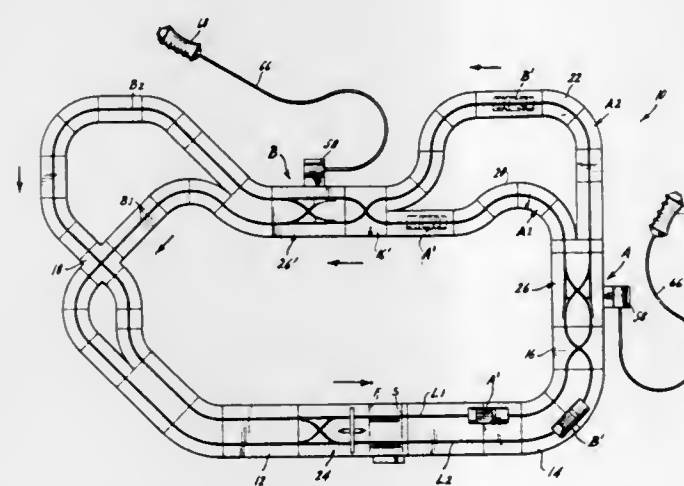
Julius Cooper, New Hyde Park, and Erwin Benkoe, Manhasset Hills, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Oct. 22, 1969, Ser. No. 868,449

Int. Cl. A63f 9/14

U.S. Cl. 273-86 R

2 Claims



A racing game to be played with at least two vehicles which are driven at substantially the same speed wherein a track is arranged to establish a raceway including at least a first course and a second course, with the second course being longer than the first course such that the elapsed time to travel the second course with the vehicles traveling at substantially the same speed is longer than the elapsed time to travel the first course. The raceway includes at least two crossover means on the track which are arranged to be manually controlled by the players of the game such that the vehicles travelling along the first and second courses at substantially the same speed may be switched to and from the longer and shorter of the courses under the control of the players whereby, notwithstanding the constant speed limitation of the respective vehicles, it is possible to cause one of the vehicles to traverse the raceway, or one or more turns about the raceway, in the shorter elapsed time than the other player-controlled vehicle.

3,630,525

## BOARD GAME APPARATUS

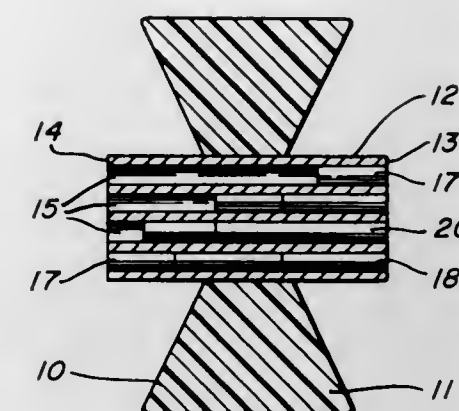
Joseph A. Weisbecker, 1220 Wayne Avenue, Cherry Hill, N.J.

Filed May 26, 1970, Ser. No. 40,632

Int. Cl. A63f 3/00

U.S. Cl. 273-130 D

4 Claims



A game construction including a screen for shielding the activities of players from each other, a body disposed centrally of said screen and having opposite ends presented to respective players and provided with a plurality of through passageways each opening through respective opposite body ends, and a plurality of elongate playing pieces of different lengths and insertable into selected body passageways, said pieces being shorter than the passageways and of uniform diameter throughout their length, whereby they may be pushed completely through a passageway.

3,630,526

## VARIABLE FORMAT GAME BOARD

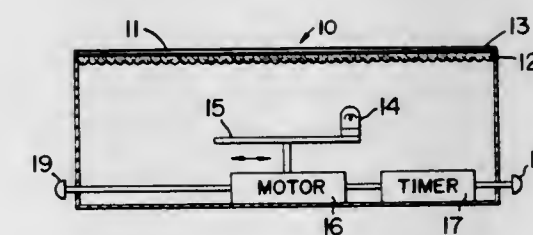
Nelson B. Winkless, III, Sunnyvale, Calif., assignor to Microlens, Inc., c/o Andrew B. Kjos Teeters, Palmer, Kjos & Glass, Palo Alto, Calif.

Filed Feb. 12, 1968, Ser. No. 704,711

Int. Cl. A63f 3/00; G09b 3/00

U.S. Cl. 273-136 A

13 Claims



A game board comprising a lens mosaic and an adjacent image bearing transparency incorporating a plurality of game board formats for selective display of a desired game board format on a screen by a light source spaced from the game board. There is also provided a mechanism for producing relative motion between the game board and light source to selectively change the game board format and vary the game board conditions of a particular game according to a random or programmed temporal sequence.



3,630,527

**PUZZLE COMPRISING DISCS WITH INTERENGAGING PINS AND APERTURES**

Jeffrey D. Breslow, Chicago, Ill., assignor to Glass, Marvin &amp; Associates

Filed Feb. 9, 1970, Ser. No. 9,651

Int. Cl. A63f 9/12

U.S. Cl. 273-157 R

6 Claims



A puzzle-type game comprising a plurality of generally flat, uniform-shaped sections nestable end to end to form an elongated object. The sections all have interengaging surfaces, with the interengaging surfaces of each section being complementary with the surfaces of at least one, or more, but not all of the remaining sections whereby the sections must be properly matched so as to interengage and thereby nest all of the sections to form the elongated object. In the preferred embodiment of the invention, the sections are disc-shaped and the interengaging surfaces comprise at least one pin and one aperture on each section, each pin and aperture having a positional relationship on each section with complementary aperture and pin, respectively, on one, or more but not all of the remaining sections.

3,630,528

**TAPE-CARTRIDGE-POSITIONING APPARATUS**

Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan

Filed Jan. 2, 1970, Ser. No. 242

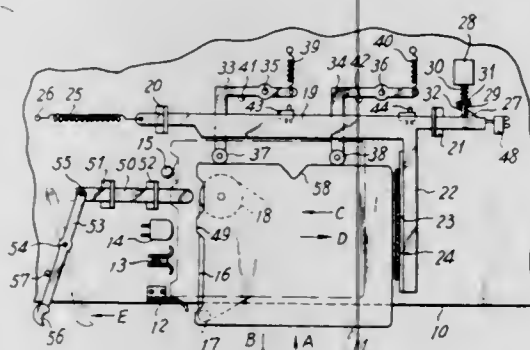
Claims priority, application Japan, Jan. 1, 1969, 44/2442;

May 8, 1969, 44/41578

Int. Cl. G11b

U.S. Cl. 274-4 B

8 Claims



A tape-cartridge-positioning apparatus for an endless magnetic tape cartridge player, comprising a reciprocating lever

member slidably supported on a deck within a player housing and biased in one direction by a tension spring, an electromagnetic device for holding the reciprocating lever in a first position against the bias of the tension spring, and a control circuit for the electromagnetic device.

The control circuit includes at least one electrical switch operable in relation to manual insertion of the tape cartridge in a predetermined position in the player housing. The electromagnetic device releases hold of the reciprocating lever in relation to operation of the electrical switch whereby the reciprocating lever is moved from the first position to a second position by the bias of the tension spring. When the reciprocating lever is moved from the first position to the second position, the cartridge is moved and positioned in the playing position as a portion of the reciprocating lever urges the rear edge of the cartridge.

3,630,529

**SODIUM VAPOR TRAP**

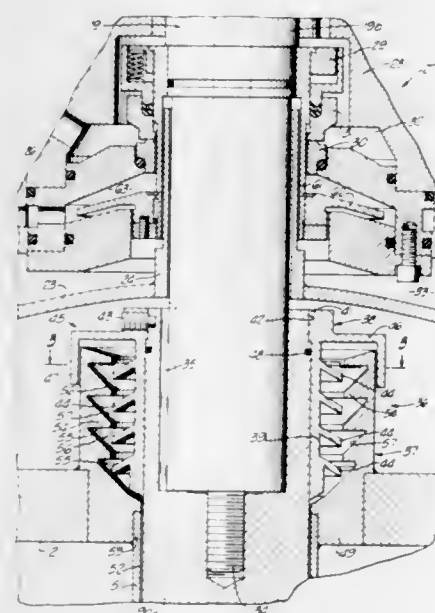
Rowland E. Ball, Long Beach, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 5, 1969, Ser. No. 821,598

Int. Cl. F02f 11/00; F16j 15/00

U.S. Cl. 277-22

8 Claims



A sodium vapor trap for sealing a rotary shaft to a housing, the trap having a stationary member carried by the housing and surrounding the shaft and a rotary member carried by the shaft for rotation within the stationary member, the rotary member and the stationary member having transverse baffles cooperating to provide a tortuous passageway communicating the interior of the housing with the exterior and forming a reflux condenser for condensing the sodium vapor to liquid sodium and returning it to the housing.

3,630,530

**BEARING WITH LOCKED SEAL**

Valdimir Mackas, Wethersfield, and Walter S. Pomeroy, Avon, both of Conn., assignors to Textron Inc., Providence, R.I.

Filed Mar. 19, 1969, Ser. No. 808,554

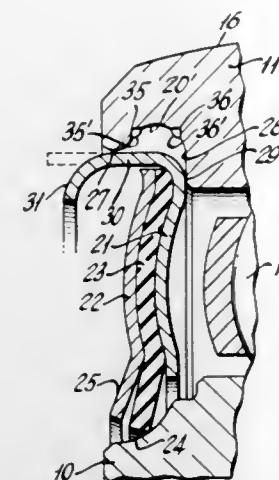
Int. Cl. F16j 15/54

U.S. Cl. 277-94

5 Claims

The invention contemplates the antirotational locked assembly of a bearing seal ring to one of the rotational elements of a rotary bearing. The rotary bearing element may be a race ring having a circumferentially extending radially open groove for accommodation of a deformable seal member, upon assembly thereto. One or more locking pro-

jections displaced out of the body of the bearing element enter the nominal inner volume of the groove, so that upon



assembly, the deformable seal material develops the desired locked relation of parts.

3,630,531

**SHAFT SEAL**

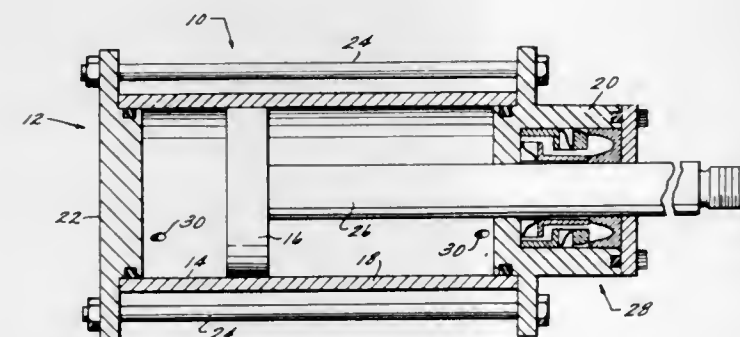
Pasquale C. Bondi, Revere, Mass., assignor to General Electric Company

Filed Apr. 27, 1970, Ser. No. 32,076

Int. Cl. F16j 15/00, 15/48

U.S. Cl. 277-117

5 Claims



A shaft seal is disclosed in which the inner and outer lips of a U-cup sealing member are independently loaded against their respective contacted surfaces by loading rings independently biased in an axial direction.

3,630,532

**HIGH- AND LOW-PRESSURE SEAL ASSEMBLY**

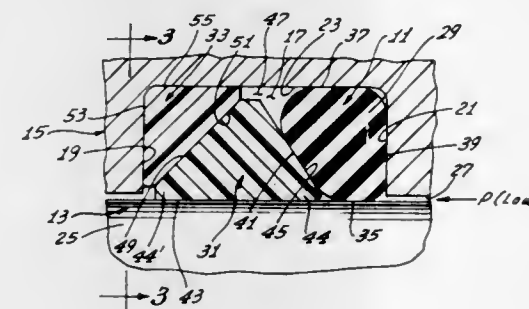
Henry A. Traub, Pacific Palisades, and Leslie A. Woodson, Long Beach, both of Calif., assignors to W. S. Shamban &amp; Co., Los Angeles, Calif.

Filed July 16, 1969, Ser. No. 842,178

Int. Cl. F16j 9/06

U.S. Cl. 277-144

3 Claims



A seal assembly of the type for forming a seal between relatively movable inner and outer members. The seal as-

sembly includes, in one embodiment, nonelastomeric sealing ring means and an elastomeric sealing ring for urging the nonelastomeric sealing ring means into fluidtight sealing engagement with the two members. The elastomeric sealing ring engages both of the members under low-pressure conditions to thereby provide a low-pressure seal and is movable away from one of the members in response to an increase in pressure.

3,630,533

**DYNAMIC SEAL FOR CRYOGENIC FLUIDS**

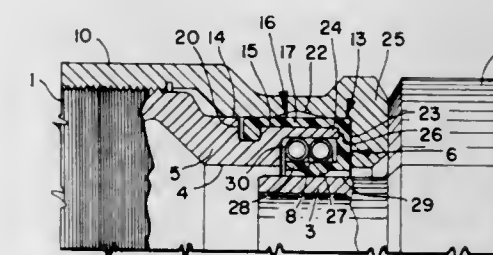
Joseph W. Butler, and Terence A. O'Connor, both of Elyria, Ohio, assignors to Lear-Siegler, Inc., Maple Heights, Ohio

Filed July 23, 1970, Ser. No. 57,697

Int. Cl. F16j 15/02

U.S. Cl. 277-153

8 Claims



A fluid seal between two members comprising a flexible sealing ring containing an open channel having radial inner and outer walls, and a seal groove for receipt of the sealing ring, the radial outer wall of the sealing ring being compressed between the outer member and an additional external member surrounding same, and the radial inner wall of the sealing ring being maintained in sealed engagement with the inner member by one or more springs disposed within the seal channel between the outer member and radial inner wall. The forward end of the outer member is also pressed into the end wall of the sealing ring channel to provide a supplemental or backup compression seal for the outer member.

3,630,534

**POLYGON TWIST LOCK TOOLHOLDER**

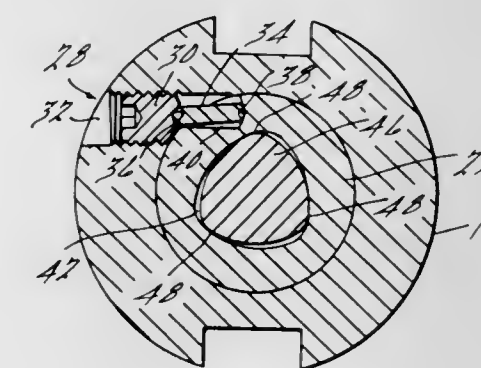
Bernard R. Better, Chicago, Ill., assignor to The Bendix Corporation

Filed Jan. 12, 1970, Ser. No. 2,220

Int. Cl. B23b 31/10

U.S. Cl. 279-1 T

11 Claims



A toolholder of the type having a polygonal bore designed to cooperate with a similarly shaped tool shank to cause these members to wedge together by the torque generated during machining operations to produce a centering action as well as a frictional gripping force between the holder and the tool, featuring a torque preloading arrangement increasing and redistributing the wedging forces created during machining operations.



### 3,630,535 MACHINE TOOL CHUCK

Pierre E. Renoux, Colombes, France, assignor to Cri-Dan, Paris, France

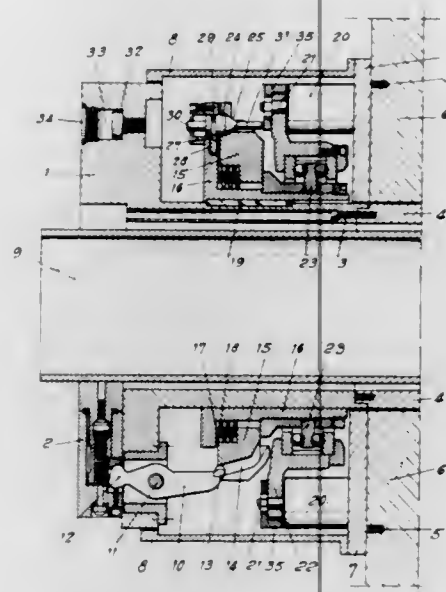
Filed Apr. 30, 1969, Ser. No. 820,394

Claims priority, application France, July 3, 1968, 157 609

Int. Cl. B23b 31/16

U.S. Cl. 279-15J

11 Claims



A machine tool chuck comprising a chuck body having a plurality of clamping jaws slidably mounted thereon and connected to a compensating actuator mechanism which includes an annular member connected to the clamping jaws by intermediate lever means whereby axial displacement of the annular member causes radial displacement of the clamping jaws between open and closed positions. The annular member is radially floatably mounted on a collar which is concentric with and nonrotatably secured to the chuck body, the collar being slidable axially relative to the chuck body and being connected to a suitable power source. A combined centering and locking device coacts between the collar and the floatable annular member for permitting the floatable annular member to be automatically coaxially aligned with the collar and suitably locked in said coaxially aligned position for permitting use of the chuck with concentric clamping action. The centering mechanism, in a preferred embodiment, comprises a centering pin slidably mounted on the collar and having a conical portion adapted to be disposed into a conical recess formed in the annular member for automatically centering the annular member.

3,630,536

### ROTATABLE CHUCK, ESPECIALLY FOR TURNING MACHINES

Hans Scharfen, Buederich, Germany, assignor to Paul Forkardt Kommanditgesellschaft, Duesseldorf, Germany

Filed Mar. 30, 1970, Ser. No. 23,593

Claims priority, application Germany, Mar. 29, 1969, P 19 16 275.5

Int. Cl. B23b 31/36

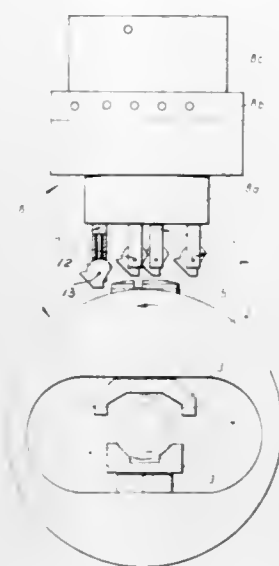
U.S. Cl. 279-5

11 Claims

The specification discloses a chuck rotatable on a work axis and having workpiece-engaging jaws rotatable on an axis extending perpendicular to the work axis. A disc is connected to rotate with the jaws and protrudes from the side of the chuck body and has elements in the form of grooves or cams thereon facing away from the chuck body. These elements occupy respective axial planes of the chuck body in respective rotated positions of the disc and are adapted for cooperation with feeler members of a control device. A feeler member is located in each said axial plane and is movable from a retracted position away from the chuck body

to an advanced position wherein one end is in the path of movement of a respective element of said disc in the respective rotated position of the disc.

The present invention concerns a rotating chuck which is intended particularly for turning machines and is designed as



displaceable or rotatable chuck with clamping jaws which are adapted to be controlled during the rotation of the chuck so as to be displaced transverse to the axis of the chuck body and/or to be pivoted about an axis different from the axis of rotation of the chuck.

3,630,537

### SKI SAFETY BINDING

Rudolf Brunner, Baldham, Germany, assignor to Wiener Metallwarenfabrik Smolka & Co., Vienna-Mauer, Lindauer-gasse, Austria

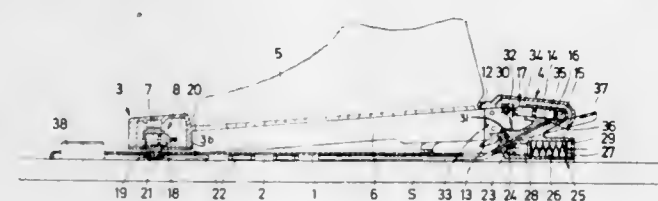
Filed July 9, 1969, Ser. No. 840,449

Claims priority, application Germany, July 11, 1968, P 17 03 787.5

Int. Cl. A63c 9/08

U.S. Cl. 280-11.35 D

13 Claims



A ski safety binding having a hydraulically operated element to transmit a clamping pressure to secure a ski boot to the ski.

3,630,538

### SAFETY SKI BINDING

Bernhard W. Klein, and Gunter L. Steves, both of St. Charles, Ill., assignors to Trans-World Ski-Equip, Inc., St. Charles, Ill.

Filed Oct. 17, 1969, Ser. No. 867,273

Int. Cl. A63c 91/00

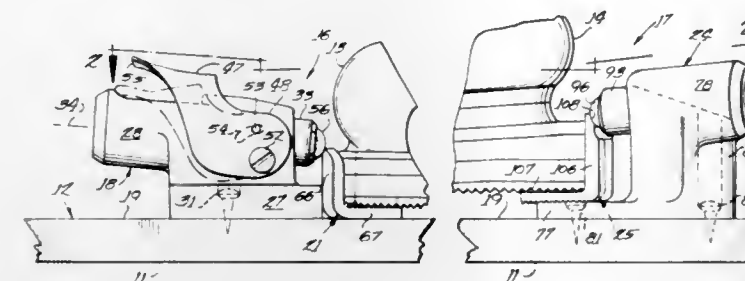
U.S. Cl. 280-11.35 T

8 Claims

A safety ski binding for releasably securing a ski to the toe and heel portions of a ski boot. The toe portion of the binding includes a spring-biased plunger mounted on the ski and movable into engagement with the toe of the boot, and the heel portion of the binding includes a pair of spring-biased plungers mounted on the ski and movable into engagement with the heel of the boot. The toe and heel engaging plungers are each inclined downwardly toward the upper surface of the ski, and the heel engaging plungers are also inclined in-

wardly toward the longitudinal center line of the ski. Ball bearings are rotatably and shiftably mounted in the ends of

trally disposed longitudinally movable roller to provide a foot and end rollers to provide control: the board can be moved



the plungers in such a way as to reduce the force required to effect engagement of the ski with the boot but to require a greater force to effect disengagement.

3,630,539

### HEEL SAFETY BINDING FOR A SKI

Robert Lusser, deceased, late of Munich, Germany (by Heinz G. Wagner, administrator), and Gustav Schmidt, Munich, Germany, assignors to Lusser GmbH & Co., Ski-Sicherheitsbindungen KG, Munich, Germany

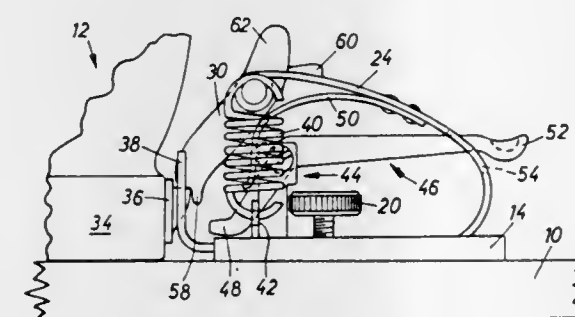
Filed July 8, 1970, Ser. No. 53,220

Claims priority, application Germany, July 23, 1969, P 19 37 501.0

Int. Cl. A63c 9/08

U.S. Cl. 280-11.35 T

10 Claims



A heel safety binding for a ski in which a pressure member extending transversely downwardly toward the front of the ski presses upon the rear edge of the heel of the ski boot or a metal heel fitting under a resilient prestress or tension and, upon attaining admissible maximum load, executes an upward angular movement against the prestress in the vertical longitudinal plane of the ski and during which movement the heel is released from the pressure member after a predetermined point in the upward path of movement. More particularly, the pressure member is connected at its upper portion with the upper leg of a substantially C-shaped leaf spring, the closed end of which faces the rear of the ski and the lower leg of which is mounted on a baseplate attached to the ski or directly to the ski.

3,630,540

### MODIFIED SKATE BOARD TO PROVIDE STOPPING ACTION

William J. Smith, 515 Plush Mill Road, Wallingford, Pa.

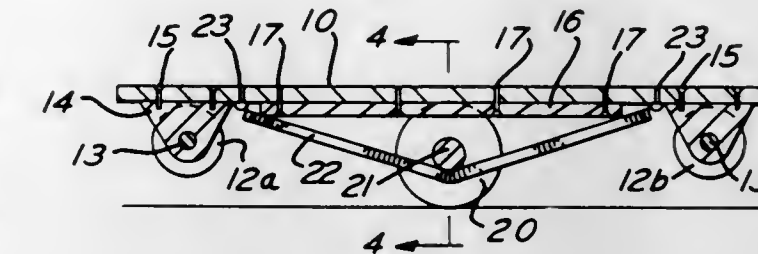
Filed Jan. 20, 1970, Ser. No. 4,320

Int. Cl. A63b 23/04

U.S. Cl. 280-87.04 A

1 Claim

An exerciser is disclosed which includes a top board for engagement by the foot, the board having therebelow a cen-



forward, stopped, steered and maneuvered by the flexing of the ankles of the user.

3,630,541

### VEHICLE AXLE SUSPENSION

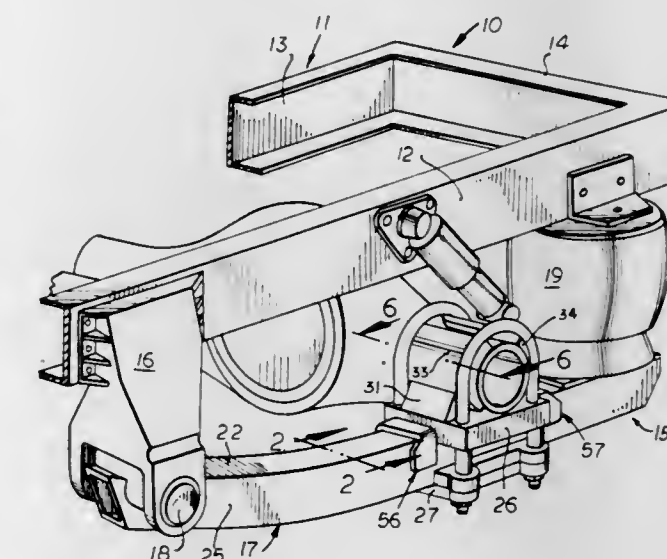
Charles A. Carlson, Fort Wayne, and William S. Locke, Hamilton, both of Ind., assignors to International Harvester Company, Chicago, Ill.

Filed June 11, 1970, Ser. No. 45,467

Int. Cl. B60g 11/26

U.S. Cl. 280-124

14 Claims



A vehicle axle suspension system including an air spring and a pair of trailing arms, beams, or the like for suspending the chassis frame of a motor truck or trailer from the rear axle or axles whether the latter be a single driving or a single trailer axle, two driving or two trailer axles, or a driving and a trailing axle. The vehicle axle suspension system further includes improved means for connecting each end of an axle housing to a respective trailing arm which means includes a resiliently mounted axle housing support or saddle and which means allows limited relative movement in certain directions between the trailing arms and the axle housing but at the same time prevents relative fore and aft movement between the trailing arms and axle housing.

3,630,542

### AUTOMATIC CRASH PAD FOR MOTOR VEHICLES

Casimir E. Wycech, 5941 Argyle, Dearborn, Mich.

Filed June 1, 1970, Ser. No. 41,841

Int. Cl. B60r 21/02

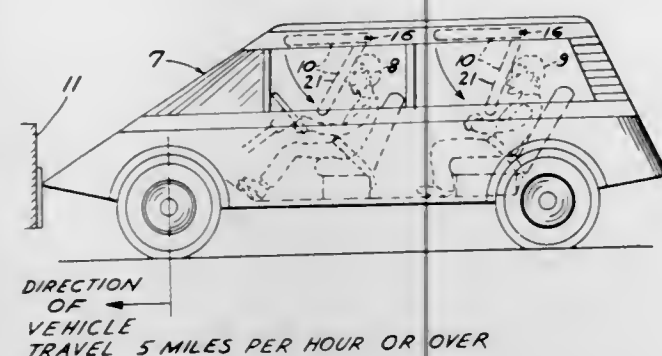
U.S. Cl. 280-150 B

6 Claims

This application discloses a safety crash shield which is supported in the head liner of a motor vehicle, and arranged to automatically move into protective position in front of the driver and passengers upon impact of the vehicle with another object, at and above a predetermined speed. The in-



vention resides in the particular mounting for the device and in the spring-biased lever for triggering the movement of the



pad, and in the shock-absorbing means for backing up the shield when in operative position.

3,630,543

**RESTRAINT BELT LINEAR STOWAGE ASSEMBLY**

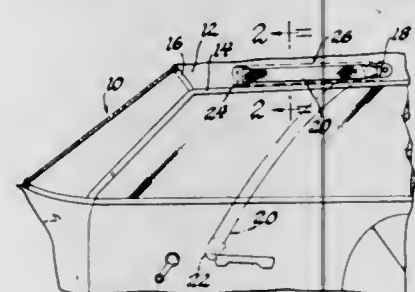
David J. Cripps, Farmington, and Joseph F. Koral, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 20, 1970, Ser. No. 56,525

Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

3 Claims



A restraint belt linear stowage assembly includes an elongated housing mounted on a vehicle. The housing has elongated channel portions that receive respective lateral flange portions of a carrier to mount the carrier for movement longitudinally of the housing between retracted and extended positions. A forklike spring clip includes a base portion riveted to the carrier. A cable of a spring reel, mounted on the housing, is hooked to the base portion to bias the carrier toward retracted position. A central latch portion of the clip is normally engageable with the housing in extended position to hold the carrier in extended position against the bias of the spring reel. The clip also includes attachment portions, one on each side of the latch portion, that allow selective attaching and detaching of a restraint belt D-ring and the carrier in extended position. With the D-ring attached to the carrier, longitudinal movement of the D-ring toward the spring reel causes the D-ring to move with respect to the carrier and to engage the latch portion. This engagement moves the latch portion out of engagement with the housing and allows the spring reel to move the carrier to retracted position and thus stow a portion of the belt along the longitudinal length of the housing.

3,630,544

**STABILIZER FOR EARTHMOVING MACHINERY**

James L. Grisham, West Burlington, and Rudolf Horsch, Burlington, both of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed June 10, 1970, Ser. No. 44,915

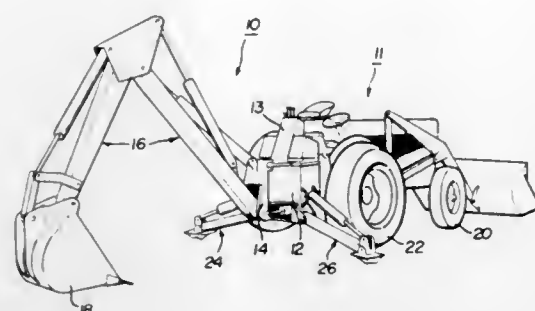
Int. Cl. B60s 9/02

U.S. Cl. 280—150.5

2 Claims

An earthmoving machine, such as a backhoe or the like, carried on a vehicle which is provided with opposite, out-

wardly extending stabilizer arms which are pivotally mounted on the machine by universal pivot arrangement to permit



3,630,545

**FIFTH WHEEL WITH IMPROVED WEDGE AND JAW OPERATING LEVER**

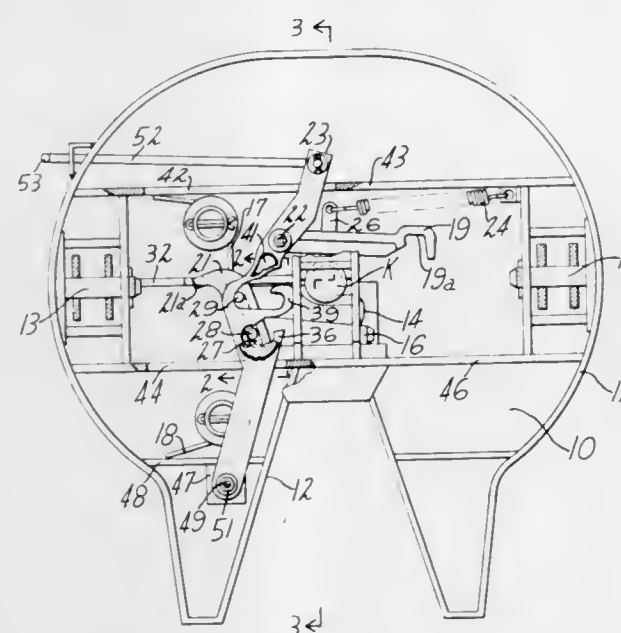
John P. K. Fontaine, Box 704-Road 11, and William D. Benson, both of Birmingham, Ala., assignors to said Fontaine by said Benson

Filed May 18, 1970, Ser. No. 37,992

Int. Cl. B62d 53/08

U.S. Cl. 280—434

6 Claims



A fifth wheel of the kind having a jaw and a wedge for the jaw, a handle for operating said parts so constructed and arranged that the handle may be assembled for operative connection with the wedge and jaw by passing the handle through the frame parts of the fifth wheel, generally on a level plane, thus eliminating the necessity of cutting vertically enlarged slots through the frame parts, thus retaining the strength of said frame parts. A further improvement is an operating handle which has a pair of side opening slots to receive the pins or the like which operatively connect the handle to the wedge and jaw to permit the assembly aforesaid, and a plate or the like welded to the bottom surface of the handle and spanning the slots, thus to form bottoms for the same, this plate preventing the pins or the like from becoming disconnected with the respective wedge and jaw in the event the pins become loose and also strengthening the handle.

3,630,546

**LAND VEHICLE COUPLING MEANS**

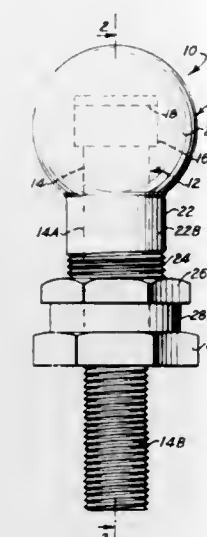
Leslie L. Church, 1058 W. Julia Avenue, Flint, Mich.

Filed June 26, 1970, Ser. No. 50,068

Int. Cl. B60d 1/06

U.S. Cl. 280—511

8 Claims



A compound male coupling member for a ball-and-socket-type hitch, and wherein the member is composed of selectively exchangeable components coating to form hitch balls each having a different diameter.

3,630,547

**COMBINATION WASTE AND VENT FITTING FOR ABOVE FLOOR MOUNTING**

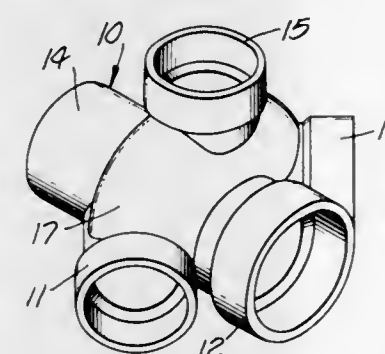
William I. Hartshorn, Jr., 356 Cienaga Drive, Fullerton, Calif.

Filed Feb. 19, 1970, Ser. No. 12,740

Int. Cl. F16l 41/00

U.S. Cl. 285—150

1 Claim



A combination waste and vent fitting of plastic material for use in a baseboard above the floor plumbing system, which can be vertically or horizontally mounted and in a single fitting connects a plurality of waste connections with a single drain connection, and which will, when connected, have a common vent connection.

3,630,548

**HOSE-FITTING SYSTEM**

Robert B. Kimm, and Richard J. May, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Jan. 21, 1970, Ser. No. 4,548

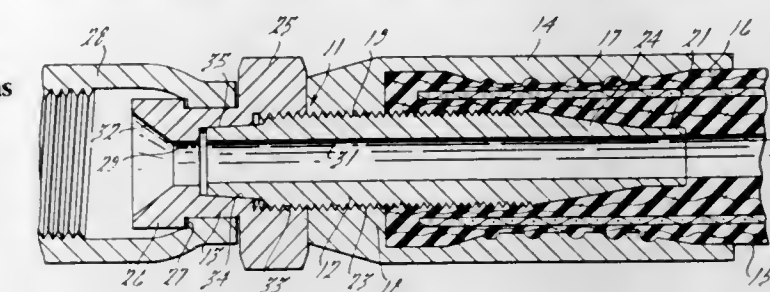
Int. Cl. F16l 33/22

U.S. Cl. 285—174

1 Claim

A two-piece hose nipple for mounting in a socket to form a complete hose fitting for securement to a hose end. The nipple comprises a male section threaded into the socket and

a female section which can accommodate any of a number of different fitting shapes. The nipple parts are united by a



tapered joint so that the two-piece nipple may be unscrewed from a hose and fitting assembly without the two parts becoming disengaged from each other.

3,630,549

**FRAME AND CLEAT JOINT CONNECTOR FOR DUCTS**

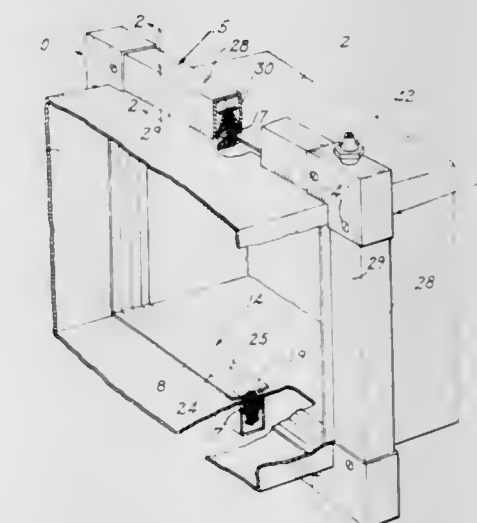
John A. Grimm, Bellvue, Colo.

Filed Jan. 22, 1970, Ser. No. 5,041

Int. Cl. F16p 13/12

U.S. Cl. 285—297

1 Claim



Duct joint connectors are provided, for sheet metal ducts, air conduits and the like, by forming a rectangular inner frame from stock frame material, positioning the ducts in place against the frame, and securing the ducts to the frame by means of external cleats. For rectangular ducts, the corners are enclosed by end caps. Sealing gaskets or mastic may be utilized to seal air gaps between the ducts and the frame.

3,630,550

**PIPE COUPLING**

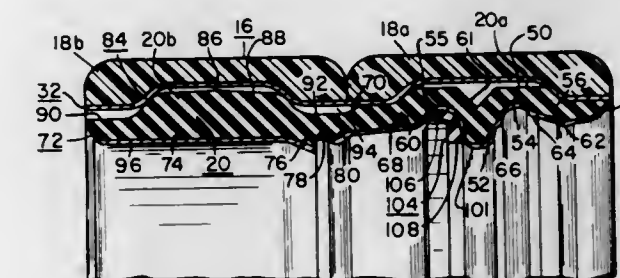
Anthony R. Zine, Jr., Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,006

Int. Cl. F16l 21/00

U.S. Cl. 285—235

11 Claims



A coupling for joining a cylindrical and a beaded pipe end portion, the coupling having a resilient liner surrounding the



pipe end portions with a first force development member surrounding a first section of the liner and urging the liner first section into sealing relationship with the beaded pipe end portion and a second force development member, adjacent and attached to said first force development member, surrounding a second section of the liner and urging the liner second section into gripping and sealing relationship with a peripheral surface band area of the cylindrical pipe end portion.

3,630,551

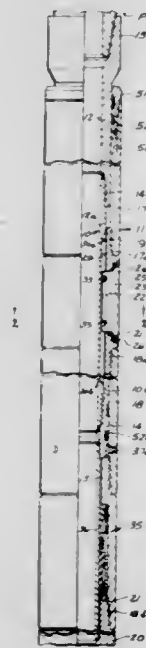
**EXTENSIBLE COUPLING FOR WELL PIPES**

Cicero C. Brown, 5429 Sturbridge Drive, Houston, Tex.

Filed June 29, 1970, Ser. No. 50,794

Int. Cl. F16I 25/00

U.S. Cl. 285—330



An extensible coupling for use in well pipe strings, particularly rotary drill strings, to permit relative longitudinal, non-rotative movement between sections of the pipe string by employing a spline connection in which the male spline member is removably mounted in the wall of the outer coupling member.

3,630,552

**HOSE COUPLING**

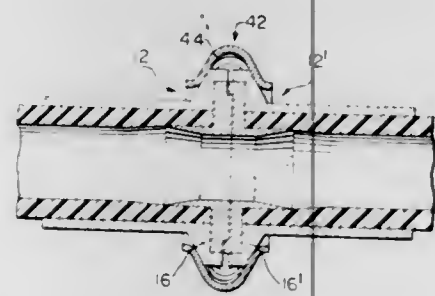
Edward J. Byron, Waltham, Mass., assignor to Sweetheart Plastics Inc., Wilmington, Mass.

Filed Apr. 6, 1970, Ser. No. 25,934

Int. Cl. F16I 33/22

U.S. Cl. 285—331

4 Claims



A sanitary coupling for connecting the ends of flexible tubes to provide a continuous smooth flow passage therethrough. The coupling includes a fitting on the end of each tube. Each fitting includes an insert having a tubular portion and an enlarged flange portion at one end. The tubular portion fits snugly within the end of the hose with the ex-

posed face of the flange in readiness to receive abuttingly the face of the flange on the other fitting. The edges of the tubular portion of the inserts located within their respective tubes are feathered in a fine taper to merge smoothly with the inner surface of the flexible tube. Each insert is retained in place by an outer sleeve which surrounds the end of the tube and which has a flange about its mating end. The outer surfaces of the flange on the outer sleeves are tapered to enable a locking band to be drawn tightly about the tapered outer flange and draw the fittings closely together. The abutting surfaces of the inserts are of male-female configuration to provide an effective seal.

3,630,553

**COUPLED JOINTS**

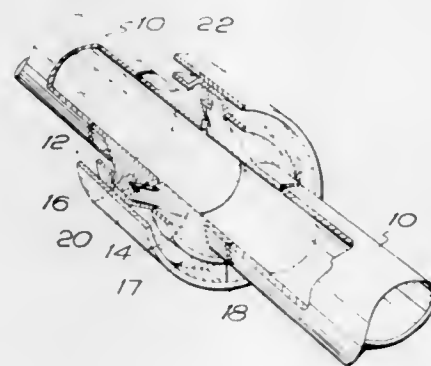
George M. Foulger, Keighley, England, assignor to Smith &amp; Johnson (Sales) Limited, Keighley, Yorkshire, England

Filed Feb. 16, 1970, Ser. No. 11,753

Int. Cl. F16I 23/00

U.S. Cl. 285—340

4 Claims



A joint connecting end-to-end pipe sections wherein there are two opposed flanges respectively having frustoconical faces whereby a frustoconical annular chamber is defined in which is located a rhomboidal sectioned gasket of which the parallel sides are both frustoconical and the cone angles of the gasket parallel sides and the flanges are inclined in the same direction with the flange face angle being largest so that the gasket when the joint is made takes up an "S"-shaped configuration with the crests of the "S" bearing respectively upon said opposed frustoconical faces of the flanges.

3,630,554

**HANGER CLIP ASSEMBLY**

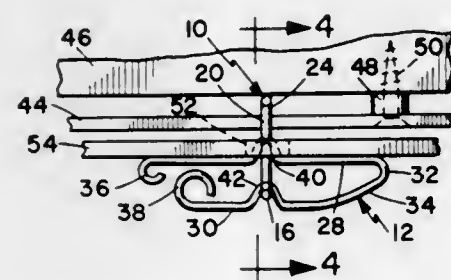
Victor B. Cherniak, 1057 Madison Avenue, Chula Vista, Calif.

Filed Mar. 26, 1970, Ser. No. 22,975

Int. Cl. E04g 17/00

U.S. Cl. 287—189.35

3 Claims



A hanger clip assembly comprising a clip for attachment between a supporting member and a structure to be supported, and a locking pin which is easily inserted and removed without tools. A looped portion of the clip passes through a hole in one of the structural elements, the locking pin fitting through the loop and having safe locking detent means. The locking pin will not work loose or become

detached under normal stresses of the structure, but can be removed intentionally with a minimum of effort.

finger into engagement with a notch in the leg of the T to lock the arrangement in the latched position.

3,630,555

**KNOT-TYING DEVICE**

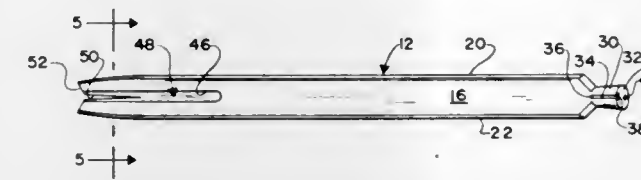
Charles E. Newlin, 3811-39th Avenue, Oakland, Calif.

Filed Sept. 4, 1970, Ser. No. 69,633

Int. Cl. D03j 3/00

U.S. Cl. 289—17

14 Claims



A knot-tying device, providing a mandrel mounted on a support member, the mandrel being formed with a surface-located slot and an aperture extending parallel to the slot, the mandrel being designed to aid in tying a knot in a cord by securing together an intermediate portion and an end portion of such cord.

3,630,556

**HANDLE-CONTROLLED DOOR-LATCHING ARRANGEMENT FOR A CABINET**

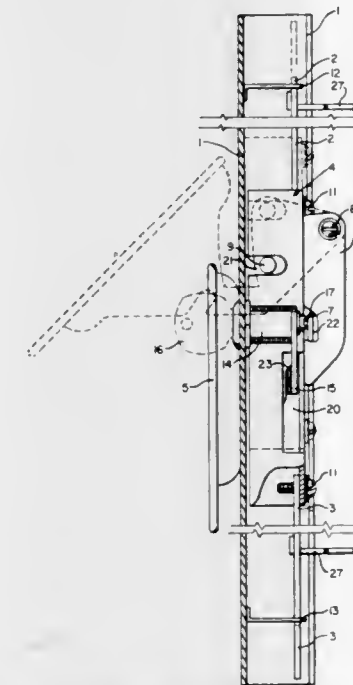
Ansano Bertellotti, Chicago, Ill., assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 26, 1967, Ser. No. 693,426

Int. Cl. E05c 9/10; E05b 65/44

U.S. Cl. 292—40

1 Claim



A handle-controlled door-latching arrangement, comprising a T-shaped handle mounted on the door of a cabinet, or enclosure, by inserting the leg portion of the T through a slot in the door and pivotally attaching the leg to a bracket secured inside the door along side the slot. A U-shaped rider, having a slot formed in the bottom and opposing notches formed in each side thereof, is mounted over the leg and bracket so that they protrude through the slot, with the side notches engaging each end of an actuating pin that is inserted through a hole in the leg of the T near the pivotal mounting. A door-latching bar is mounted to each end of the rider for engaging with or disengaging from portions attached to the cabinet, or enclosure, in response to a lever-type operation of the handle, to either latch the door in the closed position or unlatch it for subsequent opening. A key-operated rotary-type lock is mounted in the door adjacent the latching arrangement and is operated by the key for rotating a locking

3,630,557

**HOOD LATCH**

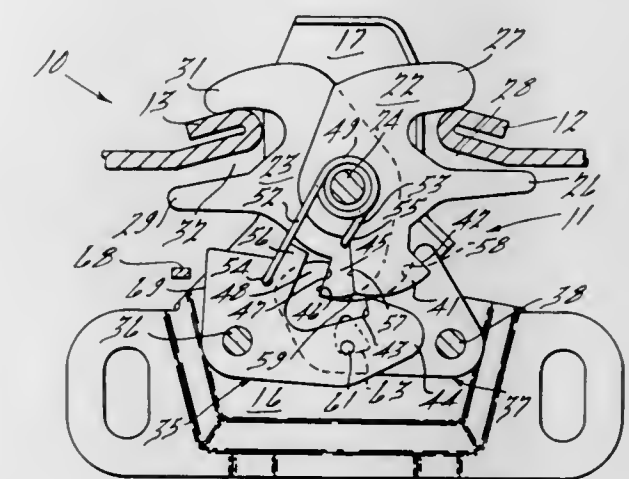
Harold W. Pierce, 32932 Southgate St., and Thomas A. Pulleyblank, 18542 Fremont, both of, Livonia, Mich.

Filed May 26, 1970, Ser. No. 40,648

Int. Cl. E05c 3/28, 3/34

U.S. Cl. 292—45

10 Claims



A latch assembly for releasably latching a hinged closure structure to a vehicle body compartment structure. The latch assembly comprises keeper elements engageable by latching levers of a latch mechanism. The latching levers, of which there are two, are paired with pawls effective to hold the levers in latched condition. Each of the latching levers and the respective pawl engageable therewith have opposed cam surfaces adapted to coact when the latching lever is moved toward latching position with its pawl displaced for any reason from latch lever holding position thereby to urge the pawl into such holding position.

3,630,558

**QUICK-MOUNTING HARDWARE**

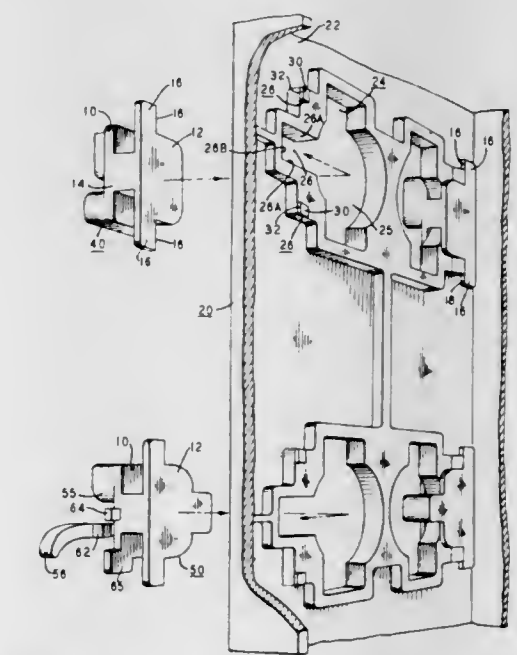
John Andreini, Irvington, N.J.; Edwin Harley Borchard; Karl-Heinz Pohl, both of Boulder, Colo., and Joseph Anthony Puccio, East Brunswick, N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Aug. 28, 1970, Ser. No. 67,902

Int. Cl. E05c 19/06

U.S. Cl. 292—87

10 Claims



each side of the opening. The hardware comprises a pair of spaced flanges joined by a hub, the flanges being spaced



apart the same distance as the thickness of the wall at the site of the opening. The hardware is positioned with the hub in the opening and the flanges straddling the wall, and the flanges include fingers that snap behind the wedge-shaped bosses to secure the hardware in place when the hub is positioned within a particular portion of the opening. One flange has a functional element extending therefrom.

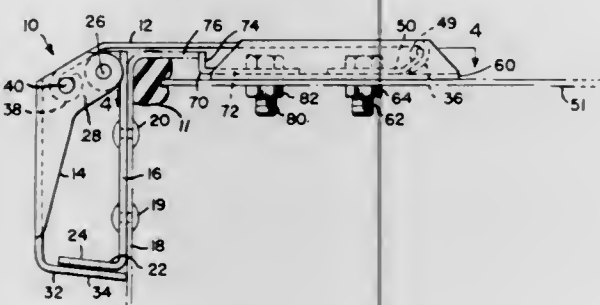
3,630,559

**OVERCENTER DRAW LATCH**

Walter B. Rawson, Chester, and Michael R. Tuozzo, Prospect Park, both of Pa., assignors to Southco, Inc., Lester, Pa.  
Filed Apr. 10, 1970, Ser. No. 27,324  
Int. Cl. E05c 5/00, 19/14

U.S. Cl. 292-113

6 Claims



A 90° overcenter draw latch is provided with adjustable strike means to lock and control the amount of force which the latch exerts, and adjustable stop means to control the force exerted between the members being locked together. The device is made tamper-proof.

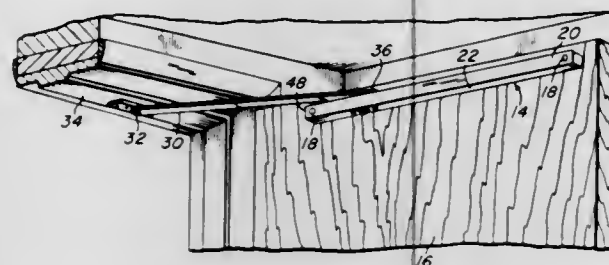
3,630,560

**SURFACE-MOUNTED NONHANDED DOOR HOLDER**  
Norman C. Atkins, Franklin Park, and Henry J. Miller, Lincolnwood, both of Ill., assignors to Glynn Johnson Corporation, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,685  
Int. Cl. E05c 17/04

U.S. Cl. 292-270

29 Claims



The door holder is applicable, without alteration, to right- or left-hinged doors, and includes an improved, manually operable hold-open device which is selectively movable between operative and inoperative positions by means of an easily accessible, actuator which projects from the bottom of the door holder housing, said actuator being rendered inoperative whenever the door is closed thereby discouraging manipulation and misuse of the hold open device by unauthorized personnel, pranksters, and the like.

3,630,561

**SUCTION CUP STRUCTURE**

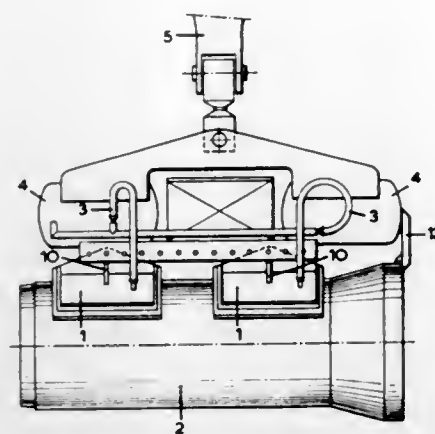
Jacob Pieter Schuler, Beatrixlaan 21, Soest, Netherlands  
Original application Apr. 28, 1969, Ser. No. 819,667. Divided and this application Apr. 28, 1970, Ser. No. 48,582  
Int. Cl. A47b 97/00; B66c 1/02

U.S. Cl. 294-65

3 Claims

A suction cup structure for use in a lifting device to lift structural building elements, which is to be connected to a

vacuum source and comprises a rubber sealing ring mounted in a circular groove around the opening of the suction cup, the configuration of which cup conforms to the relevant surface portion of the object to be lifted, said ring consisting of



a plurality of layers of foam rubber succeeding each other from the inside to the outside about the opening of the cup, said layers being separated from each other by impenetrable layers of glue interconnecting the rubber layers.

3,630,562

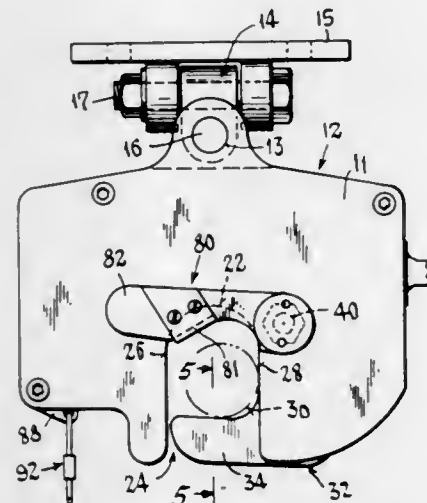
**POWER OR MANUALLY RELEASED CARGO LATCH**

Joseph R. Metz, c/o Norco Inc., P.O. Box 405, Georgetown, Conn.

Filed Dec. 24, 1969, Ser. No. 887,816  
Int. Cl. B66c 1/34

U.S. Cl. 294-83

10 Claims



A cargo latch releasable either electrically or at remote or proximal points manually, comprising a lever having an arm movable across the mouth of the latch body. Control of the lever movement is effected by a series of sears and secondary levers arranged in a unique, compact and advantageous manner to give positive action, great strength and at the same time easy release.

3,630,563

**SELF-LOCKING GRIPPING HEAD**

Bruno Jacksch, Wiesbaden, Germany, assignor to Firma W & M Automation Karl Muller, Wiesbaden, Germany  
Filed Mar. 25, 1970, Ser. No. 22,435

Claims priority, application Germany, Nov. 12, 1969, P 19 58 827.3

Int. Cl. B66c 1/62

U.S. Cl. 294-88

5 Claims

A power-operated gripping head for lifting workpieces includes two pivotally mounted coaxing jaws which are moved

toward and away from each other by a pair of pivotal levers

3,630,565

**STRETCHER SUPPORT APPARATUS FOR AN AMBULANCE**

Ludwig Lehmann, Lorch, Wurttemberg, and Gustav Schieber, Leinzell, both of Germany, assignors to Binz & Co., Lorch, Wurttemberg, Germany

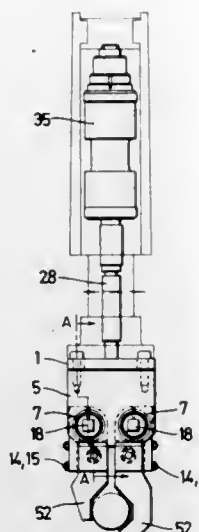
Filed June 26, 1969, Ser. No. 836,855

Claims priority, application Germany, July 18, 1968, P 17 66 783.3

Int. Cl. A61g 1/00

U.S. Cl. 296-19

21 Claims



forming with a linearly movable actuator a toggle linkage which will lock the jaws in closed position.

3,630,564

**VEHICLE BODY CONDUIT**

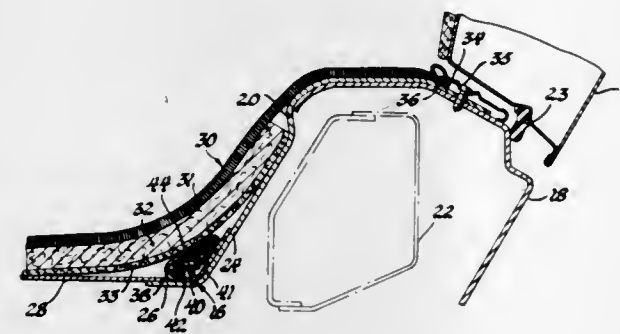
Rudolph A. Ferrara, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 4, 1970, Ser. No. 34,439

Int. Cl. H01b 17/58

U.S. Cl. 296-1 R

3 Claims



An elongated conduit of a semirigid plastic for carrying electrical wires includes an elongated base and an elongated closure flap integrally connected to each other along respective elongated edges thereof. The base includes angularly disposed elongated walls respectively supported by angularly disposed walls of a rocker inner section of a vehicle floor pan assembly. Cooperating hooks on the flap and the base secure the flap in a closed position. The closed flap and the base jointly define an elongated cavity in which the wires are carried. The closed flap is normally concave with respect to the cavity transversely thereof but is flexibly movable outwardly hereof to increase the cross-sectional area of the cavity as required by the cross-sectional area of wires therein.

A modification includes an opening in the flap intermediate the ends of the conduit that allows regression of one or more wires from the cavity. The flap is flexed outwardly over the length of the conduit that carries the larger cross-sectional area of wires and is concave over the length of the conduit that carries the smaller cross-sectional area of wires.

3,630,566

**END-SUPPORTED VEHICLE SEAT**

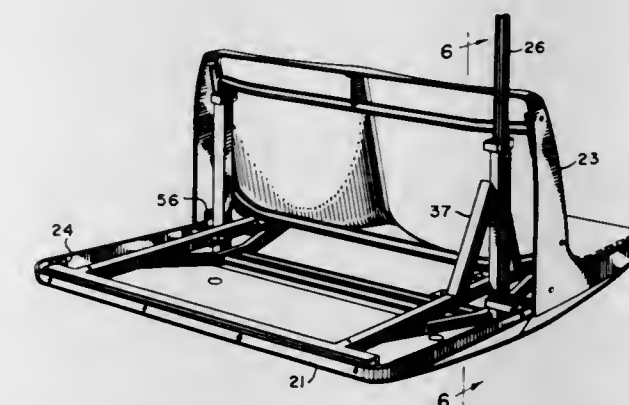
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Filed May 13, 1970, Ser. No. 36,842

Int. Cl. B60n 1/00

U.S. Cl. 296-63

7 Claims



One end of a vehicle seat is anchored at spaced points to the wall of the vehicle and the other end at the aisle is suspended from the ceiling by a suspension rod or tube braced against turning.

3,630,567

**DEVICE FOR MINIMIZING EFFECTS OF GLARE**

Peter D. Cook, 93 Church Street, Alexandria Bay, N.Y.

Filed June 26, 1969, Ser. No. 836,836

Int. Cl. B60j 3/00

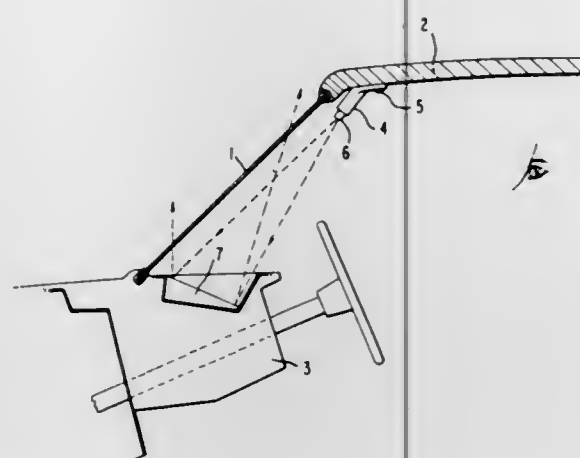
U.S. Cl. 296-97 F

1 Claim

A device for installation in proximity to the windshield of a motor vehicle for reducing glare caused by sunlight reflected from parts of the motor vehicle in the daylight as well as the glare caused by headlights of oncoming vehicles after dark, including a selectively controllable artificial light source and a distributor for the light rays emanating therefrom, the distributor including a colored translucent surface through



which the light rays are directed over the surface of the windshield from the interior thereof. According to an alternative embodiment of the present invention, the artificial



light source may be connected to a voltage source through the foot-operated switch normally provided for adjusting the beam of the headlights.

3,630,568

**CONVERTIBLE TOP DRAIN GUTTER**

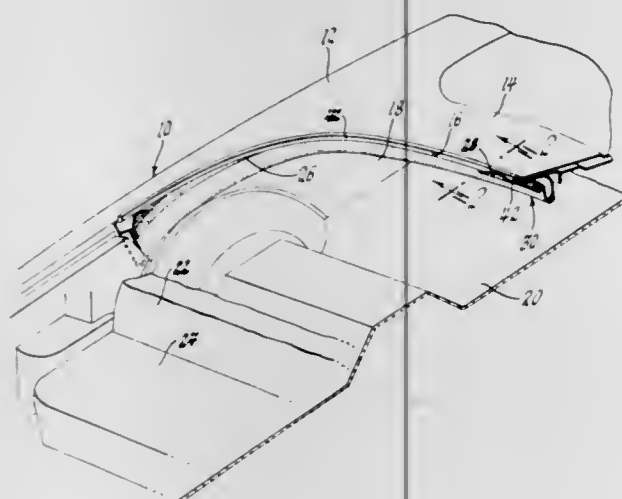
Stanley Podwys, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 10, 1970, Ser. No. 53,907

Int. Cl. B60j 7/00

U.S. Cl. 296-116

1 Claim



An elongated member of flexible material is looped between an edge of the body top well opening and a floating rear bow of the top when the top is in raised position to collect water flowing from the top within the storage well.

3,630,569

**RECLINING CHAIR**

Maurice Lory, Paris, France, assignor to Etablissements Quetin, Paris, France

Filed Nov. 7, 1969, Ser. No. 874,797

Claims priority, application France, Nov. 20, 1968, 174,532

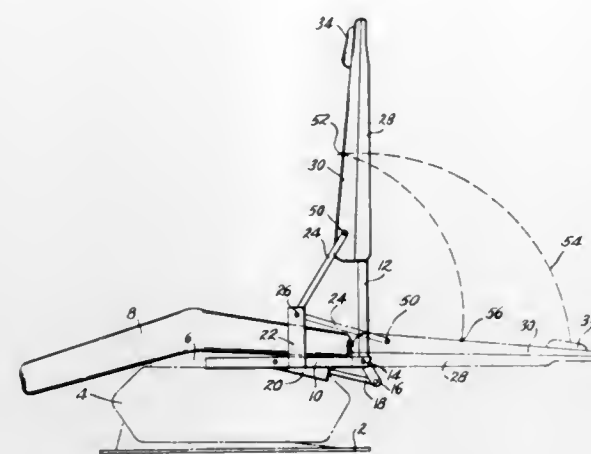
Int. Cl. A47c 3/00; B60n 1/02

U.S. Cl. 297-361

3 Claims

A chair having a seat and a back support pivoted to the seat on a fixed hinge axis adjacent the rear edge of the seat. A chair back is slidable along the back support toward and from the hinge axis. A link is pivoted at one end to the seat at

a point forwardly of and above the hinge axis and is pivoted at its other end to the slidable chair back above the hinge



axis so that rearward tilting of the back support and seat back causes the seat back to slide toward the hinge axis.

3,630,570

**BUCKET-TYPE SEAT HAVING DRAIN AND VENTILATING MEANS**

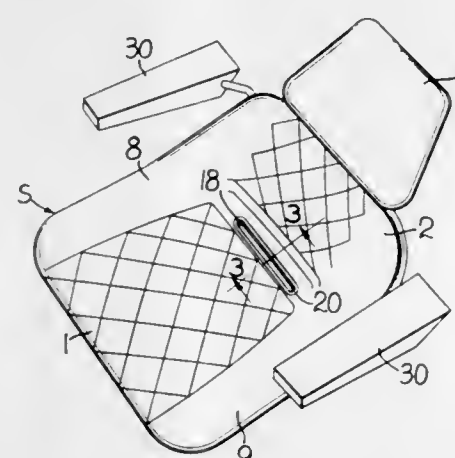
Richard F. Swenson, Milwaukee, Wis., assignor to Swenson Corporation, Red Granite, Wis.

Filed Sept. 3, 1970, Ser. No. 69,410

Int. Cl. A47c 27/14; B60n 1/02

U.S. Cl. 297-453

3 Claims



A bucket-type seat for tractors, earth-working vehicles, or the like, in which the seat and backrest are formed as an integral member, and having a pocket or recess adjacent the juncture between the seat and backrest portion and further, having opening means of considerable size in said recess. The integrally formed bucket seat has its seat, backrest and sides all inclined downwardly so as to drain into the seat recess and opening, and the position and construction of the recess is such that good ventilation is provided through the underside of the seat, even though the operator is occupying the seat.

3,630,571

**AUXILIARY DUMPING APPARATUS FOR A VEHICLE**

David G. Saldana, 15237 Lakeside St., Sylmar, Calif.

Filed Aug. 7, 1967, Ser. No. 658,670

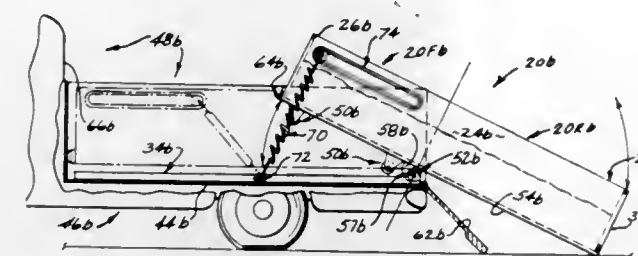
Int. Cl. B60p 1/30; B65g 67/32; B60p 1/00

U.S. Cl. 298-14

11 Claims

The specification discloses a dumping apparatus adapted to be mounted in or on the body of a vehicle, such as a pickup truck, station wagon, or the like, and includes a chamber-defining container structure adapted to be slidably mounted on a container mounting and supporting frame, rail,

or track means which is adapted to be fixedly mounted in a substantially horizontal manner with respect to a body portion of a vehicle. For example, the frame means may be mounted on the bed of a pickup truck or on the floor of a station wagon or the like. The container structure is slidably



mounted with respect to the frame or rail means referred to above for movement between a forwardly extreme load-receiving and load-carrying position and a rearwardly extreme preload-dumping position where a substantial portion of (usually slightly more than one-half of) the container structure extends beyond the rear end of the frame.

3,630,572

**SEAT ASSEMBLY**

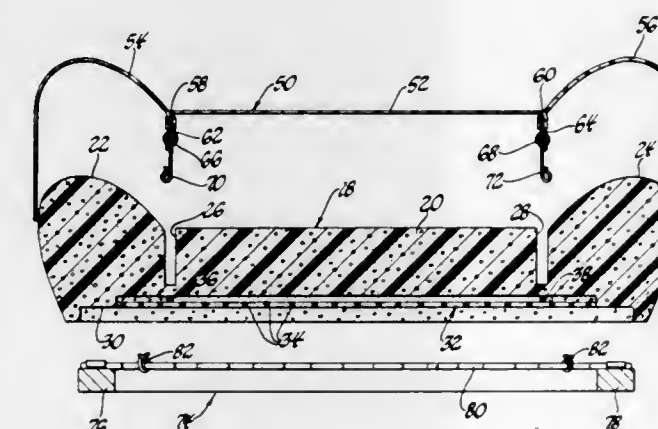
Robert I. Homier, Farmington, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 23, 1969, Ser. No. 860,291

Int. Cl. A47c 7/02, 27/00, 23/00

U.S. Cl. 297-454

4 Claims



A seat assembly comprising a molded foam cushion having laterally spaced bolster portions, a molded plastic pad secured to the bottom of the cushion and having a fine grid and at least two heavy strands. There are openings in the cushion directly above the heavy strands which locate and receive hooks for securing a trim cover to the heavy strands through the cushion. The cushion is secured to a seat frame having seat surface springs.

3,630,573

**SULFUR MINING WITH STEAM**

Clifton S. Goddin, Jr., and Karol L. Hujak, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed Dec. 19, 1969, Ser. No. 886,510

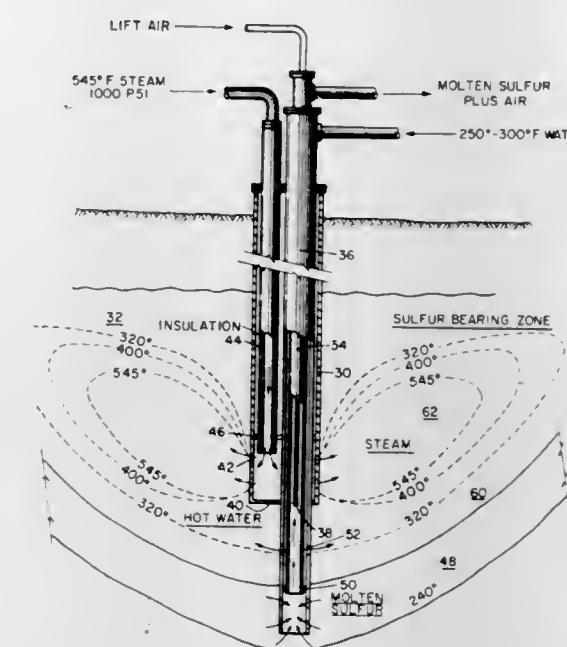
Int. Cl. E21b 43/28

U.S. Cl. 299-6

7 Claims

This is an improvement and modification of the Frasch-type underground sulfur-mining process. The primary source of heat is steam with temperature up to 600°-800° F. which is injected into the sulfur deposit. Hot water at a temperature above 240° but not over 320° F. is injected below the steam. The steam zone is surrounded by an advancing zone of hot condensate within which melting of the sulfur occurs in a temperature range of 240°-320° F. The molten sulfur flows

by gravity towards the central production tubing intake and is insulated from the hot injected steam by a blanket of hot



water. Reduced water requirement per ton of sulfur and higher thermal efficiency are effected by this process.

3,630,574

**TUNNELING MACHINE WITH STEERING SHIELD**  
Alan James Cox, Rochester, Kent, and Roy Patrick Burgess, Tunbridge Wells, Kent, both of England, assignors to Edmund Nuttall & Sons & Co. (London) Limited, London, England

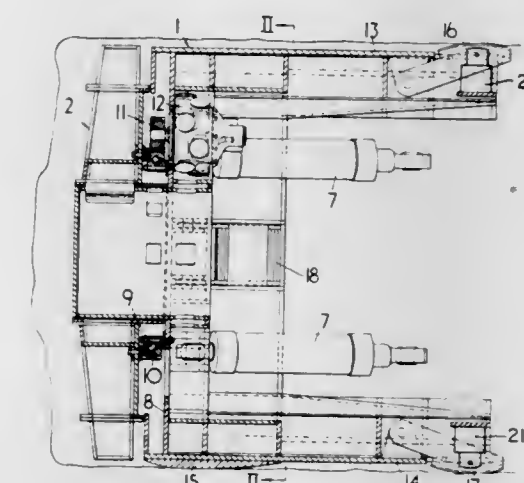
Filed Feb. 26, 1970, Ser. No. 14,339

Claims priority, application Great Britain, Mar. 3, 1969, 11,316/69

Int. Cl. E01g 3/04

U.S. Cl. 299-31

6 Claims



A tunneling machine, primarily for use in tunneling through hard ground. A digging assembly of conventional nature is mounted on a shield, but contrary to normal practice, the shield is smaller in radius than the tunnel cut by the digging assembly. At the forward end of the underside the shield is provided with a rocking pad on which the whole shield and digging assembly is bodily rockable to steer the machine. The rocking is achieved by pressing members, e.g. in the form of jacks, mounted in the shield and adapted to press against the tunnel wall.



3,630,575

**COUPLING MEANS FOR HYDRAULIC BRAKE SYSTEMS**

Richard T. Fowler, Redditch, Worcestershire, England, assignor to Girling Limited, Tyseley, Birmingham, England  
Filed July 7, 1969, Ser. No. 839,331

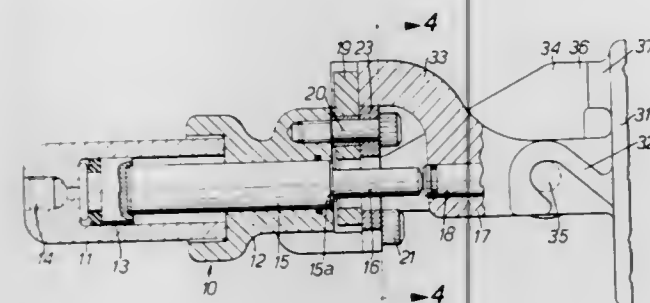
Claims priority, application Great Britain, July 20, 1968, 34,708/68

Int. Cl. B60t 11/24, 11/20

U.S. Cl. 303—7

2 Claims

U.S. Cl. 303—21 F



The tractor part of a coupling between the braking systems of a tractor and trailer is an auxiliary piston and cylinder, the cylinder carrying a safety member which prevents movement of the piston in the brake-applying direction when the coupling is disconnected and forms part of the means for connecting the coupling.

3,630,576

**ANTISKID BRAKE ACTUATOR FOR VEHICLE WHEEL BRAKES**

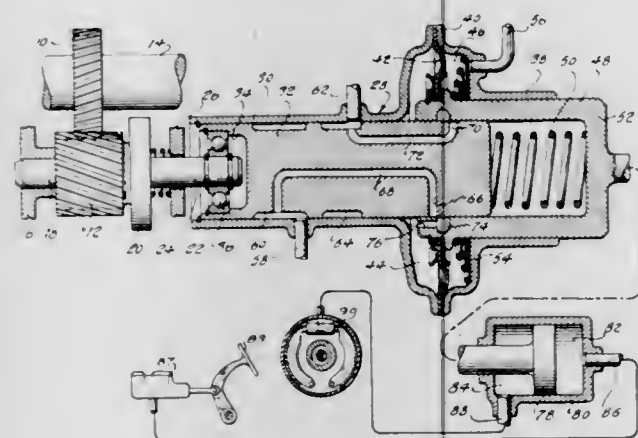
Achille C. Sampietro, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 16, 1970, Ser. No. 11,632

Int. Cl. B60t 8/16

U.S. Cl. 303—21 CG

1 Claim



An actuator for a vehicle wheel brake system which responds to changes in the algebraic sum of two opposing inertia forces, one inertia force being proportional to linear deceleration during braking and the other being proportional to angular deceleration of a vehicle wheel, said actuator being adapted to modify the effect of wheel brake pressure in the wheel brake servos associated with the deceleration sensor thereby providing wheel brake pressure modulation that is proportional in magnitude to the net value of the deceleration of the system.

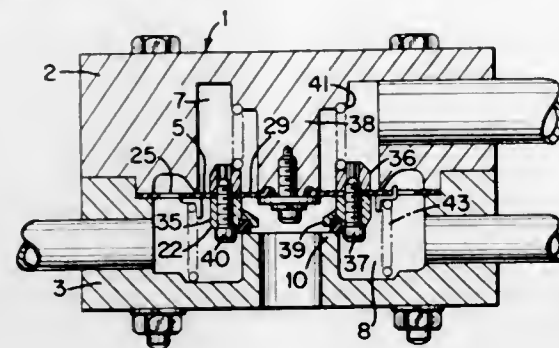
**VEHICLE ANTISKID BRAKING SYSTEMS**

John Walter Davis, 5 Hathaway Close, Balsall Common, Coventry CV7, 7EP, Warwickshire, England

Original application Sept. 23, 1968, Ser. No. 761,681, now abandoned. Divided and this application Nov. 25, 1970, Ser. No. 92,823

Int. Cl. B60t 8/00, 15/00

7 Claims



A valve having an annular inlet valve seat and an annular exhaust valve seat arranged concentrically and a flap valve diaphragm which is engageable at its outer peripheral portion with the inlet seat and at its central portion with the exhaust seat and which can flex to uncover either the inlet seat or the exhaust seat, a stem being secured to the flap valve diaphragm and to a second diaphragm and being arranged to balance the pressures acting on the flap valve diaphragm.

3,630,578

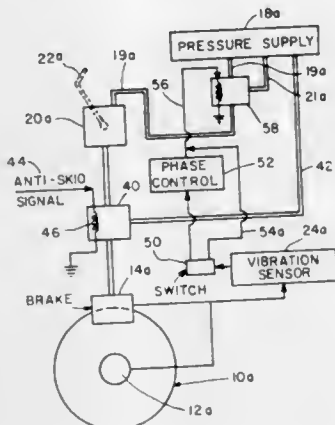
**VIBRATION SUPPRESSOR FOR BRAKED WHEELS**

Willard D. Kaiser, Grove City, Ohio, assignor to Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 23, 1969, Ser. No. 835,517

Int. Cl. B60t 8/12

7 Claims



The invention modulates the braking force as a function of the motion or vibration of the carrying axle or supporting structure for a braked wheel or wheels. Any suitable means to sense the motion is utilized with the output of this means actually modulating the brake pressure to the brake system to provide for the vibration suppression.

3,630,579

**ANTILOCKING CONTROL SYSTEM**

Anton Rodi, Karlsruhe, Germany, assignor to Teldix GmbH, Heidelberg, Germany

Filed Sept. 2, 1969, Ser. No. 854,462

Claims priority, application Germany, Sept. 4, 1968, P 17 80 348.4

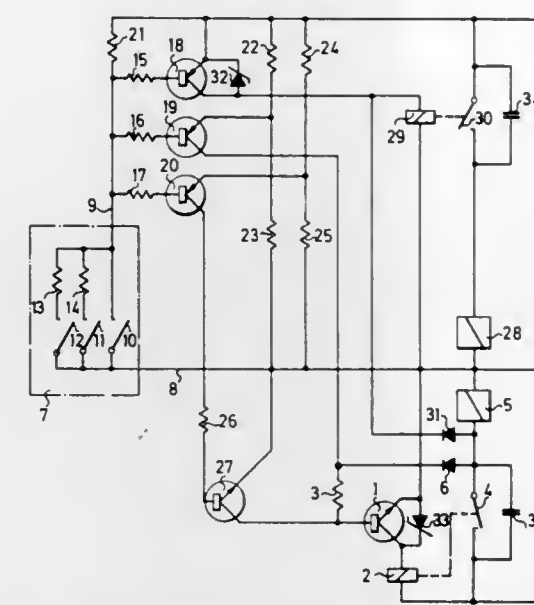
Int. Cl. B60t 8/12

U.S. Cl. 303—21 BE

2 Claims

A vehicle brake antilocking control system which includes a normally open inlet valve allowing the brake fluid pressure

developed at the master cylinder to be applied to the wheel brake system, and a normally closed outlet valve for reducing the brake fluid pressure at the wheel brake system. When the brakes are applied and a first threshold of wheel rotational deceleration is reached, the inlet valve is closed to maintain a constant brake fluid pressure at the wheel brake system. If this constant pressure is insufficient to attain a second threshold of wheel rotational deceleration, the inlet valve reopens as soon as the first threshold is no longer attained—as will occur incidental to slowing of the vehicle. If, how-



ever, the constant pressure is sufficient to attain the second deceleration threshold, the state of a bistable circuit controlling the outlet valve is changed. This change of state opens the outlet valve and one of a pair of diodes retains this state while the other of the pair of diodes retains the inlet valve closed even though the two thresholds are no longer attained by reason of the brake fluid pressure reduction. This condition will prevail until the bistable circuit is returned to its normal state in response to the attainment of a threshold of wheel rotational acceleration.

3,630,580

**CUSHIONED TRACK WITH LATERAL RESTRAINING MEANS**

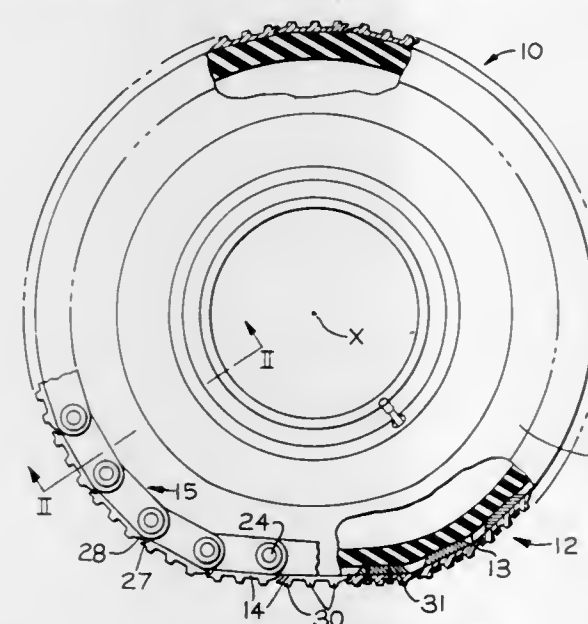
Charles E. Grawey, Peoria, and Robert N. Stedman, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 22, 1970, Ser. No. 48,285

Int. Cl. B62d 65/16

U.S. Cl. 305—19

20 Claims



A resilient spacer means, such as a pneumatic rubber tire, has a circumferentially disposed groove formed on the

periphery thereof. An endless track assembly is entrained around the tire and comprises a plurality of closely coupled ground-engaging track shoes connected together by two annular and articulated link assemblies positioned on opposite sides of the tire. Restraining means are secured to the shoes to engage the tire groove to restrain relative lateral movements therebetween.

3,630,581

**BOGIE WHEELS FOR SNOWMOBILES**

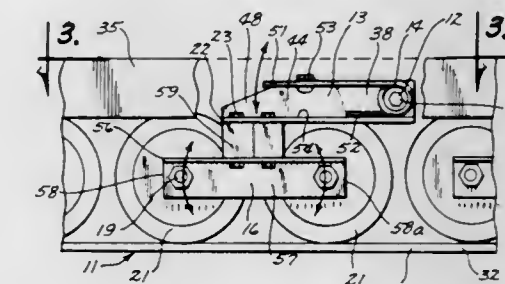
Frank T. Gostomski, 1053 North Beech St., Wahoo, Nebr.

Filed Oct. 21, 1969, Ser. No. 868,014

Int. Cl. B62d 55/16

U.S. Cl. 305—27

7 Claims



A bogie wheel system adapted for use with snowmobiles is provided herein. The bogie wheel system comprises elongate first members rotatably mounted at one end on a support means and coil springs normally urging the other end of the first members downwardly. Second members are aligned with the first members and aligned with the track of the snowmobile and have axles mounted transversely of the track with bogie wheels rotatably mounted thereon. Resilient members are disposed between the first members and the second members and means are provided for securing them in aligned relation.

3,630,582

**SEALING JOINTS**

Jacques Maire, Epinay-sur-Seine; Robert Gremion, Saint-Leu-la-Forêt, and Jean Lemaire, Saint-Denis, all of France, assignors to Le Carbone-Lorraine, Paris, France

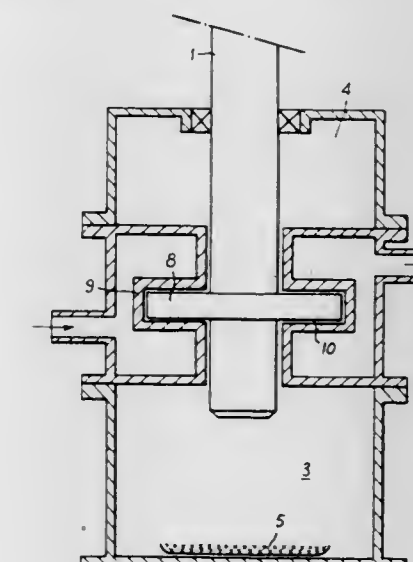
Filed Mar. 3, 1970, Ser. No. 16,003

Claims priority, application France, Mar. 10, 1969, 6906583

Int. Cl. F16c 33/78; F16j 15/40

U.S. Cl. 308—36.3

7 Claims



This invention relates to sealing joints, for example, for preventing leakage of a fluid from one part of a machine to another via relatively rotating members such as a shaft and a bearing therefor. According to the invention, the sealing joint comprises a barrier means that is formed from the fluid itself, from one of its components and from a body in contact with



the fluid to be sealed. The barrier means advantageously comprises the condensate of a condensable body and this body may either be contained within the fluid to be sealed or it may be introduced between the said fluid and an exterior fluid. The formation of the condensate can be effected by cooling appropriate parts of the system.

3,630,583

# BEARING SUPPORT OF SPINDLES FOR SPINNING AND TWISTING MACHINES

Fritz Stahlecker, Bad Überkingen, Germany, assignor to Spindelfabrik Suben, Schurr, Stahlecker & Grill G.m.b.H.

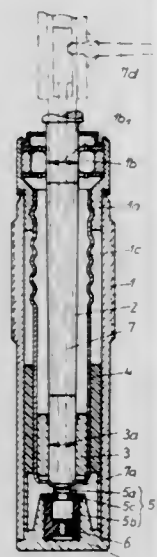
Filed Aug. 6, 1969, Ser. No. 848,043

Claims priority, application Germany, Aug. 6, 1968, Mar. 4, 1969; P 17 85 061.2, P 19 11 025.9

Int. Cl. F16c 35/08

U.S. Cl. 308—149

10 Claims



A bearing support of spindles for spinning and twisting machines in which the rotating spindle shaft is adapted to be pulled out of the spindle and in which the spindle shaft is supported by a collar bearing absorbing radial pressures and by a footstep bearing absorbing both axial and radial pressures; at least the bearing part of the footstep bearing which absorbs the axial pressures is disengageably arranged in the spindle in such a manner that it can be assembled and disassembled through the bearing bore of the collar bearing; additionally, this bearing part may be provided with engaging surfaces for an assembly tool.

3,630,584

# LUBRICATED BALL BEARING HAVING LONG FATIGUE LIFE

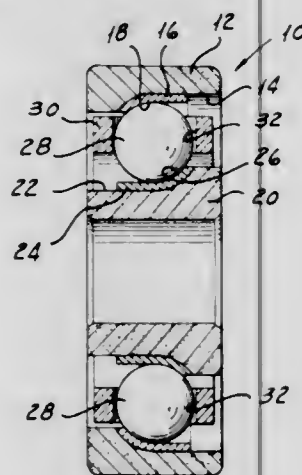
Lewis W. McKee, Brookfield, Conn., assignor to The Bayden Corporation, Danbury, Conn.

Filed Jan. 2, 1970, Ser. No. 260

Int. Cl. F16c 11/24

U.S. Cl. 308—187

11 Claims



A bearing assembly in which porous lubricant retaining inner and outer rings receive raceway-providing inserts

formed from sheet steel alloy bonded in place in recesses in the rings.

3,630,585

# MOUNTING TURRET FOR ELEVATION/AZIMUTH ANTENNA

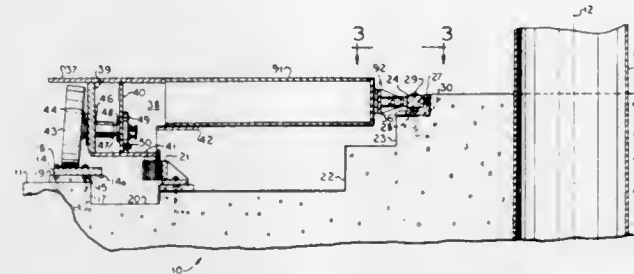
Robert Dale Hall, La Mesa, and Salvatore A. Rocci, El Cajon, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed Mar. 2, 1970, Ser. No. 15,354

Int. Cl. F16c 17/06

U.S. Cl. 308—231

12 Claims



A mounting turret for an elevation/azimuth antenna of the general type disclosed in U.S. Pat. application Ser. No. 750,444, filed Aug. 5, 1968 in the name of Robert D. Hall, one of the coinventors of the present invention, and assigned to the assignee of the present invention, is supported for rotative adjustment about an azimuth axis by wheels, which are mounted on the turret for rolling movement around an annular track mounted in a horizontal plane with its axis substantially coincident with a selected azimuth axis. A bull gear for rotatively driving the turret is fixedly mounted on the base coaxially with the annular track, and spaced radially inwardly therefrom. A pair of power driven pinions mounted on the turret are in mesh with the bull gear for rotatively adjusting the turret. For maintaining the turret with its axis coincident with the selected azimuth axis, a bearing ring is mounted on the base with its axis exactly coincident with the azimuth axis, and a plurality of bearing pads, mounted on the turret are in bearing relation with the bearing ring. Holddown means for countering tilting moments imposed on the turret by the weight of an antenna mounted on the turret comprise a plurality of holddown wheels on the turret and in preloaded rolling engagement with the under side of an exposed marginal portion of the annular track.

3,630,586

# CLEARANCE-FREE NEEDLE BEARING

Alfred Pitner, Paris, France, assignor to Nedella Rueil, Malmaison, France

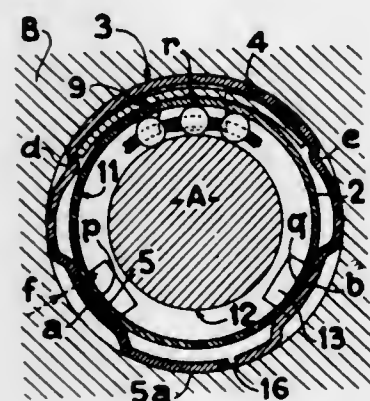
Filed Feb. 10, 1970, Ser. No. 10,229

Claims priority, application France, Mar. 14, 1969, 6907276

Int. Cl. F16c 27/04

U.S. Cl. 308—184

15 Claims



Needle bearing one of the raceways of which is formed on a thin ring. The latter comprises angularly spaced zones

which are subjected to an elastic radially inward deformation by application of these zones on supports afforded by a sleeve concentric with the ring. This sleeve is mounted in the bore of the bearing housing. The sleeve has at least one rigid support in the form of a pressure dished portion bearing on the bore, and at least one elastically yieldable support constituted by an arcuate element whose radius of curvature exceeds that of the ring and that of the bore and which bears at its ends against said bore. The arcuate element is urged radially at its crest into contact with the ring.

cabinet is provided with a three-section adjustable top forming a palette having a white formica surface for mixing colors thereon and avoiding visual absorption of their intensities.

3,630,589

# SERVING COUNTER WITH A BEER KEG HANDLING APPARATUS

Arthur A. Plate, 9216 North 9th Ave, Phoenix, Ariz.

Filed Dec. 11, 1968, Ser. No. 782,826

Int. Cl. B65g 1/04

U.S. Cl. 312—270

14 Claims



A beer keg handling mechanism is utilized for transporting a beer keg into its storage position within a cabinet. The mechanism comprises a two-section ramp, a fixed section within the cabinet, and a pivoted section tiltable 90° from its ramp position outside the cabinet to a generally upright position within the cabinet. The ramps provide rails on which a wheeled pulley-driven keg-supporting truck rides.

3,630,590

# METHOD FOR TRANSFERRING LAYERS PRODUCED IN A VACUUM

Heinrich Strubig, Darmstadt; Werner Tretnner, Weiterstadt, and Gunter Flasche, Darmstadt, all of Germany, assignors to Fernseh GmbH, Darmstadt, Germany

Filed Mar. 13, 1970, Ser. No. 19,421

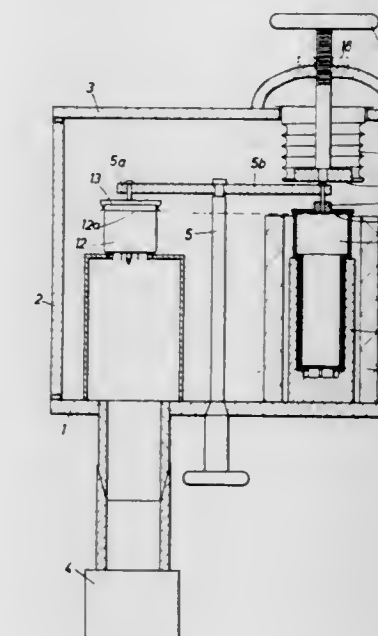
Claims priority, application Germany, Mar. 27, 1969, P 19

15 710.9

Int. Cl. H01j 9/18, 9/38

U.S. Cl. 316—4

10 Claims



3,630,588

# ARTISTS' EASY COMPACT EASEL

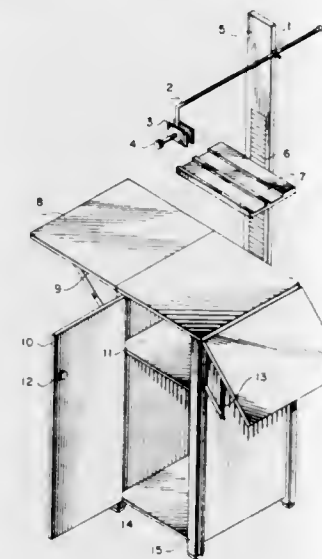
Minnie M. Baker, 615 West Pine Street, Durant, Okla.

Filed Oct. 22, 1969, Ser. No. 870,390

Int. Cl. A47f 3/06

U.S. Cl. 312—231

1 Claim



An artist's easy compact easel having an adjustable canvas support extending from the back of a supporting cabinet. The

Method for constructing operational layers, such as photosensitive layers, outside the operational containers,



such as camera tubes, in which they are to be used ultimately, testing the layers, then transferring them to the operational containers.

3,630,591

# ELECTROPHOTOGRAPHIC RECEIVER SHEET PICKUP METHOD AND APPARATUS

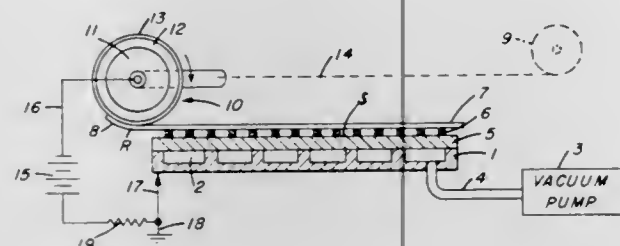
Donald R. Eastman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,894

Int. Cl. G03g 15/00

U.S. Cl. 355-3

8 Claims



An electrophotographic copier, in which a powder image is transferred from a layer of photoconductive material to a receiver sheet in contact therewith, includes at least one electrically biased roller having an electrically conductive core and an electrically insulating layer formed on and surrounding the core. As the roller and the receiver sheet are moved relative to one another, the roller picks up the receiver sheet for subsequent transport through the copier and, at the same time, effects transfer of the powder image to the receiver sheet. In another embodiment, two biased rollers are used, one to effect transfer of the powder image to the receiver sheet and the other to pick up or strip the receiver sheet from the photoconductive material for guiding it into a designated path of further movement through the copier.

3,630,592

# METHOD AND APPARATUS FOR DETERMINING ENVIRONMENT CONDUCIVE FOR RECORDING INTERFERENCE PATTERNS AND HOLOGRAPHICALLY RECORDING

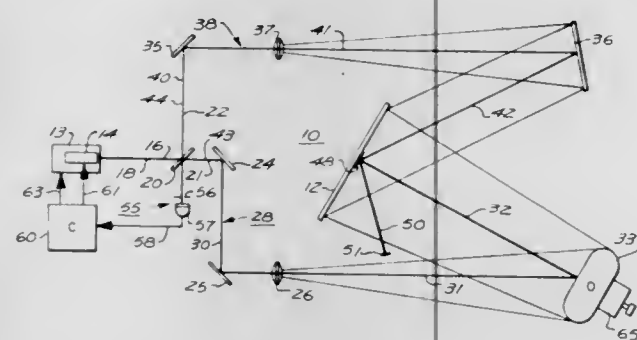
Dexter P. Cooper, Jr., Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Mar. 30, 1970, Ser. No. 23,536

Int. Cl. G02b 27/22

U.S. Cl. 350-3.5

25 Claims



Methods and apparatus for making a hologram of information on a holographic recording medium provide an object path for an object beam of coherent actinic light leading to the recording medium by way of a representative of the information for a modulation of the object beam by the information, and provide a reference path for a reference beam of coherent actinic light leading to the recording medium for an interference of the modulated object beam with the reference beam and a recording of resulting interference patterns on the recording medium. Beams of coherent inert light

are provided and transmitted on the object and reference paths, and a control signal indicating an instant at which conditions in the object and reference paths permit to an establishment and recording of the mentioned interference patterns are provided in response to the transmitted beams of inert light. The requisite object and reference beams are transmitted along the object and reference paths, respectively, in response to the signal indicating the latter instant for an establishment and recording of the interference patterns.

3,630,593

# HOLOGRAPHICALLY PRODUCED IMAGE ARRAYS FOR PHOTOLITHOGRAPHY

John Lester Bartelt, Maplewood, and Robert Kyran Curran, Stirling, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 8, 1970, Ser. No. 35,633

Int. Cl. G02b 27/00

U.S. Cl. 350-3.5

3 Claims



This disclosure describes the generation of multiple identical images holographically. Wavefronts from a unit pattern and a pinhole array separately illuminated by branched, spatially filtered and collimated laser beams are Fourier-transformed and focused in front of a holographic medium. Illumination of the developed hologram with a laser beam conjugate to the wavefront from one of the pinholes produces a spaced array of real images of the unit pattern. The process is useful in photomask making, or as a way to directly expose photoresist in silicon device manufacture.

3,630,594

# HOLOGRAPHIC SCAN CONVERTER

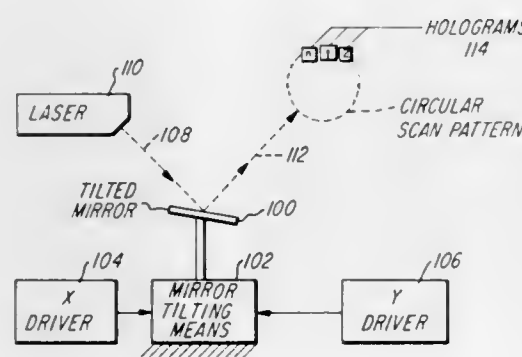
Istvan Gorog, Princeton, N.J., assignor to RCA Corporation

Filed May 25, 1970, Ser. No. 40,111

Int. Cl. G02b 27/00

U.S. Cl. 350-3.5

6 Claims



A first predetermined scan configuration, such as a circular scan for instance, of wave energy is converted into a different second predetermined scan configuration, such as a

straight line for instance, of wave energy by means of a plurality of separate holograms.

3,630,595

# APPARATUS FOR CONVERTING LINEARLY POLARIZED RADIATION INTO LINEARLY POLARIZED RADIATION HAVING A PLANE OF POLARIZATION VARYING LINEARLY WITH TIME

Theodorus Hendrikus Peek, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

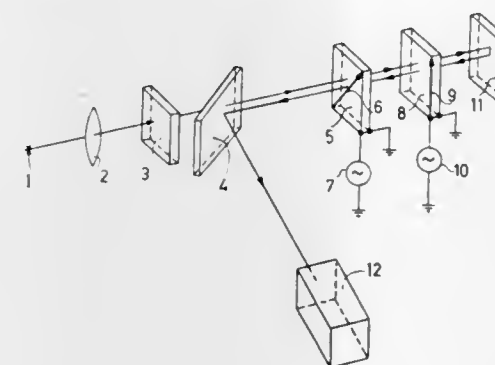
Filed Feb. 2, 1970, Ser. No. 7,634

Claims priority, application Netherlands, Feb. 3, 1969, 6901722

Int. Cl. G02f 1/26

U.S. Cl. 350-150

3 Claims



An improved apparatus for converting linearly polarized radiation having an arbitrary plane of polarization into linearly polarized radiation in which the orientation of the plane of polarization changes linearly as a function of time from the initial arbitrary orientation is discussed, in which apparatus the radiation passes at least thrice through a birefringence element, at least one of the elements traversed being an electro-optical crystal.

It is shown that by using a retrodirective element the number of birefringence elements can be reduced and also the voltage to be applied to the electro-optical crystals can be considerably lower.

3,630,596

# PHOTOMASK REGENERATION BY INTENSITY SPATIAL FILTERING

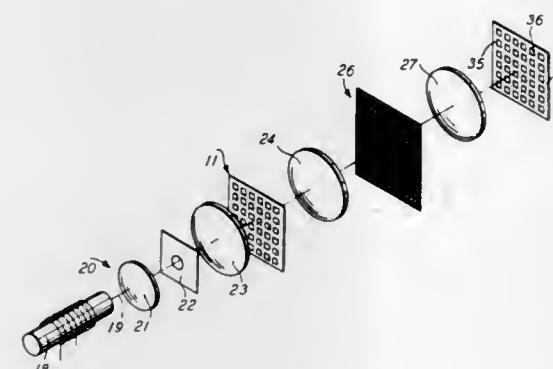
Laurence S. Watkins, Highstown, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,358

Int. Cl. G02b 27/38

U.S. Cl. 350-162 SF

5 Claims



An intensity-type spatial filtering technique is employed to generate a corrected replica of a two-dimensional photomask or other pattern containing an array of regularly spaced elements which exhibit nonperiodic errors. A coherent beam of light is diffracted by the mask and focused onto a transparency containing an array of discrete transparent regions against an opaque background. The regions are spaced by a

distance inversely proportional to the element spacing on the pattern. The focused light is spatially modulated by the transparency to suppress nonperiodic information contained in the focused light. The spatially modulated light transmitted by the filter is refocused on a photosensitive film which, when developed, defines an array of elements corresponding exactly to the array on the test pattern with the nonperiodic errors removed.

3,630,597

# ELECTRO-OPTIC DEVICES

Kenneth Fraser Hulme, Malvern, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

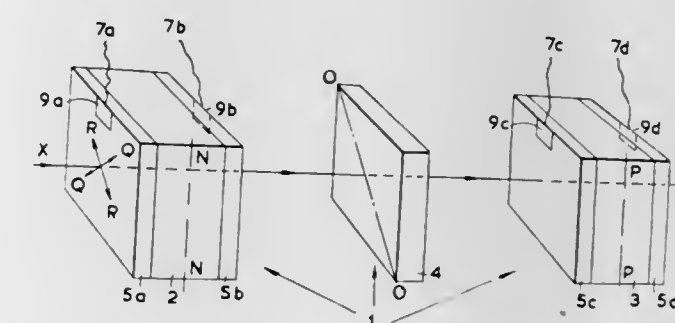
Filed Jan. 13, 1970, Ser. No. 2,509

Claims priority, application Great Britain, Jan. 15, 1969, 2,299/69

Int. Cl. G02f 1/26

U.S. Cl. 350-150

6 Claims



An electro-optic modulating device comprises a modulating element which comprises a longitudinal electro-optic crystal having transparent conducting electrodes defining a radiation path oblique to the X, Y and Z directions of the crystal.

3,630,598

# OPTICAL DEMODULATION FILTER

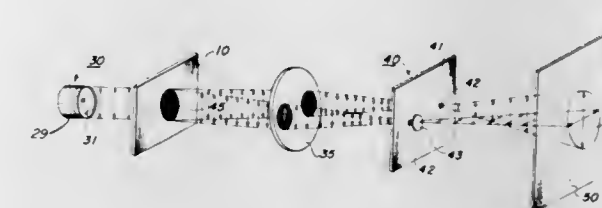
William S. Little, Jr., Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Jan. 2, 1970, Ser. No. 332

Int. Cl. G02f 2/00

U.S. Cl. 350-157

9 Claims



Optically screened input information is recorded as excursions on the surface of the thermoplastic film. The excursions consist of a periodic carrier wave and a modulating signal containing the input information. Highly coherent polarized light is directed incident upon the image-bearing surface whereby the light is diffracted by the signal-modulated deformations thereon. The diffracted light is then passed through a projection system including a spatial filter positioned in the focal plane of the system comprising an opaque mask having two clear apertures therein coincident with the two first diffracted order focal spots and being of a size sufficient to pass the modulated sidebands of the input signal. A device for rotating the relative planes of polarizations of the diffracted light is positioned in at least one of the diffracted beams wherein the polarization state of the two diffracted light beams are orthogonal at the scan plane of the system.



3,630,599

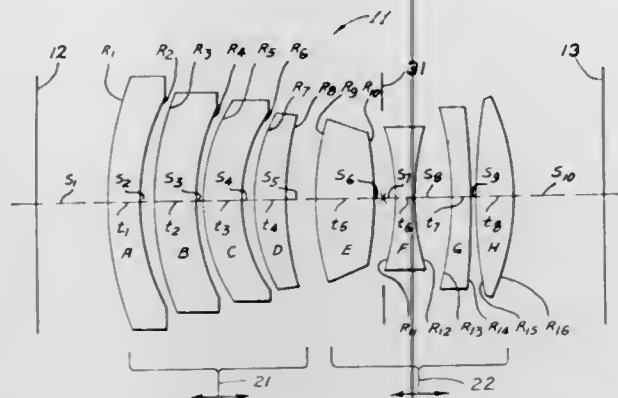
**MECHANICALLY COMPENSATED ZOOM LENS SYSTEM**

Roscoe J. Donnel, Glendale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 21, 1970, Ser. No. 82,662  
Int. Cl. G02b 15/14

U.S. Cl. 350—184

5 Claims



A mechanically compensated zoom lens system consisting of two movable lens groups, each lens group consisting of four air-spaced lens elements.

3,630,600

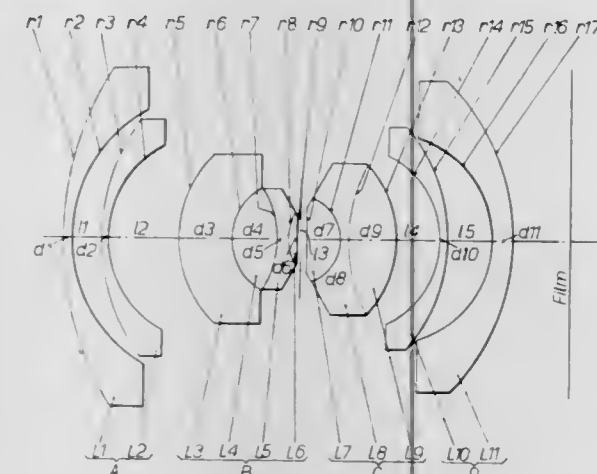
**WIDE ANGLE LENS**Ludwig Bertele, Heerbrugg, St. Gall, Switzerland  
Continuation-in-part of application Ser. No. 719,432, Apr. 8, 1968, now abandoned. This application Mar. 19, 1970, Ser. No. 20,891

Claims priority, application Switzerland, Apr. 14, 1967, 5413/67

Int. Cl. G02b 9/62, 9/34

U.S. Cl. 350—215

5 Claims



Wide angle lens having angle of view  $\pm 60^\circ$  or more comprises two converging lens components, with at least one cemented surface between lens elements therein, separated by a diaphragm, and two diverging menisci enclosing said components and diaphragm, the menisci concave facing the diaphragm. The convex outer surface of the component on the image side of the diaphragm faces away from the latter and has greater curvature than the preceding cemented surface. The convex side of said preceding cemented surface faces the diaphragm and has a lower refractive index on its diaphragm side than on its image side.

3,630,601

**PHOTOELECTRIC REGISTRATION OF BALL ROTATION AS TEACHING AID FOR BALL GAMES**

Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Filed Feb. 24, 1969, Ser. No. 801,396

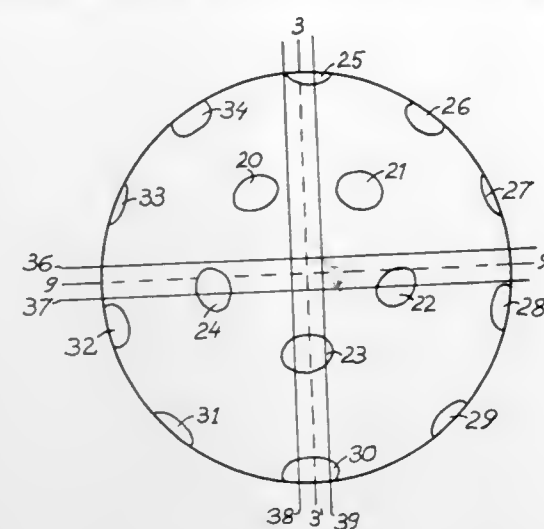
Int. Cl. G02b 27/32; G01f 15/14

U.S. Cl. 356—256

8 Claims

The ball is provided with a surface pattern of regions of different optical properties. Light reflected from the moving

ball is modulated by the rotation of these regions, trans-



formed into a time variable electrical signal in a photocell, and recorded or displayed.

3,630,602

**CONTACT LENS**

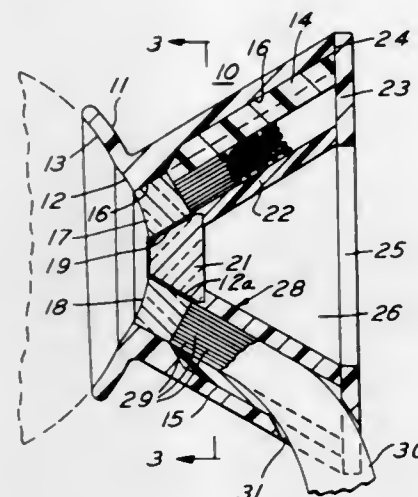
John Frederick Herbert, 605 Ashbourne Road, Elkins Park, Pa.

Filed May 4, 1970, Ser. No. 34,185

Int. Cl. A61b 3/10; G02c 7/04; G02b 5/14

U.S. Cl. 351—16

3 Claims



A contact lens is provided having an illuminator with high light input without heating effect and which is particularly suited for illumination of the interior of the eye for examination of the eye and photography of the eye.

3,630,603

**LIGHT-CONTROL DEVICE AND SPECTACLES USING REVERSIBLE OXIDATION REDUCTION REACTIONS IN A MATERIAL CONTAINING LEAD FLUORIDE**

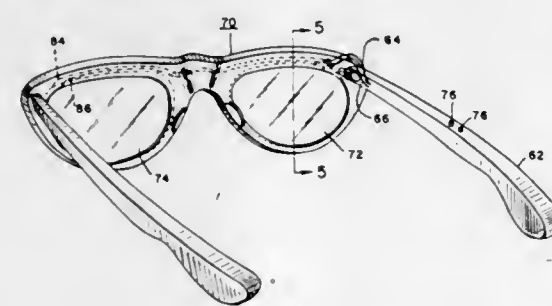
Eugene C. Letter, 90 Royal View Drive, Rochester, N.Y.

Filed Feb. 7, 1966, Ser. No. 525,620

Int. Cl. G02f 1/36

U.S. Cl. 351—44

7 Claims



Disclosed is an optical device comprising a pair of electron conducting electrodes separated by a solid-state electrolytic

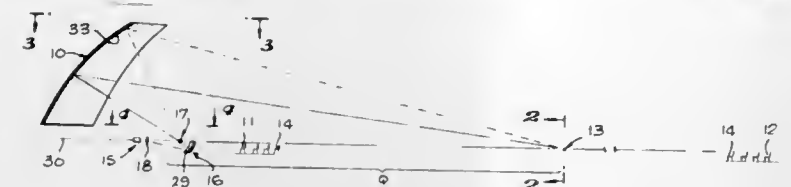
3,630,604

**OPTICAL PROJECTION APPARATUS**Wendell S. Miller, 1341 Comstock Ave., Los Angeles, Calif.  
Continuation-in-part of application Ser. No. 645,721, June 13, 1967, now abandoned. This application Feb. 16, 1970, Ser. No. 10,170

Int. Cl. G03b 21/28

U.S. Cl. 353—99

30 Claims



Projection apparatus including a first lens system operable by orthoscopic projection to produce an image of an optical object on a light director structure shaped essentially as a conicoid of revolution and a second lens system of prescribed distortion characteristics operable to view the image and reproject it onto a screen which is also shaped essentially as a conicoid of revolution, but on which the image appears from a predetermined audience area to be an orthoscopic projection of the optical object. Preferably, the two conicoids have a common axis of revolution, with the two projection lenses and the optimum viewing location being positioned on that axis. In general, the director structure has a large number of reflective facets which are so oriented as to direct the light of the image thereon primarily along converging paths and in concentrated form toward the second lens system. In one particular case these facets may fuse into a smooth condensing reflector.

3,630,605

**ORTHOGRAPHIC IMAGE-PROJECTING DEVICE**

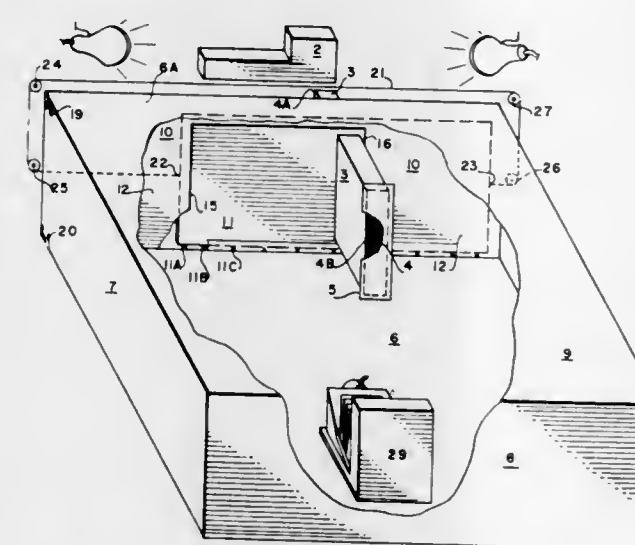
Joseph H. Lock, 520 Villa Ave. S.E., Mableton, Ga.

Filed Jan. 19, 1970, Ser. No. 3,953

Int. Cl. G03b 27/48

U.S. Cl. 355—1

4 Claims



An orthographic image-projecting device which is useful for projecting a planar image of a three-dimensional object comprises a source of radiation arranged so that the rays from the source are reflected from the object, directional ray transmission means disposed in the path of rays reflected from the object and arranged to transmit reflected rays in one general direction, image-producing means responsive to rays emitted by the ray transmission means and image recording means which may be in the form of a device which records the image produced on the image-producing means. A scanning mechanism imparts movement to the directional

ray transmission means which is transverse to the direction of transmission of rays therethrough and a radiationtight enclosure is disposed about the image-recording device and the image-producing device. For some applications of the invention the so-called image-producing means may be eliminated and the rays from the ray transmission means may be directed onto an image-recording means.

3,630,606

**ELECTROPHOTOGRAPHIC SYSTEM**

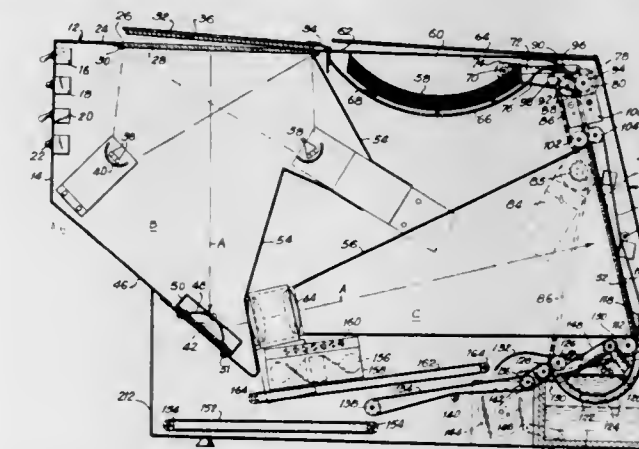
Ira M. Sage, New York, N.Y., assignor to Pitney Bowes-Sage, Inc.

Filed Mar. 28, 1966, Ser. No. 537,881

Int. Cl. G03g 15/04

U.S. Cl. 355—3

14 Claims



An electrophotographic machine in which an opaque original is lit by flashlamps to modulate the reflected light beam which is cast by an optical system onto a moving charged copy sheet so as to leave a latent electrostatic image thereon, which then is developed in a liquid toner bath. The leading edge of the copy sheet moving through the machine triggers the flashlamps. The copy sheet is fed from a magazine to an intermediate station immediately preceding the exposure station where the copy sheet awaits the start of a cycle of operations. At the exposure station, the copy sheet is urged against a glass plane by a repelling charge and by belts.

3,630,607

**SET SEPARATION COPIER SYSTEM**

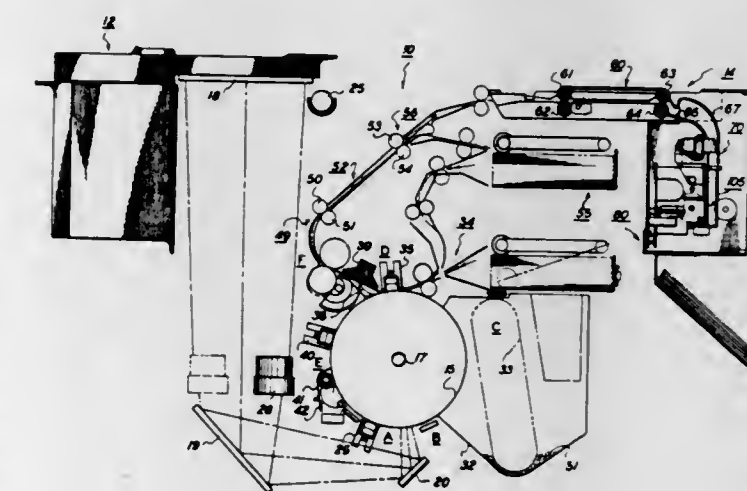
Homer Korn, Webster; Stephen J. Greenfield, and Denis J. Stemmler, both of Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 9, 1970, Ser. No. 70,834

Int. Cl. G03g 15/00; B65h 39/00, 31/34

U.S. Cl. 355—6

7 Claims



A system for producing sets of copies from documents that are copied in repeated cycles. A transport delivers copies to an intermediate tray which collects them in a set and then



separates each set from a previous set in offset fashion. A control logic provides for different modes of operation in which there is a book mode of operation and a normal copying operation and also provides appropriate signals for the offsetting of the sets as well as ejection of the sets into an output tray.

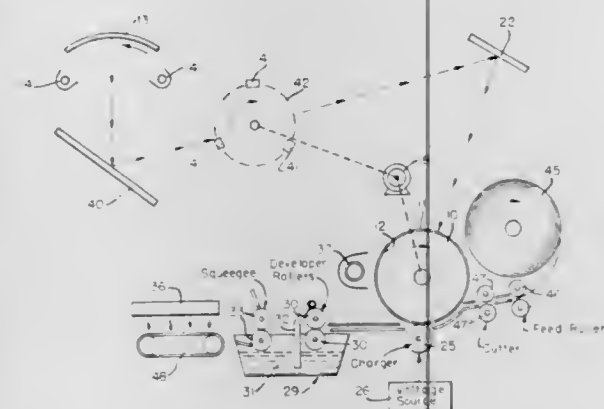
### 3,630,608 HIGH-SPEED COPIER

Ira M. Sage, New York, N.Y., assignor to Pitney Bowes-Sage, Inc.

Filed Nov. 14, 1968, Ser. No. 775,719  
Int. Cl. G03g 15/04, 15/18

U.S. Cl. 355-8

1 Claim



A latent image formed in a photoconductor surface carried on a conductive base is transferred to a sheet of untreated paper by placing said sheet in contact with said surface and imposing a high-voltage potential between the sheet and base. A charge image is thus formed in the sheet of paper corresponding to the latent image in the photoconductor surface, and this charge image is thereafter developed. These lenses are rotatably mounted such that the lenses rotate successively into the optical path for transmitting the image being scanned to the photoconductive surface.

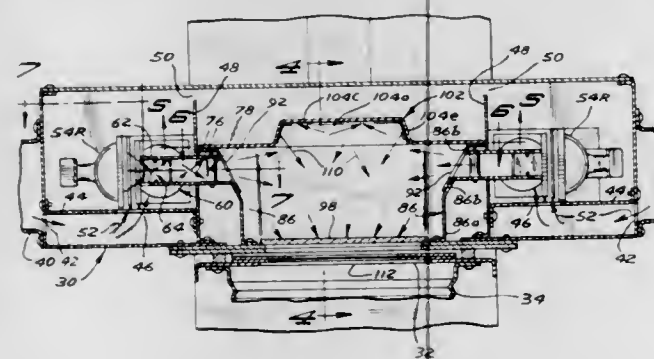
### 3,630,609 LAMPHOUSE WITH PREMIXING

Roy A. Clapp, Coon Rapids; Haven Douglas Noble, Robbinsdale, and Douglas L. Haviland, Minneapolis, all of Minn., assignors to Nord Photo Engineering, Inc., Minneapolis, Minn.

Filed Feb. 13, 1969, Ser. No. 798,916  
Int. Cl. G03b 27/54

U.S. Cl. 355-37

20 Claims



In a lamphouse assembly, light energy from several different individual light sources, each providing a primary color, is premixed and then introduced into a main mixing chamber through a rod screen, there being one such screen for each premixing chamber. The main mixing chamber is provided with an upwardly recessed roof and is further con-

figured so that a highly diffused and uniform field of light is directed downwardly through the emission opening onto the printing paper.

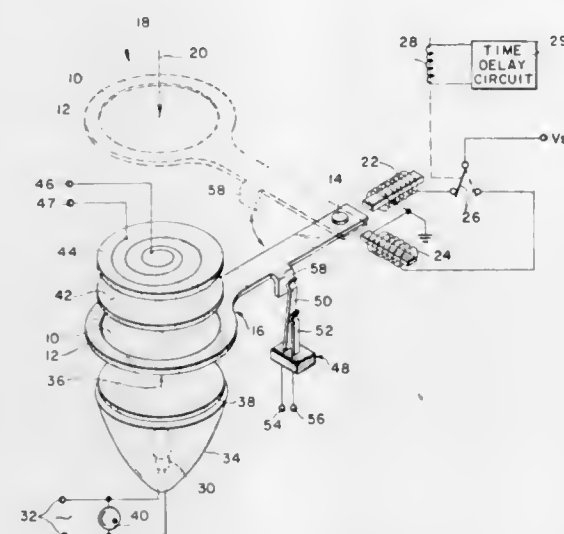
### 3,630,610 COLOR FILTER MONITOR

William C. Klein, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,300  
Int. Cl. G03b 27/76

U.S. Cl. 355-71

13 Claims



The operative condition of an element such as a color filter employed in color printing apparatus is monitored by a sensing device that indicates when the element becomes inoperative. In a color printer, color filters are employed that are adapted to be moved from a rest position to a printing position in the path of the printing beam to affect the color composition of the printing beam. A sensing device is operative when the filter is moved into the rest position to detect a variance in the color transmission of the filter and alert the operator of the color printer of the variance.

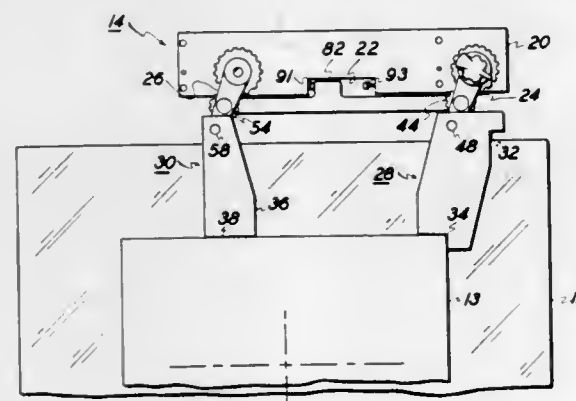
### 3,630,611 DOCUMENT REGISTRATION APPARATUS

August Hoyer, Penfield, and Karl E. Liechty, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,421  
Int. Cl. G03b 27/62

U.S. Cl. 355-75

5 Claims



Document registration apparatus adapted to be positioned on the platen of a copying machine to present document information of different sizes along the optical centerline of an optical system providing enlarged or reduced size copy. The apparatus includes a base member located adjacent to the platen area to which a pair of document guide members are

pivotaly connected. The guide members are formed with guide surfaces to present precise registration for document material inserted on the platen. A planetary gear train is used to drivingly position the guide members at different positions to effect a desired movement for the guide members relative to the platen area for registration of the different size document material along the optical centerline.

### ERRATUM

For Class 355-76 see:  
Patent No. 3,630,747

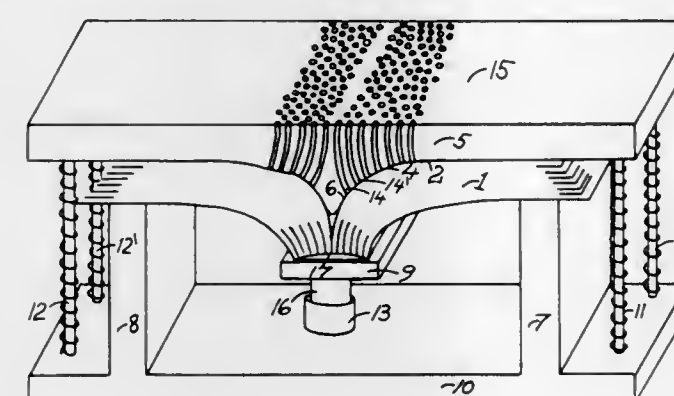
### 3,630,612 OPTICAL AID FOR BOOK REPRODUCTION

Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Filed Sept. 23, 1970, Ser. No. 74,704  
Int. Cl. G03b 27/04

U.S. Cl. 355-82

10 Claims



A curved open book page is fitted with a shaped solid body containing fiber optics to transfer optical information from book page onto a surface better suited for undistorted reproduction.

### 3,630,613 APPARATUS FOR FORMING DISCRETE AREAS OF COATING MATERIAL ON A SUBSTRATE

Edgar O. Sprude, Philadelphia, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 30, 1968, Ser. No. 763,769  
Int. Cl. G03b 27/04

U.S. Cl. 355-85

5 Claims



A substrate having a conductive layer attached to one surface, with the exposed portions of the conductive layer coated with a photoresist material, is incrementally moved past a linear array of lamps disposed laterally to the path of the substrate for selectively illuminating adjacent areas across the conductive layer to burn in the illuminated photoresist material. The energization of the lamps is controlled by a similar array of sensors and a light source disposed laterally to the path of a transparency which is moving at the same incremental speed as the substrate. This transparency has a grid or grating of squares drawn thereon having the same outline as the conductive layer and the same number of rows of squares in the grid as there are lamps or sensors. The grid squares corresponding to areas of the conductive layer to be retained are made opaque to a suitable degree and the

sensing of an opaque square by a sensor energizes the corresponding lamp to burn in the desired portion of the photoresist material.

### 3,630,614 COPYING MACHINE FOR DOCUMENTS USING A HEAT-AND-LIGHT PROCESS

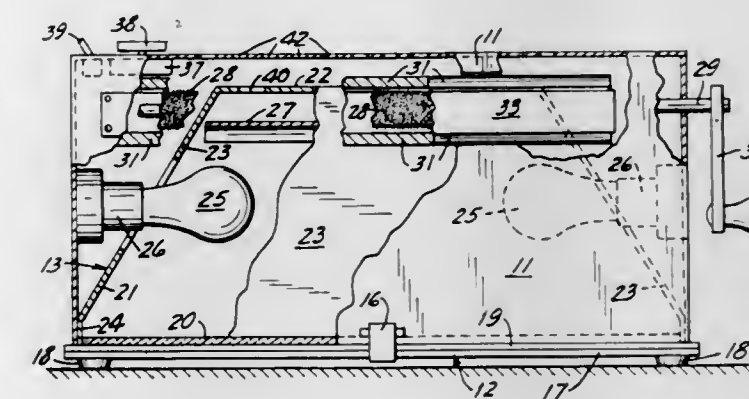
John V. Kazle, and Marvin A. Stoll, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of application Ser. No. 729,218, May 15, 1968, now abandoned. This application Jan. 16, 1970, Ser. No. 3,545

U.S. Cl. 355-100

Int. Cl. G03b 21/14

3 Claims



Apparatus for making copies of documents by the light-and-heat process including an exposure station and a heat development station in integral relation. The exposure station consists of a light box with reflective walls that slope inwardly from a transparent pressure plate or exposure station to a perforate top. Housed within the sloping walls are an arcuate reflector and light sources for exposure of a document and a light-sensitive intermediate. The heat development station consists of an open-faced shoe, a rotatable roller having a compressible surface and a stripper for separating the intermediate and the developed copy sheet and for imparting to the copy sheet a reverse curl.

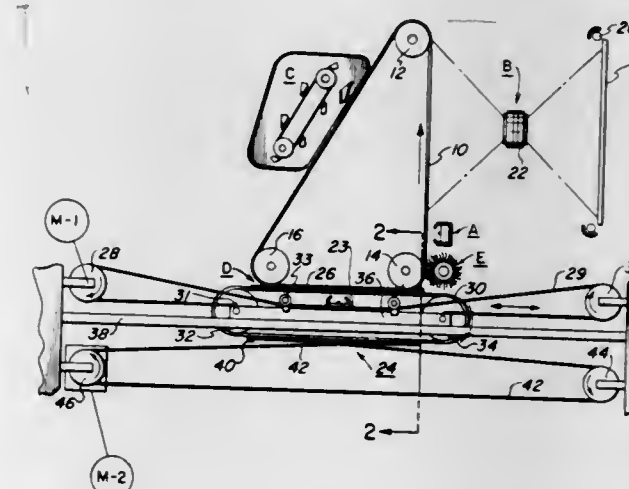
### 3,630,615 METHOD AND APPARATUS FOR TRANSPORTING SUPPORT MATERIAL

John M. Reynard, Framingham, Mass., assignor to Xerox Corporation, Rochester, N.Y.

Filed July 24, 1969, Ser. No. 844,530  
Int. Cl. G03g 15/00

U.S. Cl. 355-3

9 Claims



Method and apparatus for transporting materials into contact with a member with which the material interacts. A







3,630,623

**DEVICE FOR MEASURING THE ANGULAR DEVIATION OF VEHICLE WHEELS**

Gunter Schirmer, Leinfelden, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

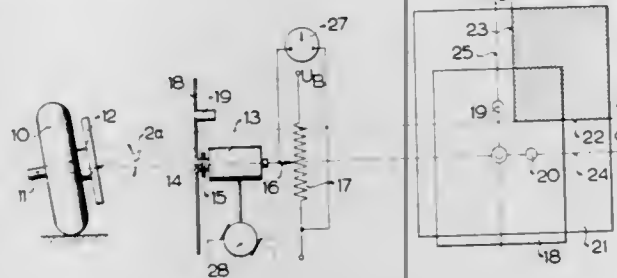
Filed June 17, 1970, Ser. No. 47,034

Claims priority, application Germany, June 18, 1969, P 19 30 737.0

Int. Cl. G01b 11/26

U.S. Cl. 356—155

17 Claims



A projector, pivotal about two orthogonal axes and driven by a servomotor for each axis, casts upon a reflector mounted on the wheel a pattern, consisting of three bright quadrants and one dark quadrant, which reflector returns the image to a screen having therein two photodiodes of which the outputs control respective ones of the servomotors. The projector is pivoted about one axis until one boundary line of the dark quadrant bisects one of the photodiodes, and then about the other axis until the other boundary line of the dark quadrant bisects the other photodiode, whereupon in each case the corresponding servomotor is stopped and the value of camber, caster, or camber and pivot inclination is given directly by an electrical circuit having a variable resistor of which the value is changed by the pivoting of the projector. There is one projector on each side of the vehicle.

3,630,624

**ARRANGEMENT FOR DETERMINING THE RELATIVE DISPLACEMENT OF AN OBJECT BY MEANS OF AN ELEMENT RIGIDLY SECURED TO THE OBJECT**

Hendrik DeLang, Delft, and Gijsbertus Bouwhuis, Emmasingel, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

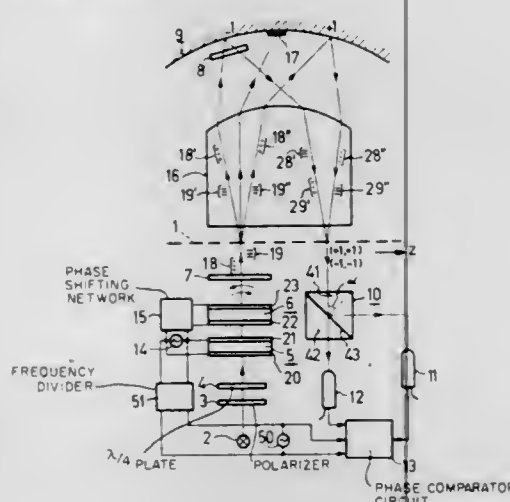
Filed Dec. 5, 1969, Ser. No. 882,530

Claims priority, application Netherlands, Dec. 5, 1968, 6817430

Int. Cl. G01b 11/04

U.S. Cl. 356—169

2 Claims



An arrangement for determining the relative displacement of an object by means of an element which is rigidly secured to the object and influences a beam of radiation emerging from a source of radiation is disclosed, which arrangement further comprises a radiation modulator and an optical system which are inserted in the path of the radiation, the radiation ultimately impinging upon a photoelectric detector in which a signal is produced when the object is displaced.

It is set forth that for this purpose periodic signals from a signal generator are applied to the electric circuit which processes the electric signals produced in the detector, the modulation signals applied to the radiation modulator being obtained by frequency division of the periodic signals.

It is described that the ratio between the frequency of the periodic signals and the frequency of the modulation signals is a fraction.

3,630,625

**DEVICE FOR DETERMINING THE RELATIVE DISPLACEMENT OF AN OBJECT BY MEANS OF A DIFFRACTION GRATING MECHANICALLY SECURED TO THE OBJECT**

Hendrik De Lang, Delft, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

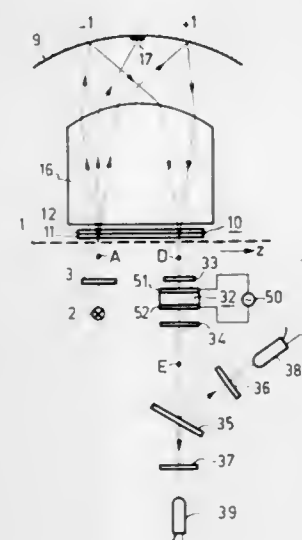
Filed Jan. 7, 1970, Ser. No. 1,117

Claims priority, application Netherlands, Jan. 11, 1969, 6900491

Int. Cl. G01b 11/26

U.S. Cl. 356—170

2 Claims



There is described a device for determining the relative displacement of an object by means of a diffraction grating which is mechanically secured to the object and the grooves of which extend at right angles to the direction of displacement, the radiation from the source of radiation once or several times traversing the grating and an associated optical system which includes an optically anisotropic element and ultimately falling on at least one photoelectric detector, in which signals are generated in the case of a displacement. It is stated that for this purpose the optically anisotropic element is included in the image-forming ray path of the diffraction grating and comprises the series arrangement of two birefringent uniaxial plate-shaped crystals the principal sections of which taken at right angles to the crystal surfaces are normal to one another, while in these principal sections the angle between the optic axis and the crystal surface is the same in both crystals. It is stated that the angle lies between 30° and 45°.

3,630,626

**TWO-CHANNEL INFRARED SPECTROMETER WITH PIVOTING COLLIMATOR**

Jean-Michel Rouberol, Courbevoie, France, assignor to Compagnie d'Applications Mécaniques a L'Electronique, Au Cinema et a L'Atomistique (c.A.M.E.C.A.)

Filed July 9, 1970, Ser. No. 53,517

Claims priority, application France, July 21, 1969, 6924740

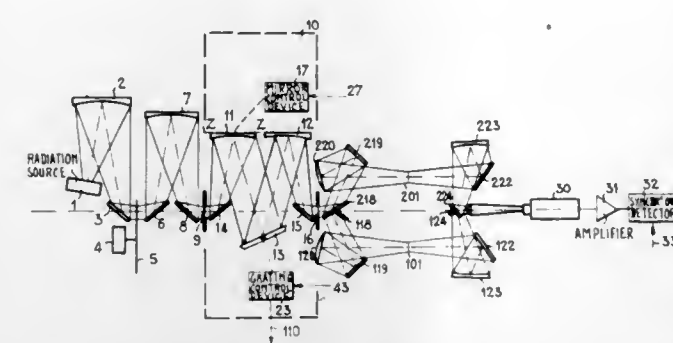
Int. Cl. G01j 3/42; G01n 21/34

U.S. Cl. 356—95

4 Claims

In an infrared spectrometer with two channels preceded by a device for producing monochromatic radiation and constituted by a collimator, a diffraction grating and a focusing

element, the collimator can adopt two angular rest positions by pivoting about an axis perpendicular to the lines of the grating; in these two positions of the collimator, the focusing



element directs a monochromatic beam whose wavelength depends solely upon the position of the grating, either onto a first slot or onto a second slot, those slots being respectively coupled to the two channels.

3,630,627

**SOLAR CELL ASSEMBLY TEST METHOD**

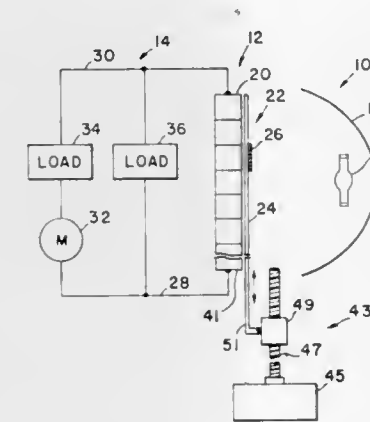
George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Charles W. Cable, Bellevue, Wash.

Filed Feb. 27, 1970, Ser. No. 15,025

Int. Cl. G01j 1/42; H01j 39/12

U.S. Cl. 356—222

8 Claims



Defects in a solar cell assembly are located by measuring power generation from the assembly as selected cells are subjected to differential illumination either by shadowing the cell or by applying local higher intensity illumination to the cell.

3,630,628

**PROPELLING PENCILS**

John Roman, London, England, assignor to Mermaid Engineering Company Limited, London, England, a part interest

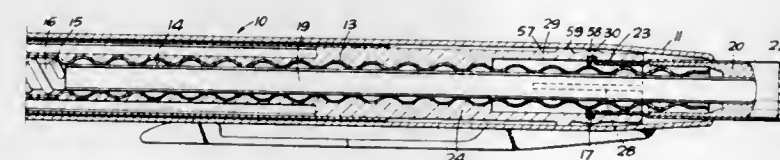
Filed Nov. 4, 1969, Ser. No. 873,983

Claims priority, application Great Britain, Nov. 4, 1968, 52,145/68

Int. Cl. B43k 21/08

U.S. Cl. 401—68

11 Claims



A propelling pencil having a tube with an internal double start screw thread, one end of the tube being surrounded by a

resiliently flexible sleeve which engages with a portion of an operating member to restrain it against axial movement along the tube while permitting its rotation. An outer casing covers the tube and constricts the sleeve to further restrict the movement of the operating member. The rotation of the operating member moves a threaded element engaging the threaded tube axially along the tube to urge a pencil lead along a guide mounted at the other end of the tube which includes a block of resilient material formed with a puncture through which the lead extends and by which the lead is held.

3,630,629

**MECHANICAL WRITING INSTRUMENT**

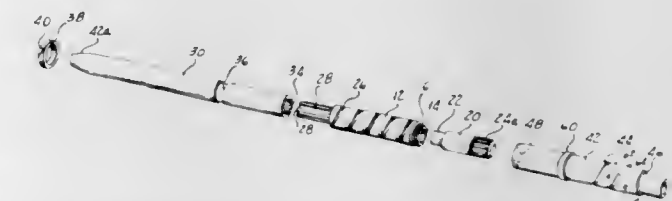
Gino Carmen DiSpirito, Hasbrouch Heights, N.J., assignor to Kreiser Manufacturing Corporation, North Bergen, N.J.

Filed Dec. 16, 1969, Ser. No. 885,421

Int. Cl. B43k 24/06

U.S. Cl. 401—116

18 Claims



A mechanical writing instrument in which a carrier supporting an ink cartridge or the like is received by and threadably engages a driver tube rotatably positioned on a sleeve by a snapping. Interengageable means provide a connection between the carrier and the sleeve which permits relative axial movement therebetween while preventing rotary movement in response to rotation of the driver tube relative to the sleeve alternately to extend and retract the cartridge with reference to the sleeve. The assembly may be completed by a decorative two-part casing and a nose through which the point of the writing instrument may protrude.

3,630,630

**POWER-OPERATED THREAD-CUTTING UNITS**

Bengt Ebbe Harald Nyman, Rockford, Ill., assignor to Atlas Copco Aktiebolag, Nacka, Sweden

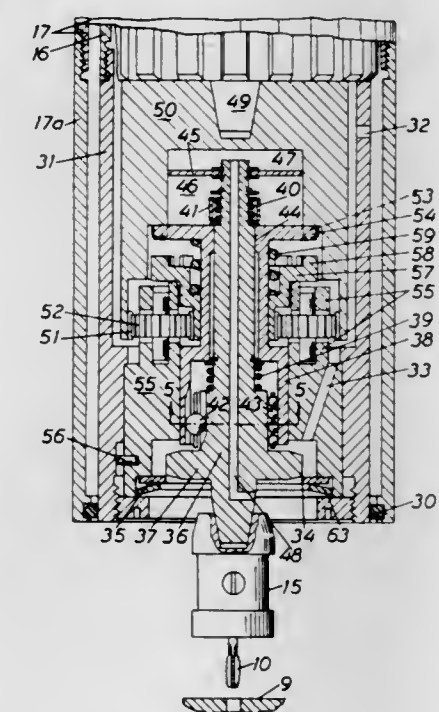
Filed Sept. 3, 1969, Ser. No. 854,939

Claims priority, application Sweden, Sept. 10, 1968, 12126/68

Int. Cl. B23g 1/00

U.S. Cl. 408—9

7 Claims



To provide a simple, compact thread-cutting unit, pressure fluid power means effect axial movement of a thread-cutting



tap. The tap is driven by a fluid motor, the rotary speed of which is automatically adapted to the axial feed by controlling the back pressure on the motor, that is, by more or less throttling the exhaust from the motor under control of axial movement of the spindle carrying the tap, independent of the axial feed.

3,630,631

**PISTON RING MACHINE FEED COMPENSATOR**

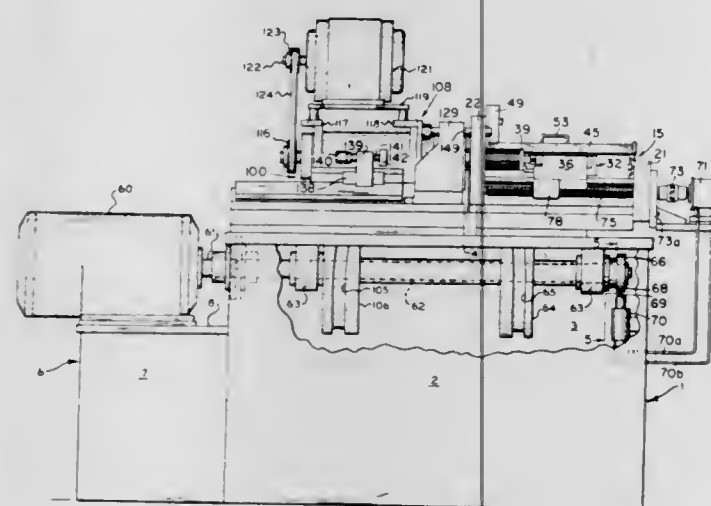
Julius J. Becker, Saginaw, Mich., assignor to B & K Tool & Die Corporation, Saginaw, Mich.

Filed Apr. 10, 1969, Ser. No. 815,168

Int. Cl. B23b 19/00

U.S. Cl. 408-19

19 Claims



Apparatus for machining stacked workpieces wherein a stack is presented to a work station where individual workpieces are machined. The workpieces are yieldably mounted on a carriage which sequentially moves toward and away from the work station. Yieldable means operates to eject one of the workpieces on the end of the stack when the carriage is moved away from the work station. Fluid motor indexing means may be provided to control the yieldable means. Spherical bearing means may be utilized for transmitting force between the yieldable means and the stack of workpieces. A gauge may suitably be provided to regulate the movement of the members which clamp the stack at the work station.

3,630,632

**CENTERING ATTACHMENT FOR CYLINDER-BORING DEVICE**

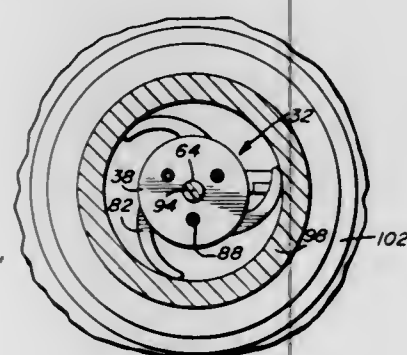
Nathan Dale Holleman, 12619 82nd Ave. N., Seminole, Fla.

Filed Feb. 10, 1970, Ser. No. 9,471

Int. Cl. B23b 29/03

U.S. Cl. 408-82

10 Claims



A head for mounting on a boring bar supported for rotation about a reference axis and shiftable along that axis. The head includes mounting structure for mounting a cutting tool

thereon and is provided with a plurality of arcuate centering arms seated in recess areas therefor extending and spaced about the periphery of the head. One set of corresponding ends of the arms are pivotally supported in the corresponding recess areas for swinging of the other set of ends of the arms between retracted positions at least substantially received within the recess areas therefor and extended positions swung outwardly of the outer surfaces of the head for engagement with the walls of a bore formed in a workpiece to center the bore relative to the axis of rotation of the head. The head further includes means operative to simultaneously and equally swing the arms between extended and retracted positions.

3,630,633

**GAS TURBINE ENGINE NOZZLE ACTUATION SYSTEM**

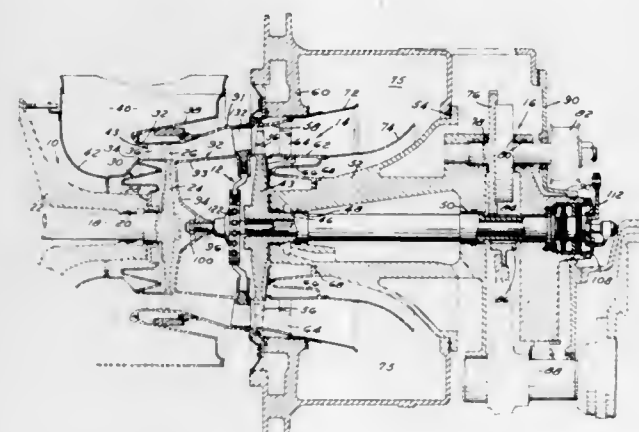
Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 7, 1970, Ser. No. 35,372

Int. Cl. F04d 27/00, 27/02

U.S. Cl. 415-150

5 Claims



An actuation system includes crank arms connected to the nozzle blades for pivoting them, the crank arms being movable in an arcuate path by pure tangential forces applied by the combined axial and rotary movement of an internally mounted shaft that is moved by a pair of fluid-interconnected servos.

3,630,634

**ROCK-DRILLING APPARATUS**

William Mayall, 6 Arundel Gardens, Ash Lane, Rustington, Sussex, England

Filed June 26, 1970, Ser. No. 50,165

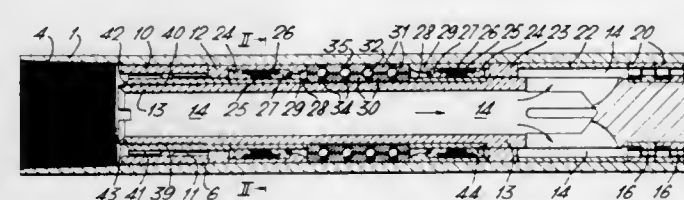
Claims priority, application Great Britain, July 1, 1969,

33,142/69

Int. Cl. F01d 11/08, 1/02

U.S. Cl. 415-170

7 Claims



A thrust-bearing structure for a turbodrill, and a turbodrill incorporating the same, comprising a stack of inner and outer ball bearing track members with sets of bearing balls running in a plurality of axially spaced tracks defined by said track members so as to be capable of transmitting axial thrust between the inner and outer track members by shear stress in the balls, the inner track members being arranged for the transmission of axial thrust between neighboring ones of such inner track members and the outer track members being ar-

ranged for the transmission of axial thrust between neighboring ones of such outer track members, whereby axial loads are distributed through the bearing structure in use.

through the blade away from the upper blade outer deflectors.

3,630,635

**TURBINE CASING WITH RAISED HORIZONTAL JOINT**

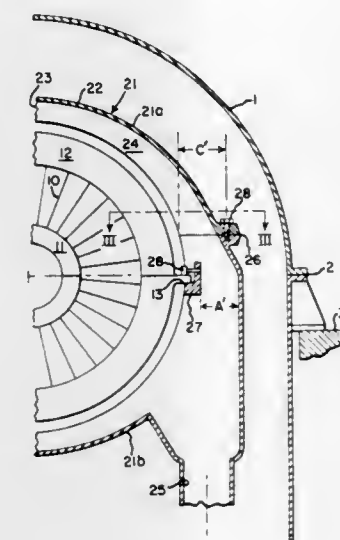
Arthur F. Fatum, Schenectady, N.Y., assignor to General Electric Company

Filed Sept. 10, 1970, Ser. No. 71,158

Int. Cl. F01d 1/00

U.S. Cl. 415-219

4 Claims



The inner casing of a low-pressure steam turbine has top and bottom sections which are connected along a horizontal joint disposed substantially higher than the horizontal centerline of the machine. The connectors at the joint can thus be located outside the inner casing because of the smaller sealing surface area at the raised joint.

3,630,636

**BLADE APPARATUS FOR HIGH-SHEAR MIXING**

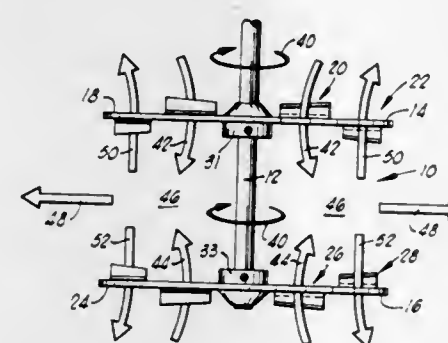
Robert M. Hill, Rockport, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Filed Apr. 22, 1970, Ser. No. 30,725

Int. Cl. B01f 7/24

U.S. Cl. 416-199

6 Claims



Apparatus for mixing materials at increased shear rate and efficiency which utilizes upper and lower spaced rotary mixer blades each driven in the same direction by a rotary shaft. The upper blade consists of a group of inner material deflectors for moving mix material in one direction through the blade while an outer concentric group of deflectors move mix material in the opposite direction through the mixer blade. The lower mixing blade is then oppositely formed so that the inner circular array of deflector-slot configurations moves mix material through the blade in opposition to material from the upper plate inner deflectors while an outer concentric ring of deflectors move mix material downward

3,630,637

**SEWAGE-PUMPING STATION**

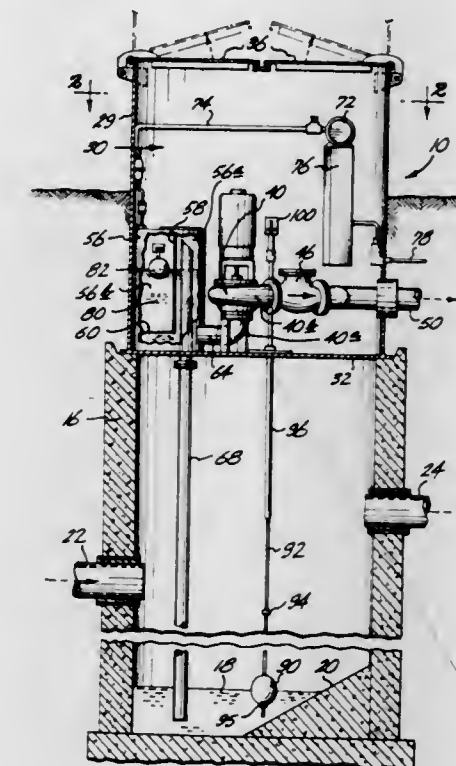
Fred J. Repp, Portland, Oreg., assignor to Cornell Manufacturing Company, Portland, Oreg.

Filed Jan. 22, 1970, Ser. No. 5,052

Int. Cl. F04b 41/06; F04d 9/00

U.S. Cl. 417-7

3 Claims



A sewage-pumping station including a sump and above the sump a machinery compartment. A pair of sewage pumps and a priming chamber for holding sewage are provided in the machinery compartment. A feed conduit extending from adjacent the base of the sump into the priming chamber provides for the flow of sewage into the priming chamber. A vacuum pump also mounted in the machinery compartment when actuated produces a subatmospheric pressure in the priming chamber effective to draw sewage from the sump into the priming chamber. The pair of sewage pumps have their inlet sides connected to the priming chamber and sewage in the priming chamber is used to prime these pumps.

3,630,638

**METHOD AND APPARATUS FOR USE IN THE TRANSPORTATION OF SOLIDS**

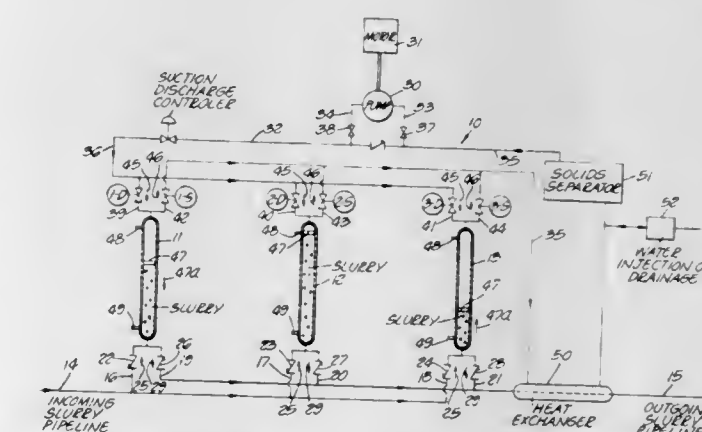
Maurice A. Huso, 5310 Las Lomas St., Long Beach, Calif.

Filed Jan. 26, 1970, Ser. No. 5,521

Int. Cl. F04b 17/00, 9/08, 35/00

U.S. Cl. 417-53

30 Claims



A method and apparatus to increase the pressure of a mixture of liquid and solids in a pipeline for transportation of the



mixture through the pipeline at a constant velocity. The mixture is pressurized in a series of chambers into which alternately flows low-pressure liquid and out of which alternately flows high-pressure liquid. The low-pressure liquid is continuously diverted from the pipeline into the chambers while an equal amount of the high-pressure liquid is diverted from the chambers back into the pipeline.

3,630,639

# SUCTION LINE VENT VALVE FOR RECIPROCATING PUMPS

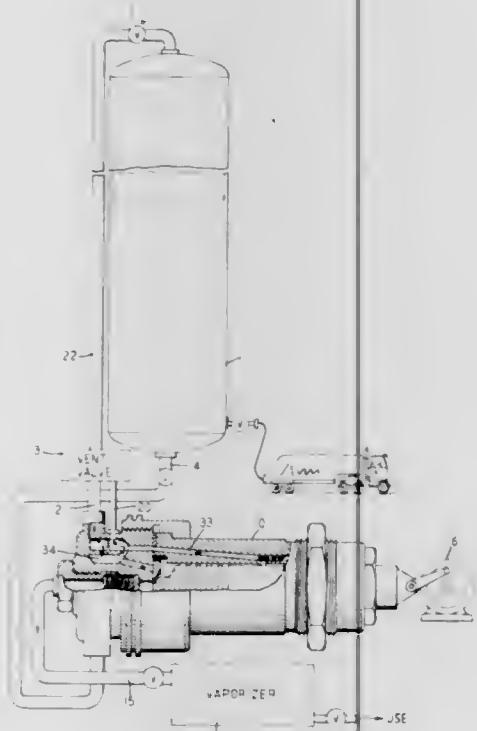
Paul P. Duron, Anaheim, and Thomas A. Carter, Jr., Whittier, both of Calif., assignors to Air Reduction Company Incorporated, New York, N.Y.

Filed Oct. 31, 1969, Ser. No. 872,849

Int. Cl. F04b 15/08, 21/02; F17c 7/02

U.S. Cl. 417-53

14 Claims



This invention relates to an automatically controlled vent valve in a vent line connected to the suction line in a cryogenic pumping system. The vent valve is in an open position during the cooldown cycle and is moved to a closed position after the system has reached desired operating conditions. Blowby gas which leaks around the piston of the pumping system provides the pressure for closing the vent valve. The vent valve contains an orifice through which the blowby gas bleeds and returns to the storage vessel for the cryogenic fluid being pumped.

3,630,640

# METHOD AND APPARATUS FOR GAS-LIFT OPERATIONS IN OIL WELLS

Everett D. McMurry, and Bolling A. Abercrombie, both of Houston, Tex., assignors to McMurry Oil Tools, Inc., Houston, Tex.

Continuation of application Ser. No. 820,454, Apr. 30, 1969, now abandoned. This application Sept. 4, 1970, Ser. No. 69,635

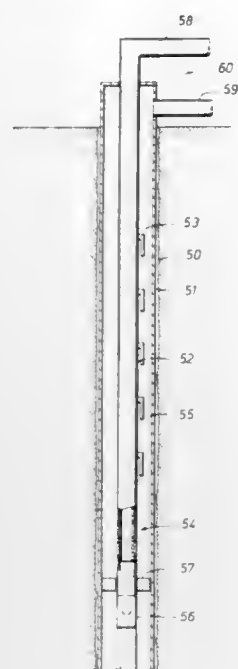
Int. Cl. F04f 1/18, 1/08

U.S. Cl. 417-54

28 Claims

A conventional gas-lift system is installed in an oil well at the initial completion and fitting-out of the well. Each gas-lift valve is provided with a blocking device which closes in response to hydrostatic pressure in the casing annulus greater than the dome pressure in the gas-lift valve assembly. Liquids in the casing annulus may be displaced through a sleeve valve

in the tubing by gas injection pressure greater than the hydrostatic pressure, after which the gas injection pressure



may be reduced to open the blocking devices for gas flow into the tubing string.

3,630,641

# CENTRIFUGAL FLUID VANES COMPRESSOR

Pieter Van Staveren, Pijnacker, Netherlands, assignor to Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer, The Hague, Netherlands

Filed Mar. 16, 1970, Ser. No. 19,758

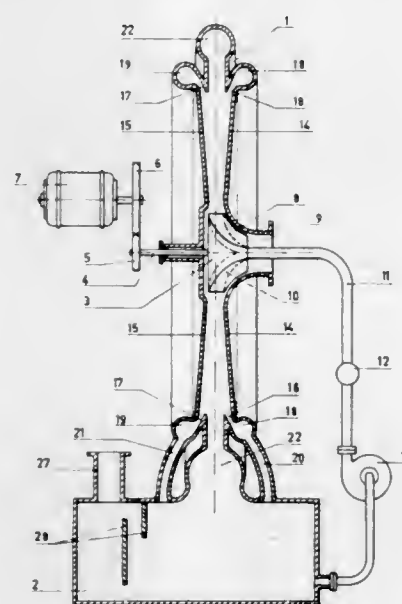
Claims priority, application Netherlands, Mar. 20, 1969,

6904345

Int. Cl. F04c 19/00; B01d 47/10

U.S. Cl. 417-67

3 Claims



A centrifugal fluid vanes compressor for making an effluvia move in the direction of rotation of the fluid vanes and for compressing it, comprising a compression chamber bounded by two parallel walls between which the fluid vanes formed by a flowing fluid which emerges at a high velocity through openings in a rapidly rotating driven rotor, are rotating. The compressed effluvia is discharged and the fluid of the fluid vanes is collected in a fluid reservoir from where it is recycled via a pump.

The improvement consists in that the distance between the two parallel walls gradually increases from the center in radi-

al direction in accordance with the increase of the thin layer of fluid that remains behind on the walls from where it may be discharged to the fluid reservoir via at least one interrupted or noninterrupted annular slotlike opening provided concentrically with the rotor.

3,630,642

# DIAPHRAGM PUMP

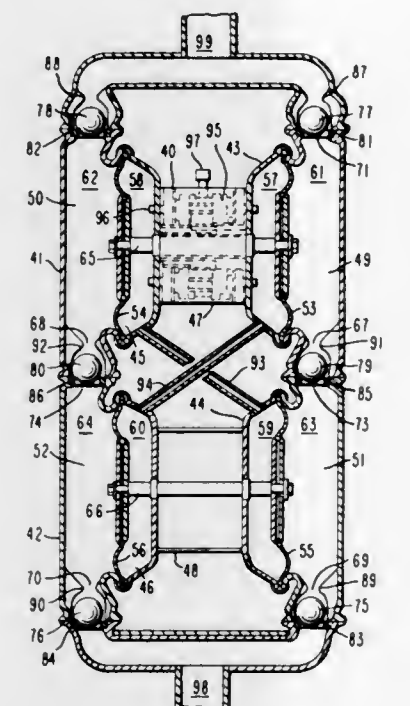
Edmund J. Osterman, Winchester, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 3, 1970, Ser. No. 8,297

Int. Cl. F04b 3/00, 43/06; F01I 15/18

U.S. Cl. 417-245

5 Claims



A diaphragm pump having means adapted to utilize the driving fluid of the pump to apply a supplementary force to the pumping diaphragm of the pump thereby providing a total pump discharge pressure which is greater than the pressure of the driving fluid.

3,630,643

# FUEL INJECTION PUMP

Franz Eheim, Stuttgart; Konrad Eckert, Stuttgart-bad, Cannstatt, and Gerald Hofer, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

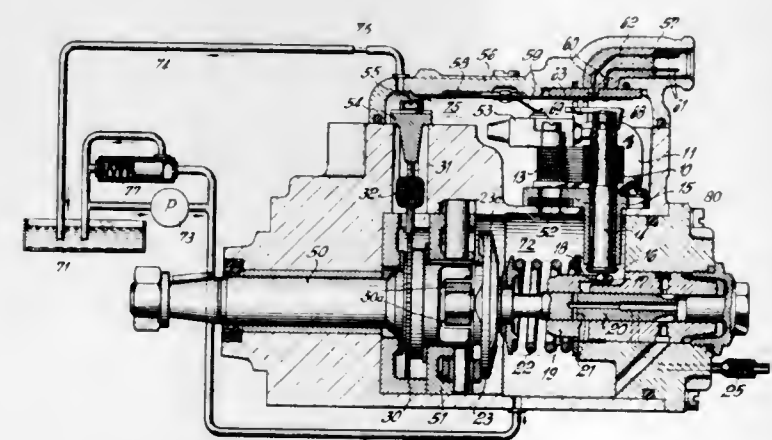
Filed Feb. 18, 1970, Ser. No. 12,409

Claims priority, application Germany, Feb. 28, 1969, P 19 10 112.3

Int. Cl. F04b 49/00, 7/04, 39/10

U.S. Cl. 417-282

15 Claims



A fuel injection pump wherein the fuel distributing piston moves angularly and axially in synchronism with rotational

speed of the engine and cooperates with an adjusting member which determines the beginning or termination of fuel injection into the cylinders. The adjusting member forms part of a transducer which is installed directly in the housing of the fuel injection pump and further includes an electromagnet having a rotary armature which is operatively connected with the adjusting member to position the latter in dependency on the intensity of signals which energize the electromagnet and are furnished by an electronic control circuit. The intensity of such signals, and hence the position of the armature, is a function of rotational speed of the engine, position of the gas pedal, and other factors.

3,630,644

# FLUID PUMP AND ACTUATION THEREOF

Brian J. Bellhouse, The Ridings, Islip, near Oxford, and Francis H. Bellhouse, 34 Hill Rise, Old Woodstock, both of England

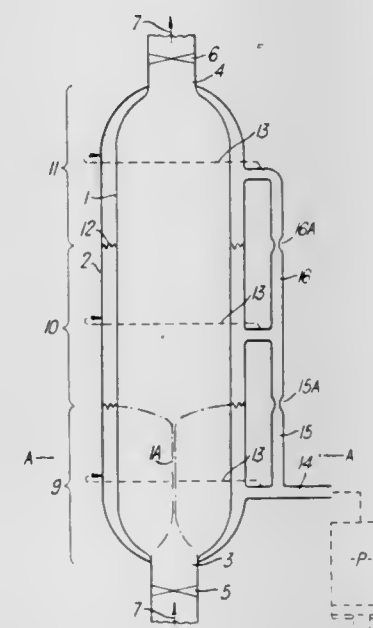
Filed June 23, 1969, Ser. No. 835,597

Claims priority, application Great Britain, June 28, 1968, 30,889/68

Int. Cl. F04b 35/02, 43/10

U.S. Cl. 417-389

16 Claims



The invention disclosed resides in a pump operating on what are generally thought of as "peristaltic" lines, and in which a flexible-walled duct is the pumping chamber and is surrounded by a cell structure into and out of which a flow of an actuating pressure-fluid is pulsatingly caused by some external means. The duct may have check valves in its entry and exit, or it may be self-valving by closing up completely when contracted, such closing being progressive from the upstream to the downstream end.

3,630,645

# ENCAPSULATED ROTATABLE ELECTRIC MOTOR AND ROTATABLE FLUID PUMP ASSEMBLY

Gunther Eheim, Plochingen Str. 32, 7301 Deizisau, Germany

Filed Feb. 26, 1970, Ser. No. 14,529

Claims priority, application Germany, Oct. 17, 1969, P 19 52 352.5

Int. Cl. F04b 17/00, 35/00, 39/06

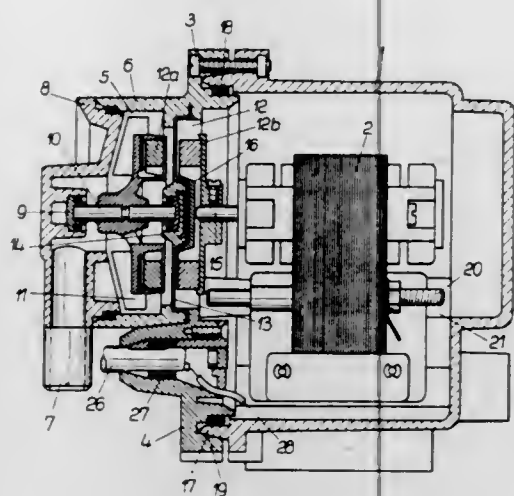
U.S. Cl. 417-420

6 Claims

To provide a totally oil-immersed motor for drive communication with a pump in a unitary assembly, an oil tight motor housing is separated from the pump housing by a thin, end wall to provide for heat exchange between the oil and the pumped fluid; the end wall is preferably of nonmagnetic, high-electrical resistance material, to permit a magnetic coupling to be used from the motor shaft to the pump impeller, the high-electrical resistance minimizing eddy current



losses (such as some stainless steels). To facilitate assembly, the motor housing is preferably cylindrical for insertion of the motor therein as one unit, the pump housing with the



common end wall being fitted on the cylindrical motor housing by means of an interengaging matching circumferential tongue and groove connection with an "O" ring as a seal, the parts being held together for example by screws.

3,630,646

**HYDRAULIC PUMP**

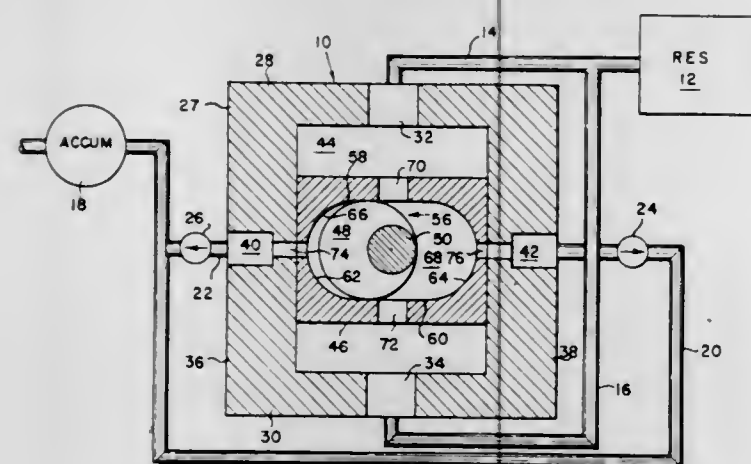
Denis Connolly, Fremont, Ohio, assignor to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio

Filed Sept. 29, 1970, Ser. No. 76,490

Int. Cl. F04b 29/00, 19/02

U.S. Cl. 417-466

4 Claims



A hydraulic pump especially adapted for full power hydraulic braking systems wherein an eccentrically mounted rotor is adapted to reciprocate a shuttle block, the latter being provided with inlet and outlet openings and having a pumping chamber in which the rotor is mounted, rotational movement of the rotor effecting a pumping action of the fluid as well as controlling the inlet and outlet of fluid to and from the pumping chamber.

**3,630,647**  
**FLEXIBLE-HOSE PUMP**  
Hansjorg Kochlin, Schlosserstrasse 38, 783 Emmendingen, Germany

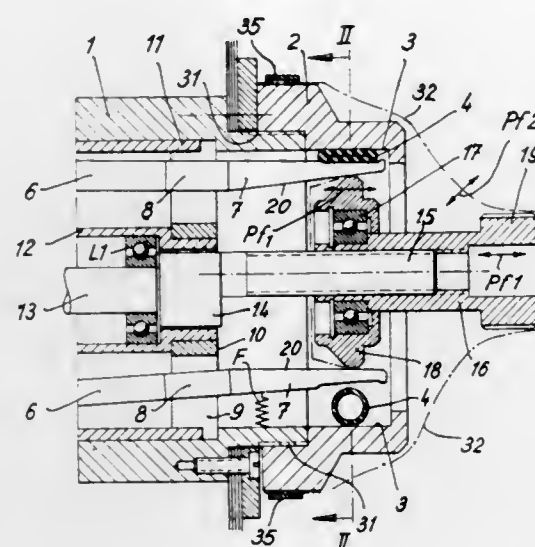
Filed Mar. 9, 1970, Ser. No. 17,370

Claims priority, application Germany, Mar. 8, 1969, P 19 11 874.2

Int. Cl. F04b 43/08, 43/12

U.S. Cl. 417-474

10 Claims



A flexible-hose pump having at least one flexible hose which is pressed against a contact face by means of pivoted fingers actuated in succession.

3,630,648

**FLAME DETECTOR USING SATURABLE CORE CONTROL**

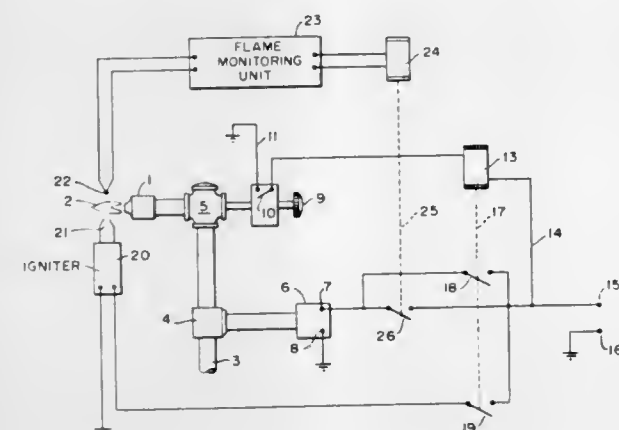
William H. Hulsman, Needham, Mass., assignor to Columbia Gas System Service Corporation, Columbus, Ohio

Filed June 15, 1970, Ser. No. 46,155

Int. Cl. F23n 5/10

U.S. Cl. 431-80

9 Claims



A system for detecting the presence of a burner flame in which the flame heats a temperature sensitive electrical device to produce an electrical current which is supplied to a winding on a rectangular hysteresis loop magnetic core to bias it to saturation in one direction termed the "reset" state, and in which means are provided to supply periodic current pulses to a winding on said core sufficient to saturate said core in the opposite direction termed the "set" state, and in which the core is provided with an output coil which generates a control pulse each time the core is shifted from the reset state into the set state. The presence of such control pulses indicates the presence of the flame and may be used to keep fuel flowing to the burner. A plurality of such cores are arranged to be individually controlled by a plurality of flames

and means are provided to select the number and combination of the flames and cores to be controlled, including means for selectively connecting the outputs of the selected cores in parallel.

3,630,649

**SHROUDED GAS BURNERS AND JETS THEREFOR**

John Hancock, Leeds, and Albert Westerman, Normanton, both of England, assignors to Geo. Bray & Company Limited, Leeds, England

Filed Aug. 1, 1969, Ser. No. 846,832

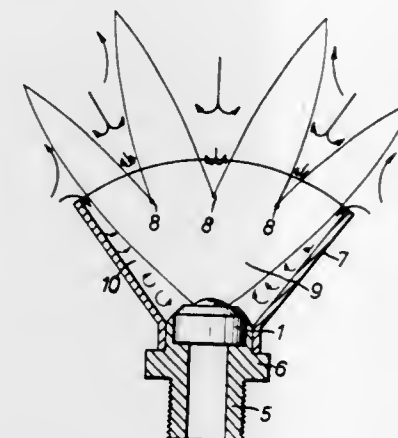
Claims priority, application Great Britain, Aug. 20, 1968,

39,712/68

Int. Cl. F23d 15/02

U.S. Cl. 431-353

15 Claims



A shrouded gas burner which can be used for all gases and in particular natural gas at operating pressures of 6-10 inches water gauge. In all the burners described an array of closely spaced diverging flames is produced which coalesce over a part of their length only thereby achieving both mutual stabilization and satisfactory aeration of the flames as a whole. The use of a shroud around the coalesced region of the flames protects them from direct airflow and contains the products of combustion near to the reaction zone so that they may be reentrained thereby accelerating the combustion process.

3,630,650

**FLASHLAMP AND APPARATUS FOR MAKING SAME**  
Peter Kaufmann, Stadtbergen, and Reinhold Liepert, Wortelstetten, both of Germany, assignors to Patent-Treuhand-Gesellschaft, für elektrische Glühlampen mbH, Munich, Germany

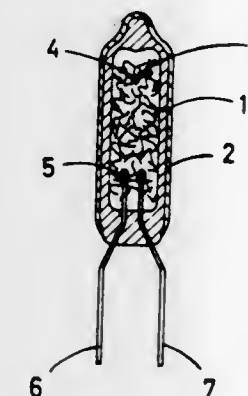
Filed Mar. 12, 1970, Ser. No. 18,875

Claims priority, application Germany, Mar. 17, 1969, P 19 13 417.9

Int. Cl. F21k 5/02

U.S. Cl. 431-95

8 Claims



A flashlamp having a small bulb volume (preferably less than 1 cc.) contains a filling of metal foil shreds, preferably

of zirconium, of small cross section of  $2 \text{ to } 10 \times 10^{-4} \text{ mm.}^2$ , which have from 8 to 50 sharp bends, forming acute angles, preferably from 12 to 30 bends per 100 mm. of shred length to effect point contact between the filling and bulb wall. The radius of curvature of the bends is preferably smaller than 0.3 mm. and the angle formed by an individual bend is preferably smaller than  $60^\circ$ . The cross section of the ball formed by a shred of 100 mm. in length is from 40 to 8 mm.<sup>2</sup>, preferably from 30 to 12 mm.<sup>2</sup>. A light gain exceeding 40 percent and a longer peak time is obtained.

3,630,651

**DUAL VORTEX BURNER**

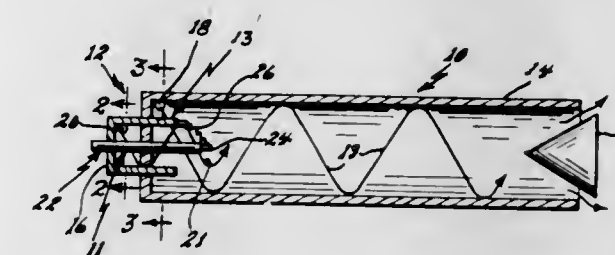
Richard J. Fay, and James P. Kottenstette, both of Denver, Colo., assignors to The United States of America as represented by the Secretary of the United States Air Force

Filed May 14, 1970, Ser. No. 37,230

Int. Cl. F23c 5/18

U.S. Cl. 431-173

9 Claims



A dual vortex gaseous burner having a vortex tube, a separator tube, a pair of vortex chambers and an igniter. An oxidizer is injected tangentially through a jet in one of the vortex chambers forming a primary vortex between the separator tube and the vortex tube wall, while a fuel is injected tangentially through a jet in the other vortex chamber forming a secondary vortex between the igniter and the separator tube. An electric spark from the igniter produces ignition of the oxidizer and fuel at the boundary between the two vortices.

3,630,652

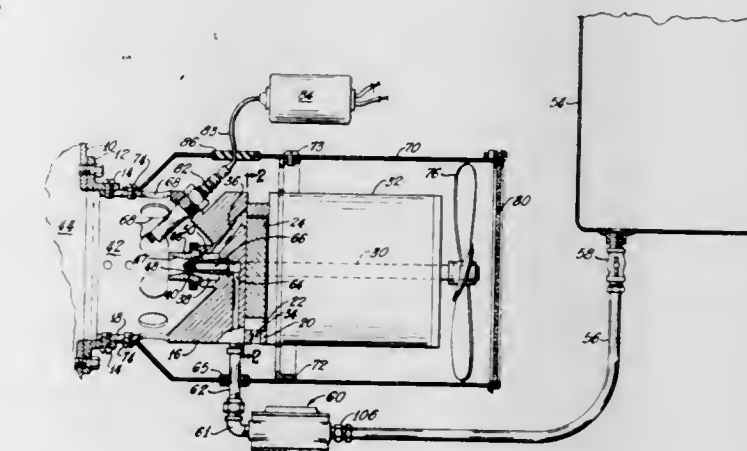
**LIQUID FUEL BURNER SYSTEM AND FUEL CONTROL**  
Warren D. Nutton, Grafton, Wis., and Bernard C. Phillips, Toledo, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 22, 1968, Ser. No. 754,684

Int. Cl. F23d 13/24

U.S. Cl. 431-253

1 Claim



1. A low-pressure oil burning unit comprising a burner head, a low-pressure aspirating nozzle mounted in and pro-



jected from said head, said nozzle having fuel and aspirating passages, said head having means defining a fuel passage in connection with said nozzle fuel passage, a compressor in connection with said head for delivering a high-velocity flow of air to and through said nozzle aspirating passage, a supply line in connection with said fuel passage incorporating therein a control regulator including a housing having an intermediately positioned diaphragm forming two chambers, one of which is vented to the atmosphere and the other of which has an inlet and an outlet positioned in the line of flow through said regulator, and means normally sealing said inlet operative to block the flow of fuel through said other chamber and its outlet and prevent its passage to said nozzle except on the occurrence of a high-velocity flow of air through the aspirating passage of said nozzle.

3,630,653

**GAS-FUELED CIGARETTE LIGHTER**

Ivan A. Wright, Blauvelt, and Emmanuel C. Theodosiou, Corona, both of N.Y., assignors to Kreiser Manufacturing Corporation

Filed Mar. 3, 1969, Ser. No. 803,573

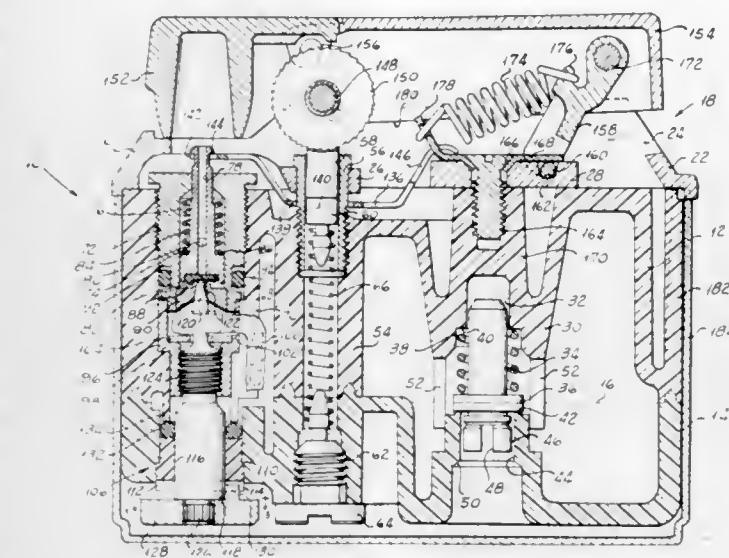
Int. Cl. F23q 2/16

U.S. Cl. 431-344

8 Claims

The invention relates to a gas-fueled cigarette lighter, having a fuel tank of clear synthetic resin made up of upper and lower sections joined to form the fuel reservoir as well as the shutoff and flame height control valve housing, the flint tube, the refill valve guide and seat and a support for the operating mechanism. A bushing providing flame height adjusting stops

is frictionally mounted in the bottom of the valve housing to permit the limits of the flame height adjustment to be changed in the course of manufacture or later during service.



ing by means of a simple tool. The tank is formed with a leaf spring which resiliently retains a decorative casing in position on the tank.

3,630,654  
**AQUEOUS ALCOHOLIC ACID DYE-CARBOXYLATED  
POLYMER COMPOSITIONS FOR DYEING AND  
GROOMING HAIR**

Norman Allen Rosenthal, Sterling Forest, Tuxedo, N.Y., and Donald Joseph Delano, Whippany, N.J., assignors to Bristol-Myers Company, New York, N.Y.

Filed May 15, 1968, Ser. No. 729,373

Int. Cl. A61k 7/12

U.S. Cl. 8-10.1

16 Claims

An oil-in-water emulsion capable of dyeing and grooming hair containing an acid dye, a slightly water-soluble alcohol and a water-soluble carboxy containing polymer.

3,630,655

**DYEING HUMAN HAIR WITH OXIDATION DYES  
COMPRISING HETEROCYCLIC AMINO COMPOUNDS**  
Peter Berth, Dusseldorf-Benrath, and Rudolf Maul, Bensheim, both of Germany, assignors to Therachemie Chemisch Therapeutische Gesellschaft m.b.H.

Filed Oct. 22, 1968, Ser. No. 769,749

Claims priority, application Austria, Nov. 6, 1967, A 9977/67

Int. Cl. A61k 7/12; D06p 1/32

U.S. Cl. 8-11

5 Claims

The novel means for dyeing human hair according to the invention are based on oxidation dyes and comprise heterocyclic amino compounds and suitable coupling components. For example, 2 parts of 6-aminotetrahydroquinoline hydrochloride, 1 part of  $\alpha$ -naphthol, 1 part of hydrogen peroxide are mixed with 96 parts of water and adjusted to a pH of 9.5. By treating gray human hair with the resulting solution a dark blue coloration is obtained.

The hair dyes according to the invention have, in addition to other favorable characteristics, the advantage of being easily removable from the hair, e.g., by reducing agents.

3,630,656

**PROCESS FOR THE DYEING AND PRINTING OF  
METAL-CONTAINING POLYOLEFIN TEXTILE  
MATERIALS**

Gerhard Wolfrum, Opladen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 20, 1969, Ser. No. 867,916

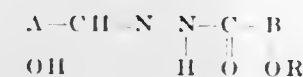
Claims priority, application Germany, Oct. 19, 1968, P 18 04 133.3

Int. Cl. D06p 1/36; C09b 65/00

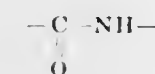
U.S. Cl. 8-31

2 Claims

Dyeing and printing of textile materials of metal-containing polypropylene with compounds of the general formula



in which A stands for a optionally substituted benzene or naphthalene radical the -OH-group and the substituent -CH N- being attached to adjacent carbon atoms; B represents a optionally substituted benzene or naphthalene the substituent -OR and the substituent



being attached to adjacent carbon atoms and R representing an alkyl radical A and B cannot simultaneously represent radicals of the benzene series.

## CHEMICAL

3,630,657

**POLYISOCYANATE TREATMENT OF POLYURETHANE  
FIBERS**

Carl John Setzer, Durham, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 1, 1969, Ser. No. 812,412

Int. Cl. D06m 9/00; D01d 5/12

U.S. Cl. 8-115.5

6 Claims

Elongation is reduced and the tensile strength and elastic properties of preformed elastomeric, polyurethane fibers are improved by subjecting the fibers to a stretching operation which includes treatment in an organic diisocyanate containing solution to effect a chemical cross-linking modification during stretching.

3,630,658

**TREATMENT OF CELLULOSIC TEXTILE MATERIALS  
WITH A SULFONAMIDE-UREA-FORMALDEHYDE  
REACTION PRODUCT TO IMPART CREASE  
RESISTANCE THERETO**

Ashley Dwight Nevers, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Original application Oct. 31, 1966, Ser. No. 590,558, now Patent No. 3,536,648. Divided and this application July 9, 1970, Ser. No. 53,697

Int. Cl. D06m 13/14, 13/40

U.S. Cl. 8-116.3

4 Claims

Cellulosic textiles are creaseproofed by treatment with a composition comprising the product of the interaction of 1 mole methanesulfonamide, from about 0.2 mole to about 2 moles of urea or carbamylurea, and from about 3 to about 10 moles formaldehyde, said product having a free formaldehyde content of from about 10 percent to 50 percent.

3,630,659

**PROCESS FOR PREVENTING DAMAGE TO NATURAL  
PROTEIN-CONTAINING FIBERS**

Udo-Winfried Hendricks, Cologne Stammheim; Mathieu Quaedvlieg, Opladen, and Walter Schonberger, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 10, 1968, Ser. No. 696,700

Claims priority, application Germany, Jan. 14, 1967, F 51255

Int. Cl. D06m 13/40

U.S. Cl. 8-133

2 Claims

Water soluble polyamides which are obtained by reacting aliphatic polyamines with  $\alpha$ ,  $\beta$ -unsaturated aliphatic monocarboxylic acids or aliphatic polycarboxylic acids optionally containing hetero atoms or their functional derivatives capable of forming amides are used as agents for preventing damage to protein-containing fiber materials or mixtures of such materials by adding the polyamides to an acidic aqueous medium used to treat said fibers.

3,630,660

**PROCESS FOR REMOVAL OF MOISTURE AND/OR  
SOLVENTS FROM TEXTILE MATERIALS**

Frederick C. Wedler, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Oct. 31, 1968, Ser. No. 772,264

Int. Cl. D01c 1/00

U.S. Cl. 8-139

10 Claims

A process and apparatus for removing water and/or other solvents from textile materials during the treatment of the same. The textile material which has been treated by scouring with a solvent or with a solvent containing a treatment material, or a textile which has been treated by a solvent media for the application of chemicals, dyestuffs, or the like, is subjected to vacuum, and if desired, to a predetermined controlled temperature for a predetermined controlled time



period in order to remove residual solvent from the textile, and from any desired treating materials. In the situation where the treating material is a solvent media with chemicals or dyestuffs, the temperature may be elevated above that necessary to vaporize the residual solvent so that the chemicals or dyestuffs may react and be deposited on the textile material and be affixed thereto.

A solvent can be defined as "that which dissolves," i.e., a medium into which other materials can be put into solution or suspension to give fluency. Water is the most generally used solvent, and is treated here in the same context as the low-boiling hydrocarbon solvents, that is, a solvent to be recovered.

3,630,661

# PROCESS FOR DEGREASING AND DESIZING FABRICS HAVING SYNTHETIC FIBERS

Georges Ramier, Villefranche sur Saone, and Remy Blanc, Lyon 1er, both of France, assignors to Societe Civile dite Soltex, Paris, France

Filed Dec. 18, 1969, Ser. No. 886,418

Claims priority, application France, Dec. 19, 1968, 50774

Int. Cl. D061 1/02

U.S. Cl. 8—139.1

Synthetic textiles are both degreased and desized by passing the textiles through a bath of an anhydrous solvent containing a dissolved alkaline agent. The textile is then preferably rinsed in a compatible solvent.

1 Claim

3,630,662

# PROCESS OF DYEING SHAPED CONDENSATION POLYMER MATERIAL IN HEATED TWO-PHASE DYE LIQUID

Harry Brody, Chester, England, and Kenneth A. Reinhart, Summit, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Sept. 19, 1966, Ser. No. 580,191

Int. Cl. D06p 5/06, 5/04, 3/24

U.S. Cl. 8—172

A method for dyeing difficultly meltable linear organic condensation polymers having nitrogen and oxygen atoms as a part of the polymer chain, particularly when such polymers are in fiber form. The method uses an aqueous dyebath, an organic solvent assist which is at most only slightly soluble in water, and a water-soluble dye which is at least partially soluble in said dye assist. A salting-out agent is utilized in the aqueous dyebath to force the dye into the organic dye assist portion, thereby facilitating a more rapid and complete exhaustion of the dyebath onto the polymer. Particularly desirable organic solvent assists are members of the group consisting of cresols and xylenols. The process is particularly useful in dyeing high-melting aromatic and cyclic aliphatic containing linear condensation polyamides, particularly those melting above 275° C., such as polyhexamethylene terephthalamide, which filaments are best formed by spinning from concentrated sulfuric acid solutions because of their high-melting points.

17 Claims

3,630,663

# PROCESS FOR DYEING ANIONIC MODIFIED SYNTHETIC FIBERS IN DYE BATHS CONTAINING AN ORGANIC NITROGEN COMPOUND

Dietrich Hildebrand, Leverkusen; Gunter Briedbach, Cologne Flittard, and Helmut Kirschneck, Leverkusen-Schlebusch, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 12, 1969, Ser. No. 798,812

Claims priority, application Germany, Aug. 30, 1968, P 17 94

049.7 Dec. 18, 1968, P 18 15 417.1

Int. Cl. D06p 5/06

U.S. Cl. 8—172

Synthetic fibers containing anionic groups, e.g. polyacrylonitrile modified with sulfonic acid groups, are dyed

9 Claims

by exhaustion in a dyebath comprising:

- hydrocarbon chloride solvent;
- 0.1 to 4% of water based on the solvent;
- a basic dyestuff soluble in hydrocarbon chloride solvent; and
- an organic nitrogen compound containing at least 12 carbon atoms, e.g. a fatty amine such as dodecylamine.

3,630,664

# PROCESS FOR DYEING SHAPED ARTICLES OF AROMATIC POLYCARBONATES

Joachim Nentwig; Karl Fuhr; Hans Rudolph, all of Krefeld-Bockum, and Johannes Romatowski, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 7, 1967, Ser. No. 644,081

Int. Cl. D06p 3/52

U.S. Cl. 8—173

Obtaining deep shades and substantially accelerating dyestuff absorption in the dyeing of aromatic polycarbonates with dispersion dyestuffs or developing dyestuffs by carrying out the dyeing process in the presence of an aliphatic, aromatic or mixed aliphatic aromatic carbonate.

7 Claims

3,630,665

# METHOD OF STERILIZATION

Harold Willids Andersen, Oyster Bay; Harold W. Andersen, Laurel-Hollow, and Charles H. Harrison, Oyster Bay Cove, all of N.Y., assignors to H. W. Andersen Products, Inc., Oyster Bay, N.Y.

Original application June 30, 1966, Ser. No. 561,777, now

Patent No. 3,516,223, which is a continuation-in-part of

application Ser. No. 448,090, Apr. 14, 1965, now Patent No.

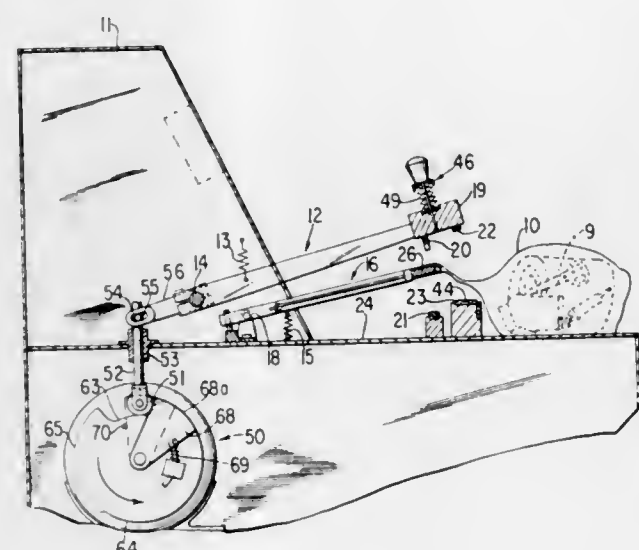
3,476,506. Divided and this application Aug. 25, 1969, Ser.

No. 858,248

Int. Cl. B65b 31/06, 55/18

U.S. Cl. 21—58

6 Claims



A method of sterilization consists of introducing the items to be sterilized and a sterilant into an enclosure made at least partially of a semipermeable membrane and thereafter sealing the enclosure. The sterilant in the enclosure is passed to the surrounding atmosphere through the semipermeable membrane at a rate which maintains a concentration of the sterilant in the enclosure long enough to sterilize the items and at a rate in which neither harmful nor dangerous levels of the sterilant are released in the surrounding atmosphere.

3,630,666

# PRECONTACTING HYDROGEN SULFIDE CONTAINING GAS STREAMS WITH RICH SULFINOL

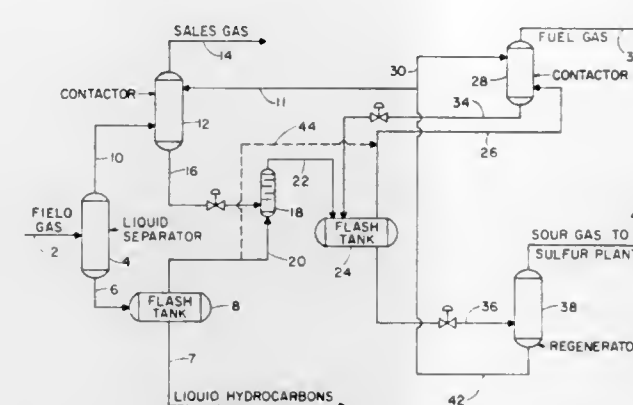
Lorenz V. Kunkel, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed July 30, 1969, Ser. No. 846,101

Int. Cl. B01d 53/34

U.S. Cl. 23—2 R

10 Claims



The efficiency of a gas-sweetening system is improved by first separating a high-pressure field sour gas into a gas and a liquid stream, sending the liquid stream to a flash tank to obtain separate liquid and sour gas fractions. The latter is then combined with rich absorbent solution from the high-pressure contactor acting on the first mentioned high-pressure gas stream. The higher hydrogen sulfide partial pressure in the aforesaid sour gas fraction causes physical solution of the H<sub>2</sub>S resulting in lessening the load on the downstream low-pressure contactor. By operating in this fashion the sweetening agent circulation rate to the contactors is approximately 30 percent less than required by conventional methods.

3,630,667

# PRODUCTION OF BARIUM FERRITE

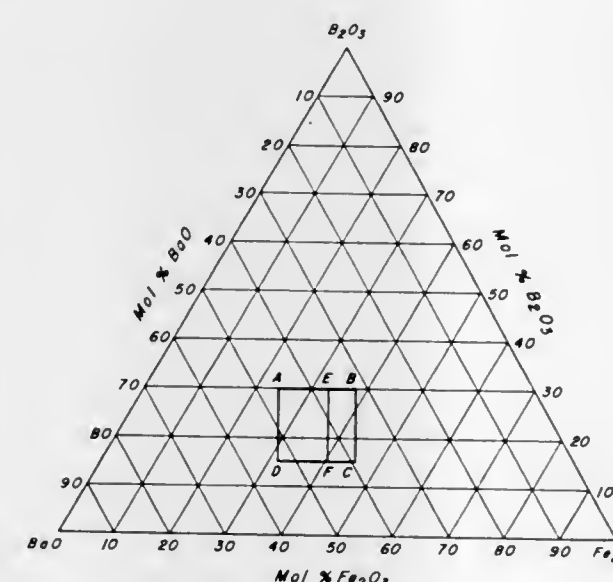
Brian Thomas Shirk, St. Marys, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed Apr. 1, 1969, Ser. No. 812,158

Int. Cl. C01g 49/00

U.S. Cl. 23—51

7 Claims



In accordance with this invention barium ferrite hard magnetic materials are produced by quenching a molten homogeneous composition of B<sub>2</sub>O<sub>3</sub>, BaO and Fe<sub>2</sub>O<sub>3</sub> within the area ABCD of FIG. 1 to form a homogeneous, substantially noncrystalline glass, heating the quenched glass to nucleate and crystallize barium ferrite in a borate-rich matrix, and separating the matrix material from the crystallized barium ferrite.

3,630,668

# MANUFACTURE OF SOLID MATERIALS IN A MOVING BED REACTOR

John Wright Coulter-Black, Ville Jacques Cartier, Quebec; John Douglas McIrvine, Mont-Saint-Hilaire, Quebec, and John Dudley Simpson, Beoeil, Quebec, all of Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

Filed June 9, 1969, Ser. No. 831,555

Claims priority, application Great Britain, June 21, 1968, 29,690/68

Int. Cl. C05c 1/00

U.S. Cl. 23—103

9 Claims

A process for manufacturing solid materials employing a reactor containing a moving bed of the product particles having separate reaction and cooling zones. One of the reactants is gaseous. The process can be employed for the manufacture of ammonium metabisulphite, ammonium nitrate and ammonium phosphate.

3,630,669

# PROCESS FOR REMOVING IMPURITIES IN THE LIQUID OF ZINC REFINING BY WET METHOD

Akira Naito, and Shigeo Oosawa, both of Tokyo, Japan, assignors to Mitsubishi Edogawa Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1968, Ser. No. 784,481

Claims priority, application Japan, Dec. 26, 1967, 42/82957

Int. Cl. C01g 9/06

U.S. Cl. 23—125

5 Claims

Impurities in the liquid of zinc refining by wet method are removed by treating a solution containing zinc with metallic zinc and removing precipitate thereby formed, thereafter adding to the solution hydrogen peroxide in an amount sufficient to oxidize ferrous iron contained in the solution to ferric iron.

3,630,670

# PSEUDOBOEHMITIC ALUMINA AND PROCESS FOR MAKING SAME

Norman Bell, Walnut Creek; John Wesley Price, Pleasanton, and Ronald James Rigge, Livermore, all of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed May 25, 1970, Ser. No. 39,958

Int. Cl. C01b 7/34

U.S. Cl. 23—143

10 Claims

Alumina of substantially pseudoboehmitic structure is made by the reaction of an alkali aluminate solution with a mineral acid solution. The alumina produced is characterized by its low Na<sub>2</sub>O content of less than about 0.03 percent by weight, a pore size distribution wherein pores of sizes within the range of 120–800 Å constitute a significant percentage of the total porosity.

3,630,671

# OXIDATION OF HYDROGEN CYANIDE TO CYANOGEN IN A LIQUID MEDIUM UTILIZING A GROUP VIII NOBLE METAL CATALYST IN COMPLEX ASSOCIATION WITH A BIPHYLIC LIGAND

Michael J. Block, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 1, 1969, Ser. No. 846,937

Int. Cl. C01c 3/00; B01j 11/00

U.S. Cl. 23—151

11 Claims

Hydrogen cyanide is oxidized to cyanogen by contacting hydrogen cyanide and oxygen with a substantially anhydrous liquid medium containing a Group VIII noble metal, preferably in complex with a biphyllic ligand at a temperature between 20° and 300° C. and at a pressure sufficient to maintain liquid phase conditions. A preferred embodiment is contacting hydrogen cyanide and oxygen with a carboxylic acid containing a complex of rhodium chloride and triphenyl-







3,630,683

**REACTOR DEVICE FOR ION EXCHANGE RESINS AND THE LIKE**

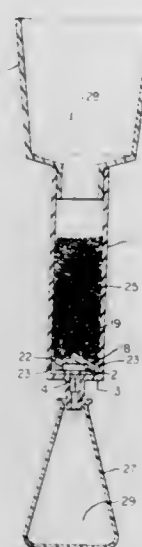
Wayne F. Robb, Aurora, Colo., assignor to Telan Corporation, Denver, Colo.

Filed Feb. 14, 1969, Ser. No. 806,339

Int. Cl. B01d 27/02; B011 3/00

U.S. Cl. 23-253 A

11 Claims



A reactor device includes a receptacle having a lower controlled orifice provided by an impermeable disk member forming a narrow annular passage which confines materials to the receptacle and passes a liquid from the receptacle at a controlled, uniform rate. The device is applicable to the treatment of human matter such as whole blood or its derivatives and urine, to be analyzed in clinical or industrial laboratories.

3,630,684

**DEVICE FOR HEATER MOVEMENT IN CRUCIBLE-FREE ZONE MELTING A CRYSTALLINE ROD**

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

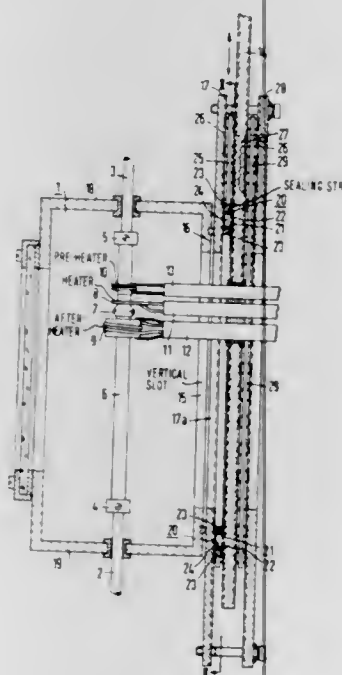
Filed Sept. 22, 1967, Ser. No. 669,979

Claims priority, application Germany, Sept. 24, 1966, S 106086

Int. Cl. B01j 17/10

U.S. Cl. 23-273 SP

3 Claims



Device for crucible-free zone melting a crystalline rod includes a zone-melting chamber having a sidewall formed with

a substantially vertical slot, heating means extending through said slot into said chamber and energizable for forming a melting zone in a substantially vertically supported crystalline rod mounted in said chamber, slide means located adjacent said sidewall and carrying said heating means, said slide means and said heating means being slidable together relative to the rod in the direction of the rod axis whereby the melting zone is passed through the rod, and an elastically deformable sealing strip mounted between said slide means and said sidewall of said zone melting chamber and completely surrounding said slot whereby said slot is gastightly sealed, said sealing strip being secured against displacement.

3,630,685

**METHOD FOR THE TRANSPORTATION OF CRYSTALS AND MELT**

Herman Schildknecht, Wilcken Str. 5, and Klaus Maas, Zuincke Str. 44, both of Heidelberg, Germany

Filed Nov. 12, 1969, Ser. No. 875,956

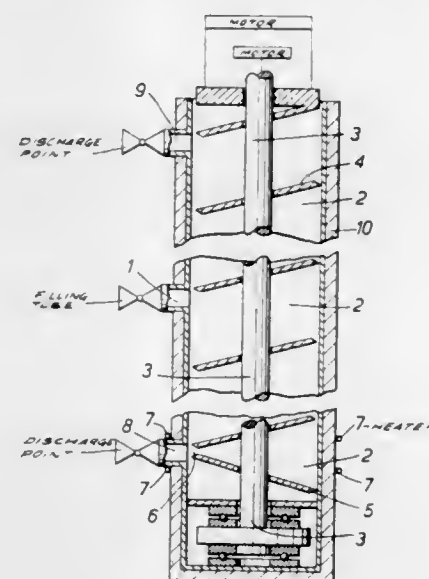
Claims priority, application Germany, Nov. 15, 1968, P 18 09

104.8 Nov. 15, 1968, P 18 09 105.9

Int. Cl. B01d 9/04

U.S. Cl. 23-273 F

7 Claims



Crystals and melt are transported in a crystallization column in countercurrent and in temperature gradient by a rotatable spiral having a plurality of turns. The spiral is disposed within an annular gap defined by the inner wall of the column and by a rod which is disposed within the column so that its axis is coincident with the column axis. The spiral extends substantially from the rod to substantially the inner wall of the column. The turns of the spiral run downwardly upon rotation of the spiral. The spiral has at its lower end one or more turns of opposite direction. The rod is rotatable about its longitudinal axis independent of the rotation of the spiral. This rotation is preferably in counterdirection to the direction of rotation of the spiral.

3,630,686

**APPARATUS FOR CONTINUOUSLY POLYCONDENSING AND POLYMERIZING MONOMERS**

Horst Rothert, Otternweg 15, Berlin 28, and Wolf Karasiak, Richterstrasse 17, Berlin 42, both of Germany

Original application June 4, 1968, Ser. No. 734,409, now abandoned. Divided and this application Dec. 8, 1969, Ser. No. 883,108 Claims priority application Germany, F 52625

Int. Cl. B01j 1/00; C08f 1/98; C08q 17/04

U.S. Cl. 23-283

4 Claims

An apparatus for continuously polycondensing and polymerizing monomers and, in particular, bis(2-hydroxyethyl) terephthalate. The condensation polymerization is carried out in a reactor vessel having a top portion, a verti-

3,630,688

**POLYMERIZATION APPARATUS**

Teruo Takiguchi; Yoshihisa Fujimoto; Yoshio Kimura, and Iwao Terasaki, all of Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kaisha, Osaka, Japan

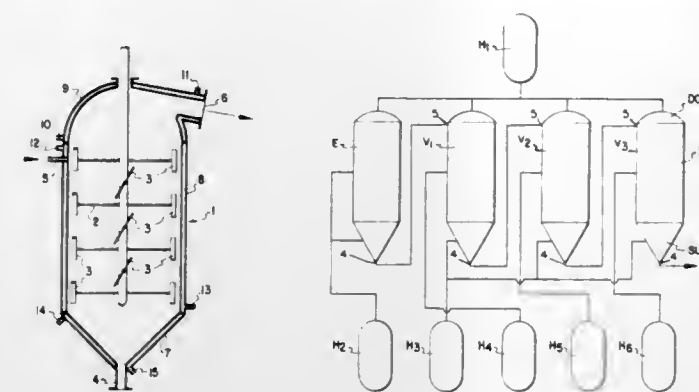
Filed Oct. 14, 1969, Ser. No. 866,326

Claims priority, application Japan, Nov. 27, 1968, 43/86336

Int. Cl. B01j 1/00; C08f 1/98

U.S. Cl. 23-285

11 Claims



products and the final products, respectively. The method of the present invention includes the step of heating the top portion, the side portion and the bottom portion of the vessel to different temperatures and the apparatus includes means for so heating.

3,630,687

**LIQUID DRAWOFF APPARATUS**

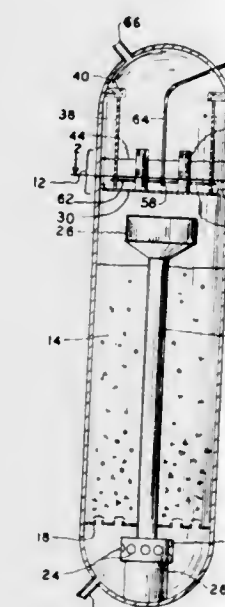
Roger P. Van Driesen, Hopewell, and William R. Mounce, Cranbury, both of N.J., assignors to Cities Service Research and Development Company, New York, N.Y.

Filed Jan. 2, 1970, Ser. No. 196

Int. Cl. B01d 19/00; B01j 1/00, 9/16

U.S. Cl. 23-285

7 Claims



A liquid drawoff apparatus for use in combination with an operating upflow liquid phase reactor vessel is shown. The liquid drawoff apparatus comprises a transversely mounted plate in the upper portion of the vessel, having a number of risers extending up from holes in the plate, each riser having a horizontal row of orifices midway up the riser and a horizontal row of slots at the riser top, and a collector having a plurality of horizontally extending arms mounted at a level below the row of orifices and above the plate and connected to a liquid drawoff conduit. Each of the arms has a plurality of holes on its underside.

An apparatus for continuously producing polymer having high degree of polymerization, comprising a substantially cylindrical vessel disposed in a substantially horizontal plane, said vessel having an inlet at its one end for supplying liquid reactant thereto, an outlet at its other end for discharging polymer therefrom and a port or ports at its one or both ends or adjacent thereto for removing gas therefrom, and an agitator rotatably mounted in said vessel, said agitator including a pair of rotating shafts extending through end plates of the vessel on a central axis thereof, a pair of discs having diameter slightly smaller than the inside diameter of said vessel and connected to the inner ends of said rotating shafts, respectively, a plurality of rods extending in parallel with the central axis and connecting said discs and plurality of agitating members supported by said rods at spaced relationship in the vessel, each of said agitating members being made of an element constituting at least a part of a frustoconical member and having open ends, the bases of the agitating members being disposed at the outlet side of the vessel and their imaginary apex being disposed at the inlet side of the vessel.

3,630,689

**APPARATUS FOR REACTING AND DEVOLATILIZING PREPOLYMER AND LIKE MATERIALS**

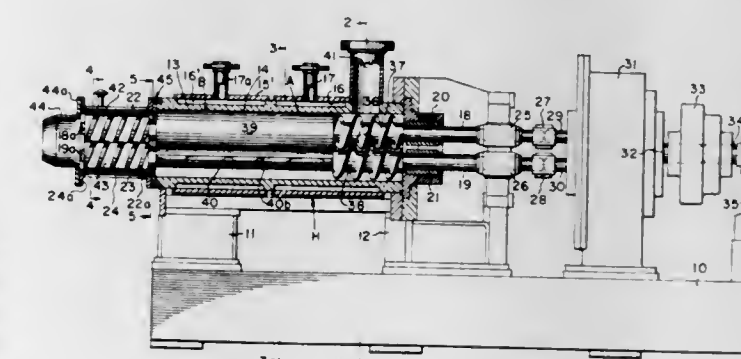
Dennis A. Wheeler; Henry F. Irving, and David B. Todd, all of Saginaw, Mich., assignors to Baker Perkins Inc., Saginaw, Mich.

Filed Oct. 30, 1969, Ser. No. 872,701

Int. Cl. B01f 15/02; B01j 1/00; C08g 17/00

U.S. Cl. 23-285

27 Claims



Multiscrew, corotating mixer shafts extend axially in a barrel and sets of interwiping self-cleaning lobular paddles or mixing elements on the shafts continuously wipe the barrel and primarily effect a radial as distinguished from an axial



mixing. In the mixing zone, the lobes of the paddle portions are aligned over the length of the stage, so that axially continuous flow paths and vapor disengagement spaces are provided to a vapor drawoff vacuum duct situated at the material charging end of the barrel. The mixing stage is separated from a product discharge stage by dam means. In the mixing stage a predetermined amount of material is supplied to the barrel which is maintained only partly full of the material which is fed continuously through the machine. Preferably the paddle sections are lens shaped in cross section and interwiping paddle sections on a pair of shafts are disposed at right angles to one another.

3,630,690

## HYDROGEN-PUMPING APPARATUS OF LAMINATED CONSTRUCTION

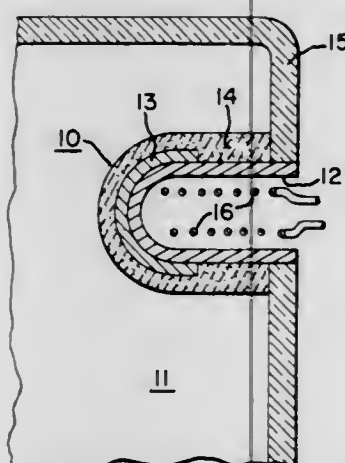
Patrick P. Coppola, Fayetteville, N.Y., assignor to General Electric Company

Filed Apr. 21, 1969, Ser. No. 817,640

Int. Cl. B01j 9/04

U.S. Cl. 23-288 J

12 Claims



An exhaust pump of laminar construction employs a palladium substrate and an intermediate layer of titanium between the substrate and a hydrocarbon cracker catalyst layer. The catalyst layer is exposed to a region being evacuated of gas including hydrogen, while the palladium substrate is exposed to the atmosphere. The combination of materials, operated at an elevated temperature, results in efficient hydrocarbon cracking, hydrogen pumping, and sorption of other gases.

3,630,691

## METHOD OF GROWING MAGNESIUM OXIDE WHISKERS

Paul Burnett, Lowell, Mass., and Arthur H. Heuer, Shaker Heights, Ohio, assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 21, 1968, Ser. No. 769,410

Int. Cl. B01g 17/22; C01f 5/02

U.S. Cl. 23-300

4 Claims

A method of growing magnesium oxide whiskers by a vapor-liquid-solid mechanism comprising sintering fine-grained polycrystalline magnesium oxide having a selected impurity element therein and then annealing the sintered product whereby the impurity element forms a liquid solution with the magnesium oxide and crystal growth occurs by precipitation from the supersaturated liquid at the solid-liquid interface.

3,630,692

## METHOD OF PRODUCING LARGE KCl CRYSTALS

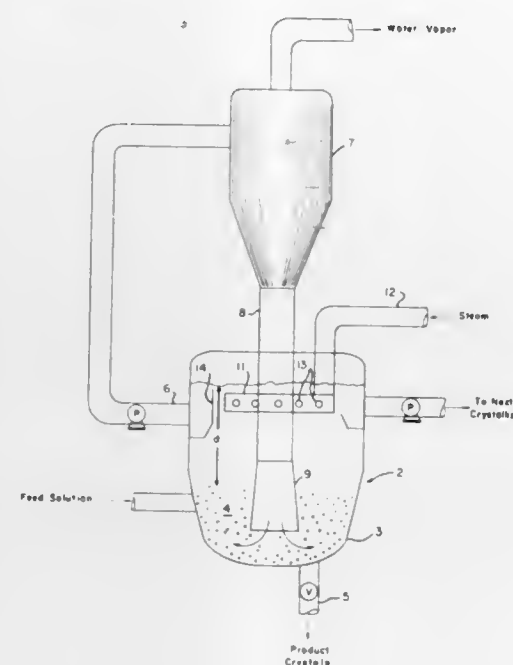
Raymond C. Green, and Joseph E. Trachta, both of Hobbs, N. Mex., assignors to Kerr-McGee Corporation

Filed Jan. 26, 1968, Ser. No. 700,988

Int. Cl. B01d 9/02

U.S. Cl. 23-302

5 Claims



A method of increasing the size of crystals produced in a crystallizing vessel having a bed of growing crystals suspended therein. Live steam is added to the solution within the crystallizing vessel at a point above the bed of growing crystals to dissolve a major portion of the fines which are circulating in the solution.

3,630,693

## INFRARED DETECTING MATERIALS

Jerry W. Moody, Worthington, Ohio, and Francis J. Reid, Syosset, N.Y., assignors to Avco Corporation, Cincinnati, Ohio

Original application June 5, 1968, Ser. No. 734,715, now Patent No. 3,558,373, dated Jan. 26, 1971. Divided and this application Apr. 6, 1970, Ser. No. 31,063

Int. Cl. B32b 15/00

U.S. Cl. 29-194

4 Claims

Infrared detector material is formed by the epitaxial growth of a single crystal alloy of the two III-V compounds InAs and InSb on an InAs substrate. In the method of such growth, a liquid solution is prepared with excess indium solvent, InSb, and sufficient InAs to saturate the indium at 500° C. The InAs substrate, oriented in the III direction is immersed in the solution, and the substrate and the solution are brought to equilibrium at approximately 500° C. Slowly lowering the solution temperature causes a single crystal to be epitaxially grown on the substrate as a solid homogeneous InAs-InSb solution. Composition of the crystal is a function of solution composition and may be controlled by dissolving selected quantities of InSb in the solution.

3,630,694

## ALUMINUM/FERRITIC STAINLESS STEEL/STEEL COMPOSITES

Thomas J. Enright, Woodbury Heights, N.J., and Sadun S. Tor, Phoenix, Md., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1969, Ser. No. 872,095

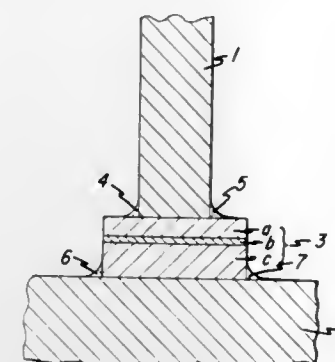
Int. Cl. B32b 15/18, 15/20; B23p 3/09

U.S. Cl. 29-196.2

10 Claims

Metal composites in which a layer of ferritic stainless steel having a yield strength of up to about 60,000 p.s.i. before

bonding is metallurgically bonded to, and sandwiched between, a layer of aluminum and a layer of steel, have im-



proved high-temperature stability, and afford electrical transition joints of better high-temperature capability than aluminum/steel transition joints heretofore known.

3,630,695

## FUEL COMPOSITION

Irl N. Duling, and Richard D. Cassar, both of West Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed July 9, 1969, Ser. No. 840,530

Int. Cl. C10I 9/00

U.S. Cl. 44-1 R

2 Claims

A solid fuel composition comprising paraffin wax having 1.1 to 25 weight percent of polyethylene with a molecular weight in the range of 500,000 to 6,000,000 uniformly distributed therein, is useful for supplying heat to protect living plants susceptible to injury by low ambient air temperature. This composition is self-supporting, burns without smoke, and burns completely leaving little or no residue. In addition a large mass of this composition ignites easily.

3,630,696

## COMBUSTION ADJUVANT

Maclin R. Milner, Clearwater, and Frederick B. Johnston, Tampa, both of Fla., assignors to Trimex Corporation, Clearwater, Fla.

Continuation-in-part of application Ser. No. 852,867, Aug. 25, 1969. This application Oct. 27, 1969, Ser. No. 869,866

Int. Cl. C10I 9/00, 1/32

U.S. Cl. 44-4

12 Claims

An adjuvant for hydrocarbon fuels is provided comprising a calcium based montmorillonite clay, a phosphate, and a source of boron oxide. A preferred formulation comprises 85 weight percent calcium bentonite, 10 weight percent anhydrous trisodium phosphate, and 5 weight percent sodium borate. The adjuvant is combined with the hydrocarbon fuel or with combustion air in an amount of about 0.1 to 2.0 weight percent, based on the weight of the hydrocarbon fuel. Combustion efficiency is substantially improved and oxidation is substantially more complete, so that combustion products are produced in less noxious forms. In addition, the nature of slag or other deposits upon surfaces in a furnace or combustion chamber are substantially altered, so that corrosive conditions do not occur and the deposition of slag is prevented or materially reduced, and the ash is produced in a soft, friable form.

3,630,697

## WICKLESS CANDLES

Irl N. Duling, and Richard D. Cassar, both of West Chester, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Filed July 9, 1969, Ser. No. 840,529

Int. Cl. C10I 5/00

U.S. Cl. 44-7.5

2 Claims

A wickless candle can be formed from a composition comprising 45 to 97.9 weight percent wax, 1 to 30 weight percent

stearic acid and 1.1 to 25 weight percent ultrahigh molecular weight polyethylene. The wickless candle is easily ignitable, burns with little or no dripping and leaves little residue upon complete combustion. The wax can be a paraffin wax or a combination of paraffin wax and one or more of the following waxes: candellilla, carnauba, montan, spermaceti and beeswax. The ultrahigh molecular weight polyethylene refers to a polyethylene with a weight average molecular weight in the range of 500,000 to 6,000,000. The components of the composition are uniformly distributed therein.

3,630,698

## FUEL SYSTEM

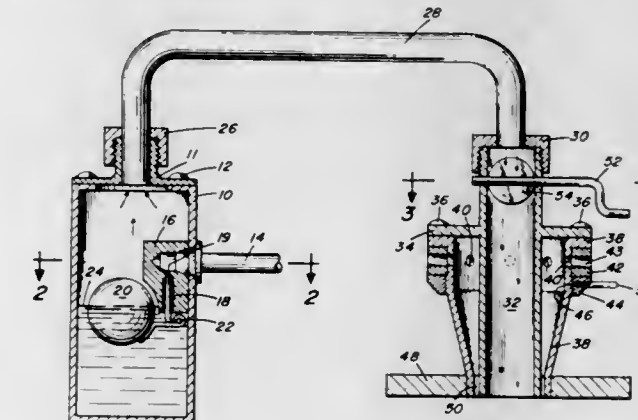
Joseph H. Baldwin, Route 4, Box 305-A-2, Waycross, Ga.

Filed Jan. 21, 1970, Ser. No. 4,509

Int. Cl. F02m 21/04

U.S. Cl. 48-180 R

5 Claims



A fuel system constructed to furnish gaseous fuel, rather than liquid fuel, to an internal combustion engine. The delivery system converts liquid fuel to its gaseous state by lowering the pressure on the surface of the liquid, thereby causing the liquid to boil thereby providing the vapor which is fed to a venturi and thence into the intake manifold.

3,630,699

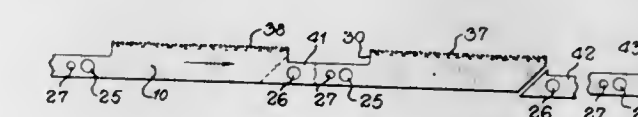
METHOD FOR PRODUCING ARMORED SABER Saws  
Robert T. Catlin, Trumbull, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Continuation-in-part of application Ser. No. 703,931, Feb. 8, 1968. This application Sept. 2, 1969, Ser. No. 854,654

Int. Cl. B24d 15/02, 17/00

U.S. Cl. 51-293

12 Claims



Method for the quantity production of armored saber saws from a long flexible strip of a base metal, consisting preferably of a heat treatable steel or alloy steel, which comprises: progressively punching out portions of said strip along one edge thereof at equispaced intervals to form the upper profiles of a series of saber saws comprising shank and blade portions of each, thereafter progressively coating the upper edges of said blade portions with a paste flux adhesive and with a powdered brazing metal, thence progressively applying to the so-coated strip edges, an overcoating of abrasive particles of a hard, high-melting diamond substitute material, thence progressively heating said strip at relatively low temperature to dry said paste flux and thence at temperature sufficiently high to austenitize said base metal and to fuse said matrix metal particles to one another and into a coating layer on said base metal, partially embedding said abrasive particles therein, thence progressively cooling said strip to tem-



perature sufficiently low and with sufficient rapidity to transform said austenite to martensite and to solidify said matrix metal layer and permanently to bond the same to said base metal and to retain said abrasive particles permanently embedded in said matrix metal layer, thereafter progressively subjecting said strip to a tempering heat treatment, and thereafter punching out portions of said strip along the opposite edge thereof to form the lower profiles of said series of said saws and/or to sever said strip into finished saber saws.

3,630,700

# PROCESS FOR FORMING PARTICLES OF MICROPOROUS GLASS FOR TOBACCO SMOKE FILTERS

Joseph J. Hammel, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 6, 1969, Ser. No. 822,297

Int. Cl. C03b 21/00; C03c 15/00

U.S. Cl. 65—21

7 Claims

This invention relates to a process for forming small particles of microporous glass having interconnected pores suitable to filter tobacco smoke. It particularly relates to a method of melting a phase-separable, metal borosilicate glass composition, quenching the melted glass by contacting the molten glass with a quenching fluid to reduce rapidly the temperature below the strain point of the glass, thereby fracturing the glass into small fragments, phase separating the fragmented glass by treatment at elevated temperatures below the miscibility temperature of the glass for a sufficient period to form a silica-rich phase and a substantially continuous borate-rich phase, then cooling the phase-separated glass, and thereafter leaching the glass to remove a sufficient quantity of the borate-rich phase to form microporous particles having interconnected pores.

3,630,701

# METHOD AND APPARATUS FOR MANUFACTURING FLAT GLASS ON A BATH OF MOLTEN METAL

Gustave Javaux, Brussels; Gilbert Doquire, Spy, and Marcel Bodart, Namur, all of Belgium, assignors to Glaverbel, Watermael-Boitsfort, Belgium

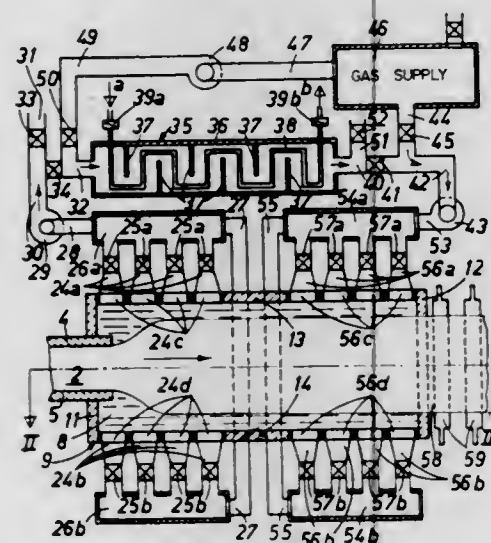
Filed June 23, 1969, Ser. No. 835,584

Claims priority, application Luxembourg, July 24, 1968, 56,578

Int. Cl. C03b 18/02

U.S. Cl. 65—27

22 Claims



Flat glass is manufactured on a bath of molten material in a partially closed chamber with the glass being cooled as it moves over the molten bath. A gas is circulated within the chamber to maintain a protective atmosphere therein. At least a portion of the circulated gas is withdrawn from one place in the chamber above the molten gas, subjected to a

treatment which may be cooling or purifying, and then reintroduced into the chamber at another place above the bath so as to recycle the protective gas.

3,630,702

# FLOAT GLASS METHOD AND APPARATUS FOR SUPPLYING MODIFYING MATERIAL TO THE GLASS SURFACE

Jack Lawrenson, St. Helens, England, assignor to Pilkington Brothers Limited, Liverpool, England

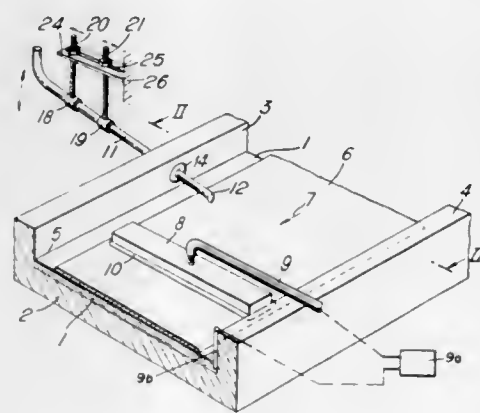
Filed Dec. 24, 1968, Ser. No. 786,722

Claims priority, application Great Britain, Dec. 29, 1967, 59,147/67

Int. Cl. C03b 18/00

U.S. Cl. 65—30

9 Claims



Float glass having a desired characteristic is made by maintaining a body of molten material which modifies the glass in contact with a surface of the glass to produce the characteristic while there is relative movement between the glass and the body, and supplying said material onto the glass surface upstream of the body so that the body is replenished in the course of the relative movement.

3,630,703

# FLOAT GLASS METHOD AND APPARATUS FOR SUPPLYING MODIFYING MATERIAL TO THE GLASS SURFACE

David Jones, St. Helens, England, assignor to Pilkington Brothers Limited, Liverpool, England

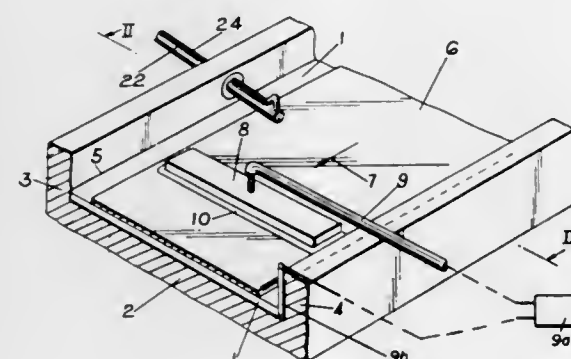
Filed Jan. 3, 1969, Ser. No. 788,725

Claims priority, application Great Britain, June 19, 1968, 29,189/68

Int. Cl. C03b 18/00

U.S. Cl. 65—30

7 Claims



Float glass having a desired characteristic is manufactured by advancing the glass beneath a body of molten material which modifies the glass to produce the characteristic, and feeding a strip of replenishing material to the glass surface upstream of the body so that the end of the strip melts on to the glass surface and the molten material is carried into the molten body as the glass advances.

3,630,704

# METHOD FOR STRENGTHENING GLASS ARTICLES

Harmon M. Garfinkel, Horseheads, and Joseph S. Olcott, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,457

Int. Cl. C03c 21/00

U.S. Cl. 65—30

7 Claims



This invention relates to the production of chemically strengthened sodium and/or potassium silicate glass articles utilizing a consecutive ion exchange reaction involving ion exchange media containing lithium ions. In carrying out the process of the invention, a surface of the glass article is first contacted with an external source of lithium ions at a temperature above the strain point of the glass but below the softening point thereof and, thereafter, this surface is contacted with an external source of lithium ions at a temperature above 200° C. but below the strain point of the glass.

3,630,705

# METHOD OF MANUFACTURING FLAT GLASS ON MOLTEN METAL AND APPARATUS THEREFOR

Masaaki Owa, Amagasaki-shi, Japan, assignor to Asahi Glass Co., Ltd., Tokyo, Japan

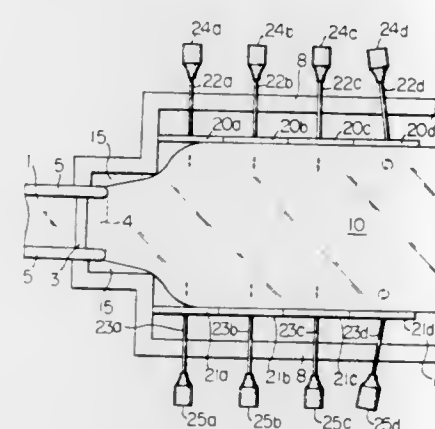
Filed May 19, 1969, Ser. No. 825,755

Claims priority, application Japan, May 28, 1968, 43/35730

Int. Cl. C03b 18/00

U.S. Cl. 65—99 A

9 Claims



In the manufacture of flat glass by the "float process" in which glass is advanced and flattened in ribbon form on a molten metal bath, vibrations of sonic or ultrasonic frequencies are applied to members which are in contact, or may come in contact, with the glass ribbon afloat on the molten metal bath, thereby decreasing the friction between the glass and said members and preventing the glass from sticking to the members.

The aforementioned members include, for example, glass-width regulating members, water-cooled fences, restrictor tiles or/and the sidewall linings of the elongated tank containing said molten metal bath.

S93 O.G.—53

3,630,706

# METHOD AND APPARATUS FOR BENDING AND TEMPERING GLASS SHEETS

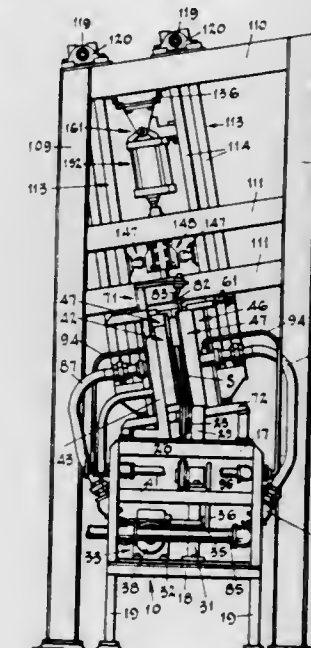
Waldemar W. Oelke, Rossford; Frank J. Carson, and Alfred E. Badger, both of Toledo, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation of application Ser. No. 365,275, May 6, 1964, now abandoned. This application Mar. 18, 1968, Ser. No. 714,114

Int. Cl. C03b 23/02, 25/04

U.S. Cl. 65—104

12 Claims



Bending and tempering glass sheets by first directing opposed flows of heated gases against a sheet to heat the glass and to support the sheet in a substantially vertical plane, then pressing the heated glass sheet between complementary shaping surfaces to the desired curvature, and finally directing opposed flows of cooling gases against the sheet to reduce its temperature and support it in the said plane.

3,630,707

# TEMPERATURE CONTROL SYSTEM FOR GLASS-SHAPING MOLDS

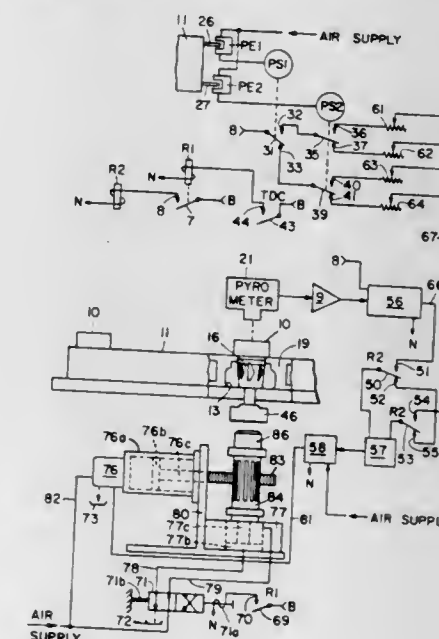
Daniel R. Ayers, Shelburne, Vt., assignor to Corning Glass Works, Corning, N.Y.

Filed June 11, 1969, Ser. No. 832,320

Int. Cl. C03b 9/38, 11/02

U.S. Cl. 65—162

8 Claims



A system for automatically sensing and controlling the temperature of each of a plurality of molds to within a



desired temperature range therefor, each such mold having a cooling fluid control valve associated therewith and each mold being intermittently positioned at a station where each respective valve is adjusted in accordance with an adjustment signal produced by comparing a signal representing the sensed temperature of the respective mold and a set point signal representing the desired temperature for such mold.

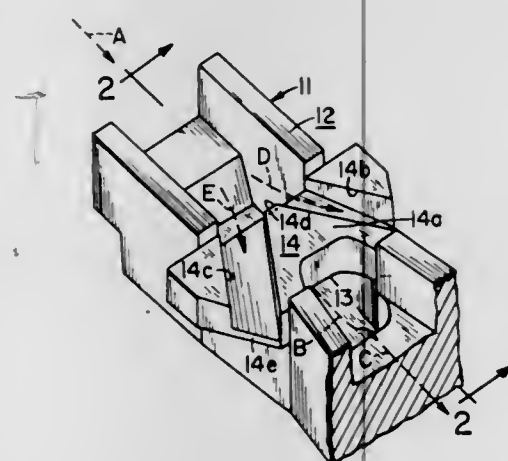
3,630,708

# FOREHEARTH SURFACE-GLASS SEPARATION AND REMOVAL

Allen C. Ihrig, Corning, and Villem Rahe, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.  
Filed Feb. 20, 1970, Ser. No. 12,939  
Int. Cl. C03b 5/20

U.S. Cl. 65—168

4 Claims



Apparatus for separating surface glass from a parent body of molten glass flowing through a forehearth and, thereafter, removing such surface glass from the forehearth. A stationary skimmer is positioned in the forehearth to interfere with or divert the flow of the surface glass and thereby separate such glass from the remainder of the parent body thereof. The skimmer has an upper portion having a horizontal planar configuration of a truncated triangle with the truncated face being on the upstream face of the upper portion. The upper surface of the upper portion is above the surface level of the glass. A lower ledge portion located below the surface level of the glass, projects upstream from the truncated face. The flow of the separated surface glass then being directed through one or more suitable channels or passages which extend from a region adjacent the upstream face of the upper portion of the skimmer and along a side of the upper portion to the exterior of the forehearth to effect removal of such glass therefrom.

3,630,709

# BLOWHEAD-OPERATING MECHANISM

George W. Irwin, Holland, Ohio, assignor to Owens-Illinois, Inc.

Filed July 14, 1969, Ser. No. 841,248

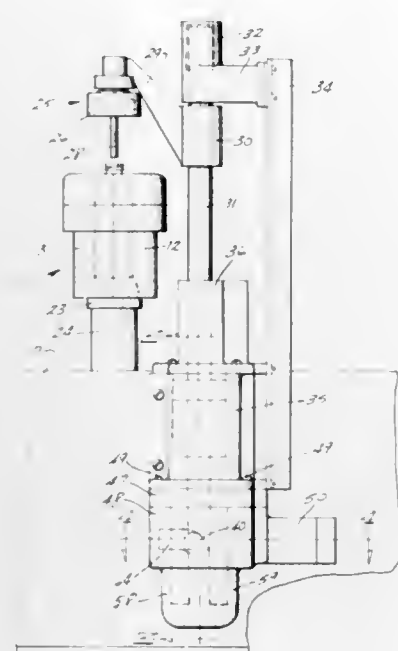
Int. Cl. C03b 9/40

U.S. Cl. 65—261

9 Claims

The blowhead mechanism on a glass-forming machine wherein limited space is provided, is hydraulically operated so as to move the blowhead from a parked position by a horizontal swinging motion followed by a vertically downward motion into blow position. Retraction of the blowhead is carried out in the precise reverse order. Separate

reciprocating motors, actuated simultaneously, through a dual cam and follower arrangement, control the movement



of the blowhead support so as to operate the head from the blow position to the parked position and return.

3,630,710

# PRODUCTION OF METABOLIC DEMAND SEAWEED-TYPE FERTILIZER

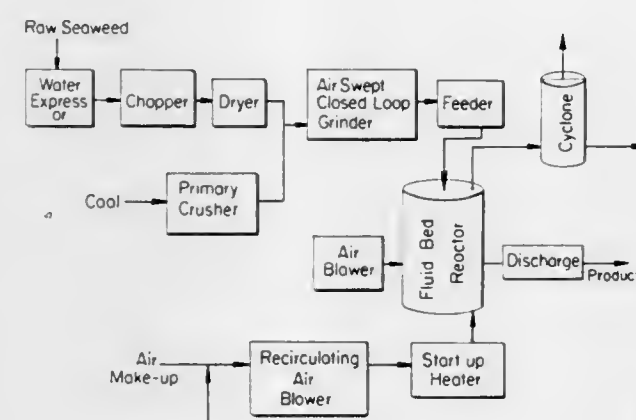
Arman F. Frederickson, Englewood, Colo., assignor to Mary Maxine Frederickson, Houston, Tex.

Continuation-in-part of application Ser. No. 575,710, Aug. 29, 1966, now abandoned. This application Jan. 31, 1969, Ser. No. 795,456

Int. Cl. C05f 11/00, 11/02

U.S. Cl. 71—23

4 Claims



A metabolic demand nitrogenous fertilizer or fertilizer base which releases nutrients into the soil in a controlled manner and in response to soil deficiencies is prepared by a process comprising the partial oxidation of organic materials at carefully controlled conditions of time, temperature and supplies of an oxidizing gas in a fluidized zone. Starting materials for the process include coal, bituminous or anthracitic, peat-moss, high chlorophyll content organic materials such as seaweeds, grasses, plant tops such as potato plant tops, sugar beet tops, and the like, seaweeds being a particularly effective type of material treated.

Nitrogen, potassium, phosphorous, and sulfate values may be added to the partially oxidized organic materials by reaction with the corresponding element supplying materials.

3,630,711

# CLARIFICATION OF AMMONIUM POLYPHOSPHATE SOLUTIONS

George M. Burkert, Shelby, N.C., and John D. Nickerson, Atlanta, Ga., assignors to United States Steel Corporation  
Continuation-in-part of application Ser. No. 791,522, Jan. 15, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 470,909, July 9, 1965, now abandoned. This application June 30, 1970, Ser. No. 51,345

Int. Cl. C05b 7/00; C01b 25/28

U.S. Cl. 71—34

6 Claims

Carbonaceous chars resulting from organic matter present in wet process phosphoric acid and generated during the concentration thereof are removed from ammonium polyphosphate solutions by adding an aliphatic organic amine compound to the polyphosphate solution, agitating the mixture and holding the solution until the solids flocculate and float as a froth to the surface, permitting removal of the solids with the froth.

3,630,712

# STABILIZED AMMONIUM NITRATE COMPOSITIONS

Marion Lipscomb Brown, Jr.; Albert Wise Green, and Elmer Ladelle Blanton, all of Yazoo, Miss., assignors to Mississippi Chemical Corporation, Yazoo City, Miss.

Filed Mar. 12, 1969, Ser. No. 806,733

Int. Cl. C05c 1/02, 3/00

U.S. Cl. 71—59

1 Claim

Stabilized ammonium nitrate in crystallized mixture with amounts of boric acid, diammonium phosphate, and ammonium sulfate in proportions which markedly reduce the physical sensitivity of the ammonium nitrate to II-IV and/or III-IV crystal-type transitions and its use in particulate ammonium nitrate production to reduce dust formation.

3,630,713

# METHOD OF PRODUCING FERTILIZER GRANULES

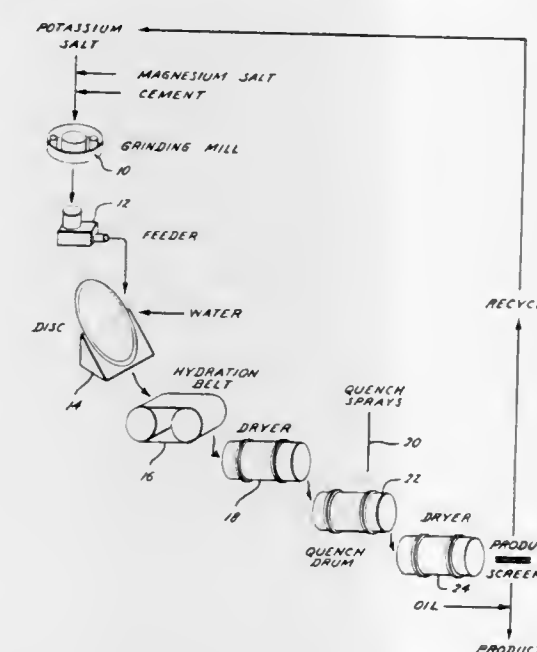
Ben E. Adams; William H. Lawhon, and Billy C. Phillips, all of Carlsbad, N. Mex., assignors to Duval Corporation, Houston, Tex.

Filed July 22, 1968, Ser. No. 746,452

Int. Cl. C05d 1/00, 5/00

U.S. Cl. 71—61

9 Claims



A method of producing competent granules of a potassium salt fertilizer which includes the steps of grinding and granulating the material with an easily dehydrated magnesium salt and Portland cement allowing time for hydration of the granules, filling the voids of the granules with an inorganic salt solution and lightly coating the granules with a coating liquid and wherein the method may be conducted without

either or both of the last two steps and may be conducted without the addition of the magnesium salt and Portland cement and the hydration step.

3,630,714

# METHOD FOR CONTROLLING UNDESIRABLE VEGETATION USING 2-NITRO-3-PYRIDOLS OR THEIR SALTS OR ESTERS

Roy C. De Selms, Rochester, N.Y., assignor to Chevron Research Company, San Francisco, Calif.

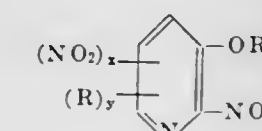
Continuation-in-part of application Ser. No. 510,677, Nov. 30, 1965, now abandoned. This application Apr. 5, 1968, Ser. No. 719,254

Int. Cl. A01n 9/14, 9/22; C07d 31/24

U.S. Cl. 71—94

7 Claims

Preemergence control of weed grasses and broad-leaved weeds using compounds of the formula



wherein x is 0 or 1, R is lower alkyl, F, Cl or Br, y is 0, 1, 2 or 3 and R' is hydrogen, a positive salt-forming group or an organic ester group such as carboxyacyl, sulfonyl, carbamyl, carbonate or thiocarbonate.

3,630,715

# ALKYLENE BIS (PHENOXYACETIC ACID) DERIVATIVES AS HERBICIDES

Alvin Gutttag, Bethesda, Md., assignor to Weston Chemical Corporation, New York, N.Y.

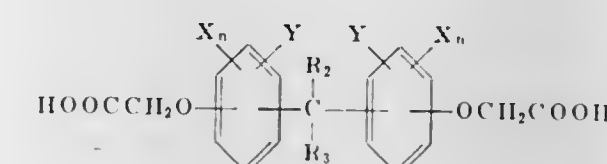
Filed Dec. 19, 1968, Ser. No. 785,404

Int. Cl. A01n 9/24

U.S. Cl. 71—109

Herbicides and insecticides of the formula

8 Claims



where n is 0, 1 or 2, X and Y are halogen or hydrogen, R<sub>2</sub> is hydrogen or methyl and R<sub>3</sub> is methyl or trihalomethyl are provided.

3,630,716

# HERBICIDAL COMPOSITIONS

John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 680,598, Sept. 15, 1967, now abandoned, Original application Mar. 21, 1966, Ser. No. 535,664, now abandoned, Continuation-in-part of application Ser. No. 329,279, Dec. 9, 1963, now abandoned. Divided and this application Sept. 3, 1969, Ser. No. 855,047

Int. Cl. A01n 9/20

U.S. Cl. 71—118

13 Claims

Herbicidal composition and method utilizing as active ingredient one or more N-alpha-haloalkylanilide.



### 3,630,717 METHOD AND COMPOSITION FOR STIMULATING PLANT GROWTH

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.  
Continuation-in-part of application Ser. No. 603,700, Dec. 1, 1966, now Patent No. 3,472,647, dated Oct. 14, 1969. This application Oct. 3, 1969, Ser. No. 863,687  
Int. Cl. A01n 9/24

U.S. Cl. 71-122

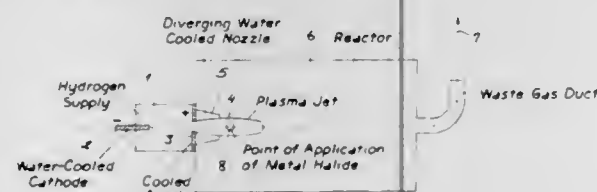
8 Claims

A method is described for stimulation of plant growth employing lower aliphatic alcohols of from one to six carbon atoms as the growth stimulating agent. The alcohol may also be used in an aqueous solution. Growth stimulation is also produced by employing an aqueous alcoholic solution in which soil, in which plants have grown, or plants have been placed and removed when the lower aliphatic alcohol is no longer present.

**3,630,718  
NONPYROPHORIC METAL POWDER OF A METAL FROM THE GROUP IVB, VB AND VIB OR THE ACTINIUM SERIES OF THE PERIODIC TABLE**  
Ernst Neuschwander, Basel, Switzerland, assignor to Hermann C. Starck, Berlin, Germany  
Original application June 7, 1966, Ser. No. 555,904, now Patent No. 3,480,426, dated Nov. 25, 1969. Divided and this application Mar. 20, 1969, Ser. No. 841,165  
Claims priority, application Switzerland, June 25, 1965, 8950/65  
Int. Cl. B22f 9/00

U.S. Cl. 75-0.5

1 Claim

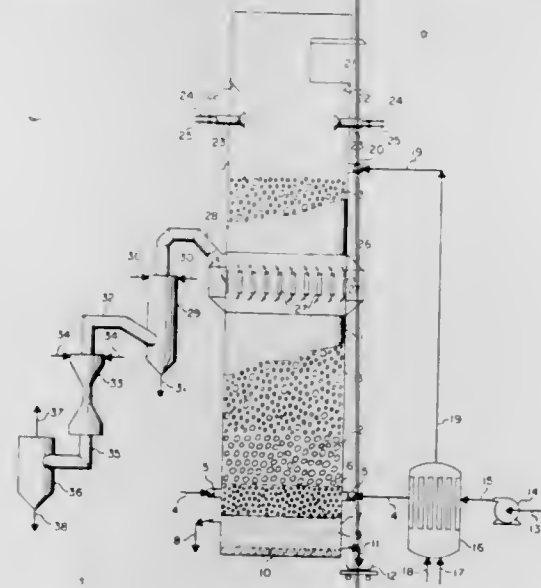


A nonpyrophoric metal powder of Group IVb, Group Vb, Group Vlb or the actinium series of the Periodic Table, having a particle size of 0.03 to 0.1 micron and a low surface area to volume ratio.

**3,630,719  
METHOD OF OPERATING A CUPOLA FURNACE**  
Robert C. Craig, Morristown, N.J., assignor to Chemical Construction Corporation, New York, N.Y.  
Filed Apr. 1, 1969, Ser. No. 811,849  
Int. Cl. C21b 11/02

U.S. Cl. 75-43

4 Claims



The formation of an explosive gas mixture in the operation of a ferrous metallurgical furnace such as a vertical cupola

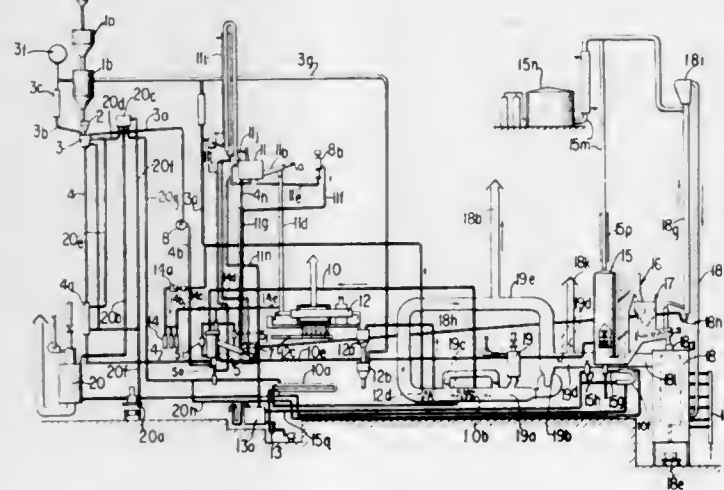
furnace or the like is prevented, by injecting an inert gas stream into the upper part of the furnace below the charge inlet, to prevent air from flowing into the upper part of the furnace through the charge inlet, and thereby preventing the formation of an explosive gas mixture of air with process gas, which is rich in carbon monoxide and is withdrawn from the side of the furnace below the upper charge inlet.

### 3,630,720 PROCESS FOR THE EXTRACTION OF ALUMINUM FROM ITS ALLOYS

Georg Messner, Latemar Strasse 7, 8000 Munich 90, Germany  
Continuation-in-part of application Ser. No. 394,873, Sept. 8, 1964, now abandoned. This application Mar. 17, 1969, Ser. No. 807,707  
Int. Cl. C22b 21/06

U.S. Cl. 75-68 R

21 Claims



Describes a process of recovering relatively pure aluminum from an aluminum alloy by charging solid aluminum alloy particles into a circulating mercury stream at atmospheric pressure, transporting the mixed stream downwardly to a melting and extraction zone maintained at a temperature of about 485° to 530° C. and a pressure of about 11 atmospheres, adding additional mercury to the extraction zone, discharging the undissolved residue at atmospheric pressure, maintaining said pressure by mercury columns at atmospheric pressure at their tops, and crystallizing aluminum from the aluminum-mercury solution by spraying the solution at atmospheric pressure to rapidly cool the mercury and crystallize the aluminum therefrom.

**3,630,721  
RECOVERY OF COPPER**  
Terence P. McNulty, Tucson, Ariz., assignor to The Anaconda Company  
Filed May 26, 1969, Ser. No. 828,801  
Int. Cl. C22b 15/00

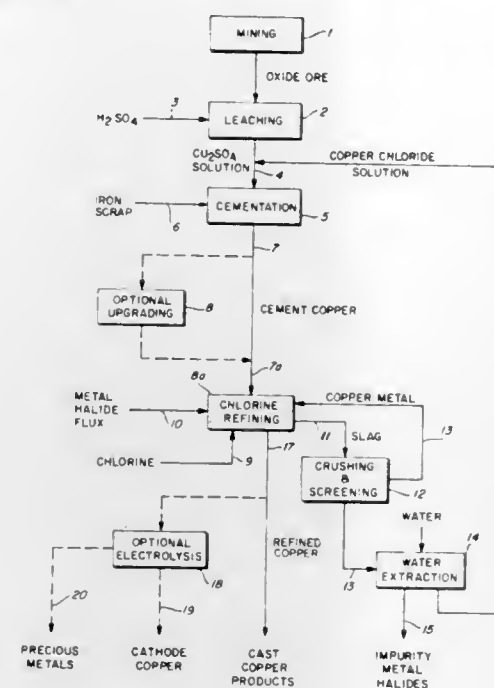
U.S. Cl. 75-72

10 Claims

Low-grade, finely disseminated copper oxide ores are beneficiated to enhance the winning of metallic copper therefrom by crushing and sieving the ore to particles of suitable size, preheating the ore particles, reacting a chlorine-donating gas with the ore particles at a controlled elevated temperature to form copper chloride (preferably cuprous chloride) therein and maintain it substantially in molten liquid form, and then reducing the molten liquid copper chloride at the elevated temperature to metallic copper with a reducing gas. Further benefits are derived by carrying out the preheating step in a reducing or oxidizing atmosphere, and by passing an oxidizing gas through the ore particles after chlorination and before reduction to metallic copper. Apparatus is also described for carrying out the foregoing processes continuously.

**3,630,722  
COPPER-REFINING PROCESS**  
Frank D. Chew, 4320 North 63rd Ave., Phoenix, Ariz.  
Filed Oct. 13, 1969, Ser. No. 865,672  
Int. Cl. C22b 15/08, 15/12, 15/14  
U.S. Cl. 75-76

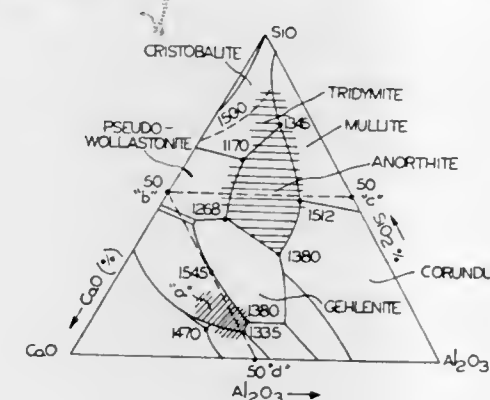
1 Claim



In an integrated process, copper-bearing materials are leached with dilute sulfuric acid and the dilute pregnant leach solution is reacted with ferrous scrap to produce cement copper precipitate containing copper metal, ferrous impurities and normally refractory metal impurities. The raw cement copper is preliminarily treated to separate portions of the ferrous impurities and is then melted and reacted with chlorine under a metal halide flux cover. The chlorine selectively reacts with the refractory metals and the ferrous impurities, forming chlorides which are dissolved by the halide flux to produce a slag containing entrained copper metal, copper chloride and the impurity metal chlorides. After separation of the substantially pure copper metal remaining in the melt, the readily friable slag is cooled to solidification and crushed. Entrained copper metal particles are removed from the crushed slag by screening and recycled to the chlorine refining step. The remainder of the slag is leached with water to dissolve the copper chloride and the pregnant copper chloride solution is recycled to the cementation step to recover the copper values.

**3,630,723  
FREE CUTTING STEELS**  
Chiaki Asada, Nagoya, Japan, assignor to Daido Seiko Kabushiki Kaisha, Nagoya, Aichi Prefecture, Japan  
Filed Sept. 13, 1968, Ser. No. 759,706  
Claims priority, application Japan, Sept. 19, 1967, 42/59620  
Int. Cl. C22c 37/00  
U.S. Cl. 75-123

2 Claims



This invention relates to free-cutting carbon steels such as S20C steel, S30C steel, S45C and S55C steel as indicated by the Japanese Industrial Standards (or steel Nos. 1020 to

1055 as indicated by the SAE Standards) containing 0.20 to 0.56 percent carbon, 0.24 to 0.33 percent silicon and 0.35 to 0.78 percent manganese. Also, this invention relates to free-cutting Ni-Cr steels, Cr-Mo steels and Cr steels containing 0.29 to 0.42 percent carbon, 0.24 to 0.33 percent silicon, 0.51 to 0.75 percent manganese, 0.07 to 2.89 percent nickel, 0.76 to 1.14 percent chromium and 0 to 0.26 percent molybdenum. They are characterized by the oxide inclusion contained in them, and also the calcium content and the improved free-cutting characteristic.

**3,630,724  
ALLOY HAVING A LOW THERMAL EXPANSION COEFFICIENT AND A HIGH SPRING BENDING LIMIT**  
Toshinari Hirayama, Kokubunji-shi; Hideharu Ohara, Tokyo, and Noboru Ichihara, Kokubunji-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed Apr. 10, 1969, Ser. No. 814,995  
Claims priority, application Japan, Apr. 17, 1968, 43/25,221  
Int. Cl. C22c 39/36, 39/50, 39/54  
U.S. Cl. 75-123 K

9 Claims

A material having a low thermal expansion coefficient (a linear thermal expansion coefficient of less than about  $7 \times 10^{-6}/^{\circ}\text{C}$ ) and a high spring bending limit (more than about 64 kg./mm.<sup>2</sup>) has been demanded for mechanical or electronic device, physicochemical machine, industrial measurement device. A nickel-iron alloy which consists essentially of 33-46 percent of Ni, 0.1-5 percent of Ti, 0.5-5 percent of Mo and the balance iron and has a linear thermal expansion coefficient of  $(2.2-7.1) \times 10^{-6}/^{\circ}\text{C}$  and a spring bending limit of 64-125 kg./mm.<sup>2</sup> is obtained as a material which suffices said demand.

**3,630,725  
METHOD OF PREPARING AN ALUMINUM ALLOY**  
Daniel B. Cofer, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.  
Continuation-in-part of application Ser. No. 608,507, Jan. 11, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 557,392, June 14, 1966, now abandoned. This application Aug. 6, 1969, Ser. No. 848,112  
Int. Cl. C22c 1/02

U.S. Cl. 75-138

8 Claims

A method of preparing an aluminum alloy which may be subsequently manufactured into an electrically conductive wrought product comprising the steps of preparing a pure aluminum melt in a first furnace and a scrap aluminum melt in a second furnace, charging melts from both the first furnace and the second furnace into a third furnace to produce a third melt having alloy constituents which fall within a prescribed formula, and fluxing the third melt. The present method permits the use of relatively inexpensive scrap materials to produce a useful material which may be formed into electrically conductive wrought products.

**3,630,726  
MAGNESIUM BASE ALLOYS**  
Philip Andrew Fisher, and William Unsworth, both of Manchester, England, assignors to Magnesium Elektron Limited, Swinton, Manchester, England  
Filed June 24, 1969, Ser. No. 836,143  
Claims priority, application Great Britain, June 26, 1968, 30,395/68  
Int. Cl. C22c 23/00

U.S. Cl. 75-168

7 Claims

This invention provides magnesium base alloys having improved mechanical properties especially in the as cast state and consisting essentially, apart from impurities, of 6 to 12 percent by weight aluminum, from 0 to 3 percent by weight zinc, and at least 0.5 percent of each of silicon and manganese, the total content of silicon and manganese being 1.2 to 1.8 percent, and having a Mn/Si ratio of 0.6 to 1.5; balance magnesium.



3,630,727

**APPARATUS AND METHOD FOR PRESSURIZING MATERIALS**

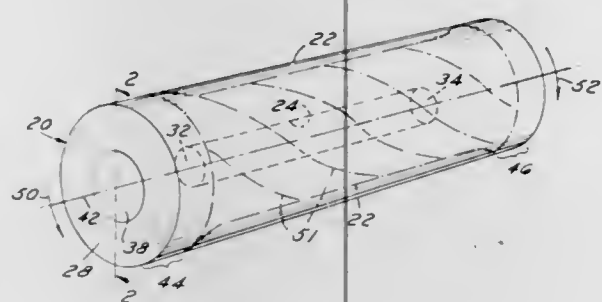
Peter F. Rossmann, 134 Merriweather Road, Grosse Pointe Farms, Mich.

Filed Sept. 11, 1967, Ser. No. 666,674

Int. Cl. B22f 3/02, 3/16

U.S. Cl. 75-214

8 Claims



A method of treating materials, and apparatus for use in the method, wherein a high-pressure torsion press in the form of a heavy wall tube having a coaxial throughbore is loaded with a charge of raw material and then the charge is confined by seal plugs secured at the ends of the bore. High pressures are exerted on the material by applying oppositely directed torsional couples to the opposite ends of the tube. This counterrotational torsional stress tends to twist the tube which in turn tends to axially shorten and radially contract the charge cavity so that the walls of the cavity apply omnidirectional compression forces on the charge of a very high magnitude. The charge is preferably also heated for a suitable time period while being pressurized to convert the charge to crystalline form, e.g., graphite to diamonds, or to otherwise modify its properties.

3,630,728

**ELECTROPHOTOGRAPHIC METHOD OF FORMING RELIEF IMAGES**

Yasuo Tamai, and Satoru Honjo, both of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun Kanagawa, Japan

Filed Feb. 24, 1969, Ser. No. 801,303

Claims priority, application Japan, Feb. 21, 1968, 43/10874

Int. Cl. G03g 13/22

U.S. Cl. 96-1

14 Claims



Producing a resist by forming an electrostatic latent image on a photoconductive insulating layer containing a resin binder on a base, developing the latent image with a granular toner containing a substance miscible with the resin binder, permeating the miscible substance contained in the toner into the photoconductive insulating layer, applying a solvent capable of dissolving the miscible substance in the binder and yet incapable of dissolving the binder and removing the portion of the photoconductive insulating layer corresponding to those portions wherein the miscible substance has permeated.

3,630,729

**ELECTROPHOTOGRAPHIC MULTICOLOR COPY PROCESS EMPLOYING SOLUBILIZABLE DYES**

Frederick O. Bach, Villa Park; Leo N. Chapin, Des Plaines; Robert Freed, Lincolnwood, and Thomas J. Cernoch, Chicago, all of Ill., assignors to A. B. Dick Company, Niles, Ill.

Filed June 25, 1969, Ser. No. 836,415

Int. Cl. G03g 13/00; 9/00

U.S. Cl. 96-1.2

10 Claims

An electrophotographic process and materials for the production of multicolor copies of a multicolor original in which an electrostatic charge is applied to a receptor sheet having a face portion subdivided into photoconductive segments containing sensitizing components in interspersed segments which cover different portions of the visible light spectrum and in which each such segment contains a solubilizable dye color corresponding to the color of the spectrum other than that to which the segment is sensitized and in which the exposed receptor is developed with a toner in which the dye component is soluble in response to toner activation for transfer of dye color from the developed receptor to copy sheets brought into surface contact therewith.

3,630,730

**DIFFUSION-TRANSFER PROCESSES AND ELEMENTS COMPRISING DYE DEVELOPERS AND BIS-SULFONYL ALKANE SPEED-INCREASING AGENTS**

Paul H. Stewart, and Donald W. Heselton, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1970, Ser. No. 42,608

Int. Cl. G03c 7/00, 5/54, 1/48

U.S. Cl. 96-3

33 Claims

Increased print speeds are provided in color diffusion transfer systems by processing in the presence of 1,1 bis-sulfonyl alkane speed increasing agents.

3,630,731

**DIFFUSION-TRANSFER PROCESSES AND ELEMENTS COMPRISING COLOR COUPLERS AND BIS-SULFONYL SILVER HALIDE SOLVENTS FOR INCREASED SPEED**

Judith A. Schwan, Rochester, and Walter M. Bush, Victor, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1970, Ser. No. 42,607

Int. Cl. G03c 1/48, 5/54, 7/00

U.S. Cl. 96-3

30 Claims

Increased speed is obtained by employing a 1,1 bis-sulfonyl alkane silver halide solvent in a color, diffusion transfer element having at least one nondiffusible coupler capable of reacting with oxidized color developing agent to produce a diffusible dye.

3,630,732

**THERMOGRAPHIC RECORDING MATERIAL**

Gerard Albert Delzenne, Gravenwezel, and Eric Maria Brinckman, Mortsel, both of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed June 26, 1967, Ser. No. 648,881

Claims priority, application Great Britain, June 24, 1966, 28,555/66

Int. Cl. G03c 5/04

U.S. Cl. 96-27

6 Claims

A photothermographic method of reproducing an original bearing an image of material absorbing visible or infrared radiation and converting the same into heat in which the original is arranged with its image material in heat conductive relation with a recording layer containing a normally solvent soluble material adapted to react with a cross-linking agent and would be thereby rendered less soluble, a compound decomposing when heated to yield a cross-linking agent for said cross-linkable material and uniformly distributed therethrough a finely divided substance absorbing visible or infrared radiation and converting the same to heat,

DECEMBER 28, 1971

and while the original and layer are thus arranged one of them is uniformly exposed for a time not in excess of  $10^{-2}$  seconds to light or infrared radiation sufficiently intense to decompose the compound in the areas of the layer corresponding to the nonimage areas of the original whereby such nonimage areas undergo a loss in solubility whereas the image areas remain relatively soluble. Reflectographic exposure with the radiation impinged upon the recording layer is preferred, with the layer containing a sufficient amount of the finely divided material to impart thereto an optical density of 0.2-0.8.

3,630,733

**PHOTOGRAPHIC SYSTEMS AND PROCESSES HAVING HEAT ALTERABLE SPECTRAL SENSITIVITY**

John R. Manhardt, Nashua, N.H., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 12, 1968, Ser. No. 697,319

Int. Cl. G03g 5/00, 13/22

U.S. Cl. 96-27

32 Claims

Reproduction systems having broader spectral sensitivity are produced wherein certain classes of dyes are added to photosensitive materials which, when activated, are capable of producing chemical reaction when in contact with image-forming agents to produce a visible image. The dyes are those which undergo a color change when heated to elevated temperatures and thus alter the spectral sensitivity of the photosensitive materials after heating. The dyes include styryl dyes substituted on the vinyl group by a nitrogen-containing heterocyclic, which in their unaltered state, themselves alter the sensitivity of the reproduction system.

Improved processes using this improved reproduction system comprise selectively exposing the present systems to activating radiation after heating to the color transition temperature or alternatively first exposing and then heating to the said temperature. A preferred process is an add-on technique for addition of images to a reproduction system in which readable images are already present. The new reproduction systems of this invention have a built-in differential in spectral sensitivity by virtue of alteration of the dye by heating.

3,630,734

**PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCT AND PROCESS**

David Alan Cottingham, Northwood, Middlesex, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,738

Int. Cl. G03c 5/54

U.S. Cl. 96-29

18 Claims

A receiving layer for use in the silver salt diffusion transfer process comprises a silver precipitant, 2-methyl hydroquinone, p-N-methylaminophenol, an alkali metal bromide and a silver halide solvent.

A plurality of copies are obtained from a single negative by the silver salt diffusion transfer process by repeatedly contacting an exposed silver halide emulsion layer containing hydroquinone with this receiving layer in the presence of an aqueous alkaline processing solution containing a silver halide solvent.

3,630,735

**METHOD FOR FIXING LIGHT-SENSITIVE FREE RADICAL PHOTOGRAPHIC MATERIALS WITH HEAVY METAL SALTS**

Kohei Itano; Shoichiro Hoshino, and Akira Kato, all of Tokyo, Japan, assignors to Keuffel &amp; Esser Co., Hoboken, N.J.

Filed Aug. 23, 1967, Ser. No. 662,591

Claims priority, application Japan, Aug. 24, 1966, 41/55418

Int. Cl. G03c 5/24, 1/72

U.S. Cl. 96-48

4 Claims

Images formed in free radical photosensitive materials comprising organic halogen-containing photoactivators capa-

ble of generating halogen free radicals upon exposure to light are fixed by treatment with aqueous solutions of reducing heavy metal salts.

3,630,736

**LEUCO DYE/HEXAARYLBIMIDAZOLE COMPOSITIONS AND PROCESSES**

Lawrence Anthony Cescon, and Rolf Dessauer, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 728,781, May 31, 1968, now Patent No. 3,445,234, which is a continuation-in-part of application Ser. No. 426,421, Jan. 18, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 234,538, Oct. 31, 1962, now abandoned. This application May 19, 1969, Ser. No. 826,009

Int. Cl. G03c 5/24

U.S. Cl. 96-48

17 Claims

Process for deactivating selected photosensitive, color-forming compositions against color formation by removing solvent from the compositions until they are substantially dry, and maintaining such dry compositions at a temperature below the activation temperature of the compositions; especially compositions comprising an admixture of selected hexaarylbiimidazoles and selected leuco dyes dispersed in a thermoplastic binder.

3,630,737

**PHOTOGRAPHIC STABILIZER BATH COMPRISING THIOCYANATE AND AN INORGANIC HARDENER COMPLEX**

Wilhelm Kairies, Leverkusen, and Kurt Faber, Cologne, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft Leverkusen, Germany

Filed Apr. 6, 1970, Ser. No. 26,054

Claims priority, application Germany, Apr. 23, 1969, P 19 20 501.7

Int. Cl. G03c 5/38, 1/30

U.S. Cl. 96-61

5 Claims

Photographic images are produced by imagewise exposure of supported silver halide emulsion layers, development and treatment with a stabilizing bath to convert the light-sensitive silver salt in the unexposed and undeveloped areas into light-insensitive reaction products. The stabilizing bath contains as inorganic hardeners complex compounds of zirconium, aluminum and chromium.

3,630,738

**BRIGHTENING AGENTS**

Kenneth M. Dear, Luton, Bedfordshire; Roy A. Jeffreys, and David A. Thomas, both of Hatch End, Middlesex, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1969, Ser. No. 827,154

Int. Cl. G03c 1/92, 1/84

U.S. Cl. 96-82

8 Claims

Thiazolo(5,4-d)thiazoles substituted with polycyclic aromatic groups or heterocyclic groups either directly onto the 2- and 5-positions or onto the 2- and 5-positions through conjugated linking groups, are valuable brightening agents for use in photographic elements or in polymeric materials.

3,630,739

**ANTI-HALATION LAYER COMPRISING GELATIN, TETRAVALENT MANGANESE, AND WATER-SOLUBLE POLYMERIC HYDROLYZATE**

Philip Hine, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company

Filed May 1, 1969, Ser. No. 821,109

Int. Cl. G03c 1/84

U.S. Cl. 96-84

11 Claims

An aqueous, colored, stable liquid containing tetravalent manganese and a water-soluble addition polymer hydrolyzate



prepared by the reduction of potassium permanganate in aqueous media containing a water-soluble addition polymer hydrolyzate, and a photosensitive element containing a light-absorbing layer prepared from the liquid.

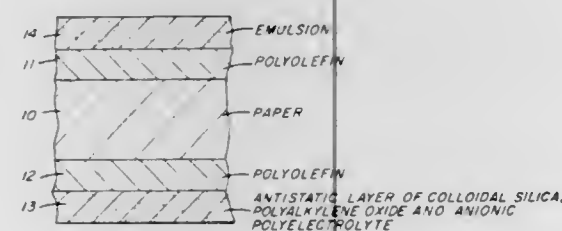
**3,630,740**  
**ANTISTATIC LAYERS FOR POLYMERIC PHOTOGRAPHIC SUPPORTS**

Douglas C. Joseph, Victor; William C. Kerr, Middlesex, and Harold K. Reed, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,086  
Int. Cl. G03c 1/82, 1/86

U.S. Cl. 96—85

7 Claims



Photographic elements having polyolefin supports coated with silver halide emulsions highly sensitive to static discharges, are protected against static by coating a polyolefin surface with a mixture of a polyelectrolyte, a polyalkylene oxide and colloidal silica. The static protection obtained is substantially better than obtained by coating the polyolefin surface with any one or two of the three materials.

**3,630,741**  
**ADHESIVE GELATIN-TERPOLYMER MATERIALS HAVING AT LEAST ONE CONJUGATED VINYLENE DICARBONYL COMPOUND ADDED TO THE EMULSION POLYMERIZATION REACTION MIXTURE**

Jacques Vial, Sarcelles, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,585  
Claims priority, application France, Dec. 31, 1968, 182377  
Int. Cl. G03c 1/80

U.S. Cl. 96—87

10 Claims

The introduction of at least one conjugated vinylene dicarbonyl compound into an emulsion polymerization reaction mixture comprising water, monomers and gelatin used to produce gelatin-terpolymer compositions useful as subbing layers for photographic films provides a subbing material having substantially improved adhesive characteristics.

**3,630,742**  
**POLYMERIC PHOTOGRAPHIC SUPPORTS**

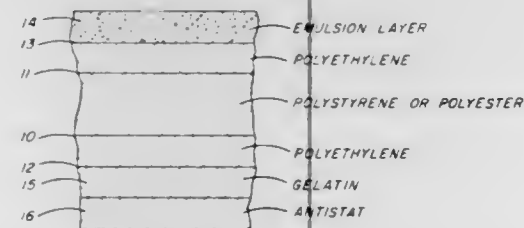
Irvin H. Crawford, Spencerport, and James L. Kane, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1969, Ser. No. 866,983

Int. Cl. G03c 1/82, 1/78

U.S. Cl. 96—87 R

16 Claims



A photographic element having a translucent support is prepared by activating each surface of a sheet of polystyrene

or polyester with corona discharge, polyethylene is extruded onto each activated surface, one polyethylene surface is then activated with corona discharge, a gelatin layer is coated upon the activated polyethylene surface and an antistatic layer is coated upon the gelatin layer, the other polyethylene surface is activated by corona discharge and a photosensitive layer such as gelatin-silver halide emulsion layer is coated on the polyethylene surface. Substantial improvement in antistatic properties and curl is obtained compared to coating a single gelatin-containing antistatic layer on the polyethylene surface.

**3,630,743**  
**METHOD OF IMPROVING THE PHOTOSENSITIVITY OF METAL OXIDE SEMICONDUCTORS**

Martin L. Harvill, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Feb. 16, 1968, Ser. No. 706,186

Int. Cl. G03g 5/02; G03c 1/72

U.S. Cl. 96—88

23 Claims

This disclosure relates to a process of improving the photoconductivity of metal-containing semiconductors by heating the semiconductor at elevated temperatures and rapidly quenching the heated semiconductor. Particularly, the semiconductor is heated in an atmosphere which reversibly alters the stoichiometry of the semiconductor and then rapidly quenched in the atmosphere. The major improvement in the semiconductor lies in a substantial increase in the photographic speed of media comprising the semiconductor when exposed to activating radiation.

**3,630,744**  
**SELECTIVELY DESENSITIZED SILVER HALIDE EMULSION MATERIALS**

Robrecht Julius Thiers, Brasschaat; Theofiel Hubert Ghys, Kontich, and Henri Depoorter, Mortsel, all of Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

Filed May 31, 1967, Ser. No. 642,355

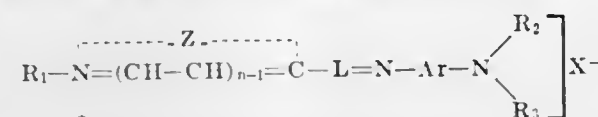
Claims priority, application Great Britain, July 1, 1966, 29,579/66

Int. Cl. G03c 1/36

U.S. Cl. 96—101

4 Claims

A photographic material containing a silver halide emulsion layer for recording information in the form of very short wavelength invisible electromagnetic radiation known as X-ray, wherein the sensitivity of said layer for ultra violet light and visible light is strongly reduced without substantially affecting the X-ray sensitivity of said material by incorporating therein an appropriate amount of a selective sensitizing compound according to the following general formula



wherein:

R<sub>1</sub> represents an alkyl group, an unsaturated aliphatic group, or an aryl group,

Z represents a heterocyclic nucleus of the thiazole series, benzothiazole series, naphthothiazole series, thiadiazole series, oxazole series, benzoxazole series, naphthoxazole series, selenazole series, benzoselenazole series, naphthoselenazole series, 2-quinoline series, pyrimidine series, quinoxaline series, quinazoline series, 1-phthalazine series, thionaphthene [7,6-d]thiazole series, 2-pyridine series, and benzimidazole series,

L represents a methine radical,

Ar represents a bivalent aromatic radical,

n represents 1 or 2,

X<sup>-</sup> represents an anion, but is not present when R<sub>1</sub> itself contains an anionic group, and

each of R<sub>2</sub> and R<sub>3</sub> represents alkyl, aryl, or R<sub>2</sub> and R<sub>3</sub> together represent the atoms necessary to close a heterocyclic nucleus is described.

**3,630,745**  
**THIAZOLO [5,4-C]ISOQUINOLINE AND THIAZOLO [4,5-C]ISOQUINOLINE AND DERIVATIVES AS ANTIFOGGANTS FOR PHOTOGRAPHIC LAYERS**

Dorothy J. Beavers, and Norman W. Kalenda, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,887

Int. Cl. C07d 35/34, 91/42; G03c 1/34

U.S. Cl. 96—109

11 Claims

Thiazolo [5,4-c]isoquinoline and thiazolo [4,5-c]isoquinoline and their derivatives are used in silver halide elements and emulsions in order to stabilize said elements and emulsions against fog.

**3,630,746**  
**PHOTOPOLYMERIZABLE RESIN COMPOSITIONS AND WATER-WASHABLE PHOTOPOLYMER PRINTING PLATES**

Yasuyuki Takimoto, Takatsuki-shi; Toshikazu Yoshikawa, Amagasaki-shi; Kiyomi Sakurai, Suita-shi; Yasuji Umeda, Osaka; Yoshiaki Oyabu, Kyoto, and Takahiro Tsunoda, Funabashi-shi all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jan. 14, 1969, Ser. No. 791,189

Claims priority, application Japan, Jan. 22, 1968, 43/3238

Int. Cl. G03c 1/68

U.S. Cl. 96—115

10 Claims

A novel photopolymerizable resin composition consists of (1) 1.26 to 3.78 parts by weight of a monoester of a polyhydric aliphatic alcohol with acrylic or methacrylic acid, (2) as a polymeric binder, an aqueous solution of one part by weight of a partially hydrolyzed polyvinyl acetate having a hydrolysis degree of 95 to 60 mol percent and an average polymerization degree of 300 to 2,000 or one part by weight of a methyl cellulose of an average polymerization degree of 160 having a hydroxylpropoxyl substituent and (3) as a photopolymerization initiator, 1 to 5 percent by weight, based on the total weight of the resin components of the above (1) and (2) constituents, of at least one uranyl salt and 0.0072 to 0.72 percent by weight, on the same basis, of azobisisobutyronitrile. A presensitized plate prepared by coating a metal plate with said photopolymerizable resin composition in a thickness of an order of microns is water washable and can be used to form a relief image. Further, a sheet of said photopolymerizable resin composition having a thickness of 0.1 to 3 mm. is directly used in printing and is water washable when it is exposed to actinic light in contact with a screen negative.

**3,630,747**  
**PROCESSING OF BRAZIL NUTS**

George L. Lowe, Chicago, and Clarence E. Brucker, Oak Park, both of Ill., assignors to American Home Products Corporation, New York, N.Y.

Filed Nov. 14, 1968, Ser. No. 775,936

Int. Cl. A231 1/36

U.S. Cl. 99—126

5 Claims

A double immersion process for preparing Brazil nuts for use in the manufacture of confections is described which results in reducing the micro-organisms present on the Brazil nuts, while simultaneously cleaning them and improving their appearance and organoleptic properties. The double immersion process consists of, first, immersing the Brazil nuts in water at a temperature of 200° to 212° Fahrenheit for about 1½ to 2 minutes and then immersing the Brazil nuts in a stream of heated air at a temperature of about 200° to 220° F. for about 2 to 10 minutes.

**3,630,748**  
**SPECTRALLY SENSITIZED LIGHT-SENSITIVE SILVER HALIDE MATERIAL**

Johannes Gotze, Bergisch-Neukirchen; Karl Lehmer, and Erich Bockly, both of Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 1, 1970, Ser. No. 24,812

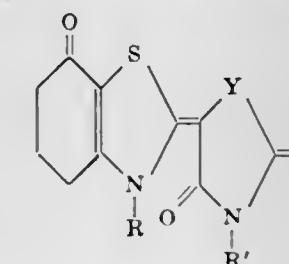
Claims priority, application Germany, Apr. 3, 1969, P 19 17 163.2

Int. Cl. G03c 1/08

U.S. Cl. 96—139

2 Claims

Light-sensitive photographic silver halide material is spectrally sensitized in the blue or blue-green range of the spectrum by new sensitizing dyes of the formula



wherein

Y stands for O,S,N-aryl or N-alkyl;

R stands for alkyl, and

R' stands for alkyl, cycloalkyl, aryl or aralkyl which groups are preferably substituted with acid groups.

The new compounds exhibit no "Schwarzschild effect" and are useful sensitizers for color photographic silver halide emulsions.

**3,630,749**  
**SILVER HALIDE EMULSIONS SENSITIZED WITH MEROCYANINE DYES CONTAINING A THIOUREIDO GROUP**

Frank G. Webster, and Leslie G. S. Brooker, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

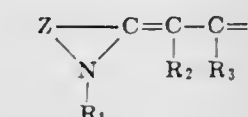
Filed Mar. 19, 1970, Ser. No. 21,210

Int. Cl. G03c 1/08

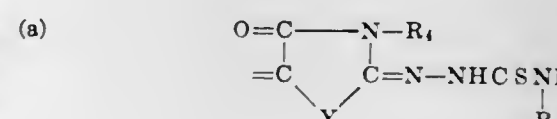
U.S. Cl. 96—140

13 Claims

A novel class of dyes especially useful as sensitizers for photographic silver halide emulsions and electrographic coatings of zinc oxide having the following structure:



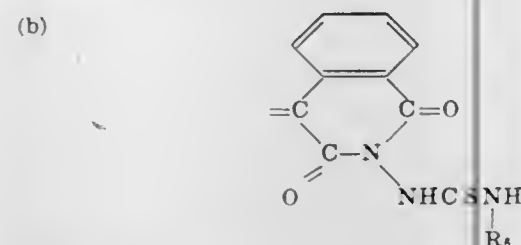
wherein Z represents the atoms required to form a basic heterocyclic nucleus; R<sub>1</sub> is an alkyl or aryl radical; R<sub>2</sub> and R<sub>3</sub> are selected from the group consisting of a hydrogen atom, lower alkyl radical or aryl radical and Q is a radical selected from:



wherein R<sub>4</sub> is selected from the group consisting of a hydrogen atom, an alkyl radical or an aryl radical and Y is selected from the group consisting of an oxygen atom, a sul-



fur atom or a selenium atom and  $R_3$  is selected from the group consisting of a hydrogen atom, an alkyl atom or an aryl atom; or



wherein  $R_6$  has the same designated value as  $R_3$ .

# ERRATUM

For Class 99—126 see:  
Patent No. 3,630,747

3,630,750

## FOOD-FLAVORING METHOD AND COMPOSITION USING 2-METHOXY-3-ISOBUTYLPYRAZINE

Ron G. Buttery, Richmond; Richard M. Seifert, El Cerrito; Robert E. Lundin, Berkeley, and Dante G. Guadagni, Moraga, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture  
Filed Apr. 18, 1969, Ser. No. 818,471  
Int. Cl. A23l 1/22; C07d 51/76

U.S. Cl. 99—140 R

16 Claims

Leucine amide is reacted with glyoxal to produce 2-hydroxy-3-isobutylpyrazine, and this intermediate is methylated to yield the new compound 2-methoxy-3-isobutylpyrazine. This compound exhibits an intense aroma of freshly chopped green bell peppers, and is useful for flavoring food products.

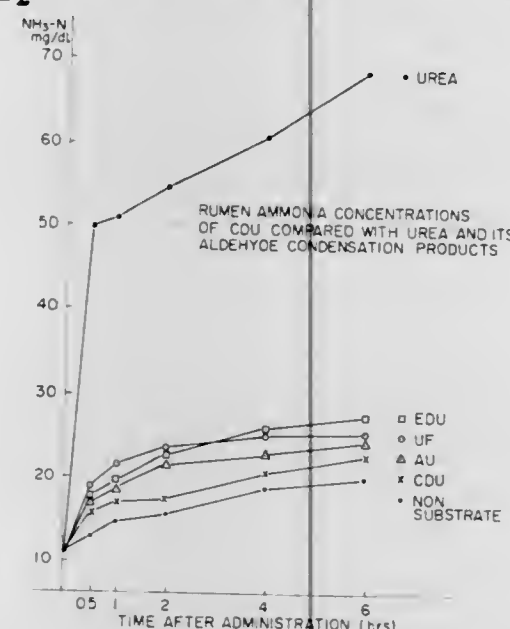
3,630,751

## FEED FOR RUMINANTS INCORPORATING 2-OXS-4-METHYL-6-UREIDOHYDROXYPYRIMIDINE

Tsuneko Ushioda, and Tatsuo Koyanagi, both of Tokyo, Japan, assignors to Chisso Corporation, Osaka, Japan  
Continuation-in-part of application Ser. No. 607,397, Jan. 5, 1967, now abandoned. This application Mar. 4, 1970, Ser. No. 16,457  
Int. Cl. A23k 1/00

U.S. Cl. 99—2

9 Claims



A feed for ruminants in which 2-oxo-4-methyl-6-ureidohydroxypyrimidine, a condensation product of urea and acetaldehyde or crotonaldehyde is incorporated, as a substitute for one part of the protein in said feed.

## 3,630,752 NITRATE ADDITION TO INHIBIT CORROSIVE ACTION OF AMMONIATED SUPERPHOSPHORIC ACID

Herbert F. Scott, Jr., Prince George, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 25, 1969, Ser. No. 861,144

Int. Cl. A23k 1/00; C23f 11/00; C05b 7/00

U.S. Cl. 99—2

13 Claims

Ferrous and aluminum metal corrosion by an aqueous solution of ammoniated superphosphoric acid is inhibited by incorporating about 0.5–5 percent by weight of nitrate ion based on the total phosphorous content measured as  $P_2O_5$ . The aqueous solution, which is useful as a ruminant feed supplement, has a pH of 5–8, a nitrogen content of 9–12 percent by weight, and a total phosphorous content measured as  $P_2O_5$  of 28–39 percent by weight.

3,630,753

## METHOD OF PRODUCING AN EDIBLE SOY PROTEIN HAVING REDUCED VISCOSITY

Paul Melnychyn, Northridge, and John M. Wolcott, Burbank, both of Calif., assignors to Carnation Company, Los Angeles, Calif.

Filed July 2, 1968, Ser. No. 741,866

Int. Cl. A23j 1/14

U.S. Cl. 99—17

19 Claims

The present invention relates to a method of controllably decreasing the viscosity of soy protein in aqueous dispersion. The method includes treating soy protein in the dispersion with a selected treating agent at selected temperature and for a time sufficient to effect a desired viscosity reduction without substantial hydrolysis of the soy protein. Thereafter, the protein is separated from the treating agent. Such treating agent may comprise any one or more of such agents as halogens, inorganic salts containing both halogen and oxygen atoms, soluble inorganic persulfates, azodiamides, thiol-containing reducing agents. As one embodiment of the invention, soy protein after treatment with the treating agent is contacted with an odor-and-flavor-improving agent selected from the group consisting of aliphatic mono- and polyhydroxy alcohols, ethers and ketones and mixtures thereof for a time and at a temperature and concentration sufficient to improve substantially the odor and flavor thereof. Such contact is effected by first precipitating the soy protein at about its isoelectric point, i.e., about pH 4.5 and then washing the precipitate with the improving agent. In another embodiment an aqueous dispersion containing the treated soy protein is mixed with the improving agent.

3,630,754

## MILLING OF CEREAL GRAINS AND PROCESSING OF PRODUCTS DERIVED THEREFROM

Truman Benjamin Wayne, P.O. Box 13086, Houston, Tex.

Filed May 7, 1969, Ser. No. 822,641

Int. Cl. A23l 1/10

U.S. Cl. 99—80 PS

8 Claims

This invention relates to improvements in milling and processing cereal grains and has, as its primary objective, the separation and recovery of the fibrous, proteinaceous and starchy components of said cereal grains in more concentrated, purer states. The improved results are obtained by separating and removing the major portion of the fibrous components from the system as early as possible in the overall process so that the separating section, in which the final separation between said fibrous, proteinaceous and starchy components occurs, is not overloaded by the fibrous components and can, therefore, operate more efficiently.

3,630,755

## DOUGH PROOFING METHOD

Robert F. Schiffmann, Brooklyn; Ernest W. Stein, New York, and Harold B. Kaufman, Jr., New York, all of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 649,610, June 28, 1967, now abandoned. This application July 1, 1970, Ser. No. 51,458

Int. Cl. A21d 8/02

U.S. Cl. 99—90 R

30 Claims

A method for proofing cut pieces of yeast-containing dough. The dough pieces are subjected to at least two microwave heating periods separated by a "rest" period. Typically, the dough pieces are first heated for a period of 5 to 180 seconds to raise the dough temperature to between 90° and 120° F. Heating of the dough pieces is then stopped for 20–180 seconds to permit temperature equilibration. Thereafter, the dough pieces are heated again for a period not exceeding 3 minutes to a temperature between 100° and 130° F. During both heating intervals, the power density within the dough pieces is in the range 0.089–9.7 watts/g. Such a sequence allows the dough pieces to uniformly rise to an optimum volume in a relatively short time.

3,630,756

## VINEGAR-TYPE FLAVOR COMPOSITION

Ross Alexander Smith, 7 Orme Ct., London, W. 2., and John Alexander Francis Woods, 24 Dennington Park Road, Kilburn, N.W. 6., London, both of England (formerly of 28 Collington Ave., Bexhill-on-Sea, Sussex, England)  
Filed Mar. 18, 1970, Ser. No. 20,840

Int. Cl. A23l 1/26

U.S. Cl. 99—140 R

8 Claims

A solid flavor composition of vinegar-type is provided by absorbing a still residue resulting from the distillation of vinegar from a double fermentation vinegar liquor (hitherto believed to be of no commercial value) in a nontoxic substantially water-insoluble substrate, preferably amorphous silica gel. The composition finds use in powdered comestible products akin to tomato or Worcester sauce.

3,630,757

## METHOD OF MAKING SIMULATED TOMATO PRODUCTS WITH MUSTARD SEED HULLS

Charles E. Meid, Arlington Heights, Ill., assignor to Kraftco Corporation

Continuation-in-part of application Ser. No. 732,516, May 28, 1968, now abandoned. This application Apr. 1, 1969, Ser. No. 813,811

Int. Cl. A23l 1/22

U.S. Cl. 99—144

3 Claims

A composition is provided containing substantially no tomato solids which is similar to the body and consistency of products prepared from tomatoes. The composition comprises a bodying agent which is used for establishing body and consistency and may comprise a gum or starch material. The bodying agent is mustard seed hulls.

3,630,758

## FRUIT HARVESTING TECHNIQUE

Charles C. Despain, Oroville, Wash., assignor to Hemisphere Harvesters, Inc., Oroville, Wash.

Filed Nov. 19, 1968, Ser. No. 777,148

Int. Cl. A23b 7/00

U.S. Cl. 99—168

3 Claims

The method of harvesting apples comprising coating the apples in situ on the tree with a cushioning material, preferably a polymer froth foam, such as a mixture of hydrolyzed polyvinyl alcohol, polyvinyl alcohol, water, and trichloromonofluoromethane (Freon 11), shaking the trees to release the apples from the tree, and collecting the apples with the cushioning material still intact. In addition, the foam

may remain on the apples during handling and storage to reduce bruise damage during processing after harvesting.

3,630,759

## PACKAGE FOR RESPIRATORY PRODUCTS

George G. Rumberger, Portage, Mich., assignor to Brown Company, Kalamazoo, Mich.

Continuation-in-part of application Ser. No. 499,088, Oct. 20, 1965, now abandoned. This application Jan. 2, 1970, Ser. No. 376

Int. Cl. B65b 25/04, 31/00

U.S. Cl. 99—171 LP

14 Claims

Perishable plant foods are contained in a package comprising an inner pouch containing the plant food and an outer pouch enveloping the inner pouch and containing a gaseous atmosphere having an oxygen content less than about 15 percent by volume therebetween. The inner pouch is made of a material having a carbon dioxide to oxygen permeability ratio of at least 3:1, and the outer pouch is made of a material having both a carbon dioxide permeability and an oxygen permeability no greater than about one-fourth of the oxygen permeability of the inner pouch material.

3,630,760

## METHOD OF PREPARING COLLAGEN SAUSAGE-CASING TUBING

Kenneth William Taylor, Higham Ferrers, England, assignor to Lever Brothers Company, New York, N.Y.

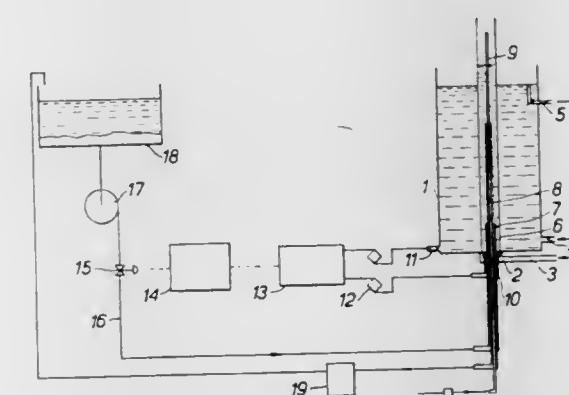
Filed May 5, 1969, Ser. No. 821,753

Claims priority, application Great Britain, May 6, 1968, 21,291/68

Int. Cl. A22c 13/00

U.S. Cl. 99—176

7 Claims



The diameter of collagen tubing prepared by extrusion into a setting bath is controlled by monitoring and maintaining substantially constant a pressure difference between the setting solution at a position inside the tubing being extruded and the setting solution in the bath outside the tubing.

3,630,761

## FOOD FRESHENER-WARMING DEVICE

Davis Piper, Tipton, and Harry D. Forse, Anderson, both of Ind., assignors to Food Quik Products, Inc., Anderson, Ind.

Continuation of application Ser. No. 49,764, June 25, 1970, now abandoned. This application Oct. 27, 1970, Ser. No. 84,373

Int. Cl. A21d 15/00

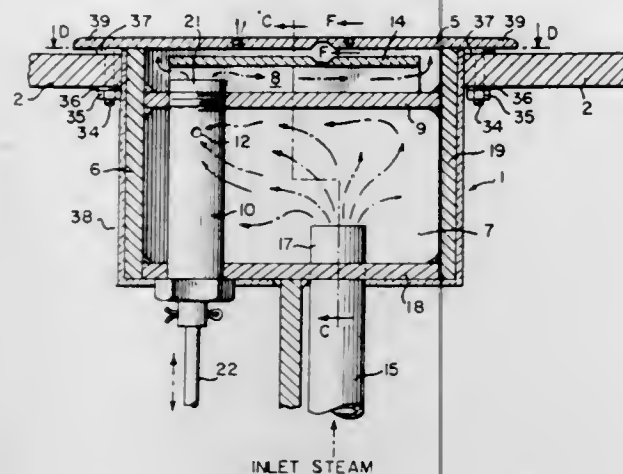
U.S. Cl. 99—234 R

11 Claims

Apparatus wherein steam is continuously circulated through a steam reservoir chamber in the device, which keeps it and an attached second chamber and head portion



hot. Steam passing via an operator controlled valve from the reservoir chamber to the second chamber is dried, and the



dry steam escapes through spaced orifices in a head portion to warm and freshen food items placed thereon.

3,630,762

## WATERPROOFING BARRIER

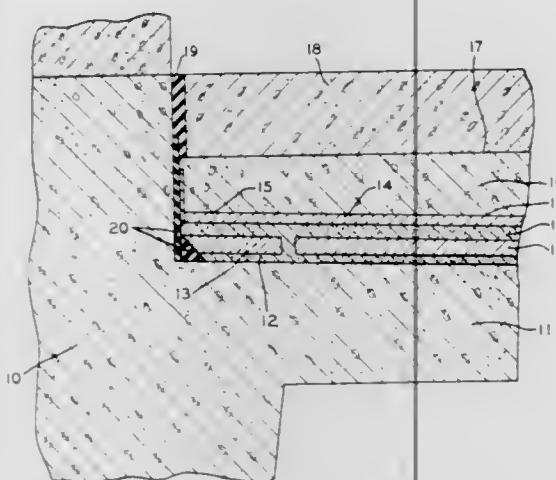
Robert N. Olton, Cleveland Heights, Ohio, and Bernard C. Berney, Indianapolis, Ind., assignors to Mineral Products Corporation, Cleveland Heights, Ohio

Filed Dec. 29, 1969, Ser. No. 888,235

Int. Cl. C09k 3/00

U.S. Cl. 106—2

9 Claims



A waterproofing barrier characterized by its controlled swelling when wet and comprising in admixture a water-swelling colloidal clay, such as bentonite, and a particulate, inorganic metal salt treated with an oleaginous carboxylic acid. Preferably, the metal salt is calcium carbonate, such as amorphous chalk, treated with an acid like oleic or stearic acids. The mixture is particularly adapted as a protective layer in a below grade concrete roof system, or the like, above which is a pavement, earth, walks, etc., are to be laid. The present mixture may be used alone as in layer form or in conjunction with an adjoining layer of water-swelling clay to form a multilayer barrier. Optionally, the mixture may include a finely divided siliceous mineral such as perlite as an additional ingredient.

3,630,763

CONTROL OF TRANSIT STAIN ON WOOD PRODUCTS  
William C. Kelso, Jr.; Clayborne M. Connor, II; Oscar U. Walling, all of Memphis, Tenn., and A. Dale Chapman, Atherton, Calif., assignors to Chapman Chemical Company, Memphis, Tenn.

Filed Mar. 21, 1969, Ser. No. 809,250

Int. Cl. C09d 5/08

U.S. Cl. 106—14

1 Claim

The treatment of wood to greatly reduce the in-transit iron staining of same when shipped in commerce by applying thereto prior to shipment an antistatic agent (preferably anionic), or a chemical change inhibitor for iron (preferably a chelating agent for iron), or such antistatic agent in combination with the chemical change inhibitor for iron.

3,630,764

## FIRE-RESISTANT PAINT

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation-in-part of application Ser. No. 583,064, Sept. 9, 1966, now abandoned, continuation-in-part of application Ser. No. 378,216, June 26, 1964, now abandoned, which is a

Continuation-in-part of application Ser. No. 132,827, Aug. 21, 1961, now abandoned. This application Jan. 8, 1969, Ser. No. 789,945

Int. Cl. C09d 5/18

U.S. Cl. 106—15

5 Claims

A fire-resistant paint comprising a paint vehicle having uniformly dispersed throughout a powdered glass and a powdered blowing agent for the glass. Films of the paint not only provide a normal protective and decorative function, but remain in position when exposed to temperatures above the softening point of the glass to be transformed into a layer of foamed glass which thereafter acts as a heat insulation.

3,630,765

## PHOTOCHROMIC GLASS CONTAINING TANTALUM OXIDE FOR OPTICAL FIBER FABRICATION

Roger J. Araujo, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,562

Int. Cl. C03c 3/04

U.S. Cl. 106—54

3 Claims

This invention relates to photochromic glass compositions containing about 10–50 percent by weight  $Ta_2O_5$  which have refractive indices higher than about 1.52, and, preferably, higher than about 1.58, thereby rendering them especially suitable as a core glass in the production of photochromic optical fibers.

3,630,766

## REFRACTORY FIBERS AND METHOD OF PRODUCING SAME

James Economy, Eggertsville, and Vlado I. Matkovich, Williamsville, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,932

Int. Cl. C04b 35/58

U.S. Cl. 106—55

10 Claims

Boron nitride fibers having a maximum diameter of about 10 microns are heated at a temperature of at least about 1,100° C. in a gaseous atmosphere consisting essentially of hydrogen and a halide of a transition metal selected from the group consisting of titanium, niobium, zirconium, tantalum and hafnium. The fibers are thereby converted to refractory fibers which consist essentially of the corresponding transition metal nitride and from about 2 percent to about 10 percent boron.

3,630,767

## PROCESS FOR PROVIDING CONTACTS ON A SEMICONDUCTOR BODY

Hans Linstedt, Stuttgart, and Siegfried Bellon, Eltingen, both of Germany, assignors to Robert Bosch, GmbH, Stuttgart, Germany

Filed Nov. 26, 1969, Ser. No. 880,384

Claims priority, application Germany, Nov. 30, 1968, P 18 11 928.3

Int. Cl. B44d 1/18

U.S. Cl. 117—227

6 Claims

Contacts on a semiconductor body are formed by depositing a nickel coating through reduction of a nickel salt with sodium hypophosphite, followed by treating the semiconductor with a solvent for elemental yellow phosphorus to remove phosphorus from the contact area.

3,630,768

CHEMICAL DEPOSITION FORMATION OF ANODES  
Giuseppe Bianchi, and Antonio Nidola, both of Milan, Italy, assignors to Electronor Corporation, Chiasso, Switzerland

Filed June 28, 1966, Ser. No. 561,054

Int. Cl. B01k 3/04; C23c 3/02, 3/04

U.S. Cl. 117—227

7 Claims

Compositions and method for chemical deposition of platinum group metals on a base structure and to novel electrodes produced by the said method. The invention relates particularly, but not exclusively, to electrodes for use in the electrolysis of salt solutions.

3,630,769

## PRODUCTION OF VAPOR-DEPOSITED Nb B SN CONDUCTOR MATERIAL

Peter B. Hart; Christopher Hill, and Clifford W. Wilkins, all of Ilford, Essex, England, assignors to The Plessey Company Limited, Ilford, Essex, England

Filed Apr. 18, 1969, Ser. No. 817,573

Claims priority, application Great Britain, Apr. 24, 1968, 19,317/68

Int. Cl. C23c 11/00, 11/08

U.S. Cl. 117—227

6 Claims

$Nb_3Sn$  superconductor material of increased critical current density is obtained by carrying out vapor deposition by decomposition of chlorides on a heated corrosion-resistant substrate in the presence of oxygen, for example 0.5 percent oxygen, in a mixed hydrogen and argon gas stream.

3,630,770

## METHOD FOR FABRICATING LANTHANUM BORIDE CATHODES

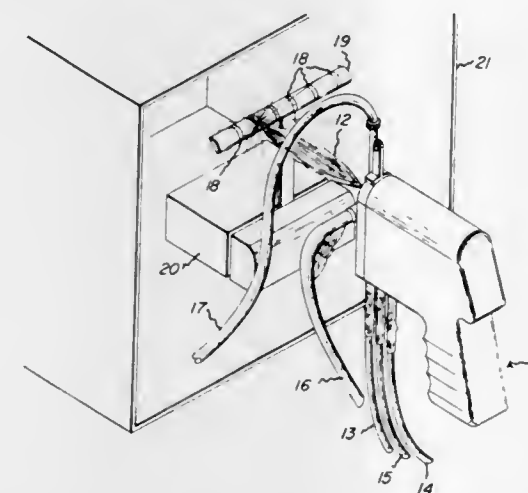
Louis J. Favreau, Elnora, N.Y., assignor to General Electric Company

Filed Apr. 30, 1969, Ser. No. 820,565

Int. Cl. B44d 1/18; H01j 1/14, 19/06

U.S. Cl. 117—230

6 Claims



A method for fabricating cathodes with a lanthanum boride coating is disclosed in which the coating is applied to

any base metal by spraying with a plasma flame spray. One plasma source is a spray gun utilizing an electric arc discharge through which a plasma gas is passed so that a plasma of ionized gas issues from the spray gun into which is injected a carrier gas having lanthanum boride powder suspended therein. The high-temperature plasma flame appearing at the nozzle of the spray gun melts the lanthanum boride ( $LaB_6$ ) almost instantly and the droplets formed thereby are carried to the surface of a prepared base material.

3,630,771

## MAGNETIC RECORDING MEDIUM

Goro Akashi, Kanagawa; Yasuyuki Yamada, and Masaaki Fujiyama, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

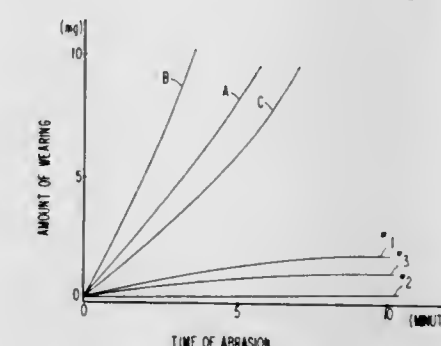
Filed Sept. 6, 1968, Ser. No. 757,967

Claims priority, application Japan, Sept. 8, 1967, 42/57639

Int. Cl. H01f 10/02

U.S. Cl. 117—235

4 Claims



A magnetic recording medium wherein a magnetic recording layer is formed from a ferromagnetic powder dispersed in a binder applied onto a support, said binder being a polyether prepolymer having terminal —NCO radicals prepared from a polyisocyanate and a polyether glycol with a cellulose derivative having 7.5–40 percent of residual hydroxyl radicals in a weight ratio of from 1:2 to 20:1.

3,630,772

## MAGNETIC MEMORY FILM

Bernhard Seidel, Gruenwald; Hans-Heinrich Credner, Munich, both of Germany, assignor to Agfa-Fevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 16, 1969, Ser. No. 842,336

Claims priority, application Germany, July 20, 1968, P 17 74 584.5

Int. Cl. H01f 10/02

U.S. Cl. 117—235

9 Claims

A lubricant is incorporated in the coating of a magnetic memory film which contains a neutral ester of a 2–20 carbon dicarboxylic acid with an aliphatic, monofunctional alcohol having 4–18 carbon atoms.

The lubricant increases the stability of still pictures recorded on the film, in particular in case of scanning with mumetal heads.

3,630,773

## CONTINUOUS PROCESS FOR THE EXTRACTION OF STARCH MATERIALS AND PRODUCTS PRODUCED THEREBY

Thomas J. Schoch, deceased, late of La Grange, Ill. (by Lydia W. Schoch, executrix), assignor to CPC International Inc.

Filed Apr. 4, 1968, Ser. No. 718,922

Int. Cl. C131 1/08

U.S. Cl. 127—32

13 Claims

Process for the removal from a starch material of substances that are soluble in a hydrophilic fat solvent. One particular kind of substance that can be removed is the normal bound fat. The process involves rapidly heating the granular starch material in intimate contact with an aqueous vehicle



comprising a hydrophilic organic fat solvent in a confined treating zone, to a temperature up to about 300° F. and preferably from about 170° to about 260° F., under a pressure that maintains the vehicle essentially in the liquid phase, during a time period at the elevated temperature from about 30 seconds to not more than about 10 minutes, then promptly separating the aqueous vehicle from the extracted starch material. The products have superior gel-forming characteristics and are particularly useful in the manufacture of gum confections, puddings, aspics, and the like.

3,630,774

#### DISRUPTED GRANULAR STARCH PRODUCTS AND METHODS OF MAKING THEM

James W. Knight, Wilmslow, England, assignor to Corn Products Company

Filed Aug. 14, 1968, Ser. No. 752,532  
Int. Cl. C131 1/08

U.S. Cl. 127—32

16 Claims

Process for making a granular starch product exhibiting a lower gelatinization temperature and a higher reactivity than the starch from which it is derived which includes subjecting the starch, in dry form or in an aqueous slurry, to the action of a vibration mill for a relatively short period of time.

3,630,775

#### SPRAY-DRIED SOLUBILIZED STARCH

August A. Winkler, Hinsdale, Ill., assignor to CPC International Inc.

Continuation-in-part of application Ser. No. 699,340, Jan. 22, 1968, now abandoned. This application May 8, 1970, Ser. No. 35,921

Int. Cl. C131 1/08

U.S. Cl. 127—71

4 Claims

Unmodified, ungelatinized starch is slurried in water at a solids content between about 10 percent and about 40 percent by weight, elevated to a high temperature under pressure, the temperature being in excess of about 325° F., and while under pressure, the starch is spray-dried to a moisture content less than 15 percent. The resulting product has an extremely high-water solubility generally in excess of 80 percent.

3,630,776

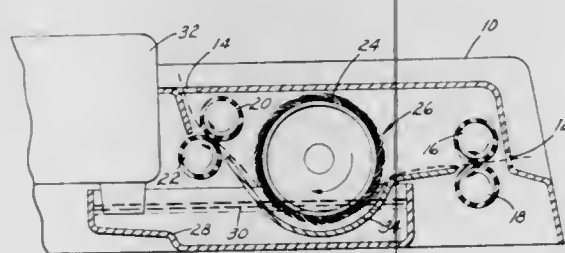
#### METHOD AND APPARATUS FOR CLEANING SELECTIVELY FUSED MASTER

Frederick E. Barr, Chesterland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Dec. 8, 1969, Ser. No. 883,012  
Int. Cl. B08b 1/02; G03g 15/00

U.S. Cl. 134—9

8 Claims



A roller having a relatively long napped loose-woven limp fabric on the surface thereof is rotated against the surface of a selectively fused electrostatic master to remove unwanted partially fused specks of material. The roller is rotated partially submerged in a liquid into which the removed material is deposited.

#### 3,630,777 METHOD OF CLEANING EQUIPMENT FOR SUPPLYING LIQUID

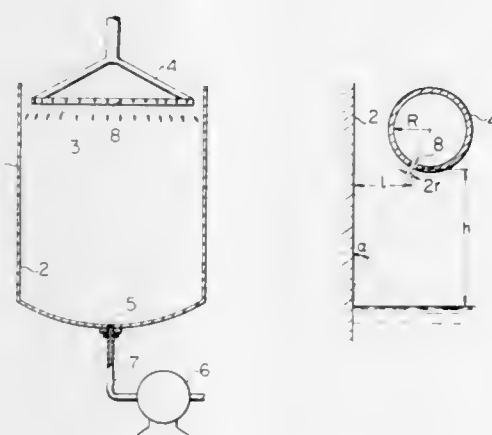
Kazutomo Ishizawa, Osaka-shi, Osaka; Tetsujiro Kubota, Yokkaichi-shi; Jiro Miki, Higashiosaka-shi, Osaka; Hirotsugu Matsunaga, Yokkaichi-shi, and Sadao Otake, Kobe-shi, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 15, 1969, Ser. No. 816,312

Claims priority, application Japan, Sept. 24, 1968, 43/68522  
Int. Cl. B08b 9/08, 3/02

U.S. Cl. 134—22 R

4 Claims



An improved cleaning method for liquid supplying equipment composed of a vertical tank and a liquid transportation means, in which the inside wall surface of the tank is cleaned by cleaning liquid flows covering the whole wall surface to be cleaned, and the cleaning liquid supplied into the tank is discharged at the same flow rate as the supply flow rate. At the same time, the sealing means of the liquid transportation means is cleaned by fresh cleaning liquid.

3,630,778

#### METHODS AND MEANS FOR RECOMBINING HYDROGEN AND OXYGEN IN A SEALED BATTERY AND CONTROLLING RECOMBINATION AT CATALYST SURFACES

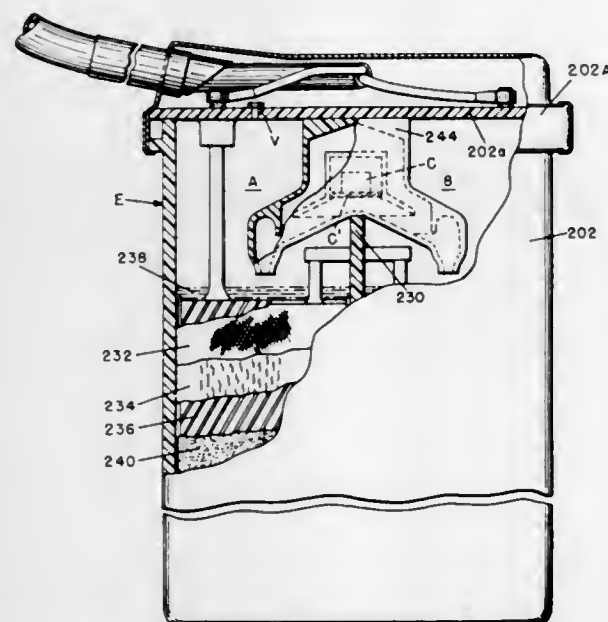
Ekkehard L. Kreidl, Wayland, and Douglas Shooter, Winchester, both of Mass., assignors to Koehler Manufacturing Company, Marlboro, Mass.

Filed Oct. 15, 1969, Ser. No. 866,531

Int. Cl. H01m 35/00

U.S. Cl. 136—6

8 Claims



Hydrogen and oxygen gases are safely recombined in the presence of a catalytic device which operates in two stages in

a secondary battery system. Recombination continues in a controlled manner while the battery is on discharge and charge for periods corresponding to the normal life of a conventional secondary battery. In sealed secondary battery systems hydrogen and oxygen gases evolved during operation of the battery are releasably contained through a range of pressures during which long term stoichiometric recombination of the gases takes place.

The catalytic device in a preferred form comprises a foraminous body which includes exposed catalytic surfaces of relatively low gas recombining capacity and an inner nucleus of enclosed catalytic material. The nucleus comprises enclosed catalytic surfaces on which gases passing through the foraminous body react initially within a thermally favorable environment whereby cumulative heating can take place. A resulting buildup of heat at the nucleus is released to raise the temperature of the exposed catalytic surfaces to temperatures at which gases coming into contact with the exposed catalytic surfaces will start to recombine thereon, and continue to react in a sustained manner within a limited temperature range. When, as may occur, the exposed catalyst surfaces are subjected to increasing gas pressure in the battery they become self-limiting in the extent to which their temperature may be raised by exothermic reaction.

Thus the rate of recombination of gases at catalyst surfaces is controlled and limited to positively prevent the exposed catalyst surfaces from reaching temperatures at which an explosion may take place, i.e., temperatures found to be within upper limits of from about 400° up to about 600° C., and the range of control may be extended downwardly to values as low as 250° C. for some battery operations. Water resulting from the controlled recombination at the catalyst surface is returned to the electrolyte with catalyst surfaces being maintained in a constantly reactive condition.

3,630,779

#### METHOD OF MAKING A CATHODE FOR USE IN A GALVANIC CELL

Morris Eisenberg, Palo Alto, Calif., assignor to Elca Battery Company, Sunnyvale, Calif.

Filed Apr. 22, 1970, Ser. No. 31,021

Int. Cl. H01m 35/18

U.S. Cl. 136—20

2 Claims

A galvanic cell is disclosed having a cathode comprising a mercury compound to provide active cathodic electrochemical action during cell operation and conductive powders mixed with the mercury compound to provide mass electrical conductivity through the cathode during cathodic electrochemical action. The conductive powders are coated with mercury in constructing the cathode in order that mercury in liquid form reduced from the mercury compound during cell operation rapidly and uniformly wets the mercury coated powders rather than agglomerate and thereby form means which could internally short circuit the cell or contaminate the cell anode.

3,630,780

#### METHOD OF PRODUCING SILVER OXIDE AND NICKEL CONTAINING ELECTRODES FOR ELECTRIC BATTERIES

Dietrich Berndt, Kronberg; Walter K. Lux, Garching an der Alz, and Kurt Weidinger, Friedrichsdorf, all of Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 14, 1970, Ser. No. 54,839

Claims priority, application Germany, Aug. 5, 1969, P 19 39 713.8

Int. Cl. H01m 13/00

U.S. Cl. 136—20

6 Claims

Silver oxide electrodes for electric batteries, particularly primary batteries capable of delivering a high-temporary current output, are produced by compressing a mixture of 10 to 40 percent by weight of pulverulent silver oxide and 60 to 90

percent of pulverulent nickel, and hard-pressing the resulting compressed layer onto a carrier structure, preferably of copper or silver, at pressures of about 0.5 to about 1.4 t/cm.<sup>2</sup> in an oxidizing or inert atmosphere at a hot-pressing temperature below the dissociation temperature of the silver oxide, this temperature being generally between about 100° and about 300° C.

3,630,781

#### PROCESS OF FORMING RECHARGEABLE ELECTRODES UTILIZING UNSINTERED FLUOROCARBON BINDER

Guy Rampel, Gainesville, Fla., assignor to General Electric Company

Filed July 13, 1968, Ser. No. 742,156

Int. Cl. H01m 43/02

U.S. Cl. 136—31

9 Claims

Polytetrafluoroethylene in aqueous dispersion is mixed with a finely divided electrochemically active rechargeable electrode material, such as zinc, zinc oxide, cadmium, cadmium oxide, nickel oxide, copper, copper oxide, silver, silver oxide, mercuric oxide, etc. The dispersion is broken by drying, freezing, solvent extraction, etc. Where zinc particles form the active material it may be desirable to amalgamate the zinc with mercury.

3,630,782

#### SEA WATER BATTERY COMPRISING A CAPACITOR WITHIN THE BATTERY ELECTROLYTE PORT AND A METHOD OF MINIMIZING INTERCELL SHORT CIRCUITS

Edwin K. Butler, deceased late of, St. Petersburg, Fla. (by Adrina Neil Butler, beneficiary of the estate) 6762 17th St. South St. Petersburg, Fla. 33712

Filed Oct. 10, 1969, Ser. No. 865,429

Int. Cl. H01m 17/00

U.S. Cl. 136—100

8 Claims

A method and apparatus for maximizing the electrical potential of primary batteries of the type immersible in an electrolyte comprising placing a foraminous capacitor within the battery electrolyte port or ports.

3,630,783

#### HEAT-SHRINKABLE PACKAGING FOR BATTERIES

Franciszek Przybyla, Toronto, Ontario, Canada, assignor to Mallory Battery Company of Canada Limited, Clarkson, Ontario, Canada

Filed May 11, 1970, Ser. No. 36,173

Int. Cl. H01m 21/00

U.S. Cl. 136—107

9 Claims

A heat-shrinkable insulating jacket surrounds the cell can, and is thus anchored and holds a cell-closure disc tightly to close the cell. A filament between can and jacket holds them slightly spaced along the filament enough to define two adjacent and parallel narrow limited air passages to serve as a vent passage alongside the filament.

3,630,784

#### PREPARATION OF OXYGEN ELECTRODES FOR FUEL CELLS

Wolfgang Kuhn, Frankfurt am Main-Griesheim; Werner Lindner, Niederhochstadt, and Gerd Sandstede, Frankfurt am Main, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 10, 1967, Ser. No. 659,619

Claims priority, application Germany, Nov. 2, 1966, B 89654

Int. Cl. H01m 13/04; B22f 7/00

U.S. Cl. 136—120 FC

7 Claims

Two layers where each contains a skeleton-forming fluorine-containing resin and only the first layer contains silver carbonate are pressed together to a disc. At least the first layer contains a water-soluble salt which is leached out to form pores. The silver carbonate is reduced to catalytically



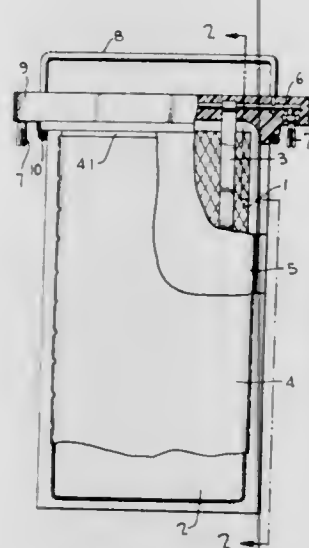
active metallic silver. In the obtained electrode, the first silver-containing layer is electrically conductive and wettable by the electrolyte, the second layer is hydrophobic and its pores suitable to retain the oxygen.

3,630,785

**ANODE WITH A TWO LAYERED SEPARATOR**  
Bruce Jagid, Whitestone, and Hong Po Louie, Brooklyn, both of N.Y., assignors to Leeson Corporation, Warwick, R.I.  
Filed Apr. 4, 1968, Ser. No. 718,895  
Int. Cl. H01m 3/02, 13/06

U.S. Cl. 136-120

8 Claims



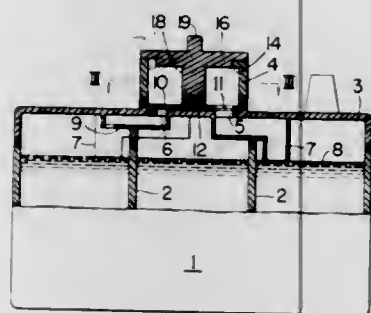
An improved anode primarily for use in a metal/air or metal/oxygen cell is described. The anode comprises a porous metal body wrapped in a first layer of hydrophilic gas impermeable material, such as a cellulosic membrane, having a plurality of slits or holes therein. A second layer of material which is hydrophilic, dimensionally stable, and heat sealable, such as copolymers of vinylchloride and acrylonitrile is placed over or around the first layer of material.

3,630,786

**STORAGE BATTERY HAVING LIQUID-FILLING MEANS**  
Motoharu Nishimura, Ibaraki, and Masatugu Yoshida, Takatsuki, both of Japan, assignors to Yuasa Battery Company Limited, Takatsuki, Osaka Prefecture, Japan  
Filed Oct. 7, 1969, Ser. No. 864,391  
Int. Cl. H01m 1/02, 7/00

U.S. Cl. 136-170

4 Claims



This invention relates to a liquid filling means equipped monoblock battery. The filling means comprises a cylindrical liquid receptacle and a rotary disc fitted therein and functions in the manner that when the disc is turned to bring its holes into communication with the liquid inlets of the cylindrical liquid receptacle, the exhaust ports of the receptacle are closed and when the holes are disconnected from the inlets, the ports communicate with the holes. The inlets and ports are connected to cells by ducts and exhaust pipes, respectively, and the lower ends of the ducts are on the same level as the normal level of electrolyte.

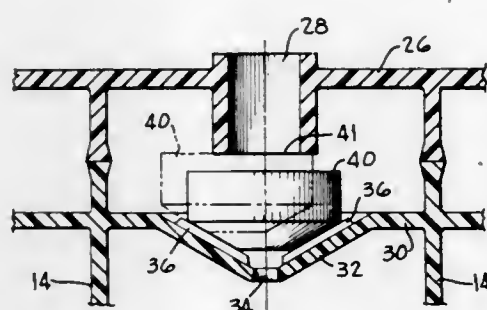
3,630,787  
**BATTERY HAVING INTERNAL SEAT FOR CONFINING A MOVEABLE MEMBER**

James W. Consolloy, Pennington, N.J., assignor to ESB Incorporated

Filed Jan. 16, 1970, Ser. No. 3,399  
Int. Cl. H01m 1/06, 7/00

U.S. Cl. 136-177

13 Claims



A moveable member is confined between a seat inside a battery and a hole in the battery cover. The seat may be: integrally constructed with the container walls; attached to and depending from either the walls of the container or the underside of the battery cover; sealed between the cover and container; or otherwise locked in place by the cover and container. The moveable member may be designed to function along with the cover as a nonspill vent by sealing off the hole in the cover when the battery is tilted beyond a preselected angle or to function as an indicating device to indicate when the height or the specific gravity of the electrolyte departs from a preselected point.

3,630,788

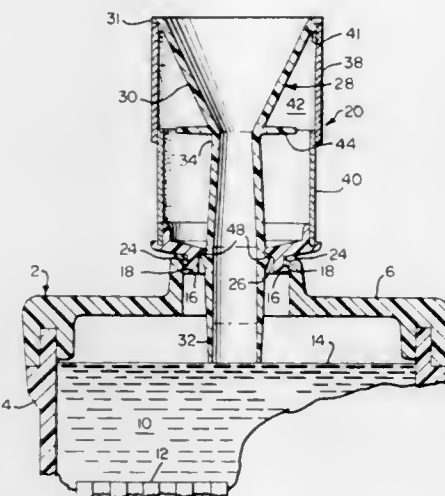
**VENTING AND FILLING DEVICE FOR STORAGE BATTERIES**

Roy Erving Hennen, Mequon, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Aug. 4, 1969, Ser. No. 847,353  
Int. Cl. H01m 1/06

U.S. Cl. 136-177

6 Claims



A venting and filling device for a storage battery which comprises a funnel tube extending vertically through an opening in the cover of the battery and being adapted to be moved from a lower position to an upper position; in its lower position the tube defining a venting space within the opening and extending below the level of electrolyte within the battery and in the upper position the tube closing off the venting space and extending to a level substantially equal to the proper operating level of electrolyte in the battery; and an explosion-proof venting means operatively associated with the funnel tube and the battery cover for safely venting explosive gases escaping from the battery through the venting space.

3,630,789  
**HEXAVALENT CHROMIUM/FUMARATE SOLUTIONS AND THE TREATMENT OF METAL SUBSTRATES THEREWITH**

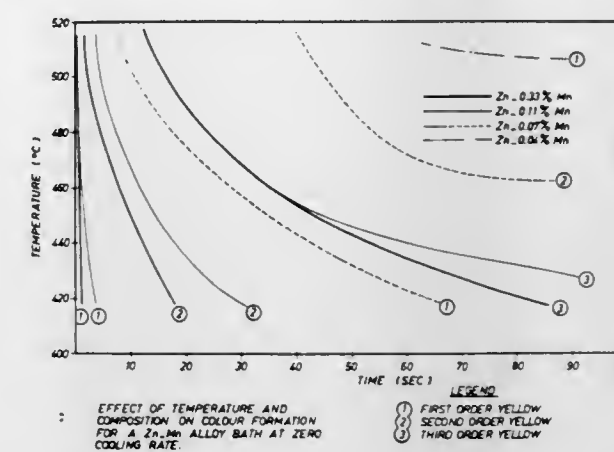
Alden J. Deyrup, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Apr. 2, 1970, Ser. No. 25,235  
Int. Cl. C23f 7/26

U.S. Cl. 148-6.2

19 Claims

Aqueous solutions having a pH of 1.8 to 5.0 and containing about 0.0001 to 0.02 gram atom per liter of hexavalent chromium and 0.001 to 0.8 gram formula weight per liter of fumaric acid, and the use of such solutions for pretreating base metal substrates at a temperature of about 25° to 100° C. to improve the adhesive bonding to the base metal substrate of a subsequently applied organic polymer coating, particularly a coating of a thermoplastic polymer such as polyethylene. Preferably, the polymer that is bonded to the pretreated substrate has uniformly dispersed therein a finely divided alumina which has a specific surface area of at least 5 square meters per gram and which is substantially free of combined water.

posure to a free oxygen-containing gas under controlled time and temperature conditions for the provision of a surface



film of an oxide of the oxygen-avid addition element having light interference color characteristics.

3,630,793

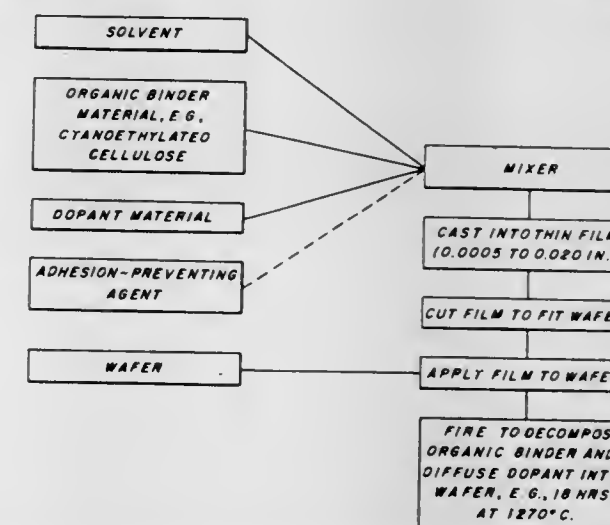
**METHOD OF MAKING JUNCTION-TYPE SEMICONDUCTOR DEVICES**

Ralph W. Christensen, Butler; Everett C. Smith, Sarver, both of Pa., and George Tibol, Fairview, N.J., assignors to Solitron Devices, Inc., Tappan, N.Y. and Semi-Elements, Inc., Saxonburg, Pa., part interest to each

Filed Feb. 24, 1969, Ser. No. 801,667  
Int. Cl. H01l 7/44

U.S. Cl. 148-188

4 Claims



This patent discloses a method for making junction-type semiconductor devices in which dopant is introduced into a wafer from a prefabricated source film.

3,630,794

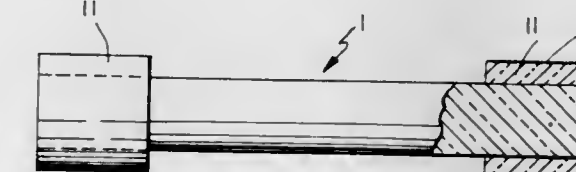
**METHOD OF CHEMICALLY MACHINING ALUMINA**  
Henry P. Kirchner, 700 South Sparks Street Borough, State College, Pa.

Continuation-in-part of application Ser. No. 664,732, Aug. 31, 1967, now abandoned. This application Feb. 16, 1970, Ser. No. 11,857

Int. Cl. C23f 1/00; C23g 1/28

U.S. Cl. 156-2

4 Claims



A method of chemically machining alumina, comprising the steps of covering the portions of an alumina body to be

3,630,790  
**METHOD OF PROTECTION OF METAL SURFACES FROM CORROSION**

Donald L. Schmidt, and William J. Leahy, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 13, 1969, Ser. No. 824,246  
Int. Cl. C23f 7/00

U.S. Cl. 148-6.15 R

8 Claims

The present invention is a method of protecting metal surfaces from corrosion which comprises contacting the metal with an organo phosphonic, phosphonous or phosphinic acid.

3,630,791

**PROCESS OF SURFACE TREATMENT OF METALS**  
Hidehisa Yamagishi, Kawasaki-shi; Hirokuni Mizuno, Kanagawa-ken, and Masao Okawa, Irima-gun, Saitama-ken, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Jan. 31, 1969, Ser. No. 795,733  
Claims priority, application Japan, Feb. 10, 1968, 43/8071  
Int. Cl. C23f 7/26

U.S. Cl. 148-6.2

7 Claims

In a process of treating metals to form anticorrosive coatings, use is made of a treating solution containing a copolymer of itaconic acid and acrylonitrile and chromatic acid or chromates.

3,630,792

**PROCESS FOR THE PRODUCTION OF COLORED COATINGS**

Robert William Smyth, Oakville, Ontario, and Gerald Perley Lewis, Streetsville, Ontario, both of Canada, assignors to Cominco Ltd., Montreal, Quebec, Canada

Continuation-in-part of application Ser. No. 574,684, Aug. 24, 1966, now Patent No. 3,530,013. This application Apr. 28, 1969, Ser. No. 819,930  
Int. Cl. C23f 7/02

U.S. Cl. 148-6.3

67 Claims

A process for the production of colored surfaces on zinc, tin and lead-tin coatings by the provision of oxide films having light interference effects; zinc, tin and lead-tin alloys for use in the process; and alloy coating compositions and colored articles produced thereby. A molten alloy of zinc, tin or lead-tin with a minor amount of an oxygen-avid element such as titanium, manganese or vanadium is oxidized by ex-



machined, packing the alumina in a fluoride packing material, and refiring the alumina at a refiring temperature, whereby the uncovered portions of the alumina will be reduced in size.

3,630,795

# PROCESS AND SYSTEM FOR ETCHING METAL FILMS USING GALVANIC ACTION

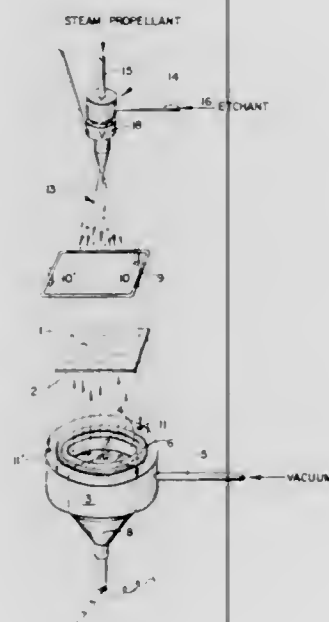
Innokent N. Vorie, Newport Beach, Calif., assignor to North American Rockwell Corporation

Filed July 25, 1969, Ser. No. 845,003

Int. Cl. C23F 1/00; B23p 1/00

U.S. Cl. 156—4

3 Claims



A metal film to be etched into a pattern comprising relatively fine and uniform lines is secured to a fixture. The film is ordinarily deposited on a rigid substrate. A metal frame is disposed about the edge of the film for certain metals to produce galvanic action during the etching process. The galvanic action increases the rate of etching and produces uniform etching from the outside of the film towards the center. After the film is in place, an etchant is sprayed onto the film at a relatively high velocity and constant temperature until the etching process is complete. A light source, placed behind the film, which is opaque, prior to the etching, is used to observe the etching process so that it can be discontinued when the etched pattern is eliminated.

3,630,796

# PROCESS FOR FORMING A TITANIUM DIOXIDE FILM

Masami Yokozawa, Osaka; Hitoo Iwasa, Toyonaka-shi, and Iwao Teramoto, Ibaragi-shi, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed June 10, 1968, Ser. No. 735,784

Claims priority, application Japan, June 14, 1967, 42/38536

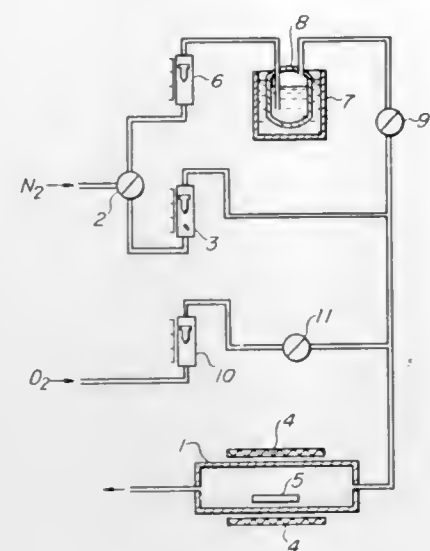
Int. Cl. H01I 7/00, 7/50

U.S. Cl. 156—17

5 Claims

A process for forming a titanium dioxide film which has recently been recognized to be useful for an insulating material for film capacitors and other electric circuit, by feeding a mixed gas of vapor of organo oxy titanium compound, oxygen and carrier gas to the surface of heated

baseplate to grow an amorphouslike titanium dioxide film on said surface of baseplate, and if necessary, crystallizing said



titanium dioxide film with a heat treatment in order to stabilize the film.

3,630,797

# METHOD AND APPARATUS FOR ASSEMBLING BULB-SHAPED GLASS CONTAINERS HAVING CYLINDRICAL BASE ELEMENTS

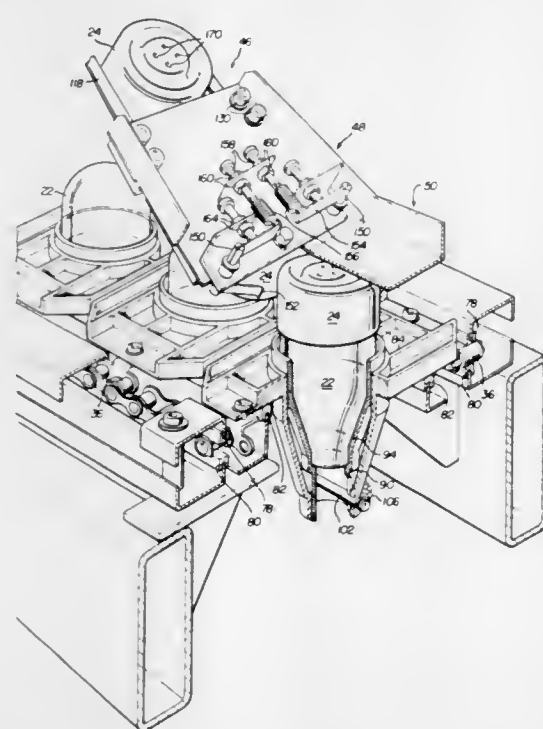
James D. Mallory, Maumee, and Frederick L. Wallington, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc.

Filed Dec. 9, 1969, Ser. No. 883,515

Int. Cl. C09j 5/00; B22b 31/00

U.S. Cl. 156—69

18 Claims



Methods and apparatus for assembling composite containers consisting of bulb-shaped glass containers having spherically shaped bottoms with cylindrical base elements fixed to the bottoms. Cylindrical base elements are fed by a chute to a resiliently releasable discharge gate in the path of travel of inverted bulb-shaped glass containers along a conveyor, the container stripping its base element from the chute discharge gate as the container is conveyed past the gate. The base element is subsequently oriented, aligned and permanently bonded to the bulb-shaped container. Bonding is accomplished by use of a hot melt adhesive applied to the base element, said adhesive being activated by the residual heat of the container. The container conveyor supports nor-

mal sized containers at a fixed elevation during the assembly operation, but permits over-length containers to be depressed by a height-limiting device to avoid interference with the discharge gate.

3,630,798

# METHOD OF MAKING PLASTIC-LINED BURLAP BAG

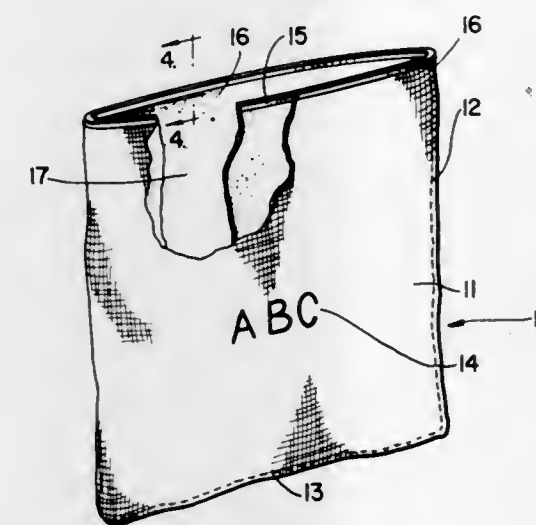
Charles S. Wicks, New Orleans, La., assignor to Chase Bag Company

Original application Jan. 4, 1968, Ser. No. 695,645, now Patent No. 3,485,281, dated Dec. 23, 1969. Divided and this application Apr. 23, 1969, Ser. No. 828,061

Int. Cl. B32b 31/04

U.S. Cl. 156—93

5 Claims



A burlap bag having a polyethylene plastic liner which is secured only at the mouth of the bag by a single line of thermoplastic adhesive which may be reactivated, positioned about the interior edge of the mouth, with the seams of the bag on the inside, the steps of manufacture including first extruding a line of adhesive onto one edge of the burlap, forming the bag in conventional manner, turning the bag, which is formed "wrong" side out, turning and inserting the liner, and reactivating the adhesive to secure the liner at the inside edge of the mouth of the bag only.

3,630,799

# METHOD OF MAKING A SUPPORTING MEDIUM HAVING A PLURALITY OF SPACED HOLES

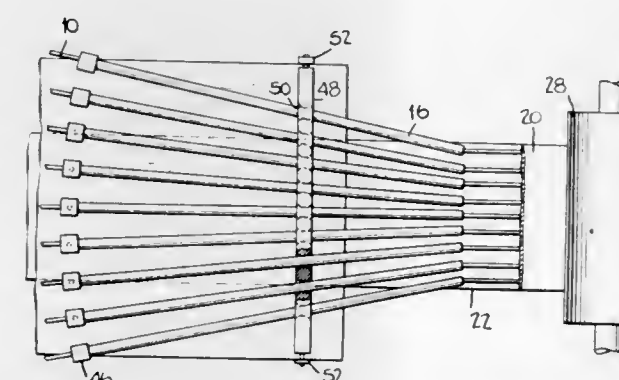
David J. Crimmins, Stockton, N.J., and Joseph W. Breakfield, Garden Grove, Calif., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Original application June 6, 1966, Ser. No. 555,421, now Patent No. 3,465,432, dated Sept. 9, 1969. Divided and this application July 7, 1969, Ser. No. 839,278

Int. Cl. B32b 3/20

U.S. Cl. 156—155

7 Claims



A method of making a supporting medium having a plurality of spaced holes comprising the steps of forming a sheet of

material with a plurality of spaced elongated elements such as wires embedded therein and removing the elongated elements to form spaced holes in said sheet. In a preferred embodiment, a laminate is formed by positioning a plurality of elongated elements between two sheets of material, bonding the sheets together and removing the elongated elements to form spaced holes in the laminate. Where the supporting medium is to be used to support magnetically coated memory wires, the supporting medium should be of nonmagnetic material.

3,630,800

# METHOD OF MANUFACTURING AN IMPROVED WIPING CLOTH

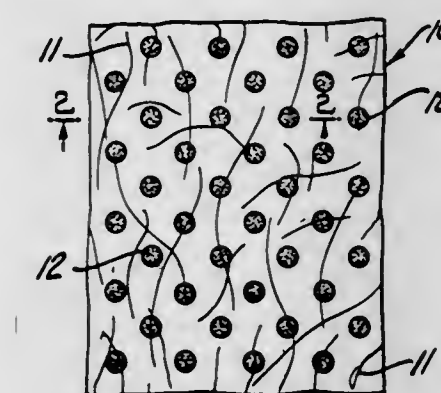
Lawrence M. Nash, East Brunswick, and Donald F. Taylor, Somerset, both of N.J., assignors to Johnson & Johnson

Original application July 1, 1966, Ser. No. 562,373, now Patent No. 3,448,478. Divided and this application Dec. 10, 1968, Ser. No. 800,019

Int. Cl. B32b 31/00

U.S. Cl. 156—229

3 Claims



Method of making an improved nonwoven fabric wiping cloth by treating an intermittently bonded fibrous web with oil and stretching the web in a crosswise direction.

3,630,801

# MACHINE FOR PRODUCING CONTINUOUS COMPRESSED HONEYCOMB

John L. Booth, 1317 Tangelo Isle, Ft. Lauderdale, Fla.

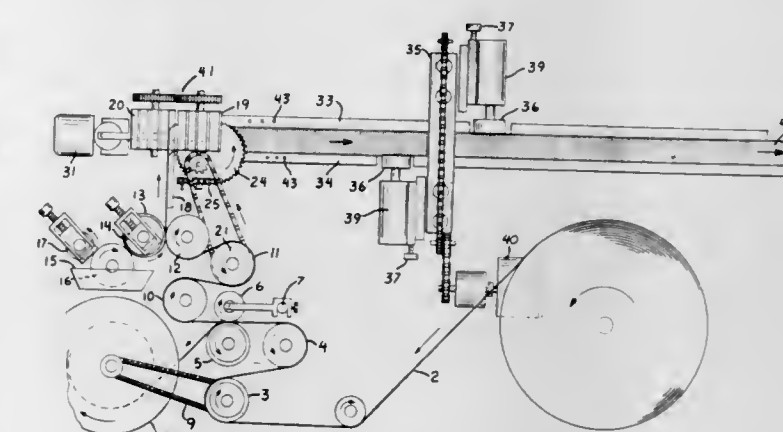
Filed Nov. 14, 1969, Ser. No. 876,665

Claims priority, application Philippines Jan. 14, 1969, 9912

Int. Cl. B31d 3/02

U.S. Cl. 156—197

27 Claims



A machine for making a continuous unexpanded honeycomb product from a single continuous web of unexpanded material that includes a severing assembly for longitudinally severing the web into a plurality of strips of material, an applicator assembly for applying longitudinally spaced, transverse strips of adhesive to the one face of each of the severed strips of material, an assembly for turning the severed strips into face to face engagement with one another,



a conveyor assembly to press the adhesive strips of one strip of material against the adjacent strip of material to provide a multiple layer of joined strips of material while the strips of material are pinned to another, a flying saw assembly to transversely sever the multiple layer to be of a predetermined length, a stacking box assembly for joining one face of one multiple layer of adhered strips of material to a face of another multiple layer of adhered strips of material, and a trimmer assembly to trimming the joined multiple layers to a predetermined height. Adjustments are provided for severing different width strips, for controlling the application of adhesive strips, and for varying the thickness of the joined multiple layers. Also, during making of the honeycomb product the strips of material are partially severed to readily permit a block of honeycomb product being pulled apart to provide two honeycomb structures. Also a method of making honeycomb is disclosed.

3,630,802

# METHOD AND APPARATUS FOR PRODUCING A COATED SUBSTRATE AND A LAMINATED PRODUCT

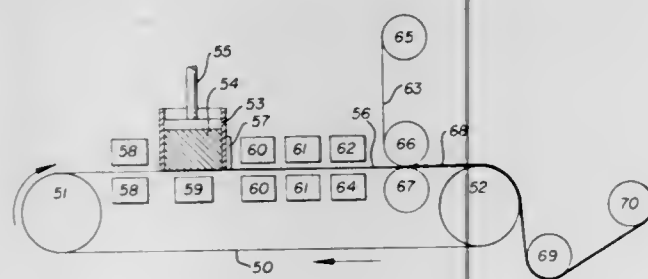
Theodore J. Dettling, 57th Castle Blvd., Akron, Ohio

Filed July 13, 1970, Ser. No. 54,428

Int. Cl. B29b 3/00, 5/00; B29d 9/00

U.S. Cl. 156—231

28 Claims



A coated substrate is produced by pressing a solid mass of an organic coating composition against a traveling metal carrier such as an endless metal belt, heating only that part of the coating composition mass adjacent to and contiguous with the carrier to that degree necessary to liquify the coating composition and cause a coating to form and deposit on the carrier, laminating a substrate to the coating, and then removing the resulting coated substrate from the carrier.

A three-layered laminate having the coating centrally located is produced by laminating a second substrate to the coated side of the coated substrate.

3,630,803

# PROCESSES AND DEVICES FOR JOINING FABRIC STRIPS

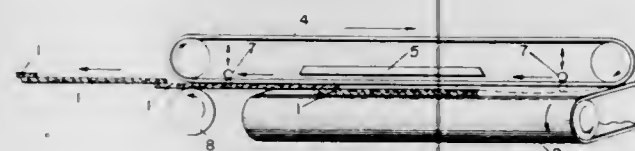
Gerhard Printz, Vienna, Austria, assignor to Semperit Österreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria

Filed Jan. 23, 1969, Ser. No. 793,427

Int. Cl. B32b 25/10

U.S. Cl. 156—266

10 Claims



The instant invention concerns a process and a machine for overlapping and in the overlapped position joining single cut strips. The process is carried out with the aid of a conveyor belt and transport means; the transport means transport the strips to a position below the conveyor belt whereupon

at least a portion of the conveyor belt is depressed thereby causing the strips thereunder to adhere thereto; subsequently the belt with the strips adhered thereon is raised and the transport means is activated so as to bring in alignment with the belt a next strip which can overlap the just lifted strip; the two overlapping strips are then pressed together and are subsequently removed from the machine. The machine for carrying out the aforesaid process is comprised of transport means which are operative to move the cut strips, a conveyor belt disposed above the transport means and adhesion generating means disposed near the conveyor belt and operative to impart an adhesive effect to a lower portion of said belt. There is also provided lifting means for transporting the strips and roller means to press the strips together.

3,630,804

# ETCHING APPARATUS

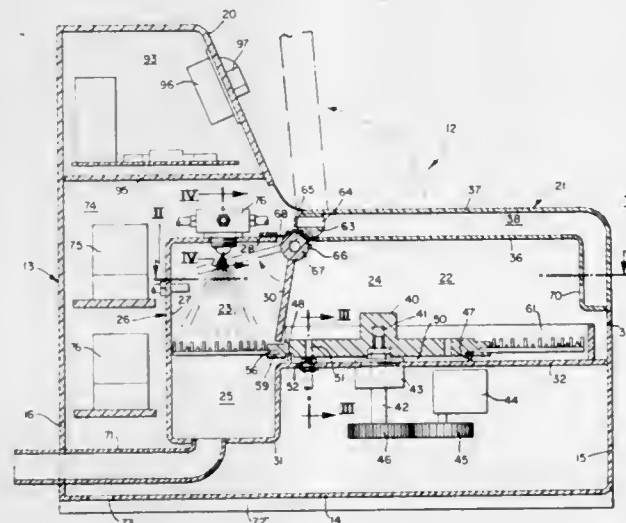
Frederick E. Coffman, State College, and Blair W. Heffner, Petersburg, both of Pa., assignors to Chemcut Corporation, State College, Pa.

Filed Aug. 19, 1968, Ser. No. 753,477

Int. Cl. H01L 7/00; C23F 1/02

U.S. Cl. 156—345

22 Claims



An apparatus is provided for etching articles, in particular, for etching wafers in accordance with the production of semiconductor devices. The apparatus employs a rotatable conveying device for traversing wafers carried thereby through a spray of acid, neutralizer, water or the like, for a portion of the cycle of operation of the apparatus, the wafers then being air dried during a further portion of the cycle of operation of the apparatus, the air drying cycle generally being conducted at a high speed.

3,630,805

# LABEL-APPLYING MACHINE

Walter Fried, Huntington, N.Y., assignor to New Jersey Machine Corporation, Hoboken, N.J.

Filed May 5, 1969, Ser. No. 821,577

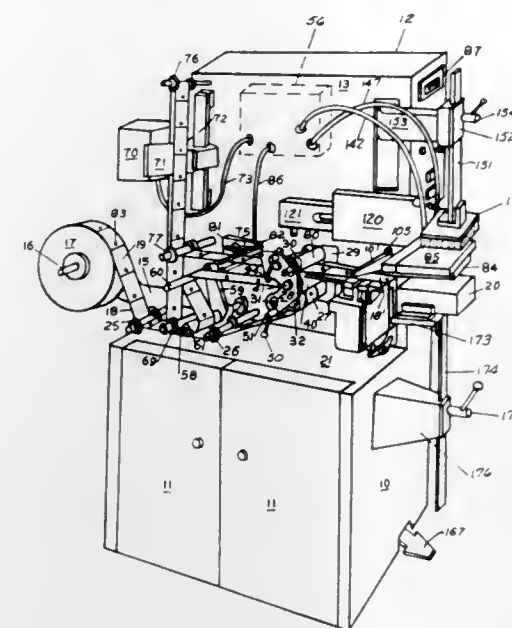
Int. Cl. B26d 5/34

U.S. Cl. 156—354

8 Claims

The labeling machine herein includes a single powered roller which is so associated with two other driven rollers and the label strip that the three rollers unwind the label strip from a supply roll and successively register the terminal labels in the strip with cutting mechanism. The cutting mechanism includes a knife that is intermittently actuated to sever the terminal labels by a label carrier for transferring the

labels to a place of label application. This same label carrier also activates an elevator for carrying the severed labels to a



position where they are placed in contact with such carrier for transfer to such place of label application.

3,630,806

# APPARATUS FOR THE MANUFACTURE OF PACKAGING MATERIAL HAVING A CORRUGATED CORE SHEET OF SYNTHETIC RESIN

Nobuo Kitajima, and Hisao Inoue, both of Konosu-shi, Japan, assignors to Asahi Shiko Kabushiki Kaisha, Tokyo, Japan

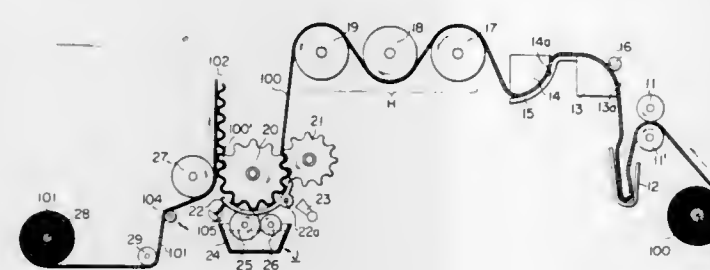
Filed June 27, 1968, Ser. No. 740,617

Claims priority, application Japan, June 28, 1967, 42/41027

Int. Cl. B31f 1/22, 1/28

U.S. Cl. 156—472

6 Claims



The invention relates to improvements in a machine for the manufacture of a continuous corrugated composite sheet comprising a corrugated core and at least a liner sheet. For attaining a waterproofness, the core sheet is made from a thermoplastic synthetic resin sheet. At least one of the liner sheet is made also of a thermoplastic resin material. The invention provides a simple attachment for the manufacture of the corrugated composite sheet of the above kind, to a conventional machine used for the manufacture of corrugated composite paper boards, said attachment comprising a liquid cooling mechanism for cooling the main corrugating roll positively driven and kept in cooperation with an auxiliary corrugating roll for the core sheet, thereby cooling the main roll in place of conventional heating and establishing a temperature difference of at least 20° C. between the auxiliary roll and the main roll.

3,630,807

# MACHINE FOR APPLYING SEALING MATERIAL FOR A CROWN CAP AND THE LIKE

Yukio Fujimura, Shimo-Suwa-machi, Japan, assignor to Kabushiki-Kaisha Sankyo Seiki, Seisakusho, Shimo-suwa-Machi, Japan

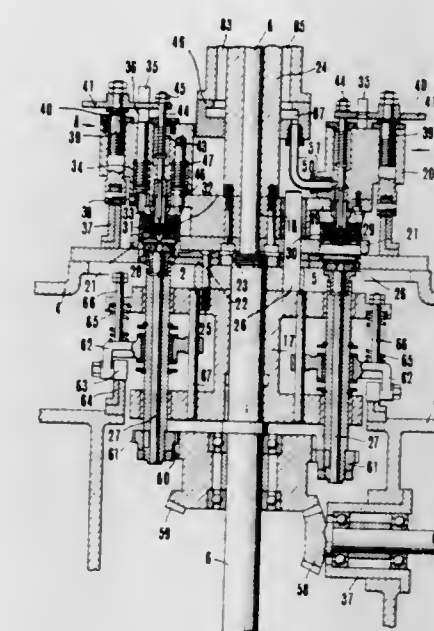
Filed Jan. 6, 1970, Ser. No. 936

Claims priority, application Japan, Feb. 26, 1969, 44/14942

Int. Cl. B05c 11/08; B05b 1/06

U.S. Cl. 156—567

2 Claims



A machine for applying sealing material for crown caps and the like wherein the crown caps travel along a circular path at a fixed rotational speed for attaining a smooth sealing material or lining operation in an uninterrupted manner.

3,630,808

# APPARATUS FOR JOINING SHEET MATERIALS BY VIBRATING PLATES

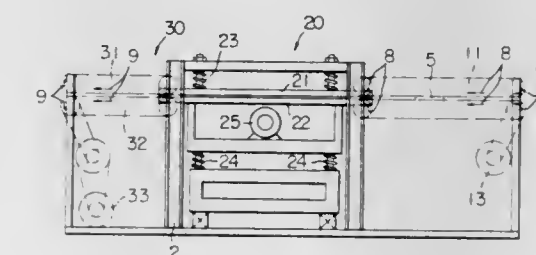
Shinjiro Yasui, No. 37-3 Aza Higashioka, Wassan-cho, Kamikawa-gun, Hokkaido, Japan

Filed May 10, 1967, Ser. No. 637,493

Int. Cl. B30b 15/34; B29c 27/08

U.S. Cl. 156—580

5 Claims



The disclosed apparatus for joining sheet materials by vibrating plates has belt conveyors for continuously feeding the sheet materials carrying to be joined, a vibrating device for vibrating the sheet materials and whereby they are joined and also belt conveyors for removing the joint materials. The vibrating device has a resonant heating plate, a vibrating plate, resilient supporting member and a vibrator. The vibrating plate and the resonant plate are heated by a heating device and transfer heat to the sheet materials.



3,630,809

## PELLUCID LAMINATES

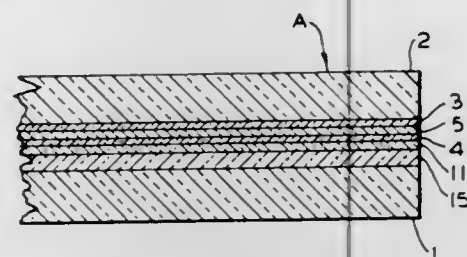
James W. Edwards, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Original application Jan. 4, 1965, Ser. No. 423,263, now Patent No. 3,499,697, dated Mar. 10, 1970. Divided and this application Aug. 1, 1969, Ser. No. 846,837

Int. Cl. G02b 5/20; B32b 17/10

U.S. Cl. 161-2

13 Claims



A pellucid laminate for selectively reflecting infrared radiation and transmitting visible wavelengths of radiation. The laminate includes a pair of outer panels. A relatively thin member formed of plastic has a multilayer dielectric film deposited on one surface thereof and a monolayer dielectric film deposited upon the opposite surface thereof. The multilayer film engages a relatively thin plastic film formed on the interior surface of one of the panels. The film is in the order of magnitude of thickness of the multilayer film so that during the lamination process any particles in the multilayer film will not become disoriented. The monolayer film in combination with the multilayer film is designed to cause some reflection of the transmitted visible radiation. A relatively thick interior panel is disposed beneath the monolayer film and may have incorporated therein light-absorbing compounds in order to reduce angular dependency. A number of methods of laminating the various components are also disclosed.

3,630,810

## FLEXIBLE ORNAMENT OF THE STICK-ON TYPE

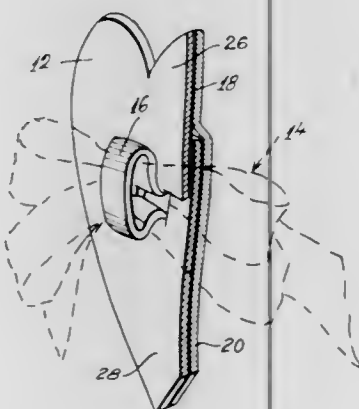
Virginia D. Mauro, 2340 West 11th St., Brooklyn, N.Y.

Filed Feb. 19, 1969, Ser. No. 800,624

Int. Cl. D04d 7/10

U.S. Cl. 161-9

2 Claims



A flexible ornament of the stick-on type adapted to be easily and quickly stuck on various supporting surfaces for ornamenting such surfaces. The ornament has a flexible plastic-coated cloth tape preferably heart shaped with a loop formed in the center thereof, and a bow formed of a fabric ribbon inserted through the loop and extending across the face of the body. The opposite surface of the body is coated with pressure-sensitive adhesive for pressing the ornament onto a supporting surface such as the hair of a human being or an animal.

3,630,811

## ARTIFICIAL TOPIARY CONSTRUCTION

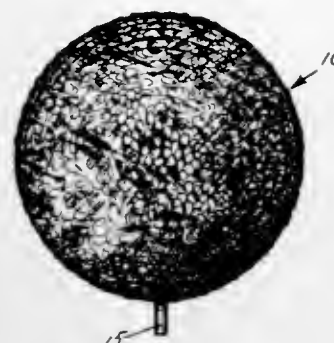
Harvey Radus, 50 Dorchester Road, Scarsdale, N.Y.

Filed Jan. 7, 1970, Ser. No. 1,243

Int. Cl. A41g 1/00

U.S. Cl. 161-27

5 Claims



An artificial topiary construction including a resilient base of penetrable material, a plurality of correspondingly shaped floral-engaging elements, a plurality of artificial floral elements selectively engageable thereupon, and supporting pole means engaging said sphere.

3,630,812

## WINDSHIELD FOR MOTOR VEHICLES

Fritz Bruckner; Hans Krings; Hans Peter Siemonsen, and Franz Kramling, all of Aachen, Germany, assignors to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

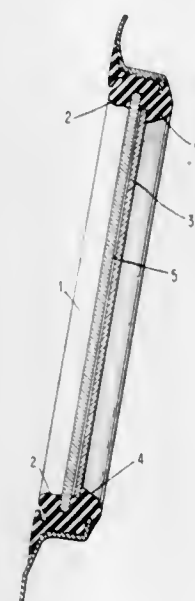
Filed Jan. 27, 1969, Ser. No. 794,152

Claims priority, application Germany, Jan. 29, 1968, P16 80 001.4, Feb. 7, 1968, P 16 96 051.3

Int. Cl. B32b 3/06, 17/10

U.S. Cl. 161-139

6 Claims



Windshields are constructed on a basis of the tolerance of the human body to impact, with special attention to the tolerance of head and spine, macroscopic lesions on the cervical vertebrae and resistance of the brain to cerebral lesions. The designs contemplate a windshield, of unbreaking center and fragile rim, which will transmit the shock of impact and break the rim in the few microseconds before body tolerance to impact has been exceeded. An impact duration of 30 microseconds is treated as the upper limit of toleration within which the windshield must shear off at its edges. Several designs are disclosed based upon special treatments for the center and the rim.

3,630,813

## COMPOSITE PANEL STRUCTURE

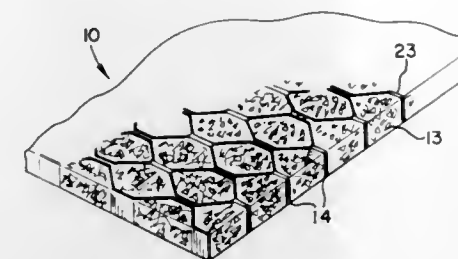
John W. Allen, Flossmoor, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed June 20, 1968, Ser. No. 738,637

Int. Cl. B32b 3/12, 5/16

U.S. Cl. 161-43

4 Claims



A composite panel adapted for use as a load-bearing structural member, including a rigid cellular core having bonded in the cells thereof a compressed fibrous and resin mixture completely filling the cellular core so that the edges of the core are in plane with the filling material. An embodiment of the composite panel includes a high-wear resistance skin, such as fiber glass cloth, bonded to the outer faces of the filler material for assuming the wear.

The disclosure also relates to a method for forming the above-described composite panel in which the filler material is placed on the core and is then compressed therein between heated press plates and held therein under pressure until the resin is cured and the material bonded to the cellular core.

3,630,814

## COMPOSITE BULLETPROOF WINDOW PANEL

Alfred Arnold, Alfred-Klingele-str. 7064, Geradstetten, Germany

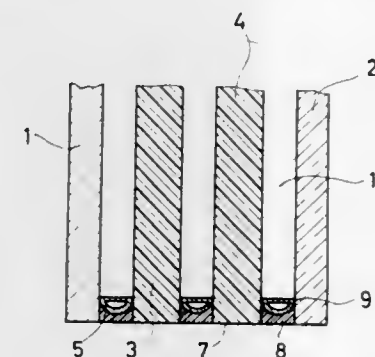
Filed Apr. 25, 1969, Ser. No. 819,405

Claims priority, application Austria, May 17, 1968, A 4766/68

Int. Cl. E04c 2/23; E04b 2/28; F41h 5/00

U.S. Cl. 161-45

8 Claims



A bulletproof composite window panel has two outer glass panes with two inner plastic panes being located between the glass panes, each pane being spaced from but parallel to its neighboring panels. Tubular spacing members of substantially semicircular cross section are located between juxtaposed circumferentially extending marginal portions of the respective panels to prevent the panels from contacting each other, and sealing means seals the spaces between the panels along the circumferentially extending marginal portions.

3,630,815

## VARIABLE ORNAMENTAL DESIGN

Anthony G. Rosa, 216 Post Avenue, Lyndhurst, N.J.

Filed May 8, 1968, Ser. No. 727,490

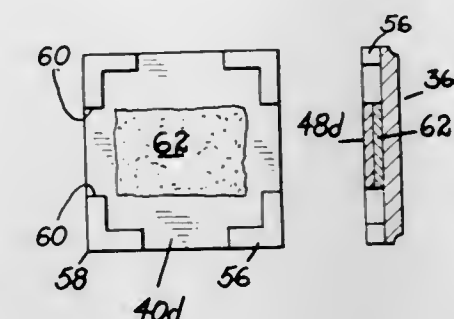
Int. Cl. B43m 17/00; G09f 7/02

U.S. Cl. 161-40

2 Claims

The present invention relates to a decorative arrangement for desk sets and the like. Generally, the member to be

decorated is rectangular in shape. The member is provided with a plurality of grooves which run the length of the member and are adapted to receive a plurality of moveable letters. The movable letters or monograms may be fit into one or all of the grooves and are interchangeably connecta-



ble in the various grooves. The grooves not used to house the letters or monograms are adapted to receive a decorative stripping which may be removably connected therein or permanently fixed in position. A V-shaped slot may be provided in the center of the member and runs parallel with the grooves the length of the member.

3,630,816

## NONWOVEN SHEETS MADE FROM RECTANGULAR CROSS SECTION MONOFILAMENTS

Phillip H. Parker, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 25, 1969, Ser. No. 845,075

Int. Cl. D01d 5/22, 7/00; B32b 27/02

U.S. Cl. 161-72

5 Claims

Nonwoven sheets of continuous synthetic polymer, e.g., stereoregular polypropylene, monofilaments which have elongated, e.g., rectangular, cross sections with aspect ratios of at least about 3:1 and are disposed randomly and are substantially discrete from each other except at crossover points in the sheet. These sheets may be made by extruding the polymer through appropriately shaped orifices, partially cooling the resulting monofilaments, drawing them with a pneumatic jet and depositing them on a collecting device.

3,630,817

## PREDECORATED GYPSUM BOARD

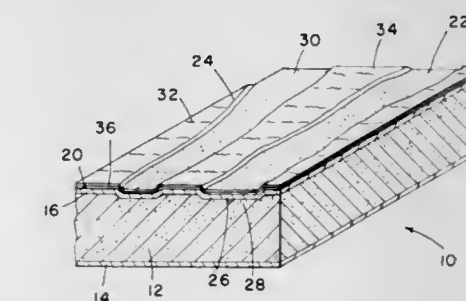
Daniel A. Winkowski, Tonawanda, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,192

Int. Cl. B32b 3/00

U.S. Cl. 161-119

10 Claims



Predecorated, washable gypsum board having a plastic base film throughout the front surface and an embossed, printed design extending into the front surface.



3,630,818

**LIGHTWEIGHT NONWOVEN FABRIC OF INCREASED OPACITY**

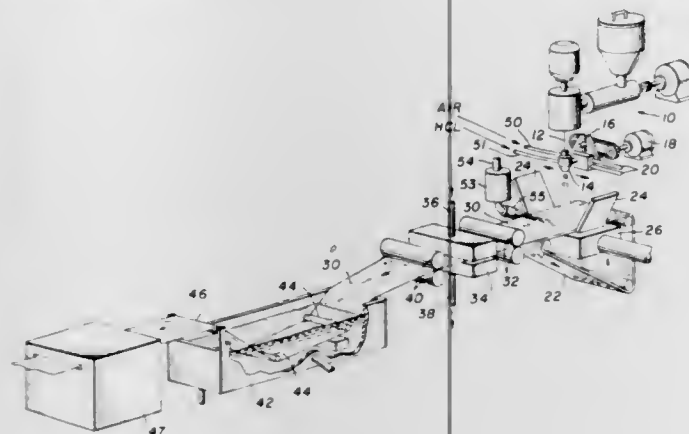
Emerick J. Dobo, Cary, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed July 22, 1969, Ser. No. 843,711

Int. Cl. D04h 3/14, 5/00

U.S. Cl. 161—150

2 Claims



A lightweight nonwoven fabric having a high degree of opacity comprises a nonwoven web of continuous synthetic polyamide filaments autogenously bonded together and short lengths of polyamide ligaments dispersed among the continuous filaments.

3,630,819

**FOAMED POLYURETHANE LAMINATES**

Marvin T. Conger, Akron, Ohio, assignor to The Goodyear Tire &amp; Rubber Company, Akron, Ohio

Filed Sept. 23, 1968, Ser. No. 761,451

Int. Cl. B32b 3/00, 3/26

U.S. Cl. 161—161

4 Claims

This invention relates to laminates useful as building boards or panels and which comprises a rigid foamed polyurethane core covered on at least two faces with a decorative film.

3,630,820

**GRANULAR FORMATIONS INCLUDING OPEN CELL POLYSTYRENE PARTICLES**

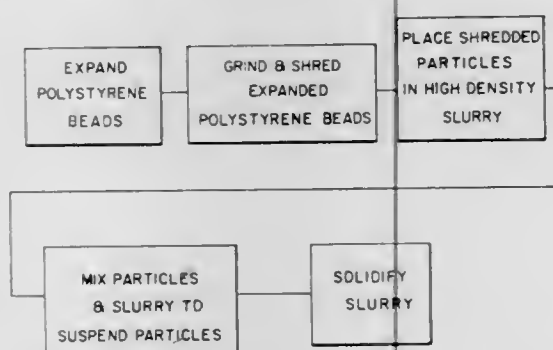
Irby H. Leach, 2094 Emerson, Napa, Calif.

Filed July 25, 1969, Ser. No. 844,895

Int. Cl. B32b 5/18

U.S. Cl. 161—168

2 Claims



Closed-cell foamed polystyrene beads are shredded to form small size, open-celled foam particles. The particles are mixed with a slurry of a granulate and a liquid whereby the slurry enters the open cells to increase the density of the particles and suspend the particles in the slurry without floating the particles to the top. After an even distribution of the particles throughout the slurry is obtained the mixture is dried to form granulate objects, such as boards, having an even distribution of foamed polystyrene particles therein to reduce the density of the object.

3,630,821

**POPCORN ENERGY ABSORBER**

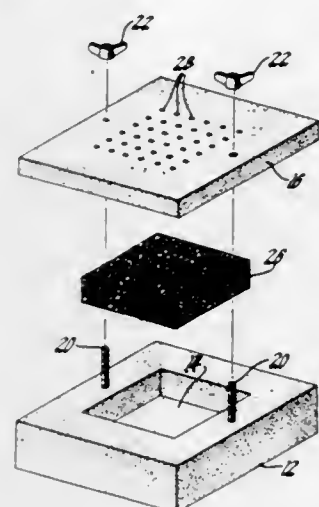
William K. Miller; Seymour Katz, both of Southfield, and Willard W. Bach, Rochester, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Original application July 20, 1967, Ser. No. 614,829, now Patent No. 3,511,899, dated May 12, 1970. Divided and this application Jan. 19, 1970, Ser. No. 3,600

Int. Cl. B32b 3/26, 5/20

U.S. Cl. 161—168

2 Claims



An energy-absorbing article comprised of a plurality of expanded popcorn kernels closely packed together and bonded together by the mechanical interlocking of the irregular outer surfaces of the expanded kernels, the density of the article being 5-15 pounds per cubic foot.

3,630,822

**ACOUSTICAL AND FIRE RESISTANT PARTICLEBOARD**

Andrew E. Carmellini, Brookfield, Conn., assignor to U. S. Plywood-Champion Papers Inc., New York, N.Y.

Filed Sept. 2, 1970, Ser. No. 69,145

Int. Cl. B32b 5/14, 5/16, 21/02

U.S. Cl. 161—168

9 Claims

A high-density particleboard of great sound attenuation and resistance to heat and flame, comprising wood particles, a suitable binder, and a compound having a density of at least 4.

3,630,823

**COCARDED BLEND OF MICROCELLULAR AND CONVENTIONAL FIBERS**

Willard Hallam Bonner, Jr., Wilmington, Del., assignor to E. I. duPont de Nemours &amp; Company, Wilmington, Del.

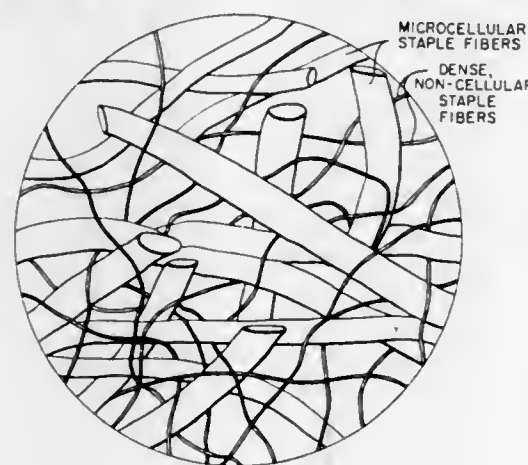
Original application June 23, 1966, Ser. No. 559,979, now Patent No. 3,521,328. Divided and this application Sept. 16,

1969, Ser. No. 870,723

Int. Cl. A47c 27/22

U.S. Cl. 161—169

7 Claims



A cocarded blend of 1-80 percent closed-cell microcellular staple fibers and 99 percent to 20 percent dense, substan-

tially noncellular staple fibers is cardable and inexpensive and has desirable bulk, resiliency, load bearing capacity and recovery upon removal of a load.

3,630,824

**HOLLOW MONOFILAMENT OF HIGH-LOADING CAPACITY AND METHOD OF MAKING SAME**

Gunter Rohlig, Remscheid-Lennep, Germany, assignor to Barmag Barmer Maschinenfabrik AG, Wuppertal, Germany

Filed May 19, 1969, Ser. No. 825,608

Claims priority, application Germany, May 22, 1968, P 17 60 467.0

Int. Cl. D01d 5/24

U.S. Cl. 161—178

10 Claims

Process for producing an industrial monofilament of a fiber-forming thermoplastic polymer in which the polymer is melt spun as a hollow filament into an aqueous bath and withdrawn therefrom through a hot air zone while stretching in both the bath and the hot air zone to reduce the hollow cross section to less than 15 percent and especially less than 3 percent of the total cross section. The resulting monofilaments with a relatively fine hollow channel and outer diameters between about 0.8 and 8 mm. are useful for making nets, ropes, fishing lines and the like.

3,630,825

**COUPLING AGENT FOR EPOXY RESIN COMPOSITE ARTICLES**

John R. Marecek, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed July 1, 1969, Ser. No. 838,323

Int. Cl. B32b 17/04, 27/38

U.S. Cl. 161—185

6 Claims

There is disclosed a coupling agent useful for the preparation of epoxy resin composite articles which is an aqueous dispersion of a copolymer consisting essentially of from 33 to 86 percent by weight of  $C_6H_5(CH_3)SiO$  units and 14 to 67 percent by weight of  $R_2N-A-SiO_{3/2}$  units, wherein each R is selected from the group consisting of the hydrogen atom, alkyl radicals containing from one to six carbon atoms and aminoalkyl radicals containing from two to six carbon atoms and A is an alkylene radical containing from three to 10 carbon atoms, and the nitrogen atom of the  $R_2N$ - group is attached to at least the third carbon atom of the A radical removed from the silicon atom. An aqueous dispersion of the fatty acid amine salt of the copolymer defined above can also be employed. The composite articles consist essentially of (1) a base member selected from the group consisting of glass cloth and glass fibers, said base member having on its surface a copolymer as defined above, and (2) a cured epoxy resin.

3,630,826

**WATER AND OXYGEN IMPERMEABLE FILM LAMINATE BONDED BY SARAN AND POLYISOCYANATE WITH A CURING AGENT**

Henry J. Rose, and Albin F. Turbak, both of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed May 23, 1968, Ser. No. 731,519

Int. Cl. B32b 27/30, 27/38, 27/40

U.S. Cl. 161—190

2 Claims

Impermeable plastic film laminates for use in the packaging of food products and other materials are formed by lamination of polyethylene or other plastic films to plastic films such as nylon, polyester, cellophane, polypropylene, polyethylene, polyvinyl chloride, etc., by using an improved oxygen impermeable saran-containing adhesive composition as the laminating adhesive. The improved saran-containing adhesive composition of this invention includes a polymeric polyisocyanate adhesive and a suitable cross-linking agent therefor, in addition to the vinylidene chloride-acrylonitrile

or other saran resin (copolymer or polymer). The adhesive composition is self-curing and the resulting film laminate is flexible and highly impermeable to oxygen while the adhesive layer is highly resistant to the action of boiling water. The cross-linking agent can be a glycol, triol, polyglycol, polytriol or any long-chain polyol, or a derivative thereof, such as a partial ester of a polyol. The preferred cross-linking agent is a polyoxypropylene triol with a molecular weight about 1,000.

3,630,827

**LAMINATED ARTICLE COMPRISING A POLYOLEFIN AND A SILICEOUS MATERIAL COATED WITH A SILANE AND A CHLORINATED ORGANIC COMPOUND**

Robert C. Hartlein, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of application Ser. No. 788,907, Jan. 3, 1969, now abandoned. This application Aug. 5, 1970, Ser. No. 61,505

Int. Cl. B32b 5/16, 17/06; C03c 17/30

U.S. Cl. 161—193

8 Claims

Polyolefin resins, such as polypropylene, are strengthened by the incorporation of a siliceous reinforcing material which has a first coating (a) of a silane coupling agent, such as  $(C_2H_5O)_2Si(CH_3)CH_2CH_2CH_2NHCH_2CH_2NH_2$ , and a second coating (b) of a chlorinated organic compound, such as perchlorinated para-xylene.

3,630,828

**BLEACHING OF A LOW-DENSITY, SUBSTANTIALLY UNCOMPACTED, POROUS FLUFFED CELLULOSIC PULP**

Norman Liebergott, Chomedey, Quebec; Frederic H. Yorston, Montreal, Quebec; Raimbault M. A. T. De Montigny, Baie D'Urfe, Quebec, and John E. Tasman, Pointe Claire, Quebec, all of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Quebec, Canada

Filed May 13, 1968, Ser. No. 728,633

Int. Cl. D21b 1/16

U.S. Cl. 162—24

10 Claims

The bleaching of chemical wood pulp at high consistencies with gaseous bleaching agents is performed by repeatedly contacting the pulp, at a consistency above 15 percent and while unsupported, with radial spaced breaker arms extending from a rotating shaft thereby producing a comminuted pulp of low density and a substantially uncompacted porous fluffed structure and thereafter bleaching the comminuted fluffed pulp at a consistency above 15 percent with a gaseous bleaching agent such as chlorine dioxide gas.

3,630,829

**RECOVERY OF KRAFT WHITE LIQUOR WITH SULFUR ADDITION PROVIDED BY CALCIUM SULFATE**

Donald Lee Caldwell, Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 18, 1969, Ser. No. 834,330

Int. Cl. D21c 11/04

U.S. Cl. 162—30

6 Claims

The present invention relates to a method of recovering kraft pulping liquor. During causticization of the green liquor, calcium sulfate is added to produce a white liquor with a higher than normal active alkali content. Further,







which determines the reactor operating level through a reactor control system. The turbine follow control system operates turbine steam valves and steam bypass valves electrohydraulically to control the stem throttle pressure as the level of reactor operation is controllably varied to produce required steam flow. In another arrangement, a coordinated control system for a boiling water reactor-steam turbine plant includes an electrical reference system which simultaneously determines the reactor operating level and the turbine steam flow subject to throttle pressure control constraints.

3,630,840

# PROCESS FOR PURIFYING SOLUTIONS OF THE FOOT-AND-MOUTH DISEASE VIRUS

Otto Wagner, Wuppertal-Elberfeld; Horst Geilhausen, Opladen; Hans Bahnmann, and Otto-Erich Schweckendiek, both of Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 13, 1970, Ser. No. 19,515

Claims priority, application Germany, Mar. 15, 1969, P 19 13 272.0

Int. Cl. C12k 5/10, 7/00

U.S. Cl. 195—1.5

Foot-and-mouth disease virus solutions, used for the preparation of vaccines against the disease, are freed of undesirable protein contaminants accompanying the virus particles by subjecting the impure solution to fractional precipitation with polyethylene glycol solutions. The precipitate, containing the virus integens is separated from the liquid phase which contains the proteins, preferably by centrifuging. The sediment consists of substantially purified virus antigen.

3,630,841

# PURIFICATION OF ENZYME INHIBITORS

Eugen Werle, and Hans Fritz, both of Munich, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 636,612, May 8, 1967, abandoned

Filed Jan. 5, 1970, Ser. No. 826

Claims priority, application Germany, May 26, 1966, F 49 298

Int. Cl. C07g 7/00

U.S. Cl. 195—2

This document discloses a method for purification, including concentration, of certain enzyme inhibitors. The inhibitors are sorbed from their aqueous solutions by an insoluble material which is a combination of a polymeric substance and an enzyme, and subsequently are desorbed.

3,630,842

# PRODUCTION OF 3',5'-CYCLIC ADENYLIC ACID WITH MICRO-ORGANISMS

Jiro Ishiyama, Noda-shi; Tamotsu Yokotsuka, and Nobuo Saito, both of Nagareyama-shi, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan

Filed May 13, 1969, Ser. No. 824,265

Aug. 10, 1968, Japan, 43/72863

Claims priority, application Japan, Aug. 9, 1968, 43/56138

Int. Cl. C12d 13/06

U.S. Cl. 195—28 N

A better and more practical fermentation method was sought out to produce a biochemically valuable compound, 3',5'-cyclic adenylic acid, from adenosine, adenine, inosine, hypoxanthine, 5-amino-4-imidazolecarboxamide-ribose, 5-amino-4-imidazolecarboxamide, succinyl adenosine, and succinyl adenine, by cultivating aerobically under suitable conditions a strain of micro-organisms belonging to one of *Corynebacterium murisepticum* No. 7 (ATCC 21374), a new species of *Arthrobacter*, No. 11 (ATCC 21375) and a new species of *Microbacterium*, No. 205 (ATCC 21376), and being capable of producing said acid from the above-named compounds, in a medium which contains, other than at least one of said compounds, suitable carbon sources, nitrogen

sources and other inorganic substances. Then, 3',5'-cyclic adenylic acid thus formed and accumulated in said medium was further purified by means of charcoal and appropriate ion exchange resins and the like.

3,630,843

# PROCESS FOR TREATING A HYDROCARBON FERMENTATION LIQUOR

Akira Furuya; Yoshiatsu Aoki, both of Machida-shi, and Mikio Takayanagi, Hofu-shi, all of Japan, assignors to Kyowa Hakko Kogyo, Ltd., Tokyo, Japan

Filed July 17, 1968, Ser. No. 745,356

Claims priority, application Japan, July 19, 1967, 42/46099

Int. Cl. C12b 1/26

U.S. Cl. 195—28 R

The present disclosure is directed to a process for treating a hydrocarbon-containing fermentation liquor obtained by culturing the hydrocarbon assimilating micro-organism in a fermentation liquor containing a hydrocarbon as the main carbon source, to separate the hydrocarbon remaining after fermentation and the micro-organism cells from said liquor, which comprises generating microfine air bubbles in the lower portion of the fermentation liquor, thereby causing the hydrocarbon and micro-organism cells to rise to the upper portion of said fermentation liquor, and thereby separating the fermentation liquor into the hydrocarbon-micro-organism cell phase and the water phase.

3,630,844

# STARCH CONVERSION SYRUPS

Thomas L. Hurst; Roy F. Larson, and Almerin W. Turner, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Aug. 26, 1968, Ser. No. 755,094

Int. Cl. C12b 1/00

U.S. Cl. 195—31

A method and composition for producing starch conversion syrups having a minimum F. E. value of 77 percent, a minimum D. E. value of about 68 percent and a maximum D. content of 47 percent by saccharifying a starch hydrolyzate with an enzyme composition comprising a diastase, glucoamylase and amylo-1,6-glucosidase.

3,630,845

# PROCESS FOR PREPARING DEXTROSE CONTAINING SYRUPS

Robert G. Dworschack, and Carolyn A. Nelson, both of Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,642

Int. Cl. C12b 1/00

U.S. Cl. 195—31

The invention is directed to a process for preparing dextrose containing syrups having a predictable dextrose content. During enzymatic hydrolysis of starch to dextrose,  $\text{ClO}_2$  is incorporated into the hydrolysate to inactivate the enzyme when the dextrose content of the hydrolysate reaches a predetermined level.

3,630,846

# ANTIBIOTIC PRODUCTION USING STREPTOMYCES KITASATOENSIS

Toju Hata; Akihiro Matsumae; Satoshi Omura, all of Tokyo; Jinno Suke Abe, Takata-gun, and Tetsuo Watanabe, Tokyo, all of Japan, assignors to The Kitasato Institute and Toyo Jozo Kabushiki Kaisha

Original application Sept. 1, 1967, Ser. No. 665,059, now

Patent No. 3,535,309, dated Oct. 20, 1970. Divided and this

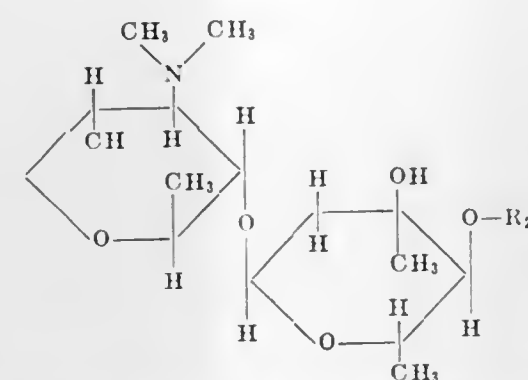
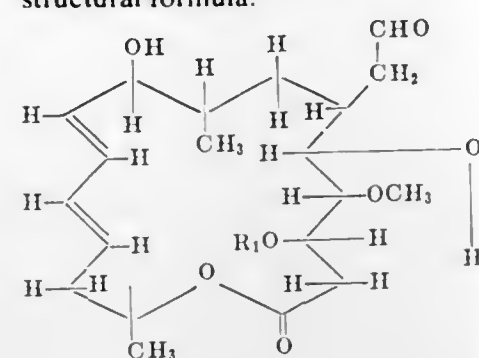
application Oct. 7, 1969, Ser. No. 871,372

Int. Cl. C12d 9/00

U.S. Cl. 195—80

Manufacture of new antibiotic substances by the cultivation of a micro-organism belonging to *Streptomyces*

kitasatoensis. The antibiotic of the invention has the general structural formula:



wherein when  $R_1$  represents hydrogen,  $R_2$  represents acetyl, propionyl, butyryl or where when  $R_1$  represents acetyl,  $R_2$  represents acetyl, propionyl, butyryl or isovaleryl.

3,630,847

# DIAGNOSTIC AGENT FOR USE IN THE DETERMINATION OF HYDROPEROXIDES AND OF PEROXIDE-ACTIVE SUBSTANCES

Hans-Georg Rey; Hans Wielinger, and Peter Rieckmann, all of Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim Gesellschaft mit beschränkter Haftung, Mannheim-Waldhof, Germany

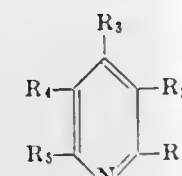
Filed July 17, 1968, Ser. No. 745,358

Claims priority, application Germany, July 20, 1967, B 93558

Int. Cl. G01n 31/14

U.S. Cl. 195—103.5

Diagnostic agents suitable for use in carrying out rapid analytical determinations of the presence and/or concentration of hydroperoxide substances which react with the liberation of hydrogen peroxide, peroxidase and peroxidase active substances comprising an indicator, i.e., chromogen, which is oxidized by hydrogen peroxide, peroxidase or peroxidase active substances to form a dyestuff, the color intensity of which is dependent on the peroxide, peroxidase or peroxidase active substance present in the test sample, wherein the chromogen is a compound having the formula:



in which  $R_1$  is hydroxyl, unsubstituted or substituted amino, wherein the substituent is an aliphatic, araliphatic, cycloaliphatic, heterocyclic or aromatic radical, which in turn is substituted by one or more of hydroxy, amino and alkoxy;  $R_2$  and  $R_3$  are each one of hydrogen, amino, hydroxy or alkoxy and  $R_4$  is hydrogen or the substituent  $R_1$ .

The diagnostic agents can be used for analytical determinations involving, for example, glucose, galactose, amino acids, uric acid, peroxide, hemoglobin, peroxidase, etc. in samples, for example, constituting biological fluids such as blood, urine, spinal fluid, etc., milk, cosmetic and drug formulations, etc.

3,630,848

# CONTINUOUS FERMENTATION METHOD AND DEVICE

Louis Alfred Auguste Lefrançois, 24 Rue Barbet de Jouy, Paris, France

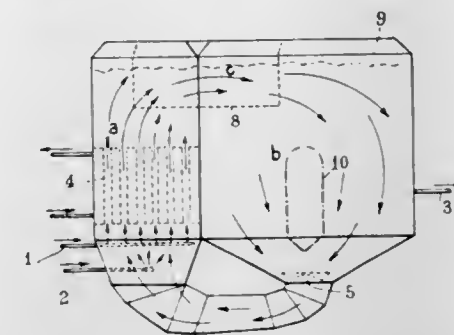
Filed Dec. 26, 1968, Ser. No. 786,930

Claims priority, application France, Dec. 29, 1967, 134358

Int. Cl. C12b 1/14, 1/16

U.S. Cl. 195—109

19 Claims



The continuous fermentation of a working liquid wherein the circulation of the working liquid takes place through two chambers in succession, the entire mass being involved in the general flow, said chambers having unequal useful horizontal cross sections, the whole or the greater part of the gas by which the circulation is obtained being blown in the vicinity of the bottom of the ascending portion of the circuit which has the smallest cross-sectional area, said mass being subsequently transferred at a lower flow rate into the descending flow chamber having a greater cross-sectional area, whereby the ratio of the times of the ascending and descending movements of said mass considered as having a uniform mean density, ranges from 0.8 to 0.05.

3,630,849

# SURFACE MICRO-ORGANISM CONTAMINATION ASSAYS

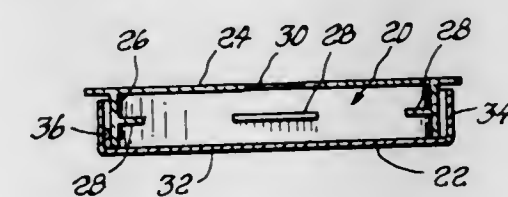
David B. Land, Horace Harding Expressway, Flushing, N.Y., and Stephen L. Bazil, 25 Catalpa Lane, Valley Stream, N.Y.

Filed Apr. 24, 1969, Ser. No. 820,040

Int. Cl. C12k 1/00

U.S. Cl. 195—139

8 Claims



A receptacle and lid combination for molding solidified nutrient containing agar-agar with a flat face coplanar with the rim of the receptacle and keyed in the receptacle to resist withdrawal, for micro-organism contamination assays. The lid is formed with a flat base inside and the height of the circular wall on the receptacle is greater than the height of the circular wall on the lid to permit the receptacle to seat against the base of the lid and where the receptacle is formed with a vent and the lid is formed with projections from the wall near the base for a force fit with the receptacle.

3,630,850

# CRACKING FURNACE WITH BURNERS ENGAGING MIRROR IMAGE COILED TUBES

Wilhelmus R. Dorresteyn, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,285

Claims priority, application Netherlands, Dec. 2, 1968, 6817224

Int. Cl. C10g 9/20

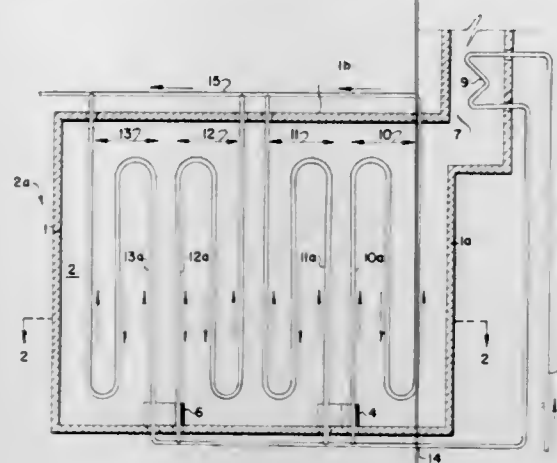
U.S. Cl. 196—110

12 Claims

A cracking furnace for carrying out chemical reactions wherein the furnace is a closed chamber having a top bottom and at least two relatively smooth vertical parallel walls. A plurality of vertically extending hollow tubes for carrying a



medium therethrough are disposed in the chamber, an odd number of the tubes forming a coil with all of the tubes in one coil being joined to adjacent tubes in the same coil. The coils include inlet and outlet openings, the inlet openings being on one side of the chamber and the outlet openings on



the other. At least two coils are adjacent in such a manner that one is the mirror image of the other. Burner means operatively engages the inlet openings and a combustion gas outlet in the chamber is in communication with the outlet openings.

3,630,851

**PERFORATED WEIR IN FLASH DISTILLATION**

Yoshito Kawaguchi, and Kenkichi Izumi, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

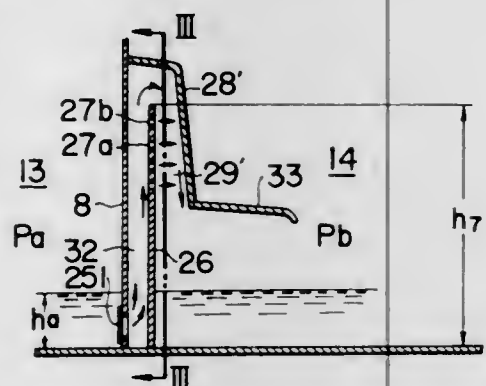
Filed July 29, 1969, Ser. No. 845,788

Claims priority, application Japan, July 29, 1968, 43/52965

Int. Cl. B01d 3/06

U.S. Cl. 202—173

11 Claims



A flash evaporator having a plurality of adjacent rectangular flash chambers defined by partition walls and arranged in a straight line horizontally, each of said rectangular flash chambers being provided with flash means comprising an orifice provided at the lower part of each of said partition walls for introducing brine therein, a weir having at least one hole therein and being set a proper distance apart from each of said partition walls, and a baffle-board provided so as to cover said weir at a proper distance therefrom, whereby the brine is effectively evaporated in the flash chamber by being fully mixed and agitated by said flash means.

3,630,852

**POLLUTION-FREE DISCHARGING AND QUENCHING APPARATUS**

Gerd Nashan, Oberhausen-Sterkrade-Nord, and Johannes Knappstein, Recklinghausen, both of Germany, assignors to Firma Carl Still, Recklinghausen, Germany

Filed July 18, 1969, Ser. No. 843,084

Claims priority, application Germany, July 20, 1968, P 17 71 855.7

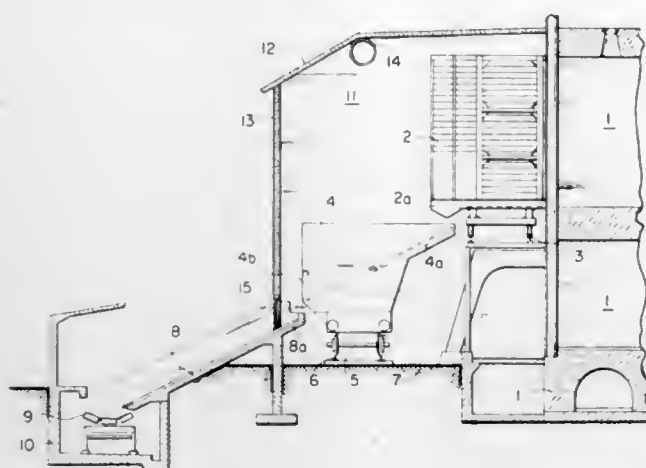
Int. Cl. C10b 33/00, 39/08, 39/12

U.S. Cl. 202—229

10 Claims

A device for the controlled gas-free and dust-free discharge and quenching of coke for horizontally arranged

coke furnace batteries includes a closed coke-receiving chamber which is provided with gas and dust exhaust devices. The chamber extends over the entire length of the coke battery and encloses the doors to the individual furnace chambers. In addition, the receiving chamber is connected with a quenching tower and it includes means for conducting



the coke to a conveyor which leads to the quenching tower. The quenching tower itself includes either an arrangement of sprays directed over the conveyor or a quenching pool into which the coke is delivered and which includes a means for conveying the quenched coal into a receiving bin at the exterior of the quenching tower.

3,630,853

**COKE OVEN DOOR WITH FLUID PRESSURE LATCHING MEANS**

Walter Grumm, Niederelfringhausen, Germany, assignor to Dr. C. Otto & Comp. Gesellschaft mit beschränkter Haftung, Bochum, Germany

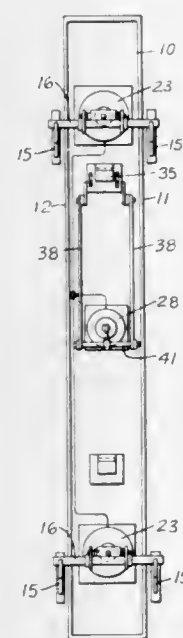
Filed Nov. 19, 1969, Ser. No. 878,035

Claims priority, application Germany, Nov. 20, 1968, P 18 09 880.1

Int. Cl. C10b 25/02

U.S. Cl. 202—248

2 Claims



A coke oven door which has upper and lower fluid filled diaphragm means acting on door latches and also has intermediate fluid filled diaphragm means continuously communicating with said upper and lower diaphragm means and normally subjected to pressure by a force while means associated with said door are provided which in response to a limited upward movement of a lifter hook movably connected to said door automatically causes said force to reduce the pressure exerted thereby upon said second diaphragm means and thereby upon said first diaphragm means so that the door latches are relieved for permitting lifting the door off the oven frame.

3,630,854

**METHOD OF DISTILLING FRESH WATER FROM SEA WATER**

Esko Ensio Huhta-Koivisto, Lumikintie 6A77, Helsinki 82, Finland, and Risto V. J. Saari, Luoma, Harjula, Finland

Filed Nov. 3, 1969, Ser. No. 873,174

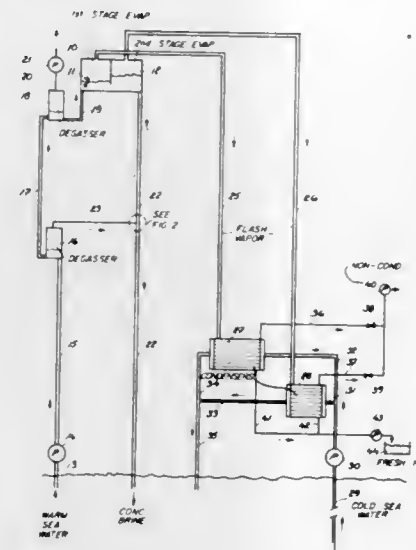
Claims priority, application Finland, Nov. 5, 1968,

3,153, 3,154; Feb. 10, 1969, 412

Int. Cl. B01d 3/00, 3/02, 3/06, 3/10

U.S. Cl. 203—11

6 Claims



A continuous flow of warm sea water, e.g. surface water, is fed upwards from a supply of the warm water through a column to degassers positioned at different levels. The warm water is fed from the lowest to the highest degasser, in which gradually decreasing partial pressures, substantially higher than the partial pressures of the warm water, are established. The non-condensable gases released in the degassers are removed and the warm water is raised further through the column to evaporators through which the warm water is passed in turn. In the evaporators, gradually decreasing pressures corresponding to the gradually decreasing partial pressure of the water vapour therein, are maintained. The waste water from the last evaporator is returned to the sea downwards through another column and the vapours from each evaporator are conducted downwards separately to a corresponding condenser operated by the indirect heat exchange using a continuous stream of cold sea water obtained from the sea. Residual non-condensable gases released on the vaporization of the warm water are removed from the condensers and the fresh water is collected from the condensers.

3,630,855

**PROCESS FOR REMOVING NAPHTHALENE FROM PHENOL BY EXTRACTIVE DISTILLATION**

Kenneth L. Turbin, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 4, 1970, Ser. No. 34,528

Int. Cl. B01d 3/40; C07c 39/04

U.S. Cl. 203—63

9 Claims

Naphthalene is removed from phenol by extractive distillation in the presence of a polyphenyl or polyphenyl ether.

3,630,856

**ELECTRODEPOSITION OF RUTHENIUM**

Andre Meyer, Geneva, Switzerland, assignor to Sel-Rex Corporation, Nutley, N.J.

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,533

Claims priority, application Switzerland, Mar. 21, 1969, 4,277/69

Int. Cl. C23b 5/32

U.S. Cl. 204—43

2 Claims

Thick electrodeposits of ruthenium can be obtained by adding an element selected from gallium, indium, and

thallium in a stable and soluble form. The deposits obtained are primarily characterized by their low stress and absence of surface cracks at thicknesses up to about 10 millimicrons.

3,630,857

**BRIGHT NICKEL ELECTROPLATING BATH CONTAINING SULFO-OXYGEN CONTROL AGENT, NITROGEN-CONTAINING BRIGHTENER AND MINOR CONCENTRATION OF TERMINAL ACETYLENIC ALCOHOL OR DERIVATIVE**

Arthur H. Du Rose, Richmond Heights, and James K. Long, Chesterland, Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

No Drawing. Continuation-in-part of application Ser. No. 619,187, Feb. 28, 1967. This application Dec. 29, 1969, Ser. No. 888,820

Int. Cl. C23b 5/08, 5/46

U.S. Cl. 204—49

5 Claims

This invention comprises an improvement in a bright nickel plating bath in which previously troublesome plating at current densities of less than 8 a.s.f. or even under 15 a.s.f. is avoided by using a combination of additives comprising (a) a sulfo-oxygen control agent, (b) a nitrogen-containing brightener, namely an aromatic monoamine or aromatic polyamine, an unsubstituted polyethylenepolyamine or a nitrile, and (c) from 0.0005 to 0.1 gram per liter of an acetylenic alcohol having the formula  $HC\equiv C-R$  in which R is a hydroxy-substituted hydrocarbon radical having 1-8 carbon atoms therein selected from the class consisting of hydroxy-substituted alkyl, alkenyl and cycloalkyl groups and the alkylene oxide adducts thereof containing no more than 4 alkylene oxide groups and the alkylene group therein having 1-4 carbon atoms.

3,630,858

**A.C. ELECTROLYTIC PROCESS**

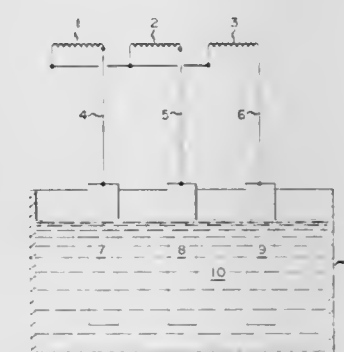
James B. Ganci and Philip Manos, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 774,765, Nov. 12, 1968. This application Aug. 24, 1970, Ser. No. 66,654

Int. Cl. B01k 3/00

U.S. Cl. 204—59

18 Claims



A process for preparing organometallic compounds of the formula  $R_nR'_{n-y}M$  where R and R' are alkyl, alkenyl or aryl of about 1-12 carbons and may be the same or different, M is a metal from Groups II-B, IV-A or V-A, n corresponds to the valence of M and y is a number from 0 to 4, including passing an electrolyzing alternating current through an electrolyte solution between electrodes of metal M, the solution containing a hydrocarbyl Grignard reagent  $RMgX$ , where X is a halide other than fluoride, in an inert organic solvent for the reagent, the solution further containing about 0.2-



2.0 moles/mole of  $\text{RMgX}$  of a compound  $\text{R}'\text{X}'$ , where  $\text{X}'$  is a halide, other than fluoride, or lower alkyl-sulfate; and recovering  $\text{R}_y\text{R}'_{n-y}\text{M}$ . Uses of such products include use as gasoline antiknock components.

3,630,859

# ELECTROLYTIC CELL BATH COMPOSITION FOR PRODUCTION OF MAGNESIUM

James G. Macey, Salt Lake City, Utah, assignor to Pete Prestinzi, Long Beach, Calif., and Ruth G. Macey and Anne M. Macey, with rights of survivorship, fractional part interest to each  
No Drawing. Filed Feb. 16, 1970, Ser. No. 11,832  
Int. Cl. C22d 3/08

U.S. Cl. 204—70

7 Claims

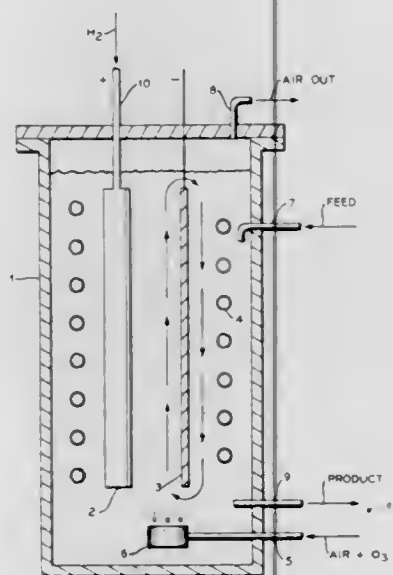
An electrolytic cell bath composition for production of molten magnesium contains about 6–36.5 percent, by weight, of magnesium chloride with essentially the remainder being lithium chloride and barium chloride in a weight ratio to each other sufficient to provide the composition with improved electrical conductivity and a specific gravity high enough to cause molten magnesium formed therein during electrolysis to float thereon. A weight ratio of barium chloride to lithium chloride of at least about 1:7.5 is employed.

3,630,860

# ELECTROCHEMICAL TREATMENT OF MATERIAL PRODUCED BY REACTION IN ELECTROCHEMICAL CELL

Homer M. Fox, Bartlesville, Okla., assignor to Phillips Petroleum Company  
Filed Feb. 5, 1970, Ser. No. 8,978  
Int. Cl. C07b 29/06; C07c 47/00, 49/00  
U.S. Cl. 204—73 R

10 Claims



A chemical reaction is conducted in an electrochemical cell to provide a material to be acted on at a cell electrode. Thus, a single step ozonolysis of a cyclic olefin within in situ electrochemical reduction to provide a dialdehyde and/or a ketone is disclosed. An electrochemical cell, the hydrogen-depolarized anode of which can be replaced by a conventional platinum, carbon, nickel, etc. anode, suitably with a diaphragm separating it from the cathode is used, having in the cell an electrolytic solvent, e.g., an alcohol such as methanol and a supporting electrolyte such as an acid, e.g., acetic acid or a salt thereof. The olefin which can be one leading to the formation of an alpha, omega-dialdehyde, e.g., cyclododecene, is fed to the cell to which

air and ozone are also fed into a lower part of the cell below the cathode, the air and ozone being sparged in one embodiment into the cell liquid below the electrode creating a stirring or mixing action at the cathode to which the olefin is also fed. Cooling is provided to maintain the temperature of the cell. The low concentration of ozonide in the operation is a feature of the invention to prevent degradation and other problems encountered with ozonides.

3,630,861

# ELECTROLYTIC HYDRODIMERISATION PROCESS

Jean Bizot, Thiais, Guy Bourat, Bourg-la-Reine, and Daniel Michelet, Lyon, France, assignors to Rhone-Poulenc S.A.  
No Drawing. Filed May 31, 1968, Ser. No. 733,306  
Claims priority, application France, June 1, 1967, 108,793

Int. Cl. C07b 29/06; C07c 121/26

U.S. Cl. 204—73 A

2 Claims

$\alpha,\beta$ -Ethylene compounds are hydrodimerised, for example acrylonitrile is converted into adiponitrile, with reduced formation of by-products by electrolysis in a single compartment of a homogeneous aqueous solution of the ethylene compound and a quaternary ammonium salt of an oxidized mineral acid which does not interfere in the reaction, the concentration of the ethylene compound being 2.3 to 4.6% by weight.

3,630,862

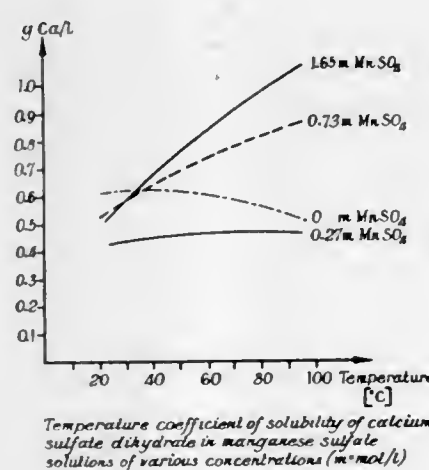
# PROCESS FOR REGENERATING ELECTROLYTIC SOLUTIONS OBTAINED IN THE ELECTROLYTIC PRODUCTION OF MANGANESE DIOXIDE

Eberhard Preisler, Knapsack, near Cologne, Kurt Grapentin, Cologne-Zollstock, and Ernst Harmsen, Lechenich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany  
Filed Feb. 16, 1970, Ser. No. 11,513  
Claims priority, application Germany, Feb. 20, 1969, P 19 08 416.3

Int. Cl. B01k 1/00; C01b 15/00

U.S. Cl. 204—83

8 Claims



Aqueous electrolytic solutions containing manganese sulfate, calcium sulfate and sulfuric acid, obtained in the electrolytic production of manganese (IV)-oxide at elevated temperatures in electrolytic cells are regenerated. The electrolytic solution is withdrawn from the electrolytic cell, cooled down to temperatures at least 5 centigrade degrees lower than the electrolysis temperature, precipitated matter is isolated therefrom after a period of at least 15 minutes, and the solution is recycled to the electrolytic cell.

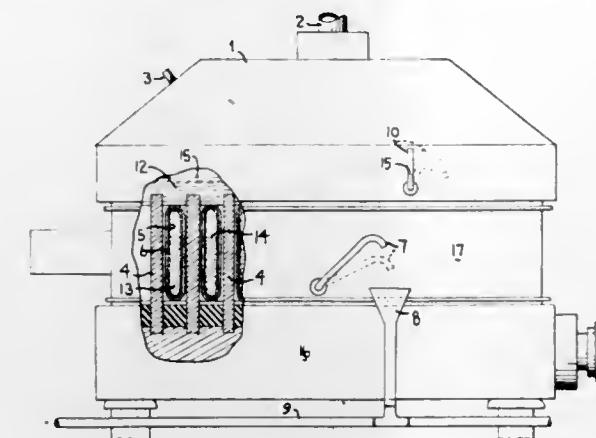
3,630,863

# CELL DIAPHRAGM TREATMENT

Thomas C. Jeffery and Waylon L. White, Lake Charles, La., assignors to PPG Industries, Inc., Pittsburgh, Pa.  
Filed Nov. 13, 1968, Ser. No. 775,426  
Int. Cl. C01d 1/06

U.S. Cl. 204—98

9 Claims



The effective life of electrolytic cell diaphragms is extended by treatment with hydroxy carboxylic compounds, e.g., hydroxy carboxylic acids such as gluconic acid or salts. This treatment removes substances which are known to restrict diaphragm porosity.

3,630,864

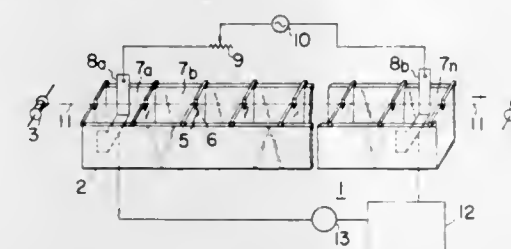
# METHOD AND APPARATUS FOR CONTINUOUS ELECTROLYTIC POLISHING OF FINE METAL WIRES

Kiyoshi Nakamura, Chiba-shi, Koji Nabae, Yokohama-shi, and Nobuo Ohsawa, Kawasaki-shi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki-shi, Japan  
Filed June 13, 1968, Ser. No. 736,700  
Claims priority, application Japan, June 19, 1967, 42/38,889; Sept. 13, 1967, 42/77,837

Int. Cl. C23b 3/06; B01k 3/00

U.S. Cl. 204—140.5

3 Claims



In an apparatus for effecting the continuous electrolytic polishing of fine metal wires an elongated electrolytic cell is divided into a plurality of electrolytic chambers by means of a plurality of partition walls having aligned limited openings to pass a straight wire. An electrolyte having lower resistance than the wire is circulated through the cell successively through the limited openings and chambers and alternating current is passed through the wire whereby in each chamber the current flows mainly through the electrolyte to create polarization. The apparatus is utilized in a continuous wire finishing line.

3,630,865

# SEQUESTERING AGENTS AS ADDITIVES FOR ALKALI CHLORATES

Alfred O. Minkley, Kenmore, and Ronald H. Carlson, Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.  
No Drawing. Filed Jan. 22, 1968, Ser. No. 699,370  
Int. Cl. B23p 1/00, 1/16

U.S. Cl. 204—143 M

6 Claims

Certain compounds such as condensed alkali metal phosphates, aminocarboxylic acids and salts thereof, hydroxy acids and salts thereof, and organic phosphorus contain-

ing sequestering agents aid the functioning of chlorate solutions as electrolytes in electrochemical machining, milling, drilling, polishing and grinding operations.

3,630,866

# CHEMICAL REACTION SYSTEM USING ULTRA HIGH FREQUENCY SONIC ENERGY

Arnold H. Pelofsky, East Brunswick, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.  
No Drawing. Filed July 28, 1969, Ser. No. 845,577  
Int. Cl. B01j 1/12; C07c 3/24

U.S. Cl. 204—157.1

7 Claims

Chemical reactions, especially intra-molecular reactions, are activated by subjecting fluid reactant to ultrasonic energy in the frequency range of between about  $1 \times 10^{10}$  and about  $1 \times 10^{15}$  hertz. This is preferably accomplished by passing fluid reactant within about 2 microns of a thin layer of piezoelectric transducer material while driving said transducer material with electromagnetic radiation in the frequency range between about  $1 \times 10^{10}$  and about  $1 \times 10^{15}$  hertz. The thickness of the transducer material is usually between 0.5 and 10 microns.

3,630,867

# PROCESS FOR PREPARING DICHLOROACETYL CHLORIDE

Karl Petz, Westheim, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany  
No Drawing. Filed June 16, 1967, Ser. No. 646,500  
Claims priority, application Germany, July 7, 1966, F 49,632

Int. Cl. C07c 51/58

U.S. Cl. 204—158 HE

8 Claims

Dichloroacetyl chloride prepared by oxidizing trichloroethylene with oxygen or an oxygen-containing gas at temperatures in the range of from 15° C. to the boiling point of trichloroethylene with exposure to short-wave light, whereby the formation of by-products is avoided to a considerable extent by adding secondary or tertiary aliphatic or aromatic amines, as such or in mixture, to the reaction mixture with or without interrupting the oxidation reaction, this process being carried out continuously or discontinuously with or without pressure being applied.

3,630,868

# PROCESS FOR ACCELERATING THE RADIATION INDUCED POLYMERIZATION OF N-VINYLPYRROLIDONE

Nelson S. Marans, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 559,426, June 22, 1966. This application Apr. 23, 1969, Ser. No. 818,790

Int. Cl. C08d 1/00; C08f 1/16

U.S. Cl. 204—159.22

7 Claims

In abstract, this invention is directed to a process for accelerating the rate of radiation induced polymerization of monomeric N-vinylpyrrolidone by mixing about 10–90 parts of the N-vinylpyrrolidone with a sufficient quantity of a monomeric acrylamide or acrylic acid to make about 100 parts and irradiating the thus formed mixture, all as recited hereinafter.

3,630,869

# PROCESS FOR ELECTRODEPOSITING METAL-SILICATE COATINGS

Carl Y. Man, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed Dec. 2, 1969, Ser. No. 881,618  
Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—181

8 Claims

The electrodeposition of silicate coatings on metal articles is the subject of this invention; aqueous disper-

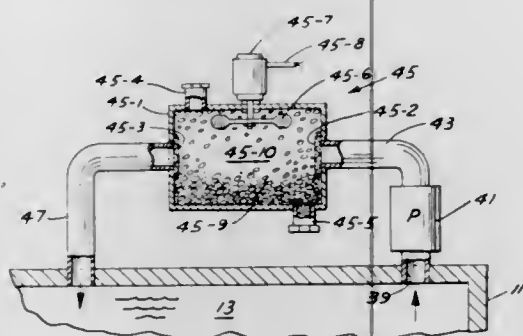


sions containing a silicate in combination with a metal, such as zinc, can be electrodeposited on metal articles to form a coating which has excellent corrosion resistance.

**3,630,870**  
**BASE CONCENTRATION CONTROL IN ELECTRODEPOSITION OF PAINT**  
Arthur G. Smith, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.  
Filed Dec. 12, 1969, Ser. No. 884,390  
Int. Cl. B01k 5/02

U.S. Cl. 204—181

1 Claim



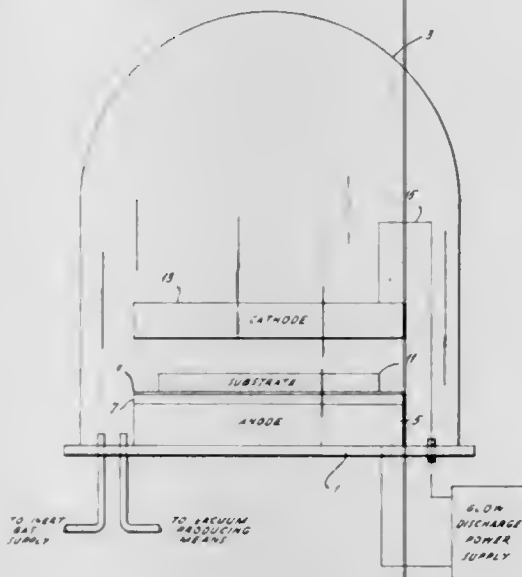
The concentration of water-soluble base in an electrocoating bath from which polycarboxylic acid resin is anodically deposited is controlled by circulating the coating bath in contact with a continuously agitated ion exchange monobed consisting essentially of a major amount of weakly acidic cation exchange resin and a minor amount of weakly basic anion exchange resin.

**3,630,871**  
**CATHODIC SPUTTERING METHOD**  
Sturges R. Wagner, North Palm Beach, Fla., assignor to General Instrument Corporation, Newark, N.J.  
Original application July 27, 1966, Ser. No. 568,321.  
Divided and this application June 11, 1969, Ser. No. 840,098

U.S. Cl. 204—192

Int. Cl. C23c 15/00

8 Claims



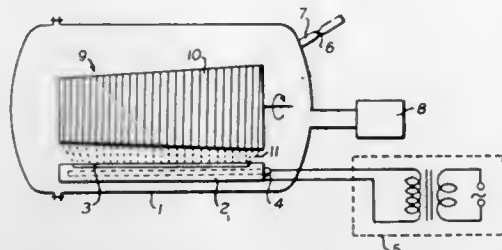
A cathodic sputtering method for depositing a thin film of cathode material on a substrate comprising the steps of positioning the substrate adjacent an anode surface coated with a material having properties similar to those of the substrate, and sputtering the substrate and the coating on the anode surface. Because of the anode coating, the anode "looks" to the cathode much like the substrate and therefore a thin film having uniform electrical resistance is produced over the entire surface of the substrate.

**3,630,872**  
**PROCESS FOR THE MANUFACTURE OF AN ELECTRICAL CONTACT POINT**  
Walter Reichelt, Hanau am Main, Germany, assignor to W. C. Heraeus G.m.b.H. Patentabteilung, Hanau, Germany

Filed Sept. 9, 1969, Ser. No. 856,932  
Claims priority, application Germany, Oct. 14, 1968, P 18 02 932.8  
Int. Cl. C23c 15/00

U.S. Cl. 204—192

9 Claims



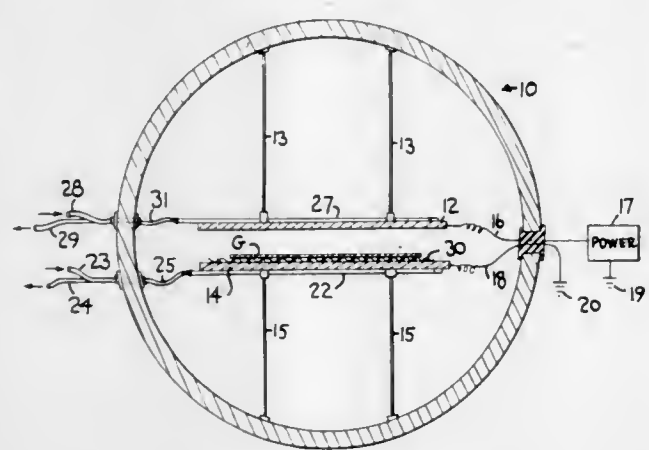
Improved process of producing contacts having a base support or substrate coated on at least part of at least one surface with a hard to form metal such as tungsten, rhenium, molybdenum, ruthenium, iridium or an alloy thereof wherein the metal coating material is provided as at least the inside surface of a cylinder and possibly also as an axial rod in the cylinder, attached to a high frequency generator which cylinder has a longitudinal slit therein, a plasma is generated by the high frequency generator which atomizes the metal and discharges such through the slit onto a suitable substrate which may be masked, if desired. The process is suitably carried out in a hermetically sealed chamber having vacuum pumping means attached thereto and gas admittance means attached thereto whereby the pressure can be regulated to  $10^{-2}$  to 1 mm. Hg A and the atmosphere can be regulated as desired.

**3,630,873**  
**SPUTTERING OF TRANSPARENT CONDUCTIVE OXIDE FILMS**  
Verl D. Moore, Kittanning, and John D. Thompson, Saxonburg, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 5, 1969, Ser. No. 882,688  
Int. Cl. C23c 15/00

U.S. Cl. 204—192

18 Claims



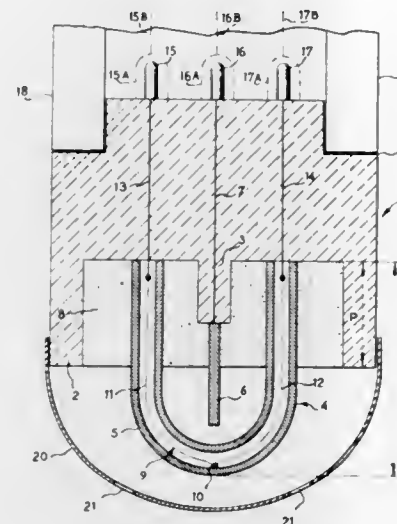
A transparent conductive oxide film may be cathode-sputtered onto glass or the like more rapidly when the glass is rested upon a water-cooled metal anode. In producing films of good conductivity, under 50 ohms per unit square, using such an anode, an undesirable patterned coating sometimes develops on the glass. The appearance is unsightly, and the pattern indicates a variation in the electrical properties of the coating. This invention minimizes and even prevents the pattern development by placing a piece of fiber-glass cloth or the like between the anode and the sample to be coated.

**3,630,874**  
**DEVICE FOR DETERMINING THE ACTIVITY OF OXYGEN IN MOLTEN METALS**  
Michel Olette and Christian Gatellier, St. Germain-en-Laye, France, assignors to Institut de Recherches de la Siderurgie Francaise, St. Germain-en-Laye, France  
Filed Nov. 15, 1968, Ser. No. 776,175  
Claims priority, application France, Nov. 17, 1967, 128,578

U.S. Cl. 204—195

Int. Cl. G01n 27/46

1 Claim



An expendable electrochemical cell for immersion into molten metal to determine the activity of oxygen therein comprise a tube of solid electrolyte which is immersed into a bath of molten metal and confines a reference substance containing oxygen whose partial pressure at various temperatures is known, and an electrode which is exposed to molten metal upon immersion of the cell. A thermocouple in the tube is surrounded by the reference substance and its branches are connected to terminals provided on a heat-resistant insulating support for the tube and electrode. The electromotive force is measured across one of the terminals and the electrode, and the temperature of molten metal is measured across the terminals.

**3,630,875**  
**HYGROMETER ELECTROLYTIC CELL**  
Fernand B. Kuffer, Brea, Calif., assignor to Beckman Instruments, Inc.  
Filed Mar. 10, 1970, Ser. No. 18,263  
Int. Cl. G01n 25/56

U.S. Cl. 204—195

15 Claims

An hygrometer electrolytic cell having an electrolyte an anhydride formed from an acid of an element selected from the group consisting of aluminum, boron, Group IV-A elements and Group V-A elements. The acid has blocked polymerization sites and contains not more than the equivalent of 19 carbon atoms.

**3,630,876**  
**MERCURY SEPARATION IN MERCURY PROCESS ELECTROLYTIC APPARATUS**

Hiroshi Shibata, Teruo Imai, and Shigeji Kumaki, Iwakashi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

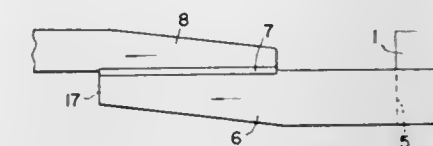
Filed Dec. 18, 1967, Ser. No. 691,413  
Claims priority, application Japan, Dec. 27, 1966, 42/85,476; Apr. 5, 1967, 42/21,226  
Int. Cl. C01d 1/08

U.S. Cl. 204—219

5 Claims

A baffle plate with an outlet opening below its lower edge forms a partial side wall of a passageway through which mercury or mercury amalgam flows together with

contaminants and a solution floating above it in a mercury process apparatus and only the mercury or amalgam is permitted to pass under and past the baffle into another passageway parallel to the first passageway,



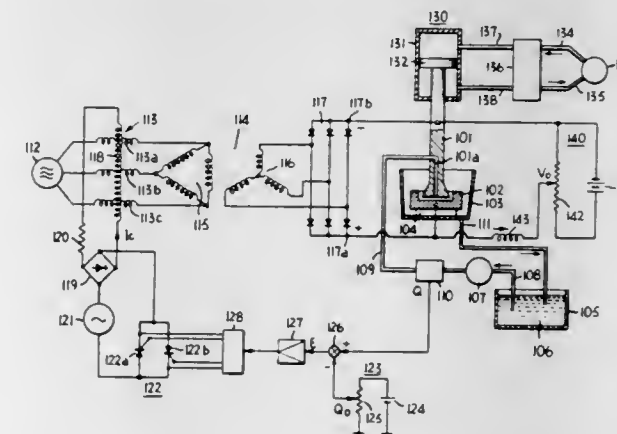
thereby being separated from the contaminants and solution, which are blocked by the baffle. The baffle along the side wall affords thorough separation without mixing due to turbulence of contaminants and solution with separated mercury or amalgam.

**3,630,877**  
**ELECTROLYTICALLY MACHINING APPARATUS**  
Kazushige Koike and Akio Sarai, Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 11, 1968, Ser. No. 759,158  
Claims priority, application Japan, Sept. 18, 1967, 42/59,699

U.S. Cl. 204—224

7 Claims



An electromagnetic flow meter measures a flow rate of a liquid electrolyte supplied to a working gap between a workpiece and a working electrode. In order to maintain the gap constant, a machining voltage or current is controlled to have its reference magnitude while simultaneously the current or voltage is controlled to make the measured flow rate equal to its constant reference magnitude. With the electrode arranged to move toward the workpiece at a constant feed rate, the feed rate is determined so as to make the machining current density equal to its constant reference magnitude while the machining voltage is controlled to make the measured flow rate equal to its constant reference magnitude. Alternatively, the machining voltage is controlled to have its constant reference magnitude while the feed rate is controlled to make the measured flow rate equal to its reference magnitude.

**3,630,878**  
**APPARATUS AND METHOD FOR FORMING GROOVES AND LANDS**  
William Andrew Haggerty, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio  
Filed Aug. 18, 1969, Ser. No. 850,805  
Int. Cl. B23p 1/04; C23b 5/72

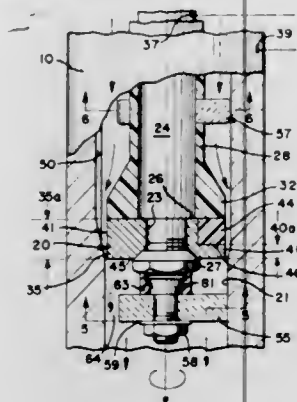
U.S. Cl. 204—225

6 Claims

An electrochemical machining apparatus for forming relatively shallow lands and grooves on the relatively



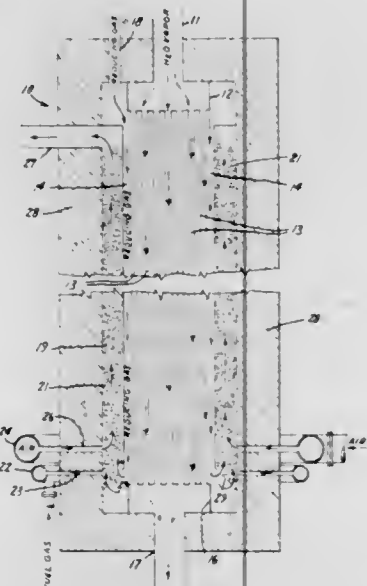
smooth interior surface bore of a tubular member, e.g., forming rifling in a gun barrel, includes a tool advanceable into the tubular workpiece while electrolyte is pumped between the tool and the interior surface of the workpiece. The outer peripheral surface of the tool includes a bore sizing and finish machining surface and an associated segmented groove machining and groove finishing surface which is integral therewith. The bore finishing surface machines the interior surface of the bore to a predetermined dimension and is followed



in the direction of tool travel by the segmented groove machining surface which forms grooves in the bore to a predetermined diameter greater than the predetermined bore dimension and separated by lands having a diameter equal to the predetermined bore dimension. By rotating the tool during its advancement spiral lands and grooves may be formed. The tool is supported by guides during its travel through the bore of the workpiece, the electrolyte flowing in the same direction that the tool is advancing.

**3,630,879**  
**INTERNALLY SHORT-CIRCUITED SOLID OXYGEN-ION ELECTROLYTE CELL**  
Henry S. Spacil, Schenectady, and Donald W. White, Burnt Hills, N.Y., assignors to General Electric Company

Filed Jan. 2, 1969, Ser. No. 788,581  
Int. Cl. B01k 3/00; C01b 13/04  
U.S. Cl. 204-248 4 Claims



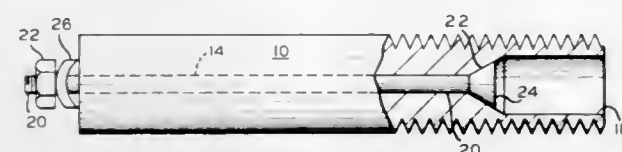
A tubular leadless solid oxygen-ion electrolyte cell is described employing as the electrolyte an oxygen-ion material having internal short circuiting. Water vapor is admitted to the cathode, where it is dissociated to yield hydrogen, while at the anode a reducing gas flow is supplied at a rate in excess of that required to combine with the oxygen emerging therefrom whereby to render the cell self-driven.

**3,630,880**  
**CURRENT COLLECTOR AND ELECTRODE ASSEMBLY**

Murl B. Howard, Bartlesville, Okla., assignor to Phillips Petroleum Company  
Filed Dec. 23, 1968, Ser. No. 785,960  
Int. Cl. B01k 3/04

U.S. Cl. 204-286

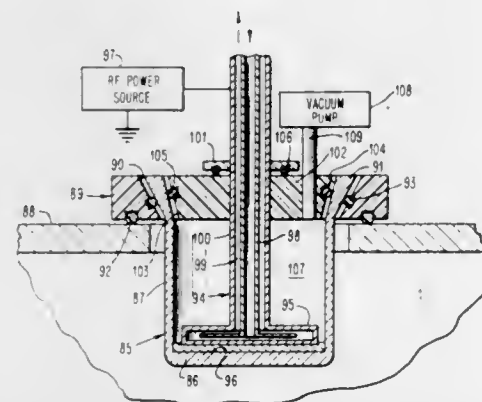
9 Claims



A current collector is provided for establishing an efficient electrical connection between same and an electrode in an electrolytic apparatus. Said current collector comprises a current-conducting bar and means for expanding at least one end portion of said bar. An electrode assembly comprising an electrode element having at least one of said current collectors mounted in an opening therein is also provided.

**3,630,881**  
**CATHODE-TARGET ASSEMBLY FOR RF SPUTTERING APPARATUS**  
William C. Lester, Hopewell Junction, Carlo Nuccio, Poughkeepsie, and Ernest S. Ward, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 22, 1970, Ser. No. 4,891  
Int. Cl. C23c 15/00  
U.S. Cl. 204-298 34 Claims



A target of a dielectric material is mounted in spaced relation to a cathode, which is isolated from the sputtering chamber and the anode in the sputtering chamber by the target and its mounting structure. RF energy is transferred from the cathode to the target, which has at least a portion parallel to the anode, through the space by a dielectric coolant, a liquid metal, or a metallic paste. When either the metallic paste or the liquid metal is employed, the cathode is cooled by circulating a coolant such as water therethrough.

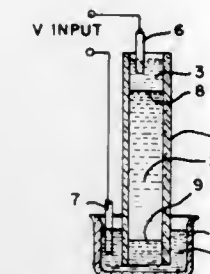
**3,630,882**  
**APPARATUS FOR PARTICLE SEPARATION**  
Robert H. Dilworth III, Knoxville, Tenn., assignor to Ortec, Incorporated, Oak Ridge, Tenn.  
Filed June 13, 1968, Ser. No. 736,642  
Int. Cl. B01k 5/00

U.S. Cl. 204-299

8 Claims

A mixture of particles in a suspending medium is subjected to an intermittent DC electrical field of strength which is sufficient to produce a sharp separation of two or more components of the mixture. The duty cycle of the field is such that electric power dissipation in the mix-

ture produced by the intermittent DC electric field does not materially cause loss of sharpness of separation of the components, and the application of the intermittent DC electric field is regulated in such a way as to produce

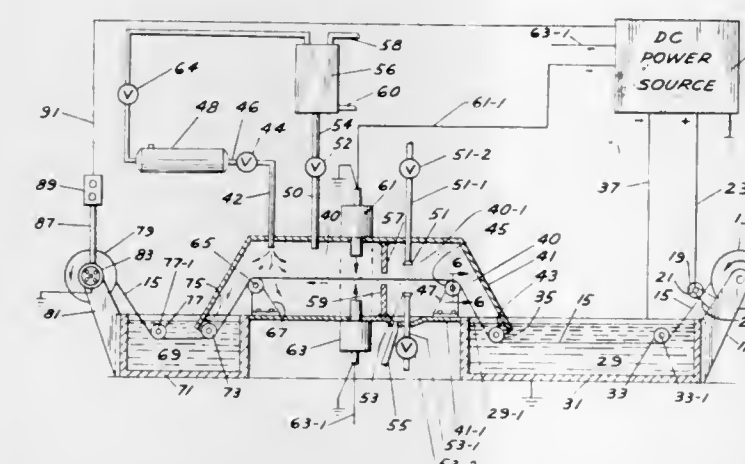


a selected low average DC power dissipation in the mixture and which may be substantially constant in spite of variations in the impedance of the mixture throughout the period of the separation.

**3,630,883**  
**COATING APPARATUS**  
Allen H. Turner, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.  
Original application Oct. 3, 1966, Ser. No. 583,834, now Patent No. 3,501,390, dated Mar. 17, 1970. Divided and this application Feb. 9, 1970, Ser. No. 9,816  
Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204-300

2 Claims



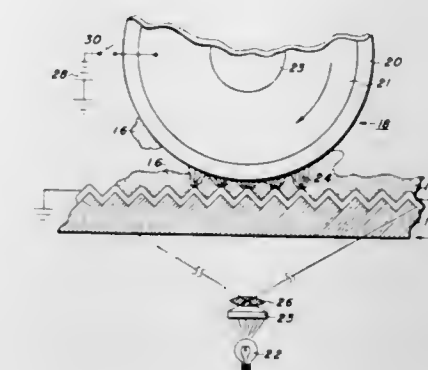
Apparatus for coating electrically conductive objects comprises in combination bath retention means, a housing forming an enclosed irradiation zone adjacent to and extending over and into said bath retention means, inlet means into said irradiation zone through which an inert gas can be introduced into said zone, a first electrode within said bath retention means, electrical supply means to provide a difference of potential between the object to be coated and said first electrode, conveyor means for transporting said object through said coating bath and into said irradiation zone, and electron emission means for irradiating said object in said irradiation zone.

**3,630,884**  
**TRANSPARENT ELECTRODE IMAGING IMPROVEMENT**  
Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.  
Filed May 2, 1969, Ser. No. 821,369  
Int. Cl. B01k 5/00

U.S. Cl. 204-300

7 Claims

Apparatus for improved imaging and for eliminating corona arcing in an electrophoretic imaging system em-



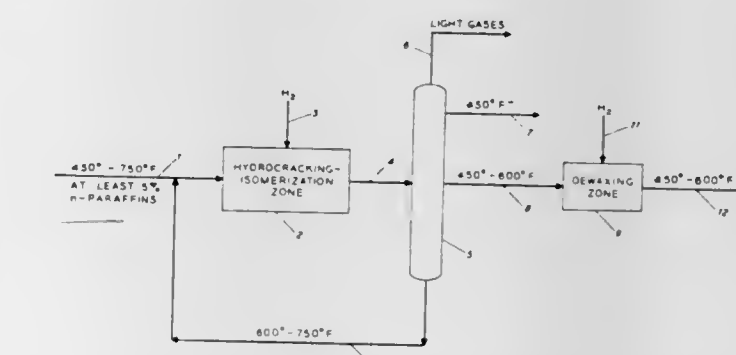
ploying a transparent electrode having electrically conductive transparent portions causing variations in the surface potential of the electrode under the influence of an electrical field. The electrode functions within an imaging

system also having a means to illuminate the conductive portions for forming an image in a confined electrical field in a manner preventing corona arcing between electrodes of the imaging system.

**3,630,885**  
**PROCESS FOR PRODUCING HIGH YIELDS OF LOW FREEZE POINT JET FUEL**  
Clark J. Egan, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
Filed Sept. 9, 1969, Ser. No. 856,304  
Int. Cl. B01j 11/08; C10g 13/02, 37/02

U.S. Cl. 208-59

10 Claims



Process for obtaining a high yield of low freeze point jet fuel from a hydrocarbon feedstock containing materials boiling above the jet fuel boiling range and containing at least 5 volume percent normal paraffins which comprises subjecting said feedstock to hydrocracking and isomerization in the presence of hydrogen and a catalyst comprising alumina, a halogen and a component selected from the metals platinum, palladium and iridium and compounds of said metals, whereby the amount of jet fuel boiling range materials is increased and normal paraffins are isomerized, and selectively hydrocracking the remaining normal paraffins in the presence of hydrogen and a catalyst comprising mordenite in hydrogen form and at least one hydrogenating component.

**3,630,886**  
**PROCESS FOR THE PREPARATION OF HIGH OCTANE GASOLINE FRACTIONS**  
Donald W. Deed, Millburn, and Terence K. Kett, Boonton, N.J., assignors to Esso Research and Engineering Company  
Filed Mar. 26, 1970, Ser. No. 22,841  
Int. Cl. C10g 37/06

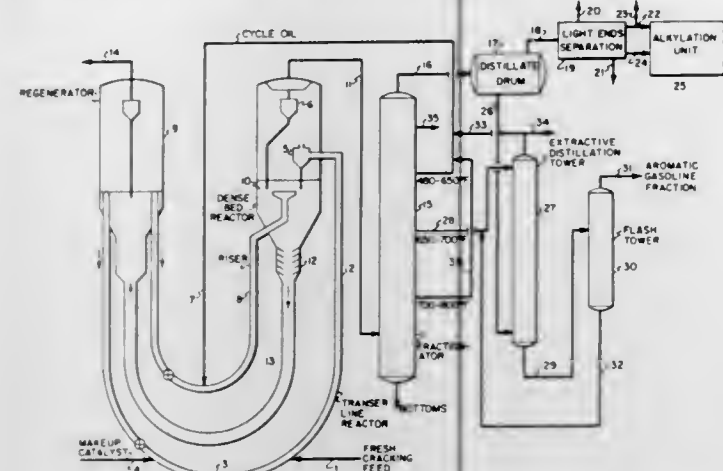
U.S. Cl. 208-96

10 Claims

High octane gasoline fractions are produced in a process comprising segregated cracking of virgin and recycle



stocks coupled with distillation and extractive distillation to recover alkylation feedstock components and a high



octane monocyclic aromatic petroleum fraction suitable for gasoline blending.

3,630,887

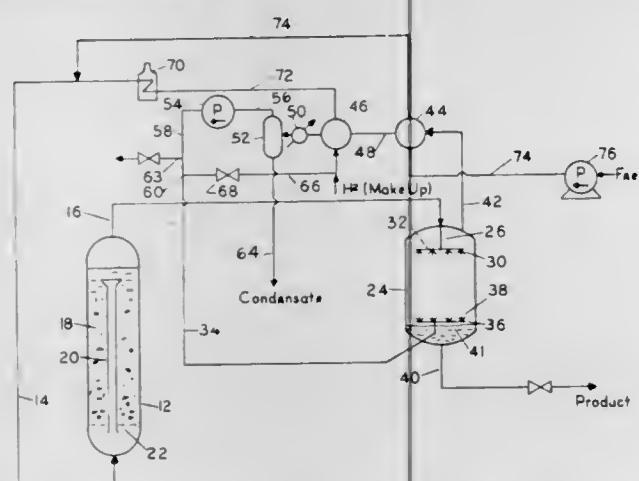
**RESIDUAL OIL HYDROGEN TREATING PROCESS**  
William R. Mounce, Cranbury and Roger P. Van Driesen, Hopewell, N.J., assignors to Cities Service Research and Development Company, New York, N.Y.

Filed Feb. 5, 1970, Ser. No. 8,857

Int. Cl. C10g 13/02

U.S. Cl. 208—100

3 Claims



An improved hydrogen treating process is disclosed in which a residual oil feed is treated with hydrogen in the presence of an ebullated catalyst bed at temperatures in a reactor between 800° F. and 900° F. and pressures between 2000 and 3000 p.s.i. The reactor effluent stream is cooled by spraying it down through an upwardly rising stream of cool recirculating hydrogen-rich gas resulting in transfer of heat to the gas and recovery of hydrogen from the effluent. The recirculating gas and recovered hydrogen is cooled by the incoming oil feed and additionally cooled before being pressurized to reactor pressure, and an aliquot portion of the cooled pressurized gas recirculated as coolant for the effluent, the remainder being recycled to the reactor with the feed.

3,630,888

**HYDROCRACKING AND DESULFURIZATION WITH A CATALYST HAVING MICROPORES AND ACCESS CHANNELS**

Seymour B. Alpert, Princeton, Ronald H. Wolk, Lawrence Township, and Peter Maruhn and Michael C. Chervenak, Pennington, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 678,727, Oct. 27, 1967. This application Mar. 2, 1970, Ser. No. 15,815

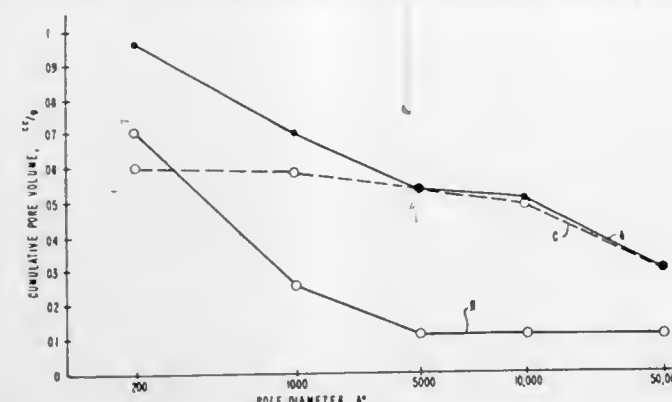
Int. Cl. C10g 23/02, 13/02

U.S. Cl. 208—109

8 Claims

A process for carrying out catalytic reactions, such as, hydrogenation, desulfurization, hydrocracking, including

halogenation, oxidation, sulfonation, nitration and amidization of hydrocarbons or the like in fixed, slurried, fluidized and ebullated beds utilizing a catalyst having micropores and access channels; and wherein the access channels are interstitially spaced throughout the micropores; and wherein 10 to 40% of the total pore volume is composed of access channels having diameters greater than 1000 angstroms; and wherein 10 to 40% of the total pore volume is composed of access channels having diam-



eters between about 100 and 1000 angstroms; and wherein these access channels are substantially uniform as to their parameters and are relatively straight with minimum bending and constrictions; and wherein the remainder of the catalyst pore volume comprises micropores with diameters less than 100 angstroms with the remainder being 20 to 80% of the total pore volume. Methods for preparing this catalyst with respect to orientation of the access channels are described.

3,630,889

**METAL NITRIDES AS CRACKING CATALYSTS**  
William F. Arey, Jr., and William J. Mattox, Baton Rouge, La., assignors to Esso Research and Engineering Company

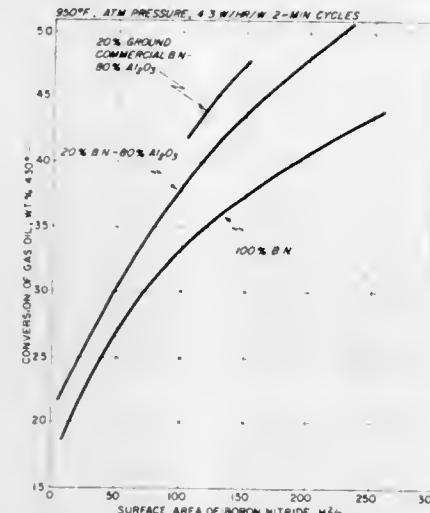
Filed Jan. 21, 1969, Ser. No. 792,653

Int. Cl. C10g 11/02; B01j 11/82

U.S. Cl. 208—114

15 Claims

CATALYTIC CRACKING OF ETLSO WITH BORON NITRIDE-CONTAINING CATALYSTS EFFECTS OF SURFACE AREA



A cracking catalyst consists essentially of a nitride of aluminum, boron, or silicon, supported or not, on alumina or alumina/silica, titania, zirconia and the like.

3,630,890

**OPERATION OF ADSORPTION SYSTEMS**

Norman L. Carr, Allison Park, and Harry C. Stauffer, Cheswick, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 7, 1969, Ser. No. 874,924

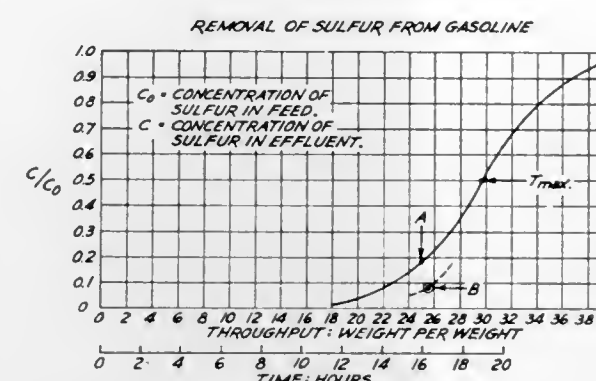
Int. Cl. C10g 17/08; B01d 53/04

U.S. Cl. 208—208

19 Claims

The operation of an adsorption system for the removal of at least one component from a fluid material with a

porous adsorbent is improved by interrupting flow of the fluid feed over the porous adsorbent at the time or before the concentration in the effluent of component ma-



REMOVAL OF SULFUR FROM GASOLINE

terial to be removed or the concentration of component material on the adsorbent reaches a predetermined value, and subsequently restarting the flow of fluid feed over the adsorbent.

3,630,891

**METHOD OF REMOVING OIL FROM THE SURFACE OF WATER**

Kenneth S. Peterson and George R. Palkie, Cloquet, Minn., assignors to Conwed Corporation, St. Paul, Minn.

No Drawing. Filed Feb. 28, 1969, Ser. No. 803,406

Int. Cl. B01d 15/00

U.S. Cl. 210—36

7 Claims

A felted fibrous sheet treated with a water repellent sizing material is used to remove oil floating upon the surface of water by absorbing the oil in preference to the water.

3,630,892

**PROCESS FOR REMOVING DISSOLVED NICKEL FROM A CONTAMINATED LIQUID**

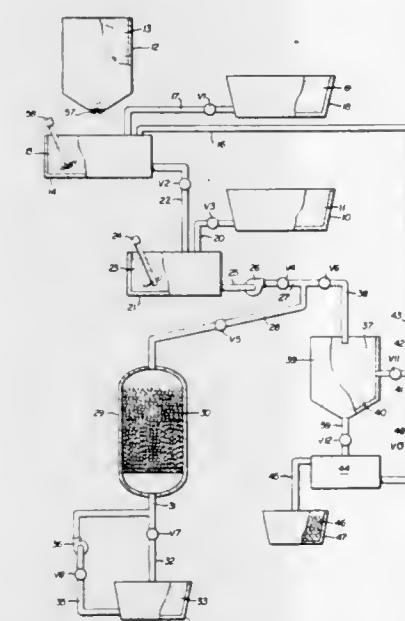
Gene Hirs, Birmingham, and Robert S. Kozar, Livonia, Mich., assignors to Hydromat Filter Company, Livonia, Mich.

Filed Dec. 10, 1970, Ser. No. 96,697

Int. Cl. C02c 5/02

U.S. Cl. 210—42

8 Claims



nickel solution to precipitate the nickel as a colloidal suspension, passing the precipitate suspension through a deep-bed filter having a granular, synthetic organic medium therein to deposit the nickel precipitate on the filter medium, backwashing the filter medium to remove the deposited nickel precipitate therefrom and then filtering the backwash liquid through a conventional filtration mechanism.

3,630,893

**METHOD OF CONCENTRATING AND HYDRO-EXTRACTING SUSPENSIONS**

Shigemasa Tanada and Hidetomo Suzuki, Tokyo, Japan, assignors to Ebara Inflico Kabushiki Kaisha, Tokyo-to, Japan

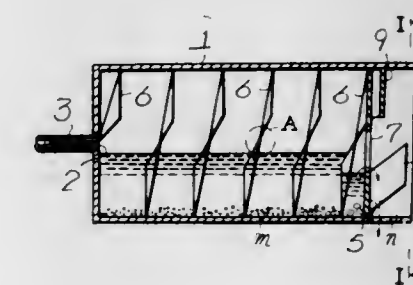
Filed Apr. 6, 1970, Ser. No. 25,679

Claims priority, application Japan, June 18, 1969, 44/48,032; July 18, 1969, 44/56,868; Sept. 8, 1969, 44/85,182

Int. Cl. B01d 21/01, 21/26

U.S. Cl. 210—49

5 Claims



According to this invention, cakes can be obtained from suspensions without the use of a centrifugal separator. vacuum hydroextractor or pressure hydroextractor. This problem is solved as a rolling motion is imparted to a solid matter suspended in liquid thereby to move the suspended solid matter while granulating or lumping the same, and the suspension is reasonably separated into a cake and liquid, say water, by taking the advantage of the difference between the imparted motion of the solid matter and the motion of the liquid.

3,630,894

**DETERGENT COMPOSITIONS**

Christina Nicholson Lazaridis, Wilmington, Del., and Harold Eugene Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed July 2, 1969, Ser. No. 838,707

Int. Cl. C11d 3/34; D06m 13/28

U.S. Cl. 252—8.7

19 Claims

A detergent composition which also softens textiles and which is non-yellowing and, further, does not render the textile water repellent, comprising a surface active detergent component and a sulfonolanyl (or sulfonolanyl) ester of a long chain carboxylic acid.

3,630,895

**TEXTILE SOFTENING AND OPTICAL BRIGHTENING COMPOSITIONS**

Horst-Jürgen Krause and Menfred Dohr, Dusseldorf-Holthausen, and Helmut Bloching, Hilden, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed June 26, 1969, Ser. No. 836,958

Claims priority, application Germany, July 2, 1968, P 17 69 718.6

Int. Cl. C09k 1/02; D06m 13/34

U.S. Cl. 252—8.75

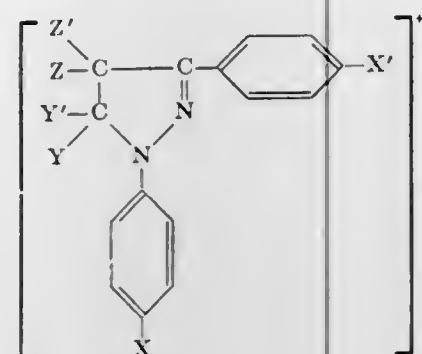
8 Claims

Textile softening and optical brightening compositions comprising a content of a water-dispersible salt of a surface-active ammonium compound and a content of a

A method of removing nickel from plating rinse water or the like by upwardly adjusting the pH of an aqueous



water-dispersible cationic optical brightener having the formula:

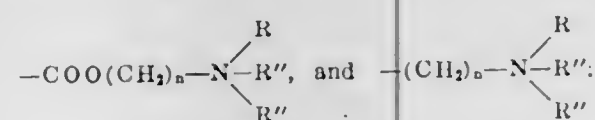
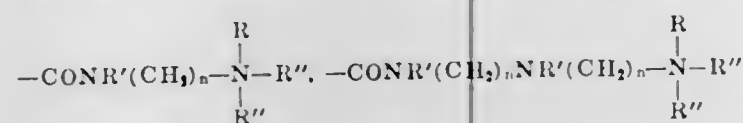


wherein:

X is a member selected from the group consisting of  $-\text{SO}_2\text{NH}_2$ ,  $-\text{SO}_2\text{R}$ ,  $-\text{SO}_2\text{OR}$ ,  $-\text{COOR}$ ,  $-\text{CONH}_2$ ,  $-\text{CN}$ ,  $-\text{CF}_3$ , halogen,  $-\text{OR}$ , and  $\text{R}$ ;

X' is a member selected from the group consisting of halogen,  $-\text{OR}$  and  $-\text{R}$ ;

Y is a member selected from the group consisting of:



Y' is a member selected from the group consisting of  $\text{H}$ ,  $-\text{R}$  and phenyl;

Z is a member selected from the group consisting of  $\text{H}$  and  $\text{Y}$ ;

Z' is a member selected from the group consisting of  $\text{H}$  and  $\text{R}$ ;

R is alkyl having 1 to 4 carbon atoms;

R' is a member selected from the group consisting of  $\text{H}$  and  $\text{R}$ ;

R'' is a member selected from the group consisting of  $\text{R}$  and  $-(\text{CH}_2)_{n-1}-\text{CH}_2\text{OH}$ ;

n is an integer from 2 to 4; and

A<sup>-</sup> is an anion of an acid.

3,630,896

#### AGRICULTURAL CHEMICAL COMPOSITION IN SOLID OR JELLY FORM

Hideto Oka, 275-1 Karasawa, Fujisawa-shi, Kanagawa, Japan, and Eiichi Nakatsuka, 23-15 Kohinata 1-chōme, Bunkyo-ku, Tokyo, Japan

No Drawing. Filed July 11, 1969, Ser. No. 841,150

Claims priority, application Japan, July 12, 1968,

43/48,724

Int. Cl. A01n 9/00; B01j 13/00; C09k 3/00

U.S. Cl. 252-1

1 Claim

The present invention relates to an agricultural chemical solidified or jellied by adding an appropriate amount of dibenzalsorbitol, monobenzalsorbitol or tribenzalsorbitol to an organic agricultural chemical which is liquid, as it is, or in a liquid state by dissolving said chemical in a solvent. The agricultural chemical may be a germicide, nematocide, insecticide or herbicide.

3,630,897

#### COLOR STABILIZATION OF LUBRICATING COMPOSITIONS

Raymond Rohde and Andrew E. Skeen, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,210

Int. Cl. C10m 1/32, 1/38

U.S. Cl. 252-33.6

7 Claims

The darkening and discoloration of lubricating greases and oils induced by the use of metal salts of substituted

dithiocarbamic acid are effectively prevented by the inclusion of small amounts of poly(phenylene sulfide) in the lubricating composition.

3,630,898

#### PRODUCT AND PROCESS

Ford C. Teeter, Palos Heights, Ill., David B. Sheldahl, Griffith, Ind., and Barnard C. Creech, Homewood, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 632,190, Apr. 20, 1967. This application Jan. 9, 1970, Ser. No. 1,875

Int. Cl. C10m 1/32

U.S. Cl. 252-34.7

24 Claims

A lubricating composition which is essentially biodegradable and dispersible in water and made from about 1 to 77 weight percent of water; about 2 to 50 weight percent of an olefinically-unsaturated fatty acid having 10 to 32 carbon atoms (e.g. oleic acid); about 1 to 50 weight percent of a water-soluble alkanol amine (e.g. ethanolamine); about 0 to 90 weight percent of an alcohol (e.g. ethylene glycol); and about 1 to 30 weight percent of an ester of a polyethylene glycol and an olefinically-unsaturated fatty acid having 10 to 32 carbon atoms (e.g. a monooleate of a polyethylene glycol of about 400 molecular weight).

3,630,899

#### LUBRICATING METHOD FOR CONTINUOUS CASTING

Peter J. Koenig, Zumikon, Switzerland, assignor to Concast Aktiengesellschaft, Zurich, Switzerland

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,387

Claims priority, application Switzerland, Mar. 25, 1968, 4,395/68

Int. Cl. C10m 1/26

U.S. Cl. 252-37

6 Claims

A method of lubricating continuous castings of metals, particularly steel, which comprises introducing into the continuous-casting mold during casting a lubricant consisting of a lubricating oil, such as rape oil, in which additives are incorporated for increasing the proportion of carbon-containing constituents in the residues formed in the mold by pyrolytic decomposition.

3,630,900

#### LUBRICANT COMPOSITIONS

Henricus G. P. van der Voort, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 680,991, Nov. 6, 1967. This application

May 13, 1969, Ser. No. 824,292

Claims priority, application Great Britain, Nov. 18, 1966,

51,844/66

Int. Cl. C10m 1/28, 1/38

U.S. Cl. 252-47.5

13 Claims

Lubricant compositions containing as an additive a linear alkyl substituted polyphenylene polymer. The phenylene groups may be connected directly together or separated by hydrocarbyl or hetero atoms, e.g., polyphenylene ethers.

3,630,901

#### GREASE COMPOSITIONS

Joseph F. Messina, Delaware, and Henry Gisser, Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,797

Int. Cl. C10m 5/18, 5/20

U.S. Cl. 252-51

8 Claims

Stable grease compositions having excellent extreme pressure properties, among others, the greases consisting of about 66.5 to 75.8 weight percent petroleum fluids having pour points ranging between  $-7.0$  to  $-40.0^\circ\text{C}$ , 0.5

weight percent phenyl-1-naphthylamine, the balance being tetrafluoroethylene polymer having a molecular weight of 10,000-50,000, a softening point of  $321.1^\circ\text{C}$ , a particle size less than 30 microns in diameter, and supplied as a 7.5% suspension in trichlorotrifluoroethane.

3,630,902

LUBRICANT ADDITIVES DERIVED FROM CATALYTICALLY POLYMERIZED REACTION PRODUCTS OF SUCCINIMIDES AND UNSATURATED MONOCARBOXYLIC ACIDS OR ANHYDRIDES

Keith Coupland and John Crawford, Hornsea, E. Yorks, England, assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed July 23, 1969, Ser. No. 844,161

Int. Cl. C10m 1/20, 1/32

U.S. Cl. 252-51.5 A

10 Claims

A process is described for the preparation of lubricant additives having detergency and viscosity index-improving properties wherein a succinimide detergent having a free primary amino group is reacted with a polymerizable acid or acid derivative and the reaction product polymerized. A further polymerization with a copolymerizable monomer is also described.

3,630,903

#### LUBRICANT CONTAINING POLYMERIC PRODUCTS OF ALKENYL SUCCINIC ANHYDRIDE AND A PIPERIDINE DERIVATIVE

Walter W. Hellmuth, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

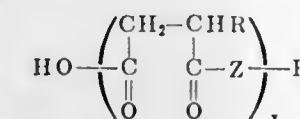
No Drawing. Filed Aug. 7, 1969, Ser. No. 848,323

Int. Cl. C10m 1/20, 1/32

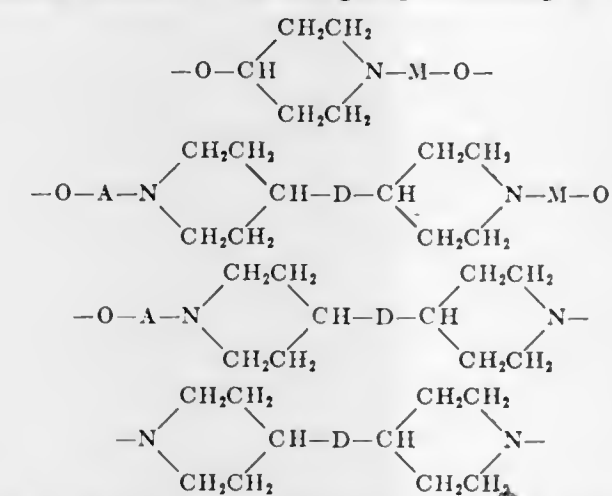
U.S. Cl. 252-51.5 A

14 Claims

A lubricating composition containing as a dispersant between about 0.1 and 80 wt. percent of a polymeric alkenyl succinic anhydride-piperidine derivative characterized the formula:



where x is an average integer of from 2 to 100 and Z is a member selected from the group consisting of



where A, M and D are divalent saturated aliphatic hydrocarbons of from 2 to 10 carbons, and R is a monovalent alkenyl hydrocarbon radical of from 30 to 200 carbons.

3,630,904

#### LUBRICATING OILS AND FUELS CONTAINING ACYLATED NITROGEN ADDITIVES

Jerry L. Musser and Edward J. Frihauf, Mentor, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of applications Ser. No. 742,133, July 3, 1968, and Ser. No. 851,736, Aug. 18,

1969. This application Nov. 10, 1969, Ser. No. 875,580

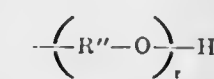
Int. Cl. C10m 1/20, 1/32; C10l 1/22

U.S. Cl. 252-51.5 A

30 Claims

Compositions of matter particularly useful as lubricant and fuel additives prepared by reacting various nitrogen-

containing reactants with a mono- or polycarboxylic acid acylating agent containing at least about thirty aliphatic carbon atoms. The nitrogen-containing reactants are characterized by the presence of at least one N-substituent corresponding to



where r is 1-10 and R'' is hydrocarbylene of up to 10 carbon atoms. An exemplary composition is one prepared by reacting polyisobutenyl succinic anhydride with the reaction product of N-(hydroxyethyl)-ethylene diamine and adipic acid.

3,630,905

#### OIL-EXTENDED VI IMPROVERS

Poznan M. Sargo, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 19, 1968, Ser. No. 777,190

Int. Cl. C08d 5/00

U.S. Cl. 260-85.1

5 Claims

An oil-extended VI improver which by outward appearance is dry comprising (a) 40-60 weight percent hydrogenated butadiene-styrene polymer and (b) 60-40 weight percent of a paraffinic oil. The oil-extended VI improver can be readily dispersed in a lubricating oil following storage and/or shipping to a place of utilization.

3,630,906

#### GALLIUM ARSENIDE

Robert K. Willardson, Arcadia, Worth P. Allred, West Covina, and James E. Cook, Duarte, Calif., assignors to Bell & Howell Company

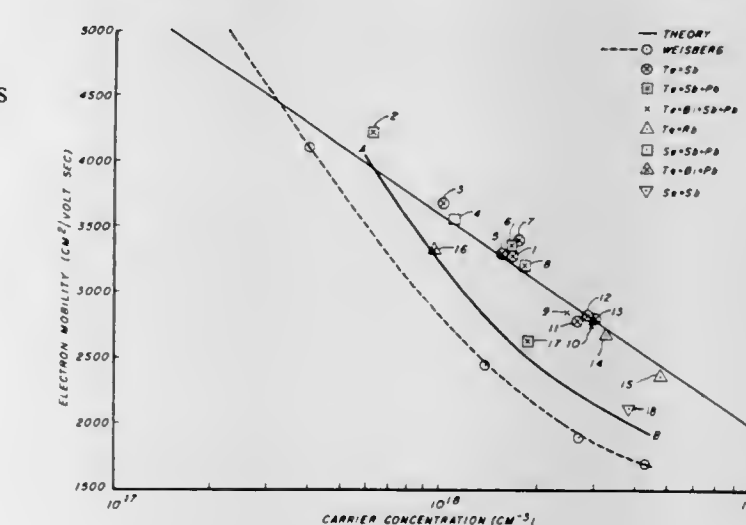
Continuation of application Ser. No. 543,604, Apr. 19,

1966. This application Oct. 2, 1969, Ser. No. 863,267

Int. Cl. C04b 35/00; C01b 27/00; B01j 17/00

U.S. Cl. 252-62.3 GA

1 Claim



Gallium arsenide having reduced lattice defect concentrations and enhanced electrical properties.

3,630,907

#### PIEZOELECTRIC CERAMICS

Tomeji Ohno, Masao Takahashi, Tsuneo Akashi, and Norio Tsubouchi, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan

Continuation-in-part of application Ser. No. 681,494,

Nov. 8, 1967. This application July 10, 1969, Ser.

No. 840,788

Claims priority, application Japan, July 12, 1968,

43/49,407

The portion of the term of the patent subsequent to

July 27, 1988, has been disclaimed

Int. Cl. C04b 35/46, 35/48

U.S. Cl. 252-62.9

3 Claims

Piezoelectric ceramics are provided consisting essentially of a solid solution of  $\text{Pb}(\text{Li}_{1/4}\text{Sb}_{3/4})\text{O}_3$ ,  $\text{PbTiO}_3$  and



PbZrO<sub>3</sub> where up to 25 atom percent of Pb may be replaced by at least one of Ba, Sr and Ca, and manganese oxide in the amount of 0.10 to 3.0 weight percent in the form of MnO.

### 3,630,908 FERROELECTRIC AND PIEZOELECTRIC COMPOSITION

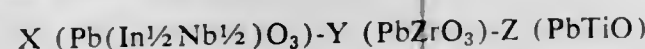
Mitsuo Osada and Osamu Kumon, Osaka, and Tatsuya Nishimoto, Hyogo, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Mar. 11, 1968, Ser. No. 712,192

Claims priority, application Japan, Jan. 8, 1968, 43/1,030

Int. Cl. C04b 35/46, 35/48

U.S. Cl. 252—62.9 4 Claims  
Ferroelectric and piezoelectric composition comprising a solid solution of the ternary system



is disclosed. The constituents are defined by the formula  $X+Y+Z=100$ .

wherein X, Y and Z are in the following ranges, taken with reference to the figure ABCDEFGH in FIG. 1:

	X	Y	Z
A-----	75	0	25
B-----	60	10	30
C-----	10	60	30
D-----	5	55	40
E-----	5	45	50
F-----	15	30	55
G-----	35	10	55
H-----	35	0	65

3,630,909

### POLARIZABLE FERROELECTRIC CERAMIC COMPOSITIONS HAVING IMPROVED ELECTRO-MECHANICAL COUPLING COEFFICIENT AND DIELECTRIC CONSTANT

Hisao Banno, Tokai, Tsutomu Tsunooka, Kariya, and Masao Sakai, Tajimi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

No Drawing. Filed May 19, 1969, Ser. No. 825,947

Claims priority, application Japan, June 5, 1968, 43/37,982

Int. Cl. C46b 35/46, 35/48

U.S. Cl. 252—62.9 12 Claims  
A novel and useful polarizable ferroelectric ceramic composition suitable for use in piezoelectric and electrostrictive ceramic articles and consisting essentially of  $\text{Pb}(\text{W}_{1/2}\text{Ni}_{1/2})\text{O}_3\text{-PbTiO}_3\text{-PbMO}_3$  wherein M represents Zr and/or Sn, and wherein a part of Pb is replaceable by at least one alkaline earth element selected from the group consisting of Ba, Ca and Sr, and containing at least one element selected from the group consisting of Bi, Sb, Ta, Nb, Th, La, Ce in an amount corresponding to 0.1 to 6.0 weight percent of respective oxide in the aggregate.

3,630,910

### MAGNETIC RECORDING MEDIUM

Goro Akashi and Masaaki Fujiyama, Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan

No Drawing. Filed Jan. 12, 1968, Ser. No. 697,329

Claims priority, application Japan, Jan. 12, 1967, 42/2,355

Int. Cl. H01f 1/26

U.S. Cl. 252—62.54 8 Claims  
By incorporating fine abrasive particles in a magnetic layer containing ferromagnetic powder in a binder on a

magnetic recording medium, the surface of a recording and reproducing head can be maintained in a smooth condition. The abrasive particles may also form the outer surface of the magnetic layer.

3,630,911

### LEAD FERRITE GLASS-CERAMIC ARTICLES AND METHOD OF MAKING THE ARTICLES

Peter Charles Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 20, 1969, Ser. No. 835,206

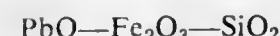
Int. Cl. C03c 3/10, 3/22

U.S. Cl. 252—62.59

9 Claims



This invention relates to the manufacture of glass-ceramic articles containing lead ferrites as the principal crystal phase. More particularly, this invention relates to glass-ceramic articles with compositions in the



field which exhibit high magnetic susceptibility, such as to recommend their use as permanent magnets, and low electrical resistivity such as to suggest their utility as semiconductor materials.

3,630,912

### LITHIUM TITANIUM BISMUTH FERRITES

Giltan Michael Argentina, Belmont, and Paul D. Baba, San Carlos, Calif., assignors to Ampex Corporation, Redwood City, Calif.

No Drawing. Filed Oct. 3, 1969, Ser. No. 863,683

Int. Cl. C04b 35/26

U.S. Cl. 252—62.59 3 Claims  
Microwave ferrites with narrow resonance linewidths, good temperature performance, low losses, low costs, and rectangular hysteresis loops are made from a lithium-titanium ferrite containing a small amount of bismuth. In addition, small amounts of zinc, copper or manganese can be present in the ferrites.

3,630,913

### DEICER COMPOSITION

Herbert F. Scott, Jr., Prince George, and Joseph Novotny and Harry E. Ulmer, Hopewell, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 15, 1969, Ser. No. 824,808

Int. Cl. C09k 3/18; C23f 11/18

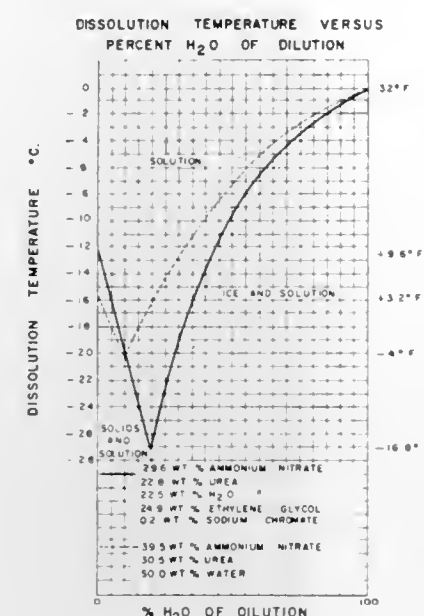
U.S. Cl. 252—70

6 Claims

A fluid deicer composition preferably for use to deice aircraft runways, consisting of from 22 to 26 weight percent of urea, 28 to 34 weight percent ammonium nitrate,

and 25 to 30 weight percent ethylene glycol in water, together with a sufficient amount of a water soluble chro-

representatives of which are the esters and amides of phosphorus, the ortho-silicates, the poly-silicones, the aryl ethers and esters. These compositions have many uses, among which are their use as hydraulic fluids.



mate salt to provide from 0.05 to 0.15 percent  $\text{CrO}_4^{=}$  ion to inhibit corrosion of aluminum and magnesium metals.

3,630,914

### AQUEOUS GLYCOL-BASED AUTOMOTIVE ANTI-FREEZE COOLANT AND CONCENTRATE CONTAINING ANTILEAK ADDITIVE

Robert J. Nankee and Conrad D. Woods, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 3, 1969, Ser. No. 839,071

Int. Cl. C09k 3/02, 3/12

U.S. Cl. 252—72

4 Claims

Small leaks in aqueous systems, e.g., automobile radiators, are stopped by the addition to the aqueous fluid of about 10 to 1000 p.p.m. of particulate cross-linked polyacrylamide, wherein the polyacrylamide particles, in dry form, are predominantly of a size that passes a 50 mesh screen but not a 200 mesh screen.

3,630,915

### THERMALLY STABLE HEAT TRANSFER FLUIDS AND FLUID SYSTEMS

James D. Sullivan, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,918

Int. Cl. C09k 3/02

U.S. Cl. 252—78

9 Claims

The long term thermal stability of halogenated polyphenyl heat transfer fluids is improved by adding a phosphorus compound to the fluid and providing an inert gas purge to sweep gaseous decomposition products from the heat transfer system. Fluids maintained in this manner are less corrosive, form less solid decomposition products, and undergo a smaller viscosity increase than untreated fluids when exposed to high temperature applications for extended periods.

3,630,916

### FUNCTIONAL FLUID COMPOSITIONS

Quentin Elwyn Thompson, Belleville, Ill., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed July 21, 1966, Ser. No. 566,735

Int. Cl. C09k 3/00; C10m 3/40

U.S. Cl. 252—78

19 Claims

Functional fluid compositions of the class which exhibit the ability to inhibit and control damage to mechanical members in contact with said compositions by the incorporation of heavy water into a class of base stocks

3,630,917

### HEAT TRANSFER COMPOSITION

Robert S. McCord, Pacific Palisades, Calif., assignor to Douglas McDonnell Corporation, Santa Monica, Calif.

No Drawing. Continuation of application Ser. No. 649,819, June 29, 1967, which is a continuation-in-

part of application Ser. No. 344,092, Jan. 29, 1964.

This application Apr. 7, 1969, Ser. No. 816,157

The portion of the term of the patent subsequent to

Oct. 22, 1985, has been disclaimed

Int. Cl. C09k 3/02

U.S. Cl. 252—78

8 Claims

Heat transfer composition consisting essentially of a tetraalkyl orthosilicate having alkyl groups each containing not in excess of 4 carbon atoms and a minor proportion not more than about 15% by weight of said composition, of a polyalkylene glycol material, preferably a polyalkylene glycol diether, such composition having low viscosity at low temperatures, i.e., less than about 250 centistokes at  $-65^\circ\text{F}$ , good hydrolytic stability and fire resistance, and a reduced shrinkage effect on rubber O-ring seals.

3,630,918

### PHOSPHORODITHIOATE SALTS FOR ATF FLUIDS

Bruce W. Hotten, Orinda, and Thomas V. Liston, Kentfield, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,381

Int. Cl. C09k 3/00; C10m 1/48

U.S. Cl. 252—75

9 Claims

Alkali and alkaline earth metal salts (atomic Nos. 3 to 20) of O,O-di(straight chain alkylphenyl) phosphorodithioates, wherein the alkyl groups are of from 8 to 30 carbon atoms, are used in automatic transmission fluids as friction agents.

3,630,919

### COLLOIDAL SILICA CLEANSING COMPOSITIONS AND METHOD

Victor E. Sheaffer, Glen Gardner, Pasquale J. Falivene, Union City, and Alan Dillarstone, Highland Park, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed June 2, 1969, Ser. No. 829,704

Int. Cl. C01b 33/14; C09k 3/22

U.S. Cl. 252—88

15 Claims

A mixture of colloidal silica of less than about 20 microns, inert filler and water provides an outstanding cleaner particularly for carpets and the like, especially when vigorously applied, and after a short drying period is readily removable.

3,630,920

### WATER-SOLUBLE COATINGS, PACKAGES AND METHODS FOR MAKING AND USING SAME

Milton Freifeld, Boonton, N.J., and George G. Tauth, Palmerton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 608,485, Jan. 11, 1967. This application Apr. 13, 1970, Ser. No. 28,132

Int. Cl. C21d 17/00

U.S. Cl. 252—90

10 Claims

This invention is directed to coated compositions comprising granular detergent solids or detergent tablets coated with a water-soluble partial ester of (a) a non-ionic hydroxyl-containing micelle-forming surface active agent and (b) a vinyl-maleic anhydride interpolymers, and the process for producing said coated compositions.



3,630,921

**SCOURING AGENTS WITH A BLEACHING AND DISINFECTING ACTION**

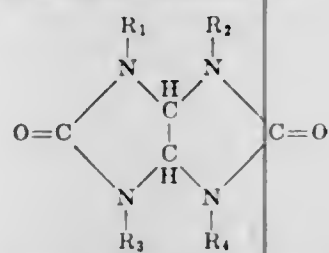
Karlheinz Disch, Hilden, Rhineland, Dieter Kuhling, Monheim, Rhineland, Peter Krings, Krefeld, and Horst Bellingier, Dusseldorf, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany  
No Drawing. Filed Dec. 27, 1968, Ser. No. 787,623  
Claims priority, application Germany, Dec. 3, 1968, P 18 12 382.5

Int. Cl. C11d 7/54

U.S. Cl. 252—95

4 Claims

Scouring agents having a bleaching and disinfecting action comprising a major amount of water-insoluble scouring components and a minor amount of essentially water-soluble components including a solid water-soluble per-compound and an effective amount of acylated glycoluril activators having the formula



wherein at least two of  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are acyls of organic carboxylic acids having from 2 to 8 carbon atoms and the remainder of  $R_1$ ,  $R_2$ ,  $R_3$  and  $R_4$  are members selected from the group consisting of hydrogen, alkyl having from 1 to 8 carbon atoms, phenyl, phenylalkyl having from 7 to 8 carbon atoms, and acyls of organic carboxylic acids having from 2 to 8 carbon atoms.

3,630,922

**LIQUID DETERGENT COMPOSITION**

Herbert Kenneth McClain, Wyoming, and Richard Fiske Stradling, Jr., Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Continuation-in-part of application Ser. No. 649,018, June 26, 1967. This application June 3, 1968, Ser. No. 733,780

Int. Cl. C11d 7/56

U.S. Cl. 252—99

4 Claims

Stable, liquid detergent compositions for cleaning surfaces, said compositions containing particulate materials (e.g., abrasives), water, arylsulfoncholoramide bleaching agents, potassium iodide, alkylbenzenesulfonate detergent, zwitterionic synthetic detergent and electrolyte, which preferably comprises a detergency builder.

3,630,923

**LOW SUDSING ALKALINE DISHWASHER DETERGENT**

Judith K. Simmons and Everitt A. Kitchen, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Filed May 8, 1969, Ser. No. 823,142

Int. Cl. C11d 7/56

U.S. Cl. 252—99

3 Claims

Alkaline dishwasher detergent based on an alkaline sequestrant builder, sodium silicate, a chlorine bleach, an alcohol ethoxylate nonionic surfactant and a mono- or dialkyl acid phosphate suds suppressant.

3,630,924

**PREPARATION CONTAINING DEXTRANASE**

Glendon Richard Miller, Basking Ridge, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,577

Int. Cl. C11d 7/54

U.S. Cl. 252—100

5 Claims

This disclosure relates to stable effervescent denture soak compositions containing dextranase particularly useful in reducing dental plaque.

3,630,925

**DEODORANT AND GERMICIDAL BODIES FOR TOILETS AND URINALS**

Fred H. Buck, Jr., Boonton Township, Morris County, N.J., assignor to Arrowhead Industries, Inc., Denville, N.J.

No Drawing. Continuation-in-part of application Ser. No. 563,689, July 8, 1966, now Patent No. 3,378,495, which is a continuation-in-part of abandoned application Ser. No. 508,585, Nov. 18, 1965. This application Mar. 11, 1968, Ser. No. 711,892

Int. Cl. C11d 9/50

U.S. Cl. 252—107

4 Claims

Deodorant and germicidal bodies for toilets and urinals comprising sugar, soap, germicidal agent, and, optionally, tetrasodium pyrophosphate or sodium tripolyphosphate.

3,630,926

**AZEOTROPIC COMPOSITION OF 1,1,2,2-TETRACHLORO-1,2-DIFLUOROETHANE AND TRICHLOROETHYLENE**

Jan R. Haase, Rochester, John Allan Schofield, Irvington, and Roger A. Delano, Dobbs Ferry, N.Y., assignors to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed Dec. 9, 1968, Ser. No. 782,419

Int. Cl. C09d 9/00; C11d 7/50; C23g 5/02

U.S. Cl. 252—171

2 Claims

The disclosure relates to azeotropic mixtures of tetrachlorodifluoroethane and trichloroethylene. It has been discovered that this azeotrope may be used in solvent vapor cleaning and degreasing applications.

3,630,927

**SOAP COMPOSITIONS CONTAINING ALKYL AMINO DIACETATES AS LIME SOAP DISPERSANTS**

Chung Yu Shen, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Mar. 10, 1970, Ser. No. 18,289

Int. Cl. C11d 1/10, 9/46; B01f 17/28

U.S. Cl. 252—117

5 Claims

The tendency of natural soap compositions to deposit precipitates in hard water is inhibited by addition of 5 to 70% by weight alkali metal alkyl amino diacetates wherein the alkyl group contains from 10 to 24 carbon atoms.

3,630,928

**PARTICLES CONTAINING MIXTURES OF POLYPHOSPHATES AND SILICATES**

Robert J. Fuchs, Clark, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Jan. 8, 1968, Ser. No. 696,114

Int. Cl. C11d 7/14, 7/16, 11/00

U.S. Cl. 252—135

3 Claims

Strong, stable particles containing a mixture of a sodium tripolyphosphate and a silicate, wherein the  $\text{SiO}_2$  to tripolyphosphate mole ratio is at least 1:1, were produced by admixing sodium tripolyphosphate and an aqueous solution of an alkali metal silicate to obtain a sticky mixture which agglomerates into soft, deformable granules, drying the granules at from 60 to 80° C. and recovering the resulting, dried, granular particles.

3,630,929

**FAST DISSOLVING NONAQUEOUS BUILT LIQUID DETERGENT COMPOSITIONS**

Antonie Brand van Dijk, Vlaardingen, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,124

Claims priority, application Luxembourg, Jan. 17, 1969, 57,796

Int. Cl. C11d 3/075, 7/42

U.S. Cl. 252—136

7 Claims

The rate of solution of a substantially non-aqueous, built liquid detergent composition comprising a water-free

liquid detergent surfactant, an inorganic carrier material and a builder is improved by the incorporation therein of a small amount of an acid substance.

3,630,930

**ENZYME-CONTAINING, GRANULAR DETERGENT COMPOSITION**

Jerry Edison Davis, Cincinnati, Ohio, and Howard John Wick, Shelton, Wash., assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of application Ser. No. 691,205, Dec. 18, 1967. This application Mar. 19, 1969, Ser. No. 808,663

Int. Cl. C11d 3/065, 1/12

U.S. Cl. 252—531

13 Claims

Alkaline, granular detergent composition containing from about 0.5% to about 20% of enzyme carrier granules, said enzyme carrier granules comprising phosphate builder salts, an acid component selected from the group consisting of dihydrogen disodium pyrophosphate, sodium bicarbonate, sodium bisulfate and mixtures thereof, and alkaline proteases or mixtures of alkaline proteases  $\alpha$ -amylases.

3,630,931

**COMPOSITIONS FOR CLEANING STONE, BRICKS AND CONCRETE**

Georges Salomone, Paris, France, assignor to Societe Anonyme SEFA, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 543,024, Apr. 18, 1966, now Patent No. 3,481,879, dated Dec. 2, 1969. This application Sept. 15, 1969, Ser. No. 869,990

The portion of the term of the patent subsequent to Dec. 2, 1986, has been disclaimed

Int. Cl. C11d 7/08, 7/10, 7/26

U.S. Cl. 252—142

2 Claims

A product for cleaning stone, bricks, concrete and other constructional material consists essentially of an aqueous paste having as a base ammonium bifluoride, barium chloride, hydrofluoric acid and ammonium sulfate with a stabilizing sugar.

3,630,932

**CORROSION-INHIBITED MINERAL ACIDS**

Robert J. Tedeschi, Whitehouse Station, and Paul W. Natali, Middletown, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed Dec. 31, 1968, Ser. No. 789,019

Int. Cl. C11d 7/26; C23g 1/06

U.S. Cl. 252—146

9 Claims

Aqueous acid solutions are inhibited against corrosion of metals, especially ferrous metals, by incorporation of a corrosion-inhibiting system composed of a combination of 4-ethyl-1-octyn-3-ol and 1,10-diethyl-7-tetradecyn-6,9-diol.

3,630,933

**AMINE INHIBITORS FOR ACIDIC CLEANING SOLUTIONS**

Walter R. Dudlik, Ambler, and George S. Gardner, Elkins Park, Pa., assignors to Amchem Products, Inc., Ambler, Pa.

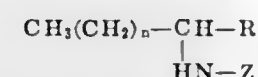
No Drawing. Filed Jan. 19, 1968, Ser. No. 699,051

Int. Cl. C11d 7/32; C23g 1/06

U.S. Cl. 252—148

23 Claims

Acidic cleaning solutions, which have little or no tendency to corrode metal surfaces, containing amine compounds prepared by reacting a specific amine starting material, formaldehyde and a ketone in the presence of acid, are described. The amine starting material is of the formula



3,630,934

**MILDNESS ADDITIVE**

Ralph Kelly, Cincinnati, and Edmond Jean Ritter, Loveland, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

No Drawing. Continuation-in-part of application Ser. No. 613,095, Feb. 1, 1967. This application Jan. 9, 1968, Ser. No. 696,509

Int. Cl. C11d 3/20

U.S. Cl. 252—547

14 Claims

The degree of skin irritation of detergent compositions is reduced by adding to the detergent compositions small amounts of a hydroxyl derivative of a polymerized fatty acid or a hydroxyl derivative of a hydrogenated (saturated) polymerized fatty acid, e.g. the hydroxy derivative of dimer acid.

3,630,935

**DRY CLEANING COMPOSITION**

Gordon W. Potter, Jr., Greenhills, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,652

Int. Cl. C11d 11/18, 3/24; D061 1/04

U.S. Cl. 252—153

9 Claims

A dry cleaning composition, having a pH in the range of from about 6.5 to about 9, consisting essentially of from about 20% to about 99.94% by weight of a dry cleaning solvent and from about 0.06% to about 80% of an anionic detergent comprising the monoethanolamine salt of an essentially pure, broad cut, linear  $\text{C}_8$  to  $\text{C}_{18}$  benzene sulfonic acid; the composition, when employed in conventional dry cleaning operations, improves fabric cleaning and reduces fabric graying.

3,630,936

**DRAIN CLEANER**

Robert E. Hill, Memphis, Tenn., assignor to Armour and Company, Chicago, Ill.

No Drawing. Filed Feb. 4, 1966, Ser. No. 525,105

Int. Cl. C11d 7/06, 7/12

U.S. Cl. 252—157

5 Claims

A composition providing heat when mixed with water, and a method for making the same. In this composition, aluminum particles and water soluble inorganic nitrate particles are bonded to the surface of alkali metal hydroxide particles.

3,630,937

**SULFONATED POLYSTYRENE COMPOSITIONS AND METHODS OF TREATING BOILER WATER**

Raymond N. Baum, Pittsburgh, Edward N. Rebis, Coraopolis, and Phillip B. Reilly, Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Filed May 6, 1968, Ser. No. 727,005

Int. Cl. C02b 1/18, 5/06

U.S. Cl. 252—181

14 Claims

Compositions and methods for boiler water treatment are disclosed. The compositions contain a sulfonated polystyrene to act as a dispersive; in addition, they may contain a chelating agent such as  $\text{Na}_2\text{NTA}$ . A useful composition combines the polymer with a silicate and/or a phosphate.



3,630,938

**CHROMATE AND ORGANOPHOSPHATE COMPOSITIONS AND METHODS FOR CONTROLLING SCALE AND INHIBITING CORROSION**

Edwin S. Trosinski, Oak Lawn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,050  
Int. Cl. C02b 1/18, 5/02

U.S. Cl. 252—181

10 Claims

This invention relates to methods and compositions used to inhibit scale formation and/or the formation of solid scale forming salts and to prevent corrosion in water or brine comprising adding to said water or brine small amounts of certain compounds containing chromates and organophosphates.

3,630,939

**COMPOSITIONS AND METHODS FOR THE PRODUCTION OF CHEMILUMINESCENT COLD LIGHT**

Harold W. Schneider, % The Varniton Co., Box 433, North Palm Springs, Calif. 92258

No Drawing. Filed Jan. 14, 1969, Ser. No. 791,155  
Int. Cl. C09k 3/00

U.S. Cl. 252—186

7 Claims

Chemiluminescent cold light of selected color to continue for up to six days duration is produced by the intimate mixture of a luminol-dimethylsulfoxide mixture, with a less than 20% by volume water solution of dimethylsulfoxide saturated with a hydroxide, with the mixture and solution initially maintained in the presence of air. The addition of fluorescein may be made to change the color of the light. Methods of producing the chemiluminescent cold light are also described.

3,630,940

**2-MERCAPTOBENZOTHAZOLE/TETRAALKYLTHIURAM DISULFIDE MIXTURE**

Richard Leshin, Akron, Ohio, assignor to The Goodyear Tire &amp; Rubber Company, Akron, Ohio

No Drawing. Filed Apr. 28, 1969, Ser. No. 819,970  
Int. Cl. C08c 11/56, 11/62

U.S. Cl. 252—182

15 Claims

Process of preparing a mixture of 2-mercaptobenzothiazole and tetraalkylthiuram disulfide in an aqueous medium involving the forming of a tetraalkylthiuram disulfide slurry containing a reducing agent prior to incorporating the 2-mercaptobenzothiazole with the tetraalkylthiuram disulfide slurry.

3,630,941

**INFRARED FLUORESCING SYSTEMS**

William Russell Bergmark, Buffalo, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 3, 1968, Ser. No. 807,468  
Int. Cl. C09k 3/00

U.S. Cl. 252—186

7 Claims

An infrared fluorescent solution comprising 16,17-dialkoxyviolanthrones in a solvent, and a method for obtaining infrared emission by radiant or chemical excitation of the fluorescent solution.

3,630,942

**REMOVAL OF ORGANIC IODINE FROM RADIO-IODINE-CONTAINING ATMOSPHERES**

Benadetto A. Soldano and Wilfred T. Ward, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,905  
Int. Cl. B01d 47/06

U.S. Cl. 252—188

2 Claims

A spray or scrub solution for removing iodine from gases in contact therewith comprises:

(a) An aqueous solution adjusted to a pH in the range

9 to 10 with an alkali metal hydroxide such as potassium hydroxide or sodium hydroxide, said solution containing

(b) Up to .3 weight percent boron as borate,

(c) A reducing agent for molecular or atomic iodine selected from the group consisting of sodium thiosulfate and formaldehyde, and

(d) From 0 to an effective amount of a free radical getter, or a material which reacts with hydrated electrons.

3,630,943

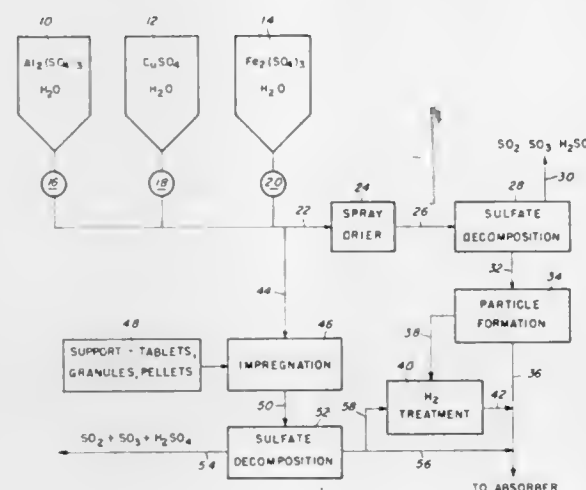
**PREPARATION OF ABSORBENTS FOR SULFUR OXIDE REMOVAL**

John G. Myers and Joseph H. Field, Pittsburgh, Pa., assignors to the United States of America as represented by the Secretary of the Interior

Filed Aug. 14, 1969, Ser. No. 850,098  
Int. Cl. C09k 3/00

U.S. Cl. 252—190

6 Claims



Mixtures of sulfate salts selected from the group consisting of  $Al_2(SO_4)_3 \cdot CuSO_4$ ;  $CuSO_4 \cdot Fe_2(SO_4)_3$ ; and  $Fe_2(SO_4)_3 \cdot Al_2(SO_4)_3$  are decomposed to the corresponding oxides and made into particulate form for use as an absorbent in sulfur oxide absorption from gases. The absorbents can be used unsupported or on a suitable support material. In either case, the absorbents are capable of regeneration.

3,630,944

**OPTICAL BRIGHTENING AGENTS WITH HIGH WHITENING POWER, THEIR MANUFACTURE AND USE**

Masaaki Ohkawa, Takatsuki-shi, Masatoshi Matsuo, Ibaragi-shi, Tadao Sakaguchi, Osaka, Syozi Sato, Hirakata-shi, and Yoshikazu Momoi, Osaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Jan. 27, 1969, Ser. No. 794,388

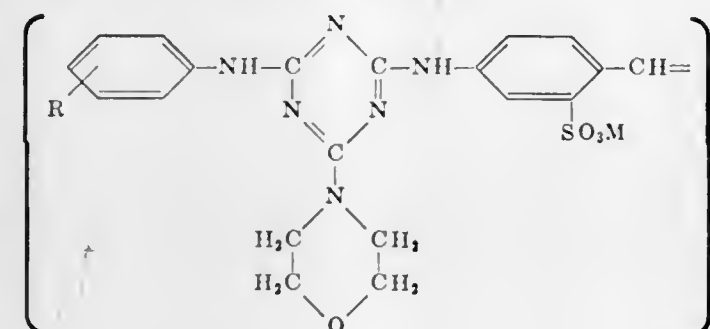
Claims priority, application Japan, Mar. 14, 1968, 43/16,916; Apr. 9, 1968, 43/23,619

Int. Cl. C09k 1/00; F21k 2/00

U.S. Cl. 252—301.3 W

14 Claims

$\beta$ -Form crystals of a compound represented by the formula



wherein R is hydrogen atom or methyl group; and M is sodium or potassium having a particle size of about  $1 \times 2 \mu$  which is prepared by pulverizing said crystals in the presence of alkaline phosphates and/or alkaline silicates or in the presence of alcohol, ester, ketone, hydrocarbon or a mixture thereof.

3,630,945

**DIVALENT EUROPIUM ACTIVATED ALKALINE EARTH ALUMINUM FLUORIDE LUMINESCENT MATERIALS AND PROCESS**

Mary V. Hoffman, South Euclid, Ohio, assignor to General Electric Company

Filed Apr. 6, 1970, Ser. No. 25,760

Int. Cl. C09k 1/04

U.S. Cl. 252—301.4 R

10 Claims

$SrAlF_6$ ,  $BaAlF_6$ , and  $Ba_2Al_2F_{12}$ , all activated with divalent europium substituting for the alkaline earth metal, are shown to be efficient producers of sharp line ultraviolet emission resulting from 4f to 4f energy level transitions in the divalent europium, as contrasted to previous luminescent materials utilizing divalent europium as an activator in which the emission is a band due to 5d to 4f transitions. Solid state and precipitation methods for producing these phosphors are disclosed. These materials are useful as phosphors in cathode ray tubes, lamps, and other applications.

3,630,946

**METHOD OF PREPARING RARE EARTH METAL ORTHOVANADATE PHOSPHOR**

Richard C. Ropp, Warren, and Raymond Oakley, Newark, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed Nov. 18, 1969, Ser. No. 877,858

Int. Cl. C09k 1/44

U.S. Cl. 252—301.4 R

8 Claims

An improved method of precipitating the raw-mix constituents of rare earth metal orthovanadate phosphor from aqueous solution, and preparing a superior rare earth metal activated rare earth metal orthovanadate composition. The constituents are dissolved in acid solution, with vanadium pentoxide being dissolved in concentrated hydrochloric acid to provide a high concentration of vanadyl radical in solution. Predetermined amounts of hydroxyl radical containing compound and sodium perborate are admixed with the rare earth metal and vanadium containing acid solutions so that the pH of the resulting mixture is at least 7.5 to provide a condition under which rare earth metal orthovanadate is very efficiently precipitated. The precipitant is calcined to provide an activated, efficient rare earth metal orthovanadate phosphor.

3,630,947

**EUROPIUM STRONTIUM CHLORIDE PHOSPHATE FLUORESCENT COMPOSITION**

Lothar H. Brixner, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

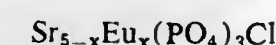
Filed Oct. 17, 1969, Ser. No. 867,990

Int. Cl. C09k 1/06, 1/36

U.S. Cl. 252—301.4 P

1 Claim

Luminescent compositions of the formula



where x has a value from 0.04 to 0.5; the compositions are prepared by a flux-reaction technique using sources of strontium chloride,  $P_2O_5$ , and europium oxide in the

3,630,948

**BISMUTH ACTIVATED YTTRIUM OXYSULPHATE**

George Blasse and Jaap de Vries, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,397

Claims priority, application Netherlands, Feb. 28, 1969, 6903112

Int. Cl. C09k 1/22

U.S. Cl. 252—301.4 S

2 Claims

A luminescent material which exhibits radiation in the ultraviolet region and which is a bismuth activated yttrium oxysulfate.

3,630,949

**AEROSOL STATIC-DISSIPATING MATERIAL**

Adolph F. Brux, Los Angeles, Calif. (11 S. Termino Ave. 313, Long Beach, Calif. 90803), and Gary V. Dubin, 3100 Cherry Creek S. Drive, Denver, Colo. 80209

No Drawing. Filed Jan. 5, 1968, Ser. No. 695,881

Int. Cl. C09k 3/30

U.S. Cl. 252—305

7 Claims

A chemical composition consisting of a high-melting-point fatty ammonium chloride compound of a waxy consistency and a low order of toxicity and which is film-forming, a straight-chain fatty acid to prevent opacity of such a film, a compatible solvent system for said film-forming and opacity-preventing ingredients, and propellants forming a system for pressurizing the foregoing ingredients and solvents to produce an aerosol for storage in a dispensing container and dispensing therefrom under pressure of the propellants.

3,630,950

**COMBUSTIBLE COMPOSITIONS FOR GENERATING AEROSOLS, PARTICULARLY SUITABLE FOR CLOUD MODIFICATION AND WEATHER CONTROL AND AEROSOLIZATION PROCESS**

Henry M. Papee, Alberto C. Montefinale, and Gianna L. Petriconi, all of Via Vettore 4 (Monte Sacro), 00141, Rome, Italy, and Tadeusz W. Zawadzki, 497 Brittany Drive, Ottawa 7, Ontario, Canada

Continuation-in-part of application Ser. No. 742,956, June 19, 1968. This application Nov. 21, 1968, Ser. No. 777,581

Int. Cl. A01g 15/00; C09k 3/30; E01h 13/00

U.S. Cl. 252—305

11 Claims

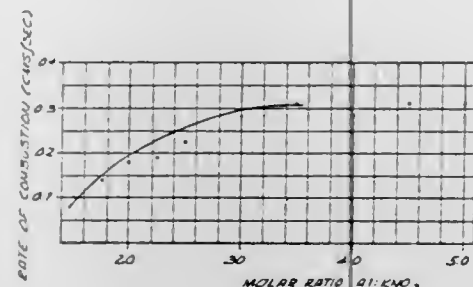
A combustible composition for generating aerosols for the control and modification of weather conditions consisting of a readily oxidizable substance selected from the group consisting of aluminum, magnesium, alkali-metals and alkaline earth metals; an oxidizing agent selected from the groups consisting of:

(a) sulphur and sulphur yielding compounds; and  
(b) organic and inorganic nitrates, alkali-metal and ammonium chlorates and perchlorates;

the molar ratio of the oxidizable substance to the oxidizing agent being between 1.5:1 and 3.5:1 and a stable hygroscopic solid which does not directly participate in the combustion process of the combustible composition,



said hygroscopic solid being present in an amount up to 40% of the total weight of the combustible composition, the oxidizable substance, the oxidizing agent and the hygroscopic substance having a particle size in the range of from -140 to +270 mesh, and a primer initiating



the combustion of said composition whereby during combustion, a finely dispersed aerosol smoke consisting of moderately hygroscopic condensation nuclei, and a non-hygroscopic gas are simultaneously evolved, said gas acting to disperse said nuclei.

3,630,951

**BUBBLE COMPOSITIONS**

George P. Netherly, Afton Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Dec. 15, 1967, Ser. No. 690,747

Int. Cl. B01j 13/00

U.S. Cl. 252—307

4 Claims

Bubble compositions comprising water, a humectant and a water soluble bubble forming compound containing a fluoroaliphatic radical and a water solubilizing group which can be used to form long lasting large pendulous bubbles.

3,630,952

**METAL-PHOSPHO-SILICA COMPOSITION AND METHOD OF MANUFACTURE**

Claudius Nielsen, 18464 Harlow Ave., Detroit, Mich. 48235

No Drawing. Continuation-in-part of applications Ser. No. 355,936, Mar. 30, 1964, Ser. No. 372,385, June 3, 1964, and Ser. No. 404,901, Oct. 19, 1964. This application July 14, 1969, Ser. No. 841,564

Int. Cl. B01j 13/00; C09d 5/08; C23f 11/18

U.S. Cl. 252—309

38 Claims

A metal-phospho-silica composition useful as a component of paints, lacquers, adhesives, sealing agents, caulking agents and the like, to impart anti-corrosion, impermeability and intumescence to such compositions, in which a divalent or trivalent metal, metal oxide or metal salt is reacted with orthophosphoric acid in a ratio sufficient to form a metal hydrogen phosphate solution containing metal dihydrogen phosphate in a major proportion and free orthophosphoric acid in a minor proportion; and thereafter, reacting a major proportion of the metal hydrogen phosphate solution with a minor proportion of an alkali metal silicate in a ratio sufficient to form a soft, non-crystalline metal-phospho-silica composition. The metal-phospho-silica composition is substantially insoluble in water and in most organic solvents, but it is readily dispersed therein; and may be dispersed in such materials by the addition of a suitable surface active agent. The metal-phospho-silica composition may also be produced in powdered form by utilizing any one of several techniques for removing water from the reaction product.

3,630,953

**TAILORED SURFACTANTS FOR USE IN FORMING OIL-IN-WATER EMULSIONS OF WAXY CRUDE OIL**

Ralph Simon, Whittier, and Alan H. Beyer, Fullerton, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,876

Int. Cl. B01j 13/00

U.S. Cl. 252—312

3 Claims

Disclosed is a method of making oil-in-water emulsions of waxy crude oils for transporting same by use of a surfactant mixture of nonionic surfactants each composed of differing amounts of ethylene oxide in the hydrophilic portions.

3,630,954

**ORGANIC AMINE-STRONG BASE STABILIZED HIGH SURFACE AREA SILICA SOLS AND METHOD FOR PREPARING SAME**

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 8, 1969, Ser. No. 823,185

Int. Cl. B01j 13/00; B28b 7/34; C01b 33/14

U.S. Cl. 252—313 S

5 Claims

Compositions consisting essentially of colloidal silica sols having a surface area of from 950 to 1800 m<sup>2</sup>/gram stabilized with a co-stabilizer system consisting of (1) an organic or inorganic base having a basic dissociation constant greater than 10<sup>-2</sup> and (2) an organic monoamine are useful as refractory binders.

3,630,955

**GRAFT POLYMERIZATION AS A CAPSULE WALL TREATING PROCESS**

Donald Day Emrick, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Jan. 29, 1968, Ser. No. 701,126

Int. Cl. B01j 13/02; B44d 1/02, 1/44

U.S. Cl. 252—316

9 Claims

A process is provided for treating, en masse, existing capsule walls of hydrophilic polymeric material, in a liquid manufacturing vehicle, to seal the capsule walls against loss of fluid materials through permeation pathways. The process includes reacting material of the capsule walls with certain transition metals to provide nucleation sites unless such sites are already present and then initiating a free-radical-generated polymerization reaction wherein polymeric material is created interstitially or internally within the wall material during which it becomes grafted onto molecular units of the capsule wall material. Capsules resulting from practice of this invention have walls which exhibit greatly decreased permeation of fluids when compared with untreated capsule walls of like material. Examples of materials to be used for the graft-polymerization of free-radical-generated polymeric material include acrylonitrile, methacrylonitrile, fumaronitrile, and itaconitrile.

**ERRATUM**

For Class 252—373 see:  
Patent No. 3,631,073

3,630,956

**METHOD OF PRODUCING GASES WITH CONTROLLED CONCENTRATIONS OF WATER VAPOR**

Michael A. Benning, Allentown, and Alan H. Singleton, Emmaus, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 1, 1969, Ser. No. 812,246

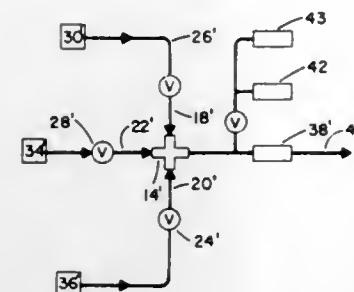
Int. Cl. C09k 3/00; C01b 5/00; B01j 11/08

U.S. Cl. 252—372

12 Claims

Processes are disclosed for the preparation of gas mixtures having a stable, controlled content of water vapor.

The invention is characterized by the catalytic conversion to water of accurately determined quantities of hy-



drogen and oxygen contained in the gas to be humidified. The processes are suitable for use in both cylinder and pipeline transportation of gases.

3,630,957

**DIAGNOSTIC AGENT**

Hans-Georg Rey, Pieter Rieckmann, Hans Wielinger, and Walter Rittersdorf, Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim Gesellschaft mit beschränkter Haftung, Mannheim-Waldhof, Germany

No Drawing. Filed Nov. 15, 1967, Ser. No. 683,129

Claims priority, application Germany, Nov. 22, 1966, B 89,944

Int. Cl. G01n 31/22, 33/16

U.S. Cl. 252—408

24 Claims

Diagnostic agents for use in the detection of biochemical and chemical components in blood, urine and other biological fluids are disclosed comprising water-resistant films in which a composition forming color in response to said chemical or biological component is uniformly distributed.

3,630,958

**TEST COMPOSITION AND METHOD FOR DETECTING REDUCING SUGARS IN AQUEOUS FLUIDS**

Helen Mae Free and John Robert Wisler, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Dec. 19, 1968, Ser. No. 785,380

Int. Cl. C09k 3/00; G01n 33/16

U.S. Cl. 252—408

8 Claims

Test composition and method for detecting reducing sugars in aqueous biochemical and industrial fluids comprising a dry solid mixture of an acid material, an alkaline material, a cupric salt and a surface active agent capable of forming a substantially monomolecular film at the liquid-vapor interphase of the fluid being tested.

3,630,959

**CARBONIZATION OF BITUMINOUS COALS**

Oliver A. Kiikka, Willoughby, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

No Drawing. Filed June 4, 1969, Ser. No. 830,509

Int. Cl. C01b 31/08

U.S. Cl. 252—422

4 Claims

Carbonization of bituminous coal wherein the coal is acidified with a liquid sulfonating agent such as sulfuric acid or oleum and thereafter carbonized by heating to a temperature in the range of 600° C. to 900° C., the heating rate in the temperature range of 400° C. to 600° C. being in excess of 10° C. per minute. The acidified coal is preferably deacidified prior to carbonization by heating at a temperature in the range of 400° F. to 700° F. with or without a sweeping airstream. Acid treatment of the bituminous coals permits carbonization thereof at an accelerated rate without caking during heating through the temperature range of 400° C. to 600° C.

3,630,960

**ORGANIC PEROXIDE ENOLIZABLE KETONE COMPOSITIONS**

Edward Chetanian, Anaheim, Calif., assignor to The Norac Company, Inc., Azusa, Calif.

No Drawing. Continuation-in-part of applications Ser. No. 732,077, May 27, 1968, and Ser. No. 831,720, June 9, 1969, the latter being a continuation-in-part of application Ser. No. 732,078, May 27, 1968, and with said Ser. No. 732,077 is a continuation-in-part of application Ser. No. 447,547, Apr. 12, 1965, now Patent No. 3,398,213, application Ser. No. 447,547 being in turn a continuation-in-part of application Ser. No. 50,308, Aug. 18, 1960. This application Apr. 27, 1970, Ser. No. 32,339

Int. Cl. C08f 21/00

U.S. Cl. 252—426

24 Claims

Compositions of hydroperoxides, ketones peroxides and peresters with B-diketones and derivatives of acetoacetic acid are useful low hazard initiators for polymerization.

3,630,961

**HYDROCARBON ISOMERIZATION PROCESS**

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 835,218, June 20, 1969. This application Aug. 22, 1969, Ser. No. 852,463

Int. Cl. B01j 11/74, 11/78, 11/12

U.S. Cl. 252—439

5 Claims

Isomerizable hydrocarbons are isomerized using a catalytic composite comprising a combination of a platinum group component and a lead component uniformly distributed throughout a porous carrier material wherein the catalytic composite contains, on an elemental basis, about 0.01 to about 2 wt. percent platinum group component and lead in an atomic ratio of lead to platinum group component of from about 0.05:1 to about 0.9:1. A catalytic composite comprising a refractory inorganic oxide combined with a Friedel-Crafts metal halide and having uniformly dispersed therewith a platinum group component and a lead component is also disclosed.

3,630,962

**AZINES AND HYDRAZONES AS PAINT DRIER ACCELERATORS**

Christian H. Stapfer, Newtown, Pa., assignor to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Filed Mar. 13, 1970, Ser. No. 19,512

Int. Cl. C09d 3/64

U.S. Cl. 252—431 C

10 Claims

Organic azines or hydrazones are used as activators for cobalt, zirconium, iron, manganese and zinc carboxylates driers for drying alkyd paints and varnishes or to promote oxidative polymerization of olefinic polymer systems, particularly unsaturated polyester resins in conjunction with organic peroxides and cobalt or other transition metal driers. The azines or hydrazones can be stabilized with phenolic antioxidants. The azines are preferred to the hydrazones, cyclohexane azine being most preferred. Particularly good results are obtained with cobalt driers and azines (or hydrazones) due to the formation of a blue complex which has a whitening effect on the composition.

3,630,963

**REACTION PRODUCTS OF HALOARYLLITHIUM COMPOUNDS AND VINYLITIN COMPOUNDS AS POLYMERIZATION INITIATORS**

William J. Trepka and Richard J. Sonnenfeld, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,579

Int. Cl. C08d 3/06

U.S. Cl. 252—431 R

3 Claims

The reaction products of vinyltin compounds with 3-halophenyllithium, 1-halo-3-naphthyllithium, 3-halo-1-naphthyllithium, 4-halophenyllithium, or 4-halonaphthyl-



lithium are employed as initiators for the polymerization of conjugated dienes to polymers having a higher cis content and lower inherent viscosity than those ordinarily obtained with organolithium initiators.

### 3,630,964 CATALYST FOR OXIDATION OF ALIPHATIC DIENES TO FURALDEHYDES

Theodor Vrbaski, Harvey, Ill., and Thomas David Sheehan, Kalamazoo, Mich., assignors to Atlantic Richfield Company

No Drawing. Original application Mar. 25, 1968, Ser. No. 715,492, now Patent No. 3,546,257, dated Dec. 8, 1970. Divided and this application Dec. 2, 1969, Ser. No. 882,380

Int. Cl. B01j 11/74

U.S. Cl. 252—439

4 Claims

A catalyst for the vapor phase oxidation of a 1,3-diene selected from the group consisting of 1,3-pentadiene and 2-methyl-1,3-butadiene to produce a furaldehyde. The catalyst contains oxides of copper, arsenic, tellurium, and molybdenum. The metals are present in the catalyst in the following atomic ratios:



wherein  $a$  is about 2 to 20,  $b$  is about 0.1 to 15,  $c$  is about 0.1 to 5, and  $d$  is about 20 to 30.

3,630,965

### HYDROCARBON CONVERSION CATALYST

Alexis Voorhies, Jr., Baton Rouge, and Charles N. Kimberlin, Jr., East Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,272

Int. Cl. B01j 11/78

U.S. Cl. 252—442

16 Claims

Improved hydrocarbon catalysts are prepared by treating certain zeolites with hydrogen fluoride. It is preferred that the hydrogen fluoride treatment be accomplished after those preparation steps requiring contact of the zeolite with water at high temperatures. It is also preferred that the zeolite which is subjected to the HF treatment have a substantial portion of its alkali metal content replaced by the hydrogen ion.

3,630,966

### PREPARATION OF SHAPED SELECTIVE TRANSITION METAL ZEOLITE CATALYST

Nai Yuen Chen, Cherry Hill, and Edward J. Rosinski, Deptford, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Feb. 25, 1969, Ser. No. 802,220

Int. Cl. B01j 11/58

U.S. Cl. 252—455 Z

7 Claims

A method for preparing an improved shape selective catalyst composition from a crystalline aluminosilicate having a silicon to aluminum atomic ratio of at least 1.8 and a pore size of about 5 angstrom units, e.g., an erionite-type zeolite, natural or synthetic, by contacting the same with sulfur or a compound thereof, which contacting can be preceded or followed by aqueous metal exchange or impregnation with a transition metal, and reforming a hydrocarbon charge stock in the presence thereof.

3,630,967

### URANIUM OXIDE CATALYST

Thomas Nicklin, Middleton, Joseph Clack, Formby, and Kenneth Harold Burgess, Handforth, England, assignors to The Gas Council, London, England

No Drawing. Filed June 19, 1967, Ser. No. 647,245  
Claims priority, application England, June 21, 1966, 27,578/66

Int. Cl. B01j 11/32, 11/36

U.S. Cl. 252—465

15 Claims

The invention provides a process for the preparation of a catalyst, which process comprises subjecting a composi-

tion comprising a first component, together with a second component, disposed on a catalyst support to at least two reduction-oxidation cycles, said first component being selected from the group consisting of uranoso-uranic oxide, uranium trioxide and a mixture thereof and said second component being selected from the group consisting of nickel, nickel oxide or a mixture thereof. The invention also provides a catalyst when prepared by the method.

3,630,968

OXIDE HAVING THE STRUCTURAL FORMULA  $(\text{La}_{1-x}\text{Ca}_x)\text{CrO}_3$  WHERE  $x$  IS BETWEEN .01 AND .15 AND A METHOD FOR PRODUCING THE SAME  
Yeshiteru Hamano, Toyonaka-shi, Saburo Kose, Kyoto, and Makoto Kinoshita, Ikeda-shi, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

No Drawing. Filed July 15, 1969, Ser. No. 842,018

Int. Cl. H01b 1/08; C04b 35/12

U.S. Cl. 252—521

3 Claims

A mixture of lanthanum oxide, calcium carbonate and chrome oxide is fired to produce a solid solution wherein a percentage of the lanthanum ions of the lanthanum oxide have been replaced by calcium ions. This solid solution is then pulverized and molded to produce an electrode of high electron conductivity especially appropriate for use in the magneto-hydro-dynamic generator.

3,630,969

### RESISTOR COMPOSITIONS CONTAINING PYROCHLORE-RELATED OXIDES AND PLATINUM

Michael J. Popowich, Amherst, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,350

Int. Cl. H01b 1/02; B44d 1/02

U.S. Cl. 252—514

13 Claims

Resistor compositions, which yield, upon firing, smooth resistors having a wide range of resistances, low TCR's and good stability properties, comprising (1) an oxide of the formula



wherein

$\text{M}$  is at least one metal selected from the group consisting of yttrium, lanthanum, thallium, indium, cadmium,

$\text{M}'$  is at least one metal selected from the group consisting of platinum, titanium, tin, chromium, rhodium, iridium, rhenium, zirconium, antimony and germanium, (2) an inorganic binder, and (3) a required amount of platinum. The control over properties afforded by this combination of ingredients and proportions thereof enhances the significance of this invention.

3,630,970

### RESISTOR

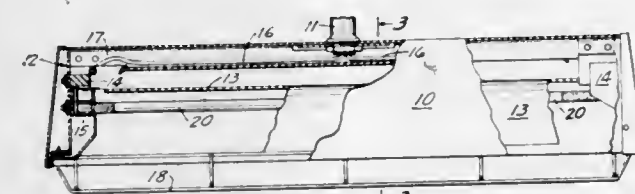
Karl E. Nelson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 24, 1968, Ser. No. 739,446

Int. Cl. H01b 1/06; C09c 1/04

U.S. Cl. 252—518

8 Claims



Semiconductors useful as electrical resistance heating elements and composed principally of zinc oxide have a

resistivity value not higher than ten ohm-cm. at 25° C. and not higher than one ohm-cm. at 925° C., the ratio being between about one and about ten.

3,630,971

### SENSOR AND METHOD OF MAKING SAME

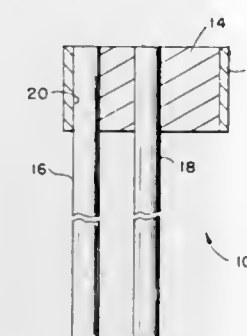
Frederic R. Quinn, Red Hook, N.Y., assignor to Zyrotron Industries, Inc., South Hackensack, N.J.

Filed Dec. 5, 1969, Ser. No. 882,549

Int. Cl. H01b 1/06; H01c 7/04

U.S. Cl. 252—518

27 Claims



Metal sulfide compounds and metal phosphate compounds are combined in a selected manner to form a resistance material for a stable sensor having a variable resistance characteristic in response to changes in temperature and voltage. The resistance material exhibits a large resistance variation as temperature of a medium being sensed passes through a critical value. The critical value is selected by choosing the types of compounds in the sensor. Resistance material is prepared in a preselected manner to obtain reliable performance characteristics throughout adverse environmental conditions. An oxide of a metal also present in the electrical leads connected to the sensor is dispersed throughout the sensor to provide strong lead attachments.

3,630,972

### PROCESS FOR POLYBENZIMIDAZOLES

Carl S. Marvel, Tucson, Ariz., Jerry G. Higgins, Bloomington, Ill., and Rolf Peuse, Frankfurt-Hochst, Germany, assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,667

Int. Cl. C08g 33/02

U.S. Cl. 260—2 R

2 Claims

2-arylbenezazoles, i.e. 2-arylbenezimidazoles, 2-arylbenezoxazoles and 2-arylbenezthiazoles, are prepared by the condensation of an aromatic aldehyde bisulfite adduct with o-phenylenediamine, o-aminophenol and o-thiophenol, respectively.

Polybenzimidazoles, known polymers particularly useful in the fabrication of articles intended for use at elevated temperatures, are prepared by the condensation of aromatic tetraamines with aromatic dialdehyde bis-bisulfite adducts.

3,630,973

### LOW VISCOSITY POLYOL BLENDS AND RIGID POLYURETHANE FOAMS PREPARED THEREFROM

Alan E. Ardis, North Haven, Conn., and Milton Lapkin, Barrington, R.I., assignors to Olin Corporation, New Haven, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 633,726, Apr. 26, 1967. This application Mar. 24, 1970, Ser. No. 22,368

Int. Cl. C08g 22/06, 22/46, 22/48

U.S. Cl. 260—2.5 AS

10 Claims

The addition of small amounts of low-molecular-weight glycols to highly viscous polyether polyols provides polyol blends having reduced viscosities and improved

handling characteristics. Polyurethane foams having desirable physical properties can be prepared from these polyol blends. Such polyurethane foams are of utility in numerous applications including insulation, cushioning and the like.

3,630,974

### TERNARY RUBBER BLEND

Lewis T. Ladocsi, South Orange, and Donald G. Young, Mountainside, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation of application Ser. No. 657,493, Aug. 1, 1967. This application Jan. 29, 1970, Ser. No. 6,969

Int. Cl. C08c 9/04, 9/08, 9/10

U.S. Cl. 260—5

9 Claims

A three part blend of ethylene-propylene terpolymer, halobutyl rubber, and a high unsaturation rubber, has surprisingly improved physical properties after vulcanization.

3,630,975

### SOLVENT RESISTANT HOLLOW BEADS OF VINYL CHLORIDE COPOLYMERS WITH ETHYLENE AND A NON-CONJUGATED DIENE

Frank Wiegler, Leverkusen, Herbert Bartl, Odenthal, Hanenberg, and Robert Zollner, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,291

Claims priority, application Germany, May 21, 1968, P 17 70 462.0

Int. Cl. C08d 13/08; C08f 47/10

U.S. Cl. 260—2.5 B

3 Claims

A solvent resistant hollow bead of ethylene, vinyl chloride and a crosslinking monomer, process of producing the same and the utility of such beads in the production of foams and in coating compositions.

3,630,976

### PROCESS FOR THE POLYMERIZATION OF VINYL CHLORIDE

Alexis Mathieu, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

No Drawing. Continuation-in-part of application Ser. No. 483,837, Aug. 30, 1965. This application May 2, 1969, Ser. No. 821,467

Claims priority, application Belgium, Sept. 9, 1964, 2,741

Int. Cl. C08f 3/30, 1/11

U.S. Cl. 260—92.8 W

3 Claims

Vinyl chloride is polymerized in aqueous suspension in a one step operation by introducing into an aqueous medium vinyl chloride, a polymerization catalyst and a suspension-forming agent comprised of polyvinyl alcohol and one or more products derived from the condensation of a polyoxyalkylene glycol and a monomeric polyamine. The polyvinyl chloride product is obtained in the form of highly porous granules.

3,630,977

### WATER-DILUTABLE PHENOPLASTS HAVING CARBOXYL GROUPS

Bernhard Broecker and Hans-Joachim Kiessling, Hamburg, Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,583

Claims priority, application Germany, Dec. 8, 1967, P 17 45 353.1

Int. Cl. G08g 37/08

U.S. Cl. 260—19

14 Claims

Amine salts of phenoplasts carrying carboxylic groups prepared by:

(a) etherifying heat-curable phenol-aldehyde condensation products, such as mononuclear and polynuclear phenols condensed with aldehydes and par-



tially etherified with lower monohydric aliphatic alcohols having 1 to 4 C-atoms, by warming with aliphatic mono- or dihydroxy carboxylic acids having 2 to 20 C-atoms or their esters with alcohols having 1 to 6 C-atoms;

- (b) saponifying the condensates having ester groupings in an alkaline medium;
- (c) separating the etherified phenolic resin-carboxylic acid; and
- (d) mixing the separated phenolic resin-carboxylic acid with ammonia and/or strong organic nitrogen bases.

3,630,978

#### STABILIZED HALOGEN-CONTAINING ACRYLONITRILE POLYMER COMPOSITION

Iyohiko Nakanome, Kenji Takeya, and Hiroshi Suzuki, Okayama, Japan, assignors to Japan Exlan Company Limited

Filed Sept. 15, 1969, Ser. No. 857,746

Claims priority, application Japan, Sept. 13, 1968, 43/66,388

Int. Cl. C08f 45/62

U.S. Cl. 260—23 A

12 Claims

Discoloration of aqueous solutions of acrylonitrile polymers by heat and/or aging, particularly those polymers containing halogen, is prevented by the addition thereto of a combination of a water-soluble inorganic bisulfite and either a triorganophosphite or an organotin carboxylate.

3,630,979

#### POLYVINYL CHLORIDE STABILIZED WITH SULFUR DIOXIDE COMPLEXES OF ALKALINE EARTH METAL PHENATES

Mark W. Pollock, Teaneck, N.J., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed June 12, 1970, Ser. No. 45,733

Int. Cl. C08f 45/62

U.S. Cl. 260—23 XA

9 Claims

This invention provides an alkaline earth metal complex formed by the reaction of alkaline earth metal phenate with an inorganic acid anhydride, in the absence of water. The complex is free from alkaline earth metal in excess of that stoichiometrically required to form the phenate and is free from the salt of the alkaline earth metal and the inorganic acid anhydride. The alkaline earth metal phenate complex has a reduced alkalinity as compared to the alkaline earth metal phenate. This invention also provides a polyvinyl chloride resin stabilizer comprising the alkaline earth metal phenate complex plus any one, or combination, of the following stabilizers: a polyvalent heavy metal salt of an organic carboxylic acid having from two to about eighteen carbon atoms, an organic compound containing at least one epoxy group and having from 10 to 150 carbon atoms, and/or an organic triphosphite. The invention also provides a polyvinyl chloride resin composition containing a combination of the alkaline earth metal phenate complex plus one of the three other stabilizers listed above.

3,630,980

#### PRESSURE-SENSITIVE HOT MELT ADHESIVES

Thomas E. Russell, Verona, N.J., assignor to The Flintkote Company, White Plains, N.Y.

No Drawing. Filed June 25, 1968, Ser. No. 739,653

Int. Cl. C09j 3/26

U.S. Cl. 260—27

11 Claims

A pressure-sensitive adhesive composition having instant room temperature tack, good cold flow resistance and good shear strength which comprises as a first component a resinous copolymer of ethylene and vinyl acetate, as a second component a resinous rubbery block copolymer of styrene and butadiene or isoprene, and as a third

component a modified or unmodified rosin, a coumarone-indene resin, a polyterpene resin, a diene-olefin aliphatic hydrocarbon resin or a polystyrene resin.

3,630,981

#### COPOLYMERS OF ALPHA METHYL STYRENE AND VINYL TOLUENE AND PROCESS OF PREPARATION

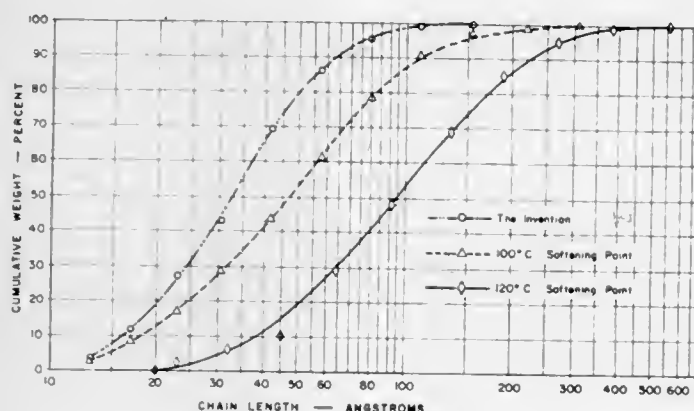
Dean A. Finfinger, Monongahela, and Clarence C. Campbell, Clairton, Pa., assignors to Pennsylvania Industrial Chemical Corporation

Filed June 9, 1969, Ser. No. 831,540

Int. Cl. C08f 45/52, 19/04

U.S. Cl. 260—28.5

1 Claim



Hot melt coating compositions are disclosed which comprise ethylene polymers, paraffin wax, and copolymers of alpha methyl styrene and vinyl toluene, 95% of said copolymers having molecular chain lengths less than 100 angstroms, said copolymer having a Ring and Ball softening point in the range of 90 to 98° C.

3,630,982

#### SEALING COMPOSITION WITH IMPROVED SEAL EFFICIENCY

James E. Matherly, Elizabethtown, Ky., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Mar. 18, 1970, Ser. No. 20,865

Int. Cl. C08g 51/22, 51/04

U.S. Cl. 260—29.1 SB

4 Claims

A mixture of poly-3,3,3-trifluoropropylmethyl-siloxane fluid, poly-3,3,3-trifluoropropylmethylsiloxane gum, a silica filler, an extending filler, a polytetrafluoroethylene resin and a polytetrafluoroethylene telomer is useful as a sealing composition, such as for fuel tanks.

3,630,983

#### YARN SIZES, SIZING TREATMENTS AND RESULTING SIZED YARNS

James C. Pangle, Jr., Danville, Va., and Alton D. Hicks, Mauldin, S.C., assignors to Dan River Inc., Danville, Va.

No Drawing. Continuation-in-part of applications Ser. No. 407,551, Oct. 29, 1964, Ser. No. 491,399, Sept. 29, 1965, and Ser. No. 670,787, Sept. 26, 1967. This application July 12, 1968, Ser. No. 744,292

Int. Cl. C08f 25/00

U.S. Cl. 260—29.6

21 Claims

Textile size compositions which are dispersible in water and comprise an alkali metal and/or ammonium salt of a styrene-maleic anhydride copolymer, copolymerized in the presence of a diester of an olefinically unsaturated dicarboxylic acid or anhydride and a monohydric alcohol and/or a polyester of such an acid or anhydride and a polyhydric alcohol. Also, textile size compositions which are dispersible in water and comprise a mixed salt of a styrene-maleic anhydride copolymer, wherein 20 to 80 weight percent of the cations of said salt are ammonium cations and 20 to 80 weight percent of the cations

of said salt are alkali metal cations. Methods for sizing yarns and yarn sized with the above-mentioned compositions.

3,630,984

#### LATEXES OF VINYL CYCLOHEXANECARBOXYLATE POLYMERS

David P. Sheetz, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 18, 1968, Ser. No. 760,734

Int. Cl. C08f 29/38

U.S. Cl. 260—29.6 TA

7 Claims

Latexes of vinyl cyclohexanecarboxylate polymers having excellent coating properties such as water resistance, light stability, and hardness.

3,630,985

#### METHOD OF STABILIZING POLYACRYLONITRILE SPINNING SOLUTIONS

Kenji Takeya, Okayama, and Toshiyuki Kobashi, Tsukubogun, Japan, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 13, 1970, Ser. No. 37,006

Int. Cl. C08f 47/16

U.S. Cl. 260—29.6 AN

8 Claims

A process for preparing a stable spinning composition comprising an acrylonitrile polymer dissolved in a concentrated inorganic solvent solution therefor and a surface active agent insoluble in said solution is disclosed which comprises dispersing said surface active agent in said solution, maintaining said dispersion under agitation, and defoaming said dispersion as a film under reduced pressure at a temperature which is at least equal to the boiling point of said composition at the reduced pressure employed.

3,630,986

#### PROCESS FOR THE PREPARATION OF SOLUTIONS OF ACRYLONITRILE POLYMERS

Andre Mison and Philippe Tarbouriech, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed June 26, 1970, Ser. No. 50,320

Claims priority, application France, June 30, 1969, 6922015

Int. Cl. C08f 45/44, 45/46

U.S. Cl. 260—30.8

6 Claims

Spinnable acrylonitrile polymer solutions are made by evaporating the water from a thin film of a wet dispersion of the polymer in a solvent therefor having a boiling point higher than water.

3,630,987

#### LINEAR, SEGMENTED POLYURETHANE ELASTOMERS

Wilhelm Thoma, Bergisch-Neukirchen, Harald Oertel, Odenthal-Glo-Busch, Heinrich Rinke, Leverkusen, and Ulrich Bahr, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,639

Claims priority, application Germany, Aug. 21, 1969, P 19 42 560.6

Int. Cl. C08g 22/04

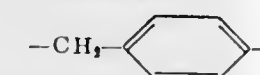
U.S. Cl. 260—32.6

11 Claims

Linear, segmented polyurethane elastomers and filaments therefrom, produced by reaction of NCO prepolymers with equivalent amounts of compounds of the formula



wherein A is m- or p-phenylene or



as chain lengthening agents in polar organic solvents.

3,630,988

#### WHITE AND COLORABLE FLAME RESISTANT POLYAMIDE

Edward Johnson Deyrup, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,203

Int. Cl. C08g 51/04, 51/14; C09k 3/28

U.S. Cl. 260—37 N

5 Claims

Polyamides are made sufficiently flame retardant to pass the Underwriters' Laboratory vertical flammability test, SE-1 (subject 746, May 13, 1966) by incorporation into the polyamide from 1-10% by weight of lead borate and an organic halide which is not reactive with the polyamide during melt processing of the polyamide but which reacts with the lead borate and polyamide during pyrolysis of the latter to produce a char, the total additive concentration being from 5 to 30% by weight. The resultant flame retardant polyamide has both good physical properties and is white, which means that the resin can be colored as desired. The resin is especially useful in electrical application such as wire coating.

3,630,989

#### STABILIZATION OF UNVULCANIZED INTERCONNECTED RUBBERY DIENE POLYMERS WITH A COMPLEX OF AN ARYL BORATE AND A N-ALKYL TRIMETHYLENE DIAMINE

Jerry Donald Hunt, Cuyahoga Falls, and Robert Paul Spitz and Edward Leo Kay, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 30, 1969, Ser. No. 837,892

Int. Cl. C08d 9/00, 11/04

U.S. Cl. 260—33.6 AQ

5 Claims

An unvulcanized interconnected rubbery homopolymer derived from conjugated dienes of 4 and 5 carbon atoms and copolymers thereof with olefins is stabilized by a complex of equimolar amounts of an aryl borate and N-alkyl trimethylene diamine.

3,630,990

#### TEXTILE FIBERS

Richard D. Neal, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,839

Int. Cl. C08g 51/04

U.S. Cl. 260—40 R

14 Claims

Disclosed is a textile fiber comprising poly(1,4-cyclohexylene dimethylene terephthalate) having dispersed therein a specific type of precipitated barium sulfate, the barium sulfate having an average particle size of about 0.8 micron. The fibers disclosed are characterized by improved dyeability with disperse dyes and soil-hiding properties. Also disclosed are yarns and fabrics containing the novel fibers of this invention.

3,630,991

#### OXIDATION INHIBITOR

Henry G. Schutze, Baytown, Tex., and Delos E. Bown, White Plains, N.Y., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 725,896, May 1, 1968, which is a division of applications Ser. No. 343,492, Feb. 10, 1964, now abandoned, and Ser. No. 734,560 June 5, 1968. This application Jan. 7, 1970, Ser. No. 1,306

Int. Cl. C08f 45/58

U.S. Cl. 260—45.75 R

10 Claims

A polyolefin composition is stabilized with a sulfur-containing ester compound formed by reacting a sulfur-containing carboxylic acid with an alcohol derived from a resin acid, e.g., tetrahydroabietyl alcohol, dihydroabietyl alcohol, dehydroabietyl alcohol, tetrahydropimaric alcohol, dihydropimaric alcohol, and mixtures thereof.



3,630,992

**ORGANOTIN THIOCARBOXYLATES AND PREPARATION THEREOF**

Lawrence R. Brecker, Brooklyn, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Filed May 20, 1969, Ser. No. 826,299  
Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 K

14 Claims

A process is provided for preparing diorganotin monothiocarboxylates and such diorganotin monothiocarboxylates containing additional groups, including diorganotin monohalide monothio-carboxylates, by reacting a diorganotin sulfide with an acyl halide to form a diorganotin monohalide monothiocarboxylate, and optionally further reacting the diorganotin monohalide monothiocarboxylate with an active hydrogen compound such as (a) a strong inorganic acid to liberate the corresponding free thiol acid; or (b) with a weak organic acid, such as a mercaptan, mercaptoester, thiol acid, or carboxylic acid, or carboxylic acid ester or (c) an alcohol to form a diorganotin monomercaptide monothiocarboxylate, a diorganotin monomercapto acid ester monothiocarboxylate, a diorganotin dithiocarboxylate, a diorganotin monocarboxylate monothiocarboxylate, or a diorganotin monoalcoholate monothiocarboxylate.

Diorganotin monohalide monothiocarboxylates and diorganotin monomercapto acid ester monothiocarboxylates are also provided, as well as polyvinyl chloride resin compositions containing these diorganotin derivatives.

3,630,993

**SYNERGISTIC ORGANOTIN STABILIZER COMPOSITIONS AND RESINS STABILIZED THEREWITH**

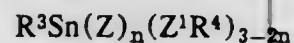
Christian H. Stapfer, Newtown, Pa., assignor to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

No Drawing. Filed Dec. 3, 1968, Ser. No. 780,888  
Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 K

4 Claims

An improved stabilizer composition comprises a synergistic combination of an organic thioanhydride and a monohydrocarbyl tin compound of the formula



wherein  $R^3$  is a hydrocarbyl radical having 1 to 12 carbon atoms,  $Z$  and  $Z^1$  are either oxygen or sulfur,  $R^4$  is hydrogen or an organic radical bonded to  $Z^1$  by a carbon atom and  $n$  is a number from 0 to  $1\frac{1}{2}$  varying in increments of  $\frac{1}{2}$ .

Halide containing resins stabilized with these compositions exhibit improved resistance to the development of early color during processing.

3,630,994

**POLYIMIDES PREPARED FROM SUBSTITUTED QUINOXALINES**

Billy M. Culbertson, Burnsville, Minn., assignor to Ashland Oil &amp; Refining Company, Ashland, Ky.

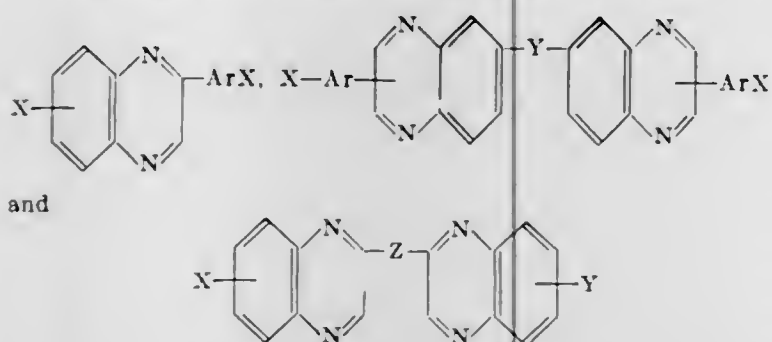
No Drawing. Application May 27, 1969, Ser. No. 828,356, which is a division of application Ser. No. 539,641, Apr. 4, 1966. Divided and this application Dec. 29, 1969, Ser. No. 1,937

Int. Cl. C08g 20/32

U.S. Cl. 260—47 CP

10 Claims

Quinoxalines represented by the general formula



wherein  $X$  is nitro or amino,  $Ar$  is divalent aromatic hydrocarbon radical,  $Y$  is a covalent bond or a divalent linking radical and  $Z$  is a divalent radical containing one or two benzene rings. The compositions are useful in the formation of fiber and film forming polyimides and polyamides and in the formation of molding resins.

3,630,995

**REMOVAL OF CATALYST RESIDUE FROM POLYPHENYLENE ETHERS**

Michael M. Modan, Albany, N.Y., assignor to General Electric Company

Filed Feb. 16, 1970, Ser. No. 11,747  
Int. Cl. C08g 23/18

U.S. Cl. 260—47 ET

10 Claims

This invention relates to separation and recovery of copper-amine complex catalyst residues from a reaction stream in a process for the formation of polyphenylene ethers by an oxidative coupling polymerization reaction. The process comprises simultaneously terminating the reaction and extracting catalyst residue by contact of the reaction solution with an aqueous acid solution in a countercurrent, liquid-liquid extraction column. The polymer is then recovered from the reaction solution substantially free of catalyst residue. The amine is recovered from the aqueous acid solution by pH adjustment with alkali and may be re-used if desired. The process of the invention is less expensive than prior art procedures and provides more effective catalyst removal than other commercially acceptable methods.

3,630,996

**SINGLE PACKAGE LATENT CURE POLYEPOXIDE SYSTEMS EMPLOYING 2,2'-BI-2-OXAZOLINE OR OXAZINE COPOLYMERIC CURING AGENTS**

Donald A. Tomalia, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 833,764, June 16, 1969. This application May 8, 1970, Ser. No. 35,885

Int. Cl. C08g 30/14

U.S. Cl. 260—47 EN

5 Claims

Doubly oxazoline or oxazine terminated alkylene, loweralkylene glycol, polyloweralkylene glycol or their sulfur analogues, combined with curable poly 1,2-epoxy-alkyl compounds yield stable, homogeneous single-package compositions of viscosity below that of the starting materials, which can be held for long periods of time uncured, but cure promptly upon heating. The resulting cured epoxy resins are of superior properties including very high resistance to thermal shock, and manifest elastomeric properties, excellent solvent resistance, and desirably high heat distortion temperatures.

3,630,997

**CURABLE EPOXY RESIN COMPOSITIONS AND METHOD OF PREPARING SAME**

Paul M. Craven, Tokyo, Japan, assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 599,741, Dec. 7, 1966. This application May 4, 1970, Ser. No. 34,523

Int. Cl. C08g 33/10

U.S. Cl. 260—47 EC

6 Claims

This invention relates to novel epoxy resin compositions and to cured products obtained therefrom. More particularly, it relates to curable epoxy resin compositions containing an epoxy resin having a plurality of 1,2 epoxide units, from about 25 to 200 parts per 100 parts of epoxy resin of a thioalkyl substituted diphenyl oxide curing agent and from about 0.05 to 15 parts per 100 parts of epoxy resin of the accelerator tetramethyl guanidine.

3,630,998

**PROCESS FOR THE MANUFACTURE OF WATER-SOLUBLE, CURABLE CONDENSATES CONTAINING CARBOXYL GROUPS**

Luzius Schibler, Riehen, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,912  
Claims priority, application Switzerland, Oct. 13, 1967, 14,309/67

Int. Cl. C08g 9/30, 9/34, 9/10

U.S. Cl. 260—67.6 R

10 Claims

The present invention provides a process for the manufacture of water-soluble, curable condensates containing carboxyl groups, wherein the methylol groups of aminoplast precondensates are etherified with monohydroxy compounds and aliphatic hydroxycarboxylic acid esters and then the carboxylic acid ester groups are hydrolyzed in an alkaline medium. The condensates are useful reactive tensides.

3,630,999

**TETRASUBSTITUTED UREA MONOMERS AND POLYMERS**

Daniel A. Dimmig, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,134  
Int. Cl. C08g 22/02; C07d 29/24

U.S. Cl. 260—77.5 C

12 Claims

Difunctional monomers containing a tetrasubstituted urea linkage are prepared and used to prepare condensation polymers having a tetrasubstituted urea group in the polymer chain. The polymers have enhanced thermal stability because degradative reactions involving the urea hydrogen atoms are not possible. The polymers are film forming materials and have high melting points.

3,631,000

**ISOCYANURATE-CONTAINING POLYISOCYANATES AND METHOD OF PREPARATION**

Perry A. Argabright and Brian L. Phillips, Littleton, Colo., and Vernon J. Sinkey, South St. Paul, Minn., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Filed June 4, 1969, Ser. No. 830,541  
Int. Cl. C08g 22/18, 22/44

U.S. Cl. 260—77.5 NC

11 Claims

Improved organic polyisocyanates are prepared by reacting chlorinated benzene-substituted compounds, especially chloromethylated aromatics, with metal cyanates in the presence of a metal iodide or bromide and in the presence of a dipolar aprotic solvent where the mole ratio of cyanate in the metal cyanate to chlorine in the chlorine-containing benzene-substituted compound is from about 0.8 to about 1.5. The polyisocyanate compositions are useful as starting materials in the production of flame-retardant urethane polymers as coatings, films, foams, adhesives, etc.

3,631,001

**PROCESS FOR PREPARING POLYCAPROLACTAM**

Soji Arakawa and Koichi Matuya, Uji-shi, Yasuro Kobayashi, Kyoto-shi, and Minoru Matsushita and Toshihiko Takamoto, Uji-shi, Japan, assignors to Nippon Rayon Kabushiki Kaisha, Uji-shi, Kyoto-fu, Japan

No Drawing. Filed Jan. 22, 1969, Ser. No. 793,154  
Claims priority, application Japan, Jan. 24, 1968, 43/4,201

Int. Cl. C08g 20/18

U.S. Cl. 260—78 L

9 Claims

This invention relates to a process for preparing polycaprolactam, in which  $\epsilon$ -caprolactam is polymerized in the presence of an alkali-type catalyst to form a polymer and one or more phosphorus compounds are then added to said polymer. The polymerized product of  $\epsilon$ -caprolactam thus formed is characterized by its lack of the diminution of the viscosity in the molten state.

3,631,002

**POLYMERIZATION OF OLEFINS**

Sydney K. Brownstein, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,201  
Int. Cl. C08d 3/04

U.S. Cl. 260—80.78

15 Claims

Polymerization of olefins e.g. ethylene and propylene with a cationic catalyst of carbonium ions stabilized with polyfluoro pentavalent antimony or arsenic anions, at low temperatures e.g.  $-20$  to  $-90^\circ\text{C}$ ., and branched polymer of ethylene.

3,631,003

**POLYAMIDES AND THEIR PRODUCTION**

Isaac Goodman and Michael Edward Benet Jones, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of abandoned application Ser. No. 655,275, July 24, 1967. This application Feb. 24, 1970, Ser. No. 14,754

Claims priority, application Great Britain, Aug. 3, 1966, 34,802/66, 34,803/66, 34,804/66, 34,805/66, 34,806/66  
Int. Cl. C08g 20/20

U.S. Cl. 260—78 R

12 Claims

Polyamides of specified minimum molecular weight having at least 50 mole percent of their repeating units, units derived from diaminodiphenyl sulphones and straight-chain  $\alpha,\omega$ -alkane dicarboxylic acids having at least 6 carbon atoms, including the carboxy carbon atoms, useful as structural polymers.

Also, a process for the preparation of such polyamides which comprises treating a diaminodiphenyl sulphone with the diacid halide of an  $\alpha,\omega$ -alkanedicarboxylic acid at or below room temperature in the presence of an organic solvent. The polyamides are useful in the manufacture of molded articles, films, fibers and the like.

3,631,004

**PROCESS FOR THE PRODUCTION AND THE RING-OPENING POLYMERIZATION OF 3-AZABICYCLO (3,2,2)NONANONE - 2 AND THE POLYAMIDE OBTAINED THEREBY**

Shinpei Gomi, Tokyo, Shigeyuki Suzuki, Kanagawa-ken, and Hitoshi Takita, Masaaki Takahashi, and Kiro Asano, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1968, Ser. No. 785,557

Claims priority, application Japan, Dec. 28, 1967, 43/83,676; Dec. 29, 1967, 43/84,712, 43/84,713  
Int. Cl. C08g 20/10, 20/12

U.S. Cl. 260—78 L

12 Claims

This invention is a process for producing 3-azabicyclo (3,2,2) nonanone-2 by reacting nitrosyl sulfuric acid with bicyclo (2.2.2) octane-2-carboxylic acid in presence of fuming sulfuric acid, process for polymerizing 3-azabicyclo (3.2.2) nonanone-2 or for copolymerization 3-azabicyclo (3.2.2) nonanone with  $\epsilon$ -caprolactam, and polyamides and copolyamides obtained thereby.

3,631,005

**N,N'-BIS(ISOMALEIMIDE) POLYHYDRAZIDES**

You-Ling Fan, East Brunswick, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Jan. 29, 1969, Ser. No. 795,075

Int. Cl. C08g 20/20

U.S. Cl. 260—78 UA

3 Claims

High molecular weight polyhydrazides have been prepared successfully by allowing equimolar amounts of N,N'-bis(isomaleimide) and dihydrazides to react in a highly polar solvent at room temperature. Both aliphatic and aromatic polyhydrazides are amorphous resins with



glass transition temperatures about 100° C. They exhibit excellent oxygen barrier properties, very high dielectric constants and fairly good mechanical properties.

3,631,006

# PROCESS FOR THE ANIONIC POLYMERIZATION OF UNSATURATED HYDROCARBON MONOMERS

John J. Hawkins, Santa Ana, Calif., assignor to Cities Service Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 484,430, Sept. 1, 1965. This application Sept. 23, 1969, Ser. No. 860,471

Int. Cl. C08d 3/06; C08f 1/28

U.S. Cl. 260—80.7

5 Claims

The disclosure is concerned with a new method of effecting the anionic polymerization of polymerizable unsaturated hydrocarbon monomers, wherein a catalyst-cocatalyst combination is used. The catalyst-cocatalyst combination consists of (a) an anionic catalyst of a Group I-A or II-A metal, and (b) a compound of a Group III-A element as the cocatalyst.

3,631,007

# REMOVAL OF VANADIUM RESIDUES FROM ETHYLENE COPOLYMERS

Bart A. Diliddo, Seven Hills, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Oct. 31, 1968, Ser. No. 772,355

Int. Cl. C08f 1/88, 15/40

U.S. Cl. 260—80.78

9 Claims

In a process whereby ethylene is copolymerized with a polyene under pressure with a vanadium catalyst to form amorphous vulcanizable elastomers, the vanadium compound content of said polymer is reduced and the color of the polymer improved by contacting at a higher pressure a polymerization effluent containing the ethylene copolymer and vanadium catalyst with a low molecular weight alcohol or ketone and thereafter washing this mixture under pressure with hydrocarbon and/or water to remove the residual vanadium compound.

3,631,008

# ODD/EVEN COPOLYMERS

Roger D. A. Lipman, Yonkers, N.Y., assignor to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 621,451, Mar. 8, 1967. This application Apr. 24, 1968, Ser. No. 723,913

Int. Cl. C08f 15/40

U.S. Cl. 260—80.78

5 Claims

Sticky, semi-solid copolymers of three or more alpha olefins useful as pour point depressants or adhesives are disclosed, the copolymers being composed of monomer residues having both odd and even numbers of carbon atoms and having specified side chain lengths.

3,631,009

# POLYMERIZATION INITIATOR ACTIVATOR SALTS

Glen E. Meyer, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation of abandoned application Ser. No. 697,600, Jan. 15, 1968. This application Feb. 24, 1970, Ser. No. 14,749

Int. Cl. C08d 1/00, 1/12, 1/20

U.S. Cl. 260—82.3

8 Claims

Discloses the use of initiator activators in the polymerization of an ethylenically unsaturated monomer capable of being polymerized by hydrogen peroxide and organic hydroperoxide catalysts in a mutual solvent polymerization system, mutual solvents being lower alcohols, acetone, methyl ethyl ketone, dioxane and tetra-

hydrofuran, the initiator activators being soluble in the non-aqueous mutual solvent by at least 2% and being a chloride, bromide, nitrate, thiocyanate or sulfate salt of magnesium, lithium, calcium, zinc, potassium, strontium, ammonia, quaternary ammonia, and hydrochloric and hydrobromic acid salts of primary, secondary and tertiary amines.

3,631,010

# PROCESS FOR THE PRODUCTION OF TRANS-POLYPENTENAMERS

Josef Witte, Cologne-Stammheim, and Nikolaus Schon and Gottfried Pampus, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 9, 1969, Ser. No. 826,062 Claims priority, application Germany, May 24, 1968, P 17 70 491.5

Int. Cl. C08d 3/04; C08f 7/02

U.S. Cl. 260—82.1

4 Claims

A process for the production of cyclopentene-polymers having predominantly transconfiguration by the polymerization of cyclopentene in solution in inert solvents in the presence of a mixed catalyst of

- a tungsten salt,
- a halogenated alcohol in which the halogen atom and the hydroxyl group are attached to adjacent carbon atoms, and/or a halogenated phenol, and
- an organic aluminium compound,

in the molar ratio of a:b:c of 1:0.3 to 10:0.5 to 15.

3,631,011

# METHOD FOR POLYMERIZING ETHYLENE BY USE OF NOVEL CATALYST SYSTEM

Kenichi Maemoto, Takatsuki-shi, Takezo Sano, Ibaragi-shi, and Katsuji Ueno, Hirakata-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,378 Claims priority, application Japan, Dec. 28, 1967, 42/84,962

Int. Cl. C08d 3/02; C08f 15/04

U.S. Cl. 260—85.3

4 Claims

A process for the homopolymerization of ethylene and copolymerization of ethylene with olefins or diolefins using a catalyst composed of (1) a reaction product of an orthovanadate compound with a phosphoric acid or its derivative, and (2) an organo-aluminum compound having the formula,



wherein R is a hydrocarbon group having from 1 to 8 carbon atoms; X is a hydrogen or halogen atom or an alkoxy group; and n is a positive number not more than 3.

3,631,012

# PROCESS FOR PREVENTING OR REDUCING DEPOSITS AND CLOGGING IN THE CONTINUOUS POLYMERIZATION AND COPOLYMERIZATION OF OLEFINS BY THE LOW PRESSURE PROCESS

Franz Zapf, Kelkheim, Taunus, Wilhelm Dummer, Wiesbaden, and Gunther Lehmann, Neuenhain, Taunus, Germany, assignors to Hercules Incorporated, Wilmington, Del.

Filed June 4, 1968, Ser. No. 734,380

Claims priority, application Germany, June 15, 1967, F 52,690

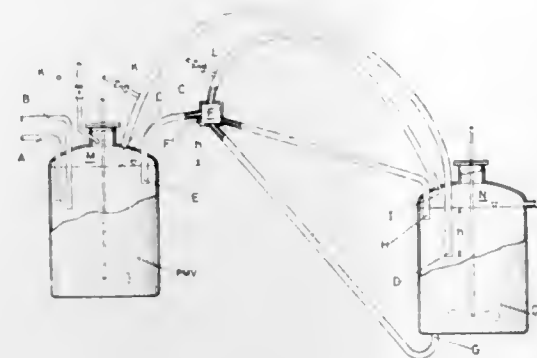
Int. Cl. C08f 1/42, 1/98

U.S. Cl. 260—85.3

10 Claims

The present invention relates to a process for preventing or reducing deposits and clogging in the continuous polymerization and copolymerization of olefins by the low pressure process, especially when partially wax-like or sticky products are obtained, in an apparatus comprising at least one main polymerization vessel and at least one

continued-polymerization vessel connected in series, both being connected by a system of definitely arranged gas outlet and reaction mixture discharge pipes. The portion of the monomer or monomer mixture, which does not react under the polymerization conditions is continuously withdrawn from the gas space of the main polymerization



vessel and introduced into another vessel together with the liquid reaction mixture to complete the polymerization. The gas space in the polymerization vessel is maintained as small and, especially, as constant as possible by the geometry of the apparatus and siphoning-over of the liquid reaction mixture is moreover prevented.

3,631,013

# METHOD FOR MAKING SOLID RUBBERY COPOLYMERS OR ISOOLEFINS AND DIOLEFIN

Tatsuo Horie, Tokyo, Japan, assignor to Nippon Petrochemicals Co., Ltd., Tokyo, Japan

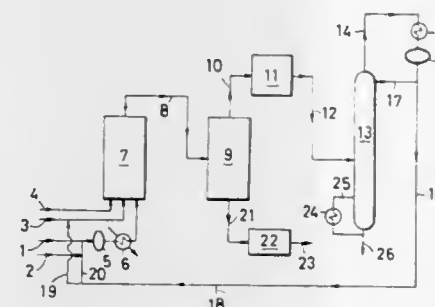
Filed Sept. 4, 1968, Ser. No. 757,389

Claims priority, application Japan, Sept. 10, 1967, 42/57,776

Int. Cl. C08d 3/06, 3/10

U.S. Cl. 260—85.3

6 Claims









aminopenicillanic acid-salicylaldehyde adduct by adding to a fermented broth containing 6-aminopenicillanic acid two moles or more of salicylaldehyde per mole of said 6-aminopenicillanic acid, and then acylating the said adduct.

3,631,029

# PROCESS FOR PRODUCING BENZODIAZEPINE DERIVATIVES

Hisao Yamamoto, Nishinomiya-shi, Shigeo Inaba, Takarazuka-shi, Tadashi Okamoto, Ashiya-shi, Toshiyuki Hirohashi, Kobe, Kikuo Ishizumi and Michihiro Yamamoto, Takarazuka-shi, Isamu Maruyama, Minoo-shi, Kazuo Mori, Kobe, and Tsuyoshi Kobayashi, Minoo-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Filed Nov. 22, 1968, Ser. No. 778,348  
Claims priority, application Japan, Dec. 1, 1967, 42/77,234, 42/77,238; Dec. 5, 1967, 42/78,270, 42/78,271; Dec. 6, 1967, 42/78,575; Dec. 9, 1967, 42/79,166; Dec. 12, 1967, 42/79,924; Dec. 15, 1967, 42/80,514; Dec. 21, 1967, 42/82,273; Mar. 11, 1968, 43/16,033

Int. Cl. C07d 53/06

U.S. Cl. 260—239.3

17 Claims

1-substituted or unsubstituted 5-phenyl-benzodiazepine-2-ones are produced with commercial advantage through ring expansion by oxydation of N-substituted or unsubstituted-2-aminomethyl-3-phenyl-indoles. The starting 2-aminomethyl-indoles are prepared by subjecting indole-2-carboxylic acids either to direct amination with ammonia or to halogenation and then amination with ammonia, reducing the yielding indole-2-carbonamides to 2-cyano-indoles and hydrogenating the cyano indoles, provided that when N-unsubstituted-indoles are used the substitution may be effected optionally in any time before or after the above procedures.

3,631,030

# PRODUCTION OF ε-CAPROLACTAM

Karl-Siegfried Brenner, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 6, 1970, Ser. No. 1,037  
Claims priority, application Germany, Jan. 18, 1969, P 19 02 458.9

Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 A

5 Claims

Production of caprolactam by catalytic rearrangement of cyclohexanone oxime in the vapor phase in contact with boric oxide catalysts on alumina which contain from 0.1 to 10% by weight of manganese, nickel and/or cobalt or as the salts oxides of such metals. Caprolactam is useful for the production of nylon 6 which is a fiber intermediate.

3,631,031

# INTERMEDIATE USEFUL IN THE SYNTHESIS OF ALDOSTERONE

Eiji Kondo, Ikeda-shi, Takashi Mitsugi, Senboku-gun, and Kazuo Tori, Kobe-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 555,220, June 6, 1966. This application Jan. 13, 1969, Ser. No. 790,834

Claims priority, application Japan, June 11, 1965, 40/34,820, 40/34,821, 40/34,822

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55

2 Claims

Corticosterone or esters thereof is treated with the enzymes of *Corynespora fungus* to obtain novel 18-hydroxycorticosterone inter- and/or intra-molecular acetals and/or acylates thereof accompanied with several monohydroxycorticosterones, then the product is treated

with acid or mixture of acid and acylating agent to form ether bridge between positions 11 and 18, finally the 18-deoxyaldosterone derivatives obtained are treated again with the enzymes of *Corynespora fungus* to prepare aldosterone, 18-dehydroaldosterone, 9α-hydroxy-11β,18-epoxy-4-androstene-3,17-dione.

3,631,032

# 3-ALKOXYMETHYLENOXY ETHERS OF PREGNANES AND 19-NORPREGNANES AND THEIR PREPARATION

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Apr. 16, 1969, Ser. No. 816,828

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55 D

14 Claims

This discloses 3-alkoxymethylenoxy ethers of the pregnane and 19-norpregnane series of steroids wherein the alkoxy portion has from 1 to 4 carbon atoms, inclusive. The remainder of the pregnane or 19-norpregnane steroid molecule can be substituted and/or unsaturated at one or more of positions C-6, 7, C-10, C-16, and C-17α. These compounds are useful are progestational agents. Also taught are methods useful for the preparation of these compounds.

3,631,033  
STERIODS

Giangiacomo Nathansohn and Giorgio Winters, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Filed May 1, 1969, Ser. No. 821,149

Claims priority, application Italy, May 3, 1968, 16,029/68

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55

18 Claims

Compounds selected from 16α-hydroxy-17α-amino-steroids, steroido-[17α,16α-d]-oxazolidines and steroido-[17α,16α-d]-oxazolidino-[3',4'-c] - 2H - tetrahydro-1,3-oxazine-2''-ones. The second and third classes of steroids are active as anti-inflammatory agents and progestin.

3,631,034

# DERIVATIVES OF 5-CINNAMOYL BENZOFURAN, THEIR PROCESS OF PREPARATION AND THEIR THERAPEUTIC UTILIZATION

Claude P. Fauran, 5 Rue Leboutaux, and Guy M. Raynaud, 39 Rue Saint-Georges, both of Paris, France; Jeannine A. Eberle, 106C Rue Leon Barbier, Chatou, France; and Bernard M. Pourrias, 36 Allee-du-Mail, Meudon-la-Forêt, France

No Drawing. Filed June 27, 1969, Ser. No. 837,342

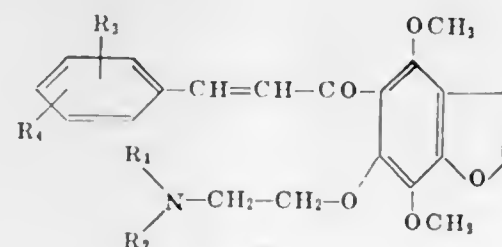
Claims priority, application Great Britain, July 6, 1968, 32,383/68

Int. Cl. C07d 5/36

U.S. Cl. 260—240 J

6 Claims

Compounds of the formula



in which R<sub>1</sub> and R<sub>2</sub> each are

- (1) an alkyl radical having 1 to 4 carbon atoms, or
- (2) together with the nitrogen atom to which they are attached for heterocyclic radical

R<sub>3</sub> and R<sub>4</sub> represent a hydrogen atom, an alkyl radical having 1-5 carbon atoms, a halogen atom, an alkoxy radical or a trifluoromethyl radical.

The compounds are made by reacting, in an alkaline medium and in an alcoholic solvent, an ether amine of khellinone with an aromatic aldehyde. The compounds exhibit hypotensive activity, vasodilatory activity, spasmolytic activity and an effect on the capillary permeability.

3,631,035

# 2-VINYL-1,4-DIHYDROQUINAZOLINE DERIVATIVES

David A. Cox, Sandwich, Kent, England, assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Apr. 2, 1969, Ser. No. 812,910

Int. Cl. C07d 51/48

U.S. Cl. 260—240 D

10 Claims

A series of novel 1,4-disubstituted-2-vinyl-1,4-dihydroquinazoline derivatives, including their pharmaceutically acceptable acid addition salts, have been prepared using various alternate synthetic routes. These compounds are useful in the effective control and/or prevention of thrombosis. Trans-1,4-dimethyl-2-styryl-1,4-dihydroquinazoline and trans-1-methyl-2-styryl-4-phenyl-1,4-dihydroquinazoline are preferred embodiments.

3,631,036

# 5-AMINO-2,6-SUBSTITUTED-7H-PYRROLO[2,3-d]PYRIMIDINES AND RELATED COMPOUNDS

Dong H. Kim, Wayne, and Arthur A. Santilli, Haver-town, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Nov. 4, 1969, Ser. No. 874,052

Int. Cl. C07d 57/14

U.S. Cl. 260—247.2 A

8 Claims

The disclosure is directed to 5-amino-2,6-substituted-7H-pyrrolo[2,3-d]pyrimidines and related compounds and to 4-halo-5-pyrimidinecarbonitriles and their derivatives. The compounds have central nervous system activity as depressants. That is, they produce a calming effect in the host.

3,631,037

# 1-SUBSTITUTED-2,5-DIPHENYLPYRROLES

Robert Louis Duncan, Jr., and William J. Welstead, Jr., Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Filed June 21, 1968, Ser. No. 738,781

Int. Cl. C07d 27/26, 87/38

U.S. Cl. 260—247

4 Claims

1-substituted - 2,5 - diphenylpyrroles having analgetic activity are disclosed. The novel compounds are prepared by cyclization of 1,2-dibenzoylthane with amines and alkylation of 2,5-diphenylpyrroles.

3,631,038

# PRODUCTION OF 6-ALKOXYPYRIDAZINIUM COMPOUNDS

Franz Reicheneder and Rudolf Kropp, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 11, 1970, Ser. No. 18,690

Claims priority, application Germany, Mar. 14, 1969, P 19 12 941.0

Int. Cl. C07d 51/04

U.S. Cl. 260—247.5 R

5 Claims

Production of 6-alkoxypyridazinium compounds by reaction of pyridazone-(6) with alkylating agents, and new

3,631,039

# 2-AMINO ETHYL-2-HYDROXY - 6-VINYL TETRAHYDROPYRANS, TAUTOMERS AND OPTICAL ENANTIOMERS THEREOF

David Andrews, Nutley, and Gabriel Saucy, Essex Fells, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,142

Int. Cl. C07d 87/32

U.S. Cl. 260—247.7 A

8 Claims

Multi-step processes for the preparation of tricyclic intermediates useful in the total synthesis of steroids are described. A first process step involves treatment of a dihydroxy, divinyl compound with both manganese dioxide and an amine to produce a Mannich base intermediate. The resulting Mannich base intermediate may be reduced catalytically and then coupled with a cyclic dione to yield a tricyclic keto diene. This compound can be reduced to yield a tricyclic hydroxy compound useful as an intermediate in the total synthesis of steroidal compounds having known valuable pharmacological properties. Alternatively, it is possible to directly couple the Mannich base with the cyclic diketo compound followed by reduction and catalytic hydrogenation to yield the tricyclic hydroxy compound.

3,631,040

# IMIDAZO[1,2-b]-AS-TRIAZINES

Bernard Loev, Broomall, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,706

Int. Cl. C07d 57/34

U.S. Cl. 260—249.5

7 Claims

1,5-dihydro-2,6-diphenylimidazo[1,2-b] - as - triazines are prepared either by reaction of a phenylglyoxal and aminoguanidine to give an aminophenyltriazine, further reaction with a phenacyl bromide, and reduction with borohydride; or directly by reaction of phenacyl bromide, aminoguanidine, and hydrogen bromide; and subsequent ring-closure in base. The products are antidepressants.

3,631,041

# ANTHRAQUINONE DYESTUFFS

Robert Norman Heslop, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,925

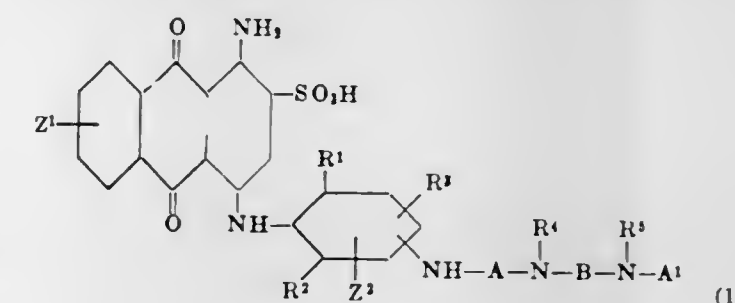
Claims priority, application Great Britain, Jan. 16, 1968, 2,406/68

Int. Cl. C07d 55/20, 51/42

U.S. Cl. 260—249

6 Claims

The invention provides reactive water-soluble anthraquinone dyestuffs of the formula:





wherein

Z<sup>1</sup> represents H or SO<sub>3</sub>H

R<sup>1</sup> represents CH<sub>3</sub> or C<sub>2</sub>H<sub>5</sub>

R<sup>2</sup> represents Cl, Br, CH<sub>3</sub> or C<sub>2</sub>H<sub>5</sub>

R<sup>3</sup> represents H, CH<sub>3</sub> or C<sub>2</sub>H<sub>5</sub>

Z<sup>2</sup> represents H, CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub> or SO<sub>3</sub>H

A represents a s-triazine or pyrimidine nucleus carrying as cellulose-reactive substituent a chlorine or bromine atom or a sulphonic acid group.

R<sup>4</sup> and R<sup>5</sup> may be the same or different and each represents H, CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub> or C<sub>2</sub>H<sub>4</sub>OH.

B represents an aliphatic or cycloaliphatic radical having up to 6 carbon atoms, and

A<sup>1</sup> represents a radical containing a heterocyclic nucleus in which the nucleus carries at least one substituent capable of reacting with the hydroxyl groups in cellulose.

These new dyestuffs are notable for the following combination of properties, namely, a remarkably high fixation on the fibre whereby washing off treatments can be reduced considerably, a desirable bright reddish-blue shade and high light-fastness.

### 3,631,042

#### QUINAZOLINE COMPOUNDS

Michel Vincent, Bagneux, Georges Remond, Paris, and Jean-Claude Poignant, Wissous, France, assignors to Societe en nom collectif "Science Union et Cie, Societe Francaise de Recherche Medicale," Suresnes, France

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,641  
Claims priority, application Great Britain, Oct. 31, 1968, 51,720/68

Int. Cl. C07d 51/48

U.S. Cl. 260—251

8 Claims

1H-quinazolin-4-ones substituted in 1-position by alkyl, haloalkenyl, cycloalkenyl, phenylalkenyl, alkynyl or cyclopropyl, and optionally substituted in 6- or 7-position by halogen, lower alkyl, lower alkoxy, phenyl, trifluoromethyl or methylenedioxy.

These compounds possess analgesic, antitussive, anti-inflammatory and anti-rheumatic properties.

### 3,631,043

#### DI- AND TRIPHENYLPROPYL PIPERAZINE COMPOUNDS

Gilbert Regnier, Sceaux Village, Roger Canevari, La Hay-les-Roses Village, and Jean-Claude Le Douarec, Suresnes Village, France, assignors to Societe en nom collectif "Science Union et Cie, Societe Francaise de Recherche Medicale," Suresnes, France

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,496  
Claims priority, application Great Britain, Mar. 14, 1967, 11,843/67

The portion of the term of the patent subsequent to Mar. 25, 1986, has been disclaimed

Int. Cl. C07d 51/70

U.S. Cl. 260—250 A

7 Claims

1-(di- and triphenylpropyl) piperazines substituted in 4-position by: pyridyl, pyridazin-2-yl, pyrazin-2-yl, s-triazinyl, thiazol-2-yl, imidazol-2-yl, isoxazolyl, 1,2,4-thiadiazolyl, 1,2,4-oxadiazolyl, tetrazol-5-yl; all these heterocyclic radicals being optionally substituted by one or more lower-alkyl up to C<sub>5</sub> inclusive, amino, mono-lower alkyl-amino or alkyleneamino.

These compounds possess analgesic, anti-inflammatory and antitussive properties.

### 3,631,044 SUBSTITUTED PYRROLO[2,3-d]PYRIMIDINES AND RELATED COMPOUNDS

Dong H. Kim, Wayne, and Arthur A. Santilli, Haver-town, Pa., assignors to American Home Products Corporation, New York, N.Y.

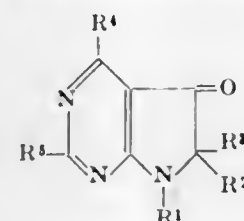
No Drawing. Filed Nov. 4, 1969, Ser. No. 874,049

Int. Cl. C07d 57/14

U.S. Cl. 260—256.4 F

7 Claims

The disclosure is directed to substituted pyrrolo[2,3-d]pyrimidines having the structural formula



(1)

where R<sup>1</sup>-R<sup>5</sup> are as defined below. The compounds have pharmacological activity as central nervous system depressants in that they decrease motor activity and decrease respiration in a host.

### 3,631,045

#### 4,5-DIAMINO-7H-PYRROLO[2,3-d]PYRIMIDINE DERIVATIVES

Dong H. Kim, Wayne, and Arthur A. Santilli, Haver-town, Pa., assignors to American Home Products Corporation, New York, N.Y.

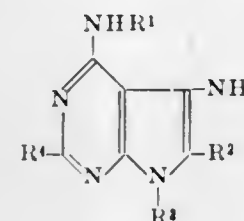
No Drawing. Filed Nov. 4, 1969, Ser. No. 874,053

Int. Cl. C07d 57/14

U.S. Cl. 260—256.5 R

6 Claims

The disclosure is directed to derivatives of 4,5-diamino-7H-pyrrolo[2,3-d]pyrimidines having the structural formula:



where R<sup>1</sup>-R<sup>4</sup> are as defined below, and to the 4,5,6-trisubstituted pyrimidines which are intermediates in their preparation. The compounds have central nervous system activity as depressants that is, they produce a calming effect in the host.

### 3,631,046

#### TETRACYCLIC QUINAZOLIN-ONES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed May 28, 1969, Ser. No. 835,289

Int. Cl. C07d 51/56, 57/16

U.S. Cl. 260—256.4 F

12 Claims

The compounds are tetracyclic quinazolin-ones of the class of polyhydro-pyrido[1',2':3,4]-imidazo[2,1-b] or polyhydro-pyrido[1,(2':3,4)-pyrimido[2,1-b] quinazolin-11-ones which are pharmacologically active as central nervous system depressants and useful, for example, as sedatives. Preparation involves reaction of novel intermediates of the class polyhydro-3-organomercapto-imidazo[1,5-a]pyridine and polyhydro-1-organomercapto-pyrido[1,2-c] pyrimidine with N-carboxy anthranilic anhydride(isatoic anhydride), or its derivatives, or with anthranilic acid, or its derivatives. The novel intermediates are in turn produced from novel compounds of the class of polyhydro-imidazo-pyridine or polyhydro-pyrido-pyrimidine thiones, for example, by reaction with a haloalkyl.

### 3,631,047 SUBSTITUTED 3,3-DIPHENYLPYPERAZINES AND 3,3-DIPHENYLPYPERAZIN-2-ONES

Meier E. Freed and Scott J. Childress, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,367

Int. Cl. C07d 51/72

U.S. Cl. 260—268 R

7 Claims

The disclosure is directed to substituted 3,3-diphenyl-piperazines, substituted 3,3-diphenylpiperazin-2-ones and related compounds. The compounds are useful as sympathomimetic agents as evidenced by their production of mydriasis in standard laboratory animals.

### 3,631,048

#### PIGMENTS OF THE PERYLENETETRAACETIC CARBOXYLIC ACID DIIMIDE SERIES

Georg Anton Klein, Bottmingen, Basel-Land, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed July 14, 1970, Ser. No. 54,858

Int. Cl. C07d 91/62

U.S. Cl. 260—281

6 Claims

Perylenetetracarboxylic acid diimides are prepared by condensing perylene-3,4,9,10-tetracarboxylic acid with 2-aminothiadiazoles. The new perylene derivatives are used as pigments.

### 3,631,049

#### BIS-TETRAHYDROQUINOLINE METHINE COMPOUNDS

James M. Straley and David J. Wallace, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

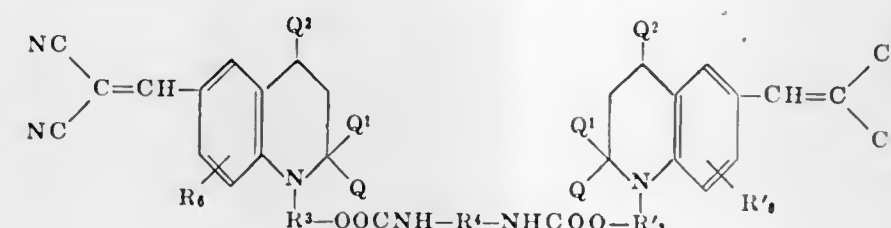
No Drawing. Original application Apr. 27, 1966, Ser. No. 545,546, now Patent No. 3,504,010, dated Mar. 31, 1970. Divided and this application Dec. 4, 1969, Ser. No. 882,287

Int. Cl. C07d 33/10

U.S. Cl. 260—283 CN

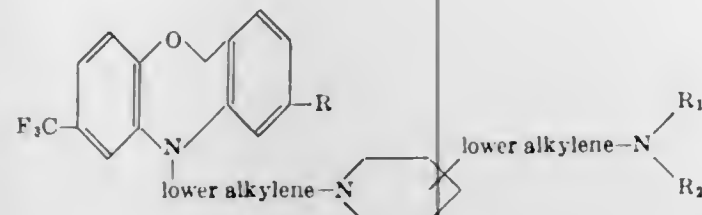
3 Claims

Methine dye compounds having the general formula





ity without other central depressant effects, have the structural formula



3,631,053

### 5-AMINOALKYL-5-HYDROXY-5,6,11,12-TETRAHYDRODIBENZO[a,e]CYCLOOCTENE

Kurt Adank, Muttentz, and Daniel A. Prins, Oberwil, Basel-Land, Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

No Drawing. Application Sept. 22, 1967, Ser. No. 681,944, now Patent No. 3,452,095, dated Sept. 24, 1969, which is a division of application Ser. No. 307,290, Sept. 9, 1963, now Patent No. 3,389,177. Divided and this application Aug. 15, 1968, Ser. No. 752,772

Int. Cl. C07d 29/16

U.S. Cl. 260—293.62

3 Claims

5-aminoalkyl-5-hydroxy-5,6,11,12-tetrahydrodibenz[a,e]cyclooctene and their salts are spasmolytic agents. They are obtained through Grignard conditions from 11,12-dihydrodibenz[a,e]cycloocten-5(6H)-one. A typical embodiment is 5-piperidinopropyl-5-hydroxy-5,6,11,12-tetrahydrodibenz[a,e]cyclooctene.

3,631,054

### 4-AROMATIC BICYCLO[2.2.2]OCT-2-ENE-1-CARBOXYLIC ACIDS AND THEIR ESTERS

James C. Kauer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 650,595, July 3, 1967, which is a continuation-in-part of applications Ser. No. 460,812, June 2, 1965, and Ser. No. 377,132, June 22, 1964, both now abandoned. This application Jan. 22, 1970, Ser. No. 5,132

Int. Cl. C07d 31/34

U.S. Cl. 260—295 F

15 Claims

4-aromatic bicyclo[2.2.2]oct-2-ene-2-carboxylic acids and their esters which are prepared by the reaction of a 3,6-disubstituted  $\alpha$ -pyrone and ethylene at elevated temperatures are useful as intermediates for the preparation of 4-aromatic bicyclo[2.2.2]octane-1-amines useful as anti-depressant.

3,631,055

### THIAZOLYL AND PYRIDYL AMINOALCOHOLS

Klaus Posselt, Bergen-Enkheim, and Kurt Thiele, Frankfurt am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 693,138, Dec. 26, 1967. This application Mar. 10, 1970, Ser. No. 18,279

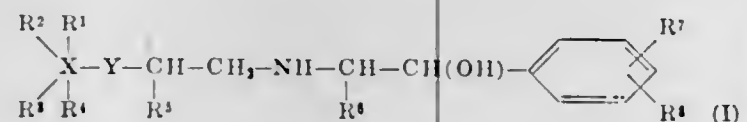
The portion of the term of the patent subsequent to May 26, 1987, has been disclaimed

Int. Cl. C07d 31/42

U.S. Cl. 260—296 R

4 Claims

Compounds of the formula



their salts and quaternary ammonium compounds, as well as their optically active isomers or diastereomers wherein  $R^1$  to  $R^4$  represent hydrogen, halogen, lower alkyl, aralkyl, phenyl, hydroxyl, lower alkoxy, nitro or lower carboalkoxy,  $R^5$  and  $R^6$  are hydrogen or methyl,  $R^7$  and  $R^8$  are hydrogen, halogen or lower alkoxy, X is a heterocyclic ring system, mono- or condensed bicyclic, with 1-4 hetero atoms, in which the individual rings have 5 to 6 members and can also contain 1 or more carbonyl groups, Y is  $-\text{CO}-$  or  $-\text{CH}(\text{OH})-$ . These compounds have pharmacological activity in that they increase the coronary blood flow by simultaneously causing dilation of the coronaries and an increase in contraction strength.

3,631,056

### BASIC ESTERS OF $\alpha$ -CARBOXY ARYL PENICILLINS

Kenneth Butler, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 695,889, Jan. 5, 1968. This application June 4, 1969, Ser. No. 830,517

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

13 Claims

Arylchloro (and bromo) carbonyl ketenes, arylcarboxy ketene basic esters derived therefrom, methods for their preparation and the use of the esters as acylating agents for the production of basic esters of  $\alpha$ -carboxy aryl acetyl derivatives of 6-aminopenicillanic acid and, by hydrolysis, the corresponding acid derivatives, are described.

3,631,057

### NOVEL 4,7-DIMETHYL-6-(LOWER ALKYL)ISOXAZOLO[5,4-e]INDOLES AND METHODS OF PREPARING SAME

William Alan Remers, Suffern, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 6, 1970, Ser. No. 1,038

Int. Cl. C07d 85/22

U.S. Cl. 260—307

10 Claims

4,7-dimethyl-6-(lower alkyl) isoxazolo [5,4-e] indoles and the corresponding 4,5-dihydro derivatives thereof. The compounds are useful as analgesics and antidepressants, respectively.

3,631,058

### PROCESS FOR THE PRODUCTION OF CHLORINATED N-METHYL IMIDAZOLES

Gunther Beck and Hans Holtschmidt, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 11, 1968, Ser. No. 743,973

Claims priority, application Germany, Aug. 19, 1967, F 53,287

Int. Cl. C07d 49/36

U.S. Cl. 260—309

11 Claims

Chlorinated N-methyl imidazoles are obtained by chlorinating dimethylamino acetonitrile in an inert solvent at temperatures of up to 150° C. by raising the chlorination temperature by about 10 to 20° C. per hour.

3,631,059

### PROCESS FOR THE EXTRACTION AND PURIFICATION OF PILOCARPINE

John T. Goorley, 2313 Jasmine St., and Robert L. Holt, 913 Middleton St., both of Monroe, La. 71201

No Drawing. Filed Sept. 11, 1967, Ser. No. 666,950

Int. Cl. C07k 49/36

U.S. Cl. 260—309

7 Claims

This invention relates to a process for the extraction and purification of alkaloids and nitrogenous compounds

from plant and animal tissue which comprises the steps of extracting plant and animal tissues having a low fat content with a dilute aqueous solution of an acid selected from the group consisting of strong mineral acids and strong organic acids having a concentration of between 0.1% to 10% by weight, neutralizing the aqueous acidic extract to a pH of between 5 to 13, contacting the neutralized aqueous extract with activated carbon, separating the carbon absorbate, extracting the alkaloids and nitrogenous compounds from said carbon absorbate with an extraction fluid selected from the group consisting of (1) a dilute aqueous solution of an acid selected from the group consisting of strong mineral acids and strong organic acids having a concentration of between 0.1% and 10% by weight and containing from 0% to 10% weight of an alkanol having from 1 to 6 carbon atoms and (2) an anhydrous organic solvent, and recovering said alkaloids and nitrogenous compounds in purified form.

3,631,060

### PROCESS FOR TREATING 4(5)-NITROIMIDAZOLES

William A. Sklarz, Clark, and Albert D. Epstein, Edison, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,414

Int. Cl. C07d 49/36

U.S. Cl. 260—309

8 Claims

The purity of 4(5)-nitroimidazoles is improved by maintaining dilute, spent nitration reaction mixture at an elevated temperature for a period of time sufficient to destroy undesirable reaction by-products.

3,631,061

### ACYLAMIDO PHENYL IMIDAZOLONES

Stanley C. Bell, Penn Valley, and Carl Gochman, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 543,555, Apr. 19, 1966. This application Feb. 12, 1968, Ser. No. 704,581

Int. Cl. C07d 49/30

U.S. Cl. 260—309.7

4 Claims

Acylamido phenyl imidazolones are prepared by reaction of an acylamido acetanilide with alkali. The compounds so prepared are pharmacologically active as CNS depressant and anticonvulsant agents.

3,631,062

### N'-SUBSTITUTED-6-NITROINDAZOLES

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

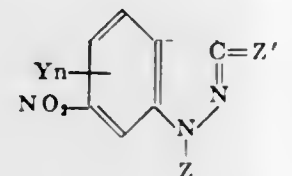
No Drawing. Continuation-in-part of application Ser. No. 589,235, Oct. 25, 1966. This application Mar. 29, 1968, Ser. No. 717,442

Int. Cl. C07d 49/18

U.S. Cl. 260—310 C

4 Claims

N'-substituted-6-nitroindazoles that have the structural formula



wherein Z represents  $-\text{S}-(\text{CH}_2)_m-\text{CH}_2\text{X}_{3-n}$  or  $-\text{SO}_2\text{R}$ ; Z' represents hydrogen or halogen; Y represents lower alkyl, halogen, or nitro; X represents halogen; R represents phenyl, tolyl, or  $-\text{CH}_2\text{X}_{3-n}$ ; m is an integer in the range of zero to one; and n is an integer in the range

of zero to two can be used to control the growth of various plant and animal pests. Among the most active of these compounds is N'-trichloromethylmercapto-6-nitroindazole.

3,631,063

### 1-AMINOALKYL-2,2-DISUBSTITUTED INDOLIN-3-ONES AND A PROCESS FOR THE PRODUCTION THEREFOR

Daniel Lednicher, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

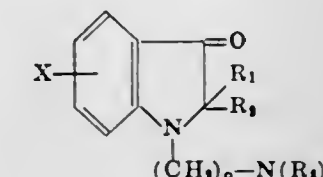
No Drawing. Filed May 28, 1969, Ser. No. 828,741

Int. Cl. C07d 27/40

U.S. Cl. 260—326.11

10 Claims

Compounds of the formula:



wherein X is hydrogen, lower-alkyl, halogen or  $-\text{CF}_3$ ; wherein  $R_1$  and  $R_2$  are lower-alkyl or  $-\text{C}_6\text{H}_4\text{X}'$  in which X' is hydrogen, lower-alkyl, halogen, lower-alkoxy or  $-\text{CF}_3$ ; wherein  $R_3$  is lower-alkyl or together  $-\text{N}(\text{R}_3)_2$  is 1-pyrrolidinyl, 1-piperidinyl or 4-morpholinyl; and wherein n is an integer from 2 to 4, inclusive, are made from 3H-indol-3-ols. The products as well as their pharmacologically acceptable acid addition salts have sedative activity and can be administered to tranquilize mammals.

3,631,064

### THIOPHENOCROMENE COMPOUNDS AND PROCESS FOR PRODUCING THEM

Shiro Kimura, Sadao Ishige, and Teruo Kobayashi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,526

Claims priority, application Japan, Sept. 16, 1968, 43/66,820

Int. Cl. C07d 63/22

U.S. Cl. 260—330.5

6 Claims

Novel thiophenochromene compounds, useful as color formers for use in pressure-sensitive copy papers, and a process for preparing these compounds are disclosed.

3,631,065

### ALUMINACYCLOALKENE MOIETY CONTAINING COMPOUNDS AND THEIR PREPARATION AND USES

Gottfried J. Brendel and Lawrence H. Shepherd, Jr., Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,651

Int. Cl. C07f 5/06

U.S. Cl. 260—340.6

32 Claims

Nonionic compounds in which an aluminum atom is part of an olefinically unsaturated ring system are prepared by causing interaction among aluminum, a conjugated diene and a hydrocarbon aluminum hydride in the presence of a suitable Lewis base such as 1,4-dioxane or N-methyl pyrrolidine. The resulting cyclic organo-aluminum compound is useful in the synthesis of olefins and branched chain alkenols. Thus by subjecting the cyclic organo-aluminum compound to hydrolysis, one or more olefins may be produced. To prepare branched chain alkenols, the cyclic organo-aluminum compound is reacted with a cleavable cycloparaffinic monoether having a 3, 4 or 5 membered ring. Thereupon the reaction mixture is



subjected to hydrolysis. The following novel compounds were prepared by this procedure:

1-chloromethyl-3,4-dimethyl-4-penten-1-ol  
1-chloromethyl-3,3-dimethyl-4-penten-1-ol  
2,2-bis(chloromethyl)-4,5-dimethyl-5-hexen-1-ol  
2,2-bis(chloromethyl)-4,4-dimethyl-5-hexen-1-ol  
1,5,5-trimethyl-6-hepten-1-ol  
1,5,6-trimethyl-6-hepten-1-ol  
4,5,6-trimethyl-6-hepten-1-ol  
2,2,3-trimethyl-5,5-bis(chloromethyl)tetrahydropyran.

3,631,066

**4,5-DIHYDRO-2(3H)-OXEPINONE**

Chin-Chiun Chu, South Plainfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,023  
Int. Cl. C07d 9/00

U.S. Cl. 260—343

1 Claim

4,5-dihydro-2(3H)-oxepinone, (6-hydroxy-5-hexenoic acid  $\epsilon$ -lactone,  $\Delta^6$ -caprolactone) is presented. It can be converted to  $\epsilon$ -caprolactam (a precursor for Nylon-6), 2,3,4,5-tetrahydro-2(1H)-azepinone (6-amino-5-hexenoic acid lactam) which may be prepared by reaction of the lactone with ammonia.

3,631,067

**PREPARATION OF COUMARIN**

Robert J. Nankee, Midland, and Charles F. Fosberry, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 5, 1970, Ser. No. 844  
Int. Cl. C07d 7/28

U.S. Cl. 260—343.2 R

7 Claims

In the process for preparing coumarin by reacting salicylaldehyde with an alkali metal acetate and acetic anhydride, separation of the product is improved without detrimentally affecting the yield by maintaining the molar concentration of alkali metal acetate at or below the concentration of the total salicylaldehyde employed in the reaction and then separating the coumarin from the reaction mixture by distillation.

3,631,068

**PROCESS FOR CONVERTING A MIXED TOCOPHEROL CONCENTRATE TO ESSENTIALLY ALL ALPHA-TOCOPHEROL**

Donald R. Nelan, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,347  
Int. Cl. C07d 7/22

U.S. Cl. 260—345.5

5 Claims

A tocopherol concentrate containing non alpha-tocopherols, such as one containing alpha, beta, gamma, and delta-tocopherols, is converted to essentially all alpha-tocopherol by reacting with the mixed concentrate an aldehyde such as formaldehyde and a hydrogen halide such as hydrogen chloride in the presence of metallic tin as a reducing agent.

3,631,069

**SUBSTITUTED PHENETHYL ALCOHOLS AND THEIR ESTERS**

Ulrich Renner, Riehen, Switzerland, Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,409  
Int. Cl. C07d 27/24

U.S. Cl. 260—326.3

10 Claims

Compounds of the class of p-(1-pyrryl)-phenethyl alcohols and alkanoyl esters thereof have analgesic and anti-inflammatory properties; they are active ingredients of pharmaceutical compositions and are useful for alleviat-

ing pain and treating inflammatory diseases; illustrative embodiments are p-(1-pyrryl)-phenethyl alcohol and the propionic acid ester thereof.

3,631,070

**TETRAHYDROFURYL ETHERS OF STEROIDS AND PREPARATION THEREOF**

Alexander Mebane, New York, N.Y., assignor to Ortho Pharmaceutical Corporation

No Drawing. Continuation-in-part of application Ser. No. 530,412, Feb. 28, 1966. This application Mar. 9, 1967, Ser. No. 622,870

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55 R

7 Claims

The present invention relates to novel steroidal tetrahydrofuryl ethers and the process for their preparation. More particularly, the present invention relates to 3-(tetrahydro-2'-furyl) ethers having antilittering activity and 17-(tetrahydro-2'-furyl) ethers of steroids and the process for their preparation.

3,631,071

**S-AROYL-, S-THIOAROYL-, AND S-(N-ARYL)HYDROCARBYLIMIDOYLHYDROSULFAMINES**

Maynard S. Raasch, Fairfax, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

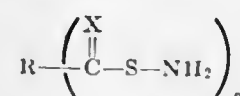
No Drawing. Filed Sept. 15, 1969, Ser. No. 858,101

Int. Cl. C07c 153/01; C07d 5/14

U.S. Cl. 260—347.2

19 Claims

Novel substituted hydrosulfamines useful as rubber curing agents, of the formula:



where  $n$  is 1, 2, or 3;  $X$  is O, S, or  $NR'$ ; when  $X$  is O or S,  $R$  is substituted or unsubstituted aryl; when  $X$  is  $NR'$ ,  $R$  is substituted or unsubstituted alkyl, aralkyl or aryl; and  $R'$  is substituted or unsubstituted aryl. The above compounds are prepared by the reaction of alkali metal or alkaline earth metal hydroxylamine-O-sulfonates with arenecarbothioate, arenecarbothioate and (N-aryl)hydrocarbylcarboximidothioate alkali metal salts.

3,631,072

**EPOXIDATION OF DICYCLOPENTADIENE**

Ming N. Sheng, Cherry Hill, and Rudolph Rosenthal, Broomall, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,941

Int. Cl. C07d 1/08

U.S. Cl. 260—348.5 L

3 Claims

Dicyclopentadiene is epoxidized to the diepoxide exclusively when employing tertiary butyl hydroperoxide as the oxidizing agent in the presence of a molybdenum-containing catalyst by removing the tertiary butyl alcohol from the reaction system as it is formed. This permits the use of higher reaction temperatures and the formation of the diepoxide as the exclusive product.

3,631,073

**PROCESS FOR OXIDATION OF CARBON MONOXIDE**

Johann G. E. Cohn, West Orange, Otto J. Adhart, Newark, Walter Egbert, Jr., North Brunswick, and Heinrich K. Straschil, East Orange, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

Filed Apr. 4, 1969, Ser. No. 813,432

Int. Cl. C01b 2/02

U.S. Cl. 252—373

1 Claim

An improved process for the selective oxidation of carbon monoxide contained in feed gases from a steam

reformer-converter wherein the feed gases in admixture with oxygen are contacted with a platinum group metal catalyst and the activity of the catalyst for the selective oxidation reaction is maintained by periodically treating deactivated catalyst with the selected oxidation reaction effluent gases containing less than 50 p.p.m. carbon monoxide at a temperature of 75° to 200° C.

3,631,074

**PROCESS FOR THE PRODUCTION OF SUBSTITUTED ANTHRAQUINONES**

Hans-Samuel Bien, Burscheid, and Walter Hohmann and Heinrich Vollmann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 710,640, Mar. 5, 1968, which is a continuation-in-part of abandoned application Ser. No. 390,244, Aug. 17, 1964. This application Nov. 24, 1969, Ser. No. 879,630

Int. Cl. C01b 1/10

U.S. Cl. 260—383

8 Claims

A process for the production of an  $\alpha$ -chlorinated anthraquinone having hydroxy substituents in the 1,4-positions which comprises chlorinating at a temperature of 50–120° C. a boric acid complex of a 1,4-dihydroxy-anthraquinone or a boric acid complex of a 1,4-dihydroxy-anthraquinone having 1 to 2 chlorine atoms in the 2-, 3-, 5-, 6-, 7- or 8-positions but with at least one of the 5- and 8-positions unsubstituted, in a solvent selected from the group consisting of sulphuric acid containing  $SO_3$  and chlorosulphonic acid in the presence of iodine, sulphur chloride or iron-III-salts as halogenating catalyst and splitting off boric acid by hydrolysis.

3,631,075

**3-OXYGENATED 21 $\beta$  - (SUBSTITUTED PHOSPHINYL)PREGNA-4/5, - 17(20),20 - TRIENES AND 19-NOR DERIVATIVES THEREOF**

Walter R. Benn, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 666,481, Sept. 8, 1967. This application Dec. 2, 1969, Ser. No. 881,588

Int. Cl. C07c 169/32, 169/34

U.S. Cl. 260—397.3

11 Claims

The above-entitled novel chemical compounds are obtained by reaction of an appropriate 17 $\alpha$ -ethynyl-17 $\beta$ -hydroxy steroid with a substituted chlorophosphine or chlorophosphite and exhibit valuable pharmacological properties, e.g. anti-bacterial, anti-protozoal, anti-fungal and anti-inflammatory.

3,631,076

**PROCESS FOR PREPARING 16-UNSATURATED STEROIDS**

Ludwig Salce, Clark, George G. Hazen, Westfield, and Erwin F. Schoenewaldt, Watchung, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 14, 1969, Ser. No. 824,658

Int. Cl. C07c 167/14

U.S. Cl. 260—397.45

9 Claims

A process for preparing 16-unsaturated steroids from 17 $\alpha$ -hydroxy steroids of the pregnane series by heating the 17 $\alpha$ -acyloxy derivative with a metal salt of a lower alkanolic or aromatic acid in a polar organic solvent. A novel compound, pregna-1,4,16-triene-3,20-dione-11 $\beta$ ,21-diol diacetate is disclosed. The adrenocortical steroids produced have anti-inflammatory and anti-allergenic properties.

3,631,077

**NEW 16 $\alpha$ -ALKYL-STERIODS**

Filippus Johannes Zeelen and Albertus Joannes van den Broek, Oss, and Martinus Johannes van den Heuvel, Vught, Netherlands, assignors to Organon Inc., West Orange, N.J.

No Drawing. Filed Jan. 22, 1969, Ser. No. 793,180  
Claims priority, application Netherlands, Feb. 1, 1968, 6801449

Int. Cl. C07c 169/32, 169/34

U.S. Cl. 260—397.3

5 Claims

The present invention relates to the preparation of a group of novel  $\Delta^4$ -3-keto-16 $\alpha$ -alkyl-20-oxygenated steroids of the pregnane and 19-nor-pregnane series substituted in 21-position with a hydroxyl, acyloxy or fluoro group, and possibly unsaturated in 6–7 position, which compounds have strong progestative, ovulation-inhibiting and pregnancy-maintaining properties.

3,631,078

**9,9-BIS-OMEGACARBONYL FLUORINE SULFONIC ACID COMPOUNDS AND THEIR SALTS**

John Ewart Lodge, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Original application Aug. 31, 1967, Ser. No. 664,640, now Patent No. 3,560,448, dated Feb. 2, 1971. Divided and this application July 10, 1969, Ser. No. 851,532

Claims priority, application Great Britain, Sept. 13, 1966, 40,815/66

Int. Cl. C07c 143/52

U.S. Cl. 260—507 R

7 Claims

9,9-bis-omegacarbonyl fluorene mono- and di-sulfonic acids and their alkali metal and alkaline earth metal salts.

3,631,079

**PROCESS FOR THE MANUFACTURE OF CARBOXYLIC ACIDS AND UNSATURATED ESTERS OF CARBOXYLIC ACIDS**

Kurt Sennewald and Wilhelm Vogt, Knapsack, near Cologne, Heinz Erpenbach, Surth, near Cologne, and Hermann Glaser, Knapsack, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Mar. 22, 1968, Ser. No. 715,190  
Claims priority, application Germany, Apr. 5, 1967, K 61,900

Int. Cl. C07c 67/04; C11c 3/00

U.S. Cl. 260—410

5 Claims

Production of carboxylic acids (defined as carboxylic acids I) and of unsaturated esters of carboxylic acids (defined as carboxylic acids II), whereby the carboxylic acid II may be identical with the carboxylic acid I, by reacting an olefinic compound in the presence of an aldehyde, which in structure and number of carbon atoms corresponds to the carboxylic acid I, and in the presence of the carboxylic acid II, each of the said olefinic compound, the said aldehyde and the said carboxylic acids containing 2 to 20 carbon atoms, with molecular oxygen or air in the gas phase, at elevated temperature and in contact with a palladium-containing carrier catalyst.

3,631,080

**QUATERNARY ALKYLATED ACIDS AND ESTERS USEFUL FOR THE CONTROL OF INSECTS**

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 860,086, Sept. 22, 1969. This application Nov. 6, 1969, Ser. No. 874,678

Int. Cl. A01n 9/24; C07c 69/52, 103/58

U.S. Cl. 260—410.9 R

7 Claims

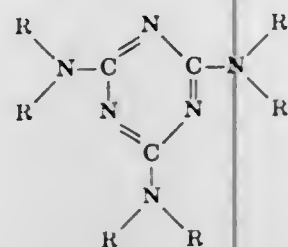
Methods of employing and compositions comprising quaternary alkylated aliphatic acids, esters and amides for the control of insects.







the catalytic disproportionation process in the presence of a conventional disproportionation catalyst and a melamine adjuvant of the formula



wherein R is hydrogen or an alkyl radical having from 1 to 4 carbon atoms therein.

3,631,096

# PROCESS FOR THE PRODUCTION OF AROMATIC POLYCARBOXYLATES

Donald G. Kuper, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 20, 1969, Ser. No. 878,539  
Int. Cl. C07c 51/00, 15/52

U.S. Cl. 260—515 P

7 Claims

Increase in yield of aromatic polycarboxylic acid salts is achieved by carrying out the transformation process for the formation of same in an inert atmosphere and in the presence of a transformation catalyst having present therewith as an adjuvant an ammonium salt of an aromatic acid.

3,631,097

# OXIDATION OF ALKYLATED DIPHENYL COMPOUNDS

Ludwig J. Christmann, Bronxville, N.Y.; Louise Christmann, executrix of said Ludwig J. Christmann, deceased, and Edward Sherrill Roberts, Ridgewood, N.Y.; said Roberts assignor to Carbogen Corporation, Bronxville, and Wilmet & Cassidy, Inc., Brooklyn, N.Y.  
No Drawing. Continuation of application Ser. No. 461,497, June 4, 1965, which is a continuation-in-part of application Ser. No. 176,101, Feb. 27, 1962. This application June 19, 1968, Ser. No. 750,670

The portion of the term of the patent subsequent to Oct. 8, 1985, has been disclaimed  
Int. Cl. C07c 63/02

U.S. Cl. 260—520

8 Claims

Alkylated diphenyl reactants are oxidized to diphenyl-carboxylic acids, using gaseous NO<sub>2</sub> as oxidant and a solvent substantially inert to NO<sub>2</sub> at elevated temperature. The reactants are alkylated diphenyls or alkylated diphenylethers which may contain substituents which do not interfere with the oxidation. The oxidation temperature is at least 125° C. Selenium may be added to the reaction mixture.

3,631,098

# EXTRACTING 4-P-TOLYLVALERIC ACID FROM DOUGLAS FIR

Carl T. Redemann, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,186  
Int. Cl. C07c 51/48

U.S. Cl. 260—525

7 Claims

When Douglas fir wood is contacted with a suitable non-polar, water-immiscible solvent, 4-p-tolylvaleric acid is extracted. This acid may then be removed from the extract by conventional means.

# PREPARATION OF UNSATURATED ALDEHYDES AND ACIDS

Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 483,862, Aug. 30, 1965, now Patent No. 3,401,198. This application Aug. 28, 1967, Ser. No. 663,557  
The portion of the term of the patent subsequent to Sept. 10, 1985, has been disclaimed  
Int. Cl. C07c 57/04

U.S. Cl. 260—533 N

6 Claims

Unsaturated acids and aldehydes, as acrylic acid and acrolein, are prepared together in excellent yields by the oxidation of an olefin as propylene in the presence of a catalyst containing a II-A metal molybdate, as strontium molybdate, tellurium oxide and phosphorus pentoxide.

3,631,100

# PROCESS FOR THE PREPARATION OF USEFUL N<sub>2</sub>O<sub>3</sub> ADDITION PRODUCTS AND FATTY ACIDS

Alan F. Ellis, Murrysville, Pa., assignor to Gulf Research & Development Corporation, Pittsburgh, Pa.

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,441  
Int. Cl. C07c 53/22

U.S. Cl. 260—533 R

13 Claims

1-alkenes, such as 1-octene, can be substantially completely converted to useful N<sub>2</sub>O<sub>3</sub> addition products by reaction with a nitrosating agent comprising a mixture of NO and NO<sub>2</sub> wherein the molar ratio of NO to NO<sub>2</sub> is at least 1:1, provided the conversion occurs in the presence of a lower alkyl fatty acid such as acetic acid. The N<sub>2</sub>O<sub>3</sub> addition products can be converted in good efficiency to a fatty acid by reaction with concentrated sulfuric or phosphoric acid, followed, if necessary or if desired, after gas evolution has ceased, by dilution with water to an anhydrous mineral acid content of less than 65 and heating to obtain the desired fatty acid, such as heptanoic acid.

3,631,101

# p - [p - (THIONYLAMINO)BENZAMIDO]BENZOYL CHLORIDE AND ITS HCl ADDITION PRODUCT

Josef Pikel, Glassboro, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 28, 1967, Ser. No. 694,123  
Int. Cl. C07c 51/58, 10/88

U.S. Cl. 260—544 R

2 Claims

(I) p-[p-(thionylamino)benzamido] benzoyl chloride and (II) p-[p-aminobenzamido] benzoyl chloride hydrochloride and processes for their preparation. (I) is prepared by reacting p-aminobenzic acid, p-thionylamino-benzoyl chloride and thionyl chloride in a reaction solvent. (II) is prepared by treating (I) with hydrogen chloride.

3,631,102

# N-AMINOALKYL-2,5-CYCLOHEXADIENE-1-CARBOXAMIDES

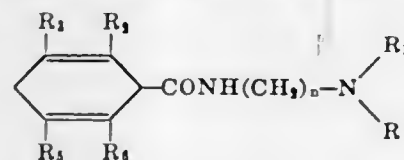
Venkatachala Lakshmi Narayanan, North Brunswick, Frederic Peter Hauck, Somerville, and Frank Lee Weisenborn, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,839  
Int. Cl. C07c 103/44

U.S. Cl. 260—557 R

6 Claims

This invention relates to new N-aminoalkyl-2,5-cyclohexadiene-1-carboxamides of the general formula



and to acid addition salts thereof.

They are useful as anti-fibrillatory agents.

3,631,103

# 5-(3'-ALKOXY OR HALO-PROPYLIDENE)-DIBENZO[a,d]CYCLOHEPTA[1,4,6]TRIENE - 10-CARBOXYLIC ACID AMIDES

Gerald Rey-Bellet and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 431,981, Feb. 11, 1965. This application Sept. 12, 1968, Ser. No. 759,499

Claims priority, application Switzerland, Feb. 18, 1964, 1,969/64; Dec. 4, 1964, 15,709/64  
Int. Cl. C07c 103/30

U.S. Cl. 260—559 R

5 Claims

Dibenzo[a,d]cyclohepta[1,4,6]trienes bearing in the 5-position, substituents such as, for example, oxo- or 3'-lower alkoxyalkylidene and in the 10-position, substituents such as, for example, carbonyl, thiocarbonyl or guanyl radicals, for instance, 5-(3'-lower alkoxypropylidene) - dibenzo[a,d]cyclohepta[1,4,6]triene 10 - carboxylic acid di-(lower alkyl)amides and dibenzo[a,d]cyclohepta[1,4,6]trien-5-one 10 - carboxylic acid cyclic amides, prepared, inter alia, from 5-(3'-lower alkoxypropylidene) - dibenzo[a,d]cyclohepta[1,4,6]triene 10 - carboxylic acid, 10 - halocarbonyl - 5-(3'-lower alkoxypropylidene)dibenzo[a,d]cyclohepta[1,4,6]triene or dibenzo[a,d]cyclohepta[1,4,6]trien-5 - one 10-carboxylic acid halide, are described. The end products are useful as antidepressants.

3,631,104

# CATALYSTS FOR THE HYDRATION OF NITRILES TO AMIDES

Clarence E. Habermann and Ben A. Tefertiller, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 791,807, Jan. 16, 1969. This application June 23, 1969, Ser. No. 835,765

Int. Cl. C07c 103/00

U.S. Cl. 260—561 N

29 Claims

Copper, copper oxide, copper-chromium oxide, copper-molybdenum oxide or mixtures thereof have been found to be excellent heterogeneous catalysts for the conversion of nitriles in the presence of water to the corresponding amides. Using one such catalyst in a continuous flow reactor, acrylonitrile was almost 100% converted to acrylamide during more than six weeks of continuous operation.

3,631,105

# ACETOXYMETHYL ACETAMIDES AND ACETAMIDOACETAMIDES AND THEIR PREPARATION

Stanley C. Bell, Montgomery, Ronald J. McCaully, Chester, and Scott J. Childress, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 456,533, May 17, 1965, and Ser. No. 677,029, Oct. 23, 1967. This application June 8, 1970, Ser. No. 44,547

Int. Cl. C07c 103/44

U.S. Cl. 260—562 N

1 Claim

A process is disclosed in which an N[(4-oxo-4H-3,1-benzoxazin-2-yl)acyloxymethyl] lower fatty acid amide is prepared by a reaction of an acid anhydride with a substituted aminoacetyl anthranilic acid. The reaction product is then treated with a compound possessing an active hydrogen and a nucleophilic group, i.e., an amine, whereby there is formed a 2-carbamyl-acetanilide in which one nucleophilic group attaches to the methylene radical of the acetyl group and another to the carbonyl group of the acetanilide. The compounds of the invention are central nervous system depressants, resulting in a generally relaxing or sedative effect.

3,631,106

# NOVEL NAPHTHALENEDIAMINE COMPOUNDS AND MEANS FOR THEIR PRODUCTION

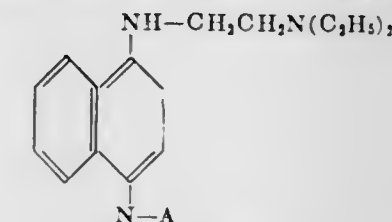
Edward F. Elslager, 4081 Thornocks Drive, Ann Arbor, Mich. 48104

No Drawing. Filed Nov. 18, 1968, Ser. No. 776,799  
Int. Cl. C07c 119/00

U.S. Cl. 260—566 F

5 Claims

Naphthalenediamine compounds of Formula I are provided by reacting N-[2-(diethylamino)ethyl]-1,4-naphthalenediamine with the appropriate aldehyde OA, specifically: (a) o-nitrocinnamaldehyde, (b) 4-dimethylaminocinnamaldehyde or (c) benzaldehyde monosubstituted by halogen, CH<sub>3</sub>CONH, NO<sub>2</sub>, CN, CH<sub>3</sub> or OH and optionally containing 1 or 2 substituents selected from Cl, CH<sub>3</sub> and CH<sub>3</sub>O. The products have antiparasitic properties and are useful schistosomacides.



(1)

3,631,107

# N,N'-BIS(ACENAPHTHENYLMETHYL)-CYCLO-HEXANEBIS(METHYLAMINES) AND THE SALTS THEREOF

Leslie G. Humber, Dollard des Ormeaux, Quebec, Canada, assignor to Ayerst, McKenna and Harrison Limited, St. Laurent, Quebec, Canada

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,321  
Int. Cl. C07c 87/28

U.S. Cl. 260—570.5 PA

18 Claims

Disclosed herein are N,N'-bis(5-acenaphthenylmethyl)-1,3- and -1,4-cyclohexanebis(methylamines) and their corresponding mono- or di-N-(lower alkyl) derivatives, as well as their acid addition salts with pharmaceutically acceptable acids. The compounds and their acid addition salts are useful in preventing the excessive secretion of gastric acid, and methods for their preparation and use are given.

3,631,108

# PARA-ALKENYLPHENOXY-HYDROXY-ISOPROPYLAMINOPROPANE

Arne Elof Brandstrom, Goteborg, Hans Rudolf Corrodi, Askim, and Bengt Arne Hjalmar Ablad, Goteborg, Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

No Drawing. Division of application Ser. No. 808,316, Mar. 18, 1969, now Patent No. 3,555,161, and a continuation-in-part of applications Ser. No. 521,436, Jan. 18, 1966, now Patent No. 3,466,325, and Ser. No. 558,226, June 17, 1966, now Patent No. 3,466,376. This application Aug. 15, 1969, Ser. No. 872,789

Claims priority, application Sweden, Apr. 30, 1965, 5,711/65

Int. Cl. A61k 27/00; C07c 93/06

U.S. Cl. 260—570.7

1 Claim

Para - allyl substituted phenoxy - hydroxy - isopropylaminopropane, its preparation, pharmaceutical compositions containing this compound, and the use thereof in the treatment of cardiac and vascular diseases.

3,631,109

# β,β'-BIS[DIALKYLAMINOMETHYL-4-HYDROXY-BENZYLTHIO]DIALKYLETERS

Francis X. O'Shea, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Dec. 4, 1968, Ser. No. 781,247  
Int. Cl. C07c 87/28

U.S. Cl. 260—570.9

3 Claims

This invention is concerned with a new series of compounds found to be useful as antioxidants, and their



method of production. The compounds described as bisphenolic antioxidants are particularly effective for retarding oxidative deterioration in rubber, plastics, fats and petroleum products.

3,631,110

## PREPARATION OF KETONES

Richard D. Smetana, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Oct. 29, 1968, Ser. No. 771,599

Int. Cl. C07c 45/02

U.S. Cl. 260—597 R

5 Claims

A method for producing ketones by contacting an n-paraffin having from 3 to 25 carbon atoms with a nitrating agent selected from the group consisting of  $N_2O_5$  and a  $P_2O_5-HNO_3-H_2O$  combination in the presence of an oxygen containing gas at temperatures between  $-50$  and  $50^\circ C$ . The presence of oxygen functions as a nitration director favoring the production of ketones.

3,631,111

## OXO PROCESS

Edmond R. Tuccl, Murrysville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 17, 1968, Ser. No. 784,479

Int. Cl. C07c 45/10

U.S. Cl. 260—604 HF

17 Claims

An Oxo process wherein an olefin is reacted with hydrogen and carbon monoxide in the presence of a catalyst system wherein the major portion thereof is a Group VI-B metal carbonyl complexed with a compound of trivalent phosphorus, trivalent arsenic or trivalent antimony and a minor portion thereof is a metal hydro carbonyl wherein the metal can be cobalt, rhodium, iridium, palladium, iron, nickel, ruthenium, osmium, manganese or rhenium.

3,631,112

## POLYBROMO-CYCLOALIPHATIC ETHERS

Paul M. Kerschner, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Dec. 29, 1967, Ser. No. 694,423

Int. Cl. C07c 43/18

U.S. Cl. 260—611 R

4 Claims

A unique group of high boiling water insoluble polyhaloalkyl and cycloalkyl ethers is described, all of which are useful as external plasticizers and flame retarders for thermoplastic organic polymers, such as polyethylene, polystyrene and polymethylmethacrylate.

These plasticizer/flame retarder compositions are advantageously produced by adding a solution of halogen, such as bromine, in a lower aliphatic alcohol to a multi-unsaturated aliphatic or cycloaliphatic hydrocarbon and then adding sufficient water to the reaction mixture to separate the desired product as an insoluble lower liquid phase.

3,631,113

## 2-METHOXY-5-METHYL-m-XYLYLENE DICHLORIDE

Harold Marvin Foster, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Oct. 13, 1969, Ser. No. 865,945

Int. Cl. C07c 43/28

U.S. Cl. 260—612 D

1 Claim

A novel compound, 2-methoxy-5-methyl-m-xylylene dichloride, is synthesized by reacting 2,6-bis(hydroxymethyl)-4-methylanisole with thionyl chloride. The product is useful in the manufacture of 2,6-bis(alkylthiomethyl)-4-methylanisoles.

3,631,114

## DITERTIARY BETA-DIOLS

Raymond Valette, Paris, France, assignor to Les Laboratoires Albert Rolland, Paris, France

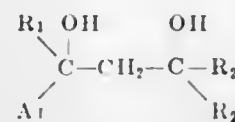
No Drawing. Continuation-in-part of application Ser. No. 262,849, Mar. 5, 1963. This application Aug. 2, 1968, Ser. No. 749,574

Int. Cl. C07c 31/14

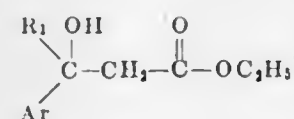
U.S. Cl. 260—618 D

3 Claims

A process for the preparation of ditertiary beta-diols of the general Formula I



in which  $R_1$  and  $R_2$  represent identical or different lower alkyl radicals, and Ar represents an aryl radical which may be a phenyl or a para-halogen such as chlorine, bromine or fluorine, substituted phenyl radical, which comprises effecting reaction between a hydroxyester of the formula



and an organomagnesium compound of the formula  $R_2\text{MgX}$ , in which  $R_1$ , Ar and  $R_2$  have the meaning stated above and X is a halogen atom, in a molar ratio of 1:3, and hydrolysing the product.

New compounds of Formula I in which  $R_1$  and  $R_2$  have different numbers of carbon atoms.

3,631,115

## TELOMERIZATION PROCESS FOR THE PREPARATION OF HALOGENATED HYDROCARBONS

Kunio Nakagawa, Nishinomiyashi, Hyogo, and Tadashi Nakata, Ibaragi-shi, Osaka, Japan, assignors to Shionogi & Co. Ltd., Osaka, Japan

No Drawing. Application Mar. 7, 1967, Ser. No. 621,151, now Patent No. 3,429,934, dated Feb. 25, 1969, which is a division of application Ser. No. 252,554, Jan. 12, 1963, now Patent No. 3,309,393, dated Mar. 14, 1967. Divided and this application Feb. 28, 1968, Ser. No. 734,181

Int. Cl. C07c 17/08, 17/10, 17/28

U.S. Cl. 260—648 C

6 Claims

A taxogen selected from the group consisting of alkenes with a maximum of 8 carbon atoms, the corresponding halogenoalkanes and halogenoalkenes, butadiene and isoprene, is telomerized with a telogen selected from the group consisting of halogeno(lower)alkanes, halogenoethylenes and hydrohalic acids with production of addition product thereof in the form of halogenated hydrocarbon, by reacting the telogen with the taxogen in the presence of nickel peroxide at a temperature from ambient temperature to the decomposition temperature of one of the telogen, the taxogen and their addition product, the said nickel peroxide being the product of the treatment of a salt of nickel selected from the group consisting of nickel chloride, nickel bromide, nickel sulfate, nickel carbonate and nickel nitrate with an oxidizing agent selected from the group consisting of alkali hypochlorite and alkali persulfate in aqueous alkaline medium at a temperature between  $10^\circ$  and  $25^\circ C$ , and containing about 0.3 to  $0.4 \times 10^{-2}$  gram-atom of active oxygen per gram.

3,631,116

## PROCESS FOR THE MANUFACTURE OF CARBON TETRACHLORIDE

Lothar Hornig, Helmut Meidert, and Wilhelm Riemschneider, all of Farbwerke Hoechst AG, Frankfurt am Main, Germany

No Drawing. Filed Jan. 8, 1969, Ser. No. 789,965

Claims priority, application Germany, Jan. 12, 1968, P 16 68 074.3

Int. Cl. C07c 17/10, 17/24, 19/06

U.S. Cl. 260—662 R

2 Claims

Improvement in a process for the manufacture of carbon tetrachloride by chlorination of aromatic hydrocarbons consisting in maintaining the immediately formed hexachlorobenzene in solution in carbon tetrachloride at elevated temperature and pressure and removing it in this form or returning it continuously to a chlorolysis reaction.

3,631,117

## HYDROISOMERIZATION OF CYCLIC COMPOUNDS WITH SELECTIVE ZEOLITE CATALYSTS

Stephen M. Kovach and Ronald A. Kmecak, Ashland, Ky., assignors to Ashland Oil & Refining Company, Houston, Tex.

No Drawing. Filed Dec. 19, 1968, Ser. No. 785,375

Int. Cl. C07c 3/00

U.S. Cl. 260—666

10 Claims

Cyclic organic compounds, such as toluene, methylcyclohexane, hydronaphthalenes, etc., are hydroisomerized to produce isomeric products, such as dimethylcyclopentanes and alkyl indanes and hydrindanes, respectively, by contacting the cyclic compound with a catalyst of an active metal selected from the group consisting of a metal of Group VIII of the Periodic System, particularly platinum, palladium, rhodium, nickel or cobalt, molybdenum and rhenium, alone or in combination with one another, or in combination with other catalytic metals, such as tungsten, etc., deposited or exchanged on a zeolite base, such a calcium type Y zeolite, a hydrogen type Z (Mordenite) zeolite, etc., while maintaining conditions sufficient to cause rupture of at least one ring of the cyclic compound, as between  $400$  and  $1000^\circ F$ , 0 and  $2000$  p.s.i.g., 0.1 and 10 liquid hourly space velocity, and 1 and 20 to 1 moles hydrogen at aromatic feed.

3,631,118

## ISOPRENE FROM ETHYLENE USING OLEFIN DISPROPORTIONATION

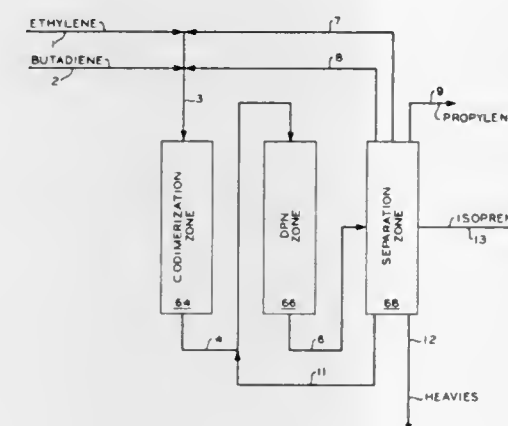
Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 8, 1970, Ser. No. 1,434

Int. Cl. C07c 3/62, 11/18

U.S. Cl. 260—680 R

7 Claims



A process of preparing isoprene from ethylene wherein ethylene and butadiene are codimerized to produce a branched acyclic diene, the branched acyclic diene is contacted with an olefin disproportionation catalyst in the

presence of ethylene to produce the isoprene. The butadiene can conveniently be provided by the olefin disproportionation of propylene to provide ethylene and butenes, and subsequent dehydrogenation of the butenes.

3,631,119

## REMOVAL OF CARBONYLS FROM POLYMERIZABLE MONOMERS

Donald M. Haskell, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Jan. 8, 1970, Ser. No. 1,555

Int. Cl. C07c 5/18, 7/00

U.S. Cl. 260—681.5

6 Claims

Carbonyl compounds are removed from a butadiene-containing stream by contacting the stream with formamide.

3,631,120

## ALKYLATION OF AROMATIC HYDROCARBONS

Paul E. Eberly, Jr., and Charles N. Kimberlin, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Filed June 13, 1969, Ser. No. 833,168

Int. Cl. C07c 3/52

U.S. Cl. 260—671

14 Claims

A process for alkylation of aromatic hydrocarbons, especially monocyclic aromatic hydrocarbons, with olefins, especially  $C_2$  to  $C_{10}$  monoolefins and more preferably  $C_2$  to  $C_5$  monoolefins, by liquid phase reaction in the presence of an ammonium-ion exchanged, calcined zeolite having a silica-to-alumina ratio ranging from about 4.0 to about 4.9.

3,631,121

DIMERIZATION OF  $C_2$  TO  $C_{10}$  OLEFINS WITH DEPOSITED CATALYST

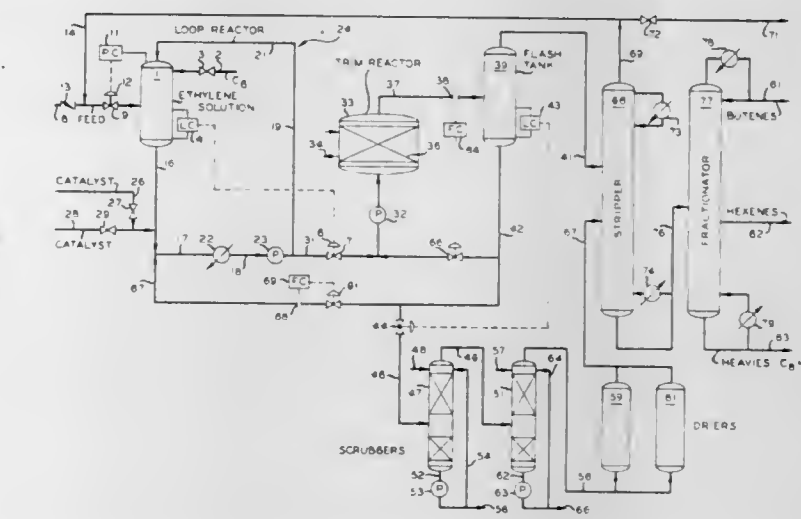
Thomas Hutson, Jr., and Cecil O. Carter, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed May 12, 1969, Ser. No. 823,618

Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D

9 Claims



In the dimerization of  $C_2$  to  $C_{10}$  olefins in a loop reactor, the improvement comprising running the reactor hotter than normal for a short period of time until catalyst and polymer are deposited on the walls of the loop reactor making the reactor more selective for dimerization, and then returning to the usual reaction temperatures. As a second feature, by running the effluent from the loop reactor through a fixed bed of ion exchange resin, some of the catalyst from the stream deposits on the ion exchange resin, and there acts as a second catalyst bed selective for dimerization.



3,631,122

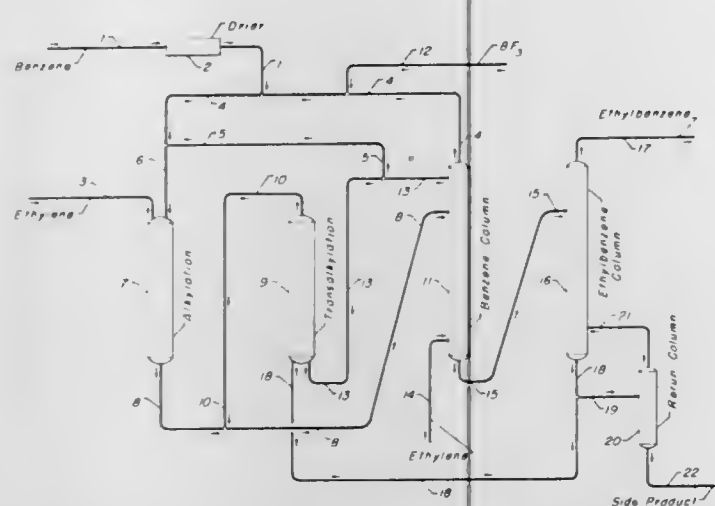
## ALKYLATION PROCESS

Charles V. Berger, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Filed Feb. 24, 1970, Ser. No. 13,632

Int. Cl. C07c 3/56

U.S. Cl. 260—671

14 Claims



Non-volatile boron oxide hydrates produced during the alkylation of an alkylatable aromatic hydrocarbon with an olefin-acting compound in the presence of a boron halide and a boron halide modified inorganic oxide are removed by reacting the boron oxide hydrate with an olefin-acting compound and removing the resultant reaction product.

3,631,123

## METHOD FOR TREATING ALKYL AROMATICS

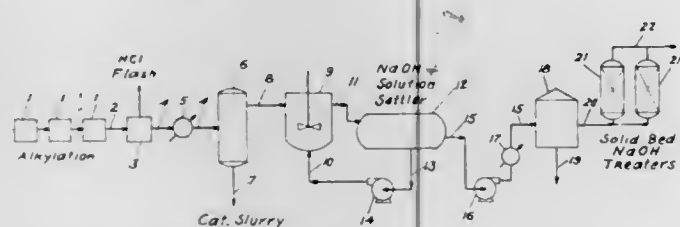
Matthew L. Becker, Philadelphia, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 756,664, Aug. 30, 1968. This application Feb. 16, 1970, Ser. No. 11,824

Int. Cl. C07c 7/00, 3/56

U.S. Cl. 260—674 A

8 Claims



Treating alkyl aromatics made by aluminum chloride alkylation with sodium hydroxide to remove residual catalyst therefrom.

3,631,124

## THERMOPLASTIC MOULDING COMPOSITIONS ON THE BASIS OF POLYACETALS

Karlheinz Burg, Hofheim, Taunus, Klemens Gutweiler, Oberjosbach, Taunus, and Harald Cherdron, Wiesbaden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 26, 1968, Ser. No. 763,015

Claims priority, application Germany, Oct. 13, 1967, P 16 94 206.6

Int. Cl. G08g 37/04, 37/38

U.S. Cl. 260—823

7 Claims

The invention provides thermoplastic moulding compositions on the basis of polyacetals having an improved

impact strength which are obtained by mixing a polyoxymethylene, for example a homo- or copolymer of formaldehyde or trioxan, with a polyether, for example polyethylene oxide.

3,631,125

## ADDUCTS OF m-TOLYLENEDIAMINE AND CURABLE POLYEPOXIDE COMPOSITIONS BASED ON m-TOLYLENEDIAMINE AND ADDUCTS THEREOF

George A. Salensky, Metuchen, N.J., assignor to Union Carbide Corporation

No Drawing. Filed Jan. 16, 1968, Ser. No. 698,140

Int. Cl. C08g 45/06, 30/08

U.S. Cl. 260—830 R

6 Claims

This invention relates to adducts of m-tolylene diamine and liquid polyglycidylethers; to adducts of m-tolylene diamine and a lactone; to curable polyepoxide compositions based on these adducts and to solid, thermosetting reaction products of m-tolylene diamine and liquid polyepoxides. These compositions and reaction products can be used to encapsulate electrical components making the components resistant to thermal and mechanical shock.

3,631,126

## POLYPHENYLENE OXIDE RESINS MODIFIED WITH POLYHYDROXY ETHERS

Hugh E. Snodgrass, Mishawaka, and Robert L. Lauchlan, Granger, Ind., assignors to Uniroyal, Inc., New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,452

Int. Cl. C08g 45/06, 45/00, 9/02

U.S. Cl. 260—830 R

27 Claims

Blends of poly(phenylene ether) resins with poly(hydroxy ether) resins provide thermoplastic compositions characterized by unique properties, particularly, significantly reduced melt viscosities and correspondingly improved melt processing characteristics, as well as increased stiffness and rigidity.

3,631,127

## POLYMERIZABLE ADDUCT OF CARBOXY CONTAINING COPOLYMER AND MONOESTERS OF DIEPOXIDES AND UNSATURATED MONOCARBOXYLIC ACID WITH VINYL MONOMERS

Shozaburo Nomura and Kiyoshi Honda, Osaka, Mitsumasa Miyazaki, Amagasaki, Kazutoyo Hirose, Tokyo, and Katsuo Akiyama, Kawaguchi, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, and Dainippon Ink Institute of Chemical Research, Kamikizaki, Urawa-shi, Japan

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,081

Claims priority, application Japan, Mar. 22, 1969, 44/21,277

Int. Cl. C08g 45/04

U.S. Cl. 260—837 R

4 Claims

A radical-cross-linkable resin composition comprising (A) a modified copolymer whose side chain has been introduced with an active unsaturated bond through the intermediary of at least two epoxy ester bonds, said copolymer having been obtained by adding an unsaturated epoxy resin to a polycarboxy copolymer; and (B) a monomer copolymerizable with the unsaturated bond of the side chain of said modified copolymer, the amount of (B) being at least 5% by weight of (A). This radical-cross-linkable resin composition can form a coating having excellent properties.

3,631,128

## POLYMERS STABILIZED WITH ORGANIC SULFIDES AND PHOSPHITES

Richard Strauss, Lexington, and James Bottomley, Andover, Mass., assignors to National Polychemicals, Inc., Wilmington, Mass.

Continuation-in-part of applications Ser. No. 443,174, Mar. 26, 1965, now Patent No. 3,435,097, and Ser. No. 462,385, June 8, 1965, now Patent No. 3,367,996; applications Ser. No. 538,022, Mar. 28, 1966, now Patent No. 3,526,679, and Ser. No. 675,299, Oct. 16, 1967, being a division of said application Ser. No. 462,385; and Ser. No. 831,744, June 9, 1969, now Patent No. 3,527,725, being a continuation-in-part of said application Ser. No. 675,299. This application Aug. 27, 1970, Ser. No. 67,487

Int. Cl. C08g 37/18, 51/58

U.S. Cl. 260—845

10 Claims

An organic polymer subject to degradation, e.g., a C<sub>2</sub>-C<sub>4</sub> olefin resin or synthetic elastomer, is stabilized by a composition composed of:

- (a) an alkylated phenol polysulfide; and
- (b) a phosphorus-containing ester polymer prepared by the reaction of a trivalent phosphorus compound, such as phosphorus trichloride and a thermoplastic phenol-formaldehyde novolak resin.

3,631,129

## METHOD OF PREPARING INORGANIC POLYMERS

Piero Luigi Nannelli, King of Prussia, and Hyman David Gillman, Norristown, Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Apr. 7, 1970, Ser. No. 26,394

Int. Cl. C08g 33/16, 33/20

U.S. Cl. 260—2 P

5 Claims

Chromium(III) hydroxyquo bis(phosphinate) polymers composed of the recurring unit



where R<sub>1</sub> and R<sub>2</sub> are inert organic groups, are prepared by reacting chromium(III) hydroxide with substituted phosphinic acids in aqueous medium. The polymers are used as coatings which will be subjected to high temperature environment.

3,631,130

## METHOD FOR SULFONATING POLY-(ARYLENEOXIDE)

Johann F. Klebe, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed June 26, 1970, Ser. No. 50,338

Int. Cl. C08g 23/20

U.S. Cl. 260—2.2

5 Claims

A process is provided for sulfonating poly-(2,6-diaryl-1,4-phenylene ethers) with a mixture of chlorosulfonic acid and a nitroalkane. Films made by casting the resulting sulfonated poly-(aryleneoxide) can be employed as ion exchange membranes.

3,631,131

## METHOD OF RECONSTITUTING UNFIRED, CAST, ALUMINA SCRAP

Paul Kopko, Anderson, Ind., assignor to RCA Corporation

No Drawing. Filed May 4, 1970, Ser. No. 34,599

Int. Cl. C08f 47/24

U.S. Cl. 260—2.3

11 Claims

Unfired, cast, alumina scrap, comprising components of aluminum oxide, inorganic additives, a plasticizer, and

a binder, is reconstituted into a slip suitable for recasting by first milling a charge of the scrap with an excess of solvent for the binder in a slip ball mill. The scrap is milled until the binder dissolves and the scrap is broken down into its components. Then, an additional charge, comprising components similar in chemical composition to those in the broken-down scrap, is added to the contents of the slip ball mill in a quantity to provide at least 25%, by weight, of a total charge for the slip mill. The total charge is milled with the aforementioned excess of solvent to provide the recasting slip with a viscosity of between 20,000 and 35,000 centipoises.

3,631,132

## FLAME RESISTANT EXPANDABLE STYRENE POLYMERS CONTAINING TRIBROMOPHENYL-DIBROMOPROPYL ETHER AND METHOD OF PREPARING

Helmut Westernacher, Hans-Wolfgang Jurgeleit, and Anton Schick, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany  
No Drawing. Filed Aug. 12, 1970, Ser. No. 63,329  
Claims priority, application Germany, Sept. 13, 1969, P 19 46 441.6

Int. Cl. C08j 1/26

U.S. Cl. 260—2.5 FP

16 Claims

Flame resistant expandable styrene polymers prepared by treating the styrene polymers in an aqueous suspension at temperatures of between about 80 and 150° C. with tribromophenyldibromopropyl ether in the liquid phase.

3,631,133

## PROCESS FOR EXPANDING POLYSTYRENE

Jean Battigelli, Rantigny, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France  
No Drawing. Filed Apr. 13, 1966, Ser. No. 542,236  
Claims priority, application France, Apr. 14, 1965, 13,185

Int. Cl. C08f 47/10, 33/02

U.S. Cl. 260—2.5 B

8 Claims

Method for expanding granules of polystyrene impregnated with a blowing agent, wherein the granules are successively (a) pre-expanded at about atmospheric pressure by insufflation with steam; (b) conditions by resting in silo at atmospheric pressure for several hours; (c) subjected in an autoclave to steam at about 150 g./cm.<sup>2</sup> for 30 seconds, the pressure raised to 500 to 700 g./cm.<sup>2</sup> in about 10 seconds, then reduced to atmospheric in about 10 seconds; (d) cooled slowly in autoclave for about 25 minutes; (e) removed from autoclave and rested in silo for several hours at 40° to 50° C. The method enables polystyrene granules to be expanded from an apparent specific mass of about 650 kg./m.<sup>3</sup>, to about 4 kg./m.<sup>3</sup>.

3,631,134

## PROCESS FOR THE CONTINUOUS PRODUCTION OF FOAMS FROM CURABLE SYNTHETIC RESINS

Hans Scheuermann and Wilhelm Krieger, Ludwigshafen, Rhine, and Leo Unterstenhoefer, Limburgerhof, Pfalz, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany  
Filed Feb. 23, 1967, Ser. No. 618,039

Claims priority, application Germany, Feb. 26, 1966, P 16 29 276.5

Int. Cl. C08f 47/10; C08v 1/16

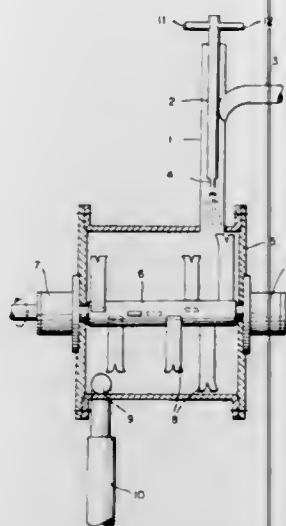
U.S. Cl. 260—2.5 F

2 Claims

A continuous process for the production of foams from curable synthetic resins in which aqueous solutions are foamed by means of foaming agents, the resultant foams



are mixed with aqueous solutions of resins in a pre-mixing zone and then in a main mixing zone and the mixtures



are discharged from the mixing zone and cured, as well as an apparatus for carrying out the process.

3,631,135

# INK COMPOSITION FOR IMPARTING HIGH GLOSS TO MELAMINE RESIN ARTICLES

Patrick J. McGulre, 123 Magnolia Ave., Mount Vernon, N.Y. 10503

No Drawing. Continuation-in-part of application Ser. No. 707,324, Feb. 21, 1968. This application Feb. 2, 1970, Ser. No. 7,320

Int. Cl. B32b 27/42; C08b 27/14

U.S. Cl. 260—17

10 Claims

A water-soluble, high gloss ink for imparting a gloss to molded articles such as articles molded from melamine resin is obtained from compositions comprising from about 25–50 parts by weight of a synthetic pearl pigment and from about 75–50 parts by weight of a vehicle comprising water, polyvinyl alcohol and a thickening agent. Based on total composition in the liquid state, water may be present in an amount of from about 40–65 parts, the polyvinyl alcohol may be present in an amount of from about 5–20 parts, and the thickening agent may be present in an amount of from about 0.1–3 parts.

3,631,136

# WHITE TO LIGHT-COLORED, DETERGENT-RESISTANT COATING COMPOSITION

Lester L. Spiller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

No Drawing. Filed Aug. 18, 1965, Ser. No. 480,760

Int. Cl. C08g 51/24

U.S. Cl. 260—29.3

23 Claims

White or light-colored aqueous coating compositions suitable for an electrophoretic coating process and exceptionally resistant to discoloration and detergents comprise (1) a polyester resin which has an acid number of 40 to 70 and which is a condensation product of an aromatic acid having more than two carboxyls, alkylene glycols (preferably in excess), and a saturated dicarboxylic acid, (2) a di- to hexa-alkoxyalkylene-substituted polyamine crosslinking agent, and (3) a suitable pigment. The resin is preferably solubilized by reaction with ammonia or an amine (preferably a tertiary amine). The composition is applied by impressing a sufficient voltage between an electrode and the article to be coated to provide an initial current density of at least 300 milliamperes per square foot of surface.

3,631,137

# POLYEPOXIDES CONTAINING AMIDE DILUENTS

Kevin Kromer Klipp, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,497

Int. Cl. C08g 51/26, 51/44

U.S. Cl. 260—30.4 EP

10 Claims

Various N-oxoalkyl and N-hydroxyalkyl amides, especially diacetone acrylamide and compounds derived therefrom, reduce the viscosity of epoxy resins. The physical properties of the resins, both before and after curing, are not substantially damaged by the addition of such diluents.

3,631,138

# SOLUTION STABLE URETHANE POLYMER COMPOSITIONS AND PRODUCTS THEREFROM

Timothy Victor Peters, Rte. 2, Rockaway Road, Lebanon, N.J. 08833

No Drawing. Continuation of application Ser. No. 699,362, Jan. 22, 1968, which is a continuation-in-part of application Ser. No. 618,280, Feb. 17, 1967. This application Apr. 24, 1970, Ser. No. 29,752

Int. Cl. C08g 51/44, 22/06

U.S. Cl. 260—32.6 N

12 Claims

A high molecular weight polyurethane having a segment derived by chain extension of a prepolymer formed by the reaction of a hydroxyl-terminated polymer with at least two diisocyanates, one having no substituents alpha to the isocyanate groups and another having a substituent alpha to an isocyanate group; and processes for the preparation thereof which include the above reactions.

3,631,139

# THERMOSETTING ORGANOPOLYSILOXANE MOLDING MATERIALS

Ignaz Bauer and Siegfried Nitzsche, Burghausen, Upper Bavaria, Germany, Rudolf A. Riedle, Adrian, Mich., and Werner Graf, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,401  
Claims priority, application Germany, Apr. 23, 1969, P 19 20 691.8

Int. Cl. C08g 51/34

U.S. Cl. 260—32.8 SB

10 Claims

Adding a ketone or metallanolate of a ketone to a polysiloxane composition containing phenyl substituents and residual hydroxyl groups and cured with lead compounds as a molding composition improves the shelf life, reduces the curing time, improves flowability of the composition and produces improvement in the physical properties of the cured molded product.

3,631,140

# PROCESS FOR PREPARING POLYTETRAFLUOROETHYLENE ORGANOSOLS

James C. Fang, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of applications Ser. No. 413,333, Nov. 23, 1964, Ser. No. 528,047, Feb. 17, 1966, Ser. No. 654,333, July 19 1967 and Ser. No. 738,825, June 21, 1968. This application July 1, 1970, Ser. No. 51,723

Int. Cl. C08f 45/28, 45/34, 47/16

U.S. Cl. 260—33.4 F

5 Claims

A process for preparing dispersions of polytetrafluoroethylene in organic liquids which comprises mixing particulate polytetrafluoroethylene and an organic liquid having a surface tension below about 25 dynes per centimeter and then milling the mixture.

3,631,141

# PROCESS FOR PREPARING POLYTETRAFLUOROETHYLENE ORGANOSOLS

James C. Fang, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of applications Ser. No. 413,333, Nov. 23, 1964, Ser. No. 528,047, Feb. 17, 1966, Ser. No. 654,333, July 19, 1967, Ser. No. 738,822, June 21, 1968, and Ser. No. 19,904, Mar. 12, 1970. This application July 1, 1970, Ser. No. 51,724

Int. Cl. C08f 45/28, 45/34, 47/20

U.S. Cl. 260—33.4 F

3 Claims

A process for preparing a dispersion of polytetrafluoroethylene in an organic liquid, which comprises mixing an organic liquid with an aqueous dispersion of polymer, boiling the mixture, taking off the resulting azeotrope, separating the water from the azeotrope and returning the organic liquid to the boiling mass until it is substantially anhydrous.

3,631,142

# METHOD TO INCREASE THE TENSILE STRENGTH OF UNCURED RUBBERY BLOCK COPOLYMERS

Clifford W. Childers, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 30, 1967, Ser. No. 626,950

Int. Cl. C08f 19/08, 47/20

U.S. Cl. 260—33.6 A

5 Claims

Rubbery block copolymer of a conjugated diene and a monovinyl substituted aromatic compound, or a mixture of resinous block copolymer of a conjugated diene and a monovinyl substituted aromatic compound with a sulfur vulcanizable rubbery polymer is treated with at least one of a peroxy oxygen-containing compound, an organo-aluminum halide, an inorganic acid, an inorganic halide, and a phosphorus oxyhalide.

3,631,143

# METHOD FOR IMPROVING GREEN STRENGTH OF VULCANIZABLE BUTYL RUBBER COMPOUNDS

Alexander J. Rizzer, Akron, Ohio, assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Jan. 21, 1970, Ser. No. 4,785

Int. Cl. C08g 51/04

U.S. Cl. 260—38

2 Claims

Green strength of vulcanizable elastomeric compositions which contain carbon black and butyl rubber is improved by the addition of a thermoplastic terpene phenol-formaldehyde Novolak resin containing a trace of free methylol.

3,631,144

# VISCOSITY BUILDUP OF POLYESTER RESINS

William H. Deis, Belmont, and Gerald Bohm, Albany, Calif., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of application Ser. No. 833,750, June 16, 1969. This application May 19, 1970, Ser. No. 37,481

Int. Cl. C08f 21/02

U.S. Cl. 260—40 R

6 Claims

A polyester resin system possessing a rapid viscosity buildup is produced by combining with said resin (1) magnesium hydroxide and (2) a potentiating agent, said agent being a liquid polyol.

3,631,145

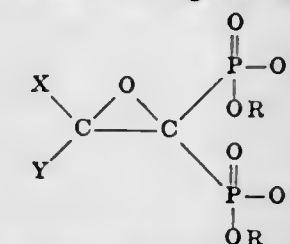
# FLAME RESISTANT POLYMERS

Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 13, 1970, Ser. No. 27,986

Int. Cl. C08f 45/00; C08g 51/00; C09k 3/28  
U.S. Cl. 260—45.8 A 16 Claims

Organic compositions containing a substituted epoxy ethane polyphosphonate having the formula



wherein R is hydrogen or an organic radical and X and Y are hereinafter defined. The compositions are fire resistant.

3,631,146

# POLYMERIC MATERIALS

Peter James Briggs, John Langshaw Brooks, and David Crawford Eaton, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of application Ser. No. 647,602, June 21, 1967. This application Apr. 15, 1970, Ser. No. 28,207

Claims priority, application Great Britain, June 27, 1966, 27,869/66

Int. Cl. C08g 22/04, 51/62

U.S. Cl. 260—45.75 N

3 Claims

Nickel di(hydrocarbyl) dithiophosphates are included as stabilising agents in polyurethane compositions, particularly foams. The said nickel compounds may be advantageously used in conjunction with a nickel or zinc  $\beta$ -keto-enolate or a zinc di(hydrocarbyl) dithiophosphate.

3,631,147

# PREPARATION OF MONOCATION SALTS OF N,N,N',N'-TETRAKIS(p-DIALKYL AMINOPHENYL)-p-PHENYLENEDIAMINES

Peter Vincent Susi, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 24, 1970, Ser. No. 49,534

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 R

7 Claims

Monocation salts of N,N,N',N'-tetrakis(p-dialkyl aminophenyl)-p-phenylenediamines are prepared in situ in the system where they are to be used, e.g., in a plastic system, by reaction of the corresponding p-quinonediimonium salts with the corresponding unoxidized N,N,N',N'-tetrakis(p-dialkyl aminophenyl)-p-phenylenediamine.

3,631,148

# 2,6-BIS(3,5-DIALKYL-4-HYDROXYBENZYL)CYCLOALKANONES

Robert A. Krueger, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Original application Nov. 1, 1967, Ser. No. 679,622. Divided and this application Apr. 9, 1970, Ser. No. 31,442

Int. Cl. C08f 45/58

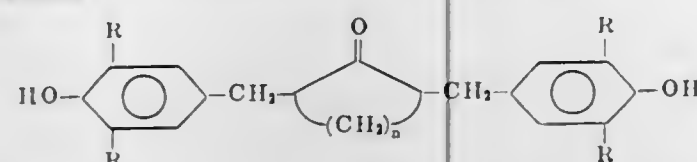
U.S. Cl. 260—45.85

6 Claims

Disclosed are novel 2,6-bis(3,5-dialkyl-4-hydroxybenzyl)cycloalkanones which are useful antioxidants for



olefin polymers. The particular 2,6-bis(3,5-dialkyl-4-hydroxybenzyl)cycloalkanones of this invention have the formula



wherein R is a hydrocarbon radical and n is an integer of 2 or 3. These compounds are useful as protective agents for poly(ethylene), poly(4-methylpentene-1), poly(propylene) and other olefin polymers.

3,631,149

# **CURABLE COMPOSITIONS OF MATTER COMPRISING EPOXY RESINS WITH 2,6 - XYLENYL-BIGUANIDE**

Hans Gempeler, Muttentz, and Paul Zuppinger, Arlesheim, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Filed May 14, 1970, Ser. No. 37,300  
Claims priority, application Switzerland, May 19, 1969, 7,678/69

Int. Cl. C08g 30/14

U.S. Cl. 260—47 EN

5 Claims

Curable moulding and coating compositions which contain an epoxide resin, for example a polyglycidyl ether, which is solid at room temperature, of a polyphenol such as bisphenol A, as well as 2,6-xylenyl-biguanide as the curing agent. The curable mixtures are suitable for use as single-component systems of good storage stability which rapidly cure in the temperature range of 130–200° C. (sintering powders or prepreps). Compared to other aromatic biguanides, 2,6-xylenylbiguanide has the advantage, as a curing agent, of a greater latency or longer gel time for about equal curing time.

3,631,150

# **SYNERGISTIC COMPOSITION FOR CURING POLY-EPOXIDES COMPRISING AN IMIDAZOLE COMPOUND AND DICYANDIAMIDE**

Gary M. Green, Concord, Calif., assignor to The Dexter Corporation, Hysol Division, Pittsburg, Calif.

No Drawing. Continuation-in-part of application Ser. No. 627,665, Apr. 3, 1967. This application May 20, 1970, Ser. No. 39,155

Int. Cl. C08g 30/14

U.S. Cl. 260—47 EN

7 Claims

The disclosure describes a new process and composition resulting therefrom for curing polyepoxides by mixing and reacting the polyepoxides at elevated temperatures with a mixture of dicyandiamide and an imidazole compound. The disclosure further describes a process for utilizing the composition in the preparation of fast curing adhesives.

3,631,151

# **PROCESS FOR THE MANUFACTURE OF THERMO-SETTING SYNTHETIC RESINS COMPRISING CONDENSING AN OPEN CHAIN ARYL BORATE WITH FORMALDEHYDE**

Franz Josef Huster, Troisdorf, Germany, assignor to Dynamit Nobel A.G., Troisdorf, Germany

No Drawing. Continuation-in-part of applications Ser. No. 523,027, Jan. 26, 1966, Ser. No. 706,714, Feb. 16, 1968, Ser. No. 838,043, June 24, 1969, and Ser. No. 143,995, Sept. 28, 1969. This application July 13, 1970, Ser. No. 54,601

Claims priority, application Germany, Sept. 30, 1960, D 34,395

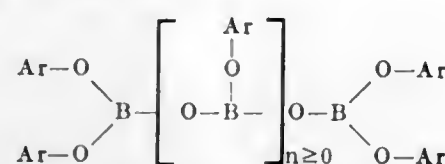
Int. Cl. C08g 5/06, 33/18

U.S. Cl. 260—51 R

8 Claims

Novel mixed aryl borates of the general formula  $\text{BO}_x(\text{OAr})_y$ , wherein x is greater than 0 but less than 1

and y is less than 1, which mixture contains open chain aryl borates of the formula:



which mixed aryl borates are made by reacting less than 3 mols of a phenolic compound per boron atom with boric acid or boric oxide at elevated temperatures and for extended periods of time sufficient to condense the boron compound and the phenolic compound and cause water as well as phenolic compound to be condensed out of the reaction and removed therefrom. These mixed aryl borates are reactable with formaldehyde or formaldehyde yielding materials to produce thermo-setting resins of the phenol-aldehyde type containing boron therein.

3,631,152

# **ETHYLENE UREA TERMINATED PHENOLIC RESINS AND METHOD OF CURING SAME**

Calvin K. Johnson, Palos Heights, and David R. Armbruster, Addison, Ill., assignors to CPC International Inc.

No Drawing. Original application Apr. 18, 1968, Ser. No. 722,220, now Patent No. 3,546,172, dated Dec. 8, 1970. Divided and this application June 17, 1970, Ser. No. 47,138

Int. Cl. C08g 5/18, 9/24

U.S. Cl. 260—51.5

16 Claims

Phenolic resins terminated by more than one ethylene urea group and thus having more than one unreacted  $>\text{NH}$  group are disclosed. These resins find specific utility in such fields as adhesives, insulation, encapsulation, lamination, castings, building structures and the like. When such resins are formulated so that the basic phenolic structure to which the ethylene urea groups are attached has a molecular weight between about 100 and about 5000, curing of these resins may be effected almost instantaneously by a method which comprises contacting a resin-acid catalyst system with an aldehyde. Curing by this method may be accomplished at room temperature or at temperatures slightly elevated above room temperature.

3,631,153

# **DIRECT ESTERIFICATION WITH FIRST STAGE ADDITIVE**

Mary E. Carter, Philadelphia, and John A. Price, Swarthmore, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed Dec. 13, 1966, Ser. No. 601,350

Int. Cl. C08g 17/013; C07c 67/00

U.S. Cl. 260—75 R

2 Claims

Terephthalic acid and ethylene glycol are directly esterified in the presence of an inorganic metal borate and the product of esterification is polycondensed to form a high molecular weight polyester.

3,631,154

# **POLYESTER POLYACRYLATE AND COMPOSITION COMPRISING THE SAME**

Takeo Kawaguchi, Kishichiro Kondo, Hiroyuki Kato, Ken Maniwa, Kenji Ito, Ariyuki Hirano, Isao Thuzi, and Hidemaro Tatemichi, Nagoya, Japan, assignors to Toagasei Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Feb. 6, 1970, Ser. No. 9,415

Claims priority, application Japan, Feb. 14, 1969, 44/10,455

Int. Cl. C08f 3/62

U.S. Cl. 260—76

6 Claims

Novel polyester polyacrylate monomers are prepared by the esterification reaction of glycols with acrylic or

methacrylic acid and polycarboxylic acids in the presence of esterification catalysts and polymerization inhibitors. Adhesive compositions composed of these monomers, a peroxide, a polymerization accelerator and preferably a stabilizer have a long shelf life when stored with access to oxygen, and a rapid set time when oxygen is excluded. The bonds formed with these compositions have excellent strength and resistance to alkalis.

3,631,155

# **POLY 1,2 - BIS(DIFLUOROAMINO)ETHYL URETHANES AND THEIR PREPARATION**

Robert A. Smiley, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 28,804, May 12, 1960. This application Jan. 19, 1961, Ser. No. 83,837

Int. Cl. C08g 22/20

U.S. Cl. 260—77.5 CR

18 Claims

Polyurethanes prepared by reaction of 1,2-bis(difluoroamino)ethyl isocyanate with aliphatic polyhydric alcohols.

3,631,156

# **METHOD FOR PREPARING MIXED ANHYDRIDE-CONTAINING POLYMERS**

Walter L. Vaughn, Angleton, and Sherman Kottle, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

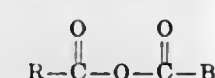
No Drawing. Filed Feb. 9, 1970, Ser. No. 11,364

Int. Cl. C08f 27/00

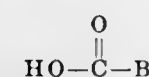
U.S. Cl. 260—78.4 D

5 Claims

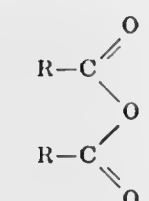
A method for preparing polyalkylene copolymers which contain one or more groups of the formula



wherein R is an alkyl, aryl, aralkyl, or like group, of up to about 20 carbon atoms, and B is a segment of the polyalkylene chain, the method comprising treating an olefin-carboxylic acid copolymer, which contains at least one group of the formula



wherein B is as defined above, with an acid anhydride of the formula



wherein R is as defined above. The resulting co-polymers may be cross-linked to form insoluble films and coatings, and, further, synergistically improve the performance of textile oil- and water-proofing agents.

3,631,157

# **REACTIVE MIXED ANHYDRIDE-CONTAINING POLYMERS AND A METHOD FOR THEIR PREPARATION**

Walter L. Vaughn, Angleton, Tex., assignor to The Dow Chemical Company, Midland, Mich.

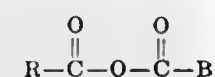
No Drawing. Filed Feb. 9, 1970, Ser. No. 11,363

Int. Cl. C08f 27/00

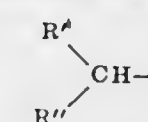
U.S. Cl. 260—78.5 T

5 Claims

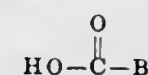
A composition of matter comprising polyalkylene copolymers which contain at least one acid anhydride group of the formula



wherein R is alkyl, aryl, aralkyl, or the like, of up to about 20 carbon atoms, or a group of the formula



wherein R' and R'' are the same type of substituents as R, so long as the group contains no more than about 20 total carbons, and B is a segment of the polyalkylene chain. These copolymers are prepared by treating an olefin-alkylene carboxylic acid copolymer, which contains at least one group of the formula



wherein B is as defined above, with either a carboxylic acid halide or an organic ketene. The resulting polymers may then be cross-linked to form insoluble films and coatings, and, further, synergistically improve the performance of textile oil- and water-proofing agents.

3,631,158

# **NEW AND USEFUL SULPHUR COMPOSITIONS AND THEIR PREPARATION**

Christian Esclamadon, Billere, Yves Labat, Pau, and Jean-Baptiste Signouret, Billere, France, assignors to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,932

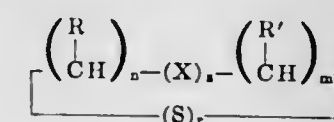
Claims priority, application France, Jan. 31, 1969, 6902061

Int. Cl. C08g 23/00

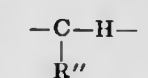
U.S. Cl. 260—79 R

7 Claims

New plastic sulphur compositions are prepared by causing molten sulphur to react with one or more cyclic polysulphides of the formula:



in which r is 2 or 3, z is 0 or 1, n and m are each from 1 to 8, R and R', which may be the same or different, are each hydrogen, a monovalent hydrocarbon radical containing 1 to 12 carbon atoms, which radicals can be saturated or unsaturated aliphatic radicals, saturated or unsaturated cycloalkyl radicals, or aromatic radicals, and X is any of the following: —NH, —O, —S—



(in which R'' can be H, CH<sub>3</sub> or OH)



and —S—(CH<sub>2</sub>)<sub>p</sub>—S— (p being from 1 to 6).

3,631,159

# **CHEMICAL PROCESS AND PRODUCT**

Walter H. Cobbs, Jr., Cincinnati, Ohio, Luther A. R. Hall, Woodcliff Lake, N.J., Roger D. A. Lipman, Yonkers, N.Y., and Thomas H. Shepherd, Hopewell, N.J., assignors to Geigy Chemical Corporation

Continuation-in-part of application Ser. No. 479,416, Aug. 13, 1965. This application Sept. 21, 1966, Ser. No. 580,973

Int. Cl. C08f 15/40

U.S. Cl. 260—80.78

14 Claims

Olefin copolymers consisting of residues of at least three different alpha-olefins containing from 3 to 25 carbon atoms have utility as viscosity index improvers. The copolymers have a molecular weight between about 50,000 and about 3,000,000 and an X-ray crystallinity between about 10 and about 50%.



3,631,160

**3-METHYLBUTENE-1 POLYMER FIBER**

Walter J. Polestak, Summit, N.J., and Karl G. Adams, Columbia, S.C., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Nov. 2, 1966, Ser. No. 591,452  
Int. Cl. C08f 15/04, 19/02; D01d 5/12

U.S. Cl. 260—88.2

13 Claims

Improved filaments of 3-methylbutene-1, particularly with respect to tensile properties at elevated temperatures, may be prepared by heat treating polymeric 3-methylbutene-1 prior to extrusion at a temperature above its melting point to increase the melt index above 10 and then melt spinning the heated polymer through at least a 14 mil diameter spinnerette and drawing down the resultant filament at a ratio of at least about 150.

3,631,161

**METHOD FOR CROSSLINKING ETHYLENE CONTAINING POLYMERS**

You-Ling Fan, East Brunswick, and Richard G. Shaw, Califon, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 737,319, June 17, 1968, and Ser. No. 831,747, June 9, 1969. This application Feb. 5, 1970, Ser. No. 9,034  
Int. Cl. C08f 27/00, 3/04, 3/06

U.S. Cl. 260—94.9 GA

6 Claims

This invention covers crosslinking ethylene containing polymers with a silyl peroxide and novel crosslinkable compositions of an ethylene containing polymer and a silyl peroxide.

3,631,162

**ANTISTATIC ADDITIVE FOR OLEFIN POLYMERS**  
Michael C. McGaugh, Angleton, and David R. Howell, Lake Jackson, Tex., and Bruce L. Oliver, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 11, 1970, Ser. No. 18,522  
Int. Cl. C08f 29/02, 29/04, 45/60

U.S. Cl. 260—94.9 GB

7 Claims

Antistatic properties of olefin polymers are improved by a marked degree by interspersing therein a small amount of an antistatic additive comprising N-(2-hydroxy-3-dodecyloxypropyl)ethanolamine and N,N-bis(2-hydroxyethyl)alkylamine.

3,631,163

**PROCESS FOR THE REMOVAL OF CATALYST RESIDUES IN A POLYOLEFIN TREATING SYSTEM**

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 23, 1967, Ser. No. 618,068  
Int. Cl. C08f 27/25

U.S. Cl. 260—94.9 GD

5 Claims

Removal of catalyst residues from polymer treated in a system utilizing a catalyst formed on mixing a Group VIII metal salt of an organic acid and a Group I-A, II-A or III-A reducing metal compound is improved by addition of a solid adsorbent material prior to the addition of the reducing metal compound.

3,631,164

**WATER-SOLUBLE, BASIC AZO DYESTUFFS**

Gert Hegar, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland  
No Drawing. Filed Dec. 29, 1966, Ser. No. 605,609  
Claims priority, application Switzerland, Jan. 14, 1966, 483/66; Nov. 17, 1966, 16,519/66  
Int. Cl. C09b 29/06; D06p 1/02

U.S. Cl. 260—156

12 Claims

Water-soluble basic azo-dyestuffs containing an ammonium-alkanoyl radical bound to an aminonaphthalene coupling component.

3,631,165

**AZATRICYCLOIC COMPOUNDS**

Gilbert H. Berezin, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Continuation-in-part of application Ser. No. 775,114, Nov. 12, 1968. This application Aug. 21, 1970, Ser. No. 66,098  
Int. Cl. C07d 41/04, 41/06

U.S. Cl. 260—239 B

2 Claims

This invention relates to the novel compounds 4-azatricyclo[4.3.1.1<sup>3,8</sup>]undecane and 4-azatricyclo[5.3.1.1<sup>3,9</sup>]dodecane, the methods of preparing same and the use thereof as intermediates in the preparation of pharmaceutically active derivatives thereof.

3,631,166

**NITROGEN CONTAINING STEROIDS**

Milton Heller and Seymour Bernstein, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,122  
Int. Cl. C07c 173/10

U.S. Cl. 260—239.5

8 Claims

The preparation of androst-5-ene(16 $\beta$ ,17 $\beta$ -b)azetidinium steroids and derivatives thereof from dimethylaminopregnenes is described. These steroids are useful as antibacterial agents and as tranquilizers.

3,631,167

**3-INDENYLMETHYLTETRAZOLES**

Tsung-Ying Shen, Westfield, and Conrad P. Dorn, Jr., Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation of application Ser. No. 692,296, Dec. 21, 1967. This application July 16, 1970, Ser. No. 56,986  
Int. Cl. C07d 55/56

U.S. Cl. 260—240 D

6 Claims

This invention relates to the preparation of 3-indenylmethyltetrazoles and intermediates thereof. The compounds of this invention are useful as anti-inflammatory agents and may be used in the treatment of diseases which are susceptible to such agents.

3,631,168

**TETRAHYDRO-PYRROLO[2,1-b]OXAZOLE - 5(6H)-ONES, HEXAHYDRO - 5H - OXAZOLO[3,2-a]PYRIDINE-5-ONES, TETRAHYDRO - 2H - PYRROLO[2,1-b]1,3 OXAZINE - 6(7H) - ONES AND HEXAHYDRO - 2H, 6H-PYRIDO[2,1-b]1,3 OXAZINE-6-ONES**

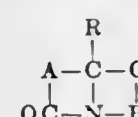
Wilfried Graf, Binningen, and Erich Schmid, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Continuation of application Ser. No. 429,892, Feb. 2, 1965. This application Mar. 20, 1967, Ser. No. 624,631  
Claims priority, application Switzerland, Feb. 11, 1964, 1,631/64

U.S. Cl. 260—244

17 Claims

This invention relates to compounds of the formula:



wherein

R is a member selected from the group consisting of (a) thienyl-(2) and (b) phenyl which is substituted by a member selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl amino, N-lower alkyl-substituted amino, lower alkanoylamino, sulfamyl, N-lower alkyl-substituted sulfamyl, hydroxyl, nitro, trifluoromethyl and halogen of one of the atomic numbers 9, 17 and 35,

A represents straight-chain alkylene of from 2 to 3 carbon atoms substituted by a member selected from the group consisting of hydrogen, lower alkyl and phenyl, and

B represents straight-chain alkylene of from 2 to 3 carbon atoms substituted by a member selected from the group consisting of hydrogen and lower alkyl. These compounds have anti-inflammatory, anesthesia-potentiating, anti-convulsive and analgetic activity.

3,631,169

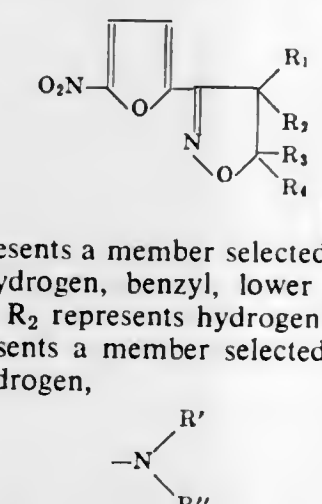
**3-(5-NITRO-2-FURYL)ISOXAZOLINE DERIVATIVES**

Shinsaku Minami, Yamato Kouriyama-shi, Jun-Ichi Matsumoto, Osaka, Masanao Shimizu, Kobe, and Yoshiyuki Takase, Amagasaki-shi, Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan  
No Drawing. Filed Sept. 22, 1966, Ser. No. 581,192  
Int. Cl. C07d 85/16, 99/02

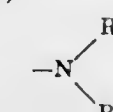
U.S. Cl. 260—247.5 R

35 Claims

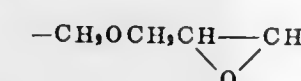
3-(5-nitro-2-furyl) isoxazoline derivatives having antibacterial and antiprotazoal activities of the formula:



wherein R<sub>1</sub> represents a member selected from the groups consisting of hydrogen, benzyl, lower alkyl and lower alkoxy; R<sub>2</sub> represents hydrogen or a lower alkyl group; R<sub>3</sub> represents a member selected from the group consisting of hydrogen,



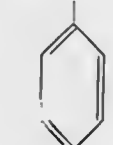
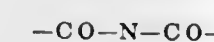
(wherein R' and R'' represent lower alkyl and R' and R'' together with the nitrogen atom may form a heterocyclic ring selected from pyrrolidino, piperidino and morpholino), lower alkyl and lower alkoxy; R<sub>4</sub> represents a member selected from the groups consisting of hydrogen, lower alkyl, lower alkanoyl, phenyl, cyanomethyl, chloromethyl, pyridine, methyl pyridine, lower alkoxy carbonyl and



R<sub>1</sub> and R<sub>4</sub> together may form a bridge selected from the groups consisting of  $-(CH_2)_3-$ ,  $-(CH_2)_4-$ ,



and



3,631,170

**CERTAIN OXIMINO PHOSPHORUS CONTAINING PYRIMIDINES**

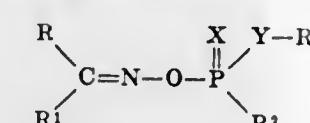
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,150  
Int. Cl. C07d 51/36

U.S. Cl. 260—256.5 R

2 Claims

Compound having the formula:



in which X is oxygen or sulfur; Y is oxygen or sulfur; R is alkyl; R<sup>1</sup> is alkyl; R<sup>2</sup> is alkyl or alkoxy and R<sup>3</sup> is a heterocyclic group, and their use as insecticides and acaricides are disclosed.

3,631,171

**CERTAIN 2-AMINO-4,5-DIHYDRO-6H-PYRROLO[3,2-e]BENZOTHAZOLES**

William Alan Remers, Suffern, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 6, 1970, Ser. No. 1,040  
Int. Cl. C07d 99/06

U.S. Cl. 260—268 TR

10 Claims

This disclosure describes compounds of the class of 2-substituted-4,5-dihydro-6H-pyrrolo[3,2-e]benzothiazoles useful as antifungal agents.

3,631,172

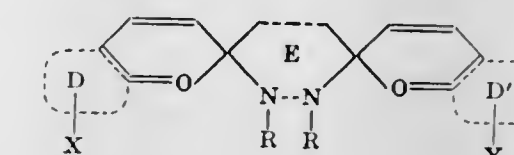
**CERTAIN BI(SPIRO(2H-1-BENZOPYRAN-2,2'-BENZOTHAZOLINE)) COMPOUNDS**

René Lucien Gautron, Sceaux, Seine, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France  
No Drawing. Filed June 7, 1966, Ser. No. 555,676  
Claims priority, application France, June 11, 1965, 20,408

Int. Cl. C07d 91/24  
U.S. Cl. 260—304

4 Claims

Photochromic compounds which are useful to change color upon exposure to radiation, comprising di-spiropyrans of the formula



in which, E represents a heterocyclic system having weak or zero absorption in the visible spectrum, D and D' represent mono or polycyclic aromatic or heterocyclic systems capable of combining with substituents X and Y, and X and Y are chosen from H—, CH<sub>3</sub>—, C<sub>2</sub>H<sub>5</sub>—, C<sub>6</sub>H<sub>5</sub>—, CHO—, CH<sub>3</sub>CO—, CH<sub>3</sub>O—, NO<sub>2</sub>—, CN—, CH<sub>3</sub>COO—, CF<sub>3</sub>— and halogens, and R represents aromatic, aliphatic, or aryl-aliphatic radicals, and methods of producing the compounds and devices using the compounds.

3,631,173

**2-AMINOTHIENO[3,2-e]BENZOTHAZOLE AND CERTAIN 4,5-DIHYDRO DERIVATIVES THEREOF**  
William Alan Remers, Suffern, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 6, 1970, Ser. No. 1,044  
Int. Cl. C07d 99/06

U.S. Cl. 260—305

10 Claims

This disclosure describes compounds of the class of 2-substituted-4,5-dihydrothieno[3,2-e]benzothiazoles useful as analgesics, anti-inflammatory agents or central nervous system depressants.

3,631,174

**4,5-HETEROCYCLIC SUBSTITUTED-6,7-DIHYDROBENZOTHIOPHENES**

William Alan Remers, Suffern, N.Y., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 6, 1970, Ser. No. 1,039  
Int. Cl. C07d 49/02, 85/48

U.S. Cl. 260—307 D

2 Claims

This disclosure describes compounds of the class of 4,5-heterocyclic substituted-6,7-dihydrobenzothiophenes



useful as an analgesic agent or central nervous system depressant.

3,631,175

## DERIVATIVES OF PYRANO[3,2-d]OXAZOLE

Real Laliberte, Laval, Quebec, Canada, assignor to Ayerst, McKenna and Harrison Limited, Ville St. Laurent, Quebec, Canada

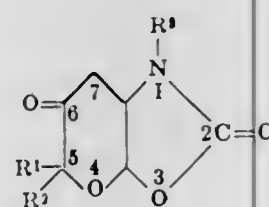
No Drawing. Filed Apr. 14, 1970, Ser. No. 28,540

Int. Cl. C07d 85/28

U.S. Cl. 260—307

17 Claims

Pyrano[3,2-d]oxazole derivatives of the formula



in which R<sup>1</sup> represents an aromatic group such as phenyl, benzyloxyphenyl, 3,4-xylyl, α-hydroxybenzyl, diphenylmethyl, 4-biphenyl and 4'-chloro-4-diphenyl; R<sup>2</sup> represents hydrogen, lower alkyl, chloromethyl, phenyl, and benzyl; or R<sup>1</sup> or R<sup>2</sup> together represent the cyclohexane ring attached in spiral fashion to the pyranone ring in such a manner that carbon atom 5 of the pyranone ring is common to the cyclohexane ring; and R<sup>3</sup> is lower alkyl, phenyl or 4-chlorophenyl. The compounds are useful as fungicidal and amebicidal agents, and methods for their use and a process for preparing them and intermediates used in their syntheses are also disclosed. The compounds of Formula I are useful as fungicidal and amebicidal agents, and the intermediates of Formula III are useful as coccidiostatic agents. Methods for their use, and a process for preparing the compounds of Formula I and intermediates used in their syntheses are also disclosed.

3,631,176

## CARBAMOYL SUBSTITUTED 2-AMINO-BENZIMIDAZOLES

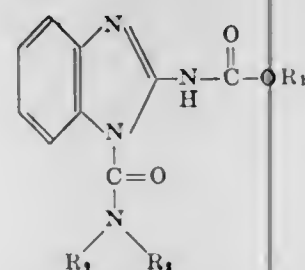
Hein L. Kloppe, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Application Mar. 20, 1968, Ser. No. 714,462, now Patent No. 3,541,213, which is a continuation-in-part of application Ser. No. 629,900, Apr. 11, 1967, which in turn is a continuation-in-part of application Ser. No. 548,034, May 6, 1966. Divided and this application July 20, 1970, Ser. No. 56,716

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

5 Claims

Carbamoyl substituted 2-aminobenzimidazoles of the formula below are useful as mite ovicides and fungicides.



where R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are as defined hereinafter. Exemplary species of the general class are the compounds:

methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate, methyl 1-(p-methoxyphenylcarbamoyl)-2-benzimidazolecarbamate, methyl 1-(ethoxycarbonylmethylcarbamoyl)-2-benzimidazolecarbamate, and the like.

3,631,177

## 3-PHENACYL-2-OXOINDOLINES

Kenneth G. Holden, Haddonfield, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.  
No Drawing. Original application Apr. 18, 1967, Ser. No. 631,619, now Patent No. 3,519,592, dated July 7, 1970. Divided and this application Apr. 21, 1970, Ser. No. 30,578

Int. Cl. C07d 27/40

U.S. Cl. 260—325

8 Claims

3-phenacylidene-2-oxoindoline-7-carboxylic acids and esters, prepared by converting 2,3-dioxoindoline-7-carboxylic acids to 3-hydroxy-3-phenacyl-2-oxo compounds and subsequent dehydration. The 3-phenacylidene compounds are reduced to the 3-phenacyl compounds and then ring-closed with hydrazine to give 3-phenylpyridazinoindoles. 2-oxoindoline-7-carboxylic acids are prepared by stepwise reduction of the 2,3-dioxo compounds. Certain of the compounds have antiinflammatory activity.

3,631,178

## 2-OXOINDOLINES

Kenneth G. Holden, Haddonfield, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.  
No Drawing. Original application Apr. 18, 1967, Ser. No. 631,619, now Patent No. 3,519,592, dated July 7, 1970. Divided and this application Apr. 21, 1970, Ser. No. 30,580

Int. Cl. C07d 27/40

U.S. Cl. 260—325

4 Claims

3-phenacylidene-2-oxoindoline-7-carboxylic acids and esters, prepared by converting 2,3-dioxoindoline-7-carboxylic acids to 3-hydroxy-3-phenacyl-2-oxo compounds and subsequent dehydration. The 3-phenacylidene compounds are reduced to the 3-phenacyl compounds and then ring-closed with hydrazine to give 3-phenylpyridazinoindoles. 2-oxoindoline-7-carboxylic acids are prepared by stepwise reduction of the 2,3-dioxo compounds. Certain of the compounds have antiinflammatory activity.

3,631,179

## ZEARALANE PRODUCTION

Wilbert H. Urry, Chicago, Ill., assignor to Commercial Solvents Corporation, New York, N.Y.  
No Drawing. Filed Dec. 13, 1966, Ser. No. 601,339

Int. Cl. C07d 9/00

U.S. Cl. 260—343.2 F

2 Claims

Disclosed is a preparation of zearalane from 10-undecanal.

3,631,180

## NEW UREA AND THIOUREA DERIVATIVES

Daniel Bertin, Montrouge, and Jacques Perronet and Andre Teche, Paris, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Jan. 14, 1970, Ser. No. 2,975

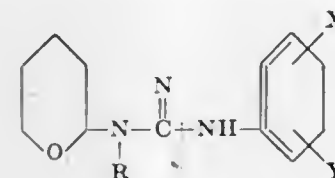
Claims priority, application France, Jan. 20, 1969, 6900886

Int. Cl. C07d 7/04

U.S. Cl. 260—345.1

21 Claims

Urea and thiourea derivatives of Formula I:



wherein R represents a lower alkyl radical, X and Y, identical or different, are selected from the group consisting of a hydrogen atom, a chlorine atom, a bromine

atom, a nitro radical, a trifluoromethyl radical, a lower alkoxy radical, a lower alkyl radical, a lower alkenyloxy radical, a halogen-substituted lower alkenyloxy radical, a lower alkoxy carbonyl radical, a lower alkylthio radical, a lower alkylsulfinyl radical and a lower alkylsulfonyl radical, and Z is selected from the group consisting of an oxygen atom and a sulfur atom, process for their preparation, compositions containing them, and pesticidal method. The derivatives of Formula I possess pesticidal, particularly herbicidal properties.

3,631,181

## PREPARATION OF NITROALKYLTETRAHYDROFURANS

John M. Larkin, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

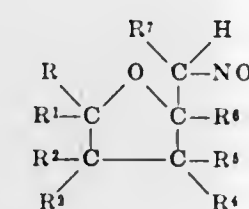
No Drawing. Continuation-in-part of application Ser. No. 708,752, Feb. 28, 1968. This application July 13, 1970, Ser. No. 54,581

Int. Cl. C07d 5/04

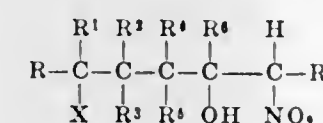
U.S. Cl. 260—346.1

23 Claims

A method of preparing a nitroalkyltetrahydrofuran corresponding to the formula:



by contacting a halonitroalcohol having at least 5 carbon atoms corresponding to the formula:



with an alkaline agent at a temperature of from about 0 to 250° C. The contemplated nitroalkyltetrahydrofurans prepared according to this invention are useful as insecticides, nematocides, coccidiostats, solvents, plasticizers, rust inhibitors, lubricant additives and fuel additives. The method of this invention also provides as valuable by-products haloketones and nitroalkanes.

3,631,182

## ALIPHATIC BIS(AZIDOFORMATE)S

David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 418,278, Dec. 14, 1964, which is a continuation-in-part of applications Ser. No. 172,815, Feb. 12, 1962, now Patent No. 3,211,752, and Ser. No. 247,878, Dec. 28, 1962. This application May 21, 1970, Ser. No. 39,521

Int. Cl. C07d 109/00

U.S. Cl. 260—349

11 Claims

Aliphatic compounds containing from 2 to 4 azidoformate groups are described, which compounds are useful for cross-linking various polymers, particularly polyolefins. Typical compounds are alkylene bis-, tri- and tetraakis(azidoformate)s such as tetramethylene bis(azidoformate), alkylene bis(polyoxyalkylene) bis(azidoformate)s such as the bis(azidoformate)s of poly(ethylene glycol)s and poly(propylene glycol)s.

3,631,183

## CYCLOALIPHATIC BIS(AZIDOFORMATE)S

David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 418,278, Dec. 14, 1964, which is a continuation-in-part of applications Ser. No. 172,815, Feb. 12, 1962, and Ser. No. 247,878, Dec. 28, 1962. This application May 21, 1970, Ser. No. 39,522

Int. Cl. C07c 117/00

U.S. Cl. 260—349

6 Claims

Cyclohexane bis(azidoformate)s and cyclohexane bis(methylene azidoformate)s are described. These products are useful as cross-linking agents for various polymers, particularly polyolefins.

3,631,184

## WATER-INSOLUBLE ANTHRAQUINONE DYESTUFFS

Jean-Frederic Guye-Vuilleme, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

No Drawing. Filed June 17, 1966, Ser. No. 558,245  
Claims priority, application Switzerland, July 1, 1965, 9,226/65; May 16, 1966, 7,099/66

Int. Cl. C09b 1/50

U.S. Cl. 260—380

2 Claims

New water-insoluble anthraquinone dyestuffs containing dihydroxy, diamino and an aryl substituent, said dyestuff containing at least one halo substituent on the anthraquinone and/or aryl moiety.

3,631,185

## SYNTHESIS OF 2,4,6-TRI-T-BUTYL-4-METHOXY-CYCLOHEXA-2,5-DIEN-1-ONE

Robert J. Laufer, Colts Neck, N.J., assignor to Consolidation Coal Company, Pittsburgh, Pa.

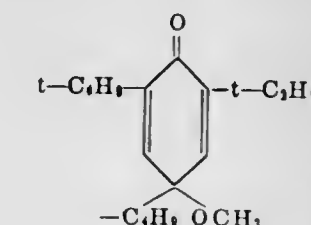
No Drawing. Filed Apr. 10, 1970, Ser. No. 27,456

Int. Cl. C07c 49/44

U.S. Cl. 260—396 N

6 Claims

The compound 2,4,6-tri-t-butyl-4-methoxycyclohexa-2,5-dien-1-one, having the following structural formula



is synthesized in one step by reacting 2,4,6-tri-t-butylphenol, bromine, methanol and an alkali metal carbonate at a temperature within the range 20 to 80° C. The product compound having the above formula is produced in 65 percent or better yield. It is useful as an intermediate in the preparation of 2,6-di-t-butyl-4-methoxyphenol or 2-t-butyl-4-methoxyphenol, both of which are useful as antioxidants, the former in non-food uses and the latter in foods.

3,631,186

17β-DIALKYLAMINOALKYLAMINO-5α-ANDROSTAN-1-ONES/1α-OLS, N-FORMYL AND Δ<sup>2</sup> DERIVATIVES THEREOF AND INTERMEDIATES THERETO

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,388

Int. Cl. C07c 169/20, 169/22

U.S. Cl. 260—397.3

10 Claims

Manufacture of the instant diamines is achieved by condensation of the appropriate 17-keto steroid with a







in which at least 60 percent of said R radicals are tetramethylene, the remainder being another alkylene radical having from 2 to 6 carbon atoms and  $n$  is an integer from about 3 to about 3000. These polyether diisocyanates may be used in chain extension and curing reactions with co-reactants containing active hydrogen, and elastomers having high tensile strength and elongation can be produced.

3,631,200

# PROCESS FOR THE PREPARATION OF CARBONATE-GROUP-CONTAINING DIHYDROXY COMPOUNDS

Rudolf Nehring and Wolfgang Seeliger, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Jan. 19, 1967, Ser. No. 610,230

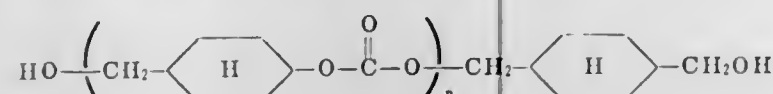
Claims priority, application Germany, Feb. 11, 1966, C 38,191; Sept. 24, 1966, C 40,188, C 40,189

Int. Cl. C07c 69/00

U.S. Cl. 260—463

5 Claims

Process for the preparation of a diol containing carbonate groups, having the general formula:



in which the average value of  $n$  ranges from 1 to 32 which consists in completely reacting at 1,4-bis-(hydroxymethyl)-cyclohexane with phosgene at a molar ratio ranging from 1:0.5 to 1:0.97, in the presence of an inert diluent in which are soluble both the starting products and the final products, under normal pressure and at a reaction temperature not higher than 75° C., and upon conclusion of the reaction distilling off the solvent while passing an inert gas through the reaction mixture thereby removing HCl in free form.

3,631,201

# 1,2-DI(4-CYANOMETHYLPHENYL)-1-CYANOETHANE

William J. Farrissey, Jr., Northford, and Edward J. Thompson, Watertown, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Jan. 15, 1968, Ser. No. 697,652, now Patent No. 3,539,611, dated Nov. 10, 1970. Divided and this application May 8, 1970, Ser. No. 35,878

Int. Cl. C07c 87/28, 119/04, 121/66

U.S. Cl. 260—465 H

1 Claim

A triisocyanate, 1,2-di[4-(2-isocyanatoethyl)phenyl]-3-isocyanatopropane, is prepared by phosgenation of the corresponding triamine. The latter is prepared by catalytic hydrogenation of the corresponding trinitrile. The latter is obtained by reaction of  $\alpha,\alpha$ -dihalo-p-xylene with sodium cyanide. The triisocyanate is an intermediate in the preparation of polyurethanes; the triamine is a curative for epoxy resins.

3,631,202

# PREPARATION OF NITRILES

Lawrence C. Mitchell, Southfield, Mich., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 712,944, Mar. 14, 1968. This application Aug. 20, 1970, Ser. No. 65,722

Int. Cl. C07c 121/16

U.S. Cl. 260—465.1

8 Claims

Alkyl nitriles are produced by the reaction of aluminum tris-alkoxides with alkali metal cyanides. For example,

hexyl cyanide is prepared from aluminum tris-hexyloxide and sodium cyanide. The process is conducted in the presence of an aprotic dipolar solvent at comparatively high temperatures and for comparatively long reaction times. The reaction is catalyzed by aluminum chloride.

3,631,203

# PREPARATION OF MONO-ESTERS OF HYDROQUINONES

Donald A. Bolon, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,114

Int. Cl. C07c 69/16, 69/28, 69/78

U.S. Cl. 260—476 R

10 Claims

Mono-esters of hydroquinones are prepared from the 4-halophenol corresponding to the desired hydroquinone by oxidatively removing the halogen with selected oxidizing agents in the presence of the carboxylic acid whose monoester of the hydroquinone is desired. The products are useful as anti-oxidants, polymerization inhibitors, precursors of photographic developers, etc.

3,631,204

# PREPARATION OF BENZOIC ACID FROM TOLUENE

Clyde H. Bell, Chattanooga, Tenn., assignor to Velsicol Chemical Corporation, Chattanooga, Tenn.

No Drawing. Filed Apr. 13, 1967, Ser. No. 630,494

Int. Cl. C07c 63/02

U.S. Cl. 260—524 R

10 Claims

An improvement in the process for the production of benzoic acid by the reaction of toluene and air in contact with a heavy metal oxidation catalyst which comprises performing the oxidation in a liquid system at a temperature of at least about 200° F. until the reaction mixture contains from about 40 to about 65 weight percent benzoic acid; reducing the pressure on the reaction mixture to atmospheric while maintaining the reaction mixture in the liquid state; maintaining the concentration of the benzoic acid in the reaction mixture to between about 25 and about 45 weight percent; and further lowering the temperature of the reaction mixture to a temperature below about 100° F.

3,631,205

# SULFONYL UREA DERIVATIVES

Albert J. Frey, Essex Fells, N.J., assignor to Sandoz Inc., Hanover, N.J.

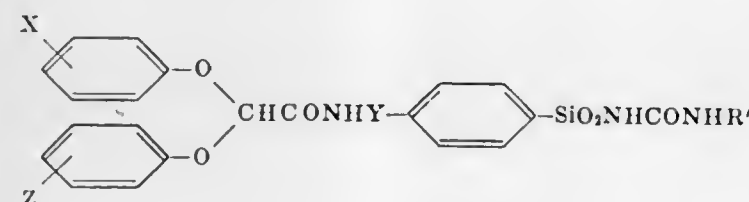
No Drawing. Filed Dec. 15, 1966, Ser. No. 601,871

Int. Cl. C07c 127/00

U.S. Cl. 260—553 DA

5 Claims

The compounds are derivatives of benzenesulfonyl urea having the structural formula



and the non-toxic basic salts thereof,

wherein

X and Z are each, independently, hydrogen or halo; Y represents alkylene having from 1 to 3 carbon atoms; R' represents hydrogen, lower alkyl, lower alkenyl, lower alkylthio, cycloalkyl having from 5 to 8 ring carbon atoms, lower alkylcycloalkyl having from 5 to 8 ring carbon atoms, benzyl, phenyl (lower) alkyl, lower alkylphenyl or cycloalkyl (lower) alkyl having from 5 to 8 ring carbon atoms.

The compounds are useful as hypoglycemic agents, e.g., 1-[p-{2-[ $\alpha,\alpha$ -bis(p-chlorophenoxy)acetamido]ethyl}phenylsulfonyl]-3-cyclohexylurea.

3,631,206

# CONTROL OF OXYCHLORINATION REACTIONS

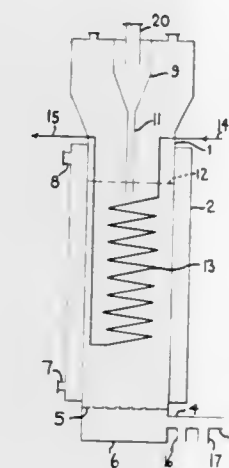
Lester E. Bohl and Raymond M. Vancamp, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 219,334, Aug. 24, 1962. This application June 1, 1966, Ser. No. 554,475

Int. Cl. C07c 21/04

U.S. Cl. 260—654 A

7 Claims



The undesirable burning of organics in a fluidized bed of catalyst particles during an oxychlorination reaction is reduced and the rate of heat transfer is increased by employing two cooling surfaces in contact with the reaction zone. The first cooling surface is maintained at temperatures considerably below those necessary to maintain the oxychlorination taking place within the bed. The temperature of the second cooling surface is higher than that of the first surface and is at least in part at the threshold temperature necessary for the oxychlorination reaction being conducted.

3,631,207

TRI- AND TETRACHLOROETHYLENE PROCESS  
Charles E. Kircher, Jr., Detroit, Donald R. McAlister, Livonia, and Doris LeRoy Brothers, Inkster, Mich., assignors to Detrex Chemical Industries, Inc., Detroit, Mich.

No Drawing. Filed July 14, 1966, Ser. No. 565,095

Int. Cl. C07c 21/04

U.S. Cl. 260—654 D

11 Claims

Processes are disclosed for producing trichloroethylene, tetrachloroethylene or mixtures thereof by dehydrochlorination of polychlorinated saturated ethanes or mixtures thereof while in the liquid state under positive pressure and elevated temperatures and in the presence of activated carbon. The reaction products are removed from the reaction zone as vapors.

3,631,208

# COUPLING OF PHENOLS WITH DIPHENOQUINONES

Allan S. Hay, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Continuation-in-part of abandoned applications Ser. No. 306,301 and Ser. No. 306,302, both Sept. 3, 1963. This application June 10, 1966, Ser. No. 556,575

Int. Cl. C07c 43/20, 43/22, 39/12

U.S. Cl. 260—619 R

21 Claims

Binary self-condensation products of phenols are prepared by reacting them with diphenoquinones in the liquid phase. Since the diphenoquinones themselves can be prepared from phenols, the phenols need to be the only starting material to produce the self-condensation products. By using 2,6-disubstituted phenols and the corresponding diphenoquinones prepared from the particular 2,6-disubstituted phenol, the self-condensation product of the phenol is a 2,2',6,6'-p,p'-biphenol and is produced both from the phenol and diphenoquinone reaction. Since 2,6-disubstituted phenols may be made by alkylation of either phenol or 2-substituted phenols and the biphenol product may be readily dealkylated, biphenols can be made which have from 0 to 4 substituents in the 2,2',6 and 6' positions.

3,631,209

# PREPARATION OF CYCLOOLEFINS

Kenneth J. Frech, Tallmadge, and David A. Hutchings and Frederic H. Hoppstock, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 22, 1970, Ser. No. 48,461

Int. Cl. C07c 5/20

U.S. Cl. 260—666 A

8 Claims

There is disclosed a method comprising the preparation of cyclic olefins and cyclic diolefins characterized in that open chain diolefins are heated in the process of a homogeneous catalyst.

3,631,210

# PROCESS FOR THE SELECTIVE HYDROGENATION OF CYCLODODECATRIENE TO CYCLODODECENE

Michael Tuttle Musser, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,204

Int. Cl. C07c 5/14, 5/16

U.S. Cl. 260—666 A

6 Claims

An improved process for the selective hydrogenation of 1,5,9-cyclododecatriene to cyclododecene in the presence of a nickel halide complexed with a trihydrocarbyl phosphine which comprises carrying out the hydrogenation with at least a 2 molar excess of the phosphine and at a hydrogen pressure in the order of 65–150 atmospheres.

3,631,211

# PREPARATION OF GEM-DIARYLALKANES

Louis Schmerling, Riverside, Ill., assignor to Unversal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,354

Int. Cl. C07c 15/12

U.S. Cl. 260—668 C

11 Claims

Gem-diarylalkanes are prepared by reacting an arylalkane with an alkyl-free aromatic hydrocarbon in the presence of a catalyst comprising a Friedel-Crafts metal halide and a higher valence halide of a metal which possesses at least two valences.



3,631,212

**PREPARATION OF POLYARYLPOLYALKANES**  
Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,355

Int. Cl. C07c 15/12

U.S. Cl. 260—668 C

10 Claims

Polyarylpolyalkanes are prepared by polymerizing an arylalkane in the presence of a catalyst comprising a Friedel-Crafts metal halide and a higher valence halide of metal which possesses at least two valences.

3,631,213

**PROCESS FOR THE PREPARATION OF META- AND PARA-TERTIARYBUTYLSTYRENES**

Charles C. Brewer, Baton Rouge, La., assignor to Foster Grant Co., Inc., Leominster, Mass.

No Drawing. Continuation-in-part of application Ser. No. 730,901, May 21, 1968. This application May 7, 1970, Ser. No. 35,595

Int. Cl. C07c 15/10

U.S. Cl. 260—669

10 Claims

This disclosure relates to a process for the production of tertiarybutylstyrenes by catalytic dehydrogenation of tertiarybutylethylbenzene.

3,631,214

**RECOVERY OF AROMATIC HYDROCARBONS**

Robert M. Engelbrecht, deceased, late of St. Louis, Mo., by Alice M. Engelbrecht, executrix, St. Louis, James C. Hill, Chesterfield, and Richard N. Moore, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 29, 1970, Ser. No. 50,887

Int. Cl. C07c 15/10

U.S. Cl. 260—669

10 Claims

A process for recovering aromatic hydrocarbons from styrene tar residues by thermally hydrocracking such residues.

3,631,215

**PLATINUM COMPONENT-TIN COMPONENT-ALUMINA CATALYTIC COMPOSITE AND AROMATIZATION PROCESS USING SAME**

Everett Clippinger, San Rafael, and Bernard F. Mulaskey, Fairfax, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Original application May 28, 1968, Ser. No. 732,588, now Patent No. 3,531,543, dated Sept. 29, 1970. Divided and this application July 15, 1970, Ser. No. 55,125

Int. Cl. C07c 5/26

U.S. Cl. 260—673

4 Claims

Composites of a Group VIII noble metal, tin and an inorganic, solid, refractory oxide carrier have excellent dehydrogenation activities and little or no isomerization and cracking activities.

3,631,216

**OLEFIN DEHYDRODIMERIZATION**

Joseph Lipsig, Rosemont, Pa., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Apr. 4, 1966, Ser. No. 539,620

Int. Cl. C07c 3/20, 11/12

U.S. Cl. 260—680 R

4 Claims

A dehydrodimerization process producing dienes and aromatic compounds by contacting an olefin stream con-

taining acyclic olefins of three to four carbon atom as the sole reactant with a compound containing oxygen bonded to bismuth and active for the removal of a hydrogen atom from the terminal methyl group in said olefins.

3,631,217

**PROCESS FOR INCREASING THE VISCOSITY OF POLYESTER RESINS, AND PRODUCTS OBTAINED THEREBY**

Ronald R. Rabenold, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Mar. 9, 1967, Ser. No. 621,798

Int. Cl. C08f 21/02

U.S. Cl. 260—863

11 Claims

An improved process for effecting the thickening of an unsaturated polyester resin composition containing a chemical thickening agent, such as magnesium oxide, which consists of adding water to the resin composition in amounts of from about 0.1 percent to about 1.0 percent, based on the weight of the polyester resin. The presence of water, in such small amounts, greatly accelerates the rate of thickening of the resin composition, thereby allowing an extremely efficient means for the preparation of semi-solid, resin-impregnated sheet materials, such as those used in molding applications.

3,631,218

**DOUBLE BOND ISOMERIZATION OF OLEFINS**

Melvin K. Carter, Moraga, Peter W. Glockner, Alameda, and John L. Van Winkle, San Lorenzo, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Apr. 30, 1970, Ser. No. 33,502

Int. Cl. C07c 5/22

U.S. Cl. 260—683.2

10 Claims

Double bond isomerization of olefins is effected with a nickel chelate of a bidentate chelating ligand having a tertiary organophosphorus moiety and a carboxymethyl or carboxyethyl group attached directly to the phosphorus atom of the organophosphorus moiety.

3,631,219

**OLEFIN ISOMERIZATION USING AMMONIA-TREATED ALUMINA**

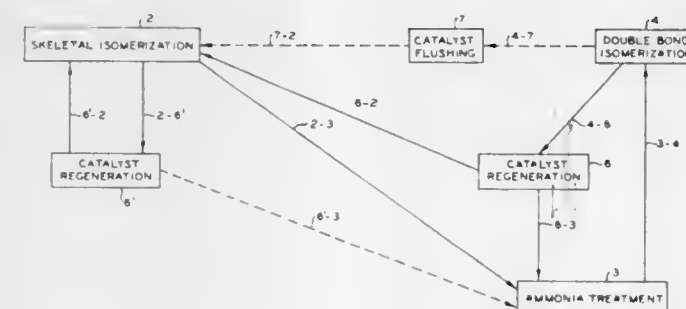
John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed July 23, 1970, Ser. No. 57,492

Int. Cl. C07c 5/22

U.S. Cl. 260—683.2

10 Claims



Olefin hydrocarbons undergo double bond isomerization by contacting the olefin with a catalyst of ammonia-treated alumina. In a further embodiment, olefin hydrocarbons are alternately isomerized with respect to the

position of the double bond and then with respect to the skeletal arrangement of carbon atoms within a single catalytic reactor. The catalyst employed for the skeletal isomerization reaction is alumina, and the catalyst used for the double bond isomerization reaction is ammonia-treated alumina.

3,631,220

**CURABLE ORGANOSILICON COMPOSITIONS**  
Lawrence F. Wojdac, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 20,027, Mar. 16, 1970. This application May 8, 1970, Ser. No. 35,939

Int. Cl. C08g 47/02

U.S. Cl. 260—825

12 Claims

Solventless liquid monophenyl-methylvinylsiloxane resins, containing at least 20 mol percent dimethyl-siloxyl units, mixed with minor amounts of a low-viscosity fluid siloxane and the  $\equiv\text{SiH}$  containing reaction product of methyl-hydrogen siloxanes and alpha-methyl styrene, are cured by heating in the presence of a platinum catalyst to provide a strong, heat-stable resin which can be used in laminates, coil coatings and the like.

3,631,221

**EPOXIDE RESIN MIXTURES**

Hans Batzer, Arlesheim, Juergen Habermeyer, Allschwil, and Daniel Porret, Binningen, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 870,547, Nov. 4, 1969. This application May 14, 1970, Ser. No. 37,299

Claims priority, application Switzerland, Nov. 11, 1968, 16,803/68; Jan. 30, 1970, 1,348/70

Int. Cl. C08g 45/00, 45/06

U.S. Cl. 260—830 TW

8 Claims

Epoxide resin mixtures, which are storage-stable and noncrystallizing at room temperature, of (a) diglycidyl ethers of mononuclear, five-membered or six-membered, unsubstituted or substituted, oxyalkylated N-heterocyclic compounds which contain two NH groups in the molecule (for example 1,3-(2'-glycidyl-oxy-n-propyl)-5,5-dimethyl-hydantoin) and (b) polyglycidyl compounds of the N-heterocyclic series, which contain at least one heterocyclic ring which possesses the grouping



at least once, and wherein at least two glycidyl groups or  $\beta$ -methylglycidyl groups in the polyglycidyl compounds are directly linked to endocyclic nitrogen atoms (for example 1,3-diglycidyl-5,5-dimethylhydantoin). These epoxide resin mixtures have not been specifically described in the main patent.

3,631,222

**POLYARYLSULFONE GRAFT AND BLOCK COPOLYMERS WITH CHAINS OF POLYAMIDE ACID OR POLYIMIDE**

Herward A. Vogel, Oakdale Township, Washington County, and Hans T. Oien, Lakeland, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Original application Mar. 22, 1967, Ser. No. 625,011. Divided and this application Jan. 2, 1970, Ser. No. 5,398

Int. Cl. C08g 41/04

U.S. Cl. 260—857 R

12 Claims

Certain linear thermoplastic polyarylsulfones having reactive groups thereon are disclosed. The reactive groups can recur along the polymer chains and/or can occur at the ends of the chains. In addition, segmented (graft and block) copolymers containing polyarylsulfone

segments are disclosed. The linear and segmented polymers have wide areas of utility, e.g. in coatings, impregnants, films, filaments, molded articles, etc.

3,631,223

**LACTAM POLYMERIZATION WITH POLYTHIOLACTONE INITIATORS**

Markus Matzner, Edison, and James E. McGrath and Sui-Wu Chow, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,385

Int. Cl. C08g 20/00, 41/04

U.S. Cl. 260—857

8 Claims

Polythiolactones are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide for a rapid polymerization process. The polymers thus obtained have good physical properties and good color.

3,631,224

**UNSATURATED POLYESTER RESIN MOLDING POWDER**

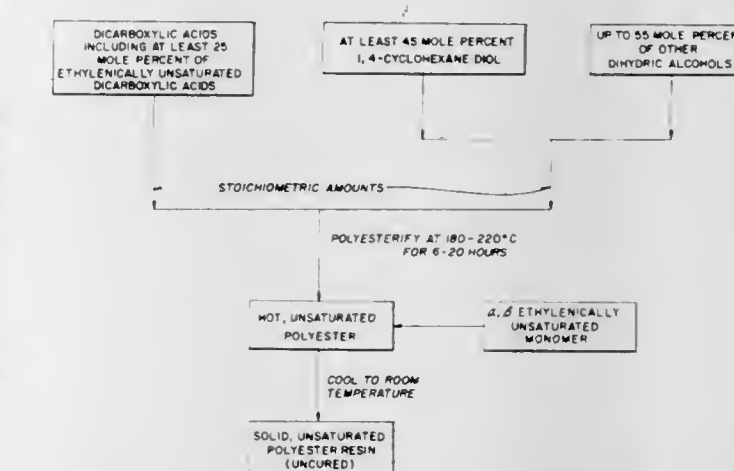
Melvin E. Baum, Monroeville, Pa., assignor to Koppers Company, Inc.

Continuation-in-part of application Ser. No. 690,935, Dec. 15, 1967. This application June 25, 1970, Ser. No. 49,780

Int. Cl. C08f 21/00, 21/02

U.S. Cl. 260—861

6 Claims



An unsaturated polyester resin which is a solid capable of being ground into a free flowing powder at room temperature comprises a mixture of an  $\alpha,\beta$ -ethylenically unsaturated monomer and a condensation polymer formed by esterifying a dicarboxylic acid, at least a portion of which contains ethylenic unsaturation, with a dihydric alcohol wherein at least a portion of the dihydric alcohol comprises 1,4-cyclohexane diol.

3,631,225

**PREPARATION OF POLYVINYL ACETALS**

Linwood P. Tenney, Durham, N.C., and Robert D. Lundberg, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Apr. 28, 1970, Ser. No. 32,717

Int. Cl. C08f 29/50

U.S. Cl. 260—874

10 Claims

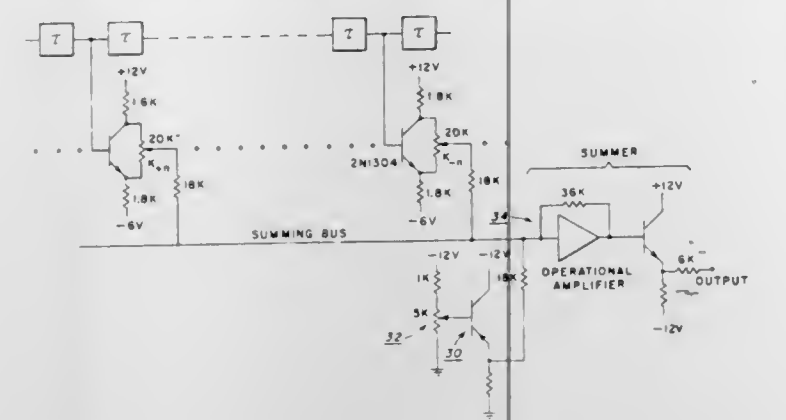
The preparation of polyvinyl acetals having a vinyl ester content of about 12 to 25% and a polyvinyl alcohol content of about 7 to 10% was achieved in non-aqueous dispersions by the addition of a swelling agent. The swelling agent is preferably an alkylene glycol alkyl ether, such







puted value. The outputs of the variable gain devices are summed in a summing device, the ratio of the signal at the



output of the summing device to the signal applied to the input of the tapped delay line corresponding to the simulated characteristic.

3,631,233

### BINARY VECTOR ROTATOR AND ANGLE-TO-BINARY CONVERTER

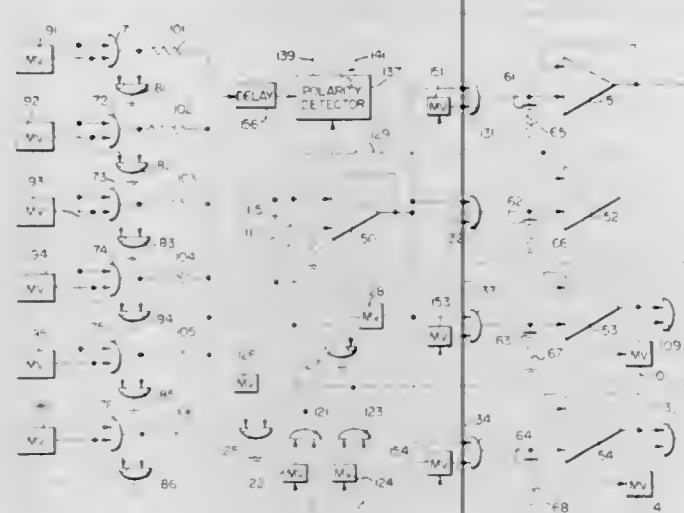
Joseph V. McKenna, Franklin Lakes, N.J., assignor to The Singer Company, New York, N.Y.

Filed Aug. 8, 1969, Ser. No. 848,519

Int. Cl. G06g 7/22; H03k 13/17

U.S. Cl. 235—186

11 Claims



This specification discloses an analogue system comprising an operational amplifier, a plurality of analogue hold amplifiers, which operate to store an applied signal voltage level, a plurality of precision resistors and a programming means which controls successive summing operations in the operational amplifier and the storage of the resulting sums in the analogue hold amplifiers to carry out the desired conversion of the analogue input signals to a desired digital number. Alternatively, the system can be operated to carry out a desired rotation of a vector represented by analogue signals through a digitally represented angle.

3,631,234

### ELECTRICAL APPARATUS FOR OBTAINING FILTER PACK DENSITY VALUES

John V. Hanline, Kansas City, Mo., and Daniel M. Chapin, Shawnee Mission, Kans., assignors to Film Equipment Manufacturing Co., Kansas City, Mo.

Filed Feb. 24, 1969, Ser. No. 801,350

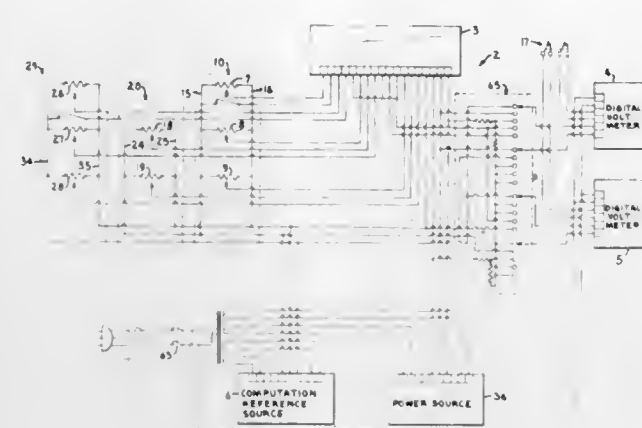
Int. Cl. G06g 7/48; G01j 3/46

U.S. Cl. 235—193

4 Claims

Electrical apparatus for obtaining density values for a filter pack for use with a production color film by comparing den-

sity values of a standard color film and its filter pack with the production color film, said apparatus having visual indicators for displaying the obtained net density values for the filter pack for the production color film. A computation circuit is electrically connected to the visual indicators and to a standard color film circuit and to a pack control circuit and to a



3,631,235

### FOLD AWAY LAMP FOR A SEWING MACHINE CABINET

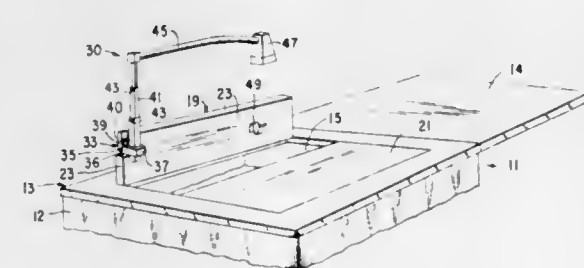
Charles R. Odermann, Montville, and Albert L. Newman, Dover, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed May 20, 1970, Ser. No. 38,949

Int. Cl. D05b 79/00

U.S. Cl. 240—2.14

2 Claims



A light source is pivotally mounted onto the front flap of a sewing machine cabinet so as to provide illumination for a sewing work support area when the machine is in operation; the light source also provides illumination for the work support area of a sewing machine cabinet even when the sewing machine is stored in the cabinet, and the light source itself may be stored in the sewing cabinet when so desired.

3,631,236

### FLASHLIGHT

Walter J. Woytowich, Box 338, Deep River, Ontario, Canada

Filed July 1, 1970, Ser. No. 51,439

Int. Cl. F21l 7/00

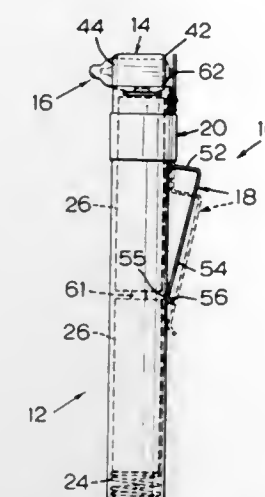
U.S. Cl. 240—10.67

11 Claims

A miniature flashlight particularly adapted for illuminating confined spaces, in which a beam of light is produced at right angles to the axis of the flashlight. The flashlight has a cylindrical case that is provided at one end with a U-shaped clip,

the clip being formed to hold a bulb in transverse position in contact with a battery in the case. A switch is slidably at-

teristic of secondary electrons emitted from a point of known potential on which the electron beam of the microscope imp-



tached to the case for completing an electrical circuit between the bulb and the battery.

### ERRATA

For Classes 250—83 and 250—103 see:  
Patent Nos. 3,631,526 and 3,631,527

3,631,237

### HIGH TEMPERATURE CELLS

Michael John Sole, Randburg, and Peter John Walker, Johannesburg, both of Republic of South Africa, assignors to Anglo American Corporation of South Africa Limited

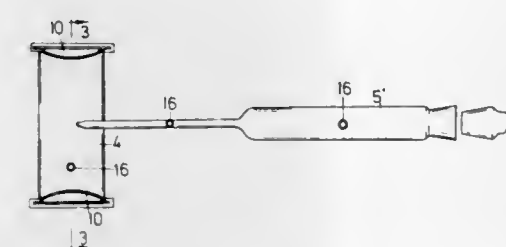
Filed June 2, 1970, Ser. No. 42,804

Claims priority, application Republic of South Africa, June 4, 1969, 69/3973

Int. Cl. G01n 21/26

U.S. Cl. 250—43.5 R

10 Claims



For examining gases in infrared spectrometers and other types of spectrometers the gases are pumped into a space with opposed windows adapted to be positioned along the line of examination. To seal off the gas inside and to withdraw the gas a curtain of an inert gas is flowed on the outside past each of the windows.

3,631,238

### METHOD OF MEASURING ELECTRIC POTENTIAL ON AN OBJECT SURFACE USING AUGER ELECTRON SPECTROSCOPY

Noel C. MacDonald, Thousand Oaks, Calif., assignor to North American Rockwell Corporation

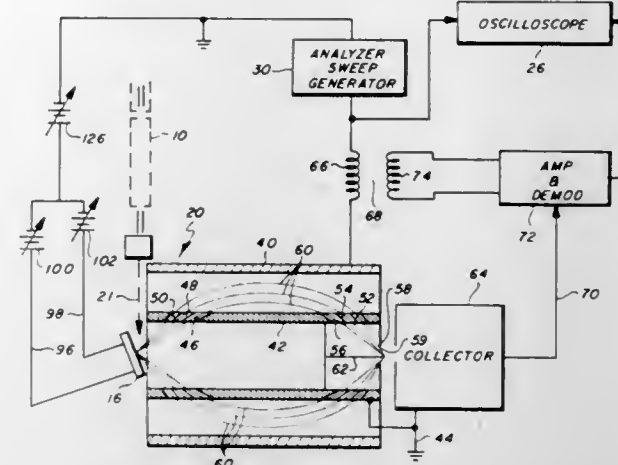
Filed Nov. 17, 1969, Ser. No. 877,358

Int. Cl. H01j 37/26; G01n 23/00

U.S. Cl. 250—49.5 A

14 Claims

A method and apparatus for quantitatively measuring potential on surfaces with submicron spatial resolution employs conventional scanning electron microscope and electron energy analyzer to obtain potential measurements and, in effect, a map of potential at different points on a surface such as a semiconductor or integrated circuit device. A micrograph of the surface to be analyzed is employed to locate points at which potential is to be measured. An Auger electron spectrum including several Auger peaks charac-



teristic of secondary electrons emitted from a point of known potential on which the electron beam of the microscope imp-

3,631,239

### SPECIMEN ALIGNMENT REFERENCE APPARATUS FOR BACK REFLECTION X-RAY CAMERA

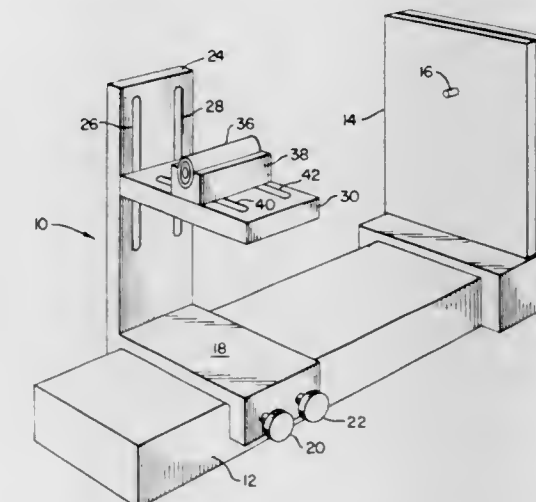
James F. Kreider, Santa Barbara, Calif., assignor to Avco Corporation, Cincinnati, Ohio

Filed June 24, 1970, Ser. No. 48,979

Int. Cl. G01n 23/20

U.S. Cl. 250—51.5

4 Claims



A specimen alignment reference apparatus is disclosed which permits an operator to locate precisely a portion of a specimen relative to a reference point. A viewing device is adjustably supported above a reference plane. The viewing device is adjustable in the X and Z directions relative to the reference plane wherein the viewing device may be precisely aligned relative to a given reference point.

3,631,240

### APPARATUS FOR HOLDING AND ORIENTING A CRYSTAL IN X-RAY INSTRUMENTS MEASURING THE MICROSTRUCTURE THEREOF

Walter Hoppe, Schillerstrasse 46, 8000 Munich 15, Germany

Filed June 9, 1969, Ser. No. 831,646

Claims priority, application Germany, June 27, 1968, P 17 72 741.2

Int. Cl. G01n 23/20

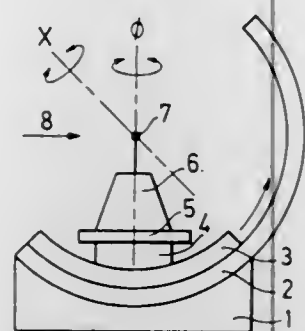
U.S. Cl. 250—51.5

6 Claims

A crystal to be examined by X-rays is held on a goniometer head rotatable with the crystal about an axis ( $\phi$ -axis) passing



through both the crystal and the goniometer head. The latter is mounted in a goniostat in such a manner that said  $\phi$ -axis, contained in the vertical plane of the goniostat, is transpos-



ble to at least two diametrically opposed (i.e., 180° apart) positions with respect to the inner race of the goniostat carrying the goniometer head.

3,631,241

### PATIENT SUPPORT FOR FLUOROSCOPIC EXAMINATION

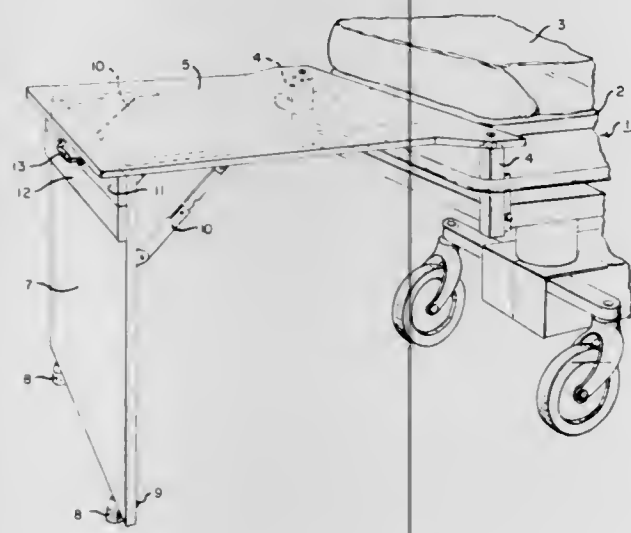
Frederick R. Franke, Mount Lebanon Township, and George E. Pettengill, Franklin Park, both of Pa., assignors to The Western Pennsylvania Hospital, Pittsburgh, Pa.

Filed Nov. 3, 1969, Ser. No. 873,583

Int. Cl. G01n 21/00

U.S. Cl. 250-54

3 Claims



A patient support unit for fluoroscopic examination comprising a table of X-ray transparent material having a pair of guides at one end adapted to fit guideways of conventional hospital beds used to retain movable head and footboards and at least one leg at the opposite end to support the table in cooperation with the bed at a height equal to the elevation of the bed. The connection between the table and leg may be hinged so as to make the support unit foldable.

3,631,242

### FLUOROSCOPE TOP FOR CARDIAC BED WHICH IS SWINGABLE ABOUT A VERTICAL AXIS OF THE BED

Earl Leonard Williams, Medina, Ohio, assignor to Simmons Company, New York, N.Y.

Filed June 17, 1969, Ser. No. 834,006

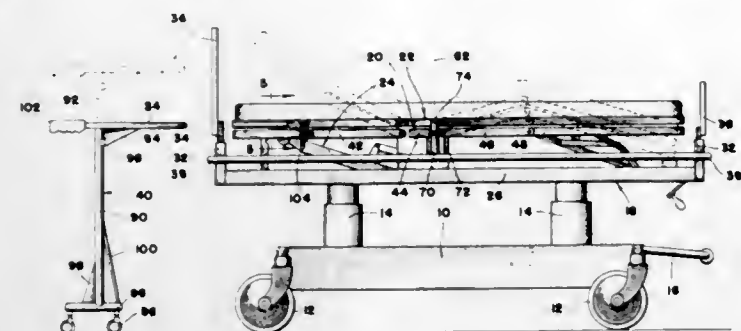
Int. Cl. G03b 41/16

U.S. Cl. 250-55

6 Claims

A fluoroscope top for a vehicular invalid bed or the like upon which the patient may be trundled to the site of the fluoroscopic examination. The patient is supported upon an X-ray transparent pallet which is pivoted at one side edge, somewhat medially thereof, on a supporting underframe upon which it may be swung clear of the understructure of the bed and transversely thereof to emplace the upper part of

the patient's body into a radiation field free of the shielding understructure of the bed. The pallet is supported during



such movement and at the transverse position by an auxiliary carriage that is detachably connected to the pallet at the head end thereof.

3,631,243

### X-RAY FILM MARKING MEANS INCLUDING A FLUORESCENT TONGUE OVERLAYED WITH OPAQUE INDICIA

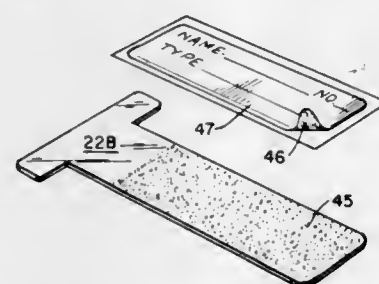
William H. Byler, Landing, N.J.; Halsey L. Raffman, Brooklyn, N.Y., and Frank Masi, Morristown, N.J., assignors to United States Radium Corporation

Filed Feb. 25, 1970, Ser. No. 14,024

Int. Cl. H05g 1/28

U.S. Cl. 250-67

5 Claims



For purposes of identifying particular film exposures in an X-ray cassette or other camerallike housing, a phosphorescent insertion unit activated by incident radiation is provided and indicia are located on a light-emitting surface thereof. The unit is then inserted through a light-sealed aperture in the housing so that its diminishing afterglow casts the silhouette of the indicia on the film adjacent the particular area of exposure to be identified. When the image of the indicia is thereby imprinted on the film, the unit is withdrawn from the housing through the aperture.

3,631,244

### TOMOGRAPHIC RADIATION CAMERA WITH MECHANICAL READOUT

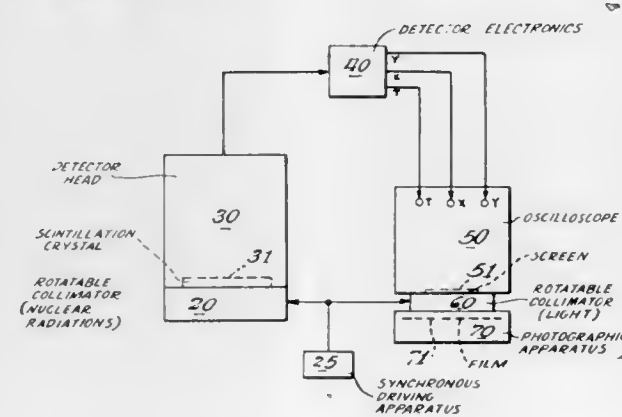
Lowell C. Bergstedt, Schaumburg, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed Mar. 13, 1969, Ser. No. 806,839

Int. Cl. G01t 1/20

U.S. Cl. 250-71.5 S

8 Claims



An Anger-type radiation detector fitted with synchronously rotating slanted hole collimators adjacent the

crystal and output phosphor screen to enable tomographic imaging of a three-dimensional distribution of radionuclides in an object. Alternatively a precessing film plane viewing the output screen may be synchronized with the rotating collimator adjacent the crystal to provide a selected in-focus image of a plane through the object.

3,631,245

### NEUTRON METHOD FOR DETERMINING RESIDUAL OIL-PHASE FLUID CONCENTRATION

James R. Jorden, Jr., Hacienda Heights, and Forrest R. Mitchell, Ventura, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 23, 1968, Ser. No. 786,132

Int. Cl. G01v 5/00

U.S. Cl. 250-83.3

6 Claims

A method for determining the concentration of oil-phase fluid in an earth formation containing indigenous oil-phase fluid and aqueous liquid. A zone in the formation is irradiated with neutrons when the zone is filled with indigenous oil-phase and aqueous liquid. The thermal neutron capture rate response of the zone is measured with respect to the first irradiation. Substantially all indigenous oil-phase is removed from the zone and the zone is filled with only an aqueous liquid substantially equivalent in composition to the indigenous aqueous liquid. The zone is irradiated with neutrons a second time and the thermal neutron capture rate response of the zone is measured with respect to the second irradiation.

3,631,246

### METHOD FOR DETERMINING THE PURITY OF RECOVERED SYLVITE

Herbert H. Defriez, Berkeley, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,447

Int. Cl. G01n 21/00

U.S. Cl. 250-83.3 H

3 Claims

A method for determining the purity of recovered sylvite by taking an infrared spectrum of the sylvite and making up a calibration curve from known standards of a known impurity on the sylvite. The impurity peaks appearing in the infrared spectrum are then compared with the calibration curve and the impurity concentration of the sylvite is determined.

3,631,247

### MOSSBAUER GAMMA RAY SPECTROMETER

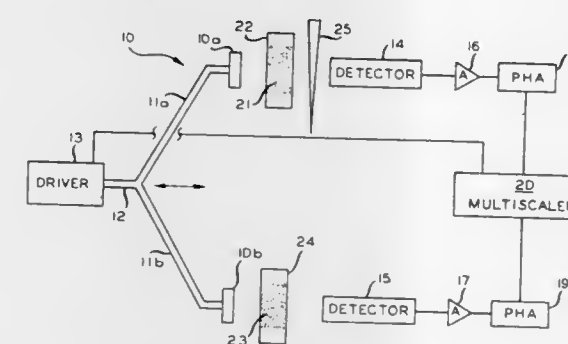
Hugh M. Barton, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Mar. 26, 1969, Ser. No. 810,723

Int. Cl. G01t 1/17, 1/36

U.S. Cl. 250-83.3 R

9 Claims



A catalyst containing a nuclide which exhibits the Mossbauer effect is irradiated with gamma rays while scanning through resonance conditions, the gamma radiation transmitted through the catalyst is measured and reactants are contacted with the catalyst as the measurement proceeds. The spectrometer includes apparatus for passing a second gamma-ray beam through a second absorbing body of similar

characteristics to the body to be analyzed, a signal being produced representative of the difference in intensity of the two beams of gamma radiation, as a function of velocity.

3,631,248

### TARGET-SCANNING CAMERA COMPRISING A CONSTANT TEMPERATURE SOURCE FOR PROVIDING A CALIBRATION SIGNAL

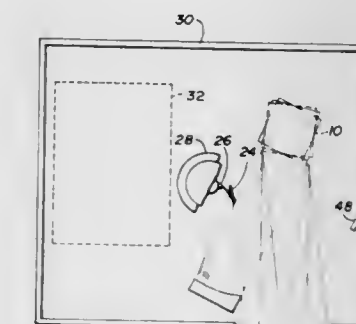
Ralph B. Johnson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1969, Ser. No. 889,145

Int. Cl. G02b 17/00; H04n 3/00

U.S. Cl. 250-83.3 H

5 Claims



To scan a target area, a polygon-shaped scan mirror is mounted to rotate about one axis and oscillate about an axis orthogonal thereto. Oscillation about the second orthogonal axis is tailored to a desired motion by means of an eccentric cam. Radiation incident on the rotating and oscillating scan mirror is reflected to a radiant energy detector by means of a convergent mirror. The convergent mirror is track-mounted and adjustable to vary the focal range focal range for scanned areas at different locations. A constant temperature area is scanned to produce a meaningful output signal prior to each scan cycle.

3,631,249

### ADJUSTMENT APPARATUS FOR X-RAY WEDGE FILTER PLATES

Manfred Friede, and Georg Vogel, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

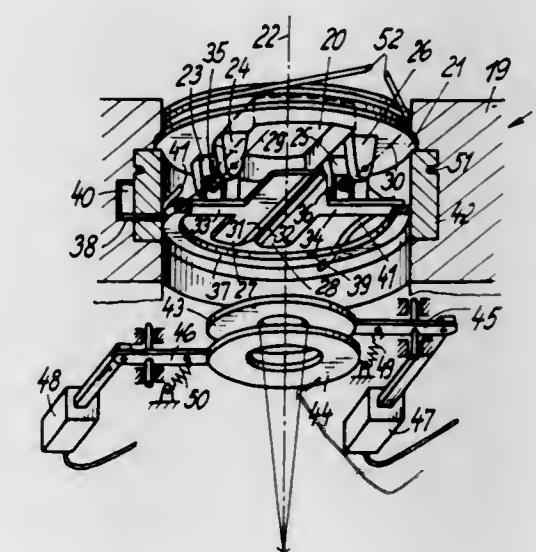
Filed Sept. 12, 1969, Ser. No. 857,347

Claims priority, application Germany, Oct. 3, 1968, P 18 00 879.2

Int. Cl. H01j 5/16

U.S. Cl. 250-86

1 Claim



A primary ray diaphragm for X-ray examining devices has plate diaphragms limiting the ray field, whereby those parts of the plate diaphragms which are adjacent to the ray field



being limited have an absorption value producing a half shade effect and corresponding to that of an iron plate having a thickness of 0.4 to 3.5 mm.

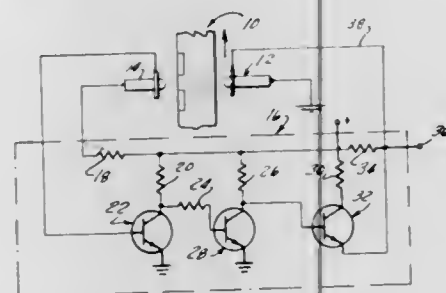
3,631,250

**OPTICAL POSITIVE FEEDBACK SENSOR CIRCUIT**  
Lyman F. Van Buskirk, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 13, 1970, Ser. No. 11,222  
Int. Cl. G01j 1/32

U.S. Cl. 250—205

1 Claim



An optical positive feedback sensor circuit which converts regularly coded information into electrical signals. When not obstructed by the coded opaque pattern on a moving information carrier light from a light emitting diode is detected by a phototransistor. The output of the phototransistor is then amplified. A portion of the amplifier output provides positive feedback through the light emitting diode, driving the circuit into saturation. A circuit is included to maintain a light level at least sufficient to restart the operation after a period of light obstruction.

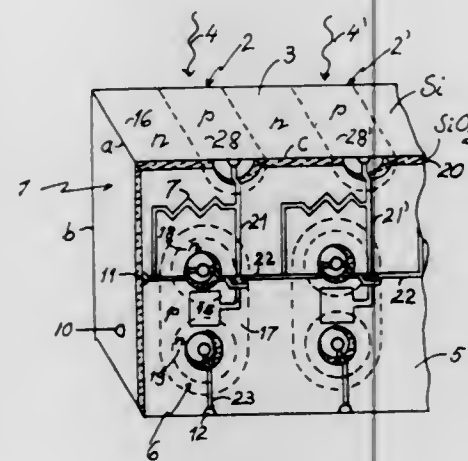
3,631,251

**ARRAY COMPRISING ROW OF ELECTRO-OPTICAL ELEMENTS AND ASSOCIATED ROW OF SEMICONDUCTING MICROCIRCUITS LOCATED ON ADJOINING FACES OF A PARALLELEPIPEDAL SLAB**  
Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Filed Feb. 26, 1970, Ser. No. 14,362  
Int. Cl. H01j 31/50, 39/12; H05b 37/00

U.S. Cl. 250—208

15 Claims



A solid material in shape of a parallelepiped on carries on one of its major surfaces a set of electric circuits, each connected to an electro-optical element for energy conversion between electric and radiative modes. The electro-optical elements are arranged in a row near a major edge of the parallelepiped on in such a manner that said radiative mode is directed perpendicular to said edge thus defining a row of points for light emission, reception or modulation along said edge. A set of such parallelepiped on is stacked to provide a two-dimensional array of such points for light emission, reception or modulation.

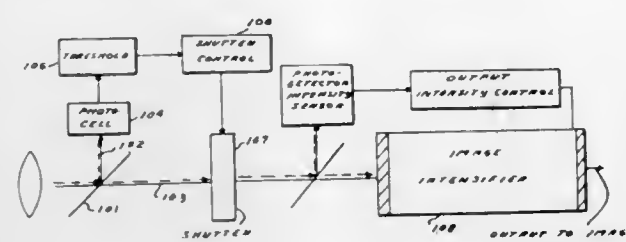
### 3,631,252 IMAGE CONTROL APPARATUS UTILIZING THE CONVOLUTION OF PHOSPHORS

Radames K. H. Gebel, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Mar. 24, 1970, Ser. No. 22,301  
Int. Cl. H01j 31/50, 39/12

U.S. Cl. 250—213 VT

3 Claims



By using the delay time incurred in image reproduction brought about by the convolution action of the phosphor in image converter tubes, time is obtained in which to turn off the reproduction of the image or to lower the reproduction intensity so that the intensity of the oncoming image will not damage a camera tube or overexpose photographic film. Conversely, time may be achieved in which to turn the image on, likewise to a camera tube or photographic film, or reproducing or recording a fast-acting phenomenon such as a lightning flash or bomb burst without the necessity of wasteful continuous exposure in order to "catch" the desired image.

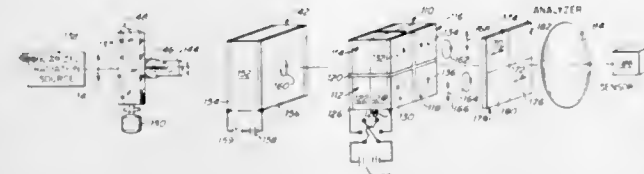
3,631,253

**LOGIC COMPARATOR USING BIREFRINGENT MEDIUM**  
Ralph Edward Aldrich, Woburn; Paul John Caruso, Bedford, and Donald Sears Oliver, Acton, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed May 28, 1969, Ser. No. 828,657  
Int. Cl. G08c 9/06

U.S. Cl. 250—219

27 Claims



Apparatus is disclosed for comparing a first item of information represented by the sense and magnitude of the relative retardation of components of radiation with a second item of information represented by the sense and magnitude of relative retardation imposed on components of radiation by a birefringent medium by modulating the relative retardation of components of radiation which retardation is representative of the first item of information with the relative retardation imposed on components of radiation by the birefringent medium and detecting a component of the modulated radiation representative of the combination thereof.

### 3,631,254 OBJECT IDENTIFICATION BY EMISSION POLARIZATION

Dennis O. Covault, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

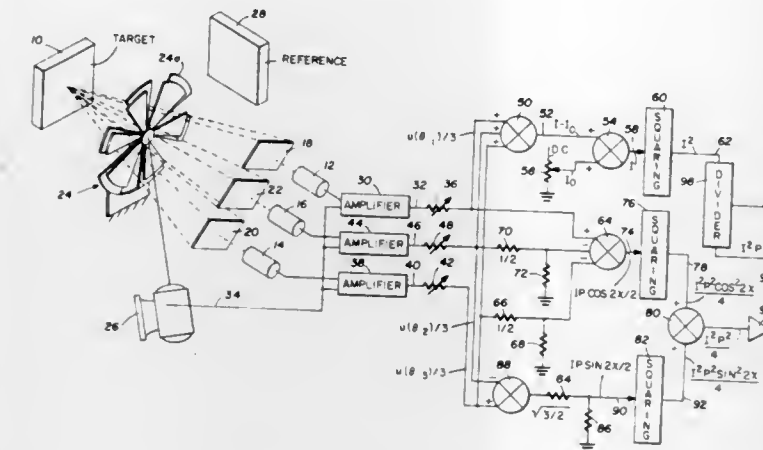
Filed Dec. 31, 1969, Ser. No. 889,406  
Int. Cl. G02f 1/18

U.S. Cl. 250—225

15 Claims

Metallic objects are identifiable by the degree of polarization of infrared radiation emitted therefrom. To identify a

metallic object from a nonmetallic object by radiation emitted therefrom, three linearly polarized detectors are positioned to be responsive to the emitted radiation. Each of these three detectors is responsive to radiation from the object along a different plane of polarization. Output signals from the three detectors are processed in a system to produce a signal equal to the square of the degree of



polarization. Smooth objects are distinguishable from rough objects in the same field of view by determining the degree of polarization of a light beam directed to and reflected from the objects. By knowing the polarization axis of the light waves at the source, the output signals of two detectors may be combined to highlight in a display smooth objects in a field of view that contains both smooth and rough objects.

3,631,255

**CONTAINER CROWN RING INSPECTION APPARATUS HAVING MEANS DISPOSED BETWEEN LAMPS AND CROWN RING FOR OBSTRUCTING RADIAL RAYS FROM LAMPS**

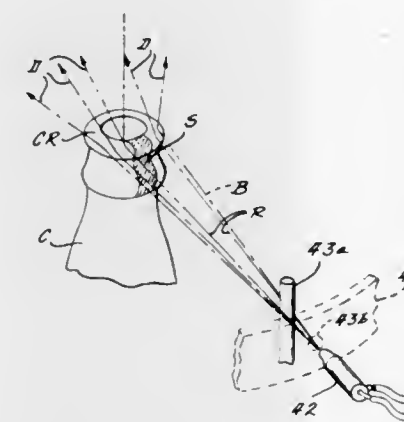
James R. Gender, Kirkwood; Leonard V. Makela, Chesterfield, and Karl Wolf, Webster Groves, all of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Continuation of application Ser. No. 773,759, Nov. 6, 1968, now abandoned. This application Nov. 16, 1970, Ser. No. 90,044

Int. Cl. G01n 21/32; G06m 7/00; H01j 39/12

U.S. Cl. 250—223 B

5 Claims



A crown ring defect inspection apparatus for beverage containers and the like comprising automatic inspection means for detecting crown ring chips and irregularities in a moving line of containers and rejecting the defective containers. The apparatus includes photoelectric means for examining each container as well as photomultiplier means responsive to optical signals for converting such signals to electrical signals which actuate the reject mechanism.

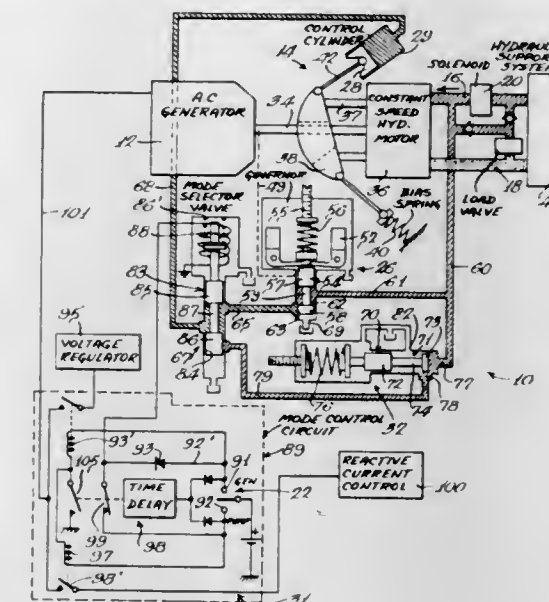
### 3,631,256 EMERGENCY POWER UNIT

Richard W. Reynolds, Rockford, Ill., assignor to Sundstrand Corporation

Filed Apr. 13, 1970, Ser. No. 27,682  
Int. Cl. H02k 7/18

U.S. Cl. 290—30 A

11 Claims



An emergency power unit for an aircraft adapted to selectively supply either emergency electrical power or emergency hydraulic power to the respective electrical and hydraulic systems of the craft including an AC generator-motor unit drivingly interconnected with a reversible displacement hydraulic motor-pump unit with a governor control responsive to the AC unit speed for supplying hydraulic fluid to a displacement control motor to maintain a substantially constant speed of the AC unit when acting as a generator, and a pressure compensator responsive to the pressure of fluid from the hydraulic unit when acting as a pump for controlling the displacement of the hydraulic unit to maintain a substantially constant hydraulic unit outlet pressure to supply emergency hydraulic power to the system, there being also provided a mode selection circuit which depressurizes the hydraulic unit when the hydraulic power mode is selected to permit the AC unit when acting as a motor to come up to speed unloaded.

### ERRATUM

For Class 307—251 see:  
Patent No. 3,631,528

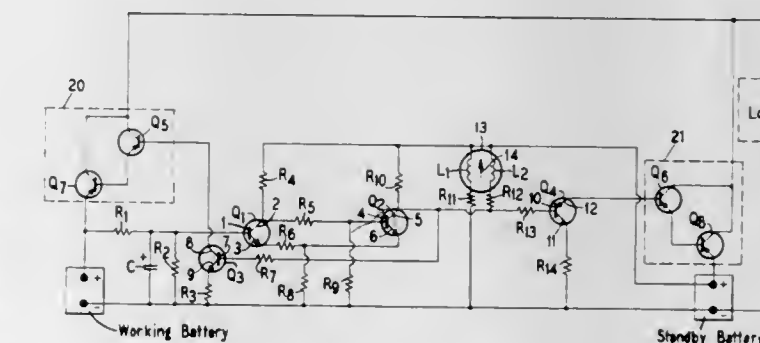
3,631,257

**AUTOMATIC POWER SWITCHING UNIT**  
Byron C. Behr, Stamford; Richard Head, White Plains, both of Conn., and Frederick Soskel, Peekskill, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,033  
Int. Cl. H02j 9/06

U.S. Cl. 307—66

10 Claims



A switching unit for automatically switching a load from a working power supply to a standby power supply when the







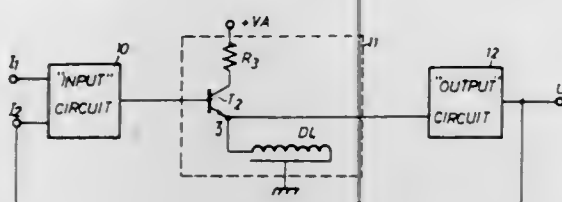
3,631,266

**DELAY LINE PULSE GENERATOR**

Georges Kassabgi, Pregnana Milanese, Milan, Italy, assignor to Honeywell Information Systems Italia S.p.A., Torino, Italy  
 Filed Feb. 25, 1970, Ser. No. 14,017  
 Claims priority, application Italy, Feb. 27, 1969, 13384 A/69  
 Int. Cl. H03k 1/18

U.S. Cl. 307-265

8 Claims



A circuit for generating an output pulse of predetermined amplitude and duration in response to an input pulse, wherein the roundtrip time of a wave applied to a short-circuited delay line determines the duration of the output pulse and wherein the output pulse is coupled back to the circuit input to isolate the input and make the duration of the output pulse independent of that of the input pulse.

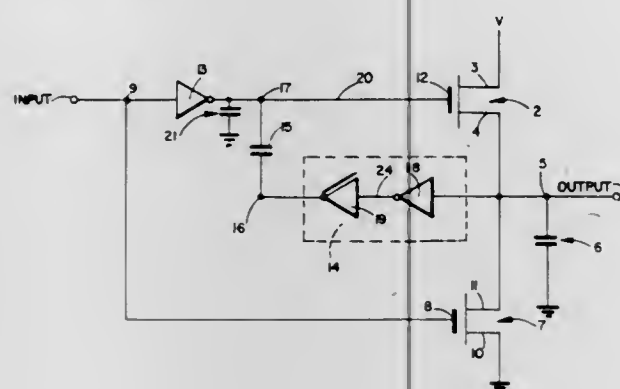
3,631,267

**BOOTSTRAP DRIVER WITH FEEDBACK CONTROL CIRCUIT**

Gary Lee Heimbigner, Anaheim, Calif., assignor to North American Rockwell Corporation  
 Filed June 18, 1970, Ser. No. 47,477  
 Int. Cl. H03k 3/26

U.S. Cl. 307-270

7 Claims



A control circuit detects a minimum output voltage level and feeds back that voltage level to boost the voltage across a capacitor connected between the control circuit and the gate electrode of a load-driving field effect transistor. The voltage on the gate electrode of the transistor is boosted to a voltage in excess of the threshold voltage of the transistor plus the minimum required output voltage.

3,631,268

**PULSER FOR INTRUDER DETECTION SYSTEMS**

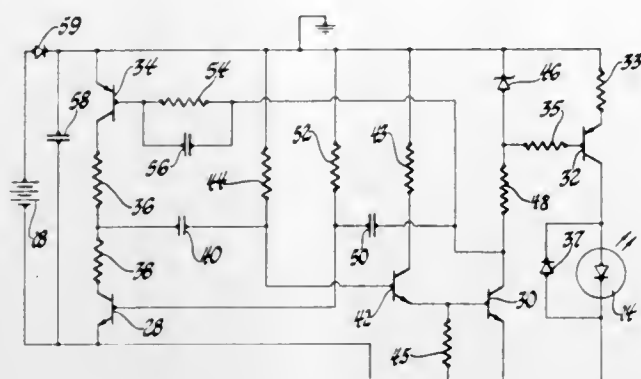
David R. Matthews, Ann Arbor, Mich., assignor to Laser Systems Corporation, Ann Arbor, Mich.  
 Filed May 8, 1969, Ser. No. 822,900  
 Int. Cl. H03k 3/10

U.S. Cl. 307-273

3 Claims

A multivibrator-type pulse forming circuit designed for asymmetric operation and power conservation. A current-controlling transistor is connected in series with one of the

two complementary stages of the pulse-forming circuit to restrict current through the stage when the stage is conduc-



tive thereby to conserve power and to permit the use of a short time constant coupling circuit.

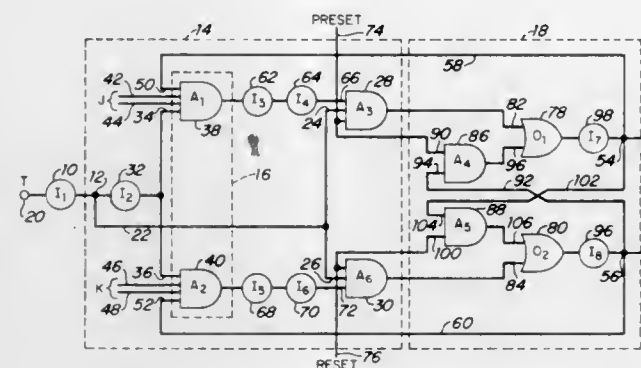
3,631,269

**DELAY APPARATUS**

Joseph E. Monahan, Framingham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.  
 Filed Dec. 30, 1968, Ser. No. 787,662  
 Int. Cl. H03k 17/26

U.S. Cl. 307-293

11 Claims



Apparatus is disclosed in an integrated circuit for generating a pulse, adaptable for triggering a complementing bistable circuit, using inverter delay means without capacitive or inductive elements including at least one logic inverter circuit to provide the necessary delay.

3,631,270

**ACTIVE ALL-PASS NETWORK FOR PHASE EQUALIZERS**

James J. Heinemann, San Jose, Calif., assignor to GTE Automatic Electric Laboratories Incorporated  
 Filed Dec. 3, 1970, Ser. No. 94,809  
 Int. Cl. H03k 1/16

U.S. Cl. 307-295

6 Claims

An all-pass system particularly adapted for equalizing group delay distortion in wide band communication systems. Two common emitter stages having adjustable resonant circuits are arranged in parallel to receive a single input and to linearly combine the outputs of the stages. One stage is wide

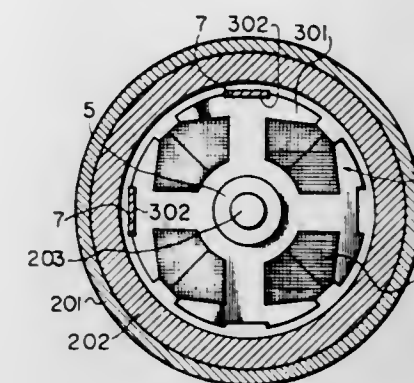
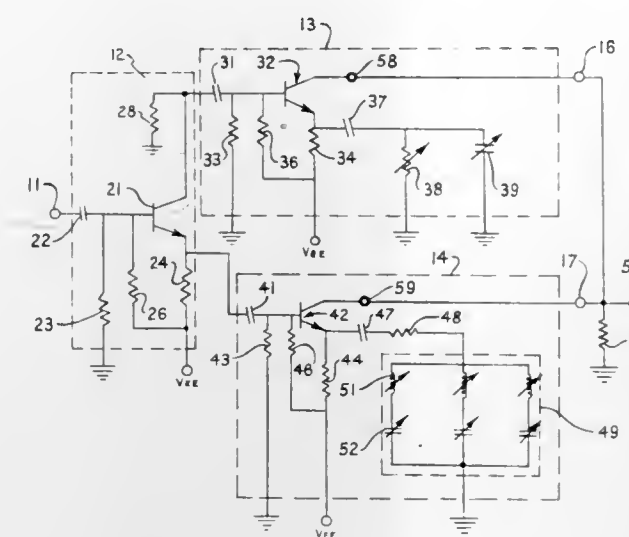
band and the other is frequency selective and the output of the selective stage is twice the amplitude of the wide band

3,631,272

**DC ELECTRIC MOTOR USING HALL ELEMENTS**

Tatsuji Shimada, c/o Daiko Electronics Industrial Co. Ltd., Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan  
 Filed Apr. 28, 1970, Ser. No. 32,682  
 Claims priority, application Japan, Apr. 4, 1969, 44/40152  
 Int. Cl. H02k 37/00

U.S. Cl. 310-10 4 Claims



stage and phase inversion is provided such that the outputs of the two stages are 180° apart.

A DC electric motor has a groove formed perpendicular to the rotating direction of a rotor at the center of the peripheral surface of one or more poles of a stator. A plurality of Hall elements are disposed at the center of a substrate which is inserted into said groove.

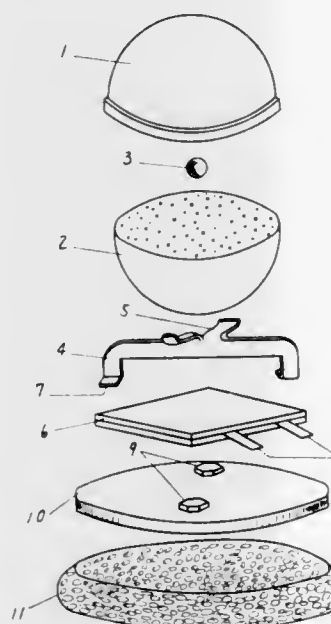
3,631,271

**BURGLAR ALARM SWITCH**

Tatsuji Shimada, c/o Daiko Electronics Industrial Co. Ltd., No. 25-28, Juso, Higashino-cho, Higashiyodo-gawa-ku, Osaka, Japan  
 Filed Oct. 22, 1970, Ser. No. 82,967  
 Claims priority, application Japan, Nov. 27, 1969, 44/095279  
 Int. Cl. H01v 7/00

U.S. Cl. 310-8.1

10 Claims



A burglar alarm switch is mounted on an object to be protected. It comprises a vibration producer for converting any tilting movement of the object into vibrations and a piezoelectric element associated therewith for transducing the vibrations into an electric warning voltage.

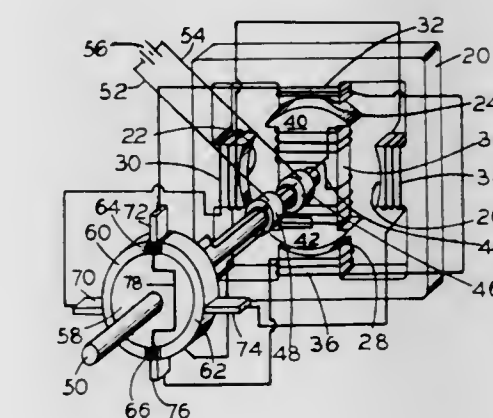
3,631,273

**DIRECT CURRENT ROTARY APPARATUS**

Jesse J. Stein, 115 Trinity Pl., Syracuse, N.Y.  
 Continuation of application Ser. No. 678,730, Oct. 27, 1969, now abandoned. This application Oct. 6, 1969, Ser. No. 866,091  
 Int. Cl. H02k 37/00

U.S. Cl. 310-46

6 Claims



A direct current rotary apparatus including a four pole stator and a two pole rotor rotatable within said stator. The rotor having a commutator switch having two opposed arcuate segments and two sliprings each ring being connected to one of the switch segments and to the rotor winding. Four relatively stationary brushes angularly spaced uniformly about the segments, opposite pairs of brushes being connected to corresponding opposed stator, and coils the commutator having antishorting segments of brush width or greater disposed between the arcuate segments, and connected by a resistance.



3,631,274

## PROGRAM SEQUENCE INITIATOR

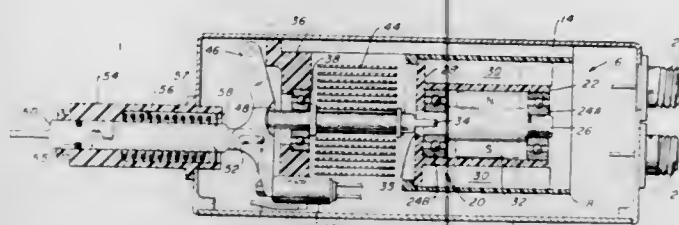
Bob E. Stauder, 5649 S. New Haven, Tulsa, Okla., and William O. Christianson, 6625 S. 70th East Ave., Tulsa, Okla., assignors to Dorsett Electronics, a Division of La Barge, Inc., Tulsa, Okla.

Filed Apr. 27, 1970, Ser. No. 32,232

Int. Cl. H02k 7/18

U.S. Cl. 310—66

7 Claims



This invention relates to a power supply for generating an electrical pulse. More particularly, the invention is a power supply for generating an electrical pulse including a housing, at least one coil of wire supported by the housing, a magnetic rotor supported by the housing and rotatable relative to the coil, and spring means interconnected to the magnetic rotor and adapted upon unwinding of the spring means to rotate the magnetic rotor relative to the coil to induce a voltage pulse in the coil.

3,631,275

## SUBMERSIBLE MOTOR COMPONENTS UNIT FOR A SUBMERSIBLE ELECTRIC MOTOR

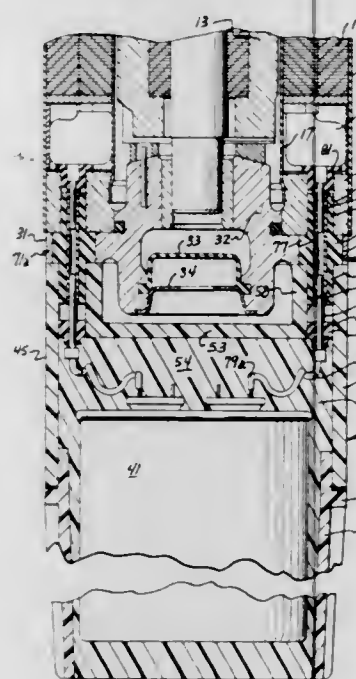
Kenneth W. Conrad; Ronald W. Albers, both of Davenport, and Elmer M. Deters, Muscatine, all of Iowa, assignors to Red Jacket Manufacturing Company, Davenport, Iowa

Filed May 20, 1970, Ser. No. 38,975

Int. Cl. H02b 11/00

U.S. Cl. 310—71

9 Claims



A submersible motor components unit for a submersible electric motor in which the submersible motor has a plug-type disconnect at one end and the motor components unit is detachably mounted on the end of the submersible motor. The submersible motor components unit has a molded plastic outer housing detachably mounted on the motor and filled with a resinous potting material around the motor components to provide a unitary resinous body that encloses the motor components and seals the same from the surrounding medium.

3,631,276

## MECHANICAL RESONATOR FOR TIME-MEASURING APPARATUS

Max Hetzel, Bienne, Switzerland, assignor to Centre Electronique Horloger S.A., Breguet-Neuchatel, Switzerland

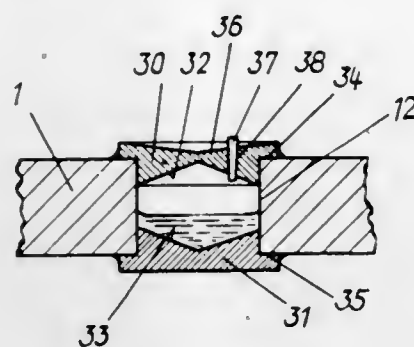
Filed Dec. 8, 1969, Ser. No. 882,818

Claims priority, application Switzerland, Dec. 19, 1968, 18896/68

Int. Cl. H02k 33/00

U.S. Cl. 310—25

5 Claims



A mechanical resonator for time-measuring apparatus, comprising two branches oscillating in phase opposition and at least one device for the compensation of the variations of the frequency proper of the resonator when the orientation in space of the latter changes, said device comprising a cavity provided in a piece forming part of one of the said branches, and a mass placed in this cavity to move freely in the same, consisting of a viscous liquid filling only a part of the cavity.

3,631,277

## STATOR FOR A PERMANENT MAGNET DYNAMOELECTRIC MACHINE INCLUDING NOVEL MAGNET RETAINING MEANS

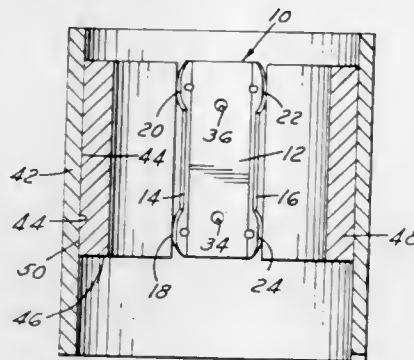
Russell G. Ferdig, Ypsilanti, and Robert W. Burby, Dexter, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 15, 1970, Ser. No. 98,252

Int. Cl. H02k 21/26

U.S. Cl. 310—154

5 Claims



A stator for a permanent magnet dynamoelectric machine in which prestressed magnet retaining means are employed to hold permanent magnets in engagement with the inner surface of a cylindrical ferromagnetic frame. The stresses developed in these magnet retaining means also retain or hold these magnet retaining means within the cylindrical ferromagnetic frame.

There is also disclosed a method for installing the magnet retaining means and the permanent magnets within the cylindrical ferromagnetic frame including positioning a pair of magnet retaining means at opposed positions within the cylindrical ferromagnetic frame, applying a radially outward force on the body portion of the magnet retaining means to rotate permanent magnet engaging tabs toward each other, inserting axially a pair of arcuate permanent magnets within the cylindrical frame, and removing the radially outward force on the body portion of the magnet retaining means so that the tabs rotate outwardly into an engagement with the edges of the arcuate permanent magnets.

3,631,278

## FORM-WOUND DYNAMOELECTRIC MACHINE WITH REDUCED COIL DISTORTION

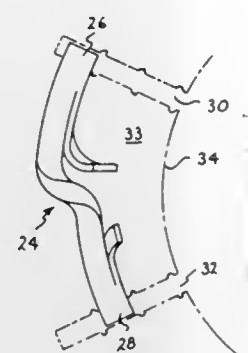
Howard Donald Snively, Schenectady, N.Y., assignor to General Electric Company

Filed Apr. 20, 1970, Ser. No. 30,047

Int. Cl. H02k 3/00

U.S. Cl. 310—208

10 Claims



A dynamoelectric machine having a plurality of circumferentially adjacent deep slots is wound with two groups of preformed coils pulled in opposite directions, i.e., a first group of coils having coil sides in one circumferential direction adapted to be radially inner coil sides and a second group of coils formed with coil sides in the particular one circumferential direction adapted to be radially outer coil sides. By placing coils of the first group in the second and third slot positions proceeding in one circumferential direction and coils of the second group in the first and second slot positions proceeding in the other circumferential direction, the machine can be wound without the necessity for raising any previously positioned coil side. When all the slots of the machine are not of equal radial depth, a radially extending step can be provided in radial alignment with the deep slots to provide substantially equal flux carrying cross section throughout the slotted member.

3,631,279

## DYNAMOELECTRIC MACHINE BLOCKING MEANS

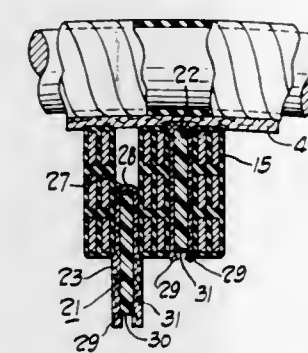
Alexander E. Bozsvai, Solon, and Harvey A. Trickel, Cleveland, both of Ohio, assignors to The Reliance Electric Company

Filed Feb. 16, 1970, Ser. No. 11,517

Int. Cl. H02k 3/50

U.S. Cl. 310—260

15 Claims



The support for the end turns of windings of a dynamoelectric machine is provided by blocking means which includes both rigid and conformable blocking. In one embodiment the conformable blocking is in a form like felt and is partially wrapped around a block to provide ready insertion of the blocking means between adjacent end turns which extend out of slots in a magnetic core of the dynamoelectric machine. The conformable blocking is initially unimpregnated and later the entire blocking means is dipped in varnish and baked to provide rigid blocking means between adjacent end turns.

## ERRATUM

For Class 313—220 see: Patent No. 3,631,530

3,631,280

## IONIC VACUUM PUMP INCORPORATING AN ION TRAP

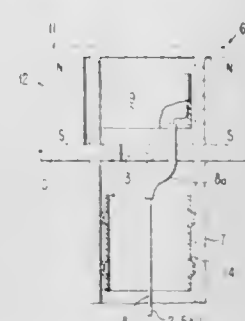
Nathan D. Levin, Los Altos Hills; Andreas Niewold, and Stephen D. Sparks, both of Sunnyvale, all of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Oct. 6, 1969, Ser. No. 864,064

Int. Cl. H01j 7/16

U.S. Cl. 313—7

5 Claims



An ionic vacuum pump, which is continuously operated to maintain a vacuum within an image tube, is located at the end of a cylindrical tubulation connected to the envelope of the tube. An ion trap comprises a cylindrical cathode sleeve in contact with the walls of the tubulation and a rod-shaped anode electrode, which is connected to the anode of the pump and extends from the pump into the envelope of the tube where it connects to one of the tube electrodes, which is in turn connected to a 2.5 kv. DC source. The radial electric field between the anode and cathode of the ion trap drives positive ions escaping from the pump toward the cathode of the trap where they are collected and thus prevented from entering the tube.

3,631,281

## MAGNETIC FIELD EXTENDERS

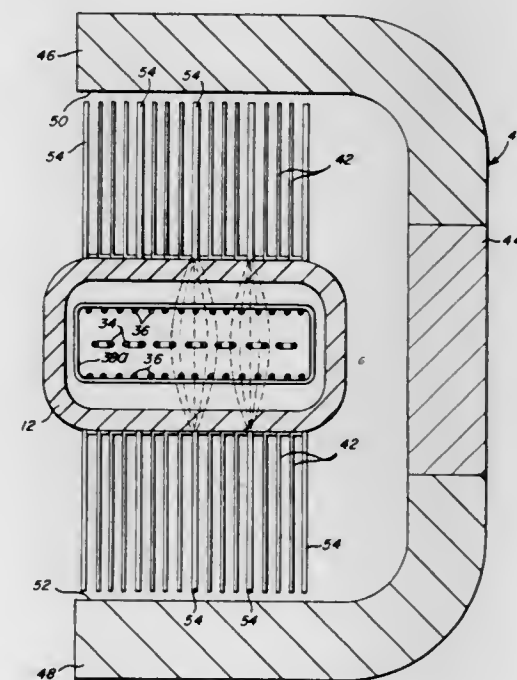
Jacob A. Randmer, Wilton, Conn., assignor to The Machlet Laboratories, Incorporated, Springdale, Conn.

Filed Apr. 30, 1970, Ser. No. 33,450

Int. Cl. H01j 7/24, 1/50

U.S. Cl. 313—11

7 Claims



An electron discharge device of the magnetic beam type which employs magnetic field extending means enabling the device to be provided with air-cooling features while reducing the magnetic gap.



3,631,282

**ACCELERATING TUBE WITH HEATING MEANS**

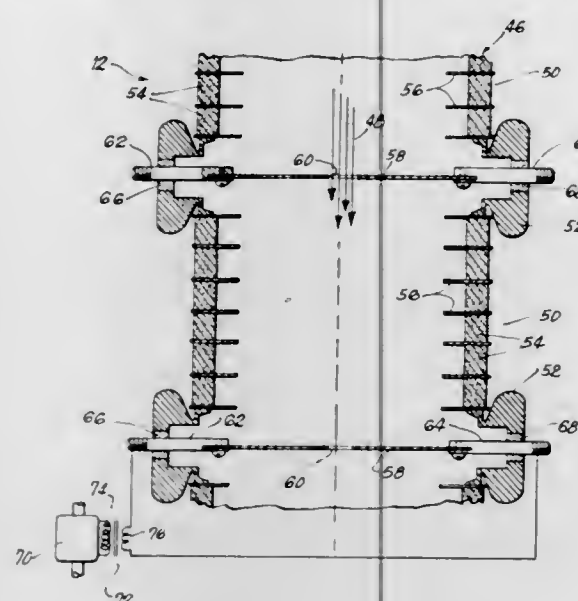
Raymond G. Herb, Madison, Wis., assignor to National Electrostatics Corp., Middleton, Wis.

Filed Jan. 23, 1969, Ser. No. 793,333

Int. Cl. H01j 7/24; H05h 5/02

U.S. Cl. 313-15

20 Claims



The accelerating tube of the present invention is provided with means for continuously heating the tube while it is in operation. This has the surprising effect of greatly increasing the ability of the tube to withstand high voltages. Thus, an increased operating voltage may be employed when the tube is heated. The heating of the tube drives off condensed gases from the interior surfaces of the tube, while also preventing any condensation of residual gases upon such surfaces. Various means may be provided to heat the tube. It is particularly advantageous to subdivide the tube into tubular sections with separator electrodes or diaphragms therebetween. The ion beam passes within the tube through apertures in the separators. It is preferred to heat the separators by causing electrical currents to pass through the separators. The electrical currents are preferably supplied by a series of generators driven by an insulating shaft. Heat may also be supplied externally to the accelerating tube, by means of heating coils or lamps. Another arrangement is to heat the entire tank in which the tube is enclosed.

3,631,283

**DEVICE FOR PRODUCING HIGH INTENSITY ION BEAMS**

Guy Gautherin; Rene Masci, and Robert Jean Warnecke, all of Paris, France, assignors to Thomson-C.S.F.

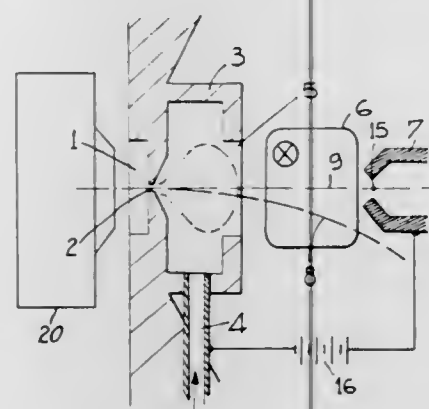
Filed Apr. 2, 1969, Ser. No. 812,708

Claims priority, application France, Apr. 9, 1968, 147478

Int. Cl. H01j 17/26; H05h 1/00

U.S. Cl. 313-63

6 Claims



A gas or vapor is ionized by passing it through a plasma jet, hydrogen plasma for example; the ionization takes place in

an enclosure, the wall of which either contains devices for injecting the gas or vapor to be ionized, or devices for vaporizing by local heating solid samples of the same substance.

3,631,284

**RED-EMITTING MATERIAL FOR CATHODOLUMINESCENT SCREENS**

Thomas E. Sisneros, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 19, 1968, Ser. No. 701,040

Int. Cl. C09k 1/04; H01j 29/20

U.S. Cl. 313-92

2 Claims

A phosphor of europium activated lithium indate provides a red-emitting luminescent material of high brightness and good chromaticity and stability under electron beam excitation. The concentration of europium is relatively low in comparison with other similarly activated phosphors.

3,631,285

**ELECTROLUMINESCENT DISPLAYS**

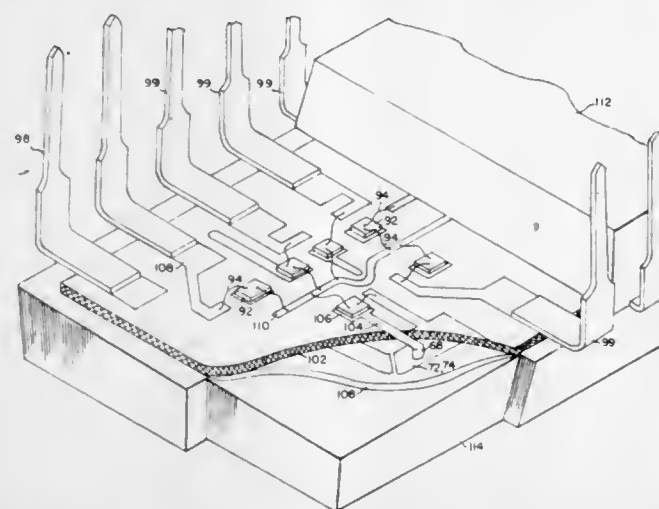
Risto J. Laihi, Amherst; Wayne F. Galusha, Reeds Ferry, and Alfred J. MacIntyre, Nashua, all of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Mar. 4, 1970, Ser. No. 16,498

Int. Cl. H01j 1/62

U.S. Cl. 313-108

12 Claims



An electroluminescent display device is provided in which the character electrodes, the common electrode, the dielectric and phosphor layers, the filter, the interconnecting leads and the semiconductor chips form an integral structure.

3,631,286

**ELECTROLUMINESCENT DISPLAY DEVICE WITH PERFORATED ELECTRODES**

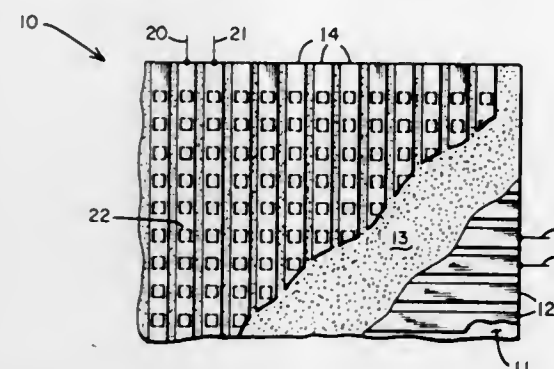
Donald E. Anderson, and Richard L. Swisher, both of Northfield, Minn., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Filed Feb. 16, 1970, Ser. No. 11,735

Int. Cl. H05b 33/02

U.S. Cl. 313-108 A

4 Claims



Electroluminescent device means comprising a base substrate member having a plurality of individual electrically

conductive drive lines arranged in integral rows upon the surface of said substrate, a film of an electroluminescent phosphor disposed on the surface of said rows of electrically conductive drive lines, a plurality of individual electrically conductive drive lines arranged in integral columns upon the surface of said phosphor and orthogonally overlying said rows at certain mutual junction areas; and means coupling a source of electrical energy to each of said electrically conductive drive lines in said rows and columns; said electrically conductive columns having isolated perforate openings formed therein at said junction areas, said openings having a large peripheral to area ratio and being disposed along said conductors in enclosed relationship therewithin.

3,631,287

**GAS DISCHARGE DISPLAY/MEMORY PANEL**

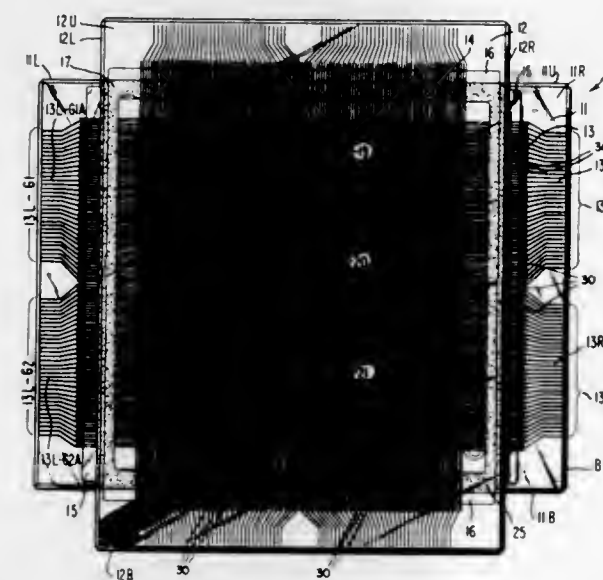
Harold J. Hoehn, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Sept. 9, 1969, Ser. No. 856,373

Int. Cl. H01j 61/30

U.S. Cl. 313-109.5

4 Claims



There is disclosed a gas discharge panel having a pair of elongated rectangular glass plates, each carrying on one surface a conductor array consisting of spaced parallel conductors running in the long direction of the plate and a dielectric coating on selected portions of the conductors of the array. The plates have long axes transverse to each other and are spacedly joined and sealed along an endless seal line defining a thin gas chamber in an active panel area, the seal being substantially along the edges of the long sides of the plates, the plates being of a length sufficient such that both lateral ends of the plates project beyond the active panel area and beyond the long side edges of the opposite plate member. Alternate conductors of each array are extended toward the edge of one side edge extension, respectively, the ends of alternate conductors of an array being terminated substantially short of the edge of the panel to permit slip-on or edge connectors to be applied to the conductors which do extend to the edge of the plates. Consult the specification for other features and details.

3,631,288

**SIMPLIFIED POLARIZED LIGHT PROJECTION ASSEMBLY**

Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 23, 1970, Ser. No. 5,194

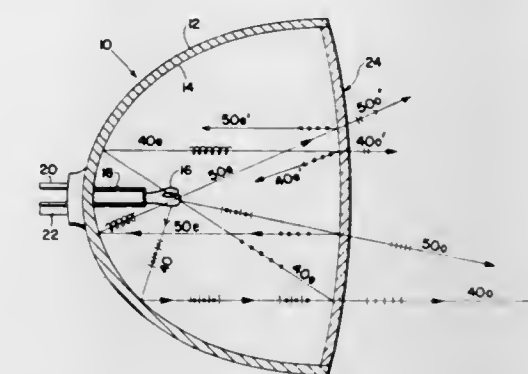
Int. Cl. H01j 5/16

U.S. Cl. 313-112

8 Claims

An improved assembly for projecting polarized light uses a concave reflecting polarizer which is confocal with a concave

metal reflector having a light source at its focus. Light possessing a preferred polarization azimuth is transmitted by the polarizer. Light possessing the orthogonal polarization azimuth is reflected back by the polarizer and circulates between the reflector and the polarizer. Its polarization is al-



tered slightly by reflection from the metal. A small fraction, related to the degree of alteration, is transmitted by the polarizer. After several traverses a significant portion of the orthogonal polarization component is altered and transmitted through the polarizer.

3,631,289

**X-RAY FILAMENT WITH BALANCED EMISSION**

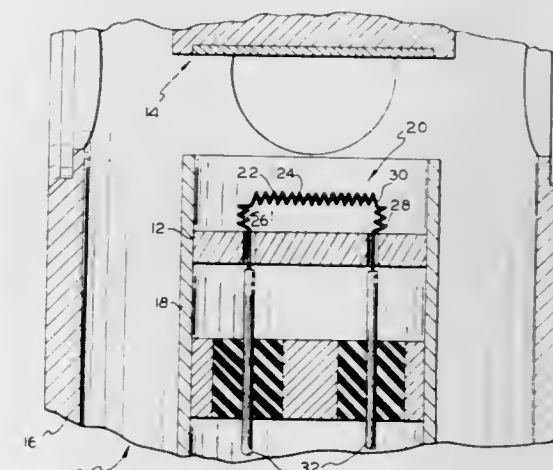
John T. Perry, Westchester, and Robert M. Cooney, Chicago, both of Ill., assignors to Picker Corporation, White Plains, N.Y.

Filed May 23, 1969, Ser. No. 827,203

Int. Cl. H01j 35/08

U.S. Cl. 313-330

4 Claims



An X-ray filament having a transversely extending portion with coils substantially along its entire length and a longitudinally extending portion attached to each of the ends of the transversely extending portion, the longitudinally extending portions each having a plurality but substantially lesser number of coils therein than does the transversely extending portion. A pair of electrical support leads substantially heavier than the wire from which the filament is made are connected to the ends of the longitudinally extending portions.

3,631,290

**THERMIONIC CATHODE FOR ELECTRON BEAM APPARATUS**

Karl H. Loeffler, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 17, 1970, Ser. No. 64,539

Int. Cl. H01j 1/15, 19/08, 1/14

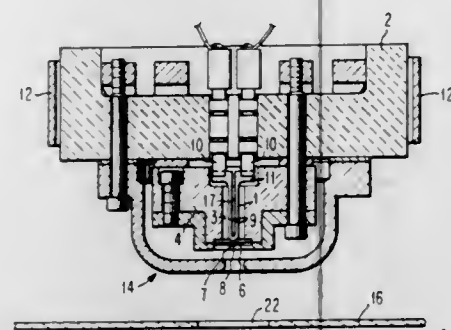
U.S. Cl. 313-341

18 Claims

A thermionic cathode comprising a lanthanum hexaboride (LaB<sub>6</sub>) emitter and an emission current-intercepting plate



made of rhenium containing an aperture disposed adjacent the emitter. The separation between the emitter and plate is set as small as possible without physical contact between them, typically 0.1 mm. The beam emitted through the aper-



ture has high brightness and low energy spread. To prevent corrosion of the emitter it is housed in a cavity which is exposed to the vacuum of the apparatus only through the aperture.

3,631,291

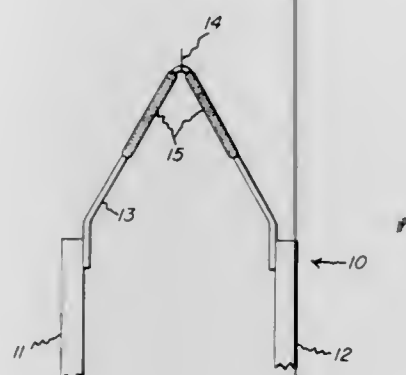
# FIELD EMISSION CATHODE WITH METALLIC BORIDE COATING

Louis J. Favreau, Elnora, N.Y., assignor to General Electric Company

Filed Apr. 30, 1969, Ser. No. 820,564  
Int. Cl. H01j 1/14, 19/06; H01k 1/04

U.S. Cl. 313-345

7 Claims



A field emission cathode comprises a hairpin rhenium filament coated with lanthanum boride and with a fine tungsten tip attached to the rhenium filament serves as an efficient source of electrons. The presence of free lanthanum atoms at the tungsten surface lowers the work function and enhances the field emission from the tungsten tip.

3,631,292

# IMAGE STORAGE TUBE

Merton H. Crowell, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

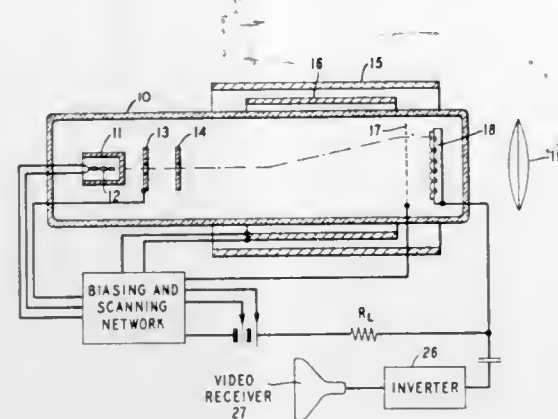
Filed Sept. 23, 1969, Ser. No. 860,271  
Int. Cl. H01j 31/26

U.S. Cl. 315-10

16 Claims

Bandwidth limitations in some video systems (e.g., those employing telephone transmission lines) prohibit the trans-

mission of high-resolution video with the normal frame interval. One proposal for overcoming this is to extend the frame period. Although moving subjects cannot be televised in this way the proposal is quite adequate for transmitting documents. The convenient way to implement this proposal is to



use a slow scan rate in the camera. However, conventional cameras are not made with sufficient storage duration to allow slow scan rates. The specification describes a video camera with a novel mode of operation to give extended storage capability.

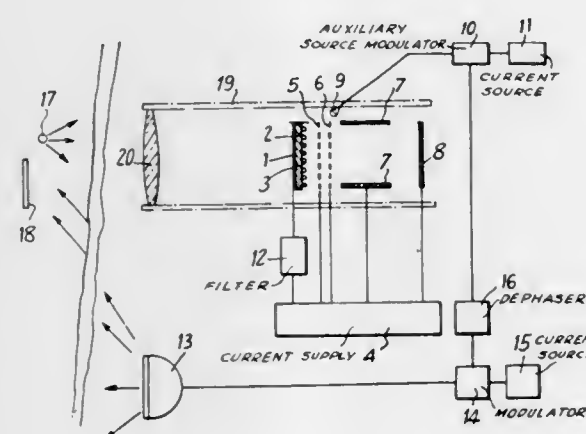
3,631,293

# ELECTRONIC IMAGE TRANSFORMER APPARATUS

Bernard Laurent, 5, rue Jules Ferry, Clamart (Hauts-de-Seine), France  
Filed Mar. 4, 1966, Ser. No. 534,962  
Claims priority, application France, Mar. 5, 1965, 8016  
Int. Cl. H01j 31/48

U.S. Cl. 315-11

6 Claims



An image-transforming apparatus operating by means of electron radiations includes a first modulator of the electron radiation, a projector for lighting the field of the apparatus, a second modulator for the light of the projector, and an electric filter which prevents the passage of the electron current at the frequency of the first modulator.

3,631,294

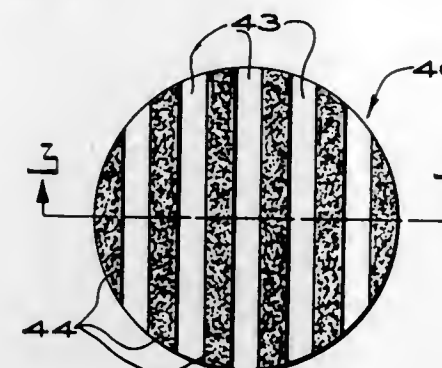
# ELECTRONIC STORAGE TUBE UTILIZING A TARGET COMPRISING BOTH SILICON AND SILICON DIOXIDE AREAS

Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronic Products, Inc., Princeton, N.J.

Filed July 10, 1969, Ser. No. 840,698  
Int. Cl. H01j 29/70

U.S. Cl. 315-12

23 Claims



An electronic storage tube having a target whose conducting areas are silicon and whose insulating areas are silicon dioxide. One configuration of the target is a pattern of alternating strips of conducting areas and insulating areas.

3,631,295

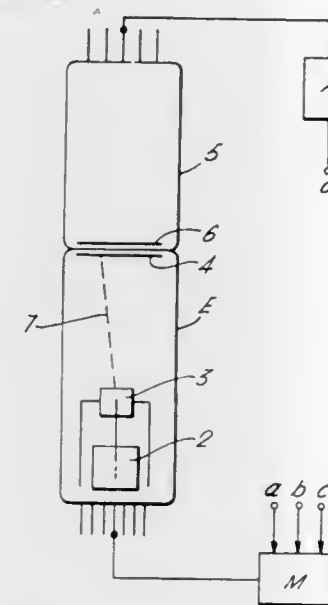
# METHOD AND APPARATUS FOR STORING INFORMATION

Derek Pooley, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed June 16, 1969, Ser. No. 833,550  
Claims priority, application Great Britain, June 21, 1968,  
June 5, 1969, 29,845/68, 28605/69  
Int. Cl. H01j 29/50

U.S. Cl. 315-13 ST

21 Claims



Information is stored, erased and read in an electron-luminescent phosphor by electron beams of respectively medium, high and low intensity. The medium intensity beam produces radiation damage in the phosphor which quenches its subsequent luminescence when irradiated with the reading low-intensity beam. The high-intensity beam heats the crystal and anneals out damaged areas thus restoring full (or nearly full) luminescence under the reading beam. In application to a storage tube the whole of the phosphor surface can be made to luminesce (with bright and quenched regions according to the information "written" in) by flooding the whole surface with ultraviolet light.

3,631,296

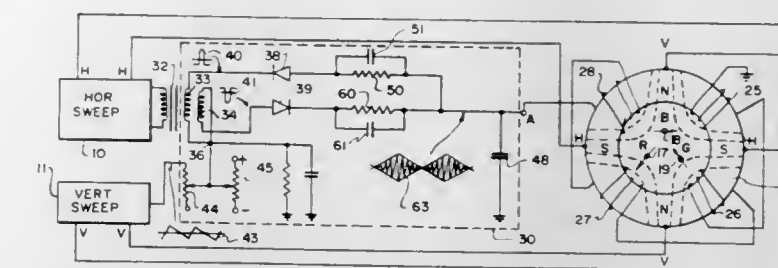
# TELEVISION DEFLECTION SYSTEM

Homah C. Collie, Jr., Long Grove, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 10, 1969, Ser. No. 883,765  
Int. Cl. H01j 29/50

U.S. Cl. 315-13

9 Claims



A deflection system for use with a color television multibeam cathode-ray tube utilizes a toroid deflection yoke with the distribution of the vertical and horizontal deflection windings being such as to provide a uniform deflection field within the toroid. An additional set of four series-connected, oppositely wound, correction windings are wound on different quadrants of the toroid yoke, and a correction current is applied to the correction windings in the form of a current corresponding to the horizontal deflection signal modulated by the vertical deflection signal for correcting misconvergence of the beams.

# ERRATA

For Classes 315-27, 315-34, 315-83, 315-94,  
315-166, 315-209 and 315-241 see:  
Patent Nos. 3,631,314 thru 3,631,319 and 3,631,531

3,631,297

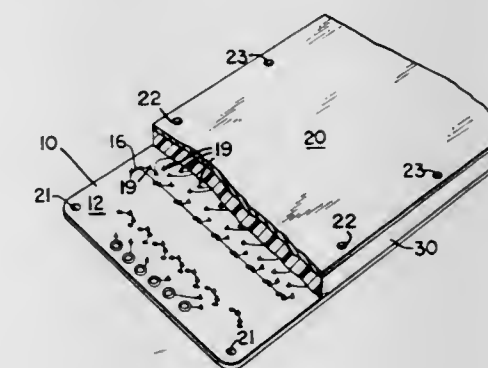
# ANTIVIBRATION MOUNTING FOR CIRCUIT BOARDS

Arthur P. Conner, Dublin, Calif., assignor to Dynallectron Corporation, Washington, D.C.

Filed Feb. 12, 1969, Ser. No. 798,670  
Int. Cl. H05k 1/04

U.S. Cl. 317-101

7 Claims



A mounting for a large printed circuit board having a widespread number of short projections extending out from a surface to be supported. A slice of easily impressionable rigid foam plastic is sandwiched between the printed circuit board and a base of rigid metal. The projections are impressed into the plastic foam to provide retaining cavities, and a series of screws extend through said board at a margin closely adjacent its edge, extending through the foam and into the base.



3,631,298

## WOVEN INTERCONNECTION STRUCTURE

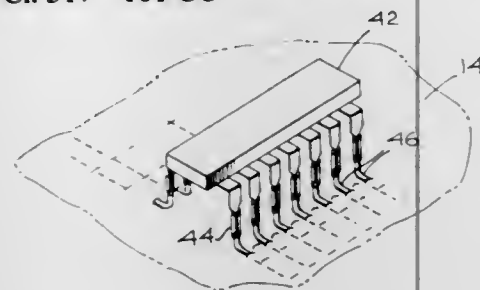
John S. Davis, Glendale, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 24, 1969, Ser. No. 869,029

Int. Cl. H05k 1/18

U.S. Cl. 317-101 CC

11 Claims



A structure for providing circuit interconnections by means of a woven fabric. Special elements and techniques are employed to establish the individual wire-to-terminal or wire-to-wire connections within the structure and also those required for the attachment to external circuit modules. These external circuit modules have perpendicularly depending output terminals and are connected to the woven structure by providing corresponding float wire patterns for each module, the float wires being cut and bent to form aligned mating terminals for receiving the module terminals. In a particular embodiment connection to the external components is accomplished by providing the float wires as hollow tubular members within which the module terminals are respectively inserted.

## ERRATUM

For Class 317-80 see:  
Patent No. 3,631,532

3,631,299

## PRINTED CIRCUIT BOARD MODULE AND SUPPORT WITH CIRCUIT BOARD SUPPORTING POSTS

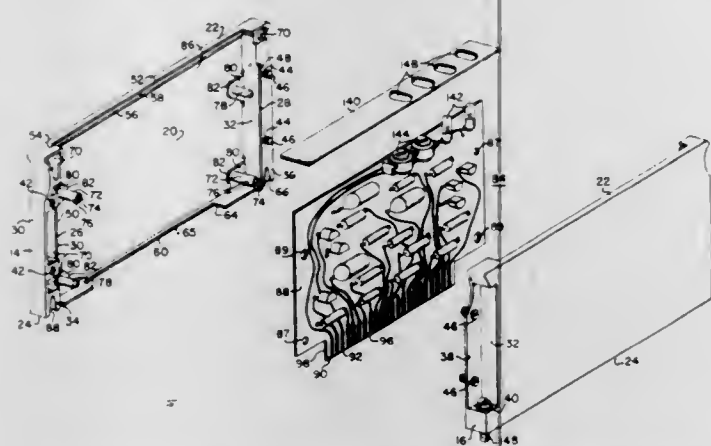
Charles F. Meyer, Wauwatosa; Clarence N. Groth, Mequon, and Kenneth L. Paape, Mequon, all of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed May 21, 1970, Ser. No. 39,485

Int. Cl. H05k 5/02; H02b 1/10

U.S. Cl. 317-120

12 Claims



A printed circuit board module including a housing which is formed by two substantially identical molded parts that are secured to each other to provide an enclosure for one or two printed circuit boards. The two molded parts each have female- and male-type posts extending through openings in the printed circuit boards. The posts are arranged so the male posts on the respective parts telescope into the female posts to position the printed circuit boards within the interior of a housing provided by the two parts. The housing positions one of the printed circuit boards so portions of the board may be plugged into a female receptacle and includes means for guiding the housing relative to the receptacle.

3,631,300

## CIRCUIT DISTRIBUTION BOARD WITH WIRE RECEIVING CHANNEL

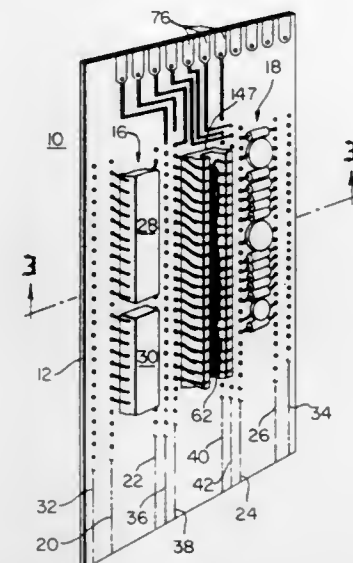
Jim V. Humble, Granada Hills, Calif., assignor to Donald Stewart

Filed July 29, 1970, Ser. No. 59,187

Int. Cl. H02b 1/20

U.S. Cl. 317-122

10 Claims



A circuit distribution board is disclosed which includes a support board made from an electrically insulating material and which has a first side and a second side. Mounting means are provided for mounting electrical components on the support board in component columns on the first side of the support board. The mounting means includes a plurality of mounting holes through the support board, with each of the mounting holes being adapted to receive the electrical leads of any electrical components to be mounted on the support board. A channel member is secured to the support board adjacent to the component columns. The channel member is adapted to receive and protect connecting wires for electrically connecting predetermined ones of the electrical leads of any electrical components to be mounted on the support board in order to connect the electrical components into any desired circuit configuration.

3,631,301

## ELECTRONIC ANTITHEFT SYSTEM

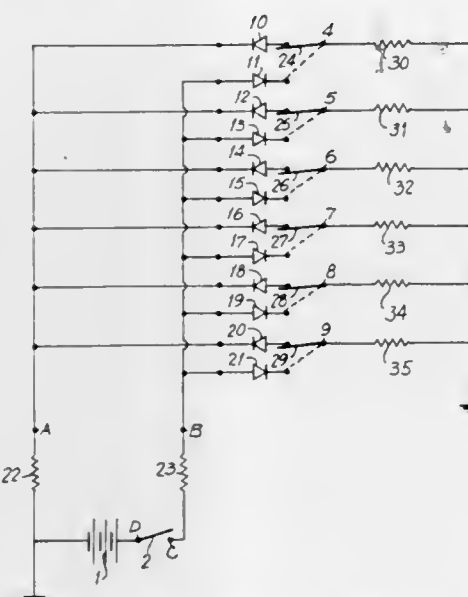
Gerald M. Goldman, 185 Bronx Road, Yonkers, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,801

Int. Cl. E05b 49/00

U.S. Cl. 317-134

1 Claim



An electronically controlled lock assembly for a chamber door adapted to afford access to the chamber only to those who carry a passkey having a predetermined profile. Mounted on the door is a keyway having a group of electric

switches therein which are selectively actuated by the inserted passkey in accordance with the profile thereof. The door is provided with a signal-operated locking mechanism which is activated to release the door lock only when an output signal is applied thereto. Disposed within the chamber is a logic circuit which is connected to the group of switches in the keyway to establish an electrical test pattern depending on which of the switches is activated and hence on the profile of the passkey. The logic circuit includes a switching panel operating in conjunction with an insertable coded reference key to produce a reference pattern depending on the key code, the logic circuit comparing the reference and test patterns to produce a control signal only when the patterns are coincident. The control signal is applied to an output circuit connected to the locking assembly to produce an output signal for releasing the lock.

3,631,302

## ELECTROLYTIC DEVICE EMPLOYING SEMICONDUCTOR OXIDE ELECTROLYTE

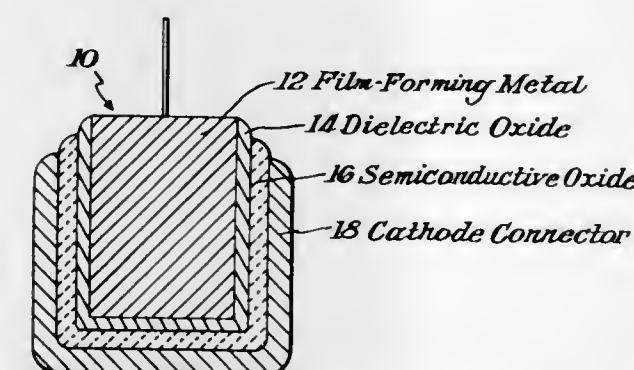
Preston Robinson, Bulkley St., Williamstown, Mass.

Filed Oct. 14, 1968, Ser. No. 767,516

Int. Cl. H01g 9/04

U.S. Cl. 317-230

3 Claims



A solid electrolyte condenser is produced by competing electrolytic reactions that produce a dielectric oxide film on an anode and an outer layer of semiconductive oxide or oxides on said film by passing current through said anode, and a suitable cathode in an aqueous electrolyte containing a film-forming anion; and an anion capable of being oxidized to a semiconductive layer on the surface of the dielectric film.

3,631,303

## III-V CATHODES HAVING A BUILT-IN GRADIENT OF POTENTIAL ENERGY FOR INCREASING THE EMISSION EFFICIENCY

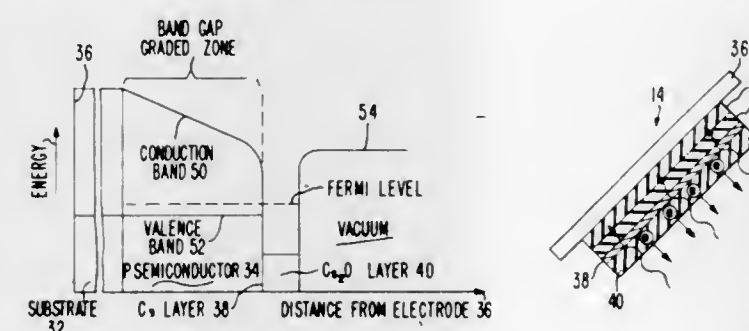
George A. Antypas, Mountain View, and Ronald L. Bell, Woodside, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Jan. 19, 1970, Ser. No. 3,948

Int. Cl. H01l 15/00

U.S. Cl. 317-234 R

8 Claims



A gradient of potential energy was established in the active layer of a III-V photocathode for enhancing free electron diffusion toward the emissive surface of the cathode. The energy gradient was provided by decreasing the bandgap energy across the active layer which caused the conduction level to slope downwards from the substrate to the emissive surface

through progressive changes in the concentration of the III-V elements forming the active layer. Alternatively, a nonuniform concentration of active layer dopant—heavy on the substrate side and light on the emissive side of the active layer—established a built-in electric field across the active layer. The graded bandgap and/or dopant levels promote free electron drift toward the outer surface of the active layer. Layers of cesium, cesium oxide, or both, were provided over the active layer to lower the work function of the photocathode emissive surface.

3,631,304

## SEMICONDUCTOR DEVICE, ELECTRICAL CONDUCTOR AND FABRICATION METHODS THEREFOR

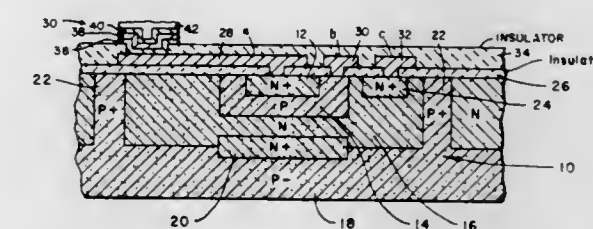
Harshad J. Bhatt, Poughkeepsie, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed May 26, 1970, Ser. No. 40,635

Int. Cl. H01l 3/00

U.S. Cl. 317-234 L

31 Claims



This disclosure is directed to an improved semiconductor device, electrical conductor, thin-film conductor, and fabrication methods therefor. An aluminum-aluminum oxide alloy conductor is disclosed which has a high resistance to electromigration and hence, a conductor lifetime greater by at least a factor of 10 than unalloyed aluminum conductors. Semiconductor device utilizing this aluminum alloy in the thin-film conductive stripes interconnecting different conductivity regions or devices located in the semiconductor substrate are significantly improved and more reliable.

3,631,305

## SEMICONDUCTOR DEVICE AND ELECTRICAL CONDUCTOR

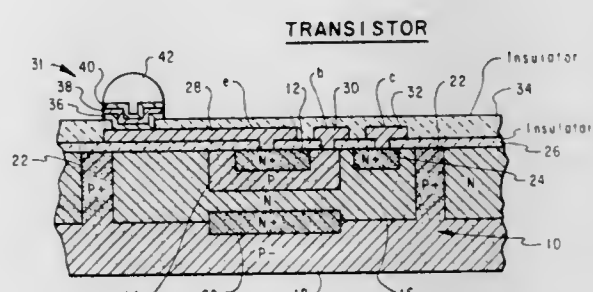
Harshad J. Bhatt, and James W. Tuttle, both of Wappingers Falls, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,036

Int. Cl. H01l 3/00

U.S. Cl. 317-234 L

18 Claims



This disclosure is directed to an improved semiconductor device, electrical conductor, thin-film conductor, alloy and fabrication methods therefor. An aluminum-oxide-copper alloy conductor is disclosed which has a high resistance to electromigration and hence, a conductor lifetime greater by at least a factor of 10 than unalloyed aluminum conductors. Semiconductor devices utilizing this aluminum alloy in the thin-film conductive stripes interconnecting different conductivity regions or devices located in the semiconductor substrate are significantly improved and more reliable.



3,631,306

# SCHOTTKY-EMISSION THIN-FILM VARISTOR DIODE FORMED OF $Al/Al_2O_3/MN/MN_2O_3/Pb$ AND A METHOD OF FABRICATING THE DIODE

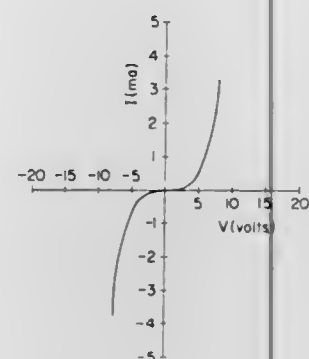
Robert D. Hitchcock, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 25, 1969, Ser. No. 810,267

Int. Cl. H011 9/00, 9/10

U.S. Cl. 317-234

7 Claims



The diode is formed in a bell-jar system using a vapor-deposition technique to deposit a sandwich of thin-films on a glass substrate, the films including aluminum, aluminum oxide, manganese, manganese oxide and lead. Thus a five-layer diode system  $M/I/M/I/M$  is provided in which the  $I/M/I$  is a barrier member formed of the oxides and the manganese and having a thickness about 200 Å. The electrodes are the aluminum and lead, i.e., the metals "M" which sandwich the barrier  $I/M/I$ . Critically, the manganese oxide film is formed by a two-step process in which the deposited manganese film first is permitted to oxidize slowly, preferably, in the residual air of a reduced atmosphere of about  $2-8 \times 10^{-5}$  torr. This oxidizing exposure, which may last for about 5 minutes, is followed by a relatively rapid oxidation of the manganese at atmosphere pressure.

3,631,307

# SEMICONDUCTOR STRUCTURES HAVING IMPROVED HIGH-FREQUENCY RESPONSE AND POWER DISSIPATION CAPABILITIES

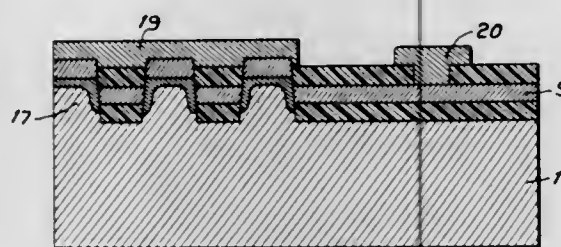
Walter E. Naugler, Jr., Redondo Beach, Calif., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 13, 1970, Ser. No. 11,243

Int. Cl. H011 1/106

U.S. Cl. 317-235 R

6 Claims



A semiconductor device which utilizes a nonplanar structure to provide for an increased power capability and an improved high-frequency performance. A multiplicity of emitter regions are isolated on plateaus wherein each plateau is surrounded by a moat. A base region forms a PN junction with each emitter region, which junction extends to the edge of the moat. The base region has a portion which extends toward the base of the moat within the periphery of the plateau. An insulated base electrode is placed within the moat so as to make contact with the base region beneath the surface of the device, while contact is made to the emitter region by a metal layer extending over a portion of the device

surface. This configuration provides for an increased emitter periphery for a given base area and thus improved high-frequency performance and power capability.

3,631,308

# MOS SEMICONDUCTOR DEVICE OPERABLE WITH A POSITIVE OR NEGATIVE VOLTAGE ON THE GATE ELECTRODE AND METHOD THEREFOR

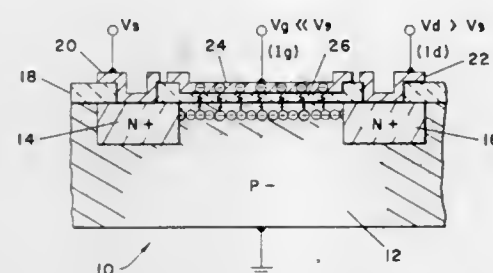
Walter F. Krolikowski, Hopewell Junction, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed June 19, 1970, Ser. No. 47,773

Int. Cl. H011 1/114

U.S. Cl. 317-235

8 Claims



This disclosure relates to a field-effect transistor-type (MOS) device which is operable with either a positive or negative voltage applied to the gate electrode. In one state of operation, a potential of one amount applied to the gate serves to turn on the field-effect device (forms a channel) to conduct current from the source region to the drain region of the device. In another state of operation, a potential of opposite polarity applied to the same gate electrode serves to turn on the device by means of the tunneling of electrons through the gate insulator into the channel or substrate area located between the source and drain regions. This electron tunneling effect occurs due to the thinness of the insulator layer located between the gate electrode and the semiconductor substrate surface. This latter state of operation provides very fast FET action.

3,631,309

# INTEGRATED CIRCUIT BIPOLAR MEMORY CELL

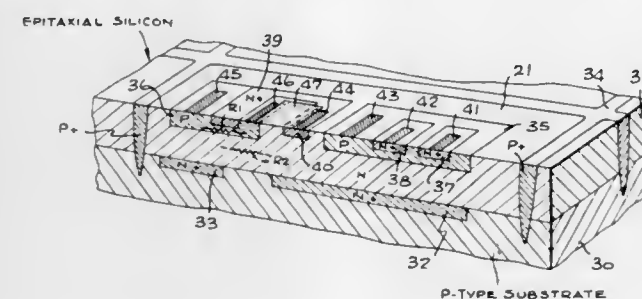
Charles Frank Myers, Scottsdale, Ariz., assignor to Semiconductor Electronic Memories, Inc., Phoenix, Ariz.

Filed July 23, 1970, Ser. No. 57,500

Int. Cl. H011 19/00

U.S. Cl. 317-235 R

10 Claims



An integrated circuit bipolar memory cell having two cross-coupled NPN transistors is provided in adjacent isolated regions of a silicon chip. Each region containing a transistor may include a diode and a large collector load resistor in parallel. A small resistor is provided in series with the diode, either in the same region or a separately isolated region. If in the same region, the small resistor may be included in the diode branch that is in parallel with the large resistor or in series between the cathode region of the diode and on N+ collector contact of the transistor. The base of the transistor and the anode of the diode are formed by diffusion of P-type impurities in an N-type film which serves as a col-

lector region. While two emitters are diffused into the base region of the transistor, the same diffusant is used to form an N+ region across the anode region of the diode to form the large resistor as a thin channel for current conduction from the anode to the N+ region of the collector. The small resistor is formed in the bulk material of the silicon chip either between the cathode region of the diode and the collector region or in a separately isolated region.

3,631,310

# INSULATED GATE FIELD EFFECT TRANSISTORS

Mukunda Behari Das, Thornton Heath, England, assignor to U.S. Philips Corporation, New York, N.Y.

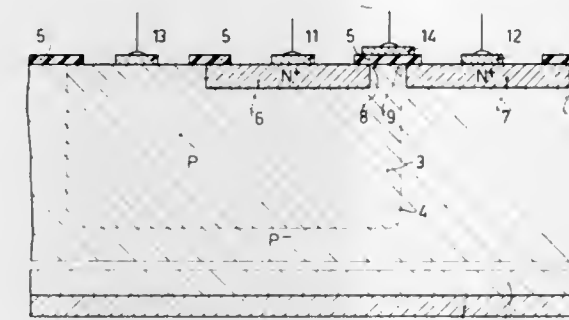
Filed Dec. 5, 1967, Ser. No. 688,227

Claims priority, application Great Britain, Dec. 13, 1966, 55,813/66

Int. Cl. H011 7/14, 11/00

U.S. Cl. 317-235 R

9 Claims



An insulated gate field effect transistor having in the channel region extending from the source to the drain, at least to the depth of the source, a laterally decreasing concentration of substrate-type impurities, with the result that the resistivity of the channel region decreases as the source is approached. An advantage is that the source and drain may be closely spaced while avoiding punchthrough at the usual drain source voltage.

3,631,311

# SEMICONDUCTOR CIRCUIT ARRANGEMENT WITH INTEGRATED BASE LEAKAGE RESISTANCE

Reiner Engbert, Talheim, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

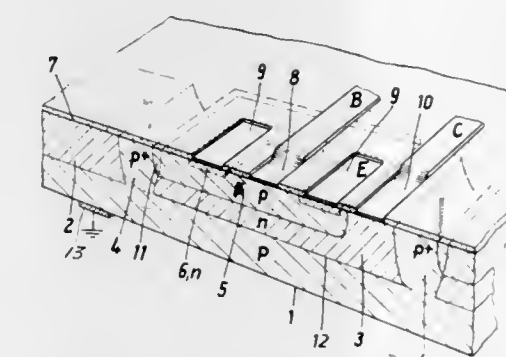
Filed Mar. 18, 1969, Ser. No. 808,153

Claims priority, application Germany, Mar. 26, 1968, P 17 64 048.1

Int. Cl. H011 1/24, 19/00

U.S. Cl. 317-235 R

6 Claims



The invention relates to an integrated circuit arrangement comprising a semiconductor body having regions of a first type of conductivity separated by zones of a second type of conductivity. One or more of the regions serves as the collector region of a transistor, the base region thereof being let into the collector region and the emitter region being let into

the base region. A separating zone overlaps a portion of the collector region at the semiconductor body surface and extends into the base region whereby a base leakage resistance for the transistor is provided by the bulk resistance between the contact to the separating zone and the base contact.

3,631,312

# HIGH-VOLTAGE MOS TRANSISTOR METHOD AND APPARATUS

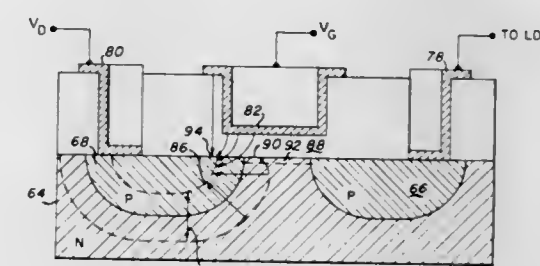
Kenneth J. Moyle, Altos Hills, and Lee P. Madden, Sunnyvale, both of Calif., assignors to National Semiconductor Corp., Santa Clara, Calif.

Filed May 15, 1969, Ser. No. 824,878

Int. Cl. H011 1/114

U.S. Cl. 317-235

6 Claims



An MIS FET device and method of making the same wherein a device of nominal topology is made capable of sustaining drain to source potentials substantially higher than the normal breakdown potentials of prior art devices. The present invention is constructed with linearly graded PN junctions and the diffusion profile, as related to the geometry of the gate, is such that the junction depletion layer will extend into the drain region to a point under the thick field oxide so that a critical electric field is not produced in the thin gate oxide causing rupture thereof.

3,631,313

# RESISTOR FOR INTEGRATED CIRCUIT

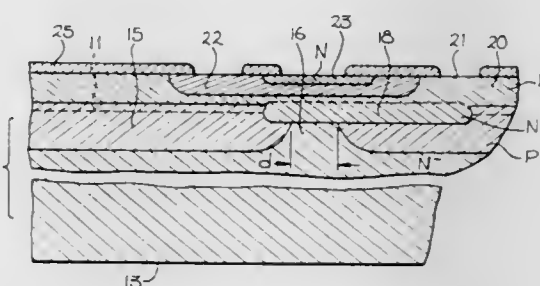
Gordon E. Moore, Los Altos Hills, Calif., assignor to Intel Corporation, Mountain View, Calif.

Filed Nov. 6, 1969, Ser. No. 874,529

Int. Cl. H011 19/00

U.S. Cl. 317-235

9 Claims



Electrical resistor of semiconductor material formed in the thickness dimension of a high-resistivity substrate underlying an epitaxial layer of the same conductivity-type. A region of the opposite conductivity-type in the substrate, contiguous with the epitaxial layer, extends laterally across all but a predetermined area of the substrate in conjunction with the resistivity of the substrate material determining the resistance value of the resistor. Semiconductor devices and other circuit elements may be formed in the epitaxial layer in accordance with known techniques, the resistor being in series with any desired ones of the additional elements.



3,631,314

**CIRCUIT ARRANGEMENT COMPRISING A HIGH-VOLTAGE TRANSISTOR**

Wilhelmus Theodorus Hendrikus Hetterscheid, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

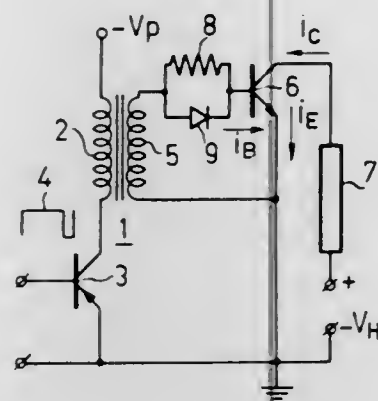
Filed June 14, 1968, Ser. No. 737,009

Claims priority, application Netherlands, June 17, 1967, 6708465

Int. Cl. H01j 29/76

U.S. Cl. 315—27 TD

12 Claims



A circuit for increasing the speed of collector current reduction of a high-voltage transistor, in which an impedance is connected in series with the base to restrict variation in reverse base current. The specification discloses embodiments in which the impedance is a parallel circuit of a resistor and diode connected in the pass direction of base-emitter current, and in which the impedance is a coil.

3,631,315

**BROADBAND TRAVELING WAVE DEVICE HAVING A LOGARITHMICALLY VARYING BIDIMENSIONAL INTERACTION SPACE**

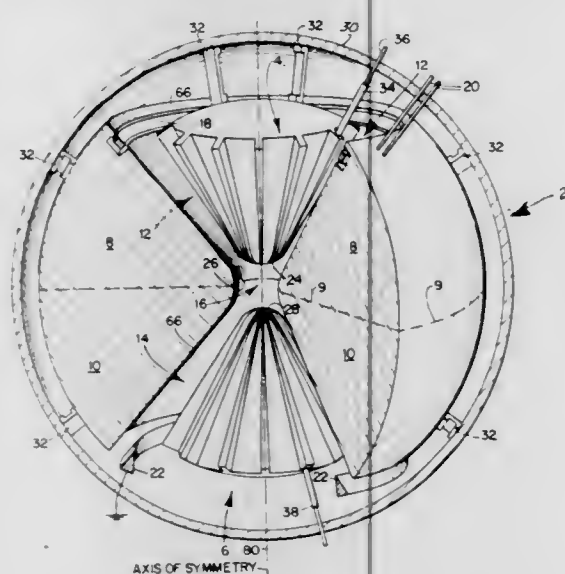
John M. Osepchuk, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 20, 1969, Ser. No. 867,752

Int. Cl. H01j 25/34

U.S. Cl. 315—39.3

15 Claims



An annular electron beam interacts with a slow wave structure having a periodicity in a specified circumferential direction and a substantially logarithmically continuously scaled or periodic characteristic in a radial direction. The electron stream is translated along a helical path bounded by conical members emanating from a common point of origin and the interaction of the electrons and circuit waves is generally in a transverse reentrant direction with suitable

spatial harmonics. Elements of both the "O" and "M" type electron stream interaction coexist with appropriate adjustments of the DC fields in the bidimensional interaction space. An extremely wide bandwidth of as high as a decade for microwave frequency amplifiers as well as oscillators in either the forward or backward wave modes is provided with the disclosed structure.

3,631,316

**SYSTEM FOR LIGHTING A PARKED VEHICLE**

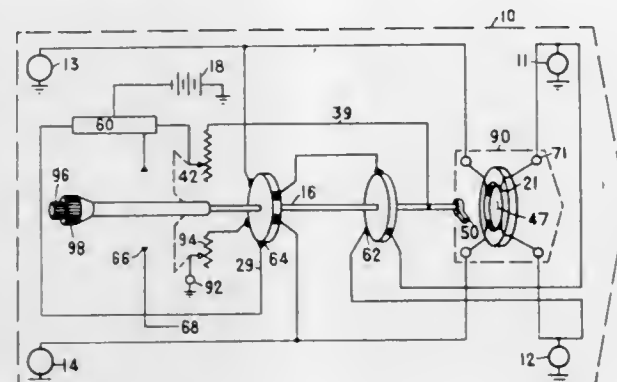
Hans A. Eckhardt, 55 Crescent Bend, Allendale, N.J.

Filed Mar. 4, 1969, Ser. No. 804,235

Int. Cl. B60q 1/48

U.S. Cl. 315—83

4 Claims



For lighting a vehicle during periods of parking, the vehicle has a first circuit from a battery through an adjustable resistance and a warning switch coupled to the vehicle's light control, alternately to the vehicle's tail side and parking lights. A second circuit leads from the battery through the light control separately to the tail side and parking lights. In a warning position of the light control, the first circuit becomes functional and the lights can be turned on and off alternately by turning the warning switch, the brightness being adjusted by turning the light control's outer ring which is coupled with the adjustable resistance. The warning switch closes the first circuit alternately to tail side or parking lights and simultaneously to individual control lights which are correspondingly positioned in a scaled-down symbol of the car.

3,631,317

**SYSTEM FOR LIGHTING A FLUORESCENT LAMP**

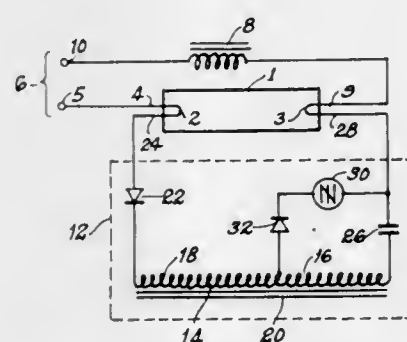
Masayoshi Miyajima, Kyoto, Japan, assignor to Kuroi Electric Industrial Company, Kyoto, Japan

Filed Jan. 16, 1970, Ser. No. 3,367

Int. Cl. H05b 39/00

U.S. Cl. 315—94

4 Claims



A system for instantaneously lighting a fluorescent lamp is disclosed which includes a capacitor, a pulse transformer having primary and secondary windings, and a diode and silicon symmetrical switch which are connected in parallel with said primary winding and said capacitor. The said primary winding, diode, capacitor and silicon symmetrical switch form an oscillatory circuit for applying a unidirectional pulse

series across the fluorescent lamp, thereby instantaneously lighting the lamp. The circuit is composed entirely of components of a small size, facilitating the production of miniature fluorescent lamp appliances.

3,631,318

**SOLID-STATE FLASHER**

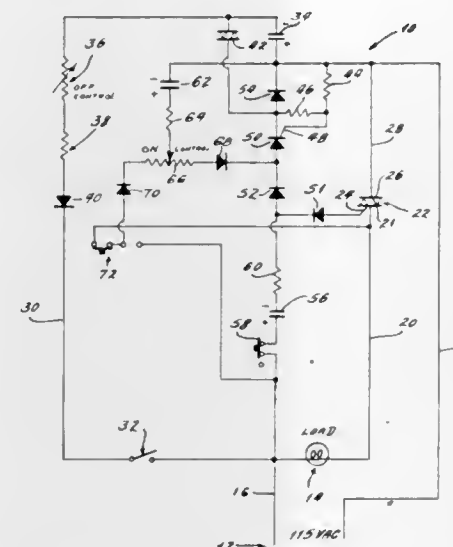
Bobby Gene Hubbard, Cairo, Ill., assignor to E.D.I. Inc. Cairo, Ill.

Filed Aug. 25, 1969, Ser. No. 852,801

Int. Cl. H05b 37/02

U.S. Cl. 315—209 R

18 Claims



A solid-state flasher circuit for controlling the flashing of electric signs, warning lights and other similar devices, said circuit having no movable parts or wear components. The subject circuit is a relatively versatile control which includes separate means adjustable to control the flasher on time, the flasher off time, the flashing frequency, whether the flasher is to be operated at full or half-wave power, it always initiates energizing of the flasher device under minimum power conditions, and it also includes means for operating as a time delay means.

3,631,319

**TRIGGERED SPARK GAP DEVICE**

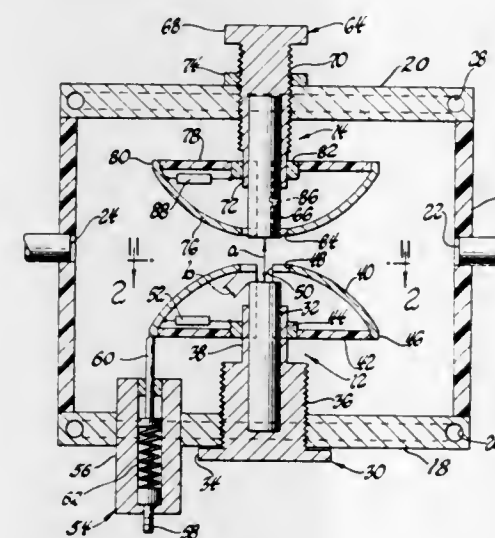
David R. Matthews, Ann Arbor, Mich., assignor to Laser Systems Corporation, Ann Arbor, Mich.

Filed Oct. 10, 1969, Ser. No. 865,420

Int. Cl. H05b 37/00; H01j 17/00

U.S. Cl. 315—241

18 Claims



A triggered spark gap device as disclosed which is adapted to switch exceedingly high values of voltage and current over

a large dynamic operating range. The device comprises first and second main electrodes defining a main gap and an auxiliary electrode defining a trigger gap with one of the main electrodes. The auxiliary electrode is electrically isolated from the main electrode as a separate discharge path and means are provided to limit the discharge current therethrough thereby minimizing deterioration of the auxiliary electrode under the influence of high-discharge current. Additionally, the auxiliary electrode is provided with means for preventing induced circulating currents to avoid excessive heating and deterioration thereof. In a preferred embodiment the dynamic range is extended by biasing the auxiliary electrode with reference to one of the main electrodes so that it may be positioned closer to the other main electrode to obtain reliable firing at low-main gap voltage. Additionally, the other main electrode may be provided with an auxiliary electrode for electric field forming to increase the upper limit of the dynamic range.

3,631,320

**SAFETY DEVICE FOR CONVENIENCE-OUTLET CONNECTIONS**

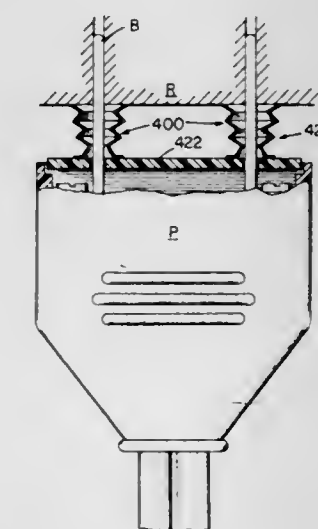
William F. Eckert, 3521 Belfont Drive, Ellicott City, Md.

Filed June 30, 1970, Ser. No. 51,035

Int. Cl. H01r 13/44

U.S. Cl. 317—9 R

6 Claims



A collapsing flexible sleeve for insulating the blades of plugs connected with electrical convenience outlets is disclosed. In one embodiment the sleeve is a tapered rubber bellows which nests to minimum thickness on collapsing; in another embodiment the sleeve is an elastic spiral of insulative material.

3,631,321

**STATIC GROUND FAULT CIRCUIT**

David L. Eisenstadt, Warrensville Heights, Ohio, assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Mar. 30, 1970, Ser. No. 23,632

Int. Cl. H02h 7/06

U.S. Cl. 317—13 R

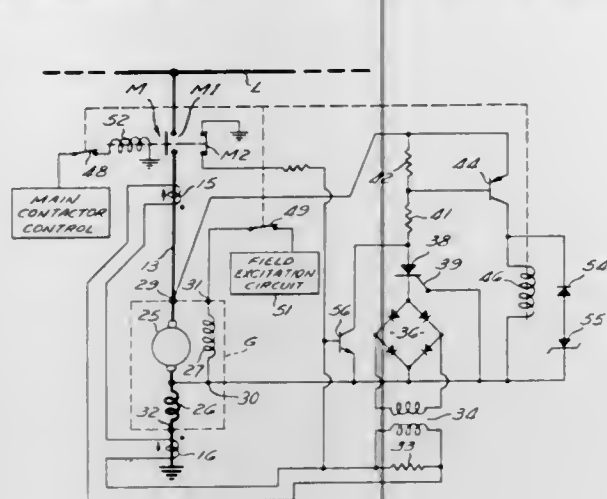
7 Claims

A circuit for protecting a DC power source such as a DC generator or a battery from a ground fault condition between two points in a current path connected to the source. One point may be a terminal of the source and the other a load bus to which the source is connected by a feeder conductor. Sensing means such as a current transformer at each of the points senses changes in current flowing and provides a signal proportional thereto. The two sensing means are connected with their outputs in series opposition and produce a signal indicative of an unbalanced current change. This signal is employed to cause the source to be disconnected from the load bus and/or from the feeder conductor. When the DC source is a generator, the unbalance signal is used to inter-



rupt the generator field excitation. During generator buildup, a ground fault is detected by an increased voltage drop across the interpole winding. This voltage drop is utilized to cause the generator to be disconnected from the load bus

creasing the magnitude of the current which can be discharged through the blocks and concurrently decreasing block damage attending "fulgurite channeling." An additional desideratum is a greater degree of protection from



and its field deenergized. When the power source is a battery, a capacitor charged thereby energizes the actuating circuit temporarily when the battery voltage is lowered excessively by a ground fault.

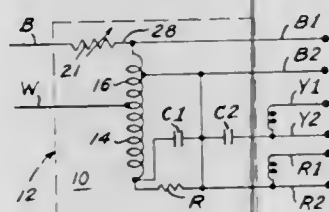
### 3,631,322 FLUORESCENT LAMP BALLAST PROTECTOR MEANS AND METHOD

Curtis F. Kruger, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 4, 1969, Ser. No. 882,237  
Int. Cl. H02h 7/04

U.S. Cl. 317-15

7 Claims



A fluorescent lamp ballast protector which senses and limits the amount of heat generated within a ballast, thereby keeping temperature in the ballast within a preselected temperature limit to avoid deleterious effects on insulation comprises a heat-responsive layer of material having negligible resistance at temperatures below a threshold and a resistance which increases by several orders of magnitude per degree at temperatures above the threshold. The layer is preferably placed in optimum heat-transfer relation with the windings and electrically connected in series relation between a power source and the ballast. The sensor/protector can be mounted on a separate heat-conductive member to enhance heat transfer.

### 3,631,323 SURGE-MODIFYING LIGHTNING ARRESTER CONSTRUCTION

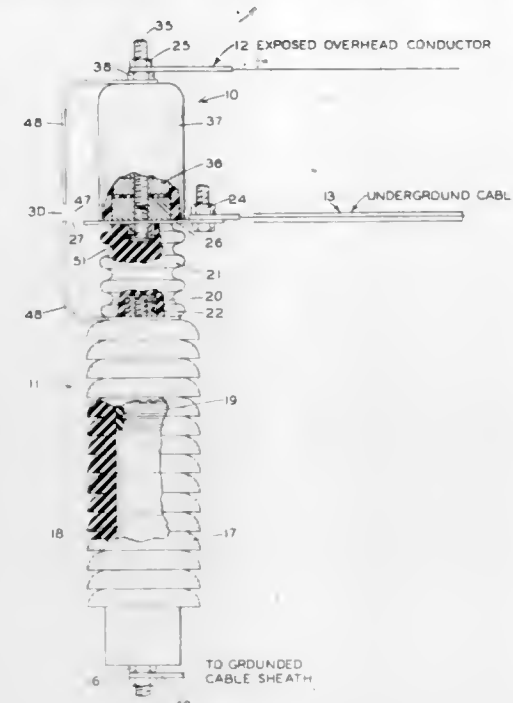
Ralph R. Pittman, 1015 Louisiana Street, Little Rock, Ark.  
Filed June 9, 1970, Ser. No. 44,681

Int. Cl. H02h 1/04, 3/22

U.S. Cl. 317-61.5

14 Claims

A valve-type lightning arrester construction includes a fast-responsive, magnetically saturable inductive member effective to facilitate uniform distribution of surge current discharging through the bound silicon-carbide blocks of the current-limiting valve material forming a part of the arrester, the improved current distribution throughout the blocks in-



damage by superimposed surges, such as are initiated by lightning strokes to an exposed overhead electrical conductor, to connected cables or apparatus at points of electrical discontinuity, e.g., at the junction of an overhead line conductor with an underground cable.

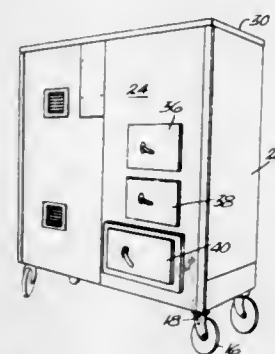
### 3,631,324 PORTABLE DISTRIBUTION PANEL

Richard D. Jones, 14851 Lewis Road, Miami Lakes, Fla.  
Filed Apr. 24, 1967, Ser. No. 633,062

Int. Cl. H05k 7/14

U.S. Cl. 317-99

6 Claims



A portable distribution panel having a main input side adapted to be connected to either of two different power sources, a regular line power source or a generator power source, and including a wheeled housing in which a circuit means are disposed for distribution of power to subfeed connectors, said circuit means including switching means for the subfeed lines and main input switching means.

### 3,631,325 CARD MODULE AND END WALL TREATMENT FACILITATING HEAT TRANSFER AND SLIDING

Charles F. Wenz, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

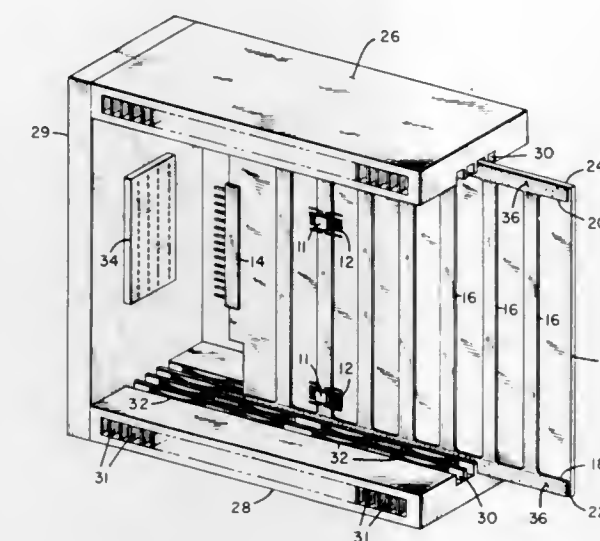
Filed June 15, 1970, Ser. No. 46,297  
Int. Cl. H05k 7/20, 1/02

U.S. Cl. 317-100

2 Claims

An electrical packaging arrangement is described wherein individual electrical components are mounted on printed wir-

ing boards with the body of the components in physical contact with heat sink strip members also located on the printed wiring boards. These heat sink strip members terminate at the edge of the board and the board is adapted to be inserted into slots provided in a frame member such that the frame member acts as a heat sink. The invention resides in provid-



ing a coating of a material having properties of high thermal conductivity and a low coefficient of friction between the heat sink strips on the edge of the board and the frame member. In practice, it is found that a coating of Teflon between the edge of the boards and the frame member provides excellent results.

### ERRATUM

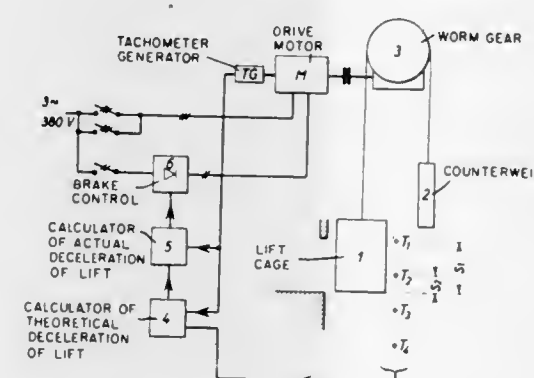
For Class 318-138 see:  
Patent No. 3,631,529

### 3,631,326 LIFT ARREST CONTROL

Vilkko Virkkala, Purjetuulenkujä 11., Helsinki 85, and Matti Kahkipuro, Espoo, both of Finland  
Filed Mar. 4, 1969, Ser. No. 804,070  
Claims priority, application Finland, Mar. 8, 1968, 630/68  
Int. Cl. H02p 5/22

U.S. Cl. 318-140

11 Claims



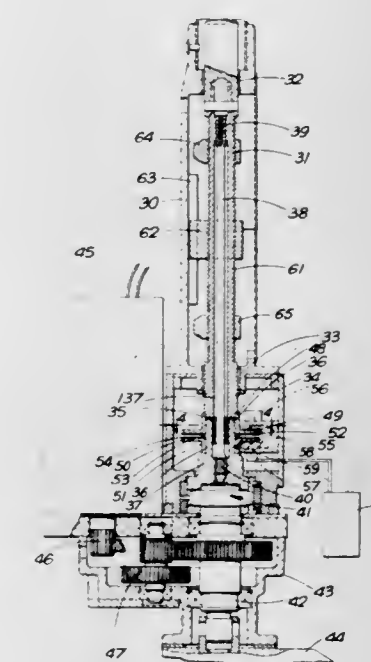
A method and device for controlling the speed of a lift when the lift is braked is characterized in that a reference or set-point value for controlling the device is dependent upon constant retardation used to stop the lift at a desired level, and that this set-point value is determined at checkpoints to be directly proportional to the square of the lift velocity and inversely proportional to the distance of the checkpoint from the desired stopping level.

### 3,631,327 DEVICES FOR SENSING RELATIVE ROTATIONAL DISPLACEMENT

Ivan Salisbury Payne, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, England  
Filed May 5, 1970, Ser. No. 34,701  
Claims priority, application Great Britain, May 5, 1969, 22,880/69  
Int. Cl. G05b 11/01

U.S. Cl. 318-628

10 Claims



A device for sensing relative rotation between two members comprises two discs mounted on the members respectively, one disc having two areas of light-polarizing material each disposed opposite a corresponding area of light-polarizing material on the other disc. A light source transmits light through each pair of opposing discs, and two light-sensitive devices are disposed to receive the light transmitted through the pairs of opposing discs respectively. The discs of light-polarizing material are orientated to polarize the light in such planes that when there is rotational displacement from a datum position there is a decrease in the amount of light falling on one device and an increase in the light falling on the other device, the variation depending on the angle of displacement.

### 3,631,328 ELECTRONIC CONTROL MARINE SEARCHLIGHT

Gaylord M. Borst, and Robert A. Booty, both of Galesburg, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 7, 1970, Ser. No. 1,082  
Int. Cl. G05b 1/06

U.S. Cl. 318-663

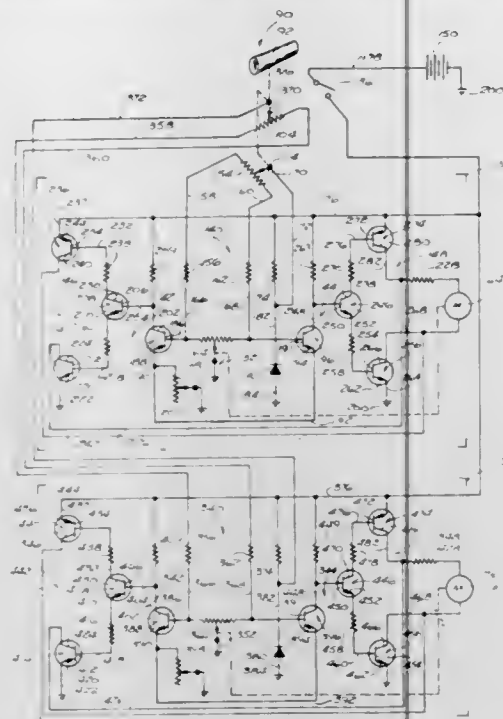
8 Claims

Disclosed herein is a searchlight which is supported for movement about horizontal and vertical axes and a control member for remote operation of the searchlight. The control member is supported for movement about first and second or horizontal and vertical axes corresponding to the axes of the searchlight and is connected to vertical and horizontal position sensing potentiometers which form part of an electrical circuit. The electrical circuit includes transistor preamplifiers



and transistor switches which control operation of horizontal and vertical position electric motors which are connected to

connected in series with a pair of diodes and an air-core coil. Interconnecting such branches are two commutating capacitors each having its opposite sides connected to the cor-



the searchlight and which move the searchlight to a position corresponding to the position of the control member.

3,631,329

## ISOLATION CIRCUIT FOR PROGRAM SIGNALS

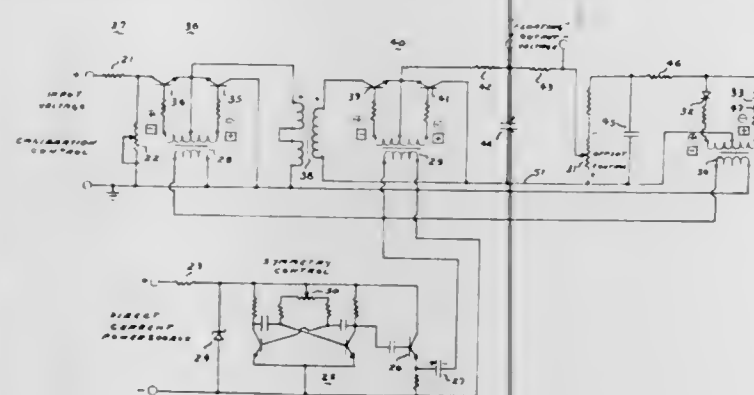
Robert L. Kimball, 725 Saddlewood Avenue, Dayton, Ohio

Filed Apr. 17, 1970, Ser. No. 29,598

Int. Cl. H02m 3/32; G01r 19/18; H03f 3/38

U.S. Cl. 321-2

5 Claims



Through a modulation-demodulation system having an off-set control to reestablish a zero reference, relatively slowly changing single-ended (grounded) electrical direct current input signals are converted to a "floating" potential that may readily be applied to bridge and other electrical devices that require a fully floating input signal. The direct current input potential is modulated (chopped) at a frequency many times removed (higher) than the effective frequency of the input signal. The modulation is then removed by a balanced demodulator using the same chopping frequency providing a floating output signal.

3,631,330

## PARALLEL INVERTER WITH DUAL CAPACITOR COMMUTATION AND INDUCTIVE OUTPUT MEANS

William L. King, Springfield, Oreg., assignor to Nathan E. Knecht, Springfield, Oreg.

Filed Aug. 10, 1970, Ser. No. 62,421

Int. Cl. H02m 7/48

U.S. Cl. 321-45 C

2 Claims

An inverter for converting DC to AC employing, in two parallel-disposed branches, silicon-controlled rectifiers each

responding sides of corresponding diodes in the branches. The two branches mentioned are connected across an iron-core output inductor.

3,631,331

## WAVEGUIDE FREQUENCY MULTIPLIER WHEREIN WAVEGUIDE CUTOFF FREQUENCY IS GREATER THAN INPUT FREQUENCY

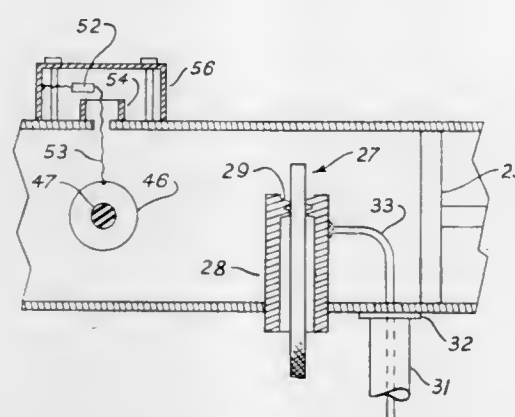
David O. Fairley, San Jose, and Stephen C. McIntyre, Redwood City, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 10, 1970, Ser. No. 62,305

Int. Cl. H03b 19/00; H02m 5/16

U.S. Cl. 321-69 W

11 Claims



A frequency multiplier for the microwave region utilizing electromagnetic waveguide characteristics for frequency isolation. An input cavity is provided within an output waveguide with a natural cutoff frequency of the waveguide providing high pass isolation of output from input and a varactor diode as a coupling probe to the input cavity and as a mode launcher to the output to thus eliminate the requirement for a transition between varactor circuit and waveguide output. High efficiency and broad bandwidth operation is obtained.

3,631,332

## INVERTER STARTING CIRCUIT

Dennis F. Williamson, Media, Pa., assignor to Canadian General Electric Limited, Toronto, Canada

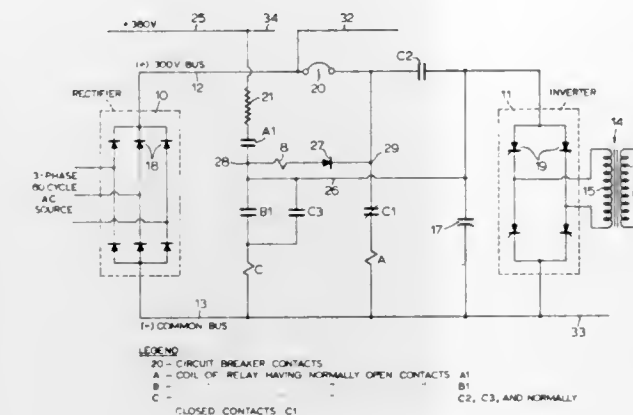
Filed Sept. 11, 1970, Ser. No. 71,579

Claims priority, application Canada, Apr. 14, 1970, 080,030

Int. Cl. H02m 5/40

U.S. Cl. 321-45 S

5 Claims



A frequency changer has a semiconductor rectifier for converting commercial frequency AC to DC, a thyristor inverter for converting the DC to adjustable frequency AC, and a capacitor bank connected across the input to the inverter for reactive inverter load control. According to the invention, the inverter is started by charging the capacitor through a resistor from an auxiliary DC source at a voltage significantly higher than the rectifier DC voltage. A relay responsive to a capacitor voltage slightly above the rectifier voltage connects the rectifier to the capacitor-inverter combination and disconnects the capacitor charging circuit. The switchover takes place at a capacitor voltage equal to or slightly in excess of the rectifier voltage.

3,631,333

## ELECTRICALLY CONTROLLED ATTENUATOR

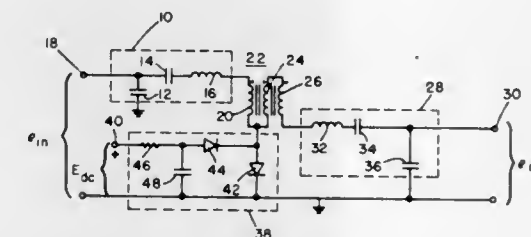
Henri T. Pichal, St. Petersburg, Fla., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed May 6, 1970, Ser. No. 34,939

Int. Cl. H01p 1/22; G05f 3/00

U.S. Cl. 323-66

23 Claims



In an electrically controlled attenuator input signals pass through two transformer windings of opposing phase the signals then pass to output terminals. A DC control voltage varies the current through a variable impedance diode in series with one of the windings. The currents through the windings ordinarily cancel because of their phase opposition. The variable impedance diode regulates the currents through one of the windings and therefore the degree of cancellation. This varies the attenuation.

3,631,334

## DEVICE FOR VOLTAGE STABILIZATION AT THE INPUT OF A POWER CONSUMER REMOTE FROM POWER SUPPLY SOURCE

Izrail Mordukhovich Pesis, and David Leonidovich Shvarts, both of Kharkov, U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro Po Elektrobureniu (SKBE), Moscow, U.S.S.R.

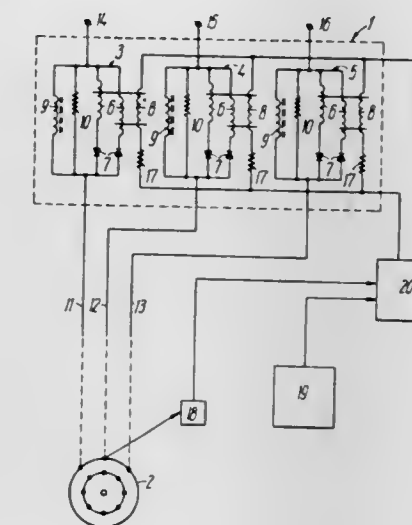
Filed July 22, 1969, Ser. No. 843,568

Claims priority, application U.S.S.R., July 19, 1968, 1254002

Int. Cl. H02p 13/12; H03f 9/00

U.S. Cl. 323-85

3 Claims



A voltage stabilization device at the input of a power consumer remote from a power supply source comprises a plurality of controllable magnetic power amplifiers including respective working power windings phase connected to respective current supply leads between the supply source and consumer; a plurality of shunting circuits with respective ones of the plurality of shunting circuits being parallel connected to a respective power winding of each magnetic amplifier, the impedance of each shunting circuit being a minimum at no-load consumer operation with maximum internal impedance working winding compensating for the voltage drop across the respective current supply lead and a maximum when the consumer operates under load with a minimum resistance of the respective working winding of the amplifier.

3,631,335

## METHOD AND APPARATUS FOR MEASURING MAGNETIC GAP LENGTH

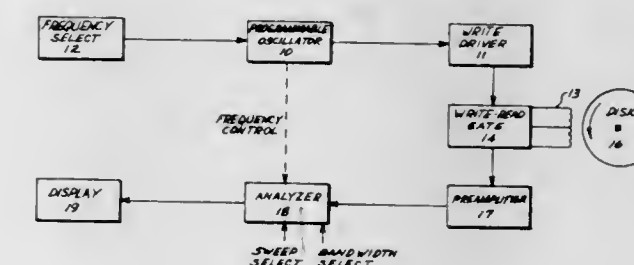
Allan E. Carr, Thousand Oaks, and Michael I. Behr, South Pasadena, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 25, 1970, Ser. No. 14,071

Int. Cl. G01r 35/00

U.S. Cl. 324-34 R

10 Claims



A technique is provided for measuring the magnetic gap length of a magnetic transducer, particularly useful when the gap length is only a few microns as is the case in modern transducers for high-density recording. According to this technique, a magnetic signal of known frequency is written



on a magnetic recording medium with a recorded wavelength being in the same order of magnitude as the magnetic gap length of the recording transducer. The same transducer is then employed for reading the recorded magnetic signals and the signal amplitude is measured over a very short frequency band so that the effect of most noise accompanying the signal is eliminated. These operations are repeated over a series of recorded wavelengths spanning the wavelength where the ratio of magnetic gap length to wavelength is about 0.88 at which point a signal minimum or null is observed. Knowing the frequency of the signal minimum permits a determination of the gap length.

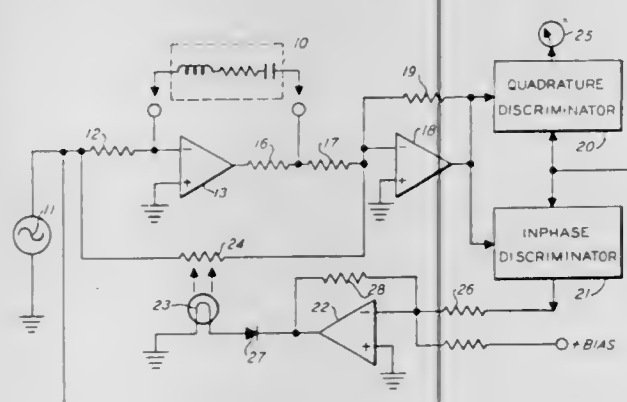
3,631,336

### CIRCUIT FOR DETERMINING DEVIATION FROM RESONANCE OF LC NETWORKS BY CANCELLING INPHASE COMPONENT AND SENSING QUADRATURE COMPONENT

William H. Marvin, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.  
Filed Dec. 22, 1969, Ser. No. 887,146  
Int. Cl. G01r 27/00

U.S. Cl. 324—57 R

6 Claims



A circuit for measuring the deviation of resonance of a series LC circuit includes an operational amplifier with the series LC circuit connected in a feedback path. The amplifier output is connected to both an inphase discriminator and a quadrature discriminator. The output of the inphase discriminator controls an inverted inphase circuit to cancel out a substantial portion of the inphase component of the amplifier output which is applied to the quadrature discriminator. A circuit for measuring the deviation from resonance of a parallel resonance LC circuit includes a transformer with one side of the secondary connected in series with the operational amplifier and the LC circuit and with the opposite side of the transformer connected by a radiant energy controlled resistor to the input of the amplifier. The radiant energy controlled resistor is controlled by a lamp operated by an inphase discriminator to cancel a substantial portion of the inphase component of the signal through the parallel resonant circuit.

3,631,337

### MOISTURE MEASURING AND TOTALIZING SYSTEM

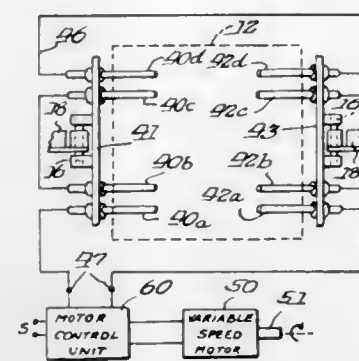
Paul M. MacKinney, 1012 East Geneva Road, Wheaton, Ill.  
Filed June 17, 1969, Ser. No. 834,036  
Int. Cl. G01r 27/02

U.S. Cl. 324—65 R

7 Claims

A system for measuring the moisture entrained in a batch of aggregate material discharged from a storage hopper and for compensating for said moisture in a batch-mixing apparatus. The system includes a plurality of electrical probes arranged to project into a free-falling stream of aggregate material in a plurality of vertical portions of said stream, as said stream is discharged from the storage hopper. Electrical circuit means connected to said probes create an electrical signal proportional to the conductivity and hence the

moisture content of each vertical portion of the aggregate stream. Signal accumulating means is also provided to accumulate and integrate said electrical signals during the time interval of aggregate material flow past said probes to provide



a resultant electrical signal which is proportional to the total entrained moisture in the aggregate batch. Data-recording means is also provided to provide indicia of said moisture content of said aggregate in response to said resultant signal.

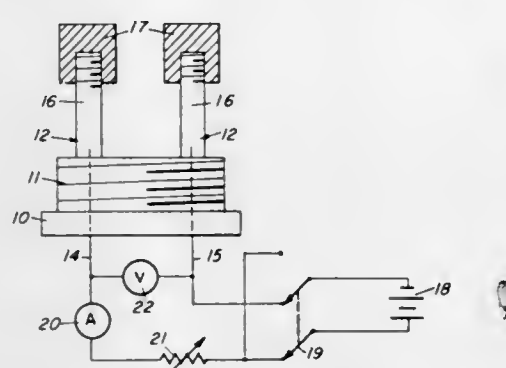
3,631,338

### METHOD AND APPARATUS FOR DETERMINING GALVANIC CORROSION BY POLARIZATION TECHNIQUES

Vincent F. Fitzpatrick, and Russell B. Richman, both of Richland, Wash., assignors to The United States of America as represented by the Secretary of the Interior  
Filed June 30, 1969, Ser. No. 837,799  
Int. Cl. G01n 27/00

U.S. Cl. 324—71 R

8 Claims



A specially modified, two-electrode polarization probe is used to detect the onset of and qualitatively measure nonuniform or pitting corrosion of the galvanic type. Each probe electrode consists of a galvanic couple formed from two dissimilar metals in physical and electrical contact; one of the metals acting as an anode portion and the other acting as a cathode portion. Anode to cathode area ratio and total exposed surface areas of the two electrodes are substantially equal.

3,631,339

### METHOD AND APPARATUS FOR HIGH-RESOLUTION SPECTRAL ANALYSIS

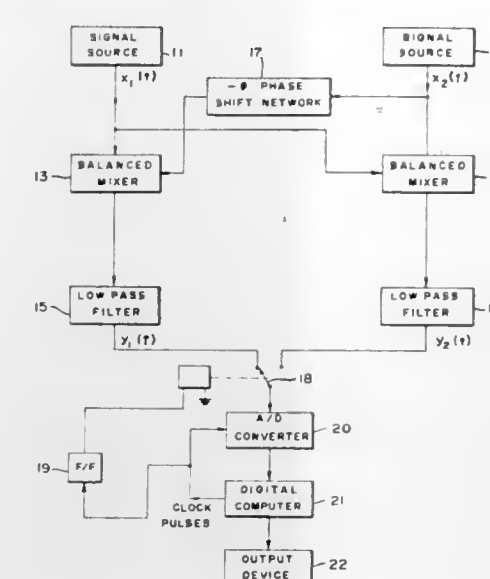
George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Willard F. Gillmore, Altadena, Calif.  
Filed Aug. 13, 1970, Ser. No. 63,383  
Int. Cl. G01n 23/16

U.S. Cl. 324—77 G

10 Claims

A method and apparatus for high-resolution power spectral analysis employing a digital computer is provided without stringent stability requirements on the sampling rate by using a pair of balanced mixers to combine one signal directly and in quadrature with a second signal, and alternately sampling the outputs of the mixers through an analog-to-digital con-

verter. The computer then carries out computations of a convolution spectrum from two autocorrelation and two cross-correlation functions which can be computed from the two sequences of samples with compensation for variations in



gain of the signal channels by normalizing correlation functions, and known deviation from  $-90^\circ$  in the quadrature mixing of signals by using  $\phi$  in place of  $-90^\circ$  in the analysis and dividing the sum of the cross-correlation functions by  $-\sin \phi$ .

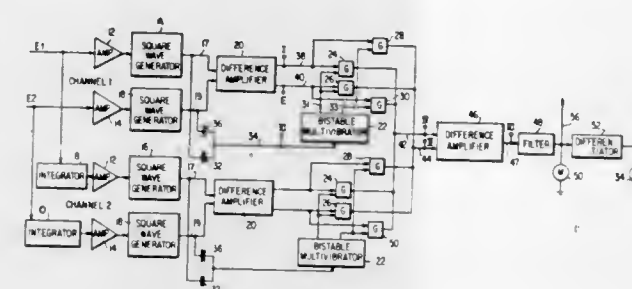
3,631,340

### PHASE ANGLE ANALYZER

Joseph G. Miller, 22121 River Oaks Drive, Cleveland, Ohio  
Filed Apr. 21, 1970, Ser. No. 30,392  
Int. Cl. G01r 25/00; H03d 13/00

U.S. Cl. 324—83 A

10 Claims



A phase angle analyzer for producing a first output signal having a magnitude proportional to the difference in phase between first and second input signals, and having a polarity depending upon whether the first or second input signal is leading. The input signals are applied to a first channel, and integrated and applied to a second channel. In each channel, the resulting signals are converted to square waves and fed to the inputs of a first differential amplifier. The square waves are also differentiated to produce pulses for controlling a bistable multivibrator. The multivibrator and differential amplifier control a plurality of gates acting as a double-pole, double-throw switch. The gated outputs from the two channels are logically combined and applied to a further differential amplifier. This amplifier produces at its output a series of pulses, each pulse being proportional in duration to the magnitude of the phase difference between the two input signals. The pulses are positive if the first signal leads the second signal, and are negative if the first signal lags the second signal. The pulses from the further differential amplifier are passed through a filter and applied to a meter to provide a direct reading of the phase relationship between the input signals. The output of the filter is differentiated and applied to a second meter to provide an indication of the rate at which the phase difference between the input signals is changing.

3,631,341

### BIMETAL THERMAL GAUGE HAVING ZERO AND FULL SCALE CALIBRATION MEANS

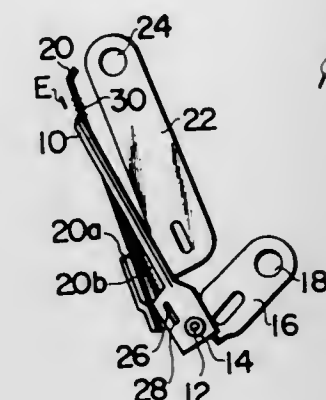
Keiichi Kazuno, Ohmiya, Japan, assignor to Nissan Motor Company, Limited, Yokohama and Kanto Seiki Company, Limited, Ohmiya, Japan

Filed Sept. 21, 1970, Ser. No. 73,997

Claims priority, application Japan, June 19, 1970, 45/53291  
Int. Cl. G01r 5/26, 1/38

U.S. Cl. 324—106

6 Claims



A bimetal thermal gauge having a U-shaped bimetal strip which is deformed when heated and a pointer which is rotatable about a stationary shaft and which is positioned relative to a graduated scale, the pointer being calibrated for alignment with respect to upper and lower limit lines of the scale by moving the bimetal strip in two directions. The alignments with respect to the lower and upper limits can be achieved independently from each other.

3,631,342

### DIGITAL VOLTMETER APPARATUS EMPLOYING A BIPOLAR AMPLIFIER HAVING A UNIDIRECTIONAL OUTPUT AND A VOLTAGE CONTROLLED OSCILLATOR

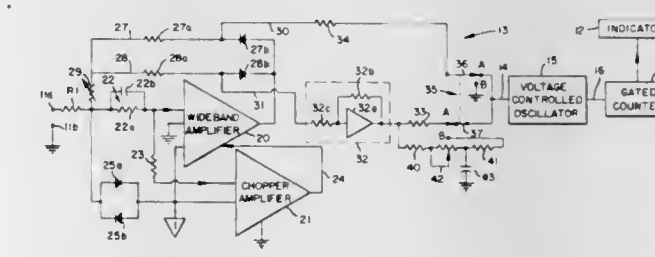
John C. McDonald, Los Altos, Calif., assignor to Vidar Corporation, Mountain View, Calif.

Continuation of application Ser. No. 529,460, Feb. 23, 1966, now abandoned. This application Jan. 26, 1970, Ser. No. 6,043

Int. Cl. G01r 19/26; H03k 5/00

U.S. Cl. 324—120

4 Claims



A voltage to frequency converter serving, for example, as a digital voltmeter which includes a bipolar amplifier responsive to both positive and negative DC inputs and also AC inputs. Coupled to the amplifier is a voltage-controlled oscillator which in combination with a counter provides an indication of the input voltage magnitude. The oscillator is responsive to a single polarity input voltage produced by the bipolar amplifier. To promote the DC stability of the amplifier a chopper amplifier converts all DC to AC which after reconversion to higher level DC is then coupled into the wide-band bipolar amplifier.



3,631,343

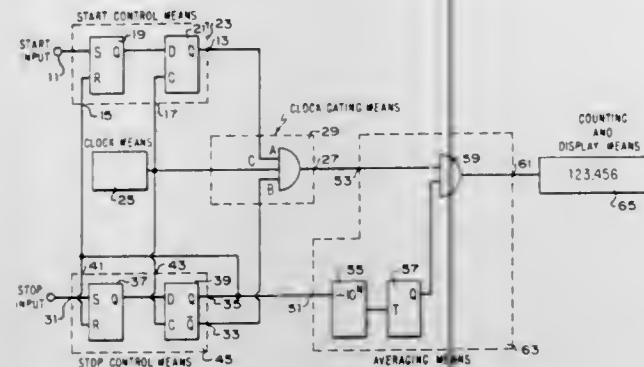
## TIME INTERVAL AVERAGING CIRCUIT

Rolf Schmidhauser, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.  
Filed Aug. 27, 1970, Ser. No. 67,417  
Int. Cl. G04f 9/00, 1/106

U.S. Cl. 324-186

3 Claims

U.S. Cl. 325-364



A circuit to measure the average time interval that occurs between recurring electrical signals. Independent input channels control the passage of periodic clock pulses through a gate such that only complete clock pulses are passed through the gate. The number of clock pulses that occur during  $10^N$  time intervals (where N is an integer) is totaled and displayed.

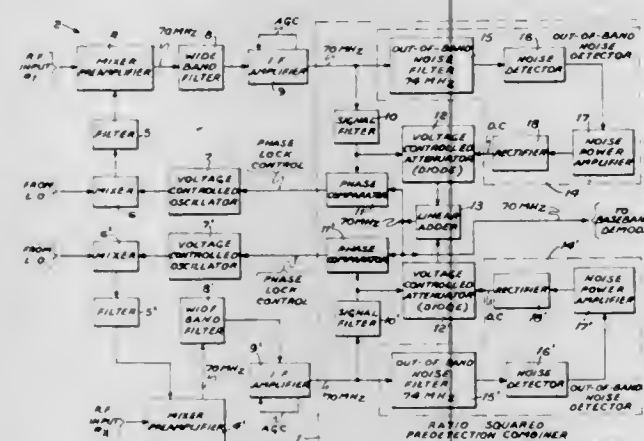
3,631,344

## RATIO SQUARED PREDETECTION COMBINING DIVERSITY RECEIVING SYSTEM

Charles Greenwald, Livingston, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.  
Filed Dec. 12, 1969, Ser. No. 884,528  
Int. Cl. H04b 7/08

U.S. Cl. 325-305

10 Claims



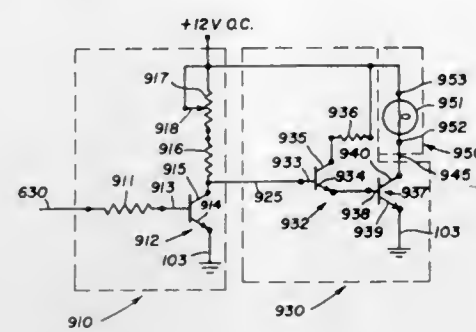
A pair of RF diversity signals are heterodyned to two IF signals each having the same center frequency with a given information bandwidth. The two IF signals are routed through separate signal channels. Each channel includes in tandem a first filter having said center frequency and a bandwidth greater than said given bandwidth, a second filter having said center frequency and said given bandwidth, and a continuously variable, voltage controlled attenuator. After said attenuator the IF signals are linearly added to provide a common IF signal for demodulation. The common IF signal is used as a reference signal for a phase comparator in each channel. Each phase comparator compares the phase of its associated IF signal at the output of said second filter to the reference signal and adjusts its associated IF signal for inphase combining thereof. Each channel further includes an out-of-band noise detector coupled to said first filter to produce a control voltage for coupling to the associated one of said attenuators to continuously control the amplitude of the associated one of the IF signals prior to the linear addition thereby achieving the desired ratio squared combining of the IF signals.

3,631,345

## MONITOR CIRCUIT

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr.  
Original application Mar. 9, 1964, Ser. No. 350,163. Divided and this application Oct. 7, 1969, Ser. No. 871,101  
Int. Cl. H04b 1/106

4 Claims



The present invention is directed to a monitor circuit for use in a communication receiver including an input circuit and a detecting circuit having applied thereto a carrier signal carrying intelligence from a transmitter, the monitor circuit comprising a monitor input circuit having the input thereof coupled to the detecting circuit and an output, the monitor input circuit being responsive to the application of the carrier signal to the receiver for providing a control signal on the output thereof, a monitor switch connected to the output of the monitor input circuit and having a first inoperative condition and a second operative condition, and a monitor indicator coupled to the monitor switch, the monitor switch being responsive to the application thereto of the control signal for actuating the monitor switch from the first inoperative position thereof to the second operative position thereof to operate the monitor indicator.

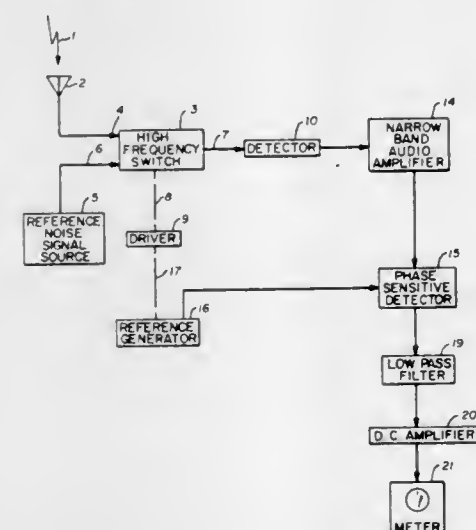
3,631,346

## LOW SELF-NOISE RADIOMETER SYSTEM

Robert F. Riggs, Charlottesville, Va., assignor to Sperry Rand Corporation  
Filed Feb. 2, 1970, Ser. No. 7,483  
Int. Cl. G01t 1; G01r 27/04

U.S. Cl. 325-363

7 Claims



An improved microwave radiometer of the comparison type features elimination of broadband amplification through the employment of a modified high-frequency switch operating on the signal to be investigated in cooperation with a broadband low self-noise detector. The switch cyclically exposes the signal to be investigated and a reference signal to the detector at a rate of switching such that a strong component of the detected signal falls within the passband of a narrow band comparison and indicator system.

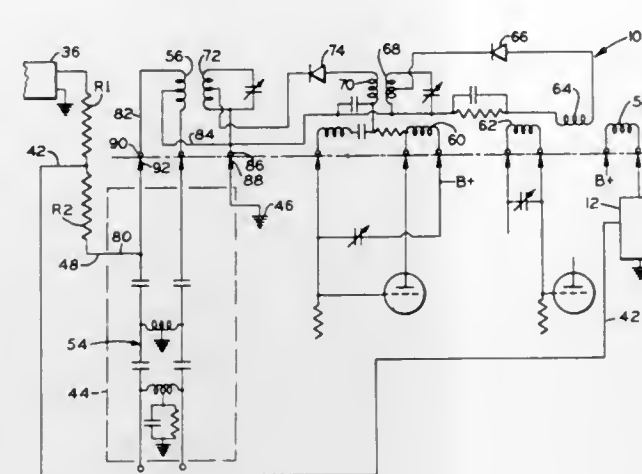
3,631,347

## METHOD AND APPARATUS FOR FINE TUNING FOR A TELEVISION SET HAVING BOTH VHF AND UHF RANGES

Jack R. Chipman, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.  
Filed Dec. 4, 1968, Ser. No. 780,992  
Int. Cl. H04b 1/116

U.S. Cl. 325-418

5 Claims



The invention relates to an automatic fine tuning system, especially for televisions, having both VHF and UHF ranges in which a frequency discriminator has its input connected to an intermediate frequency stage of the television and supplies a voltage signal to adjust the frequency of the local oscillator in the set in a direction to maintain the intermediate frequency substantially constant, and wherein the full voltage of the discriminator output is employed during VHF operation and a predetermined fractional part of the said voltage is employed during UHF operation.

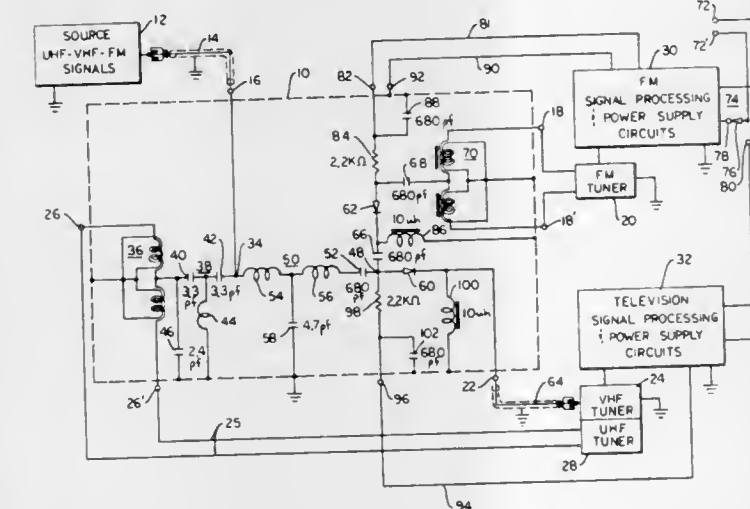
3,631,348

## SIGNAL DISTRIBUTION SYSTEM

William L. Lehmann, Indianapolis, Ind., assignor to RCA Corporation  
Filed Feb. 19, 1969, Ser. No. 800,607  
Int. Cl. H04b 1/106

U.S. Cl. 325-458

4 Claims



A signal distribution system includes a filter which separates UHF television signals from VHF television and FM radio signals. A TV receiver (VHF tuner) and an FM receiver are each coupled to the filter by a diode. Energization of a desired receiver causes an appropriate diode to be forward biased and electrically connect the filter to the desired receiver.

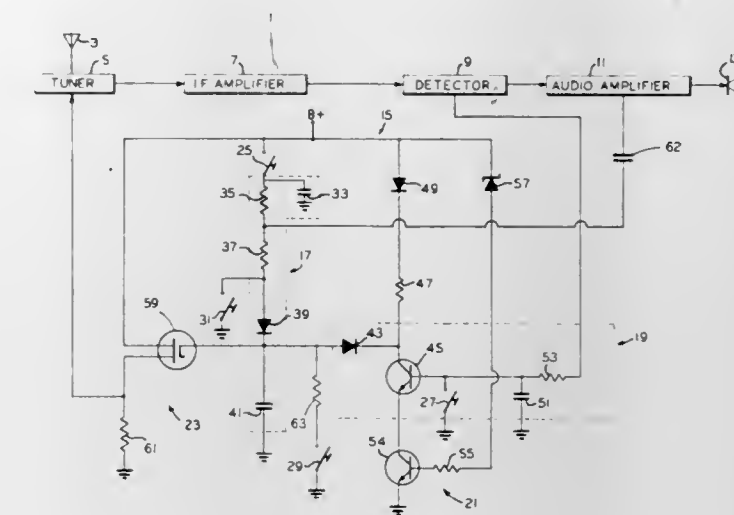
3,631,349

## AUTOMATIC SIGNAL-SEEKING CIRCUITRY

Dong Woo Rhee, Williamsville, N.Y., assignor to Sylvania Electric Products Inc.  
Filed Mar. 9, 1970, Ser. No. 17,442  
Int. Cl. H04b 1/32

U.S. Cl. 325-470

16 Claims



An FM receiver having a source of detected signals and a voltage-responsive tuner includes signal-seeking apparatus having a charging circuit coupled to the source of detected signals, connectable to a potential source by a switching device, and coupled to the voltage-responsive tuner by a potential follower means whereby a varying potential accumulated in the charging circuit is applied to the voltage-responsive tuner until a received signal is detected whereupon the application of the varying potential to the voltage-responsive tuner is automatically discontinued.

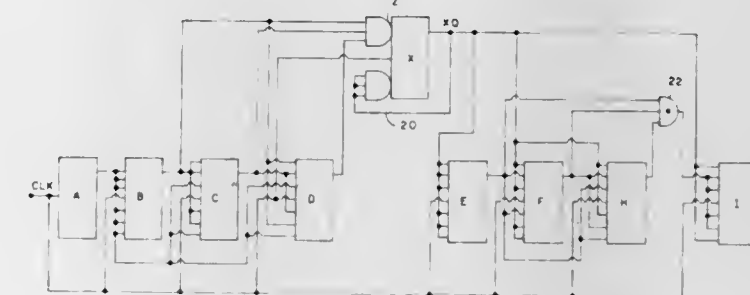
3,631,350

## SYNCHRONOUS COUNTING APPARATUS

John Vernon Drake, Plano, Tex., assignor to Collins Radio Company, Dallas, Tex.  
Filed Sept. 15, 1970, Ser. No. 72,468  
Int. Cl. H03k 21/30

U.S. Cl. 328-42

1 Claim



Apparatus for and the method of obtaining high-speed synchronous counting at speeds and an accuracy which would normally encounter problems due to delays in steering circuits used with the counting flip-flops. This is accomplished by the use of a synchronous AND gate operating in conjunction with a first section of flip-flops for controlling the remaining section of flip-flops.



3,631,351

## SIGNAL PHASE ESTIMATOR

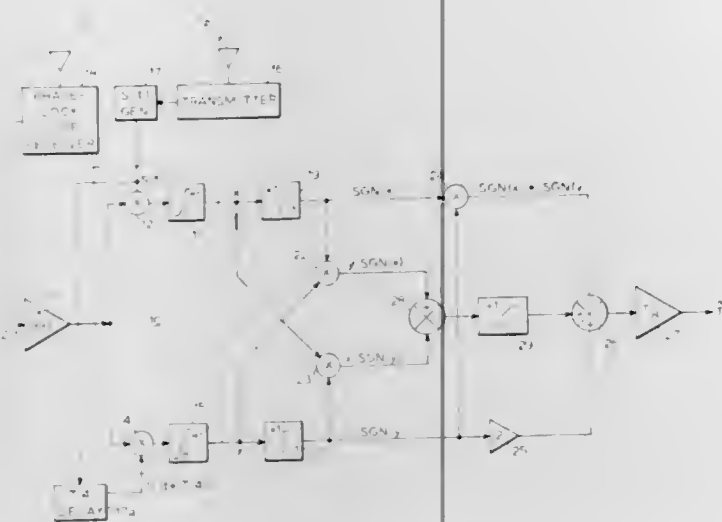
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Stanley Butman, Pasadena, Calif.

Filed Jan. 19, 1970, Ser. No. 3,696

Int. Cl. H03d 13/00

U.S. Cl. 328-133

7 Claims



Apparatus is disclosed for estimating the amplitude and sign of the phase difference or time delay between a first signal  $z(t)$  and a second signal. One replica  $s(t)$  of the second signal and another  $s[t+(T/4)]$  delayed a quarter period  $T$  are correlated with the first according to the equations:

$$x = \frac{1}{AMT} \int_0^{MT} z(t)s(t)dt$$

$$y = \frac{1}{AMT} \int_0^{MT} z(t)s[t+(T/4)]dt$$

where  $M$  is a multiple. The term  $1/A$  is a term employed to make the signal  $z(t)$  equal to the signal  $s(t)$  in amplitude. A signal representing the value and sign of the time delay being estimated is then given by

$$\gamma = T/8 \{ 2SGN(y) - SGN(x)SGN(y) - SAT[xSGN(y) - ySGN(x)] \}$$

where  $SGN(\dots)$  indicates the sign of the signal indicated in the parenthesis expressed as plus or minus a unit amplitude, and  $SAT[\dots]$  indicates a value of the expression in the brackets limited to a unit amplitude.

3,631,352

## MIDVALUE SIGNAL SELECTOR

Michael R. Kelley, and David A. Le Febvre, both of Phoenix, Ariz.

Filed Dec. 28, 1970, Ser. No. 101,890

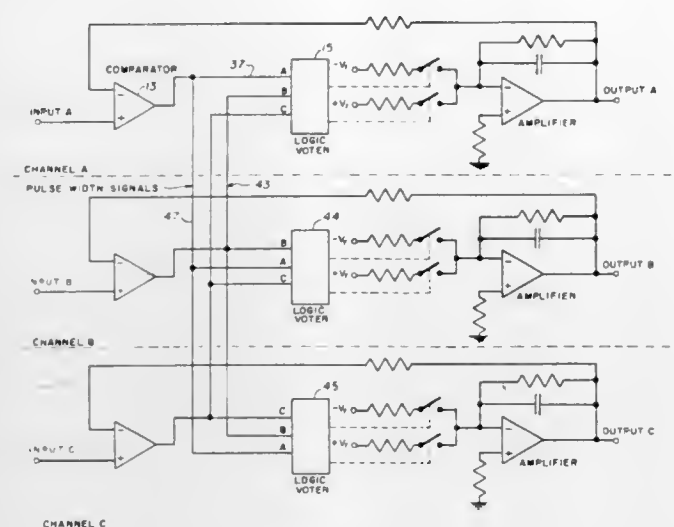
Int. Cl. H03k 5/20, 19/42; G06f 11/08

U.S. Cl. 328-137

8 Claims

A midvalue signal selector contains a channel for each of the signals to be compared. Each signal is applied to its respective channel through a comparator which produces a high- or low-level signal depending upon the comparative instantaneous values of the input signal and a feedback signal developed in that channel. Each channel contains a logic voter connected to receive the outputs of all comparators. The logic voter actuates a bipolar weighting switch in accordance with the high or low value of the majority of the signals applied to that logic voter. The output of the weighting switch in each channel is applied to a combination filter and operational amplifier which produces the output and feedback signals for that channel. The hysteresis inherent in a comparator, together with the filter circuit associated with the corresponding operational amplifier, produces an oscillatory signal at the output of the operational amplifier. The comparator receiving the midvalue signal produces a rectangular wave having a duty cycle dependent

upon the magnitude of the midvalue signal. The output signal from the corresponding operational amplifier includes a DC component dependent upon the amount that this duty cycle



deviates from 50 percent. The comparators of the remaining channels produce steady output signals so that the corresponding logic voters respond only to the midvalue signal.

3,631,353

## MULTIPLEXING ARRANGEMENT USED IN CONVERTING AN AC SIGNAL TO A DC SIGNAL

Herbert S. Jarecki, E. Rutherford, and Bob N. Naydan, Wyckoff, both of N.J., assignors to The Singer Company, New York, N.Y.

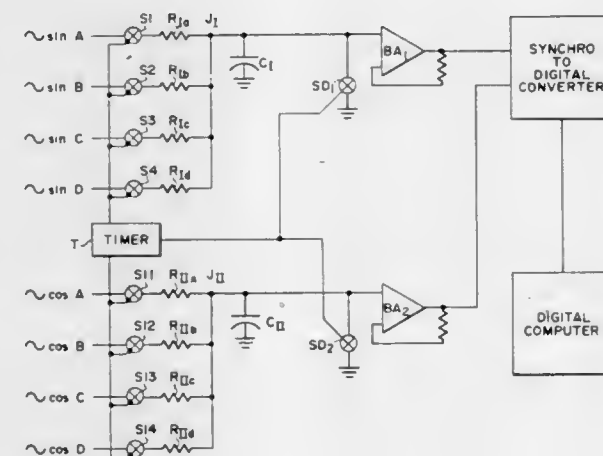
Continuation-in-part of application Ser. No. 641,347, May 25, 1967, now abandoned. This application Oct. 24, 1969, Ser.

No. 871,430

Int. Cl. H03b 1/04

U.S. Cl. 328-139

3 Claims



A method of converting an AC voltage to a DC voltage corresponding substantially to the fundamental sinusoidal AC components by dropping said AC voltage through an input line across a series resistor and parallel capacitor, to an output line, comprising the step of opening up the input line at a predetermined time of the changing input sinusoidal voltage depending on its frequency and the values of the capacitor and resistor so as to obtain a DC voltage having a large percentage of the AC sinusoidal fundamental component while minimizing the effects of the harmonic and quadrature content.

3,631,354

## APPARATUS FOR THE AUTOMATIC ADJUSTMENT OF A YARN CLEANER

Hermann Werfeli, Horgen, Switzerland, assignor to Maschin-fabrik Schwitter AG, Horgen, Switzerland

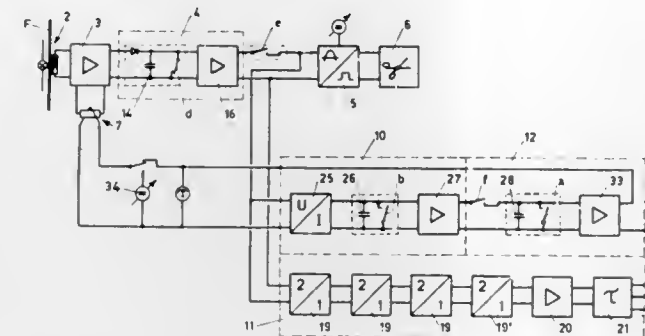
Filed Feb. 16, 1970, Ser. No. 11,461

Claims priority, application Switzerland, Mar. 5, 1969, 3354/69

Int. Cl. H01j 19/82

U.S. Cl. 328-271

13 Claims



An apparatus for the automatic adjustment of a yarn cleaner at a winding machine, such yarn cleaner embodying at least one measuring cell, an amplifier and a pulse shaper. A signal feedback circuit electrically couples the output of the pulse shaper with the input of a control device which by means of its output signal brings about the adjustment of the amplification gain at the aforementioned amplifier. The signal feedback circuit embodies a pulse evaluation circuit which serves to generate an average value signal from a predetermined number of signals appearing at the output side of the pulse shaper.

3,631,355

## SYNCHRONOUS DEMODULATOR

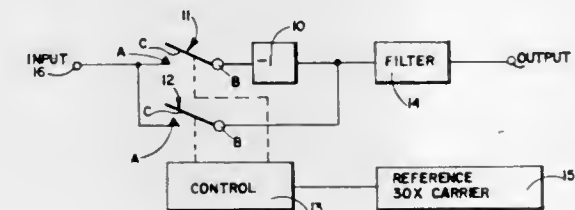
Robert W. Vail, Newport Beach, Calif., assignor to North American Rockwell Corporation

Filed Oct. 16, 1970, Ser. No. 81,231

Int. Cl. H03d 3/18

U.S. Cl. 329-50

4 Claims



The invention is a switching type of synchronous demodulator in which the periods of switched closure are controlled in such a way that the filtered output of the demodulator is unaffected by certain harmonics of the carrier.

The demodulator is comprised of an input terminal for receiving an amplitude modulated carrier signal and a pair of switching means. Each of the switch means is connected to the input terminal in the closed position. A filter means is connected to the output of each of the switching means and an inverter is connected to one of the switching means to invert the signal passing through that switching means. A control means is provided for alternately holding said switches closed for two periods of  $120^\circ$  each during two complete  $360^\circ$  cycles of the carrier signal and for holding both switches open for the remainder of each cycle.

3,631,356

## CONTROLLABLE AMPLIFIER STAGE

Wilfried Aschermann, Volkswolweg 1, 21 Hamburg 90, Germany

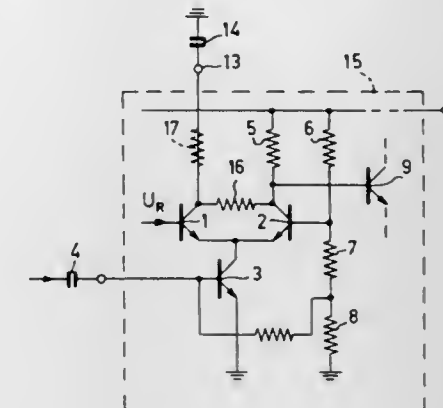
Filed Dec. 16, 1969, Ser. No. 885,543

Claims priority, application Germany, Dec. 20, 1968, P 18 16 034.4

Int. Cl. H03f 3/68

U.S. Cl. 330-30 D

6 Claims



An integrated signal-controlled amplifier stage uses a differential amplifier emitter coupled to a signal input amplifying transistor connected in the grounded emitter configuration. In order to provide DC stabilization of the output transistor in the differential amplifier a first resistor is connected between a source of constant potential and the output collector of the differential amplifier to provide direct current to the output transistor and, through a second resistor connecting the collectors of the differential amplifier, to the control voltage transistor of the differential amplifier. In addition, a capacitor is connected between the collector of the control voltage transistor and ground.

3,631,357

## AMPLIFIER

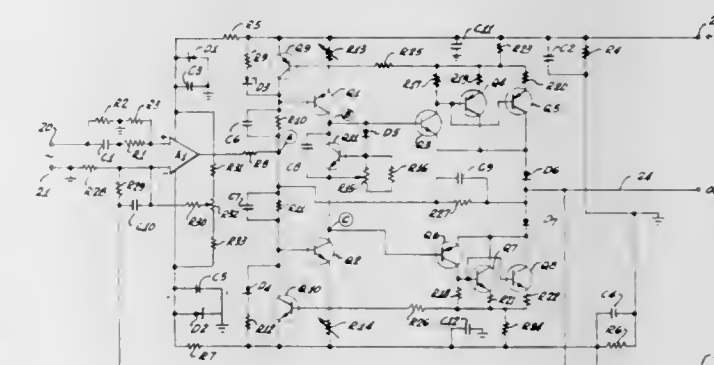
Dawson N. Hadley, Claremont, Calif., assignor to Marantz Co., Inc., Sun Valley, Calif.

Filed Mar. 10, 1969, Ser. No. 805,484

Int. Cl. H03f 3/18

U.S. Cl. 330-17

11 Claims



A solid-state audiopower amplifier using a single operational amplifier feeding a dual channel, substantially class A drive circuit for a pair of substantially class AB, complementary symmetry power amplification stages, distortion being controlled by the degree of conductive cycle overlap between the channels of the drive circuit, and power output being held to safe levels by a current limiting loop in each channel between each power amplification stage and its corresponding drive circuit. Temperature compensation is also provided.



3,631,358

**MULTISTAGE-TYPE MICROWAVE AMPLIFIER**

Kazuo Ayaki, Tokyo-to, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Jan. 14, 1969, Ser. No. 790,989

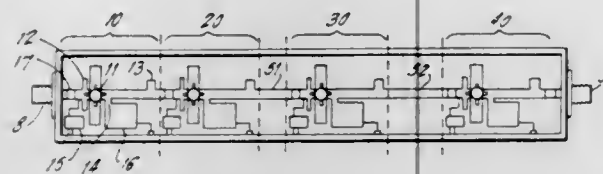
Claims priority, application Japan, Jan. 17, 1968, 43/2513

43/21415; May 7, 1968, 43/31415, 43/31416, 43/31417

Int. Cl. H03f 3/60

U.S. Cl. 330-53

5 Claims



A microwave amplifier comprising a plurality of amplifier units connected in cascade fashion. Each of the amplifier units have substantially similar gain-versus-frequency characteristics, which characteristics are substantially flat over the entire operating frequency range. The units are connected by lines which in the microwave amplifier embodiment may be strip lines having electrical lengths which are selected in accordance with any one of a group of predetermined equations so as to provide a multistage microwave amplifier whose resultant gain-versus-frequency characteristic is likewise substantially flat over the entire operating frequency range.

3,631,359

**MULTIVIBRATOR DRIVEN REGENERATIVE TRANSISTOR DRIVE CIRCUIT FOR LAMP FLASHER**

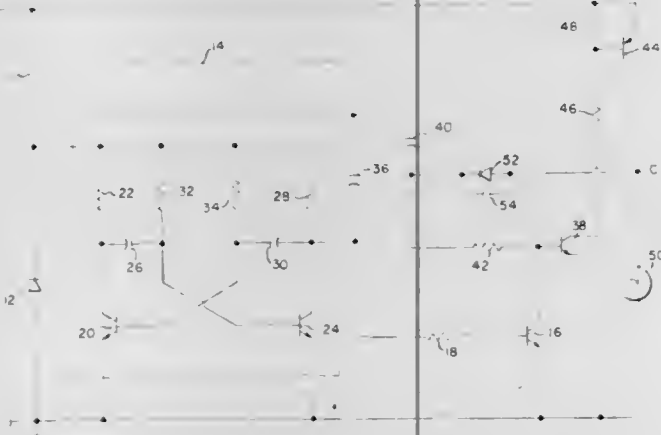
Raymond A. Jones, Swampscott, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed May 6, 1970, Ser. No. 34,935

Int. Cl. H03b 3/282; H05b 39/09

U.S. Cl. 331-75

3 Claims



This is a solid-state lamp flasher operated from an oscillator using the combination of NPN-transistor and a PNP-transistor to drive the load and create regenerative action and another NPN-transistor to stop the regenerative action when it receives a signal from the oscillator.

3,631,360

**ELECTRO-OPTICAL STRUCTURES UTILIZING FRESNEL OPTICAL SYSTEMS**

Kurt Lehovc, 11 Woodlawn Drive, Williamstown, Mass.

Continuation-in-part of application Ser. No. 653,245, July 13,

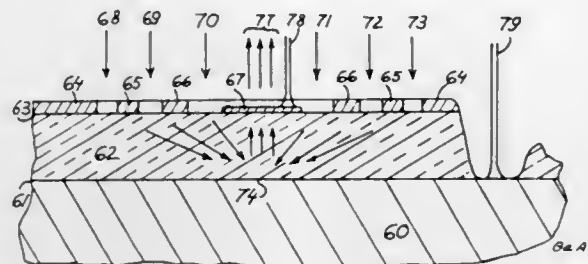
1967, now Patent No. 3,569,997. This application

July 10, 1970, Ser. No. 53,811

Int. Cl. G02f 1/28; H01j 1/62; H01s 3/00

U.S. Cl. 331-94.5

6 Claims



This invention concerns improved structures for the transformation of radiant energy into electric energy or vice versa. The improvement consists in coupling a solid having excited electron states with a Fresnel optical system into a compact integrated structure. The solid having excited electron states can be a semiconducting microcircuit element, or a laser material.

3,631,361

**ROOM TEMPERATURE LIQUID LASER**

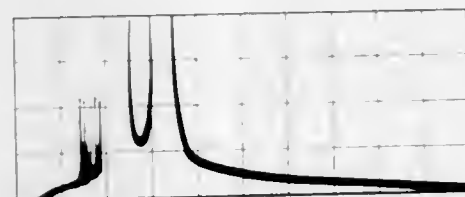
Norman C. Blumenthal, Brooklyn, N.Y., assignor to The Singer Company, New York, N.Y.

Filed July 22, 1968, Ser. No. 746,442

Int. Cl. H01s

U.S. Cl. 331-94.5

5 Claims



A liquid laser was produced by using solutions of a non-hydrogen containing neodymium compound, e.g., neodymium oxide in a 5:1 by volume solution of phosphorous oxychloride and strong nonhydrogen containing (aprotic) acid, e.g., tin tetrachloride contained in a tubular transparent cell using optical flats bonded to the ends of the cell, external dielectric mirrors aligned parallel to the ends of the cell and exciting the substance in the cell with a flash lamp.

3,631,362

**FACE-PUMPED, FACE-COOLED LASER DEVICE**

Joseph C. Almasi, and William S. Martin, both of Schenectady, N.Y., assignors to General Electric Company

Filed Aug. 27, 1968, Ser. No. 755,652

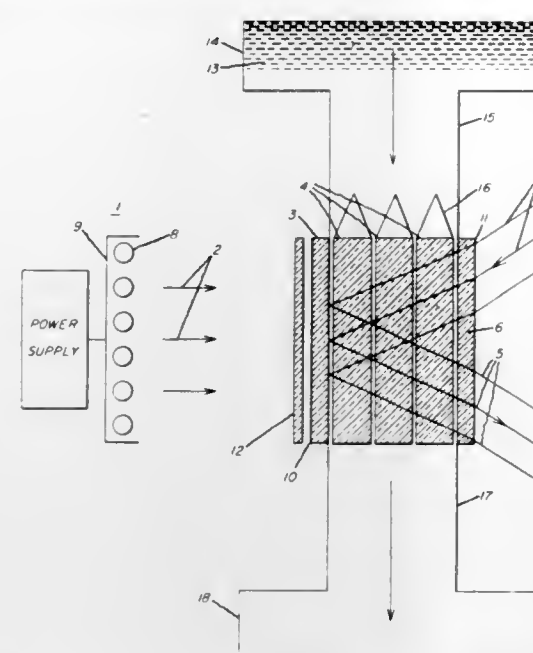
Int. Cl. H01s 3/00

U.S. Cl. 331-94.5

8 Claims

A face-pumped laser device utilizes one or more thin planar laser elements which have major surfaces thereof in physical contact with a flowing coolant having an index of

refraction near that of the laser elements. The arrangement allows increased pulse repetition rates while also maintaining



uniform optical properties and relaxing wavelength tolerance requirements of the laser elements.

3,631,363

**HIGH-FREQUENCY CAVITY OSCILLATOR HAVING IMPROVED TUNING MEANS**

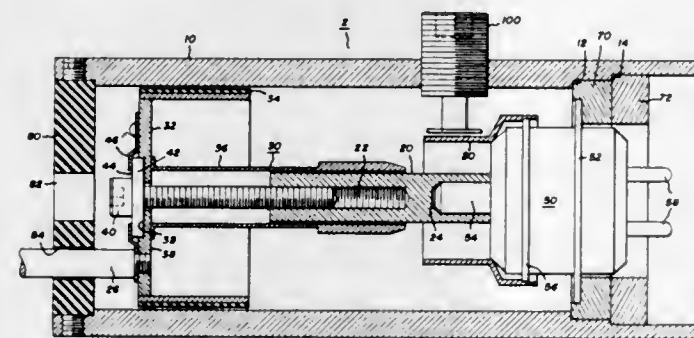
Harold D. Miller, Owensboro, Ky., assignor to General Electric Company

Filed Nov. 14, 1969, Ser. No. 876,657

Int. Cl. H03b 5/18

U.S. Cl. 331-97

4 Claims



A high-frequency coaxial cavity oscillator is provided having an adjustable tuning member centrally carried by the inner conductor of the cavity to minimize detuning of the cavity by thermal expansion of the outer wall.

3,631,364

**COMPACT, DIRECT FM MODULATOR PROVIDING CONSTANT DEVIATION ON EACH OF A PLURALITY OF ADJUSTABLE CENTER FREQUENCIES**

William Alan Schilb, Lombard, and Donald Lindsey Booth, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 12, 1970, Ser. No. 2,302

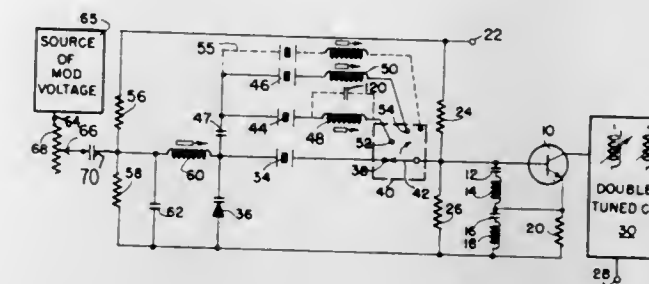
Int. Cl. H03c 3/22, 3/28

U.S. Cl. 332-26

11 Claims

A multiple center frequency, direct FM modulator includes an oscillator having a plurality of center frequency determining circuits each of which is comprised of a piezoelectric crystal and a warping coil. A switch connects a selected center frequency determining circuit between a varactor and the active element of the oscillator. The capacitance of the varactor is changed by a modulating volt-

age to provide frequency deviation about the center frequency of oscillation. The crystal has an undesirable tendency to change the deviation corresponding to a given change in varactor capacitance, as the inductance of the warping coil associated therewith is changed. To compensate for this undesirable change in deviation, the values of the components



in the frequency controlling circuit of the oscillator are selected such that adjustment of the warping coil causes a change in the variation of equivalent capacitance connected with the crystal so that the frequency deviation corresponding to a modulating voltage of a given amplitude remains constant.

3,631,365

**SIGNAL COMPRESSORS AND EXPANDERS**

Ray M. Dolby, London, England, assignor to Dolby Laboratories Inc., New York, N.Y.

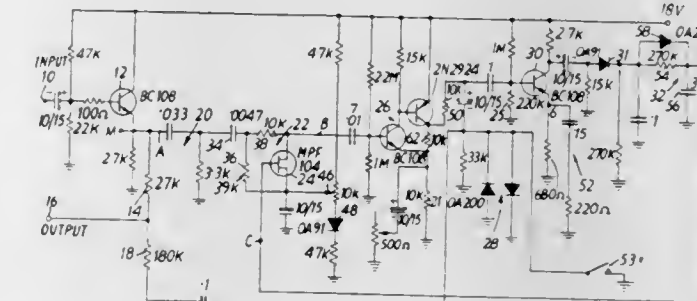
Filed Oct. 20, 1969, Ser. No. 867,454

Claims priority, application Great Britain, July 21, 1967, 36,466/69 Nov. 1, 1968, 51,985/68

Int. Cl. H04b 3/04; H03q 7/06

U.S. Cl. 333-14

27 Claims



Signal compressor or expander action is obtained by passing the signal through a main path which provides an undistorted signal. A further path is tapped off the main path and amplifies and limits the signal. The output of the further path is used to boost or buck the signal in the main path to obtain compressor or expander action. This action takes place in a restricted frequency band defined by a variable filter in the further path, this filter being responsive to the output of the further path to narrow the pass band when this output increases. The filter comprises two filters in cascade, a fixed value filter and a variable filter which includes a voltage-controlled variable resistance. The two filters can be simple RC filters but in combination they give a 12dB/octave cut-off which is important in avoiding noise modulation effects. Various advantageous filter configurations are disclosed.



3,631,366

**POLARIZED ELECTROMAGNETIC RELAYS HAVING A FLOATING ARMATURE**

Pierre E. Ugon, 21 rue Claude Debussy, Saint-Germain-en-Laye, (Les Yvelines), France

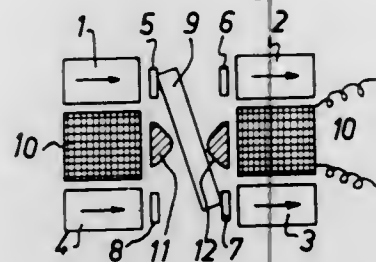
Filed July 22, 1969, Ser. No. 843,640

Claims priority, application France, July 23, 1968, 160183

Int. Cl. H01h 51/22

U.S. Cl. 335—82

4 Claims



A polarized electromagnetic relay wherein an armature is freely movable about its center of gravity between two pairs of contact members.

**ERRATA**

For Classes 335—213 and 336,155 see:  
Patent Nos. 3,631,533 and 3,631,534

3,631,367

**CONICAL LAYER TYPE RADIAL DISK WINDING WITH INTERWOOUND ELECTROSTATIC SHIELD**

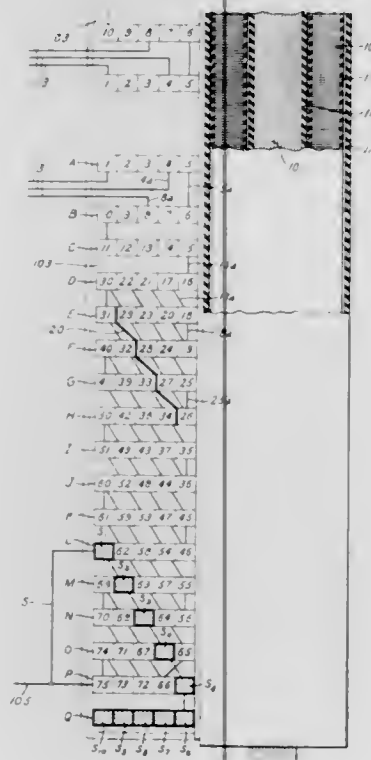
John C. Dutton, and Daniel B. Scott, both of Rome, Ga., assignors to General Electric Company

Filed Oct. 29, 1970, Ser. No. 85,137

Int. Cl. H01f 15/04

U.S. Cl. 336—70

8 Claims



A radial disk-type inductive winding for high-voltage electric apparatus wherein coil turns are interlaced in such turn-to-turn sequence that directly serially connected turns form conical layers of turns in coaxial nested relation, and wherein an insulated shielding conductor is interwound to occupy the last full length conical layer of turn positions at one end of the winding and is electrically connected at one point to the winding terminal at that end.

3,631,368

**RADIO TUNING APPARATUS**

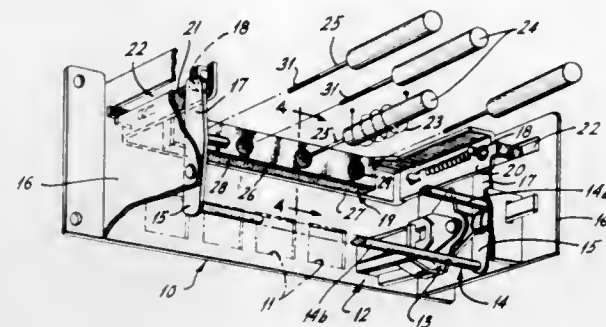
Alvin E. Thompson, North Wales, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Nov. 6, 1970, Ser. No. 87,566

Int. Cl. H01f 21/06

U.S. Cl. 336—131

2 Claims



Radio tuning apparatus of the pushbutton type in which a plurality of variable impedance devices may be adjusted by use of a carriage bar drivingly associated with rods extending from said devices. The carriage bar is provided with an elongated strip of resilient material within which the drive rods are frictionally received.

3,631,369

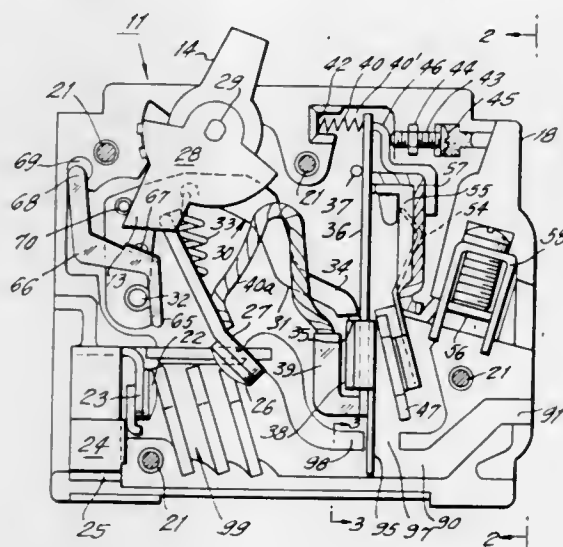
**BLOWOFF MEANS FOR CIRCUIT BREAKER LATCH**  
Gustavo A. Menocal, Philadelphia, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Apr. 27, 1970, Ser. No. 32,101

Int. Cl. H01h 9/30, 33/02, 71/00

U.S. Cl. 337—110

5 Claims



A circuit breaker having automatic fault responsive trip means for releasing a latch to permit the operating mechanism to open the contacts is provided with a baffle which extends into the arcing gas venting passage. The baffle is connected to the latch and is positioned transverse to the flow of arcing gases through the venting passage, so that upon the occurrence of severe overload conditions, rapid gas pressure buildup in the passage will act to move the baffle and thereby physically moving the latch toward tripping position prior to movement of the latch by the fault current responsive means.

3,631,370

**HIGH-CURRENT, HOT WIRE RELAY AND FLASHER**  
Arthur J. Hollis, Danvers, Mass., assignor to Sylvania Electric Products Inc.

Filed Oct. 1, 1969, Ser. No. 862,812

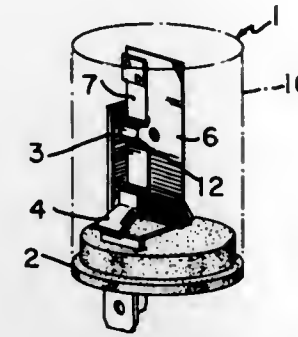
Int. Cl. H01h 61/06

U.S. Cl. 337—125

6 Claims

A monostable snap vane of a high-current flasher is held just beyond its snap point in an open contact position by an

expansion ribbon fastened to opposite corners of the vane. Upon the passage of electric current through a resistance wire wrapped around the ribbon, the ribbon thermally ex-



pands, thereby permitting the vane to snap to a closed contact position and shorting out the current flow to the resistance wire. Cooling of the ribbon causes the vane to snap back to its open contact position.

**ERRATUM**

For Class 337—161 see:  
Patent No. 3,630,219

3,631,371

**ROTARY-CONTACT POTENTIOMETER**

Jean Maurice, Nice, France, assignor to Societe Francaise de l'Electro Resistance

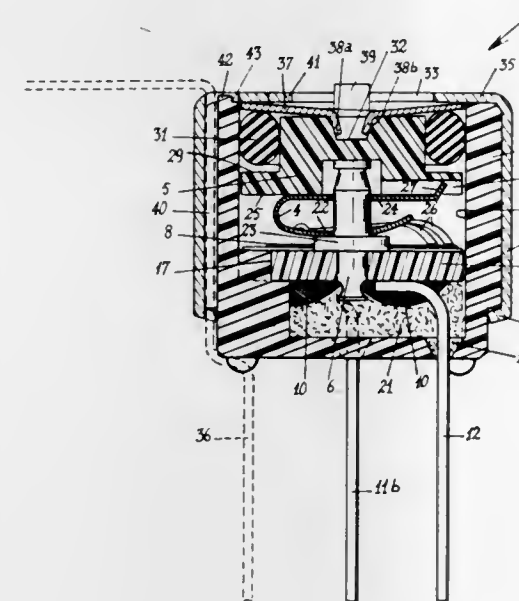
Filed June 30, 1970, Ser. No. 51,292

Claims priority, application France, July 29, 1969, 6925938

Int. Cl. H01c 9/02

U.S. Cl. 338—164

9 Claims



A rotary-contact potentiometer especially of the miniature type and primarily intended for use in electronic circuitry comprising an insulating casing having an axial cavity and containing in addition to other components a slider and slider-actuating member which are both rotatably mounted on a shaft attached to the casing, means for driving said actuating member, a resistance track, an external metal jacket which surrounds the casing and serves to maintain all the components in position. The potentiometer comprises at least one stop which is associated with the control means aforesaid and serves to limit the angular displacement, said stop being constituted by a boss formed on the jacket. At the end of travel, the effort is therefore exerted on a metallic stop which is endowed with sufficient mechanical strength.

3,631,372

**VARIABLE RESISTOR OF LEAD SCREW ACTUATED TYPE WITH CONTACT ENGAGING SCREW THREADS**  
Takashi Yamamura, Iwai-Machi, Sashima-gun, Japan, assignor to Victor Company of Japan Ltd., Yokohama, Kanagawa-ken, Japan

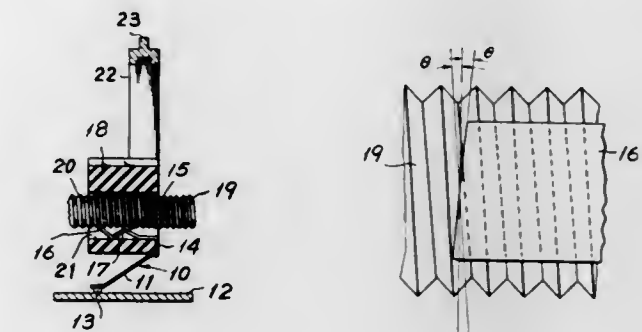
Filed June 12, 1970, Ser. No. 45,777

Claims priority, application Japan, June 12, 1969, 44/54564

Int. Cl. H01c 9/02

U.S. Cl. 338—202

2 Claims



A variable resistor comprises a rotatable screw shaft having a screw on the outer periphery thereof, a resistor disposed in parallel with the screw shaft, a movable member formed of a bent leaf spring of electroconductive metal, and a movable member holder through which the screw shaft passes. The movable member holder holds the movable member. The movable member has at one end thereof a slidable contact portion contacting with the resistor. The other end of the movable member contacts with the portions of the grooves of the screw having the effective screw diameter. The movable member also has a protuberant middle portion contacting with adjacent crests of the screw. The edge line of the other end of the movable member has an inclination angle with respect to a vertical plane to the axis of the screw shaft, which angle is reverse in direction to the lead angle of the screw and substantially equal to the lead angle in absolute value.

3,631,373

**PLUGGABLE SOCKET CONNECTOR**

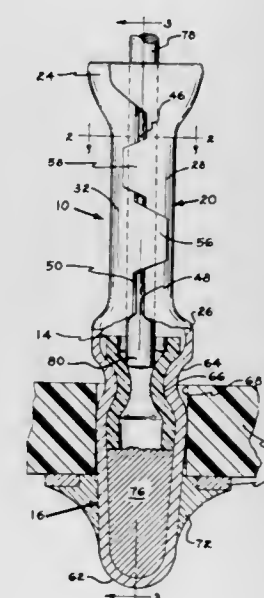
Robert M. Matrisian, Lemoyne, Pa., assignor to Berg Electronics, Inc., New Cumberland, Pa.

Filed May 20, 1970, Ser. No. 39,042

Int. Cl. H05k 1/02

U.S. Cl. 339—17 C

12 Claims



A circuit board socket connector having a longitudinal seam with antispreading fingers on both sides of the seam extending across the seam and into close proximity with the



outside part of the socket across the seam. The fingers limit spreading of the seam when a lead is inserted into the socket.

3,631,374

## MATRIX SWITCH

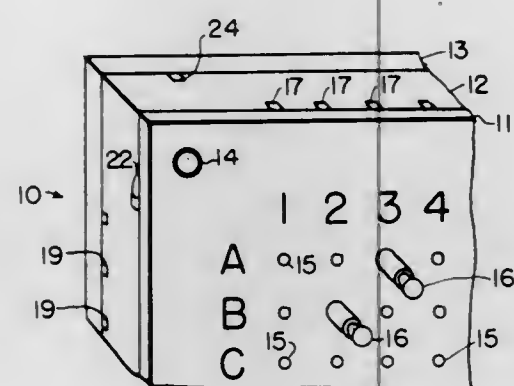
Joseph M. Cartelli, c/o Infolite Corp., 2337 Lemoine Ave., Fort Lee, N.J.

Filed Aug. 24, 1970, Ser. No. 66,407

Int. Cl. H01r 25/00, 27/02

U.S. Cl. 339—18 C

7 Claims



A matrix switch contains an array of apertures intersected on two or more levels by aligned channels containing thin conducting strips backed by elastic strips, the insertion of a pin in an aperture contacting and flexing conducting strips on different levels and compressing elastic backing strips to maintain good electrical contact.

3,631,375

## ELECTRICAL CONNECTORS

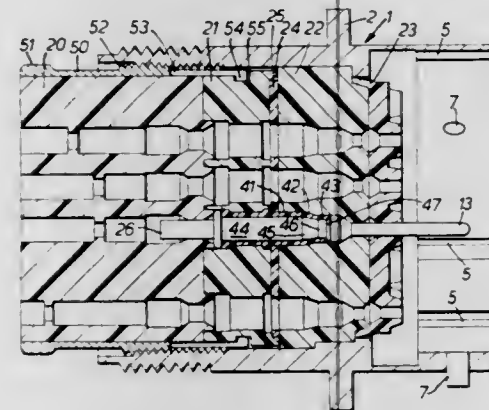
Kenneth Frederick Bridle, London, England, assignor to A. B. Electronic Components Limited

Filed Apr. 1, 1970, Ser. No. 24,784

Int. Cl. H01r 13/40

U.S. Cl. 339—59 M

4 Claims



The specification describes a multiway electrical connector in which the individual contacts are retained in individual collet members which in turn are retained in a first retainer member and are compressed on to the contacts by a second retainer member.

### 3,631,376 FLUORESCENT LAMP HOLDER MOUNTING

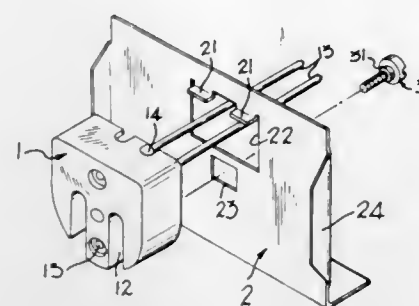
Thomas C. Halfaker, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 12, 1970, Ser. No. 88,598

Int. Cl. H01r 33/08

U.S. Cl. 339—53

5 Claims



A mounting plate for providing limited play in any direction for a fluorescent lampholder for a U-shaped lamp.

3,631,377

## COUPLING

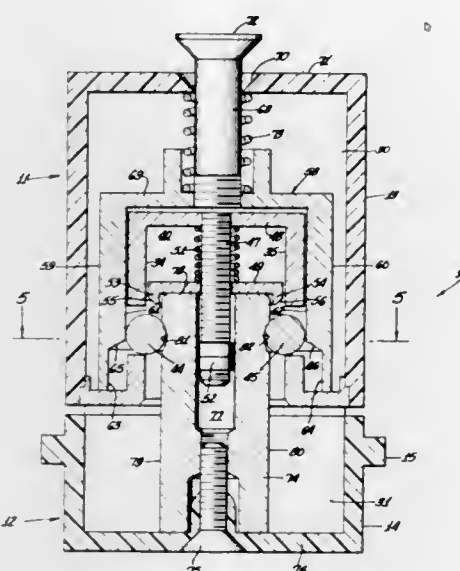
David J. Ball, Banning, and Michael E. R. Soderlindh, La Jolla, both of Calif., assignors to The Deutsch Company Electronic Components Division, Banning, Calif.

Filed Apr. 1, 1970, Ser. No. 24,660

Int. Cl. H01r 13/54

U.S. Cl. 339—91 B

12 Claims



This invention provides an electrical connector and coupling arrangement including a plug and receptacle of rectangular cross section, with each having an integral shell and inner portion, the latter carrying contacts engaged when the connector is mated, with a centrally located coupling mechanism including a post on one member having shallow transverse recesses receiving rollers carried by the other member and held in engagement with the recesses by a retractable member which is moved by an exteriorly operable element to release the coupling mechanism.

3,631,378

## WIRE-CONNECTING BLOCKS

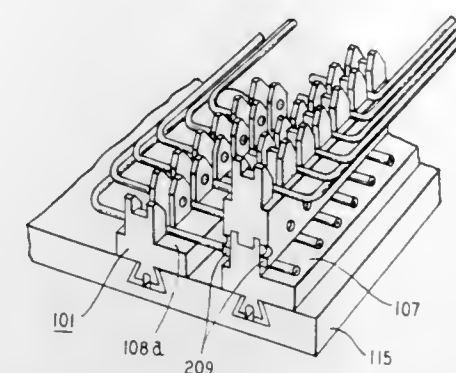
Benjamin C. Ellis, Jr., Baltimore, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Original application Dec. 27, 1968, Ser. No. 787,453. Divided and this application Aug. 10, 1970, Ser. No. 69,511

Int. Cl. H01r 13/42

U.S. Cl. 339—125 R

1 Claim



This disclosure describes an indexing strip and connecting block scheme for equipment and station interconnections for key telephone systems. The indexing strip is a plastic molding with two narrowly spaced rows of teeth. The insulated line wires are placed across the slots between the teeth. The connecting block straddles the teeth and its pin connectors are each guided into piercing contact with a respective wire. The blocks and strips lock, once engaged. Wall mountings for the strips include bases with V-shaped insertion tracks.

3,631,379

## INCANDESCENT FILAMENT LAMPS

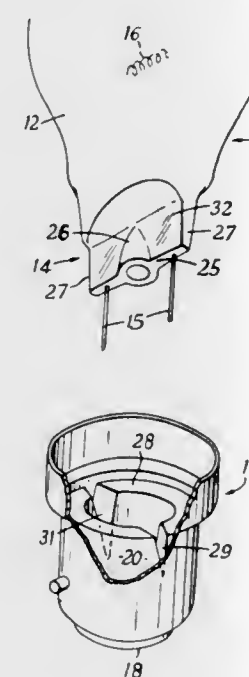
John Willoughby Thomas Wright, deceased, late of Leicester, England (by Audrey M. Wright and Denis W. Clarke, Leicester, England, legal executors), and Trevor Humphery, London, England, assignors to British Lighting Industries Limited, London, England

Filed May 23, 1969, Ser. No. 829,157

Int. Cl. H01r 13/32

U.S. Cl. 339—145 R

3 Claims



An incandescent filament lamp having an envelope closed with a wedge-shaped pinch seal and a cap disposed about the seal. The cap is closed by a plug of vitreous material and an extension of said plug provides a seating structure for the seal.

3,631,380

## UNIVERSAL CIRCUIT BOARD CONNECTOR

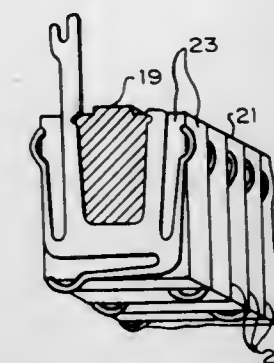
Patrick A. Bohn, 20115 Pacifica Drive, Cupertino, Calif.

Filed Mar. 19, 1970, Ser. No. 21,136

Int. Cl. H05k 1/04

U.S. Cl. 339—156 R

2 Claims



A multiplane connector includes spaced contact elements on each of three orthogonally oriented surfaces and connection means of selected configuration on the fourth orthogonally oriented surface. A selected number of contact elements may be supported by an insulating body in laterally spaced relationship to provide a connector of predetermined length having such selected number of independent contact means for each surface.

3,631,381

## MULTIPLE ELECTRICAL CONNECTOR

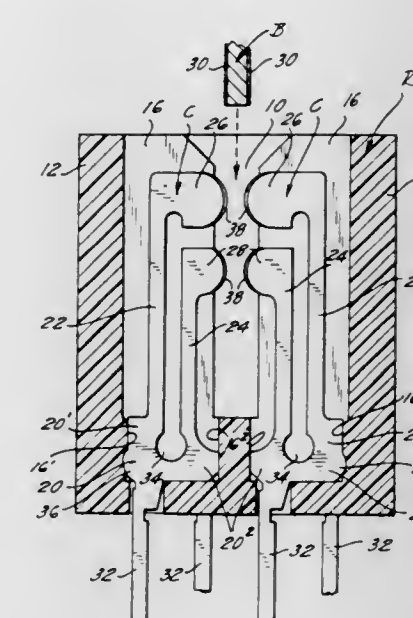
Robert B. Pittman, River Edge, N.J., assignor to Industrial Electronic Hardware Corp., New York, N.Y.

Filed Apr. 2, 1970, Ser. No. 25,134

Int. Cl. H05k 1/07

U.S. Cl. 339—176 MP

14 Claims



A multiple electrical connector for a printed-circuit board embodying a receptacle having an open-topped trough for receiving a printed-circuit board and contact elements spaced from one another along said receptacle trough, featured by contact elements formed in the flat as from a sheet of conductive material and each comprising a base and a pair of spring legs of different lengths extending up from the base, the contact element being positioned in the receptacle in a plane normal to the plane of the printed-circuit board. The spring legs provide a redundancy in that the legs function in-



dependently to provide an electrical connection to the contact areas of the board and have independent deflection and resonant frequencies.

3,631,382

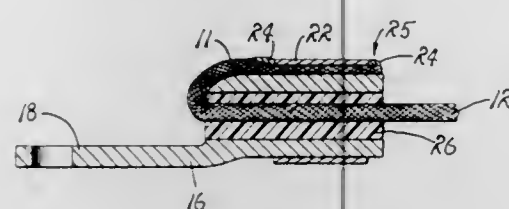
## ELECTRICAL CONNECTOR

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Charles D. Baker, La Canada, Calif.

Filed Mar. 31, 1970, Ser. No. 24,224  
Int. Cl. H01r 11/06, 11/08

U.S. Cl. 339-275 T

5 Claims



A sterilizable electrical connector which readily can be inspected after sterilization characterized by a flexible multistrand conductor coupled with a barrel-and-lug terminal element, a feature of the connector being an elastomer disposed within the barrel and securing an end of the conductor therewithin while the distal end of the conductor is secured to the exterior of the barrel through a circumscribing and deformed ferrule.

3,631,383

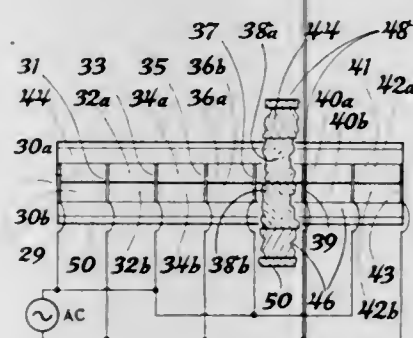
## PIEZOELECTRIC TRANSDUCER CONFIGURATION

Gené Zilinskas, Van Nuys, Calif., assignor to The Bendix Corporation

Filed July 25, 1969, Ser. No. 844,861  
Int. Cl. H04r 17/00

U.S. Cl. 340-10

10 Claims



Piezoelectric transducer elements are polarized to vibrate in a number of different planes such as longitudinally, radially, or axially. Polarized flat disk or bar transducers have been severely limited in power-handling capacity because of the inherent weakness of the usual piezoelectric materials in tension. Applicant has found that flexural disk-type elements as well as "bender bar" types of transducers, all of which require that the piezoelectric elements be stressed in tension, gain very substantially in power-handling capacity when a thin layer of material, such as a metal plate, is bonded to the face exposed to tensile forces. Alternately, a laminate layer of glass epoxy was also found effective to improve the power handling capabilities of the transducers, and this has been found especially useful where an electrical insulating layer is required.

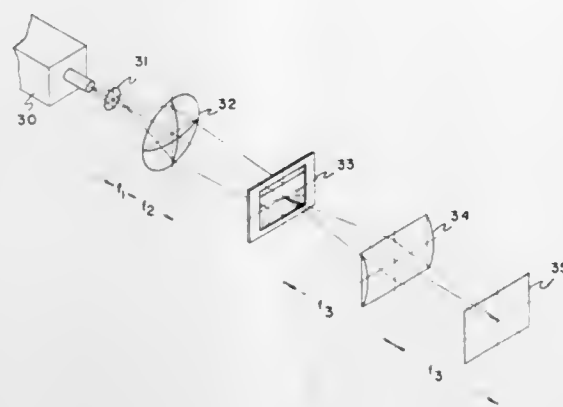
### 3,631,384 SEISMIC HOLOGRAPHY

Noyes D. Smith, Jr., Bellaire, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,503  
Int. Cl. G01v 1/34

U.S. Cl. 340-15.5 DS

9 Claims



A method for processing seismic data wherein seismic arrival time-distance sections are produced from seismic data traces received at points located along lines through an areal array of receivers, at least one signal corresponding to a reference wave being combined with each section, visible strips of one-dimensional Fourier transforms relating to a selected frequency of each seismic section being optically produced from each section and the visible strips arranged as the sections were arranged in the original array with the so-arranged strips being illuminated with coherent light to produce a three-dimensional visible display of the acoustic images resulting from the reflection and diffraction of seismic energy from subterranean structures.

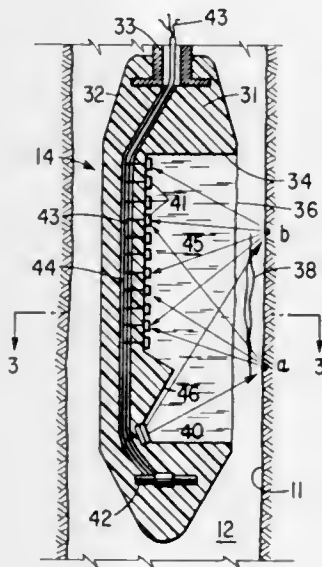
### 3,631,385 HOLOGRAPHIC WELL-LOGGING SYSTEM

Daniel Silverman, Tulsa, Okla., assignor to Amoco Production Company

Filed Nov. 24, 1969, Ser. No. 879,218  
Int. Cl. G01v 1/28, 1/34

U.S. Cl. 340-18

2 Claims



By an adaptation of elastic-wave holography, data are recorded from which a hologram can be prepared for reconstructing an image of a well wall to show fractures, vugs, dips, stratification and like features. An expanse of well wall

is irradiated with high-frequency, coherent sound waves, and the interference pattern of the irradiating sonic energy and that returned from the wall expanse to a detection area is recorded to form an acoustic hologram at the detection area. By a combination of axial and rotary-scanning motions of the logging apparatus, a continuous hologram is obtained suitable for reconstruction to view as much as desired of the entire well-wall area.

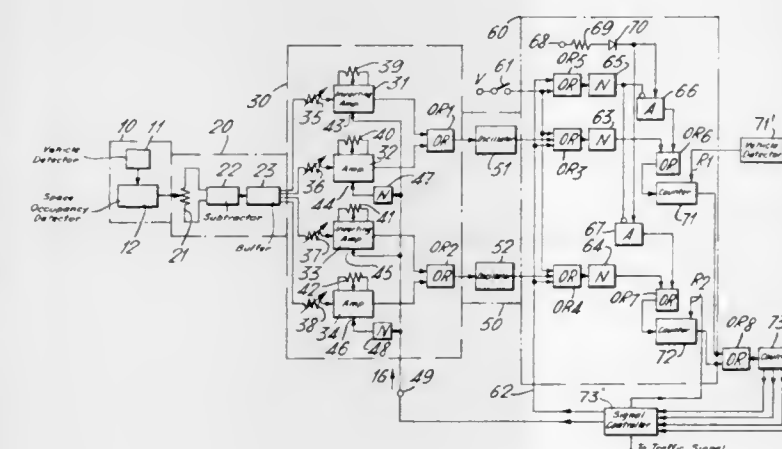
### 3,631,386 TRAFFIC SIGNAL CONTROL SYSTEM

Tutomu Saita; Yasumasa Yoshida, both of Kyoto, and Norio Yamazaki, Shizuoka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Feb. 14, 1969, Ser. No. 799,343  
Claims priority, application Japan, Feb. 19, 1968, 43/10451  
Int. Cl. G08g 1/08

U.S. Cl. 340-37

14 Claims



A system for controlling the duration of an extended portion of the green or proceed phase displayed to traffic at an intersection of a major street and at least one minor street comprises first and second oscillators which normally provide pulse outputs having a predetermined frequency  $f_0$  which are supplied to first and second counters, respectively. These counters provide a control signal to a third counter when separate, predetermined counts therein are reached for terminating the extended portion of the green phase. The first counter is reset by the passage of each vehicle by a detector on a major or minor street to which the green phase is displayed so that its output represents a plurality of unit extensions thereof. On the other hand, the second counter is reset at each change of phase and its output represents a limit to the total duration of the unit extensions. A congestion sensor furnishes an output signal corresponding to traffic occupancy on the major street. Amplifier means supply a control signal to the first and second oscillators in responses to this output signal such that their output frequency is changed from  $f_0$  to effect a corresponding change in the duration of both the unit extensions and the extension limit. If the right-of-way is given to the major street, the output frequency is lowered so that each unit extension and the extension limit are lengthened. If right-of-way is given to the minor street, the output frequency is increased such that each unit extension and the extension limit are shortened. An embodiment for immediately shifting right-of-way from the minor to the major street when congestion increases beyond a specified point is shown, as are embodiments permitting control of the green phase displayed to both streets in accordance with the individual traffic congestions thereof.

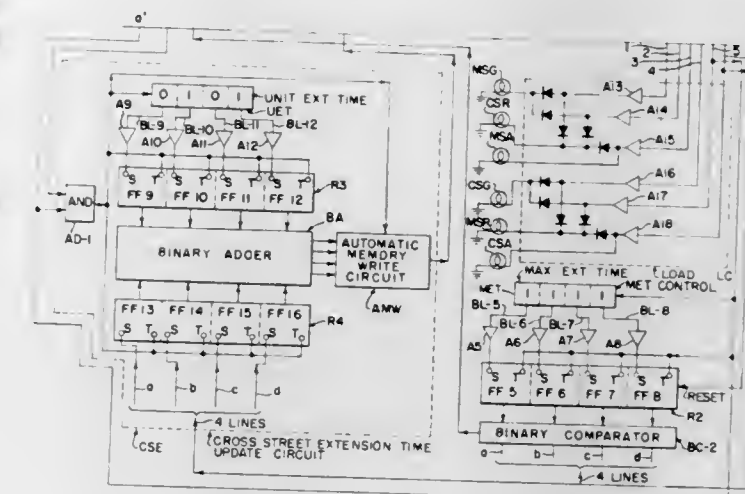
### 3,631,387 UNIT EXTENSION CIRCUIT MEANS FOR TRAFFIC CONTROL SYSTEM

Frank W. Hill, Moline; Joseph E. Meschi, Lyon, both of Ill., and Peter G. Bartlett, Davenport, Iowa, assignors to Gulf & Western Industries, New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 827,083  
Int. Cl. G08g 1/08

U.S. Cl. 340-37

20 Claims



An activated traffic control system is disclosed herein for controlling the time duration that a traffic signal displays a go signal to at least one traffic lane in accordance with traffic demand. The system includes a go extension interval memory and an extension interval control circuit for acting upon the memory to change the time duration of the go extension interval. The system also includes a plurality of traffic interval time storage memories which are electrically alterable and electrically interrogatable for storing binary signals having corresponding values representative of the desired time durations of the associated traffic intervals.

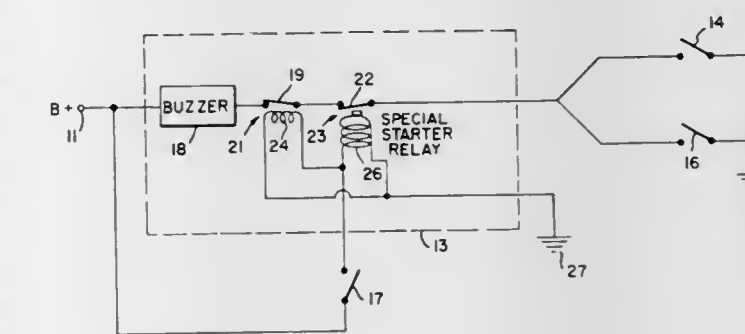
### 3,631,388 ENGINE OIL AND WATER TEMPERATURE AUDIO WARNING SYSTEM

Raymond K. Strong, 41974 Chadbourne Drive, Fremont, Calif.

Filed Sept. 8, 1970, Ser. No. 70,366  
Int. Cl. B60q 5/00

U.S. Cl. 340-52 F

2 Claims



A system which audibly warns a driver of a motor vehicle when either the engine oil pressure is too low or the temperature is too high. The system is so arranged that the audible warning is not sounded during initial startup of the engine when the oil pressure is inherently low.



3,631,389

**BRAKE SYSTEM CONDITION WARNING SYSTEM AND SWITCH ASSEMBLY THEREFOR**

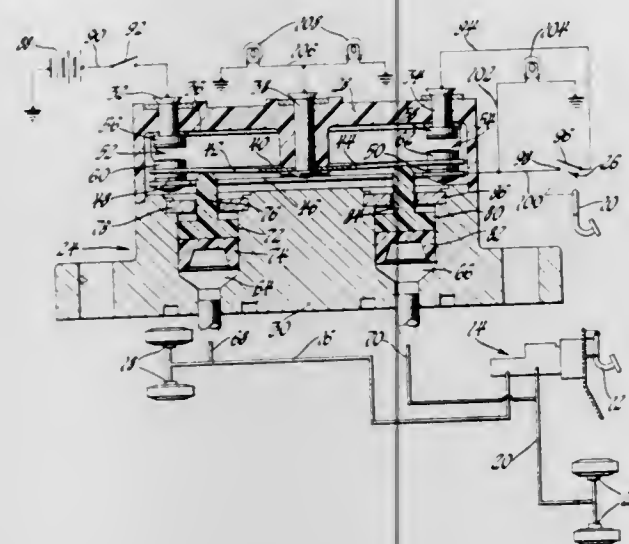
Harold V. Elliott, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of application Ser. No. 587,887, Oct. 19, 1966, now abandoned. This application Apr. 17, 1970, Ser. No. 28,239

Int. Cl. B60q 1/44; B60t 17/22

U.S. Cl. 340-60

5 Claims



A switch assembly having switch sections separately actuated by front and rear brake pressures, and connected in electric circuitry to warn when either system fails to pressurize. The circuitry includes the parking brake warning light and the vehicle stoplights.

3,631,390

**VEHICLE MOVEMENT CONDITION SAFETY LIGHT SYSTEM**

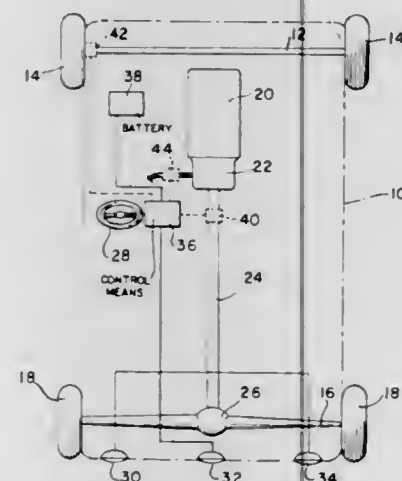
Thomas S. B. Murphy, 991 Ridgefield Road, Wilton, Conn.

Filed Nov. 21, 1969, Ser. No. 878,608

Int. Cl. B60q 1/54

U.S. Cl. 340-62

2 Claims



A vehicle has a plurality of stroboscopic lights mounted thereon. An electrical circuit is provided for operating the stroboscopic lights and includes a source of electrical energy as well as speed-responsive switch means which is responsive to the speed of movement of the vehicle for causing the stroboscopic lights to be illuminated in accordance with the speed of the vehicle when the vehicle is traveling in a forward direction.

ward direction. Control switch means are provided for selectively operating the stroboscopic lights in different manners in accordance with whether the vehicle is at rest, is in reverse, is to make a left turn, is to make a right turn, or is traveling forward and making no turns.

3,631,391

**ELECTRIC SYSTEM FOR LIGHTING A PARKED VEHICLE**

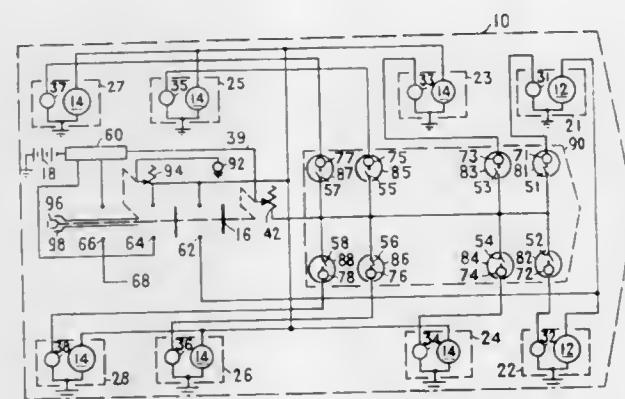
Hans A. Eckhardt, 55 Crescent Bend, Allendale, N.J.

Filed Mar. 3, 1969, Ser. No. 803,571

Int. Cl. B60q 1/26

U.S. Cl. 340-76

3 Claims



For periods of parking, a vehicle has warning lights of low wattage close to but separate from taillights, side lights and parking lights. A circuit from a battery to the warning lights includes an adjustable resistance and individual warning light switches combined with individual warning control lights, in the form of lighted pushbutton switches, in a scaled-down symbol of the vehicle at the dashboard. When parking, the driver lights selected warning lights on the outside of the vehicle by pushing the corresponding pushbutton switches in the symbol of the vehicle which then also light giving a clear picture as to which warning lights are turned on. In addition, the driver adjusts the resistance to render the turned-on brightness of the corresponding lighted pushbutton switches, and depending on weather and other traffic conditions. In a modification the warning lights are controlled by a switch which is actuated by axially pulling or pushing the vehicle's light control to an extra position. In this position, by turning the vehicle's light control, the adjustable resistance may be adjusted and thus the brightness of the warning lights varied.

3,631,392

**CONTROL SYSTEM FOR ALTERNATELY ENERGIZING TWO SIGNAL LAMPS AT A PREDETERMINED RATE AND IN A FAIL-SAFE MANNER**

William B. Zelina, Erie, Pa., assignor to General Systems, Inc., Erie, Pa.

Filed May 9, 1968, Ser. No. 727,862

Int. Cl. G08b 5/36

U.S. Cl. 340-83

17 Claims

A control system for alternately energizing first and second lamp loads at a predetermined rate wherein a bistable circuit is connected with the lamp loads so that one lamp load is energized when the bistable circuit is in one stable operating state and the other lamp load is energized when the bistable circuit is in the other stable operating state. An oscillator system is coupled with the bistable circuit to effect triggering thereof between the two stable operating states. The oscillator system may be supplied from a first power source, such as a battery, and the switching system for a second power

3,631,394

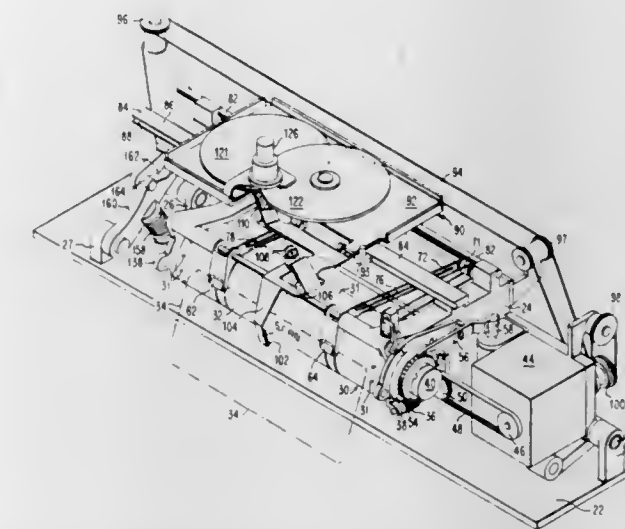
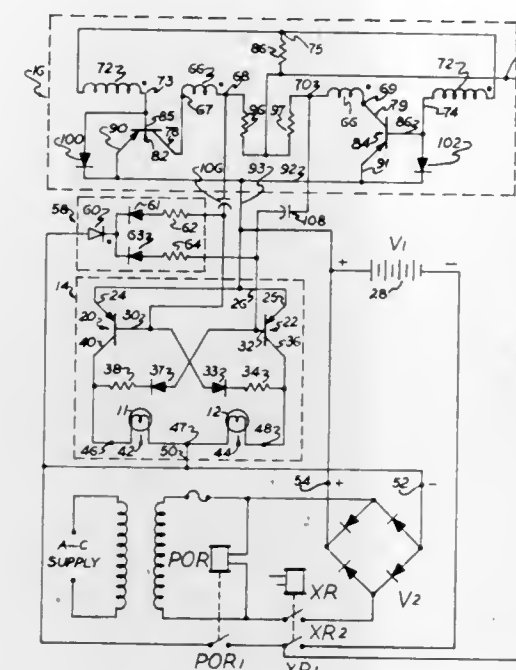
**CHARACTER RECOGNITION SCANNING APPARATUS**  
Jerome Danforth Harr, San Jose; Reynold Benjamin Johnson, Palo Alto; Ralph Eugene Marrs, Campbell; Ernie George Nassimbene, and George Edmund Price, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,626

Int. Cl. G06k 7/14

U.S. Cl. 340-146.3 F

6 Claims



vided to assure that if one lamp load is short circuited the bistable circuit will toggle to and remain in the other stable state and thereby prevent damage to the system while continuing to energize the other lamp load.

3,631,393

**VEHICLE LAMP FAILURE WARNING SYSTEM HAVING WARNING CIRCUIT COMPLETED WHEN LAMP IS OFF**

Allan Bennett, Solihull, England, assignor to Joseph Lucas Industries Limited, Birmingham, England

Filed June 16, 1969, Ser. No. 833,404

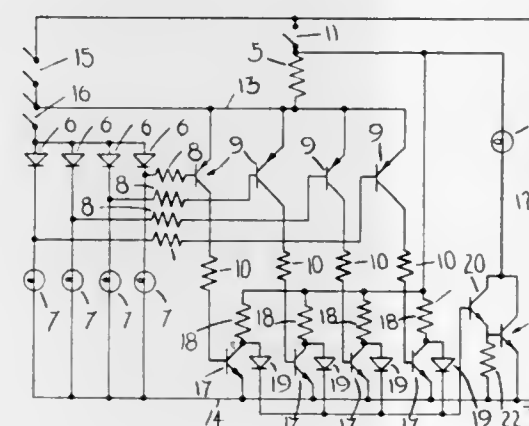
Claims priority, application Great Britain, July 1, 1968,

31,263/68

Int. Cl. G08b 21/00; B60q 1/02

U.S. Cl. 340-85

2 Claims



A lamp failure warning system for a road vehicle has a first lamp circuit which is completed when the lamp is to be illuminated and a second lamp circuit which is completed when the lamp is extinguished but has a resistance sufficiently high to ensure that the lamp is not illuminated. Means is provided sensitive to failure of the lamp when either circuit is completed for giving a warning when the lamp fails.

3,631,395

**DATA COMMUNICATION AND VERIFICATION SYSTEM**  
Fredric E. Zucker, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed July 27, 1970, Ser. No. 58,242

Int. Cl. H04q 9/00

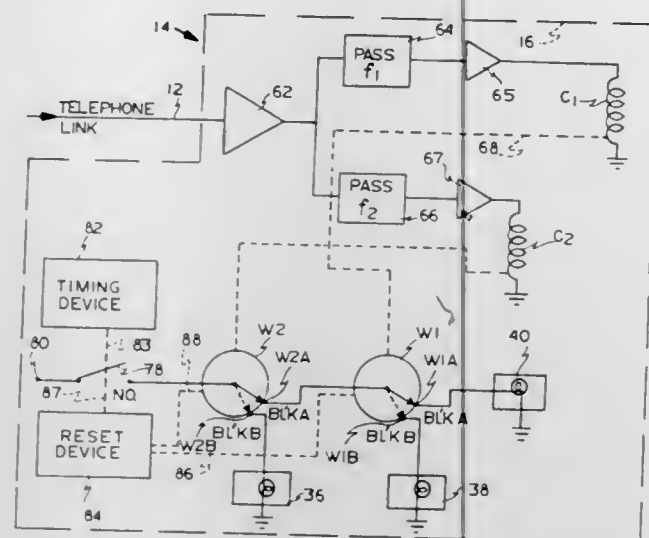
U.S. Cl. 340-149 A

7 Claims

A system for communicating more than 100 different digital message combinations over a single voice-grade telephone link, using different combinations of only two frequency tones. The invention is particularly useful in a credit card verification system comprising a satellite station where the card is identified, a communications link over



which card identification information is transmitted, and a computer station which sends back an answer in the form of frequency tones uniquely specifying one of four verification



possibilities. If the credit card is acceptable, it also provides a number in the range from 00 to 99 which identifies the particular transaction for subsequent audit purposes.

#### ERRATA

For Classes 340—149, 340—172, 340—267 and 340—283 see:  
Patent Nos. 3,631,535 thru 3,631,538

#### 3,631,396

##### DATA VERIFICATION METHOD AND SYSTEM

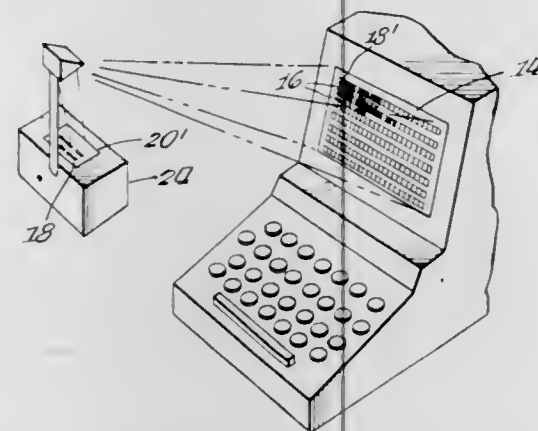
Eugene D. Spertus, Barrington; Harry A. Spertus, Barrington Hills, and Philip Spertus, Glencoe, all of Ill., assignors to Hypertech Corporation, Harwood Heights, Ill.

Filed June 4, 1969, Ser. No. 830,349

Int. Cl. G06f 11/00; G08c 25/00

U.S. Cl. 340—149

13 Claims



A method and system for entering data into a data-processing system and simultaneously verifying the data by displaying the original information or an image thereof, entering the original information into the system, and displaying the entered information in a format similar to the format of the original information and in juxtaposition therewith.

#### 3,631,397

##### SIGNAL SWITCHING DEVICE

Sadayuki Mitsuhashi, and Takeo Shinohara, both of Tokyo-to, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed July 3, 1969, Ser. No. 839,039

Claims priority, application Japan, July 10, 1968, 43/48690

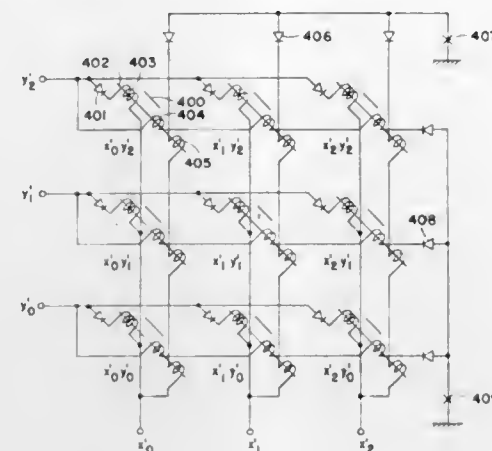
Int. Cl. G11b 5/00; H04g 9/00

U.S. Cl. 340—166 S

12 Claims

A cross point signaling switch including unidirectional conductive diodes, magnetic cores and groups of electric

windings wound on the cores for interconnection with input and output control lines to cause current to flow in predetermined windings at predetermined cross points aligned with preselected input and output control lines to activate the cores associated therewith to produce magnetic fields to move the overlapping adjacent reeds ends into engagement



at preselected cross points to connect the input and output signaling lines theret and at the same time to move overlapping adjacent reeds ends out of engagement as engaged at other cross points aligned with the preselected cross points to disconnect the input and output signaling lines thereat, without disturbing the signaling connection at the preselected cross points.

#### 3,631,398

##### TV REMOTE CONTROL SYSTEM

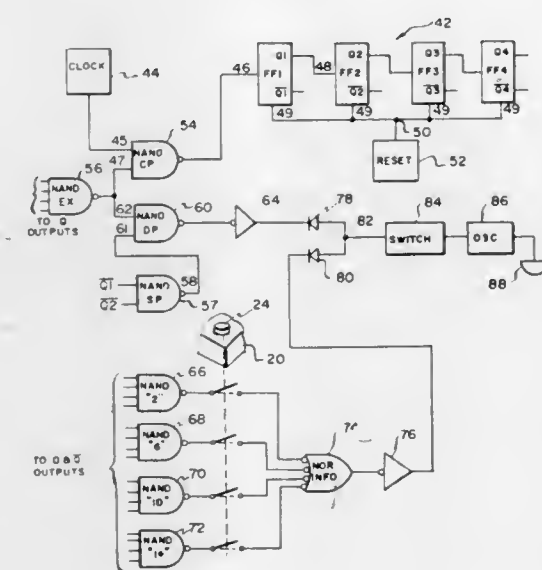
Larry R. Houghton, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed Oct. 12, 1970, Ser. No. 79,866

Int. Cl. H04g 9/00

U.S. Cl. 340—167 R

24 Claims



A remote control transmitter for controlling a television receiver generating a composite signal of single-frequency pulses including a selected binary code combination of information bits, a synchronization pulse prior to each information bit, and an elongated execute pulse at the end of the last information bit. A remote control receiver locally generates clock pulses corresponding to the received synchronization pulses to enable a storage device to serially store the received information bits. The stored information is decoded during storage and, upon reception of the execute pulse, a single output is provided corresponding to the selected function.

#### 3,631,399 PULSE CODE MODULATED TRANSMITTER-RECEIVER TRANSMISSION LINK

George E. Minns, Hounslow, Middlesex, England, assignor to Dewhurst & Partner Limited

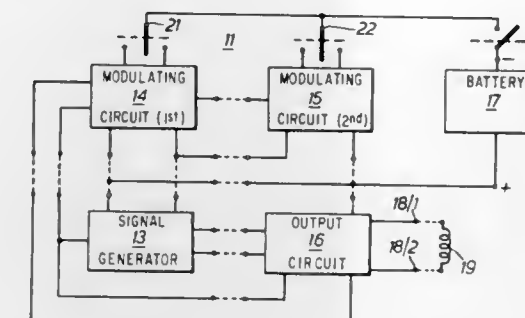
Filed July 14, 1969, Ser. No. 841,429

Claims priority, application Great Britain, July 12, 1968, 33,481/68

Int. Cl. H04q 9/00; H04i 3/00

U.S. Cl. 340—171 R

6 Claims



A transmission link for the control for example of a window hoist utilizes a carrier signal C selectively frequency modulated by either of two inverse primary periodic pulse signals A1 and A2, with or without selective frequency modulation of the selected primary signal A1 or A2 by either of two similar but lower frequency secondary signals B1 and B2. Each of the primary and secondary signals is detected by periodic charge and discharge of capacitance and periodic sampling of the capacitance charge level. The pulses are of nonunity mark/space ratio, being distinguished by a DC blocking capacitance producing pulses of opposite polarity and nonunity mark/space ratio and hence of unequal amplitudes, detected by a threshold level detecting device.

#### 3,631,400

##### DATA-PROCESSING SYSTEM HAVING LOGICAL STORAGE DATA REGISTER

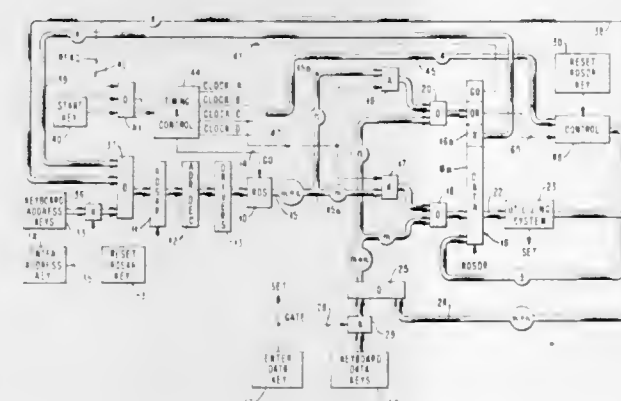
James T. Dervan, III, Salt Point, and James R. Moysey, La Grangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,570

Int. Cl. G06f 7/06

U.S. Cl. 340—172.5

5 Claims



A data-processing system includes a read-only storage data register in which words can be selectively ORed. A read-only storage has its output connected to the register. When the store is cycled to read out a word, the register is either reset prior to being set in accordance with the word or, the reset is inhibited whereby the contents of the word is ORed with a word previously placed in the register. A word may also be placed in the register from an alternate source such as a keyboard or a utilizing system.

#### 3,631,401 DIRECT FUNCTION DATA PROCESSOR

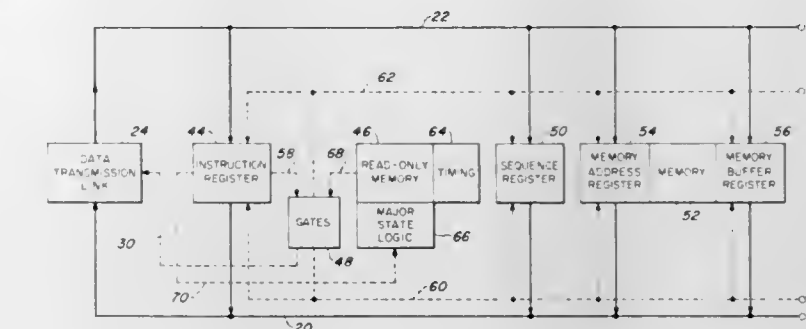
Saul B. Dinman, Wayland, Mass., assignor to GRI Computer Corporation, Newton, Mass.

Filed July 29, 1969, Ser. No. 845,760

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5

10 Claims



A direct function data-processing system employing a number of functional elements all connected to either an input or output data bus or both so as to function as a data source of a data user or both. The system also includes a data transmission link which serves to connect the two data buses so that data can flow only from a data source to a data processor either directly, or by being shifted left or right, or by having one bit added thereto, or by being complemented. A simple control circuit is used to control the operation of the transmission link.

#### 3,631,402

##### INPUT AND OUTPUT CIRCUITRY

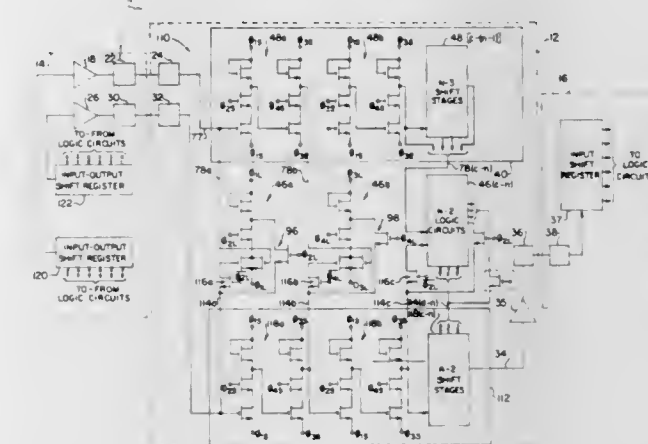
Jack O. Field, West Carrollton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Mar. 19, 1970, Ser. No. 21,150

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5

29 Claims



Input and output circuitry is described which enables one to time share certain pads on an integrated circuit chip between several signals. This may be accomplished by providing shift registers for these pads and having each shift register receive, in parallel, the data bits provided by several of the logic circuits on the chip. Each shift register thereafter provides a signal which represents the data in serial order, and this signal is applied through the pad to a pad on a second chip. The signal is thereafter applied to a shift register on the second chip, and the data bits appear at its outputs in parallel. The data bits are thereafter applied to logic circuits on the second chip.



3,631,403

## RETAIL SALES TRANSACTION TERMINAL

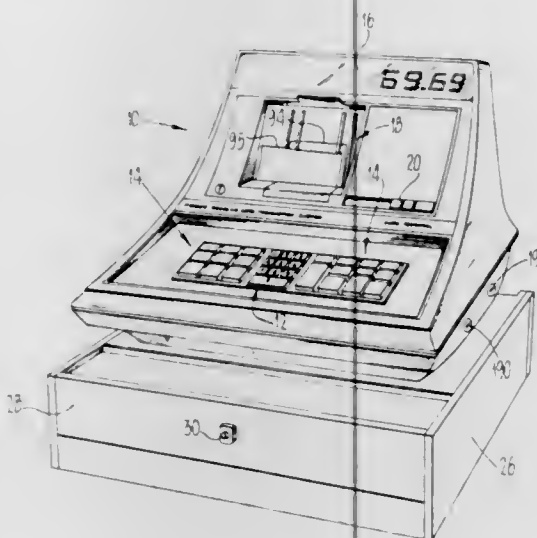
Elnar Asbo, Castro Valley; Joseph R. Herr, Los Altos Hills, and Jerry W. Sublett, Newark, all of Calif., assignors to The Singer Company, New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,904

Int. Cl. G06f 15/02, 15/20

U.S. Cl. 340—172.5

16 Claims



A data input and function-directing terminal in the form of a point of sale transaction device having manually operable numerical and function specifying keys, and a data processor comprised of a read-only-memory, a set of data-handling registers and a read/write memory for manipulation of data between the terminal and various ones of a plurality of input/output devices according to a sequence of operator actions that are supervised by a fixed program in the read-only-memory, and variable program that may be entered manually into the processor.

3,631,404

## DATA COMMUNICATION SYSTEM INCLUDING ADDRESS-GENERATING MEANS AND METHOD

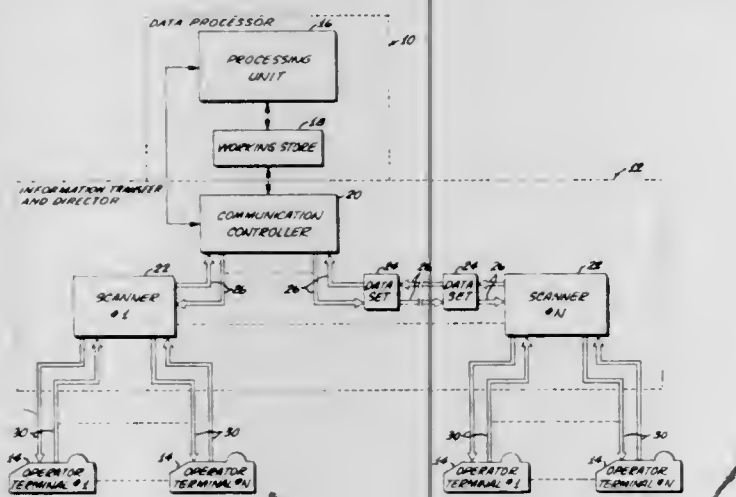
Donn E. Bernhardt, and Perry W. Penton, both of Phoenix, Ariz., assignors to General Electric Company

Filed July 28, 1969, Ser. No. 845,397

Int. Cl. G06f 3/04, 9/20

U.S. Cl. 340—172.5

5 Claims



The controller provided services transmit and receive queues of data in a data processor memory, in a manner which is substantially independent of the data processor in respect to the transfer in and out of the queues of messages to and from data terminals.

3,631,405

## SHARING OF MICROPROGRAMS BETWEEN PROCESSORS

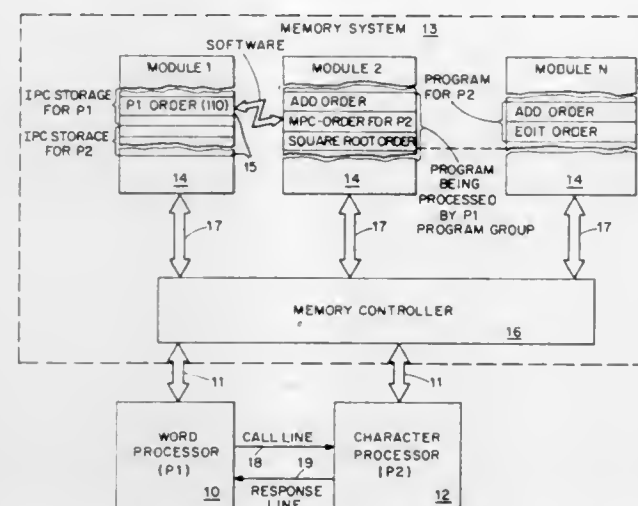
George S. Hoff, Sudbury, Mass., and Richard P. Kelly, Nashua, N.H., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 12, 1969, Ser. No. 875,900

Int. Cl. G06f 9/12, 15/16

U.S. Cl. 340—172.5

21 Claims



A multiprocessor system includes two microprogrammed processors, each having a different instruction repertoire and capable of executing separate programs or portions thereof independently. Both processors share a common memory unit and communicate through established groups of memory storage locations. One processor is word-oriented and processes data using a fixed word format while the other processor is character-oriented and processes data using a variable length format. The microprogrammable control elements of both processors are interconnected to permit the fixed word processor to share microprograms of the variable length processor for executing instructions not included in its repertoire.

3,631,406

## METHOD OF CONTINUOUSLY EXCHANGING DATA BETWEEN A DATA PROCESSING APPARATUS AND EXTERNAL DEVICES

Hans Kurner, Karlsruhe, Germany, assignor to Siemens AG, Berlin and Munich, Germany

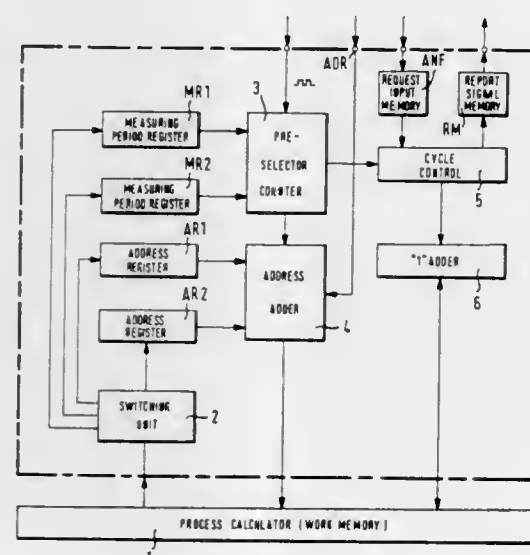
Filed Nov. 19, 1969, Ser. No. 878,053

Claims priority, application Germany, Nov. 22, 1968, P 18 10 413.7

Int. Cl. G06f 1/04

U.S. Cl. 340—172.5

2 Claims



For a continuous exchange of data between the memory of a data processing apparatus and external devices, the data

are alternately stored in one of two partial ranges of said memory. While storing is in progress in one partial range, the data of the other partial range may undergo processing.

3,631,407

## CHARACTER MEMORY OF REDUCED SIZE

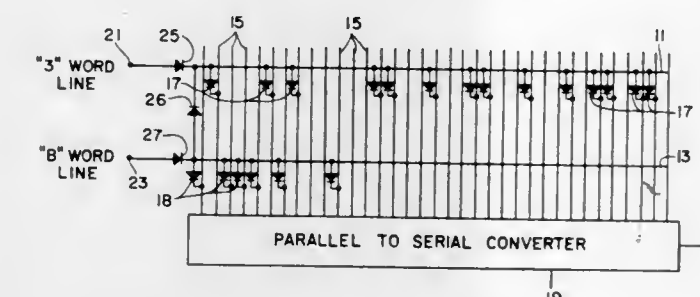
Douglas A. Cotter, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed June 25, 1969, Ser. No. 836,514

Int. Cl. G11c 17/00, 11/38

U.S. Cl. 340—173 SP

9 Claims



Read-only memory size reduction based on the implication theory of logical mathematics. A different designation number is generated by the memory in response to the application of an interrogation pulse to each of the word line input terminals. If one of the designation numbers implies another designation number, then the latter may be generated from the former with a cross-point impedance element saving which equals the number of logical bits that are common to both designation numbers.

3,631,408

## CONDENSER MEMORY CIRCUIT WITH REGENERATION MEANS

Masaharu Kubo, Hachioji-shi, and Minoru Nagata, Kodaira-shi, both of Japan, assignors to Hitachi, Ltd., Chiyoda-ku, Tokyo, Japan

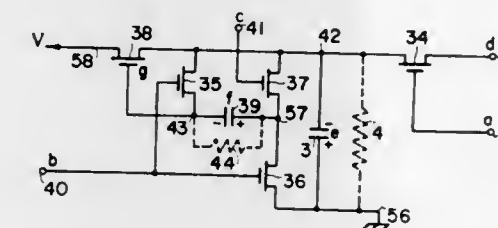
Filed Sept. 15, 1969, Ser. No. 857,824

Claims priority, application Japan, Sept. 13, 1968, 43/65583

Int. Cl. G11c 7/00, 11/24

U.S. Cl. 340—173 CA

11 Claims



A condenser memory circuit comprising a condenser in which information is stored as an electric charge, and means closed by application of a regenerative instruction pulse of a certain specific period under the condition that the electric charge is stored in said condenser, said means connecting a regeneration power source to said condenser; said condenser memory circuit characterized in that when a stored charge is present in the condenser, the stored charge is regenerated at

3,631,409

## ELECTRO-OPTIC READOUT OF INFORMATION USING A SCHLIEN OPTICAL SYSTEM

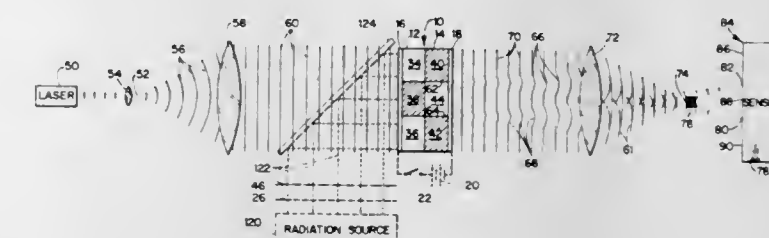
William R. Buchan, Lincoln, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed June 24, 1970, Ser. No. 53,767

Int. Cl. G11c 13/04

U.S. Cl. 340—173 LM

22 Claims



Apparatus is disclosed for reading out information present in the form of variations in electric field intensity using a Schlieren system to focus regular wave fronts passing through an electro-optic medium, whose index of refraction varies as a function of an applied electric field, at an opaque spot and to focus disturbed wave fronts, whose distortions are created by variations in the index of refraction of the medium caused by variations in the applied electric field, in the space surrounding that spot to form a representation of the information present in the electric field applied to the medium.

3,631,410

## EVENT RECORDER

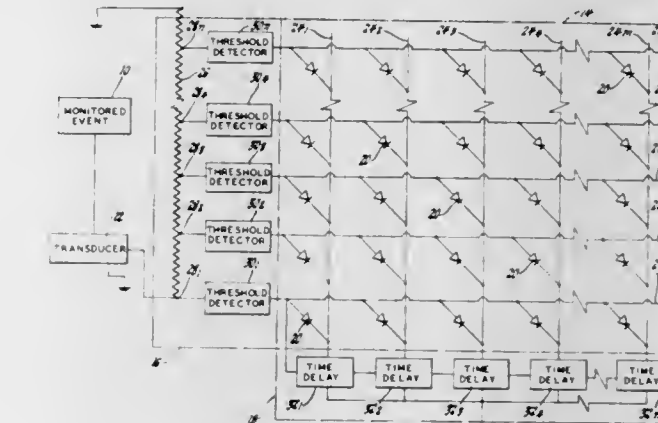
Bruce M. Velasco, Goleta, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1969, Ser. No. 873,529

Int. Cl. G11c 11/36

U.S. Cl. 340—173 SP

2 Claims



An apparatus is provided for recording a signal voltage as a function of magnitude and time. The apparatus includes a memory matrix comprising a plurality of diodes connected between different ones of a series of magnitude drive lines and a series of time drive lines. A magnitude input circuit is



connected with the magnitude drive lines for applying a drive voltage to different ones of the drive lines as a function of the magnitude of the signal voltage. A time input circuit is connected with the time drive lines for coupling different ones of the drive lines to a reference voltage point as a function of time. The drive voltage is substantially greater than the peak voltage rating of the diodes. Therefore, as the drive voltage is applied to the selected ones of the magnitude drive lines and as selected ones of the time drive lines are coupled to the reference voltage point, the diodes connected between the selected ones of the magnitude and time drive lines are burned out or open circuited by the drive voltage. Hence, the pattern of open circuited diodes within the memory matrix provides a representation of the magnitude of the signal voltage as a function of time.

3,631,411

## ELECTRICALLY AND OPTICALLY ACCESSIBLE MEMORY

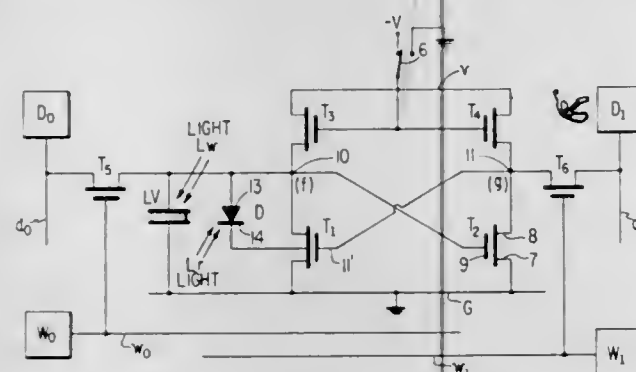
Walter Frank Kosonocky, Skillman, N.J., assignor to RCA Corporation

Filed Oct. 15, 1969, Ser. No. 866,645

Int. Cl. G11c 11/42

U.S. Cl. 340—173 LS

16 Claims



A computer memory system is disclosed which includes a randomly and electrically accessible semiconductor "page" memory. The semiconductor page memory is an array of memory units each of which includes an electrically accessible flip-flop for storing a binary information bit. In addition, each flip-flop is provided with a photodiode by which the flip-flop can be set in response to received light, and is provided with a liquid crystal light valve controlled by the electrical state of the flip-flop. The page array of memory units is constructed as a metal oxide semiconductor (MOS) integrated circuit. Each memory unit includes a flip-flop transistor having a drain which is extended over an area of opposite-conductivity material to form a photodiode. A liquid crystal material and a transparent electrode are positioned over the photodiode to form a light valve. The page array of memory units is used as a page-at-a-time electrical input-output unit for a great many pages of information stored optically on an erasable holographic storage medium.

3,631,412

## MULTISTATE MAGNETIC CORE MEMORY

Philip A. Harding, Palos Verdes Peninsula, Calif., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 27, 1970, Ser. No. 6,132

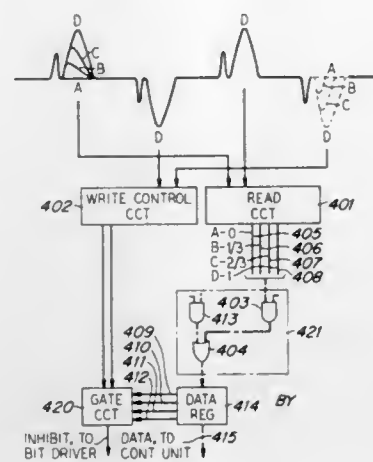
Int. Cl. G11c 5/02, 11/06, 15/00

U.S. Cl. 340—174 PA

9 Claims

A magnetic core memory wherein states of partial magnetization as well as magnetic saturation are employed. In the course of reading information from a core the core is first switched to one extreme state of magnetization to obtain a data readout pulse and subsequently the core is switched to the opposite state of magnetization to obtain a reference data

pulse. The ratio of the magnitudes of the reference pulse and the data pulse is measured and is employed to define the state in which the core resided prior to interrogation. Cores are placed in a stable state either a state of partial magnetization or a state of full magnetization, by switching the core from one extreme state of magnetization to the other ex-



3,631,413

## MAGNETIC DOMAIN PROPAGATION ARRANGEMENT

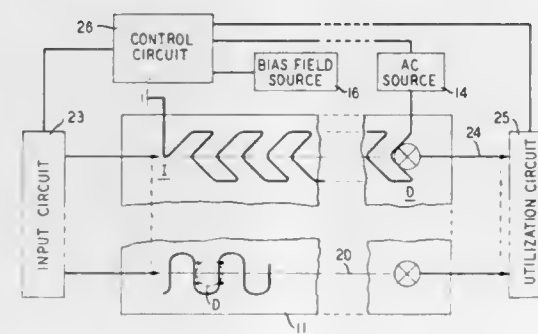
John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 24, 1970, Ser. No. 49,272

Int. Cl. G11b 5/62

U.S. Cl. 340—174 MC

8 Claims



A single electrical conductor to which an AC signal is applied causes movement of a single wall domain therealong in a substrate of magnetic material in which such domains can be moved.

3,631,414

## RAPID ACCESS DATA STORAGE AND RETRIEVAL SYSTEM

John E. Bigelow, Niskayuna, N.Y., assignor to General Electric Company

Filed Dec. 30, 1968, Ser. No. 787,699

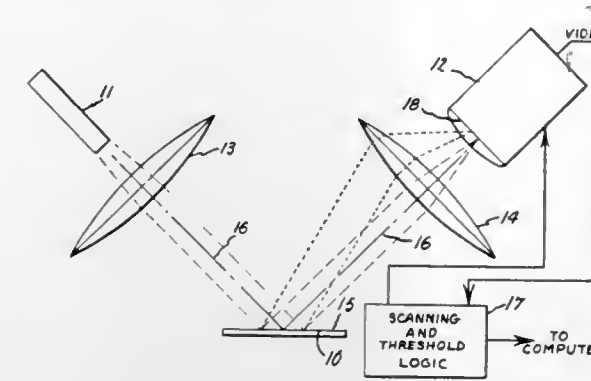
Int. Cl. G11c 11/14, 11/42; G02b 5/18

U.S. Cl. 340—174 YC

12 Claims

Superimposed angularly oriented diffraction gratings are recorded on sheets of magnetic film to provide high-density data storage on each sheet, each recorded grating representing a particular binary digit. Optical readout is accomplished by diffracting a beam of monochromatic light with the gratings on any selected sheet to produce first order diffraction images in the form of spots on an output plane according

to the binary digits recorded on the sheet. The locations of the input of the first stage by way of an inverter. Each stage the spots thus formed on the output plane are indicative of is associated with one of the controllable rectifiers and the



data recorded on the sheet. The sheets may be stacked to provide compact, three-dimensional storage of data.

3,631,415

## OPTICAL MASS MEMORY

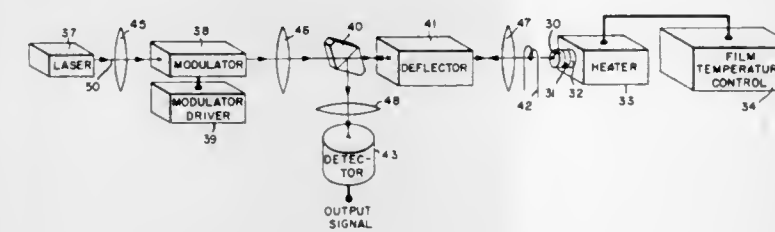
Roger L. Aagard, Minneapolis; Di Chen, Minnetonka, and Francis M. Schmit, St. Louis Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 12, 1969, Ser. No. 857,308

Int. Cl. G11b 7/00; G11c 11/14, 11/42

U.S. Cl. 340—174 YC

11 Claims



An optical mass memory utilizing the Curie point writing technique wherein information is stored on a manganese bismuth film having low- and high-temperature crystallographic phases. A preheater is utilized to maintain the manganese bismuth film within a temperature range during the quiescent stage of operation in which only the low-temperature crystallographic phase exists. A laser beam provides additional thermal energy to a predetermined film spot to achieve Curie point writing. The stored information is retrieved utilizing the polar Kerr magneto-optic effect.

3,631,416

## GENERATOR FOR PRODUCING CONTROL IMPULSES FOR STRIKING THE CONTROL-TABLE RECTIFIERS OF A THREE-PHASE INVERTED CONVERTER

Flemming Thorsoe, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

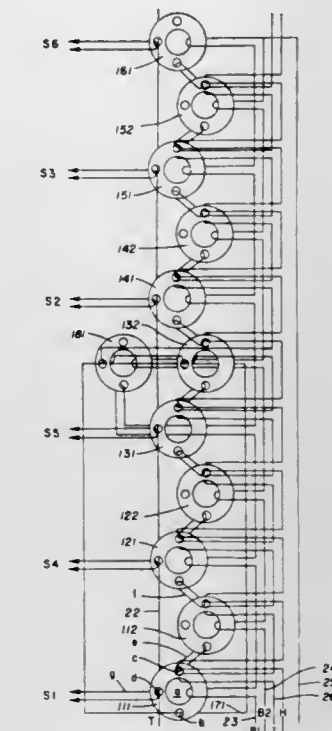
Filed Oct. 6, 1969, Ser. No. 864,571

Int. Cl. G11c 19/00, 11/08

U.S. Cl. 340—174 SR

3 Claims

The invention relates to a generator for producing control signals for striking the controllable rectifiers of a three-phase inverted converter having common quenching means. The generator is a slide-type impulse-storing type of device which is actuated in synchronism with quenching impulses and has six bistable stages. The output of the third stage is applied to



3,631,417

## CYLINDRICAL MAGNETIC MEMORY CONSTRUCTION

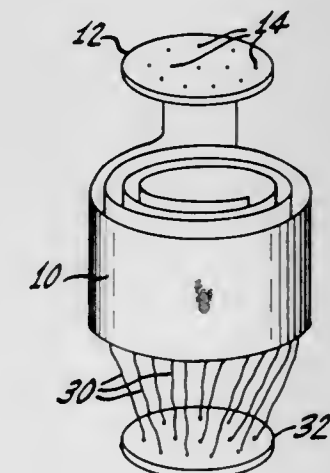
Willis Edward Golder, Holliston, and John Pellegrino, Saugus, both of Mass., assignors to RCA Corporation

Filed Nov. 18, 1969, Ser. No. 877,805

Int. Cl. G11c 11/06, 5/04

U.S. Cl. 340—174 MA

6 Claims



A magnetic core memory construction, and method of construction, is disclosed in which selection diodes and magnetic core memory arrays are mounted on an elongated flexible web. The web has printed conductors thereon having external connection terminals and internal connection terminals. The diodes and memory wires are connected to internal connection terminals. The flexible web assembly is rolled into a cylindrical shape and enclosed in a container having an end cap that includes a multiterminal connector for connections to the external connection terminals of the flexible web. The container is filled with an insulating liquid. Expansion and contraction of the liquid is accommodated by an internal bellows which is vented on one side to the atmosphere.

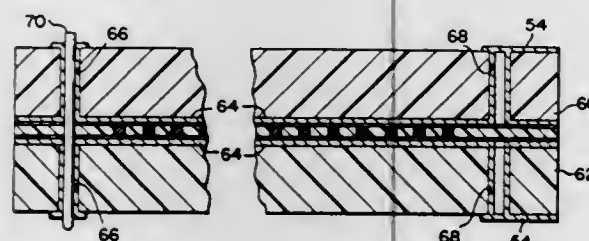


3,631,418

**FILAMENTARY MAGNETIC MEMORY**

Thaddeus F. Bryzinski, West Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.  
Original application Jan. 22, 1968, Ser. No. 699,673, now Patent No. 3,513,538, dated May 26, 1970. Divided and this application Nov. 26, 1969, Ser. No. 880,188  
Int. Cl. G11c 5/02, 11/04, 11/14  
U.S. Cl. 340—174 PW

1 Claim



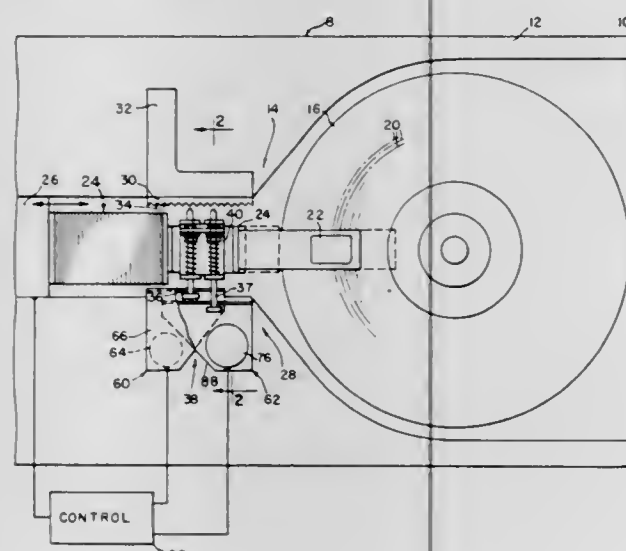
An array of spaced, insulating lands in cast in situ upon a printed circuit card bearing spaded, parallel conductive strips. The lands are aligned normally across the strips. Stretchable filaments are placed in the grooves between the lands, and a second card, identical to the first is cemented upon the array of lands in opposed registration with the first card. The filaments are pulled out, leaving elongated apertures to receive filamentary magnetic memory elements. Connections are made through the cards to the conductive strips by any convenient means such as by electroplating through holes to connect the strips to an external circuit.

3,631,419

**APPARATUS FOR THE VIBRATION-FREE POSITIONING OF MOVABLE COMPONENTS**

Bin-Lun Ho, Los Gatos, Calif., assignor to Iomec Incorporated, Santa Clara, Calif.  
Filed Apr. 10, 1970, Ser. No. 27,277  
Int. Cl. G11b 21/08; H01f 7/16  
U.S. Cl. 340—174.1 C

13 Claims



Apparatus for positioning a carriage which is movable along a predetermined path by mounting a toothed rack parallel to the carriage movement, and engaging predetermined indentations of the rack with a plunger mounted to the carriage for movement in a direction perpendicular to the carriage movement. Means for moving the plunger into engagement with the rack is mounted to the apparatus base so that inertial forces upon acceleration and deceleration of the

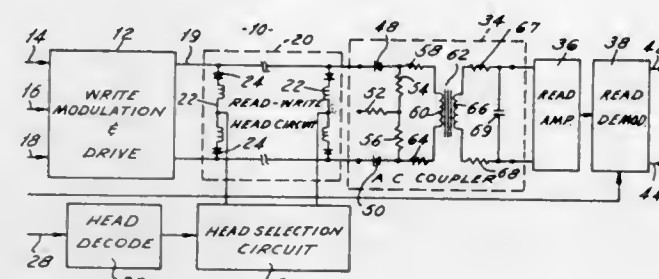
plunger are transmitted between the actuating means and the rack and the carriage is isolated from forces acting transversely to its direction of movement whereby lateral vibrations of the carriage due to inertial forces are eliminated.

3,631,420

**READOUT CIRCUIT FOR DIGITAL MAGNETIC RECORDING SYSTEM**

Gerald K. Strehl, Detroit, Mich., assignor to Information Data Systems, Inc., Detroit, Mich.  
Filed Apr. 15, 1970, Ser. No. 28,673  
Int. Cl. G11b 5/02  
U.S. Cl. 340—174.1

15 Claims



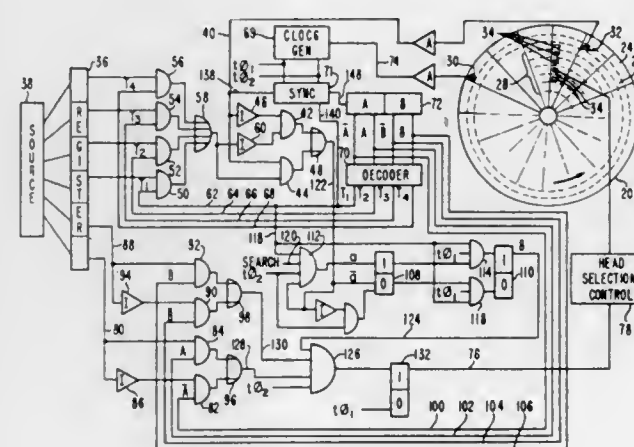
A readout circuit for phase-modulated data recorded on magnetic storage media wherein the playback signal developed by the playback heads is processed through a passive circuit comprising a resistor connected in series between the head and the primary of a ferrite core transformer. A capacitor is connected in parallel with the secondary of the transformer. The resistor has a value such that the series combination of the resistor and the primary differentiate the pickup signal. The capacitor has a value that tunes the secondary to parallel resonance at a preset frequency to compensate for distortion due to the crowding effect at high-recording densities.

3,631,421

**DATA STORAGE ADDRESSING SYSTEM**

Cornelius C. Perkins, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.  
Filed Sept. 23, 1968, Ser. No. 775,971  
Int. Cl. G11b 27/32  
U.S. Cl. 340—174.1 J

20 Claims



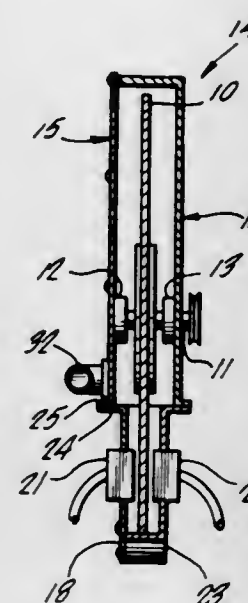
This invention relates broadly to addressing memory systems for the recording and the retrieval of information therein, and more particularly to a new and improved method of and apparatus for addressing a cyclically movable data storage member, such as a rotatable magnetic disk,

3,631,423

**SELF-PURGING DISK SYSTEM**

Robert George Groom, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.  
Filed June 13, 1969, Ser. No. 832,930  
Int. Cl. G11b 5/40; B01d 45/18  
U.S. Cl. 340—174.1 E

5 Claims



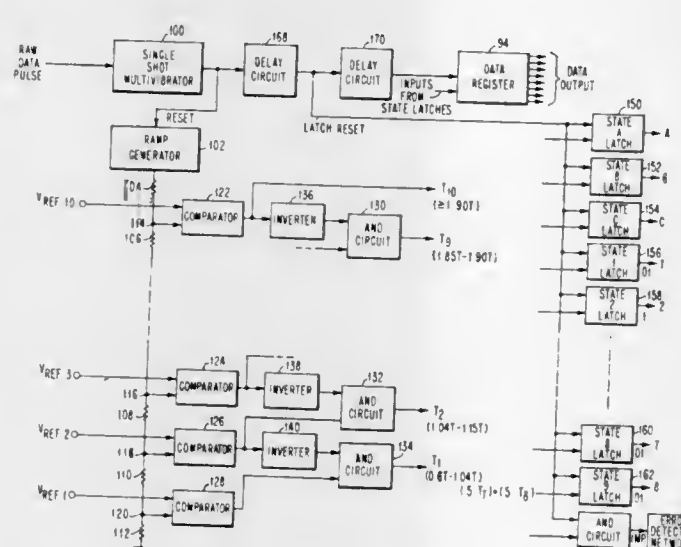
capable of locating every bit time thereof and of detecting and correcting any nonsynchronous relation between certain operating and timing signals. The more significant digits of the address of the wanted location are compared against an address track of the memory device in which the more significant digits of the addresses of all of the storage locations are recorded in binary form while at the same time the lesser significant digits of the two addresses are compared by means of a binary counter. With the cooperation of the counter, only the more significant digits of the addresses for the storage locations need be recorded on the address track of the memory device. The counter is capable of locating each digit within any address on the sector track, and as a result, any bit time around the memory may be addressed and located. Moreover, with the cooperation of the counter, certain properties of the binary numbers of the recorded sector track addresses are taken advantage of for synchronizing the operation of the system, and means is provided for detecting any out-of-phase relation between counter and timing signals that might develop and for automatically bringing these signals back into synchronization within a limited distance of movement of the memory device.

3,631,422

**SYSTEM FOR DETECTION OF DATA BY TIME INTERVAL MEASUREMENT**

William F. Krajewski, Los Gatos; Marco Padalino, and David H. Paulson, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Feb. 3, 1969, Ser. No. 795,920  
Int. Cl. G11b 5/04  
U.S. Cl. 340—174.1 G

17 Claims



A system is provided in which data processed in digitally encoded form is detected using an inverse algorithm of the encoding process and the predictable nature of errors which may be introduced by the processing media. In one example, a measurement of the time interval between each adjacent pair of data signal transitions derived from a magnetic recording media is adjusted to compensate for speed variations of the recording media, and the adjusted measurement is categorized according to the predictable nature of bit shift introduced by the recording media. Logic circuitry responds to each categorized time interval measurement to determine the data denoted thereby in terms of data detected from the immediately preceding time interval.

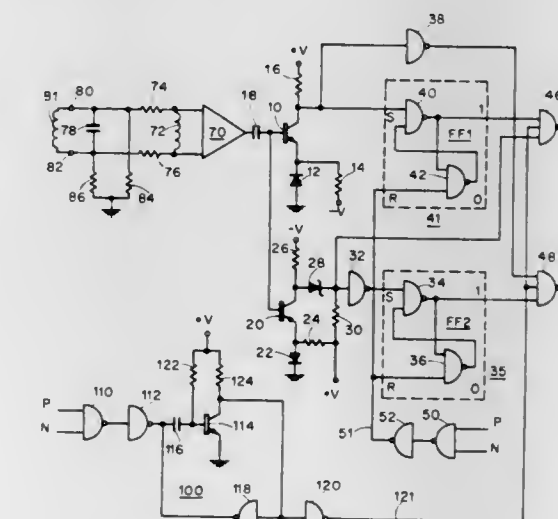
A closed system designed to have a minimum, and preferably no foreign particles in its interior, includes an enclosure housing a rotating mass which develops pressure differentials in the fluid enclosed in the housing. A conduit having a filter therein for collecting particles over a selected size connects an outlet port with an inlet port which are located adjacent areas of high pressure and low pressure, respectively, with the difference in pressure being sufficient to carry the particles through the conduit with the fluid movement therethrough.

3,631,424

**BINARY DATA DETECTING APPARATUS RESPONSIVE TO THE CHANGE IN SIGN OF THE SLOPE OF A WAVEFORM**

William M. Regitz, Franklin, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.  
Filed July 22, 1969, Ser. No. 843,724  
Int. Cl. G11b 5/02  
U.S. Cl. 340—174.1 H

13 Claims



In a magnetic recording system wherein a playback waveform is induced in a read transducer, detecting ap-



paratus adapted to sense the occurrence of positive and negative voltage peaks of the playback waveform. The detecting apparatus includes first and second semiconductor active elements of opposite types, one capable of conduction during a positive-going transition of the playback waveform, while the other is capable of conduction during a negative-going transition of the playback waveform. Logic means are also included and adapted to connect to the output of the first and second semiconductor active elements.

3,631,425

## MAGNETIC HEAD SLIDER WITH ORIFICE

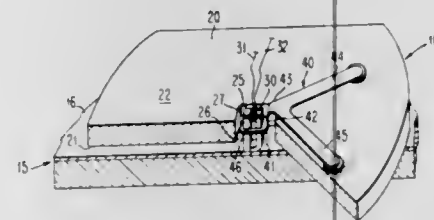
Tung-Men Tang, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,630

Int. Cl. G11b 5/10, 2/120

U.S. Cl. 340-174.1 E

4 Claims



A magnetic head assembly is disclosed for cooperating in transducing relation with a moving magnetic medium. The assembly comprises a slider having an air-bearing surface, a magnetic transducer, and resilient means for mounting the transducer to the slider and for providing relative movement between the transducer and the slider. The slider has an orifice therethrough defining an aperture in the air bearing surface. In view of the pressure differential between the air bearing surface and the other surface of the slider, contaminants are urged through the orifice and out of the slider.

3,631,426

## INFORMATION STORAGE SYSTEM HAVING MASTER AND REDUNDANT DATA ON TAPE IN TURRET SUPPORTED CARTRIDGES

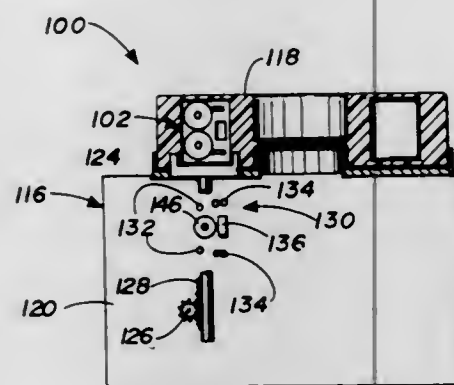
Daren R. Appelt, Houston, Tex., and Granville E. Ott, Columbia, Mo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1969, Ser. No. 888,337

Int. Cl. G11b 5/02, 23/08

U.S. Cl. 340-174.1 B

6 Claims



In an information storage system, a turret supports a plurality of cartridges which in turn enclose individual lengths of magnetic tape. The turret rotates the cartridges to an ap-

paratus that selectively transfers the cartridges to an information recording/reproducing station. At the station, phase modulated data is simultaneously recorded along 32 master data tracks. At the same time, the same data is encoded and recorded along 32 redundant tracks. During reproduction, all 64 tracks are read simultaneously. Data from the master data tracks is selected unless a parity error occurs, whereupon data from the corresponding redundant track is used.

3,631,427

## INCREMENTAL TAPE DRIVE CONTROLLED BY PRERECORDED CLOCK TRACK

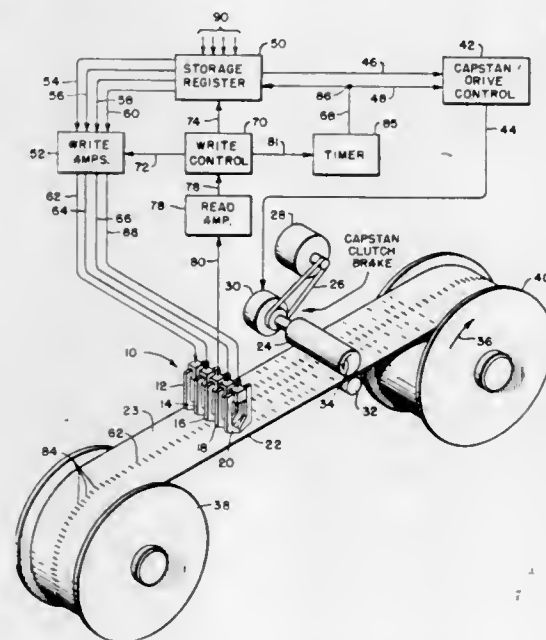
Richard A. Hein, Skokie; Mark A. Hunter, Evanston, and Alf J. Olsen, Elk Grove Village, all of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Dec. 30, 1969, Ser. No. 889,099

Int. Cl. G11b 15/18; B65h 17/22

U.S. Cl. 340-174.1 A

6 Claims



A plurality of electromagnetic transducers for recording in magnetic medium supported on a moveable carrier are arranged in a record head in alignment with a magnetic sensor which is responsive to a clock track in said medium. An effect generated by the sensor in response to a sensed mark in the clock track simultaneously orders (1) transmission of intelligence to writing amplifiers, (2) discharge of the amplifiers to said transducers for recording said intelligence and (3) cycling of a timer. Upon completion of its cycle, the timer orders (1) drive to the carrier terminated for reinitiation in response to availability of intelligence for recordal and (2) resetting of a data register for receiving new intelligence.

3,631,428

## QUARTER-HALF CYCLE CODING FOR ROTATING MAGNETIC MEMORY SYSTEM

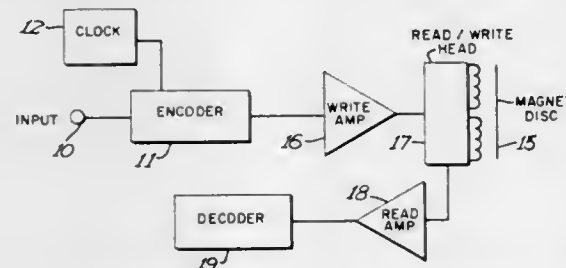
Wayne J. King, Leucadia, Calif., assignor to Pacific Micronetics, Inc., San Diego, Calif.

Filed Nov. 19, 1968, Ser. No. 805,916

Int. Cl. G11b 5/04

U.S. Cl. 340-174.1 G

11 Claims



A system for coding information in a rotating magnetic memory, the system having means for representing, for ex-

ample, a "1" by a one-half cycle portion of a wave such as a rectangular wave, and having a given frequency, and representing a "0" by one-quarter portion of a similarly shaped wave having the same amplitude but only half the frequency of the first wave.

3,631,429

## SYSTEM FOR REPRODUCIBLY STORING DIGITAL DATA

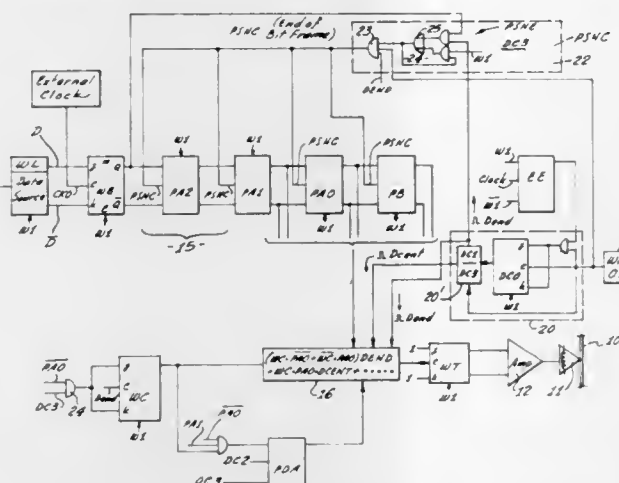
Wayne J. King, Leucadia, Calif., assignor to Pacific Micronetics, Inc., San Diego, Calif.

Continuation-in-part of application Ser. No. 805,916, Nov. 19, 1968. This application Aug. 6, 1969, Ser. No. 847,831

Int. Cl. G11b 5/06

U.S. Cl. 340-174.1 G

16 Claims



A system is disclosed for recording digital data on a magnetic storage surface and in sequential bit frames thereof. A "zero" is recorded by placing a transition on but one of the two frame boundaries of a bit frame. A "one" is recorded by placing a transition on both boundaries or in the center of the frame. The selection of transition placement is made dependent upon an odd-even count of recorded "zeros." Upon readback, the delay between sequential readback peaks may be about one, one and a half or two frame periods, and the data are reconstructed from these delays in that a delay of a frame period represents a one, a delay of two frame periods represents two "zeros," and a delay of one and a half frame periods is alternately interpreted as a "zero," followed by a "one," or as a single "zero." Bit crowding and signal rise time problems are counteracted by predistorting the placement of transitions during recording.

3,631,430

## POSITION-RESPONSIVE APPARATUS

Gordon Maurice West, Kirkcaldy, Scotland, assignor to The Rank Organisation Limited, London, England

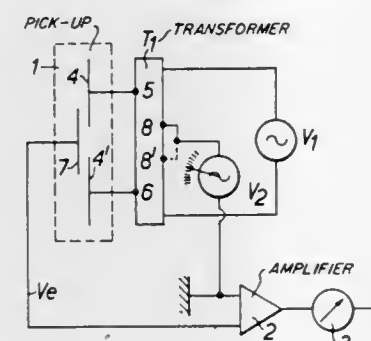
Filed Jan. 29, 1969, Ser. No. 795,003

Claims priority, application Great Britain, Feb. 12, 1968, 6,842/68

Int. Cl. G08c 19/00

U.S. Cl. 340-200

28 Claims



An apparatus for determining the relative position of two members in which a voltage from an adjustable supply is used

3,631,431

## EVENT-MONITORING SYSTEM

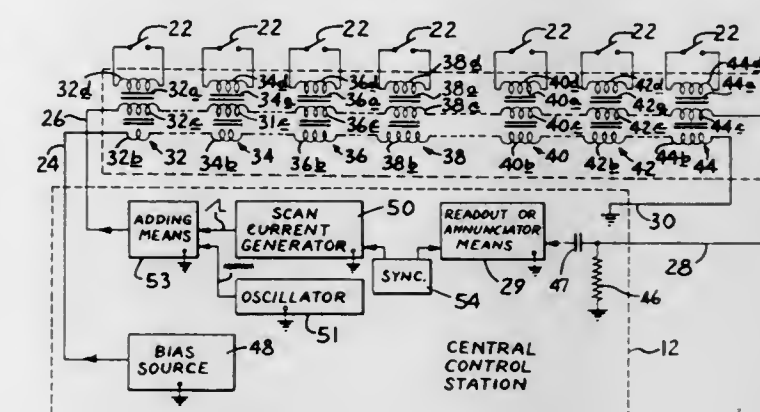
Jay A. Cox, Rolling Hills Estates, Calif., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed May 27, 1969, Ser. No. 828,247

Int. Cl. G08b 25/00

U.S. Cl. 340-213

11 Claims



An event-monitoring system including saturable core devices having respective separate saturable cores most desirably each carrying a biasing winding and a scanning winding, the biasing windings being connected in series with one another and the scanning windings being connected in series with one another. The biasing windings of the saturable core devices have different numbers of turns so an instantaneous predetermined magnitude of biasing current will saturate the cores to progressively increasing degrees. The series connected scanning windings receive a scanning current of progressively increasing value, which most advantageously have an AC component superimposed thereon, to develop an oppositely directed progressively increasing electromagnetic field sequentially to unsaturate the cores at predetermined current values normally to cause sequential electrical output signals to be generated thereby, the interval during which unsaturation occurs being a large number of cycles at the modulating frequency. Associated condition-responsive switch means are connected to each saturable core device, such as across each scanning windings, or preferably across a separate isolation winding, so closure of the switch means will prevent the generation of said output signal.

3,631,432

## ANNUNCIATOR UNIT FOR USE IN A FAULT WARNING SYSTEM

John Stallebrass, 15 Adam and Eva Mews, London, W. 8, England

Filed Jan. 14, 1970, Ser. No. 2,868

Int. Cl. G08b 19/00, 25/00

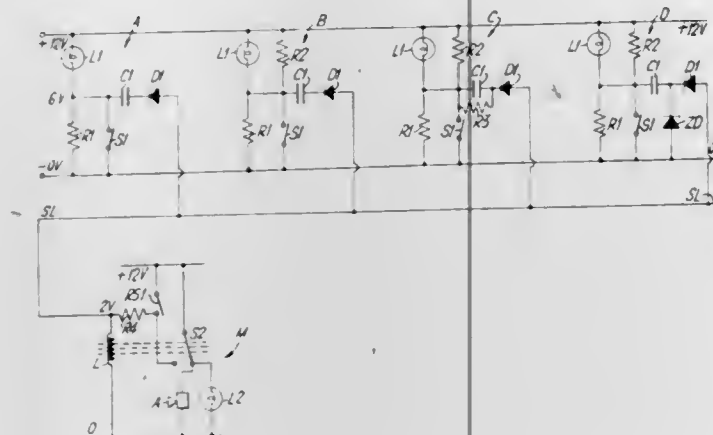
U.S. Cl. 340-213.1

11 Claims

The invention is concerned with annunciator units for use in electrical fault warning systems which can indicate whether certain parameters of a number of pieces of equipment lie within acceptable operating limits or not. The unit comprises a visual indicator and a switch which is normally open but which is arranged to be closed upon a fault occurring and thus causing the visual indicator to be energized. The switch is connected to one side of a capacitor the other side of which is connected through a blocking diode to a signal output for connection to a signal line. The arrangement is such that when the switch is closed the potential on the one side of the capacitor is changed so that an additional charge is drawn as a pulse through the diode to or from the



signal line from or to the other side of the capacitor. In use a number of annunciator units are connected to a common master warning unit through common or parallel signal lines and the appearance of the pulse in the signal line operates



the master warning unit which can subsequently be reset before the fault has cleared on one annunciator unit so that it is ready to indicate a fault appearing on another annunciator unit.

3,631,433

## DETECTION AND ALARM SYSTEM

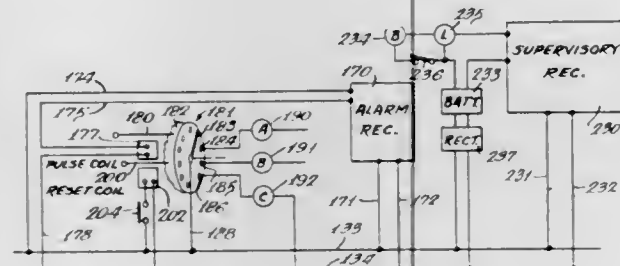
Keith M. Dix, Bannockburn, Ill., assignor to Fire Protection Company

Filed Sept. 15, 1969, Ser. No. 857,882

Int. Cl. G08b 1/08

U.S. Cl. 340—216

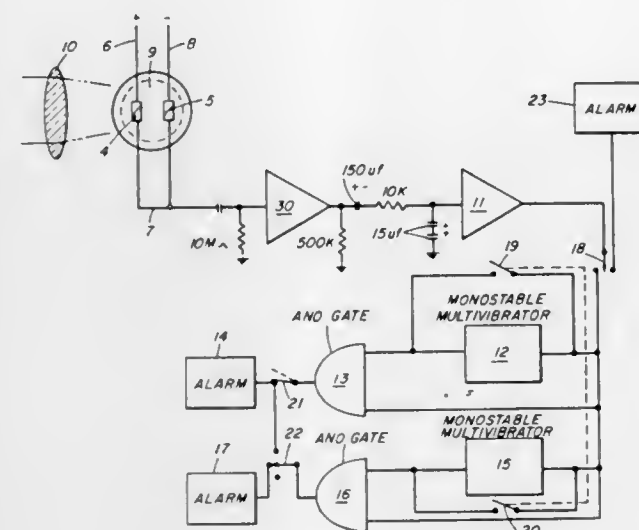
23 Claims



A fire detection and alarm system for sensing a dangerous fire or like condition in one part of a building or the like and providing an alarm signal at a remote location in the building, by means of high-frequency carrier signals superimposed on the existing wiring, including a fire detection transmitter for sensing fire and transmitting at one frequency, a receiver responsive to signals from the fire transmitter for actuating an alarm, a normally energized supervisory transmitter adjacent the fire-detecting transmitter and operative at a second frequency for sensing circuit failure, and a supervisory receiver at the remote location responsive to signals from the supervisory transmitter for actuating an alarm on power failure when the supervisory transmitter stops sending.

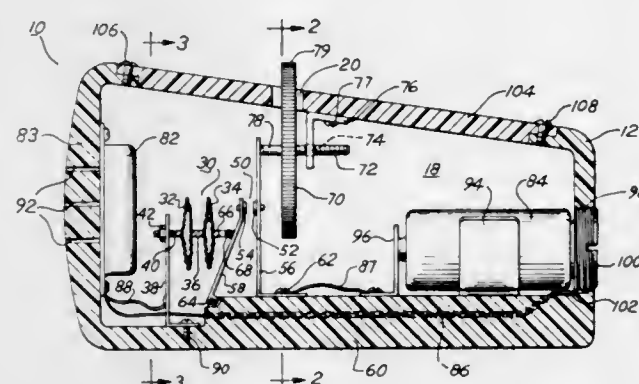
In an alternative embodiment for use in a large building involving many different widespread areas, a separate fire detection transmitter is provided in each area in association with a stepping relay which identifies the area, and an annunciator at the remote alarm location includes a single stepping relay for selectively energizing indicators not only warning of fire or the like but also showing the location.

3,631,434  
PASSIVE INTRUSION DETECTOR  
Frank Schwartz, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.  
Continuation-in-part of application Ser. No. 564,391, July 11, 1966, now abandoned. This application Oct. 8, 1969, Ser. No. 864,842  
Int. Cl. G08b 13/18; H01j 39/00  
U.S. Cl. 340—228 13 Claims



A passive intrusion detector is described with two stationary detectors or detector elements arranged side by side and stationary optics which image a target onto the plane of the detector. The output of the two detectors or detector elements, which are in opposition, is processed in electronic circuits involving differentiation so that there will be no final output unless the image of the target moves onto and off a detector or, in one modification, from one detector to the other. The electronics can also indicate the direction of the movement. The detector is aimed at an area where an intruder may enter, for example, a path through the jungle, and signals by the infrared radiation of the target that moves into the area or across it actuate an alarm.

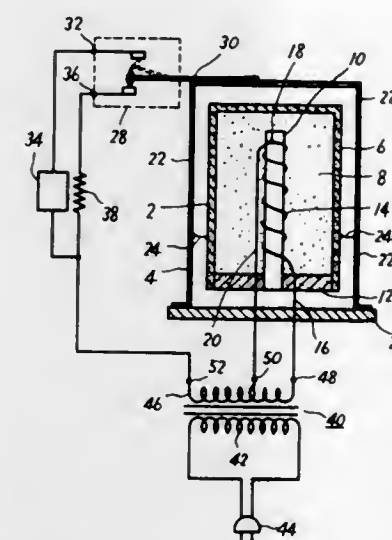
3,631,435  
TORNADO SENSING DEVICE  
George H. Elenbaas, 814 Hiawatha Drive, Elkhart, Ind.  
Filed May 2, 1968, Ser. No. 726,096  
Int. Cl. G08b 21/00  
U.S. Cl. 340—236 5 Claims



A tornado warning device in which an electrical signal means is controlled by an electric circuit having a switch

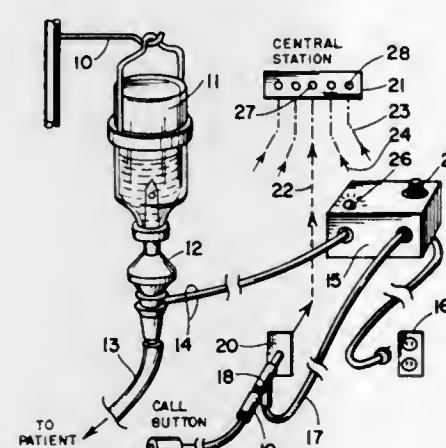
responsive to barometric pressure and a means for adjusting the switch to compensate for normal changes in barometric pressure. The adjustment means can readily be set and the circuit tested after a condition favorable for tornadoes has been reported or observed.

3,631,436  
GAS-DETECTING DEVICE  
Naoyoshi Taguchi, 1-2 Ikedaumachi Nagata-ku, Kobe, Japan  
Filed July 14, 1970, Ser. No. 54,743  
Int. Cl. G08b 21/00; G01n 31/06  
U.S. Cl. 340—237 6 Claims



A gas-detecting device having a gas responsive semiconductor, a pair of electrodes in contact with the semiconductor, means for heating the semiconductor to stabilize its resistance at a predetermined value, time delay switching means and an alarm circuit and an impedance circuit interconnected with said electrodes and said switching means so that the impedance circuit will be connected with the semiconductor electrodes during the heating period and upon stabilization of the semiconductor the switching means will automatically and effectively disconnect the impedance circuit and substitute the alarm circuit.

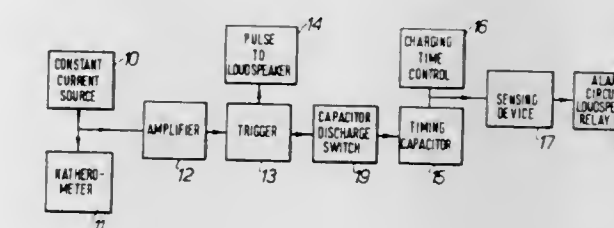
3,631,437  
INTRAVENOUS FEEDING MONITORING SYSTEM  
Duncan Campbell, 312 Peach Grove Lane, and Alexander Donald, 4120 Cresta Avenue, both of Santa Barbara, Calif.  
Filed July 24, 1969, Ser. No. 844,444  
Int. Cl. G08b 19/00; A61m 5/16  
U.S. Cl. 340—239 R 5 Claims



A drop rate generator is connected to conductors imbedded in the drop chamber of an intravenous feeding system to generate a series of electrical pulses of frequency

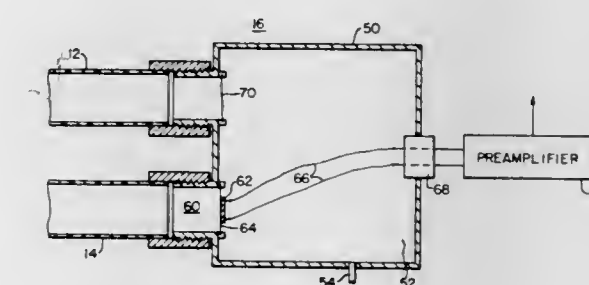
corresponding to drop rate. These pulses are fed into an electrical circuit including a logic circuit means for actuating an alarm at a central station when the frequency of the pulses and thus the drop rate is less than a first predetermined frequency or greater than a second predetermined frequency higher than the first predetermined frequency. The first and second predetermined frequencies define a tolerable or acceptable range of frequency variation in the drop rate such that no alarm signals are generated so long as the drop rate is within this range. The system also includes a fluid level indicating means responsive to the lowering of the fluid level in the intravenous feeding bottle below a predetermined level for actuating an alarm at the same remote location.

3,631,438  
APNOEA ALARMS  
John Ernest Lewin, London, England, assignor to National Research Development Corporation, London, England  
Filed Sept. 30, 1969, Ser. No. 862,421  
Claims priority, application Great Britain, Oct. 31, 1968, 51,738/68  
Int. Cl. G08b 21/00; A47c 27/08  
U.S. Cl. 340—240 4 Claims



An apnoea alarm comprises a compartmented air mattress the individual compartments of which are connected to a common chamber containing an anemometer. The anemometer is connected to an electronic circuit which gives an alarm after a preset time if there is no airflow over the katherometer due to movement of the mattress caused by a breathing baby lying on it.

3,631,439  
PRESSURE-SENSITIVE SECURITY APPARATUS  
Edward W. Nichols, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Sept. 15, 1969, Ser. No. 857,961  
Int. Cl. G08b 13/20; H01h 35/34  
U.S. Cl. 340—240 1 Claim



A pressure-sensitive security signal apparatus of the type in which a receiving transducer responds to pressure applied to fluid-filled tubes by developing an electrical signal which is a function of the applied pressure. More particularly the invention is directed to a pressure-sensitive security signal apparatus comprising two fluid-filled tubes and a single pressure transducer means for developing an electrical signal as a function of the difference in pressures applied to each of the fluid-filled tubes.



3,631,440

**LIQUID LEVEL DETECTOR**

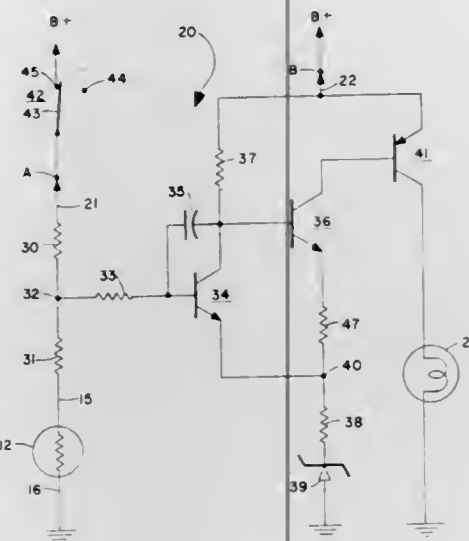
Arnie L. Cliffgard, 9268 Daisy Avenue, Fountain Valley, Calif.

Filed July 7, 1969, Ser. No. 839,322

Int. Cl. G08b 21/00; B60q 1/00

U.S. Cl. 340-244 C

6 Claims



A liquid level detector comprising a voltage-divider network, including a thermistor, connected between the terminals of a battery so that the potential at the voltage-divider output varies as a function of the resistance of the thermistor. The voltage-divider output is connected to the input of a voltage-sensitive switching circuit which is connected via a Zener diode to one of the battery terminals whereby the Zener diode provides a reference voltage level which is independent of current and battery voltage fluctuations. The voltage-sensitive switching circuit has two stable states and is either in one state or the other depending upon whether the potential at the voltage-divider output is above or below the reference level provided by the Zener diode. When the potential at the voltage-divider output indicates that the thermistor is out of a good heat conductor such as a liquid, the switching circuit closes a series circuit between the battery and a lamp so that the lamp provides a visual indication of the low liquid level condition. According to a preferred embodiment of the invention, the reference voltage level provided by the Zener diode has first and second discrete, controllable values depending upon whether the potential at the voltage-divider output is greater or less than the reference level provided by the Zener diode to permit independent control of the activation and deactivation of the lamp.

3,631,441

**LAMP FAILURE INDICATOR**

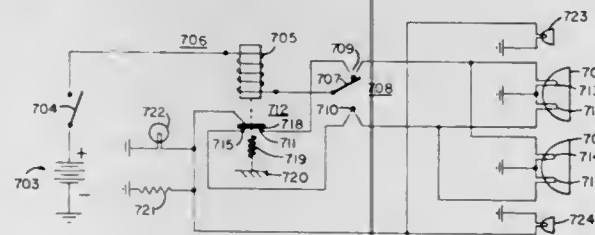
Herman H. Murphy, 3870 Highland Ave., San Diego, Calif.

Filed Jan. 31, 1969, Ser. No. 795,439

Int. Cl. G08b 21/00; B60q 1/04

U.S. Cl. 340-251

2 Claims



A circuit arrangement for monitoring the normal operation of the headlamp filaments in an automotive vehicle comprising an interrupter device connected in an electrical circuit with the headlamp filaments and a power supply, the interrupter device being inhibited from functioning as an active

interrupter by a normally functioning filament. Upon failure or other abnormality in the headlamp circuit, the device is enabled to function as an active interrupter to produce an audible indication characteristic of a buzzer or horn and, optionally, to provide a visual indication of the failure to the driver. According to the preferred embodiment of the invention, when functioning as an active interrupter, the present device intermittently connects an alternate filament into the circuit to substitute for the failed filament to thereby visually signal distant observers of the failure.

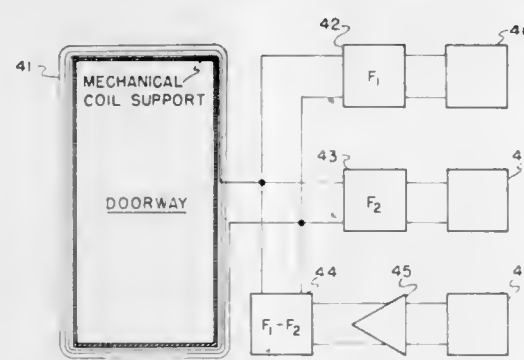
3,631,442

**ANTI-SHOPLIFTING SYSTEM**Robert E. Fearon, 530 S. Lewis, Tulsa, Okla.  
Continuation-in-part of application Ser. No. 680,666, Nov. 6, 1967, now abandoned. This application Mar. 22, 1968, Ser. No. 747,050

Int. Cl. G08b 13/24

U.S. Cl. 340-258 R

5 Claims



Article theft detection system wherein a passive nonlinear radio transponder is attached to each article to be protected, and an exit way is monitored by a loop antenna which is energized by currents of two different frequencies. The transponders radiate the difference frequency when subjected to a field of the two energizing frequencies. Receiving means connected to the loop antenna detects signals having a frequency equal to the difference between the two energizing frequencies, and actuates an alarm.

3,631,443

**UNSAFE VELOCITY DETECTION SYSTEM**

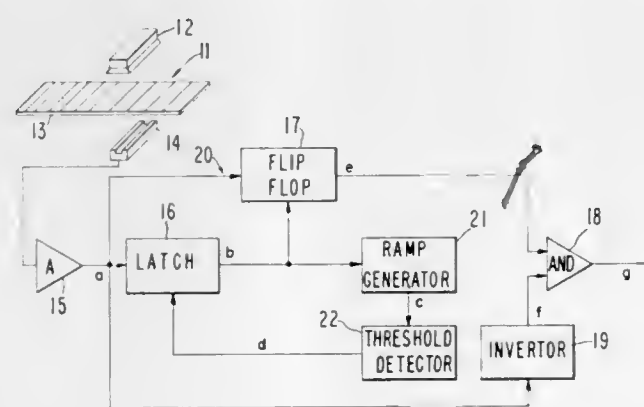
Martin O. Halfhill, and Timothy W. Martin, both of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed July 18, 1969, Ser. No. 842,942

Int. Cl. G08b 5/22

U.S. Cl. 340-263

4 Claims



An unsafe velocity detection system for use with a servo-controlled actuator connected to a movable load, including a

transducer for generating a signal indicating traverse by the load of a predetermined increment of the effective working area of the load, circuitry for developing a time-based signal from the traverse signal and means for comparing the traverse signal with the time-based signal to detect any excessive velocity condition.

3,631,444

**ELECTRIC PERMUTATION LOCK AND ALERTING SYSTEMS**

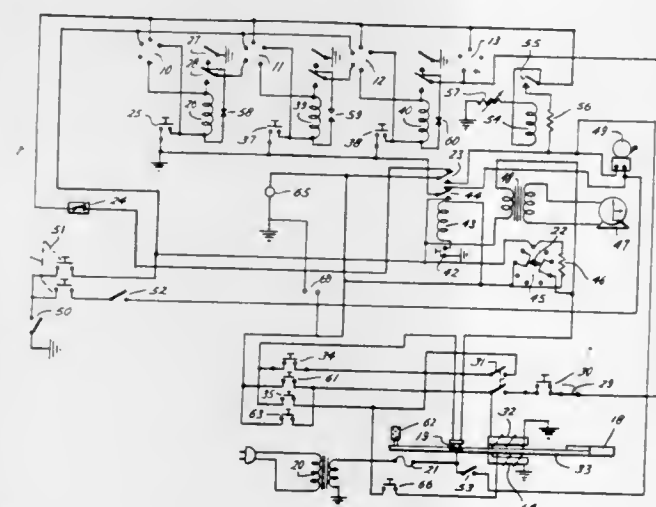
Don Harold Daniel, 5114 Huisache, Bellaire, Tex.

Filed July 22, 1968, Ser. No. 754,154

Int. Cl. G08b 19/00

U.S. Cl. 340-274

5 Claims



A composite door lock security system in which a door-unlocking combination function is provided through electric screening of outside-switch-generated signals. A preselected and changeable unlock combination is allowed to pass to an unlock solenoid while any erroneous unlock signals, burglar detection and community alert signals are channeled to the lock reset and to one or both of two alarm circuits which sound, register and identify the above source signals plus fire detection signals. Simple switch and manual lock-unlock means are also provided.

3,631,445

**BURGLAR ALARM AND LOCKING DEVICE FOR DRAWER**

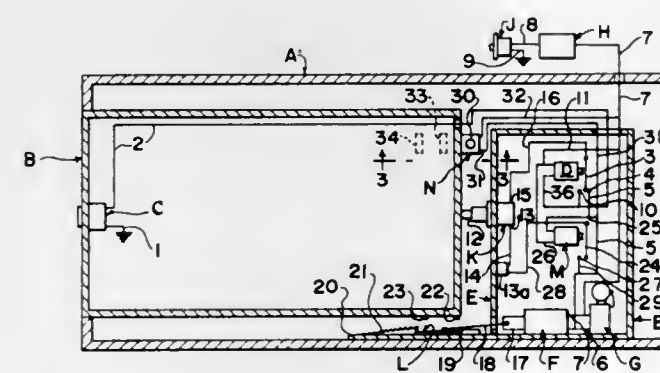
Alfred G. Shew, 6449 Hazel Avenue, Richmond, Calif.

Filed Dec. 9, 1969, Ser. No. 883,480

Int. Cl. G08b 13/08

U.S. Cl. 340-274

4 Claims



A burglar alarm and locking device for a key-locked drawer for holding valuables in which the burglar alarm is ac-

tivated as soon as an unauthorized person tries to forcibly open the drawer without using the required key. Automatic drawer locking means is also actuated for preventing the drawer from being forced open to an extent where the unauthorized person can remove valuables such as currency from the drawer. This same means will prevent the drawer from being completely closed by the unauthorized person.

3,631,446

**SLEEP-SENSING DEVICE FOR USE ON AUTOMOTIVE VEHICLES**

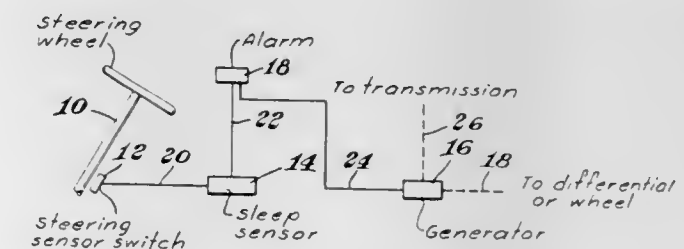
Donald D. Setser, 1901 S. Fulton, Tulsa, Okla.

Filed Aug. 12, 1968, Ser. No. 751,984

Int. Cl. G08b 21/00

U.S. Cl. 340-279

5 Claims



This invention relates to means for detecting sleepiness or drowsiness in a driver of an automotive vehicle. An electrical sensing switch is coupled to the steering mechanism of the vehicle whereby the normal moving of a steering wheel results in frequency movement and actuation of the contacts of the switch.

Actuation of the multicontact switch either charges a charge transfer condenser or, depending on movement of the vehicle's steering wheel, transfers the charge of the transfer condenser to a rate or counter circuit whose output is coupled a relay which when deactivated, for example, actuates an alarm powered by voltage generated by means coupled to the drive means of an automotive vehicle.

Lack of normal steering movement results in the deactivation of the relay and actuation of the alarm when predetermined speed of the vehicle occurs.

3,631,447

**SAFETY ALARM**

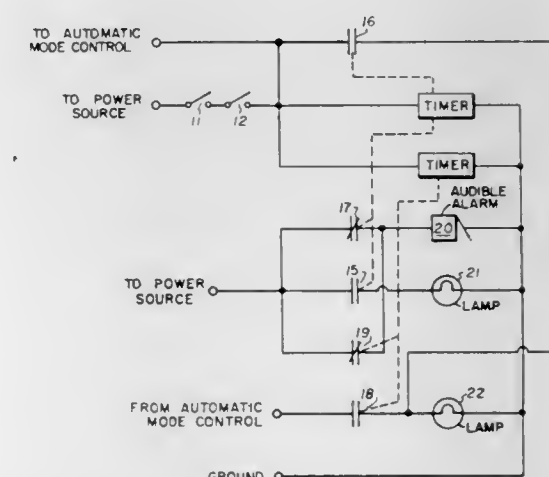
Raymond J. Sulat, West Caldwell, and Moses W. Hunt, Newark, both of N.J., assignors to Hudson Tool &amp; Die Co., Inc., Newark, N.J.

Filed July 11, 1969, Ser. No. 841,048

Int. Cl. H01h 47/22

U.S. Cl. 340-279

7 Claims



A safety alarm for machines having an "automatic" mode of operation comprising a pair of timers actuated by manually operable switches, the said timers connected in se-



ries to prevent the machine from converting to the "automatic" mode of operation until both have timed-out and requiring the uninterrupted manual actuation of said switches during the period of timeout, and audible alarm means energized continuously while the machine is set for "automatic" mode of operation, the said alarm means being deenergized when both timers have timed out.

3,631,448

### MULTIPLE STATION INTERCOMMUNICATIONS SYSTEM

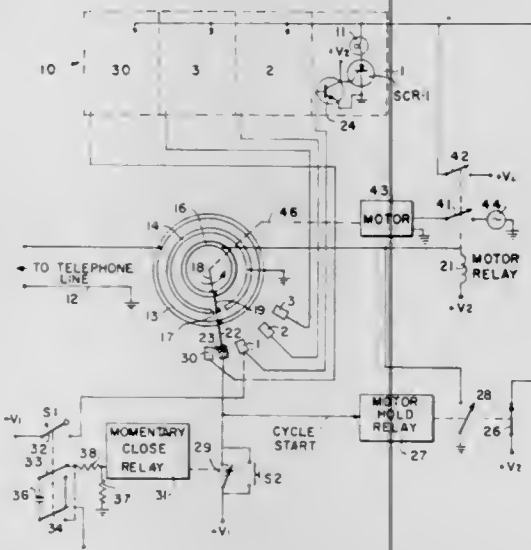
John M. Leslie, Portola Valley, Calif., assignor to Havalex, Inc., Redwood City, Calif.

Continuation-in-part of application Ser. No. 624,008, Mar. 17, 1967, now abandoned. This application Apr. 26, 1968, Ser. No. 724,388

Int. Cl. G08b 5/00; H04q 3/00

U.S. Cl. 340—286

12 Claims



A system interconnecting several stations, each having one of two conditions which it is desired to communicate to all stations so that the conditions of all stations is indicated at each station. A plurality of indicators, one for each station, are at each station, and have an energized and deenergized state for indicating the conditions of the corresponding stations. Silicon controlled rectifiers maintain the energized condition of energized indicators. Each station is sequentially scanned in response to a change in condition of any one of the stations.

3,631,449

### STATUS-SIGNALING SYSTEM

William John Head, West Hill, Ontario, Canada, assignor to Electro Tech Appliance Service Limited, Toronto, Ontario, Canada

Filed Sept. 18, 1969, Ser. No. 858,983

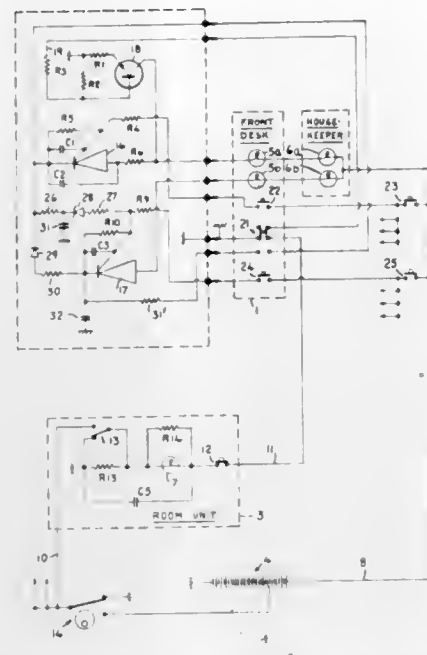
Int. Cl. G08b 5/36

U.S. Cl. 340—293

14 Claims

A room-status-signalling system comprises a central unit containing a plurality of pairs of indicator lamps and a plurality of room units each containing an indicator lamp corresponding to a respective pair of indicator lamps at the central unit. The remote room units are interconnected with the central unit by call wires to form a plurality of signalling circuits, each signalling circuit containing a single-call wire and including switching means at the remote unit and the central unit for selectively energizing the lamps in accordance with a sequence of room status conditions to be signalled. By selectively energizing one or other of the lamps of any pair, with

steady or intermittent current, a number of signals are made available to indicate the different status conditions, and the



particular condition is indicated in the room unit by the room lamp.

3,631,450

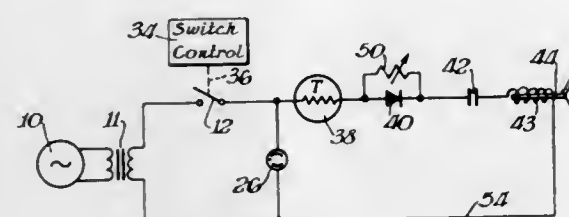
### ACOUSTIC ALARM DEVICE

John W. Chalfant, 8325 S.W. 86th Terrace, Miami, Fla.  
Filed Aug. 27, 1969, Ser. No. 853,295

Int. Cl. G08b 23/00

U.S. Cl. 340—328

3 Claims



A loudspeaker is adapted to be energized by an alternating current signal to provide an audible output signal of progressively increasing intensity. An alarm controlled switch applies the signal to a loudspeaker. The increase in intensity of the audible signal is facilitated by a thermistor connected in series with the loudspeaker. A high-pass filter and rectifier circuit in series with the thermistor enhance the production of harmonics of the signal frequency thereby to provide an improved audio tone and to permit said tone, or alarm signal, to be readily heard over a broad intensity range. A vibrator attached to the speaker provides a second audible signal after a predetermined audio intensity is achieved.

3,631,451

### APPARATUS FOR THE CONTACTLESS RELEASE OF SIGNALS IN CLOCKS

Karl Schmitt, Achern, Baden, Germany, assignor to Gehap Gesellschaft für Handel und Patentverwertung mbH & Co. KG.

Filed Dec. 12, 1969, Ser. No. 884,680

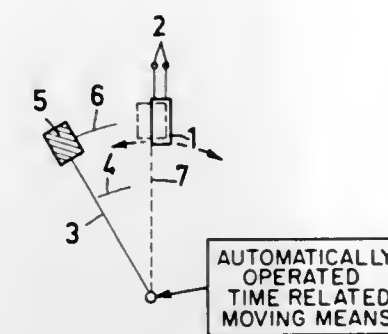
Int. Cl. G04b 23/00; G04c 21/00

U.S. Cl. 340—309.1

10 Claims

An apparatus for the contactless release of signals in alarm clocks, signal clocks, timers for electrical appliances, start-stop time switches, short-time bells, or the like, comprising in the area of a release mechanism which is actuated by the clockwork at least one magnetic-field-dependent resistor

connected to an electronic control circuit, and a magnetic field that changes by reason of the release mechanism being



caused to act on this resistor when the signal is released in the desired manner.

3,631,452

### WORK-SCHEDULING APPARATUS

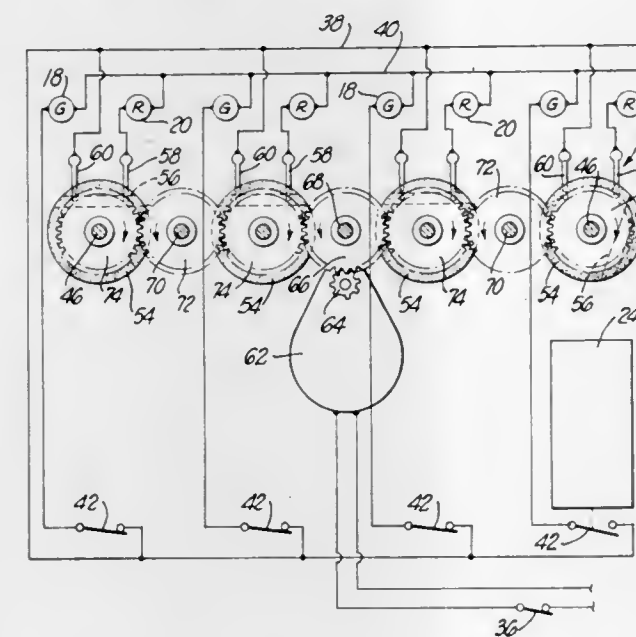
Willard H. Richard, 42865 Jefferson St., Fremont, Calif.

Filed Dec. 23, 1968, Ser. No. 786,029

Int. Cl. G04c 23/00

U.S. Cl. 340—309.5

3 Claims



Work-scheduling scheduling apparatus for indicating the status of a number of work-performing media which may be either men or machines. The scheduling apparatus embodies a number of indicator sets to be associated with the work-performing media, respectively, whose work is to be scheduled. Each indicator set includes a first indicator for indicating the availability of the corresponding work-performing medium to perform its respective task and a second indicator for indicating the period of time which the corresponding medium, when occupied, has been engaged in its respective task and hence the remaining time required to complete the task.

3,631,453

### TIMER START-STOP APPARATUS

Bernard J. Stalp, Hillsboro, Oreg., assignor to Data Time, Inc., Beaverton, Oreg.

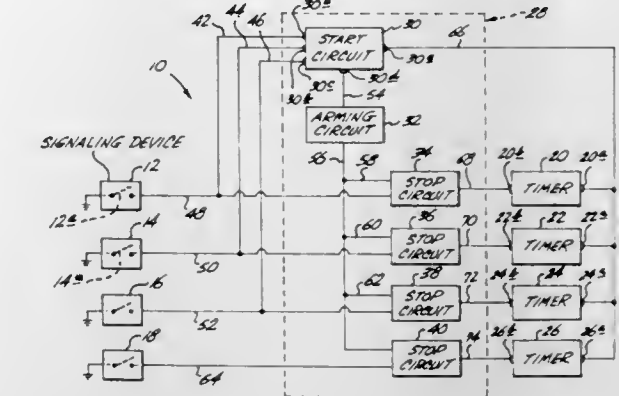
Filed Aug. 21, 1970, Ser. No. 65,928

Int. Cl. G06m 3/06

U.S. Cl. 340—323

7 Claims

Electronic circuitry for controlling from the actions of one or more hand-operated signaling devices the starting and stopping of one or more electrical timers employed to time the performances of participants in sporting and like events. The circuitry employs a start circuit, and separate therefrom



prevents operation of the stop circuits until the elapse of a predetermined time after operation of the start circuit.

3,631,454

### SELECTIVE DISPLAY SYSTEM

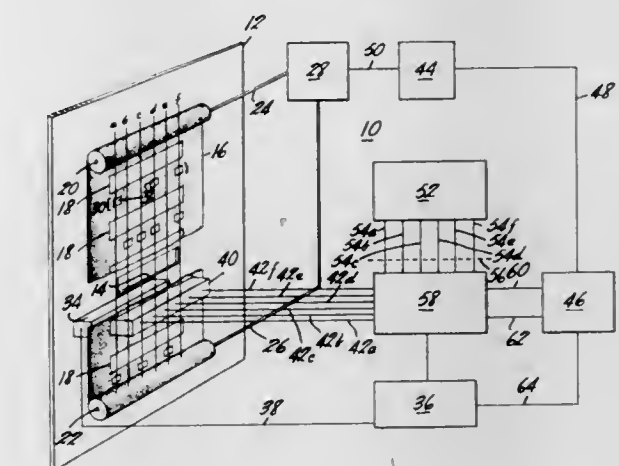
Delmar G. Fields, 82-51 Foxbay Road, Union Lake, Mich., and Jon Eckert, 1633 Paseo De Roca, Hacienda Heights, Calif.

Filed Oct. 23, 1969, Ser. No. 13,914

Int. Cl. G08b 5/22

U.S. Cl. 340—324 R

9 Claims



A system for selectively displaying symbols contained on a display curtain involving the noncontiguous sensing of identifiers associated with each symbol and continuous comparison of sensed identifiers with a command identifier indicative of a symbol desired to be displayed, said comparison being performed by nonretentive parallel parity detection circuitry.

3,631,455

METHOD AND APPARATUS FOR CODE CONVERSION  
Roland S. Gregg, Jr., Canoga Park, Calif., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Filed Feb. 13, 1969, Ser. No. 798,896

Int. Cl. G06f 3/14

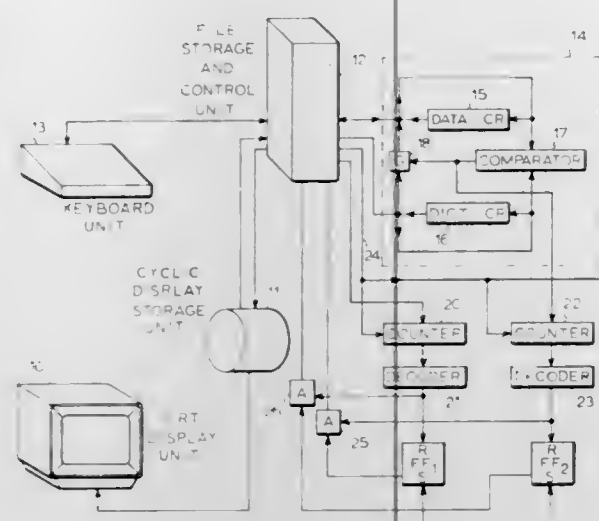
U.S. Cl. 340—324 A

20 Claims

A system for converting codes between a system data (e.g., ASCII) code format and a video display (e.g., dot matrix) code format is disclosed for use in a data display system employing a cathode-ray tube. Conversion is accomplished one line of characters at a time by a procedure in which the character code groups to be converted (system to video or video to system) are circulated in a register in synchronism with a "dictionary" consisting of a series of all possible character code groups, each with its related code group of the other format. The circulating register for the dictionary is



shorter than the register for the line of data to be converted such that with each cycle of the data circulating register, the dictionary is "precessed" (shifted) one character position in the line of data. When a correlation is found, the related



code group of the other format is substituted from the dictionary into the data register. Thus, one line of data is converted in a number of cycles of the data register equal to or less than the number of different character code groups of either format in the dictionary register.

3,631,457

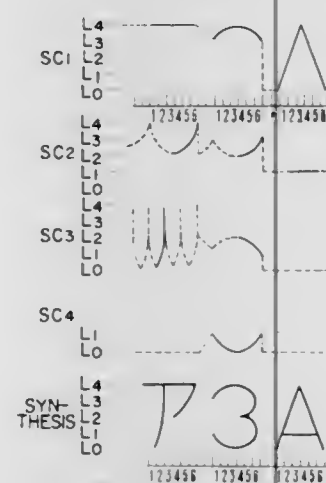
**DISPLAY DEVICE FOR DISPLAYING SIMULTANEOUSLY A PLURALITY OF SYMBOLS ARRANGED IN JUXTAPOSED RELATION IN ONE LINE**  
Terumichi Yokoyama, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed July 15, 1969, Ser. No. 841,795

Claims priority, application Japan, July 15, 1968, 43/49041  
Int. Cl. G06f 3/14

U.S. Cl. 340—324 A

7 Claims



Display device for displaying simultaneously a plurality of alpha-numeric and other special symbols arranged in juxtaposed relation in one line wherein said symbols are displayed by a plurality of horizontal scanning lines which are vertically deflected by a few fundamental waveforms and the phosphor screen of a CRT is excited to luminescence at a required portion or portions of said deflected waveform.

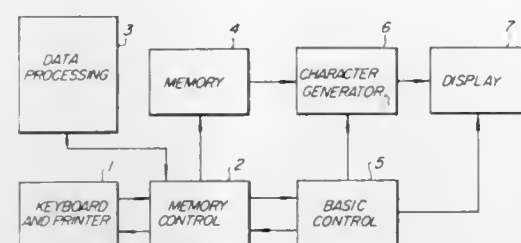
**3,631,457  
DISPLAY APPARATUS**  
Nagaharu Hamada, Hitachi-shi; Motosi Miyataka, Kumage-gun, Yamaguchi-ken; Yasuo Suzuki; Isao Yasuda, and Yukitaka Hayashi, all of Hitachi-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 8, 1969, Ser. No. 855,804

Claims priority, application Japan, Sept. 9, 1968, 43/64261  
Int. Cl. G06f 3/14

U.S. Cl. 340—324 A

5 Claims



A display apparatus having a keyboard for encoding elements for the display of various characters, symbols or graphs by the combination of dots on a cathode ray tube operated in accordance with the standard television system, and MOS (Metal Oxide Semiconductor) dynamic shift registers for storing the codes representing the characters, symbols on graphs to be displayed. A video signal according to the codes applies intensity modulation to the scanning lines or rasters thereby to effect the desired display on the cathode ray tube. Renewal of displayed character can be effected by displaying a cursor at a renewed position on the cathode ray tube and manipulating the keyboard.

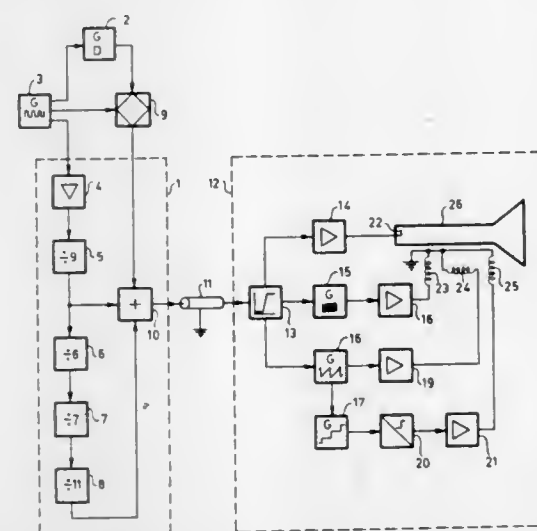
**3,631,458  
SYSTEM FOR TRANSMITTING AND DISPLAYING CHARACTER INFORMATION**  
Jean Caron; Claude Mothiron, and Andre Souvay, all of Evreux, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,348

Claims priority, application France, Dec. 27, 1968, 181401

U.S. Cl. 340—324 A

8 Claims



Transmission and display system in which character and synchronization information are converted in a control device, with the aid of modulated clock pulses and two synchronizing signals derived from the clock pulses by frequency division, into one sequential complex signal. The complex signal to be displayed on a television tube in a signal receiver includes three signals of substantially constant amplitude lying at different levels, a first synchronizing signal obtained by division corresponding to the spaces between the

columns of the characters displayed in a matrix, whereas the second synchronizing signal is the line synchronizing signal. A third synchronizing signal is generated in the receiver as a step signal derived from the received line synchronization signal.

**3,631,459  
INTEGRATED HEATER ELEMENT ARRAY AND DRIVE MATRIX**

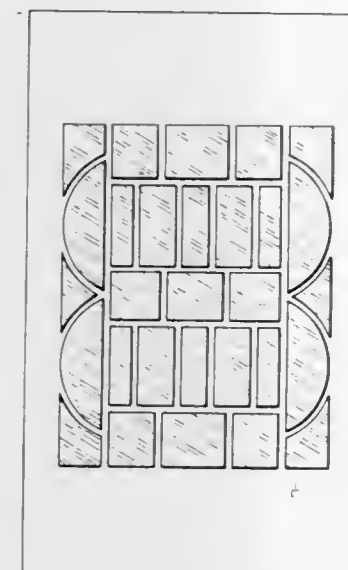
Marvin L. Morris, Jr., Dallas; Hermon L. Pope, Jr., Houston, and Edward M. Ruggiero, Dallas, all of Tex., assignors to Texas-Instruments Incorporated, Dallas, Tex.

Filed Aug. 8, 1969, Ser. No. 848,564

Int. Cl. G08b 5/36

U.S. Cl. 340—336

5 Claims



Thermal display including an air-isolated integrated semiconductor circuit forming an array of semiconductor heater elements having different heights, widths and shapes joined by a metallic connecting pattern which extends out over the heating elements to interconnect selected ones of them and a PN-junction isolated integrated semiconductor drive matrix for the heating element array positioned in the same plane as the heating element array. The PN-junction isolated integrated semiconductor drive matrix and the semiconductor heating element array are concurrently formed in the same semiconductor substrate and the heating element array is air isolated to provide a high degree of electrical and thermal isolation for the heating element array while both are located in the same plane on a larger support. The thermally sensitive material on which a dynamic display is formed or on which a permanent display is printed is in direct contact with the monocrystalline semiconductor material of the heating element array and can be passed over the heating element array and the drive matrix.

**3,631,460  
DISPLAY APPARATUS**  
John A. Haase, Bloomington, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 7, 1970, Ser. No. 1,080

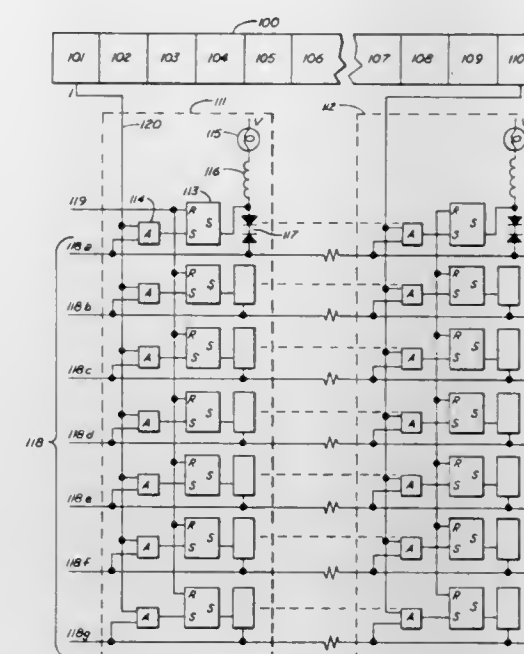
Int. Cl. G09b 13/00

U.S. Cl. 340—339

7 Claims

Display apparatus providing a visual indication of the status of bistable devices. The display apparatus also coupling the voltage generated in an inductor, as its field collapses, to utilization means whenever the breakdown voltage of devices exhibiting high-impedance characteristics prior to

breakdown and low impedance thereafter is exceeded. The devices being used in connection with a ring which takes ad-



vantage of the fold-back characteristic of a commercially available voltage regulator to control pulse advance.

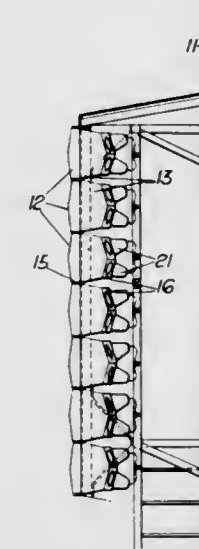
**3,631,461  
ILLUMINATED DISPLAYS**  
Anthony Powell, Bideford, and Peter Dunstan Renwick Adams, Ware, both of England, assignors to Seemark Switches Limited, Bideford, Devon and Adams Huntley Associates, Ware, England

Filed Nov. 12, 1968, Ser. No. 775,044

Int. Cl. G09f 9/32

U.S. Cl. 340—339

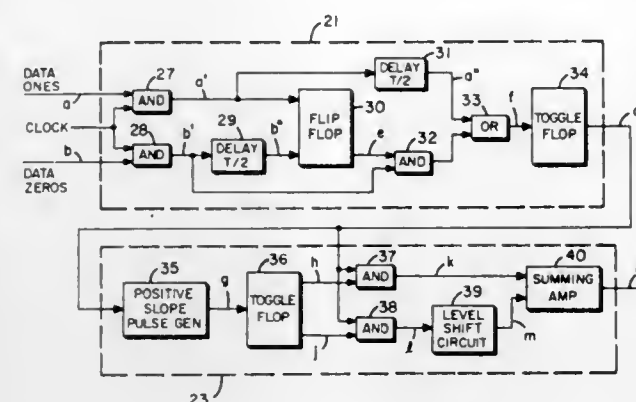
6 Claims



An animated illuminated colored advertising display including a display board built up of individual lighting units each comprising a group of lamps, giving primary colors, behind a translucent screen, and control equipment in the form of a matrix of photoelectric cells equivalent in numbers and positions to the lamps in the display boards and each con-



trolling the switching of a respective lamp, together with a cinematograph projector for projecting on to the photocell pulse train into a three-level bipolar pulse train, thereby to reduce the bandwidth requirements of the system. The en-



coder and converter operate to provide a self-clocking data translation system.

3,631,464

## DIGITAL PARALLEL TO SERIAL CONVERTER

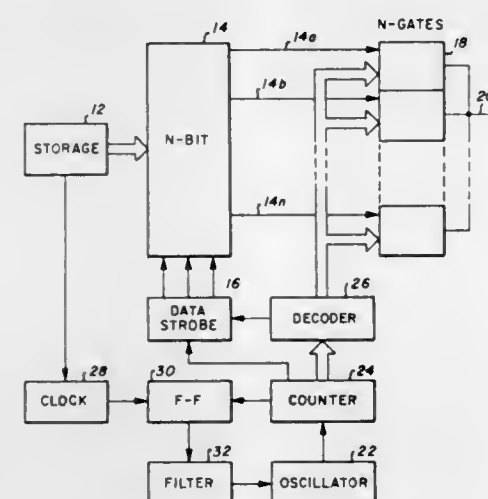
Roger C. Dahlberg, Palo Alto, Calif., assignor to Singer-General Precision, Inc., Binghamton, N.Y.

Filed Mar. 21, 1969, Ser. No. 809,355

Int. Cl. G06f 5/04

U.S. Cl. 340—347 DD

5 Claims



The disclosed embodiment of the present invention is a digital parallel to serial converter for a television raster display which employs a phase-locked loop for controlling the conversion rate. The disclosed converter is formed of a register which receives data in parallel form, a plurality of transfer gates for transferring data out of the register, and a frequency controlled gating circuit for enabling the transfer gates. The frequency controlled gating circuit is formed of a voltage controlled oscillator having an output connected to a counter, which is, in turn, connected to a decoder from which the gating pulses are derived for enabling the transfer gates. A flip-flop is connected to the counter and to a clock, such that the DC average value of an output thereof forms a feedback control for the oscillator.

3,631,465

## FET BINARY TO ONE OUT OF N DECODER

Richard H. Heeren, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed May 7, 1969, Ser. No. 822,533

Int. Cl. H03k 13/25

U.S. Cl. 340—347 DD

9 Claims

A circuit is described in which eight field effect transistors are interconnected to translate a two-bit binary word into



3,631,462

## MULTIPURPOSE GRAPHIC INPUT PULSE TRANSDUCING CIRCUIT

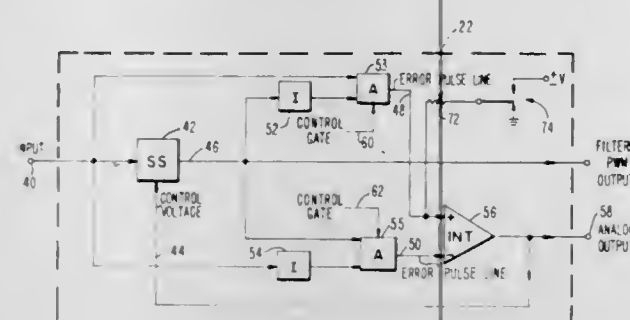
Herbert Dym, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,323

Int. Cl. H03k 13/02

U.S. Cl. 340—347 CC

6 Claims



A multipurpose circuit to be used in a graphic data tablet for providing the functions of pulse width modulation filtering, pulse width demodulation, selectable bandwidth for sensitivity, translation of coordinate system, and peak track-and-hold capability. The multipurpose circuit receives as its input a pulse width modulated signal that represents positional information from a graphic tablet input device. A voltage-controlled single shot is utilized to transduce the input signal into a desired wave pattern to achieve any of the above-mentioned functions. Comparator means are provided for comparing the input signal stream to previously processed pulses and generate either a positive or negative error signal. These error signals are then integrated to provide a feedback voltage that controls the duration of the single shot.

3,631,463

## SELF-CLOCKED ENCODING SCHEME

John V. Murphy, Norristown, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 10, 1969, Ser. No. 805,426

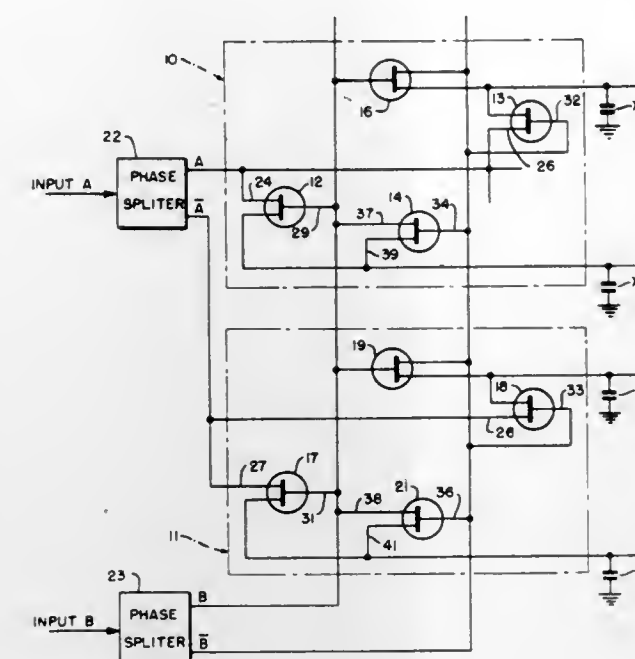
Int. Cl. H04l 3/00; H03k 13/24

U.S. Cl. 340—347 DD

1 Claim

A binary data translation system is provided wherein the binary data is first fed into a data encoder to produce a unipolar pulse train characteristic of the data to be transmitted and then a converter is used to convert the unipolar

one-out-of-four logic. The description further includes an explanation of how to apply the principles taught herein to



3,631,466

## LOW STALENESS ANALOG-TO-DIGITAL CONVERTER

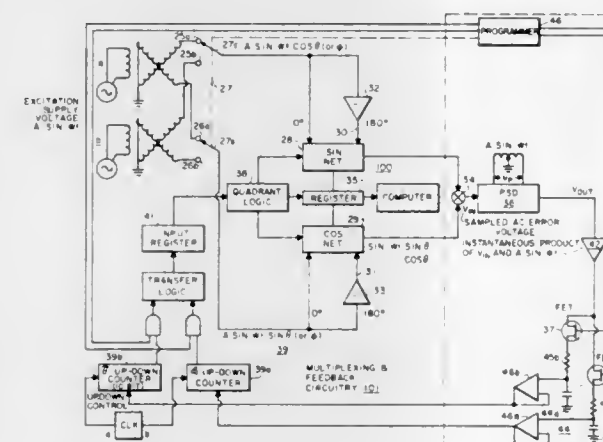
Marvin Masel, West Englewood, and Robert D. Gross, North Caldwell, both of N.J., assignors to The Singer Company, New York, N.Y.

Continuation-in-part of application Ser. No. 770,166, Oct. 22, 1968. This application Aug. 8, 1969, Ser. No. 848,476

Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

3 Claims



Using a digital-to-synchro converter having a sine and cosine side, synchro sine values are fed to the cosine side and synchro cosine values are fed to the sine side of the converter which in effect multiplies the present sine/cosine value by the previous cosine/sine value. The multiplied outputs are compared and any difference serves as the error signal which is fed back to the converter control register to update the register. The various input channels to the converter are multiplexed, fed through the converter onto a hold capacitor. The information temporarily stored on the capacitors is further processed and sequentially used as the input to the control register of the converter means.

3,631,467

## LADDERLESS, DUAL MODE ENCODER

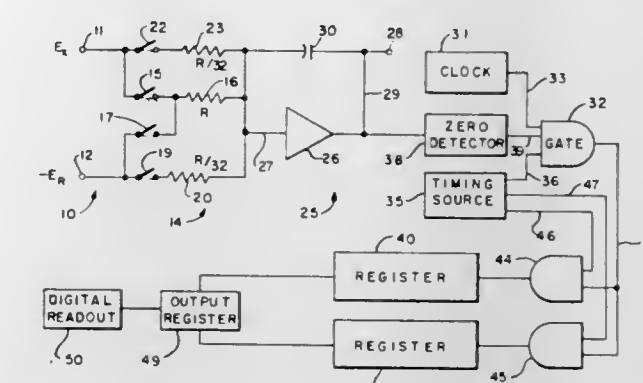
Mario M. Vojvodich, Montclair, and Herbert B. Gillis, Matawan, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed May 7, 1970, Ser. No. 35,381

Int. Cl. H03k 13/16

U.S. Cl. 340—347 NT

3 Claims



A ladderless, dual mode, analog to digital (A to D) converter for converting analog signals into a digital representation. The unknown analog input signals are applied for a fixed time period to an integrating circuit through a first input resistor causing the integrator output to reach a first signal level. A reference signal is thereafter applied to the input of the integrating circuit through the first input resistor or through an input resistor having the same value as the first input resistor, thus causing the output signal from the integrating circuit to approach a reference level. During the time that the reference signal is applied to the integrator, pulses from a clock source are stored in a first register. When the output of the integrator reaches the reference potential, the pulses supplied to the register are inhibited. Thus, data stored in the first register represent a first binary approximation of the magnitude of the unknown analog input signal. During a second conversion of the unknown signal, both the unknown analog signals and the reference signals are respectively applied to the input of the integrating circuit through input resistors each of which has a value substantially less than the value of input resistors used during the first conversion cycle. Both the unknown signals and the reference signals are provided to the input of the integrating circuit for a time determined by the first binary approximation stored in the first register during the first conversion cycle. Thereafter, only the reference signal is removed from the input to the integrator circuit so that only the unknown signal is applied for the remainder of the fixed time period causing the output signal of the integrator to assume a second level. Thereafter, the unknown signals are removed from the input of the integrator and the known reference signal is again applied thereto to cause the output signal level of the integrator to approach a reference signal level. For the time of the second conversion cycle during which only the reference signal is applied to the integrator circuit, pulses are fed to a second register. The binary sum of the data stored in the first register and in the second register represents the total binary approximation to the unknown input signal.

3,631,468

## ANALOG TO DIGITAL CONVERTER

William L. Spaid, R.R. No. 1 South River Road, Cedarville, Ohio

Filed July 2, 1970, Ser. No. 51,791

Int. Cl. H03k 13/02

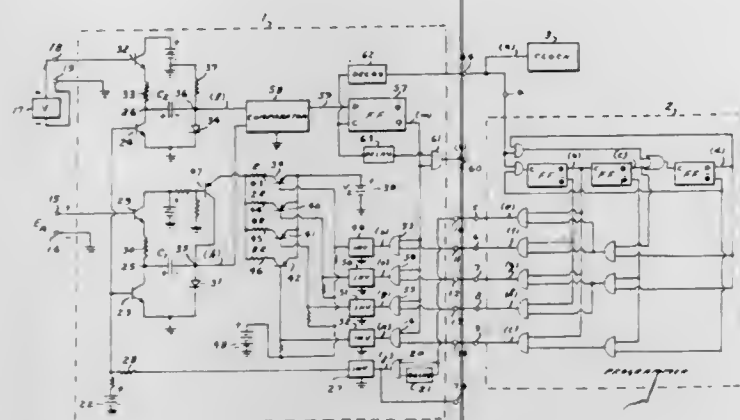
U.S. Cl. 340—347 AD

3 Claims

An analog to binary number converter, for operation in synchronism with the clock of a computer, in which the analog input signal charges a first capacitor to the analog voltage. A second capacitor, initially charged to a voltage



equal on the analog scale to the value of the most significant bit of the binary number, is subsequently discharged as an exponential function of time such that the capacitor voltage at the end of each of a succession of equal bit intervals, which are the clock pulse intervals, has one-half its value at the start of the interval. At the start of each of the successive bit intervals the voltage of the first capacitor is compared with the voltage of the second capacitor. If greater, the first capacitor is permitted to discharge during the interval suffi-



ciently to reduce its voltage by the amount of the second capacitor voltage at the start of the interval. If less, the first capacitor voltage is held constant during the interval. At each comparison, a binary 1 is generated if the first capacitor voltage is greater than the second capacitor voltage and a binary 0 if less, thus generating a serial binary number. By using a plurality of such converters and overlapping their conversion cycles, parallel binary codes are generated at an analog sampling rate equal to or a multiple of the clock rate.

3,631,469

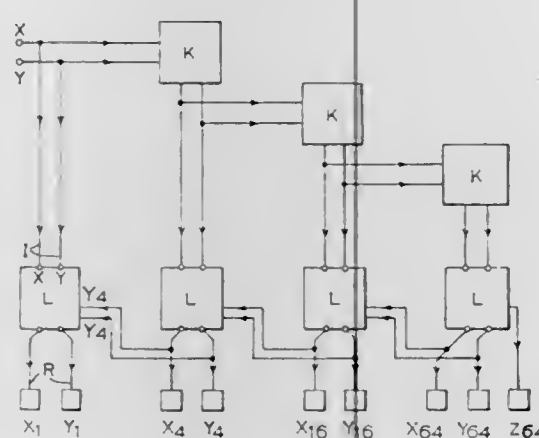
**SYSTEMS FOR COMPARING ELECTRICAL SIGNALS**  
Ralph Levy, Leeds, England, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 487,765, Sept. 16, 1965, now abandoned. This application Aug. 28, 1969, Ser. No. 853,002

Int. Cl. H03k 13/02

U.S. Cl. 340-347 AD

4 Claims



The present invention features a system for comparing the amplitudes and signs of two simultaneous electrical signals. A chain of discriminators is arranged to determine with successively greater resolution the angle  $P = \tan^{-1} X/Y$  where  $X$  and  $Y$  respectively have the signs and amplitudes of each of the said two signals. In each discriminator except the first in the chain means are provided for inhibiting or correcting errors in the immediately preceding discriminator.

### 3,631,470 AUDIO CONSOLE DELEGATION SYSTEM WITH VISUAL READOUT

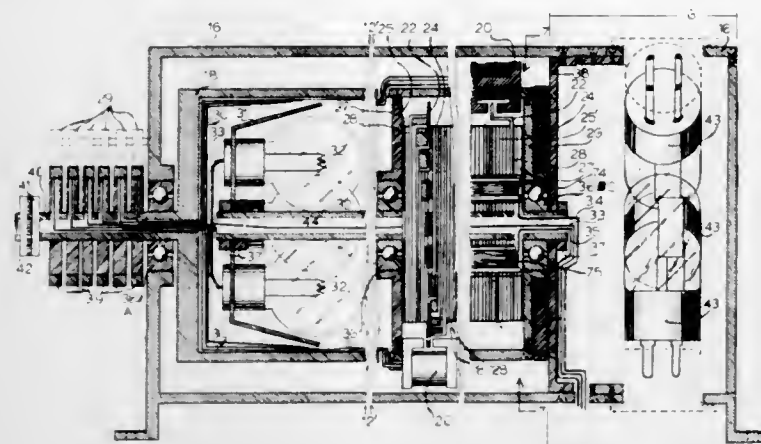
Robert A. Bloom, Oak Park, Mich., assignor to Audio Designs and Manufacturing, Inc., Roseville, Mich.

Filed Sept. 26, 1969, Ser. No. 861,339

Int. Cl. G08b 5/36

U.S. Cl. 340-381

11 Claims



An audio console delegation system distributor switching unit. Reed relays for selectively enabling a program source to a plurality of program busses and readout means for visually indicating which busses are enabled. Independent electrical lighting elements, each in a separate light well, direct light through a numerical indicia created by an open area in a black nonlight transmitting layer, then through a layer of white translucent material and finally through a panel of transparent smoke gray or red material to produce a sharp projection of the indicia on a mat exterior surface of the panel.

3,631,471

### LOW DISPARITY BINARY CODES

John Michael Griffiths, Hillingdon, England, assignor to The Post Office, London, England

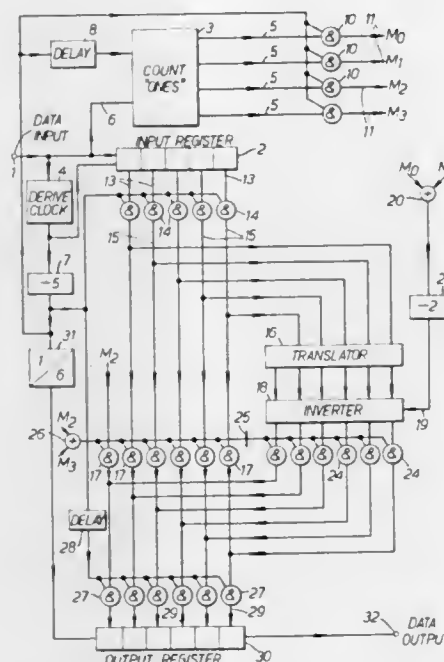
Filed Dec. 8, 1969, Ser. No. 882,938

Claims priority, application Great Britain, Dec. 13, 1968, 59,503/68

Int. Cl. H04l 3/00

U.S. Cl. 340-347 DD

13 Claims



A method and apparatus for recoding a sequence of binary digits into a form having lower disparity for transmission and the transformation of the data back into its original form are

described. In recoding, successive groups of  $n$  binary digits are recoded as groups of  $m$  binary digits, where  $m$  is greater than  $n$ , and both are positive integers. Recoding is arranged so that some but not all of the groups of  $m$  digits have minimum disparity and successive groups of  $m$  digits having nonzero disparity have disparities of opposite signs. Preferably,  $m$  equals  $n+1$  and is even, each of the  $m$  digit groups having zero disparity being derived from a respective one of the  $C_{m/2}$  of the groups of  $n$  digits having unit disparity by the addition at a predetermined position in that group of one extra digit of the appropriate type to produce zero disparity.

3,631,472

### CAPACITIVE KEYING MODULE AND SYSTEM

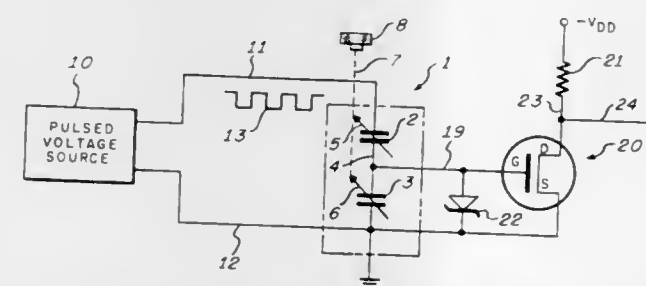
Andrew J. Lincoln, Concord, Mass., assignor to Sperry Rand Corporation

Filed Jan. 2, 1970, Ser. No. 125

Int. Cl. G08c 1/00; H03k 17/80

U.S. Cl. 340-365

15 Claims



A modular key for an electrical keyboard employs a capacitive voltage divider circuit with stator and armature capacitive elements forming a pair of capacitors in ganged relation. Downward motion of one capacitor element when a key is manually depressed produces a corresponding change in the output of the divider sufficient to overcome the threshold of a transistor detector circuit. An inverted output data pulse is supplied, free of disturbing transients, at the input of associated digital processing equipment.

3,631,473

### MANUALLY KEYED PULSE TRANSMITTER

Akio Yakata, Kawasaki-shi, and Kiyoshi Kubota, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

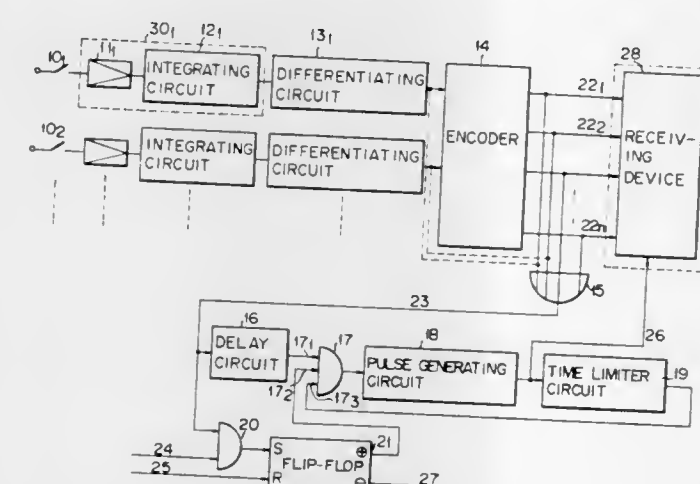
Filed Sept. 2, 1969, Ser. No. 854,805

Claims priority, application Japan, Sept. 4, 1968, 43/62990

Int. Cl. H04q 1/30

U.S. Cl. 340-365

4 Claims



A signalling device with a plurality of signal generating switches, a plurality of pulse generating circuits correspond-

ing to the respective switches, are provided, as well as an encoder for encoding outputs from the pulse generating circuits to supply encoded signals to a receiving device. The signalling device applies the signal from one of the signal generating switches to the receiving device while one or more other switches are maintained in their operative condition.

3,631,474

### DISPLAY DEVICE WITH REMOVABLE MEMBRANES

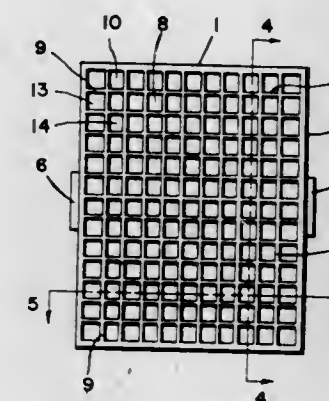
Eugene J. Majewski, 121 North Elmore Ave., Park Ridge, Ill.

Filed June 17, 1969, Ser. No. 834,071

Int. Cl. G08b 5/00; G09f 13/06

U.S. Cl. 340-366 R

8 Claims



In this specification, the gist of the technical disclosure resides in a thin-wall, light message-transmitting element which can be masked, peeled, cut, punched or molded in selected patterns and placed over a glass or plastic reflector, or over a glass or plastic lens, or over a translucent or light-diffusing element to convey a message from a light reflector or a backlighted device. The element is constructed of a piece of opaque material or light-transmitting or filtering material, such as thin-wall acrylic, styrene, butyrate, polycarbonate or other type of material having the properties of light blockage, transmission or filtering. The element is constructed in such a way as to include preformed designations of outlines such as squares, rectangles, triangles, diamonds, circles and the like which a user may mask, peel, cut or punch in selected sequences to form symbols such as an arrow, numerals such as house numbers, and letters to form words such as "Caution," "Stop," "Slow," a person's name or initials, and the like. Such a light message-transmitting element is constructed with tabs or other fastening devices corresponding with receiving inserts on the glass or plastic reflector, lens or translucent or diffusing light element, for attachment and detachment for the purpose of readily detaching the light message-transmitting element to perforate the marked portions in whatever selected sequence desired to form the indication or message desired to convey upon light being either reflected from the front or transmitted from behind, depending on whether used with a reflecting element, a lens, or translucent or light-diffusing element being backlighted.

There are obviously many other ways in which the element can be attached and detached to the light reflector or backlighted device, such as adhesives, heat-sealing, solvents, sonic welding and the like. Once the desired indication or message has been made on the element by masking, peeling, cutting or punching the selected marked portions, the element is then placed by whatever attachment means selected over the reflecting element, lens or translucent or light-diffusing element, to form either a reflective device or backlighted device having a directive sign or message.

It is also possible to make the message-transmitting element a permanently assembled part of the reflector or backlighted device by solvent cementing or sonic welding to the faces thereof. The membranes would be punched out in



place without removing the element from the reflector or backlighted device.

3,631,475

**ELECTROMECHANICAL INDICATOR DEVICE**

Gerhard Quandt, Heidelberg, and Hans-Christian Muller, Waldhilsbach, both of Germany, assignors to Feldix G.m.b.H., Heidelberg, Germany

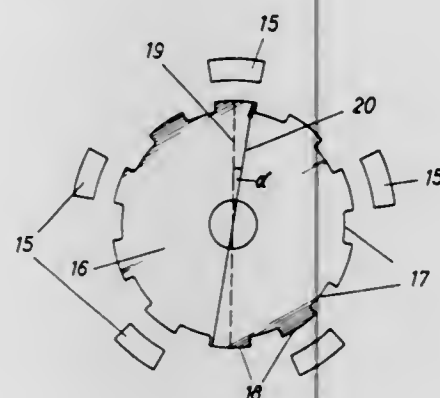
Filed Dec. 5, 1969, Ser. No. 882,596

Claims priority, application Germany, May 24, 1969, P 19 26 734.6 May 24, 1969, Germany, P 19 26 733.5

Int. Cl. G08b 5/24; H02k 21/16

U.S. Cl. 340—366

10 Claims



An electromechanical rotary indicating device for selectively displaying a plurality of symbols having a cylindrical permanent magnet rotor, to which a symbol-carrying member is coupled, which is selectively deflectable to a plurality of discrete angularly spaced positions by selective energization of the excitation coils or windings placed on the pole pieces of the stator. The periphery of surface of the rotor is provided with a plurality of longitudinal or axial grooves which are arranged asymmetrically with respect to the direction of the magnetic field in the rotor, which direction is transverse to the axis of rotation of the rotor.

3,631,476

**MULTIPLE ANNUNCIATOR FOR AIRCRAFT INSTRUMENTS**

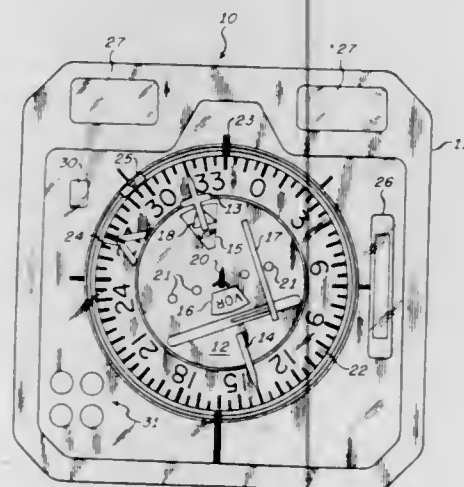
Richard E. Schaffer, Scottsdale, Ariz., assignor to Sperry Rand Corporation

Filed Nov. 10, 1969, Ser. No. 875,009

Int. Cl. G08b 5/00

U.S. Cl. 340—378

11 Claims



A display device for multiple annunciation instruments, particularly of the type used in aircraft, comprising a mask having two diametrically arranged apertures therein. A disk, having a plurality of display indicia disposed on its surface, is mounted for rotation behind the mask so that selected dis-

play indicia may be positioned adjacent the apertures to be viewable therethrough. One of the display indicia may include a VOR arrowhead symbol which may be selectively positioned adjacent either of the two apertures.

3,631,477

**PILOT LAMPHOLDER AND DIAL ASSEMBLY**

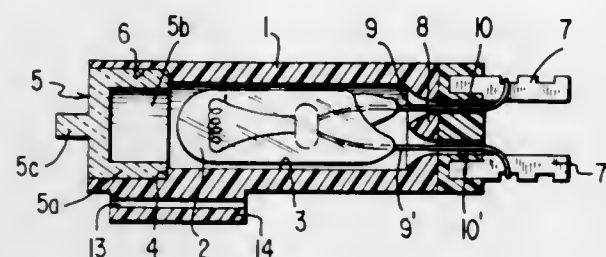
Ryoya Matsushima, Tokyo, Japan, assignor to Pioneer Electric Corporation, Tokyo, Japan

Filed Sept. 11, 1969, Ser. No. 857,082

Int. Cl. G08b 5/36

U.S. Cl. 340—381

7 Claims



A dial plate for a stereo amplifier carries one or more small diameter holes which receive an axially projecting light-conducting pin which extends from a light-transmitting bracket at the end of a cylindrical lampholder with the pin mechanically coupling the lampholder to the dial.

3,631,478

**LIGHT GUIDE SUPPORT MEANS AND DISPLAY DEVICE UTILIZING SAME**

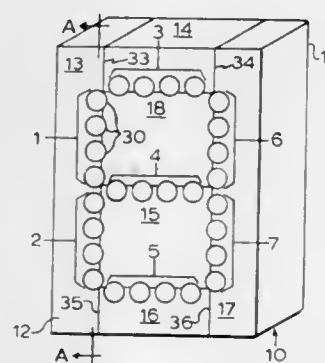
Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif.

Filed Sept. 23, 1970, Ser. No. 74,624

Int. Cl. G08b 5/36

U.S. Cl. 340—380

5 Claims



A display device includes the use of an assembly of preformed parts each designed to support an array of light guides wherein each array, when illuminated with light, will present a predetermined segment of one, or a number of different, informational characters.

3,631,479

**SCANNING-CIRCUIT RESOLVING SWITCH**

Edward J. Fitzell, Birkenfeld, Oreg.

Filed Oct. 16, 1969, Ser. No. 867,010

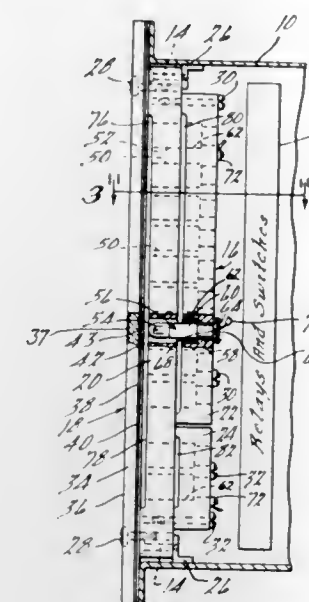
Int. Cl. H03h 13/24

U.S. Cl. 340—347 DD

1 Claim

This is an electromagnet, photoelectric switch with a continuously rotating shaft as driven by a scanning-wheel shaft. Its use is for a blind reader or any correctly timed binary code groups. There are several hundred binary code light holes possible on a relatively small code disk as for each disk to represent a cell of the scanning system array of cells. The

disks automatically reset on null operations. On a valid code, a light beam gets through and a fast-acting relay system holds



them until the output section of the switch delivers the output mechanically.

3,631,480

**ELECTRICALLY OPERATED SOUND GENERATORS**

Alec John Heap, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

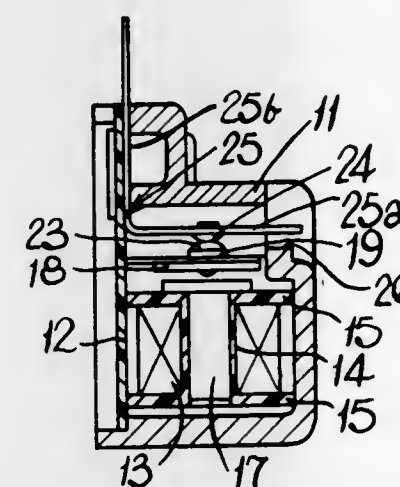
Filed Feb. 2, 1970, Ser. No. 7,799

Claims priority, application Great Britain, Feb. 11, 1969, 7270/69

Int. Cl. G08b 3/10

U.S. Cl. 340—388

2 Claims



An electrically operated sound generator includes a casing housing a solenoid. A fixed contact is positioned within the casing and is engageable by a movable contact carried by the armature of the solenoid. The fixed and movable contacts are in the energizing circuit of the solenoid, so that when a current is supplied to the sound generator the armature of the solenoid is caused to vibrate, as the energizing circuit of the solenoid is made and broken through the fixed and movable contacts, thereby generating sound. The fixed contact is carried by a deformable metal strip one end of which projects from the casing of the sound generator. In order to effect tuning of the sound generator the projecting end of the strip is moved to deform the strip to alter the position of the fixed contacts relative to the solenoid.

3,631,481

**SOUND GENERATOR**

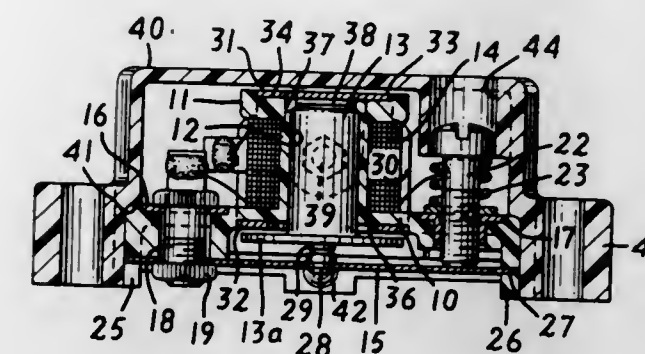
Rein Haus, Long Branch, N.J., assignor to Wheelock Signals, Inc., Long Branch, N.J.

Filed Nov. 26, 1969, Ser. No. 880,135

Int. Cl. G08b 3/00

U.S. Cl. 340—388

11 Claims



A compact sound generator which includes an insulating supporting base having an integrally formed bobbin, a passage extending through the bobbin and the support for accommodating therein a reciprocating plunger, an electrical winding on the bobbin which actuates the plunger upon energization, and a resilient sound-generating diaphragm strip mounted at opposite ends to the support with the unsupported intermediate span engageable by the plunger to generate the sound.

3,631,482

**ELECTRICALLY OPERATED BELL WITH INTERNAL POWER SOURCE**

Edward Leslie Merritt, Birmingham, England, assignor to Evered and Company Limited, Smethwick, Warley, England

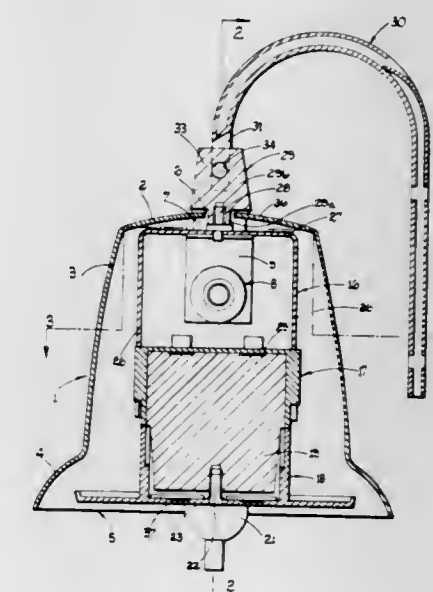
Filed July 18, 1969, Ser. No. 843,151

Claims priority, application Great Britain, July 20, 1968, 34725/68

Int. Cl. G08b 3/00; G10k 1/064

U.S. Cl. 340—396

7 Claims



An electrically operated bell is provided with a bell-shaped resonant body and means for suspending the bell with its open end presented downwardly. A striker, a motor unit and means for supplying current to the motor unit are supported within the resonant body so that only the latter and the simulated clapper are normally visible.



3,631,483

**SHORT PERSISTENCE RADAR DISPLAY SYSTEM**

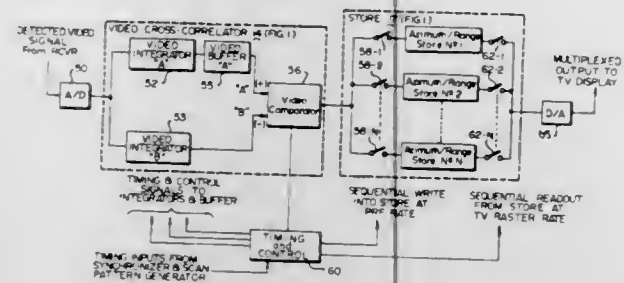
Norman A. Ruggles, Pasadena, and Irving I. Kaplan, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 19, 1970, Ser. No. 12,207

Int. Cl. G01s 7/04

U.S. Cl. 343—5 SC

11 Claims



A low PRF radar system display utilizes a cathode-ray tube having a short persistence time in a television type display. The video signal detected from the radar return signal in the receiver is sampled and converted to digital form, and the digital numbers are integrated over each beamwidth of the antenna pattern during an azimuth scan. The digital results of the integration for each beamwidth are stored in separate stores and are read out nondestructively, so that they may be updated during successive azimuth scans, at the raster rate of the TV display. The sequentially readout contents of the stores are converted to analog format and supplied to appropriate control elements of the cathode-ray tube. The operation to provide a processed video output to the display constitutes video cross-correlation and storage and permits use of the television type display.

3,631,484

**HARMONIC DETECTION SYSTEM**

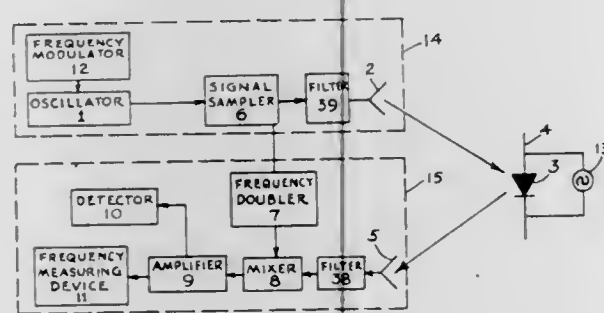
Harry A. Augenblick, Mountain Lakes, N.J., assignor to Microlab/FXR, Livingston, N.J.

Filed July 30, 1969, Ser. No. 845,955

Int. Cl. G01s 9/56

U.S. Cl. 343—6.5 R

9 Claims



A detection system comprising a transmitter for radiating signal of frequency "F" to a harmonic generator. The generator is adapted to produce a signal of frequency "XF+XD" where XF is a harmonic of the transmitted signal and XD is a frequency shift due to the movement of the generator. A receiver includes a multiplier connected to the transmitter for producing a signal XF and a mixer adapted to receive the harmonic generator signal and the multiplier signal for producing a signal proportional to the difference therebetween.

3,631,485

**GUIDANCE SYSTEM**

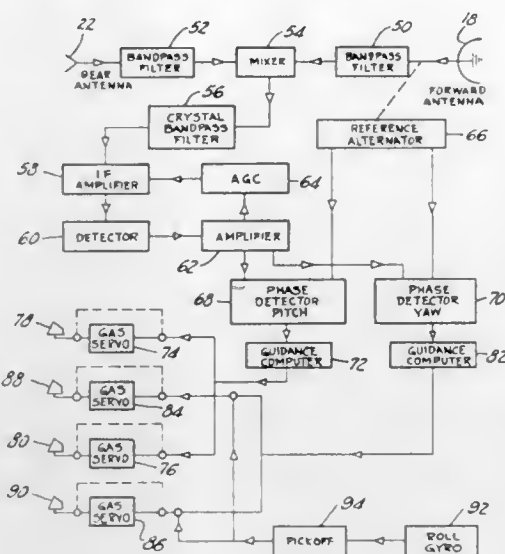
Harry L. Beazell, Jr., South Bend, Ind., assignor to Bendix Corporation, Mishawaka, Ind.

Filed June 5, 1962, Ser. No. 200,224

Int. Cl. G01s 9/02; F41g 7/00

U.S. Cl. 343—7 ED

4 Claims



2. In a guidance system for a missile, said system including an illuminating radar and its antenna and said missile including pitch and yaw control devices, a rear antenna and a front scanning antenna;

said illuminating radar including means for generating a high-frequency reference signal, means for generating a second signal of lower frequency, a mixer for combining said second and said reference signals to produce a target-illuminating signal, means for receiving and amplifying both of said reference and illuminating signals and for connecting said amplified signals to said illuminating antenna;

said missile including a first band-pass filter connected to said rear antenna adapted to pass a band of frequencies including the frequency of said reference signal as modified by the Doppler effect caused by the velocity of said missile and to discriminate against said target-illuminating signal;

a second band-pass filter connected to said front scanning antenna adapted to pass a band of frequencies including the frequency of said target illuminating signal as modified by the Doppler effect caused by the velocity of said missile and said target and to discriminate against the band of frequencies passed by said first band-pass filter;

means operatively connected to said scanning antenna for imposing a modulation signal on the signal received by said scanning antenna, said modulation signal varying in phase depending upon the position of said target;

mixing and filtering means connected to said band-pass filters for producing a modulated intermediate frequency signal;

means for detecting and amplifying said modulated signal;

means producing an alternating current signal in phase with the movement of said scanning antenna;

and phase-responsive means for comparing said modulated signal with said alternating current signal for controlling the operation of said pitch and yaw control devices.

3,631,486

**PROCESSING METHOD AND COMMUTATION SYSTEM FOR PULSE DOPPLER RADAR**

Roland A. Anders; David E. Callahan, both of Baltimore; F. Stewart Myers, Jr., Severna Park, and James M. Saboe, Ellicott City, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1969, Ser. No. 835,995

Int. Cl. G01s 9/44

U.S. Cl. 343—8

17 Claims

In a pulse Doppler radar system, a threshold level for target detection is automatically adjusted as a function of

clutter and noise. A commutation network for interrogating each of a plurality of Doppler channels simultaneously interrogates channels of adjacent higher and lower frequencies for deriving a threshold signal comprising an average or normal-

gate and, upon receipt of the range gate center signal, applies its acquired value to a readout means to indicate distance.

3,631,488

**DIGITAL MOVING TARGET INDICATOR CANCELLATION SYSTEM**

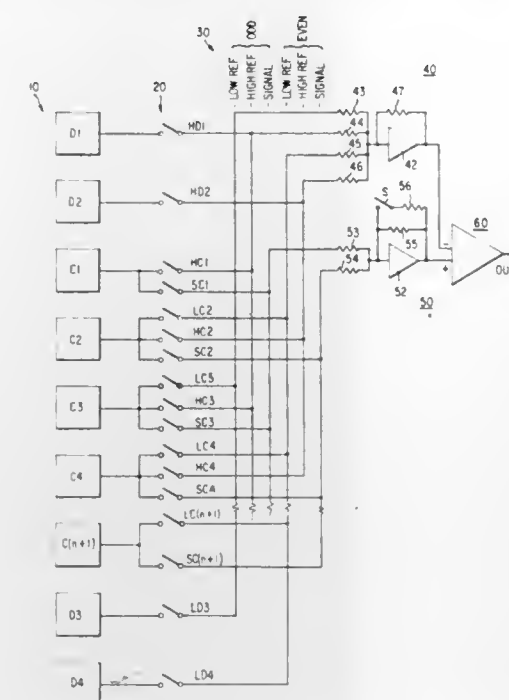
Norol T. Evans, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 22, 1965, Ser. No. 427,332

Int. Cl. G01s 9/42

U.S. Cl. 343—7.7

11 Claims



ized detection threshold for the interrogated channel, for all channels. The commutation system also provides for enhancement of the accuracy of velocity measurement of a given number of Doppler channels by interpolating between consecutive pairs of channels.

3,631,487

**COMPLEMENTARY SEARCH SYSTEM FOR D.M.E.**

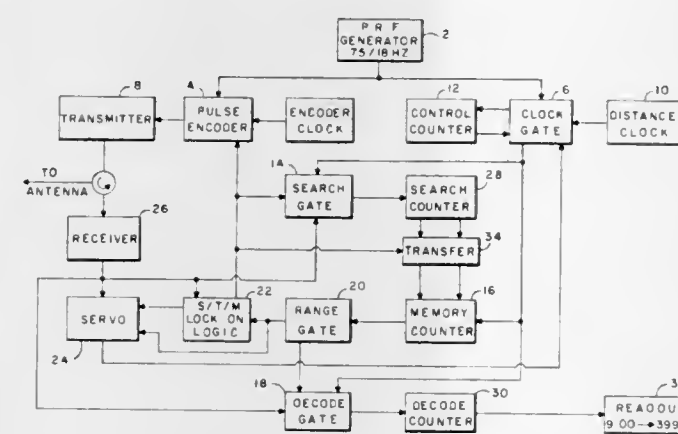
Dean P. Huntsinger, Marion, and Floyd M. Totten, Cedar Rapids, both of Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Mar. 9, 1970, Ser. No. 17,674

Int. Cl. G01s 9/14, 9/16

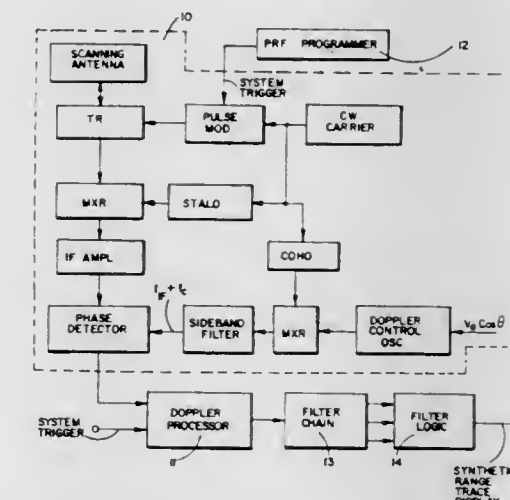
U.S. Cl. 343—7.3

6 Claims



An all-digital, distance measuring radio equipment is disclosed wherein the duration of each cycle of operation is determined by a train of clock pulses which is applied to a plurality of counters. Detection of a reply signal triggers a search counter which then counts until the end of the cycle. At the end of the cycle the count acquired by the search counter is transferred into a memory counter which starts the subsequent cycle at this value, establishes a range gate upon reaching a count corresponding to the maximum range, starts counting again from zero and ends the cycle at the same count that it held at the start of the cycle. A decode counter counts from the start of each cycle to the center of the range

An azimuthally scanning, pulse-energy system employing doppler processing of clutter-referenced received echoes of pulsed transmission, including means for improved discrimination between high-speed moving targets displaying ambiguous doppler shifts and targets of lesser velocity. The pulse repetition rate of the pulsed energy system is periodically alternated between two rates, and the received signals associated with each pulse repetition rate separately doppler processed. Variations in the apparent doppler shift of a target in response to variation in the system pulse repetition rate is deemed indicative of a target of interest.





3,631,490

# SIGNAL PROCESSOR FOR REDUCING CLUTTER AND ELIMINATING RANGE AMBIGUITIES IN TARGET DETECTION SYSTEMS

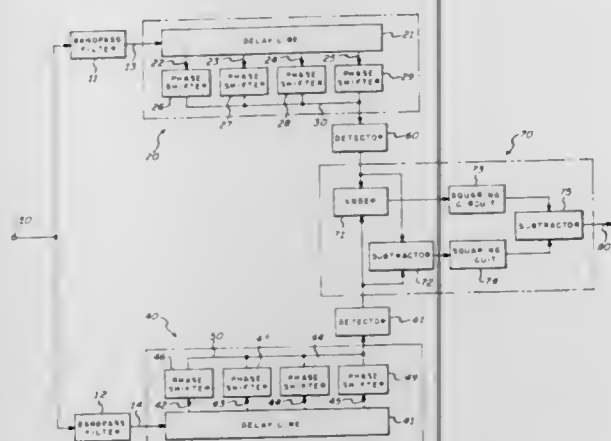
Chester A. Palmieri, New Hyde Park, N.Y., assignor to Sperry Rand Corporation

Filed Mar. 17, 1969, Ser. No. 807,689

Int. Cl. G01s 7/28, 9/42

U.S. Cl. 343—7.7

15 Claims



Apparatus for processing target detection system signals consisting of two pulse sequences of different pulse repetition frequencies reflected from a radially moving target and noise or clutter signals reflected from a relatively stationary background. The apparatus comprises two matched filters responsive to the signals having frequency responses matched respectively to the frequency spectra of the two pulse sequences. A multiplier provides an output signal representative of the product of the signals from the two matched filters.

3,631,491

# TARGET VELOCITY DISCRIMINATOR

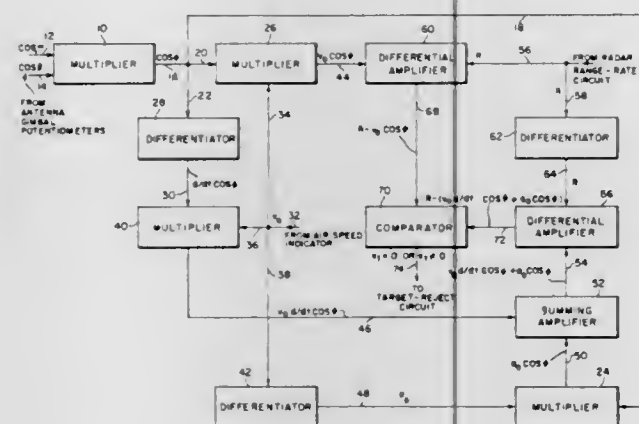
William W. Cuthbert, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 1, 1960, Ser. No. 8,070

Int. Cl. G01s 9/42, 9/44

U.S. Cl. 343—8

4 Claims



4. In an airborne radar apparatus designed to track a target and to yield range information with respect thereto, a differential amplifier including two cathode-coupled electron discharge devices to the respective control electrodes of which are applied a range-rate voltage from the said radar apparatus and an electrical quantity representative of

where

$V_0$  = the airspeed of the craft carrying the radar

$\alpha$  = the vertical component of  $\phi$ , the angle formed by a line representing the direction of the target from the radar and a line representing the direction of heading of the radar-equipped aircraft

$\theta$  = the lateral component of  $\phi$ ,

a two-position relay the coil of which is connected across the anodes of the said two cathode-coupled electron discharge devices, whereby, when the respective outputs of the said two electron discharge devices are identical, no appreciable current will flow through the coil of said relay and the latter will be in one of its said two positions, and, when the respective outputs of the said two electron discharge devices are not identical, current will flow through the coil of said relay and the latter will assume the other of its two said positions.

3,631,492

# MULTI-LAYER WAVE ABSORBING WALL

Kunihiko Suetake, 10-11, Minami 3-chome, Meguro-ku, Tokyo, and Yasutaka Shimizu, 2969, Oaza Iiyama, Iiyama-shi, both of Japan

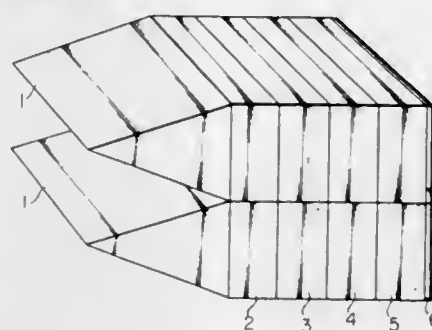
Filed Oct. 3, 1969, Ser. No. 863,447

Claims priority, application Japan, Oct. 9, 1968, 43/73677

Int. Cl. H01q 17/00

U.S. Cl. 343—18 A

3 Claims



A superwide band wave absorbing wall of a thin multilayer type, which comprising a plate-shaped dielectric layer, a plate-shaped magnetic material lossy material, and a metal plate backing said magnetic material lossy material plate. The plate-shaped dielectric layer may be made in a plurality of the same layer and also may be provided at front surface a tapered part made of a dielectric lossy material.

3,631,493

# TERRAIN PROFILE GENERATOR

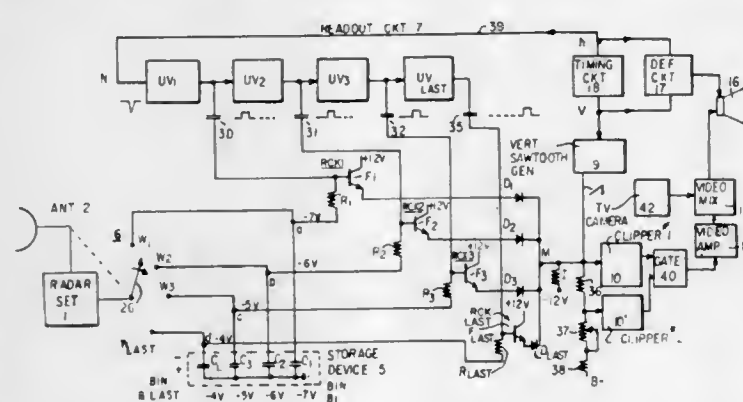
George H. Balding, Salt Lake City, Utah, assignor to Kaiser Aerospace & Electronics Corporation, Oakland, Calif.

Filed Sept. 23, 1969, Ser. No. 860,267

Int. Cl. G01s 7/06

U.S. Cl. 343—5 SC

13 Claims



A signal converter for converting terrain representative signals obtained in a radar scan into a display of a profile line

on a cathode-ray tube of the terrain which is scanned. Electronic switches gate the detected radar information to capacitors in a storage matrix, and emitter followers are used in a readout circuit operated at the horizontal scan frequency to selectively gate the stored information over mixing diodes to a first clipper circuit for conversion to video signals. A second clipper circuit is used with the first clipper circuit to provide a thin profile line which is presented as an overlay to the presentation provided by video signals from a conventional television camera.

3,631,494

# RETRANSMISSION SYSTEM

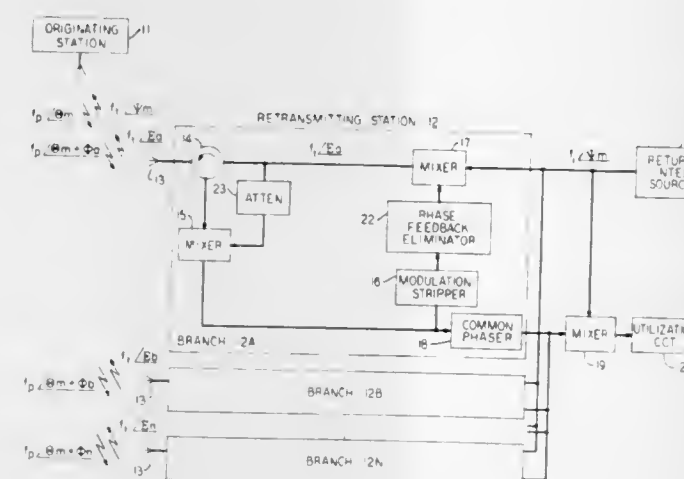
Michael J. Gans, Middletown Township, and Douglas O. J. Reudink, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 8, 1969, Ser. No. 848,582

Int. Cl. H04b 7/00

U.S. Cl. 343—100 TD

12 Claims



In a space diversity phased array radio station capable of retransmission, each branch receives a pilot signal containing phase information which is used to continuously control the phase of the retransmitted signal containing return intelligence, thus providing adaptive retransmission from the array. To prevent a strong retransmission signal from swamping a weak pilot when their frequency separation is small, a sample of the retransmission is applied to the receiving section to act as the local oscillator for down-conversion of the pilot, thereby avoiding unwanted mixer products in the retransmission loop and minimizing crosstalk between the reception and retransmission.

3,631,495

# OMNIDIRECTIONAL NAVIGATION TRANSMISSION SYSTEM AND APPARATUS

Robert Walter Redlich, Jannali, New South Wales, Australia, assignor to The University of Sydney, Sydney, New South Wales, Australia

Filed May 14, 1969, Ser. No. 824,568

Claims priority, application Australia, May 24, 1968, 38279

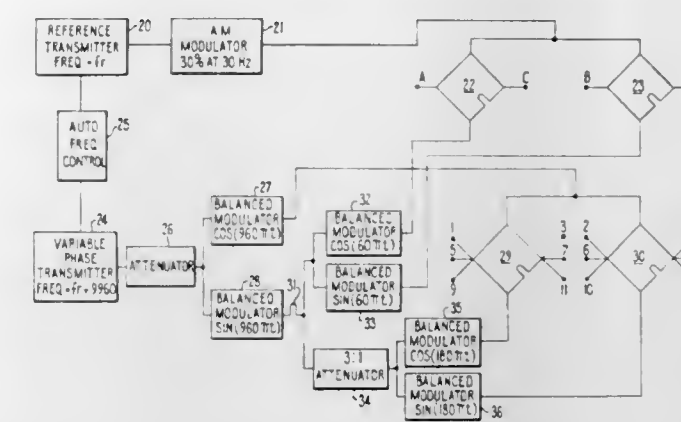
Int. Cl. G01s 1/38

U.S. Cl. 343—106 D

10 Claims

This invention relates to an omnidirectional navigation transmission system for aircraft wherein a "reference" phase signal which is amplitude modulated at a selected frequency is radiated omnidirectionally, and wherein a "variable" phase signal which is frequency modulated by a signal of approximately square waveform is radiated to produce a rotating field in space, said variable phase signal being frequency

modulated at said selected frequency and being phase locked with said reference phase signal whereby bearing information



may be derived from said signals at a receiver with reference to a point at which both said signals will be received exactly in phase.

3,631,496

# MULTIPLE DIGIT CODE DIRECTION FINDER SELF-ADJUSTING TO DIFFERENT FREQUENCIES

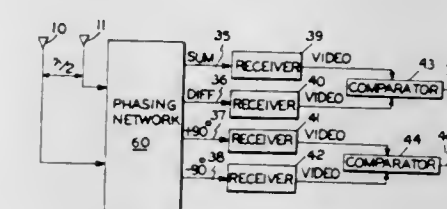
Charles Fink; Fred E. Burnham, both of Silver Spring, and Maury I. Marks, Bowie, all of Md., assignors to Litton Systems, Inc., Silver Spring, Md.

Filed Oct. 22, 1965, Ser. No. 501,231

Int. Cl. G01s 3/46

U.S. Cl. 343—113 R

18 Claims



A direction finding system producing a multiple digit code representing the direction of an emitted signal and including means for resolving ambiguities when the signal arrives at an angle normally giving rise to digit changeover.

3,631,497

# DUPLEX RADIOCOMMUNICATION EQUIPMENT

Didier Leonard, Boulogne, France, assignor to C. I. T. Compagnie Industrielle des Telecommunications

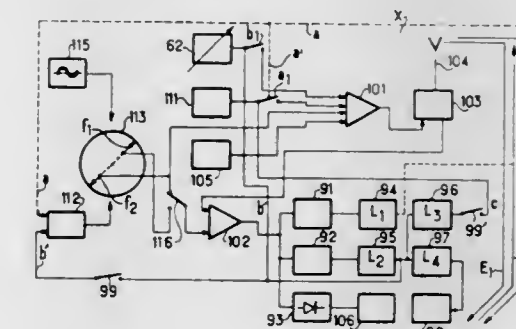
Filed Aug. 7, 1968, Ser. No. 750,986

Claims priority, application France, Aug. 11, 1967, 117,836

Int. Cl. H04b 1/50

U.S. Cl. 343—179

17 Claims



A duplex radiocommunication transceiver with carrier frequencies that are made available to all parties of a network comprises a generator providing a plurality of pairs of



frequencies and which is equipped with a stepping switch, a coder for coding the address of a correspondent, means for transmitting an occupation frequency in a channel which is occupied, means for decoding an address code being received, means for interpreting the presence of the occupation frequency, and means for stopping said stepping switch if both frequencies of the concerned pair are free for both parties.

3,631,498

**PULSED CONTROL CIRCUIT**

Alphons E. Bachhuber, Jr., Appleton, Wis., assignor to Advance Industries, Inc., Appleton, Wis.

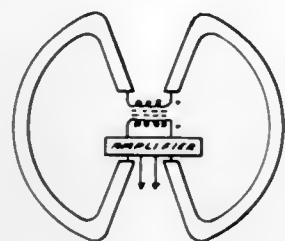
Filed July 1, 1969, Ser. No. 838,290

Int. Cl. H04b 1/16

U.S. Cl. 343-228

8 Claims

at the receiver, to preclude overloading the receiver, by changing the potential supplied the amplifier over the con-



ventional signal transmission line connecting the receiver to the antenna.

3,631,500

**ENERGY DENSITY ANTENNA APPARATUS FOR MOBILE RADIO RECEIVER**

Kiyohiko Itoh, Sapporo, Japan, assignor to Hokkaido University, Sapporo, Hokkaido, Japan

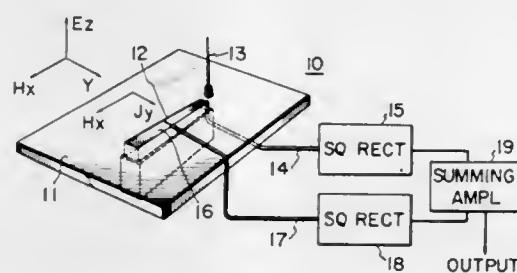
Filed Mar. 12, 1970, Ser. No. 18,876

Claims priority, application Japan, Mar. 18, 1969, 44/20057

Int. Cl. H01q 13/10, 21/00; H04b 7/08

U.S. Cl. 343-725

10 Claims



An energy density antenna has a magnetic current antenna in the form of a slot in a conducting plate and an electric current antenna in the form of a unipole normal to the plate with the signals from each antenna independently coupled to separate square law detectors and combined to provide an output signal which is relatively immune to fading due to motion of the antenna through a standing wave pattern.

3,631,501

**MICROWAVE PHASE SHIFTER WITH LIQUID DIELECTRIC HAVING METALLIC PARTICLES IN SUSPENSION**

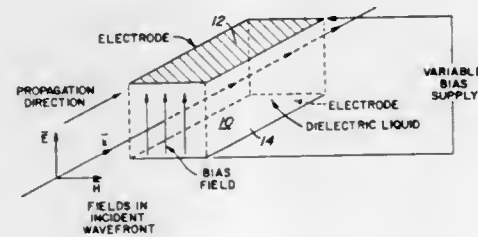
Harold T. Buscher, Berkeley, Calif., assignor to General Dynamics Corporation

Filed Feb. 16, 1970, Ser. No. 11,712

Int. Cl. H01q 19/06

U.S. Cl. 343-754

31 Claims



Microwave phase shifters and electronic beam steering antennas are described which use an electrically controllable anisotropy dielectric medium in the microwave beam path.

3,631,499

**ELECTRICALLY SMALL DOUBLE-LOOP ANTENNA WITH DISTRIBUTED LOADING AND IMPEDANCE MATCHING**

Edwin M. Turner, 1530 Newton Avenue, Dayton, Ohio

Filed Aug. 17, 1970, Ser. No. 64,520

Int. Cl. H01q 1/12

U.S. Cl. 343-701

8 Claims

Relatively uniform impedance and broad bandwidth is obtained in a double-loop electrically small antenna by transformer coupling in phase opposition the ends of the loops. For receiving, amplification may be added within the loops to increase the effective electrical output of the antenna. The electrical output of the antenna may be remotely controlled

3,631,502

**CORRUGATED HORN ANTENNA**

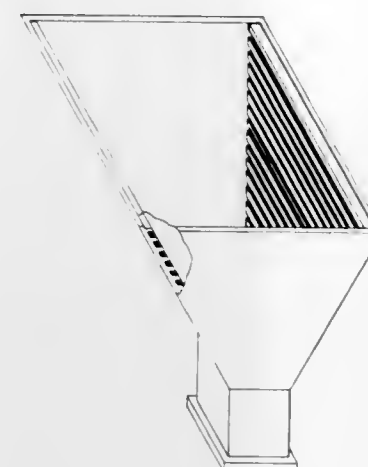
Leon Peters, Jr., and Richard E. Lawrie, both of Columbus, Ohio, assignors to The Ohio State University Research Foundation

Filed Oct. 21, 1965, Ser. No. 500,024. The portion of the term of the patent subsequent to July 28, 1987, has been disclaimed.

Int. Cl. H01q 13/00

U.S. Cl. 343-786

5 Claims



A horn type of antenna for the propagation of electromagnetic energy having a modified structure for the reduction of backlobes and sidelobes in the radiated beam by controlling the illumination of the E-plane edges. Specifically, the control of illumination of the E-plane edges is achieved by electrically modifying the walls of the horn having an E-plane edge as an element.

3,631,503

**HIGH PERFORMANCE DISTRIBUTIONALLY INTEGRATED SUBARRAY ANTENNA**

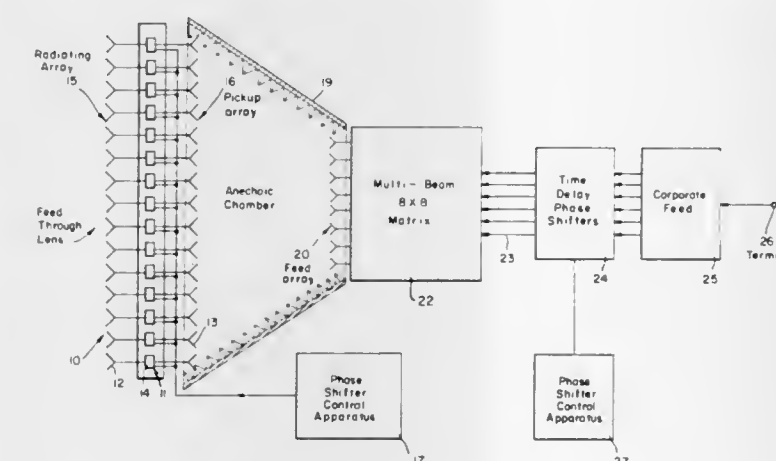
Raymond Tang, Anaheim, and Nam San Wong, La Habra, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 2, 1969, Ser. No. 821,209

Int. Cl. H01q 3/26

U.S. Cl. 343-754

10 Claims



The apparatus of the present invention provides a space-fed antenna system with a capability of forming highly efficient, multiple simultaneous beams over a broad instantaneous frequency bandwidth. The space-fed antenna system consists of a feed-through lens with a high-performance feed system. This invention employs the technique of resolving the radiating array of the feed-through lens into subarrays which overlap each other completely over the entire radiating aperture. Each of the subarrays has a truncated  $\sin x/x$  amplitude

3,631,504

**PARABOLIC ANTENNA WITH WAVE ABSORBER AT CIRCUMFERENTIAL EDGE**

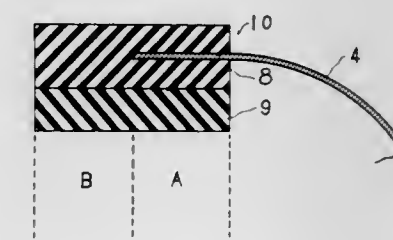
Kunihiro Suetaki, 10-11 Minami 3 chome, Mequro-ku, Tokyo, and Yoshiyuki Naito, No. 261-44 Suenaga, Kawasaki-shi, both of Japan

Filed Dec. 15, 1969, Ser. No. 884,832

Int. Cl. H01q 19/12

U.S. Cl. 343-840

5 Claims



An antenna having a parabolic reflector including a wave absorber in the vicinity of the circumferential edge of the reflector. The absorber is composed of layers of different absorbing materials. The edge of the reflector is inserted into one of the layers. The absorber extends beyond the edge of the reflector, thereby providing an improved front-to-back ratio of wave transmission.

3,631,505

**EXPANDABLE ANTENNA**

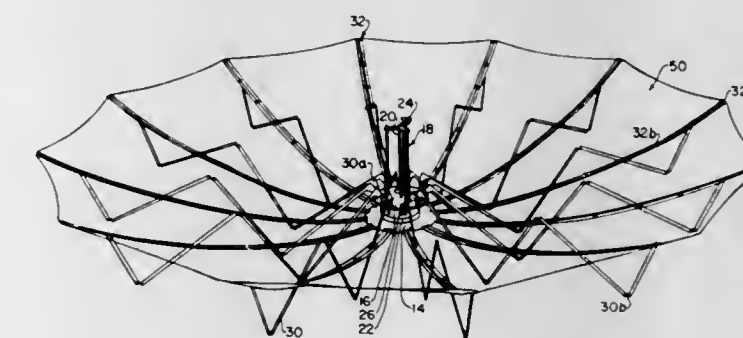
Robert R. Carman, Tallmadge, and Howard W. Barrett, Akron, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Mar. 23, 1970, Ser. No. 21,745

Int. Cl. H01q 15/20

U.S. Cl. 343-915

7 Claims



The invention relates to a large expandable antenna or reflector which can be packaged in a small volume. The antenna can be parabolic, spherical or flat. Radial ribs, interconnected in a scissorslike pattern, extend from a center hub. One set of the elements are fabricated to the desired reflector contour while the alternate elements are straight elements which deploy and support the contour elements. A flexible screen or reflector surface between the contoured elements provides the reflector surface.

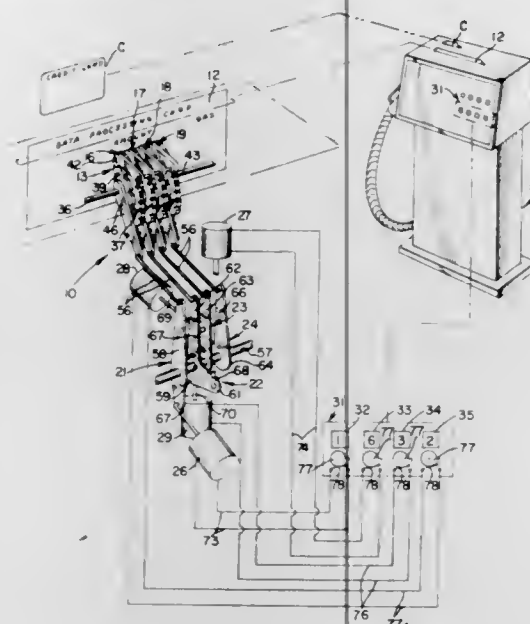


3,631,506

**IMPRINTING UNIT FOR A DISPENSING DEVICE**  
 Watrons Alfred Nielsen, Chicago, Ill., assignor to Card Automatic Recording Data, Inc., Chicago, Ill.  
 Filed June 9, 1969, Ser. No. 840,095  
 Int. Cl. B67d 5/24

U.S. Cl. 346-43

10 Claims



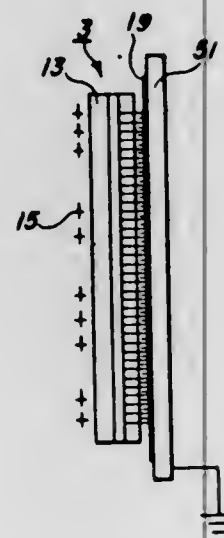
A billing card imprinting device for a dispensing unit. The device includes a plurality of side-by-side imprinting discs, each disk having a solenoid and linkage drive means for rotating the disk in correspondence with the dispensing unit.

3,631,507

**METHOD OF REDISTRIBUTING CHARGE ON A DIELECTRIC MEDIUM**  
 Benjamin Kazan, Pasadena, and Arthur W. Vance, Corona Del Mar, both of Calif., assignors to Xerox Corporation, Rochester, N.Y.  
 Original application Sept. 29, 1966, Ser. No. 582,911, now Patent No. 3,518,698, dated June 30, 1970. Divided and this application Sept. 29, 1969, Ser. No. 870,878  
 Int. Cl. G01d 15/06; G11b 7/06

U.S. Cl. 346-74 ES

9 Claims



This application relates to an imaging system and method utilizing a conductive pin matrix for redistributing charge on a charge-dielectric surface which is placed in contact therewith. Conductivity between adjacent pins and therefore charge redistribution is controlled by means of a field-effect semiconductor layer and an electric field applied thereto, the presence of the electric field modifies the conductivity of the

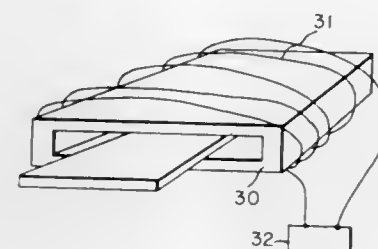
electrical path between adjacent pins through the field-effect semiconductor layer.

3,631,508

**THERMOMAGNETIC RECORDING WHEREBY IMAGE REVERSAL IS ACHIEVED MAGNETICALLY**  
 Dimitri N. Staicopolus, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
 Filed June 8, 1970, Ser. No. 44,110  
 Int. Cl. G03g 19/00

U.S. Cl. 346-74 MP

6 Claims



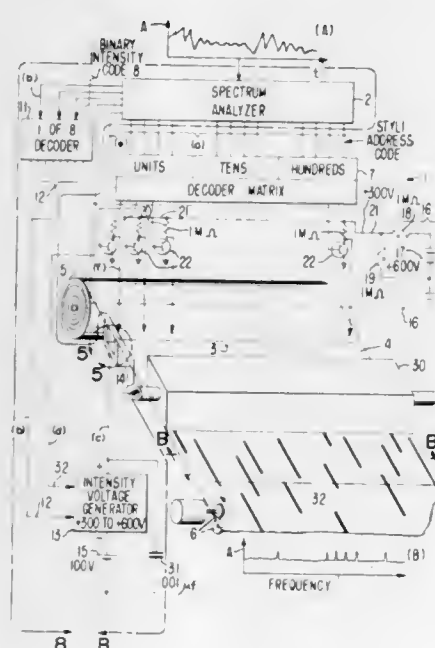
A magnetic image, recorded on a magnetic recording member having a finely particulate hard magnetic material as its magnetic working material, is changed by application of a magnetic field to demagnetize areas of the recording member having maximum magnetization opposed to the field, while other areas are magnetized or enhanced in magnetization in the direction of the field. Thus a recording member magnetized to print a black on white image can be reversed to print a white on black image.

3,631,509

**HIGH-SPEED COINCIDENT PULSE ELECTROGRAPHIC PRINTER WITH GRAY SCALE PRINTING CAPABILITY**  
 Edward W. Marshall, Saratoga, Calif., assignor to Varian Associates, Palo Alto, Calif.  
 Filed July 2, 1969, Ser. No. 838,628  
 Int. Cl. G03g 15/00; H04n 1/12

U.S. Cl. 346-74 ES

8 Claims



The printer includes an array of electrographic styli electrodes disposed overlaying a backup electrode. An electrographic recording web is passed between the styli and the backup electrode. The recording web comprises a dielectric charge retention film facing the styli, such film being supported on a conductive paper backing which makes electrical contact with the backup electrode. A pulsed first writing potential is produced across the styli and the backup electrode, such first pulsed potential having a pulse amplitude

and duration which is less than that which is sufficient to deposit a charge image on the recording medium but which has an amplitude and/or duration which varies in variable accordance with the density of the incremental charge image to be printed by a selective one of the styli on the recording web. A second pulsed potential is applied across the selected one of the styli and the backup electrode, such second pulsed potential being of generally invariant amplitude and/or duration and which, by itself, is insufficient to produce a charge image on the recording medium but which when combined with the first potential produces a total pulsed voltage of an amplitude and/or duration sufficient to deposit an incremental charge image on the recording medium, such deposited charge image having an average charge density in accordance with the density of the image to be printed to produce a gray scale printing capability.

**3,631,510**  
**RECORDER FOR PRINTING DOT ARRAYS ON ELECTROSENSITIVE PAPER**

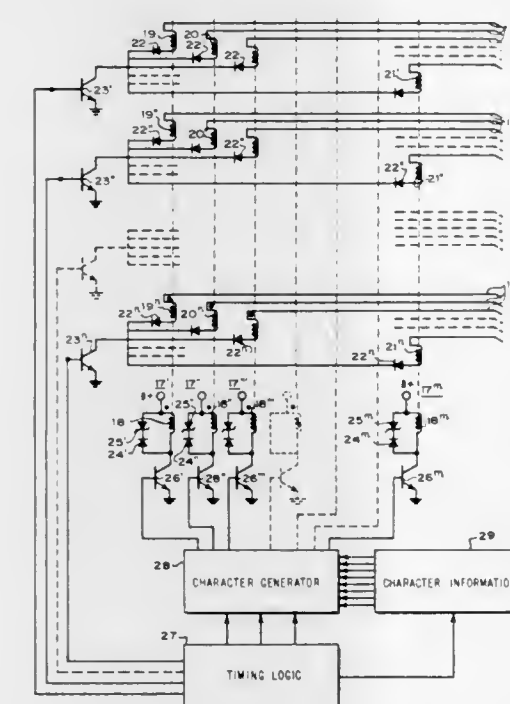
Richard E. Monnier, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 28, 1970, Ser. No. 41,273

Int. Cl. G01d 15/06

U.S. Cl. 346-74 E

8 Claims



A paper printer employing a plurality of groups of print fingers arranged linearly across the paper, each group of fingers printing the rows of dots in a different character across the paper is disclosed. A plurality of voltage step-up transformers are used to energize the fingers, each transformer including a primary winding and a plurality of secondary windings. One primary winding is provided for each finger of a group, and different ones of the secondary windings of each transformer are coupled to one of the fingers in each group of fingers. Circuit means are provided for enabling all the secondary windings associated with a selected group of fingers and additional circuit means are provided for energizing one or more of the primary windings associated with the desired finger or fingers in the group. Those enabled secondary windings associated with the primary winding or windings selectively energized develop currents to be passed through the desired finger or fingers in the group to mark the paper.

3,631,511

**DROP CHARGE COMPENSATED INK DROP VIDEO PRINTER**

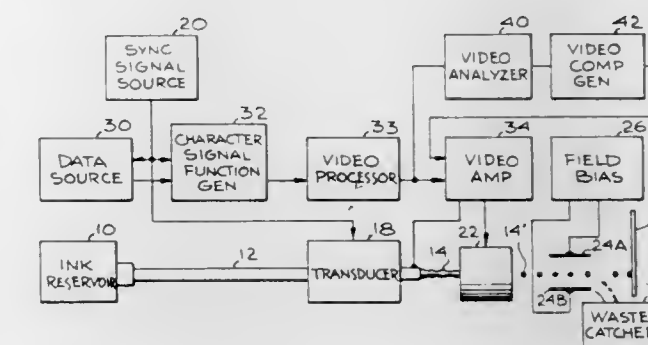
Robert I. Keur, Niles, and Vincent E. Bischoff, River Grove, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed May 8, 1970, Ser. No. 35,650

Int. Cl. G01d 15/18

U.S. Cl. 346-75

12 Claims



In an ink drop printer, the adverse affects of the charge on a just formed drop upon the charge on a following ink drop being formed is compensated for, enabling the use of every ink drop for printing and thus affording better and faster printing.

3,631,512

**SLAVE PRINTING APPARATUS**

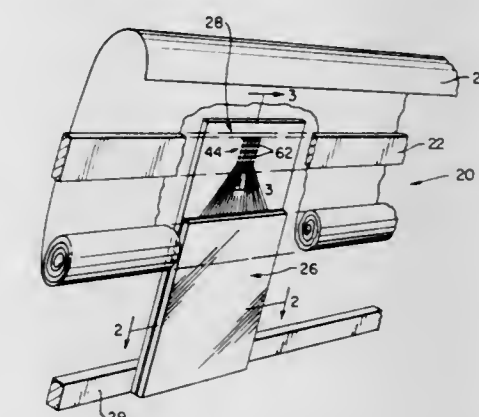
John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Mar. 9, 1970, Ser. No. 17,762

Int. Cl. G01d 15/10

U.S. Cl. 346-76 R

8 Claims



An apparatus for producing character patterns which includes a first matrix, or "master" unit, of selectively energizable components (like resistors and electric lamps) which are arranged in a first array for producing a plurality of character patterns. A second matrix, or "slave" unit, which is easily replaceable, has selectively energizable second components (like resistors for printing on a thermally responsive medium, or light cells for printing on a light-responsive medium), which are arranged thereon in a second array for producing character patterns corresponding to those produced by the first matrix. A sensing element (like a semiconductor with a high negative coefficient of resistance, or a light-sensitive semiconductor) is associated with each component of the first matrix, and this sensing element is effective to energize the associated component of the second matrix whenever the corresponding component of the first matrix is energized. Regardless of the number of energizable components present on the second matrix, only two connection leads for connection to a source of potential are required for the second matrix, making it easily replaceable when subjected to wear in cooperative association with a printing medium (like thermally or photographically responsive paper).



3,631,513

**APPARATUS FOR THE AUTOMATIC RECORDING OF HYPOSTASIS REACTIONS**

Walter Fotsch, Regensdorf, and Stanislaus Monn, Watt, both of Switzerland, assignors to Guest Medical and Dental Products AG, Zug, Switzerland

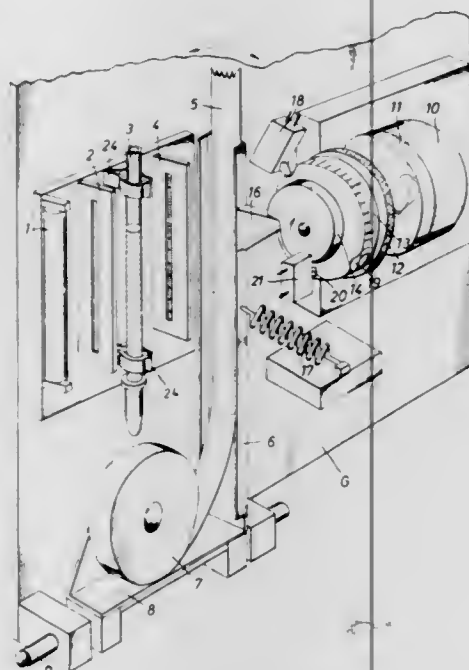
Filed July 28, 1969, Ser. No. 845,234

Claims priority, application Switzerland, July 26, 1968, 11524/68

Int. Cl. G01n 33/16

U.S. Cl. 346—107

6 Claims



Apparatus for the automatic recording of hypostasis reactions.

3,631,514

**RECORDING FILM HAVING REMOVABLE ANTISTATIC LAYER**

Edward William Lee, and Frank Percy Lambert, both of Ilford, England, assignors to Ilford Limited, Ilford, England

Filed Apr. 8, 1970, Ser. No. 26,807

Claims priority, application Great Britain, Apr. 14, 1969, 18,933/69

Int. Cl. G01d 15/34

U.S. Cl. 346—135

4 Claims

This application describes an image-recording film comprising a film support and a silver halide emulsion layer thereon, characterized in that there is provided in superposition on the emulsion side of the assembly a layer of a film-forming material which is soluble or dispersible in water or alkali and, as the outer layer, a layer of acid-reacting polymer having dispersed therein an acid-reacting carbon black.

3,631,515

**PLOTTER DRUM MOUNTING SYSTEM**

Joseph R. Read, Anaheim, Calif., assignor to California Computer Products, Inc., Anaheim, Calif.

Filed Dec. 22, 1969, Ser. No. 886,915

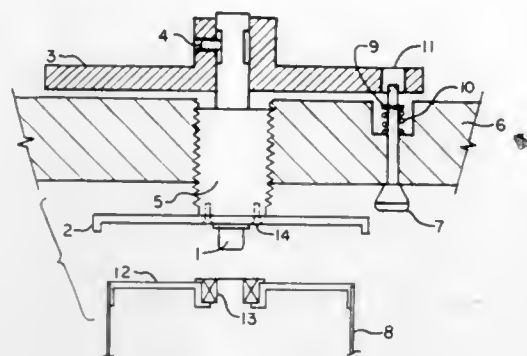
Int. Cl. G01d 15/28

U.S. Cl. 346—136

3 Claims

A mechanical detent having a limited engagement length may be used to precisely position one rotatably adjustable

member relative to another. Such an arrangement may be



used to reestablish the correct axial loading when installing a plotter drum after it has been removed.

3,631,516

**RECORDING CHART**

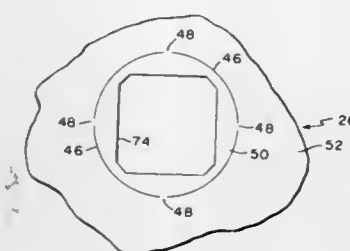
William J. Puchik, Verona, N.J., assignor to Nashua Corporation, Nashua, N.H.

Filed July 30, 1969, Ser. No. 846,050

Int. Cl. G01d 15/32

U.S. Cl. 346—137

7 Claims



A tachograph for recording information during a number of identical, successive time intervals on a stack of disks rotatable in unison past a stylus. Rotation of the stack past the stylus is accomplished within one of the time intervals. Each disk has a window which exposes the next lower disk of the stack. After the uppermost disk has rotated through one full time interval it is separated from the hub and held stationary, and the remaining lower disks continue to rotate, and the stylus then bears against the uppermost of the rotating disks through the stationary window of the separated disk. The disks are separable from the hub by means of a weakened score line which circumscribes the hub and separation is effected by a fixed detent which engages the edge of the window after the disk has been rotated fully through the time interval period.

3,631,517

**ADJUSTABLE BEARING FOR PEN**

Robert I. Morrison, Jenkintown, and Peter H. Batchelar, Bucks County, both of Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 15, 1970, Ser. No. 28,806

Int. Cl. G01d 15/00

U.S. Cl. 346—139 C

7 Claims

A unitary bearing member for adjustably supporting a pen carrying arm of a recorder that provides No. 1 a means for permitting the rotary movement of the pen to be restricted to one of several preselected recording portions on a chart and

3,631,519

**STRESS GRADED CABLE TERMINATION**

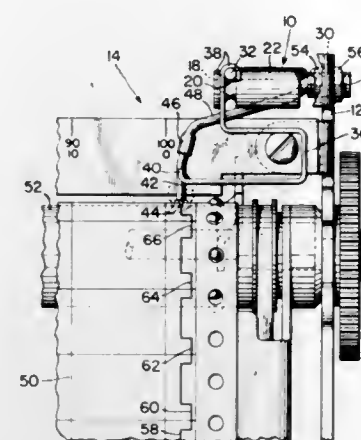
Hooshang Salahshourian, Fairfield, Conn., assignor to General Electric Company

Filed Dec. 21, 1970, Ser. No. 99,799

Int. Cl. H02g 15/02; G01r 31/12

U.S. Cl. 174—73 R

9 Claims



tending between the arm and the pen so that the best writing pen pressure of the pen on the chart can be achieved.

3,631,518

**STRIP-CHART PORTABLE ELECTROGRAPHIC APPARATUS**

Sebastiano Battaglia, 71, Via Isonzo, Casalecchio di Reno, Bologna, Italy

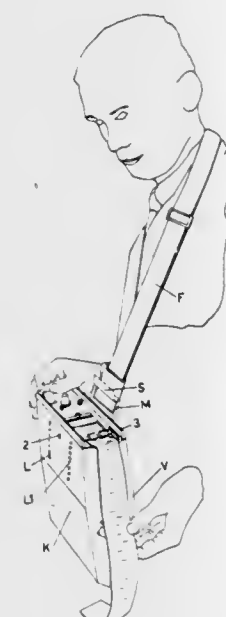
Filed Feb. 9, 1970, Ser. No. 9,556

Claims priority, application Italy, Feb. 21, 1969, 6820 A/69

Int. Cl. G01d 11/30

U.S. Cl. 346—145

6 Claims



3,631,520

**PREDICTIVE CODING OF SPEECH SIGNALS**

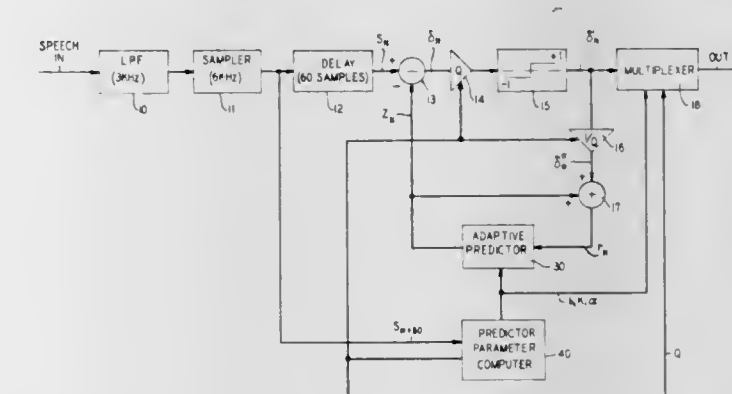
Bishnu S. Atal, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 19, 1968, Ser. No. 753,408

Int. Cl. G10l 1/06

U.S. Cl. 179—1 SA

11 Claims



A strip-chart portable electrographic apparatus, comprising an electronic amplifier unit, a recording galvanometer provided with a writing pen or stylus and a unit for advancing a strip chart at a predetermined speed and the electric battery or auxiliary source of current for operating the above units are arranged in compartments of a flat valislike case adapted to be connected to a strap for slinging on the operator's shoulders, with one of the narrow case sides up. On this side the control panel and the supporting plate for the strip-chart end are arranged, at reach of the operator's hands and under his eyes.

Predictive coding of signals, i.e., the reduction or redundancy in a signal by subtracting from it that part which can be predicted from its past, is a well-known technique for reducing the channel capacity required to transmit a signal with specified fidelity. It has been widely applied to signals, such as television signals which have regularly repeating intervals of information, but has not been satisfactorily applied to signals, such as speech, which exhibit characteristics that vary from speaker to speaker and from time to time for one speaker. According to this invention, an adaptive predictor is employed which is readjusted periodically to match the time-varying characteristics of a speech signal.



**3,631,521**  
**ELECTRICAL CIRCUIT BREAKER OF THE GAS BLAST**  
**TYPE WITH ARRANGEMENT FOR INSPECTION OF**  
**BLAST VALVE**

Dieter Floessel, Fislisbach, Switzerland, assignor to Aktien-  
 gesellschaft Brown, Boveri & Cie, Baden, Switzerland

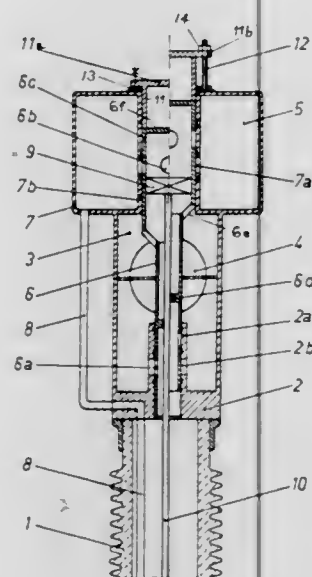
Filed July 16, 1970, Ser. No. 55,526

Claims priority, application Switzerland, July 23, 1969,  
 11246/69

Int. Cl. H01h 33/80

U.S. Cl. 200—148 R

5 Claims



An electrical circuit breaker of the gas blast type includes a hollow columnar insulator atop which are supported circuit breaker components such as a high-pressure housing within which gas such as  $\text{SF}_6$  is stored in readiness for delivery to a switch contact chamber via a low-pressure housing under the control of a blast valve which is accessible for inspection through the low-pressure housing. A two-position blocking-off member is provided to control communication between the low-pressure housing and the columnar insulator on the one hand, and between the low-pressure housing and the high-pressure housing on the other hand. In a first position of the blocking-off member corresponding to the operating state of the circuit breaker, communication is established between the low-pressure housing and the columnar insulator; in the second position, both the columnar insulator and high-pressure housing are blocked off from the low-pressure housing thereby enabling the latter to be opened for inspection of the blast valve.

**3,631,522**  
**ELECTRIC SWITCHES**

Gerald David Breeze, Coventry, England, assignor to The  
 General Electric Company Limited, London, England

Filed May 1, 1970, Ser. No. 33,616

Claims priority, application Great Britain, May 1, 1969,  
 22,287/69

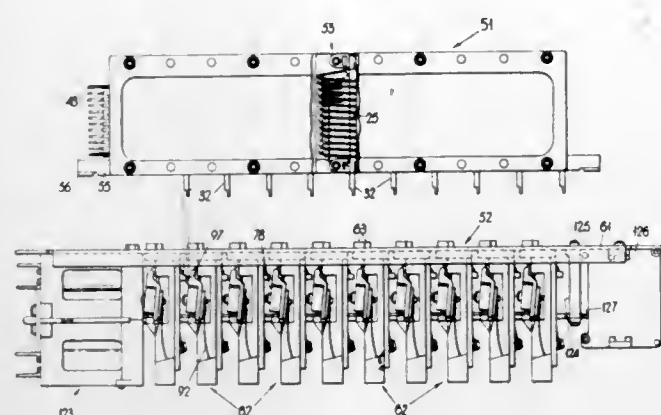
Int. Cl. H01h 63/00

U.S. Cl. 200—175

6 Claims

A crossbar switch having a three-dimensional matrix of cross-point contacts provided by rows, columns and tiers of conductor wires. The tiers of contacts at each cross-point provide a contact set of, say, 12 contact pairs which are housed in an individual housing member. Mounted within each housing member is a comb having a tooth for each contact pair, the tooth engaging one wire, the row wire, of the contact pair. The tip of each tooth engages its respective row

wire both in closing and opening the contact set and in fact provides a support for the row wire. The comb is biased into



the contact open condition in which the row wires are un-stressed.

**3,631,523**  
**ELECTRIC SWITCH**

Gordon Feetenby, Coventry, England, assignor to The  
 General Electric Company Limited, London, England

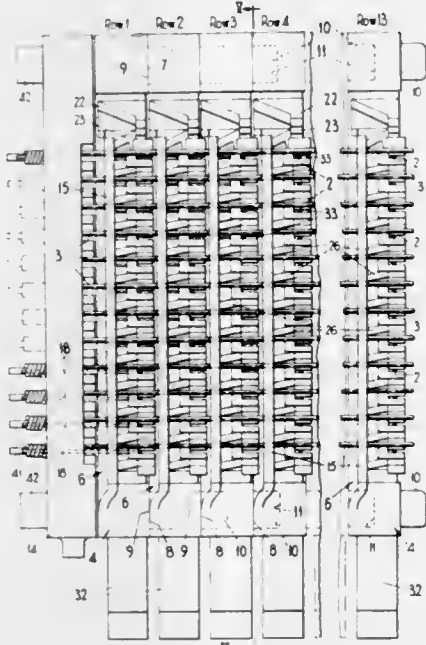
Filed May 1, 1970, Ser. No. 33,617

Claims priority, application Great Britain, May 1, 1969,  
 22,285/69

Int. Cl. H01h 63/00

U.S. Cl. 200—175

6 Claims



A crossbar switch having a three-dimensional matrix of cross point contacts provided by rows, columns and tiers of conductor wires. The tiers of contacts at each cross point provide a contact set of, say, 12 contact pairs, which are housed in an insulating housing unit. The housing units interlock in columns to locate and support the column wires and the columns are clamped together to provide similar paths for the row wires.

The tiers are in groups or levels which are selected by terminal wires allotted to a particular group and standing in for row wires in auxiliary rows. Contact sets in the auxiliary rows thus comprise only 'cross point' contacts for the group associated with the particular auxiliary row.

**3,631,524**  
**ARRANGEMENT FOR INCREASING THE TRANSFER OF**  
**ELECTRICAL POWER IN THE WELDING OF PIPES BY**  
**INDUCED CURRENTS**

Helmut Denner, deceased, late of Gebenstorf, Switzerland (by  
 Leo Wyrsh, administrator, Baden, Switzerland), assignor  
 to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzer-  
 land

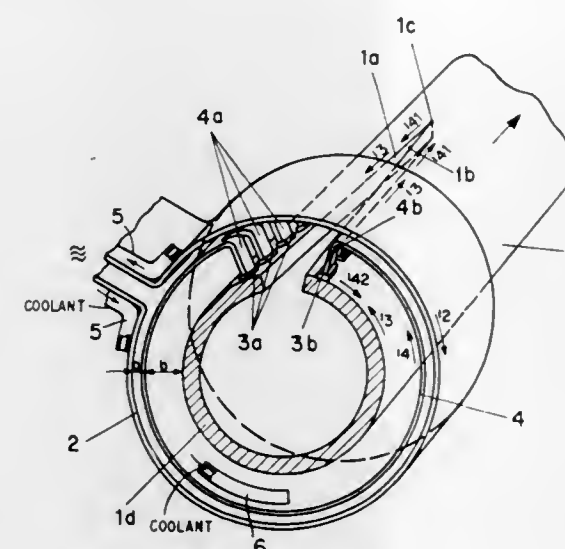
Filed Dec. 16, 1969, Ser. No. 885,488

Claims priority, application Switzerland, Jan. 15, 1969,  
 471/69

Int. Cl. B23k 13/00

U.S. Cl. 219—9.5

6 Claims



A procedure for welding together the adjacent longitudinal edges of a split tube in a longitudinally progressive manner by induced high-frequency currents flowing to the welding point includes a primary induction turn surrounding the tube and located upstream from the weld point for inducing current flows in the tube to and from the weld point. In addition to the primary induction turn, a secondary turn encircles the tube in the annular space between the tube and primary turn, and the spacing between the primary and secondary turns as measured in a radial direction is smaller than the spacing between the secondary turn and the tube. Current induced in the secondary turn is applied to the tube conductively by two sets of contacts, each contact set being disposed adjacent a respective opposed face of the split tube to produce current flows along the opposed faces which reinforce the current flows induced along these same paths by the primary induction turn. The contact sets also produce additional current flows around the back of the tube which act in opposition to and therefore reduce similar current flows induced along these same paths by the primary induction turn.

**3,631,525**  
**ELECTRIC HEATER FOR USE IN A DUCT WORK**  
**SYSTEM**

Jerome F. Brasch, 11327 Clayton Road, St. Louis, Mo.

Filed Nov. 24, 1969, Ser. No. 879,412

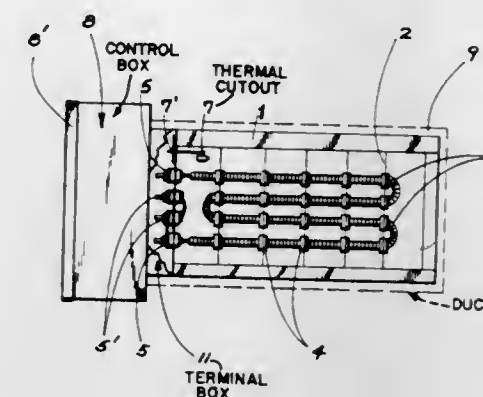
Int. Cl. F24h 3/04; H05b 1/00

U.S. Cl. 219—366

3 Claims

A heater adapted for use in a duct work system includes a unitary assembly of (1) a housing unit supporting at least one resistance wire heating element having a pair of terminals, (2) a control box containing heating element controls attached to and positioned outside the housing unit and (3) an enclosed terminal box housing the terminals and the electrical connections between the terminals and the controls in the control box. The terminal box is disposed adjacent the control box and positioned within the housing unit. The housing unit, terminal box and control box are so dimensioned relative to the duct work that when the heater is installed within the duct work both the housing unit and terminal box are

recessed within the duct work in the path of the airstream while the control box is outside the duct work. The terminal



box also contains thermal cutouts connected to the heating element. The space heater can be of the "slip-in" or "flange" type.

**3,631,526**  
**APPARATUS AND METHODS FOR ELIMINATING**  
**INTERFERENCE EFFECT ERRORS IN DUAL-BEAM**  
**INFRARED MEASUREMENTS**

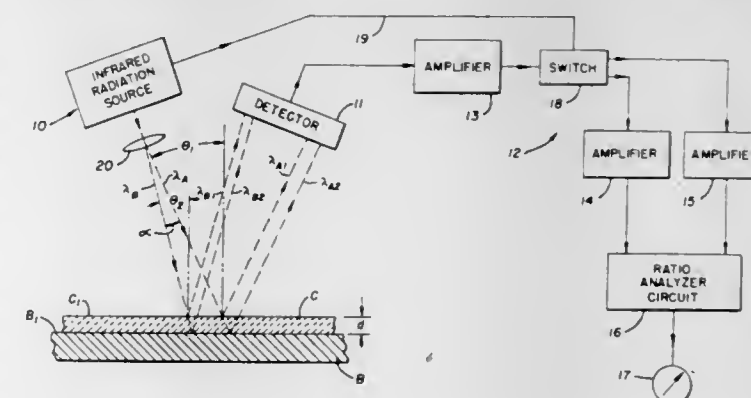
Donald C. Brunton, Columbus, Ohio, assignor to Brun Sensor  
 Systems, Inc., Columbus, Ohio

Filed Nov. 5, 1969, Ser. No. 874,358

Int. Cl. G01j 3/00

U.S. Cl. 250—83.3 D

18 Claims



Apparatus and method for eliminating interference effect errors in dual-beam infrared measurements of either a reflection or through-transmission type is provided through specific geometrical arrangements and beam configuration and through selection of the two beam wavelengths in a specific relationship. Aspects of interference phenomenon are utilized in both the geometrical arrangement or beam configuration and the wavelength selection techniques of eliminating interference effects in the measurement of a particular material property or parameter. These techniques are adapted to measurement of a radiation-transmissive material which may be formed as a self-supporting film or as a coating or film on a base material and wherein the surfaces of the layer of material are specular. One technique comprises causing the two beams of radiation to be incident to a surface of the film at a broad spectrum of angles such that components of the beams that subsequently exit the film and are reflected at the surfaces thereof will be added at all possible phase angles thereby eliminating the effects of phase displacement as to specific beam components. A second technique utilizes selection of two wavelengths sufficiently close together for the two beams so that, for a film which is relatively thin, the interference effect resulting from phase displacement of components of each beam will be minimal. The third technique forms each of the two beams of radiation to comprise a relatively broad spectral band rather than a substantially discrete wavelength with the consequent phase



displacement of the beam components resulting in addition of the beam components at all possible phase angles. These three techniques may be utilized independently or either the second or third described technique may be utilized in combination with the first-described technique. Also, the techniques are equally applicable to reflection measurements where the radiation detector is disposed at the same side of the film as the radiation source or to through-transmission measurements where the detector is disposed at the opposite side of the film.

Details of some elements of structure are not incorporated in the foregoing description as these elements are well known in the prior art and the interference-error-eliminating techniques of this invention are fully disclosed. These techniques are applicable to either reflection or through-transmission measurements in effectively eliminating interference errors thereby providing more accurate results. Any of the described techniques may be utilized independently of the others or either the closely adjacent wavelength selection or the broad spectral band techniques may be utilized in combination with the wide-angle technique as may be deemed advisable in a specific application of the invention to optimize interference error elimination.

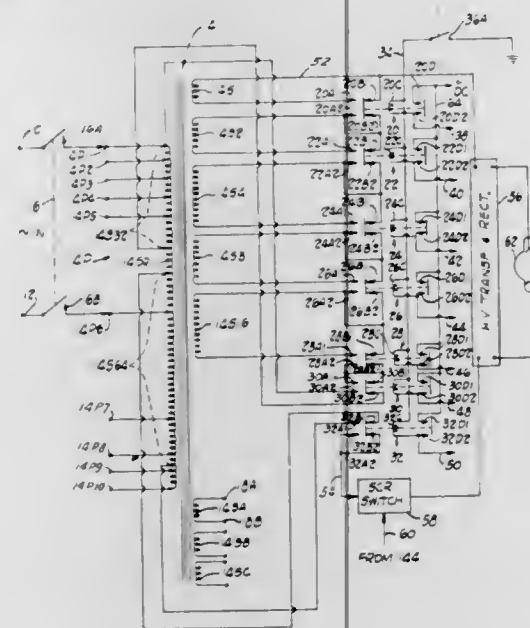
3,631,527

**X-RAY TUBE KILOVOLTAGE CONTROL SYSTEM**  
Walter E. Splain, Solon, Ohio, assignor to Picker Corporation, White Plains, N.Y.

Filed July 9, 1968, Ser. No. 743,421  
Int. Cl. H05g 1/32; G03b 41/16

U.S. Cl. 250-103

30 Claims



A system for automatically supplying a preselected kilovoltage to an X-ray tube is provided with a transformer having a plurality of binary-coded secondary windings. Switching devices are connected to the secondary windings to provide various combinations of secondary windings. A control system automatically changes the combination of secondary windings to correct for changes in system parameters to insure that a selected kilovoltage is actually applied to the X-ray tube at the start of an exposure.

3,631,528

**LOW POWER CONSUMPTION COMPLEMENTARY DRIVER AND COMPLEMENTARY BIPOLAR BUFFER CIRCUITS**

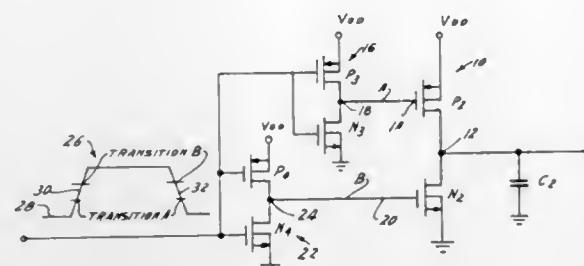
Robert S. Green, 345 E. Brahma, Murray, Utah  
Filed Aug. 14, 1970, Ser. No. 63,727  
Int. Cl. H03k 17/60

U.S. Cl. 307-251

12 Claims

A low-power complementary driver comprising a first complementary inverter is provided with a special circuit for

turning the N-channel device off before the P-channel device is turned on and vice versa to greatly reduce power consumption. This is accomplished by two additional complementary inverters having different transition voltages connected



between the input signal and the gates of the N and P-channel devices, respectively, of the first complementary inverter. A complementary-bipolar inverter is provided using the same technique with one of said additional inverters being replaced by a double inverter.

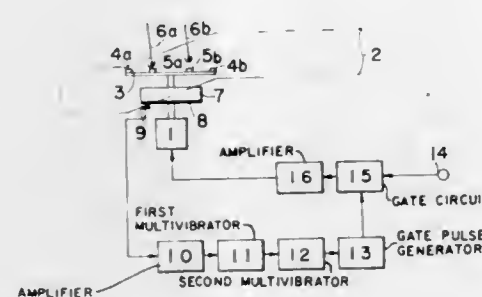
3,631,529

**APPARATUS FOR ELIMINATING SPARK NOISE GENERATED FROM A DIRECT CURRENT MOTOR**  
Sadakimi Ohyama, Tokyo, Japan, assignor to Shiba Electric Co., Ltd., Tokyo, Japan

Filed Sept. 15, 1969, Ser. No. 858,014  
Claims priority, application Japan, Feb. 17, 1969, 44/11061  
Int. Cl. H02k 13/14

U.S. Cl. 318-138

3 Claims



An apparatus for eliminating the sparking noise originating from the commutator in a DC motor in a communication device having a DC motor and a high gain amplifier. The apparatus has at least one commutator position indicator providing a signal corresponding to each sparking period. A circuit converts the signal into an appropriate gate pulse signal which actuates a gating circuit switching off the current to the DC motor during the sparking period.

3,631,530

**COMPACT DISPLAY PANEL**  
James A. Ogle, Paoli, Pa., assignor to Burroughs Corporation, Detroit, Mich.

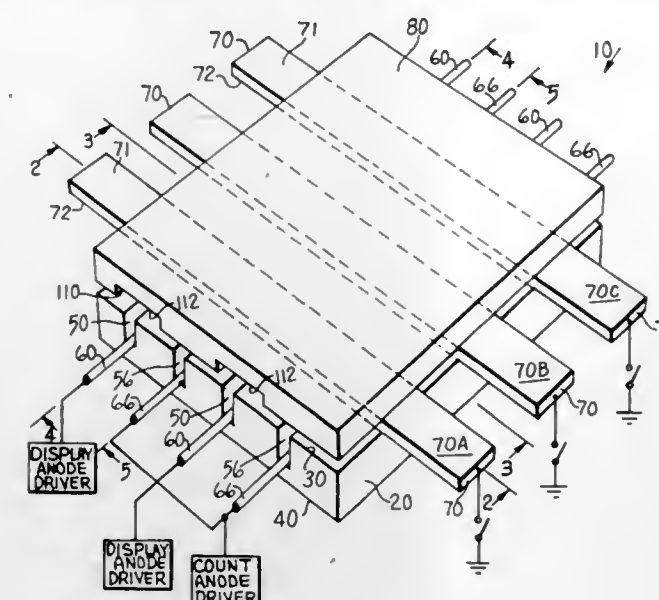
Filed Dec. 1, 1969, Ser. No. 881,023  
Int. Cl. H01j 17/16

U.S. Cl. 313-220

20 Claims

A display panel includes a first plate having slots for receiving anode electrodes and a surface for supporting cathode electrodes for operation with said anode electrodes. A cover plate covers the electrode assembly, with gas-filled spaces being provided, above each cathode, in which cathode glow can be generated facing a viewer. The anode electrodes

are hidden from view and do not obstruct the cathode glow. The slots can also be used to provide communication of



excited particles between adjacent anodes to facilitate the firing of adjacent cells.

3,631,531

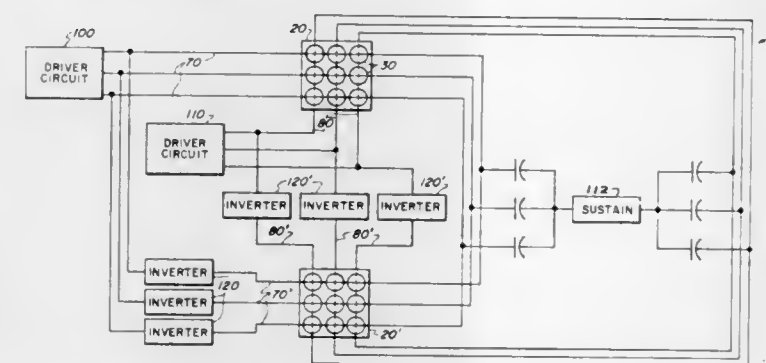
**IMPEDANCE BALANCE SYSTEM FOR GASEOUS DISCHARGE DISPLAY PANEL**

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of application Ser. No. 863,392, May 14, 1969, now abandoned, which is a continuation of application Ser. No. 669,358, Sept. 15, 1967, now abandoned. This application June 18, 1970, Ser. No. 48,918  
Int. Cl. H05b 41/00

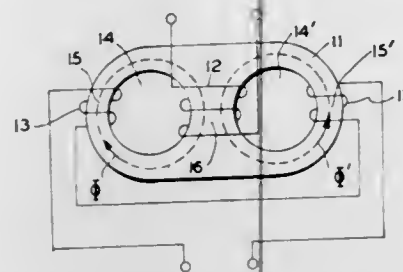
U.S. Cl. 315-166

13 Claims





magnetically to each other. The inductance of one of the two coils is controlled by a DC current flowing through the other of said two coils. The device has a high Q-value, and a wide



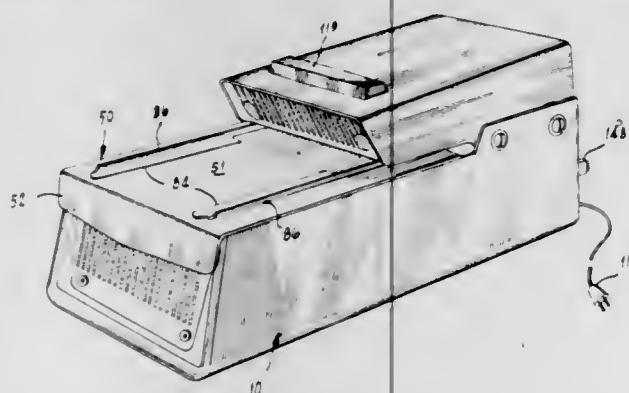
range of inductance is produced by a small DC current. The device is useful in tuned circuits of various electronic instruments.

### 3,631,535 CREDIT CARD DECODER

Thomas Bilinski, Jr., North Wales; Donald W. Fleischer, Ambler, and Jared M. McGowan, Norristown, all of Pa., assignors to Credit Systems, Inc., Gwynedd, Pa.  
Filed July 26, 1968, Ser. No. 748,014  
Int. Cl. H04g 1/00, 3/00, 9/00

U.S. Cl. 340-149

18 Claims



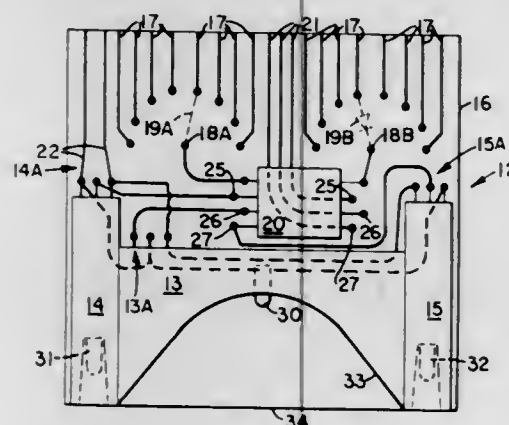
A tray supporting a coded credit card and a document (such as a sales slip) is advanced and latched, shifting a code-sensing contact block into a code-reading position in which it signals a computer. Affirmative or negative intelligence is stored in the computer with respect to each code. If the computer signal is affirmative, a roller imprints information (for example, the cardholder's name and address) from the card to the document, and the tray is released so that the imprinted document may be removed. If the signal is negative, the tray is released without imprint of the document.

### 3,631,536 REGISTER SYSTEM MEMORY MODULES

John A. Mosman, 295 Edgewood Drive, Pacifica, Calif.  
Filed June 10, 1968, Ser. No. 735,683  
Int. Cl. G08b 5/22

U.S. Cl. 340-172.5

2 Claims



Interchangeable memory modules for electronic in-out register systems, each module having a plurality of memories

uniquely addressable from remote stations for control and interrogation of the memory states, and display means for displaying states of each of the memories. The modules are arranged in an illuminated name and memory state panel display.

### 3,631,537 CALIBRATION CIRCUIT FOR BOOM CRANE LOAD SAFETY DEVICE

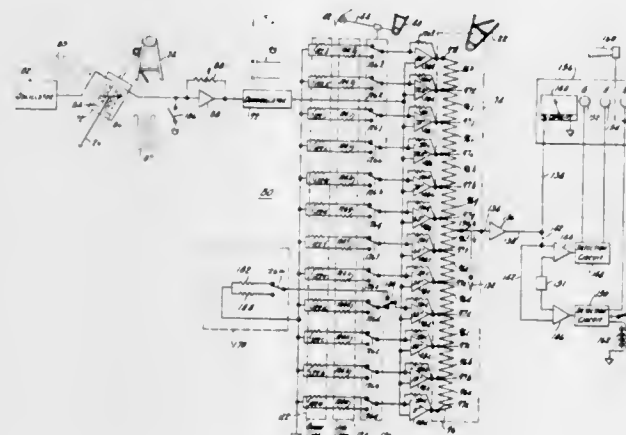
Richard E. Zibolski, Milwaukee, and Ronald W. Morters, Wauwatosa, both of Wis., assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Jan. 26, 1970, Ser. No. 5,679

Int. Cl. B66c 23/00; G08b 21/00

U.S. Cl. 340-267 C

13 Claims



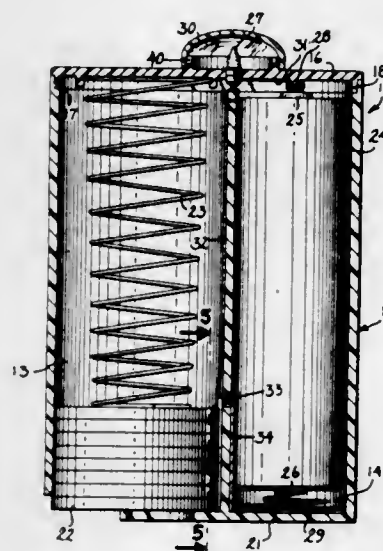
A calibration circuit for determining that a load safety device for a boom crane is operative and properly calibrated. The circuit includes a means for altering the operation of the load safety device so that the weight of the boom itself may be used as a calibrating load.

### 3,631,538 COIN STORAGE AND DISPENSING DEVICE

Herbert A. Kohn, 3753 Cedar Avenue, Minneapolis, Minn.  
Filed Dec. 8, 1969, Ser. No. 882,919  
Int. Cl. G08b 23/00; G08f 5/00

U.S. Cl. 340-283

9 Claims



A coin storage and dispensing device is disclosed which includes a battery-operated indicator light arranged to turn on when the coins remaining in the device fall below a predetermined number.

## DESIGNS

DECEMBER 28, 1971

### 222,765 TROUSERS

Elliot Silverstein, 310 E. 92nd St.,  
Brooklyn, N.Y. 11212  
Filed Nov. 14, 1969, Ser. No. 20,096  
Term of patent 14 years  
Int. Cl. D2-227

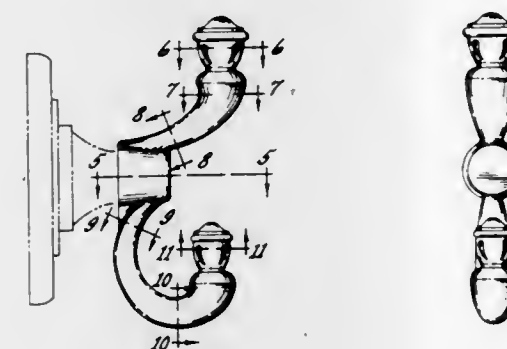
U.S. Cl. D2-28



### 222,766 HOOK

La Verne E. Clayton, Rockford, Ill., and Martin R. Lambertz, New Hamburg, Ontario, Canada, assignors to Amerock Corporation, Rockford, Ill.  
Filed June 24, 1970, Ser. No. 23,634  
Term of patent 14 years  
Int. Cl. D8-03

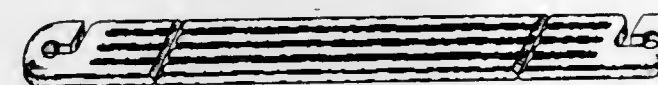
U.S. Cl. D8-254



### 222,767 PACKAGE HANDLE OR THE LIKE

Gustave Alfano, 141-15 28th Ave.,  
Flushing, N.Y. 11354  
Filed Apr. 16, 1969, Ser. No. 16,763  
Term of patent 7 years  
Int. Cl. D9-99

U.S. Cl. D9-292

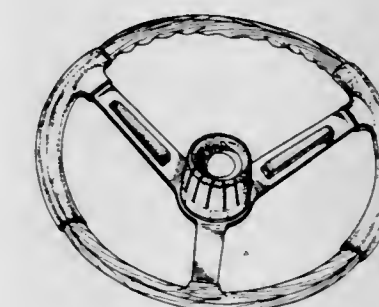


### 222,768

#### STEERING WHEEL FOR MOTORCAR

Tsuneizumi Hikosaburo, Tokyo, Japan, assignor to Izumi Jidosha Kabushiki-kaisha (Izumi Motor-Car Co., Ltd.), Tokyo, Japan  
Filed Nov. 12, 1970, Ser. No. 25,927  
Term of patent 14 years  
Int. Cl. D12-16

U.S. Cl. D14-30

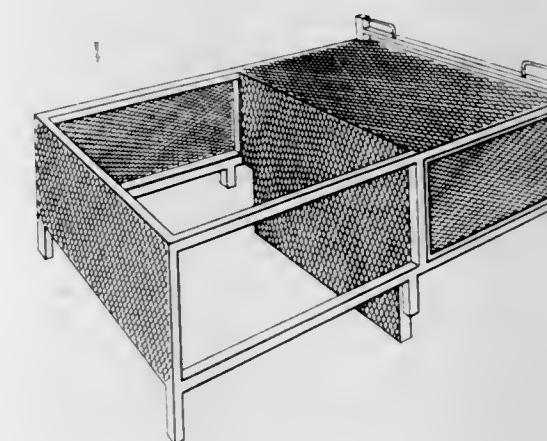


### 222,769

#### CABLE AND SEISMOMETER SUPERSTRUCTURE FOR PICKUP TRUCKS

Clifford D. Dransfield and Darwin D. Shields, Dallas, and Oswald Paxton, Plano, Tex., assignors to Atlantic Richfield Company, New York, N.Y.  
Filed June 11, 1969, Ser. No. 17,658  
Term of patent 14 years  
Int. Cl. D12-16

U.S. Cl. D14-3





222,770

## GARDEN TRACTOR

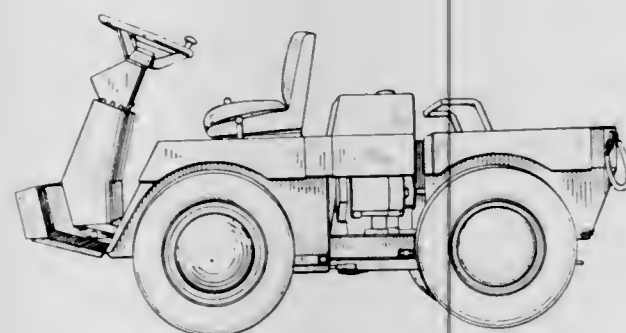
Keith S. Wood and James E. McCane, Oregon, Ill., and Richard E. TenEyck, Curtis G. Ekiss, and William T. Dale, Wichita, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed July 24, 1970, Ser. No. 24,109

Term of patent 14 years

Int. Cl. D12-09

U.S. Cl. D14-3



222,772

## MAGNETIZER

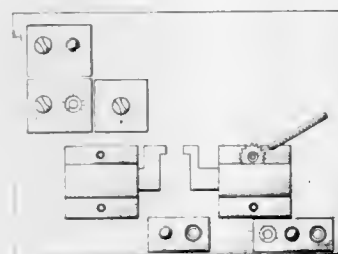
Chester L. Richards, Jr., 7109 N. Meridian St. 46260, and Sherman S. Smith, 6007 N. College Ave., Apt. 10 46220, both of Indianapolis, Ind.

Filed Aug. 14, 1970, Ser. No. 24,483

Term of patent 14 years

Int. Cl. D13-99

U.S. Cl. D26-5



222,773

## CABINET DOOR

Frank Sartori, Hopewell Junction, N.Y., assignor to

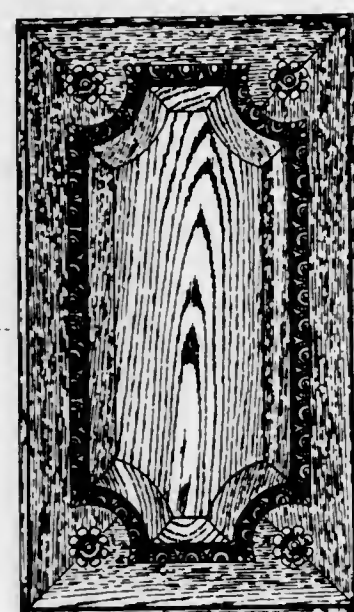
Westinghouse Electric Corporation

Filed May 19, 1970, Ser. No. 23,054

Term of patent 14 years

Int. Cl. D6-04

U.S. Cl. D33-1



222,771

## CHAIR

Lawrie G. McIntosh, Etobicoke, Ontario, Canada, assignor to Carolina Enterprises, Inc., Tarboro, N.C.

Filed Aug. 3, 1970, Ser. No. 24,278

Term of patent 3 1/2 years

Int. Cl. D6-02

U.S. Cl. D15-1



222,774

## CABINET DOOR

Frank Sartori, Hopewell Junction, N.Y., assignor to

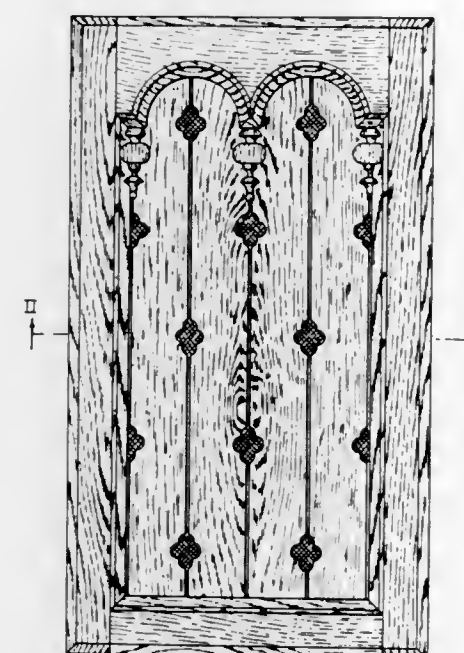
Westinghouse Electric Corporation

Filed May 19, 1970, Ser. No. 23,056

Term of patent 14 years

Int. Cl. D6-04

U.S. Cl. D33-1



222,775

## CABINET DOOR

Frank Sartori, Hopewell Junction, N.Y., assignor to

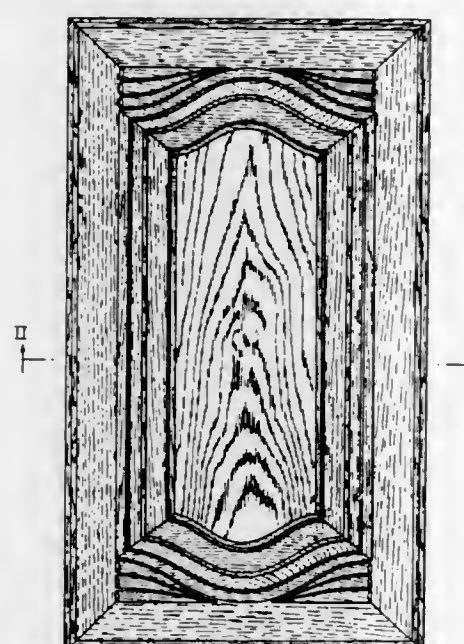
Westinghouse Electric Corporation

Filed May 19, 1970, Ser. No. 23,057

Term of patent 14 years

Int. Cl. D6-04

U.S. Cl. D33-1



222,776

## CABINET DOOR

Frank Sartori, Hopewell Junction, N.Y., assignor to

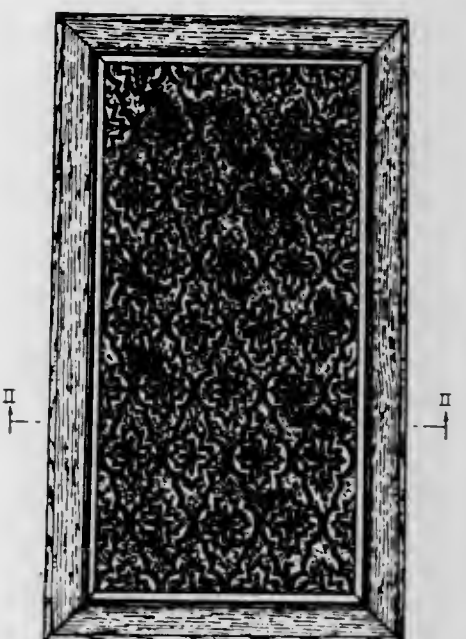
Westinghouse Electric Corporation

Filed May 19, 1970, Ser. No. 23,058

Term of patent 14 years

Int. Cl. D6-04

U.S. Cl. D33-1



222,777

## TABLE BASE OR THE LIKE

Willard M. Fesler, 228 4th St., Manhattan

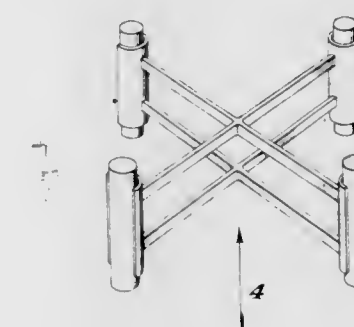
Beach, Calif. 90266

Filed Aug. 7, 1970, Ser. No. 24,365

Term of patent 14 years

Int. Cl. D6-03

U.S. Cl. D33-14





222,778

**TOWEL BAR**

LaVerne E. Clayton, Rockford, Ill., and Martin R. Lambertz, New Hamburg, Ontario, Canada, assignors to Amerock Corporation, Rockford, Ill.  
 Filed June 24, 1970, Ser. No. 23,637  
 Term of patent 14 years  
 Int. Cl. D8—03

U.S. Cl. D33—32

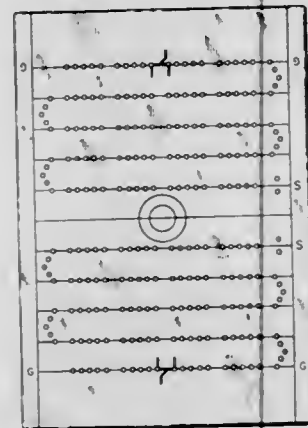


222,779

**CRIBBAGE BOARD**

Spencer M. Wagnild, 3661 34th Ave. S., Minneapolis, Minn. 55406  
 Filed May 25, 1970, Ser. No. 23,121  
 Term of patent 7 years  
 Int. Cl. D21—01

U.S. Cl. D34—5

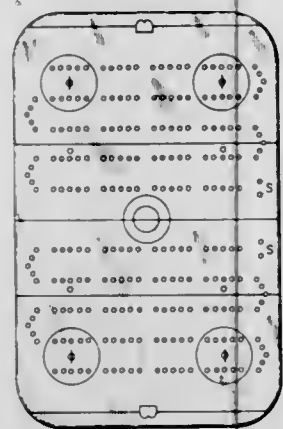


222,780

**CRIBBAGE BOARD**

Spencer M. Wagnild, 3661 34th Ave. S., Minneapolis, Minn. 55406  
 Filed May 25, 1970, Ser. No. 23,123  
 Term of patent 7 years  
 Int. Cl. D21—01

U.S. Cl. D34—5

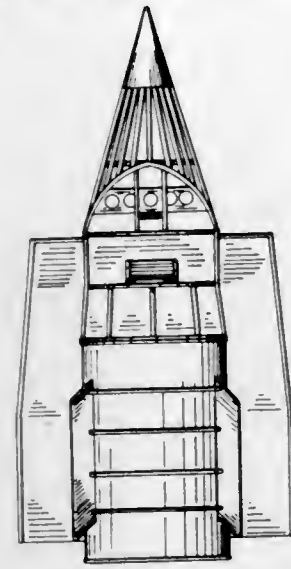


222,781

**COMBINED PLAYGROUND CLIMBER AND SLIDE**

Roland W. Johnson, Hastings, Nebr., assignor to American Play-World, Inc., Hastings, Nebr.  
 Filed July 27, 1970, Ser. No. 24,153  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—5



222,782

**SET OF BRIDGE PLAYING CARDS**

Elisabeth Dibrell, 2553 Church St., Three Mile Bay, N.Y. 13693  
 Filed Sept. 11, 1970, Ser. No. 24,953  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. Cl. D34—13

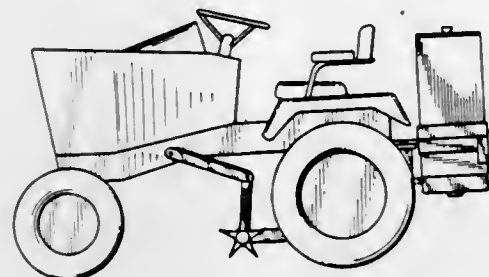


222,783

**LAWN COMBINE**

Donald W. Burton, Gates, N.Y., assignor to Lawn Medic, Inc., Rochester, N.Y.  
 Filed Apr. 8, 1970, Ser. No. 22,327  
 Term of patent 14 years  
 Int. Cl. D15—03

U.S. Cl. D40—1

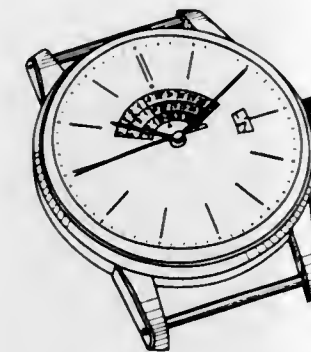


222,784

**WRIST WATCH**

Philipp Kurth, Granges, Switzerland, assignor to Certina Kurth Freres S.A., Granges, Switzerland  
 Filed Aug. 20, 1970, Ser. No. 24,589  
 Term of patent 14 years  
 Int. Cl. D10—02

U.S. Cl. D42—8

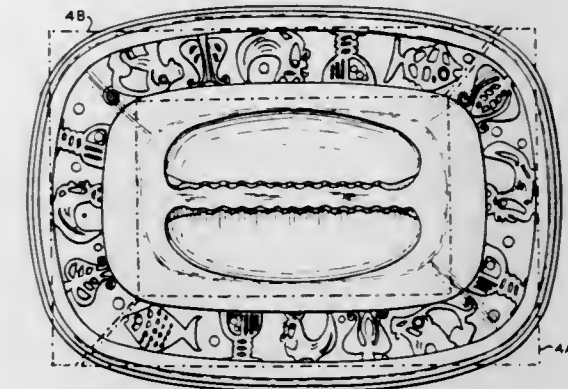


222,786

**COOKING VESSEL**

Eduard Bay, Hohlstrasse, 5412 Ransbach, Westerwald, Germany  
 Continuation of design application Ser. No. 17,400, May 8, 1969. This application July 31, 1970, Ser. No. 24,250  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D44—1

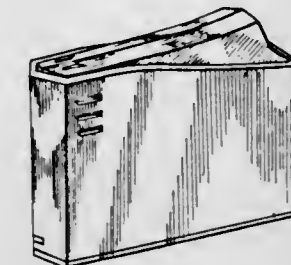


222,787

**CIGARETTE LIGHTER**

Kenjiro Goto, Tokyo, Japan, assignor to Mansel Kogyo Kabushiki Kaisha, Kamiaoki-cho, Kawaguchi-shi, Saitama-ken, Japan  
 Filed May 18, 1970, Ser. No. 23,047  
 Term of patent 7 years  
 Int. Cl. D27—05

U.S. Cl. D48—27

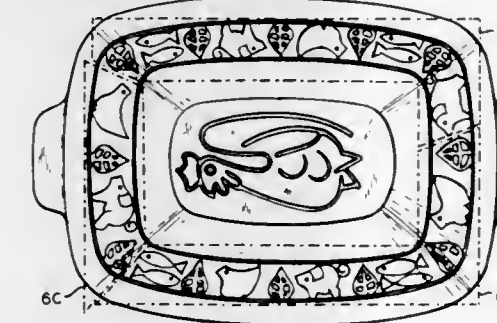
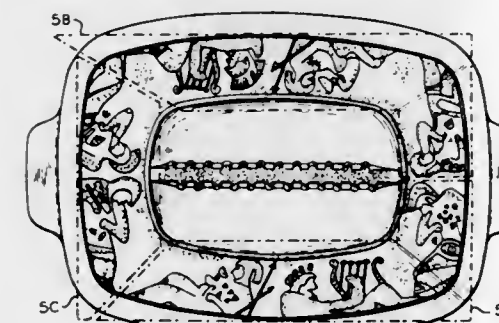


222,785

**COOKING VESSEL**

Eduard Bay, Hohlstrasse, 5412 Ransbach, Westerwald, Germany  
 Continuation of design application Ser. No. 17,397, May 28, 1969. This application July 31, 1970, Ser. No. 24,249  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D44—1



222,788

**WORKPIECE RELEASING DEVICE FOR A STAMPING PRESS**

Hershel E. Hick, % Arbor Tool Corp., 2221 Arbor Blvd., Dayton, Ohio 45439  
 Filed June 19, 1970, Ser. No. 23,577  
 Term of patent 14 years  
 Int. Cl. D15—99

U.S. Cl. D55—1





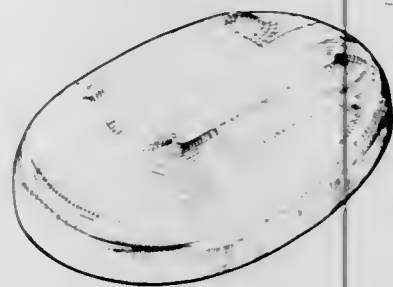
222,789

**COVER PLATE FOR A SEALED MOTOR-COMPRESSOR UNIT**

Dante Giacosa, Turin, Italy, assignor to SIRA Societa Industriale Recherche Automotoristiche S.r.l., Turin, Italy

Filed May 27, 1970, Ser. No. 23,162  
Claims priority, application Italy Dec. 5, 1969  
Term of patent 3½ years  
Int. Cl. D15—02

U.S. Cl. D65—1



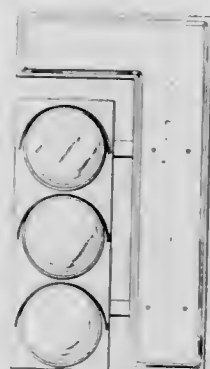
222,790

**COMBINED TRAFFIC LIGHT AND STREET SIGN**

Lyle E. Gant, Indianapolis, Ind., assignor of a fractional part interest to John W. Guterman, Indianapolis, Ind.

Filed Apr. 2, 1970, Ser. No. 22,206  
Term of patent 14 years  
Int. Cl. D29—02

U.S. Cl. D72—1



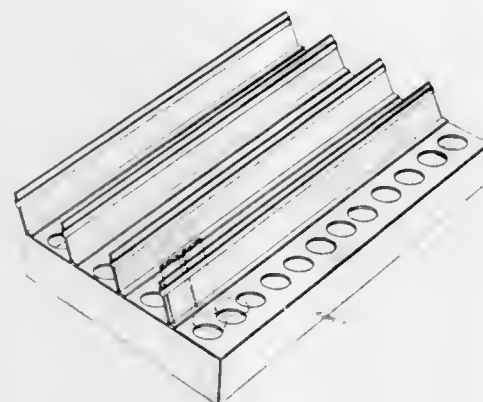
222,791

**MEDICINE DISPENSING TRAY OR THE LIKE**

Marilyn K. Costello, El Centro, Calif.  
(413 Butler Ave., Chalfont, Pa. 18914)  
Filed July 15, 1970, Ser. No. 23,964

Term of patent 14 years  
Int. Cl. D24—02

U.S. Cl. D83—1



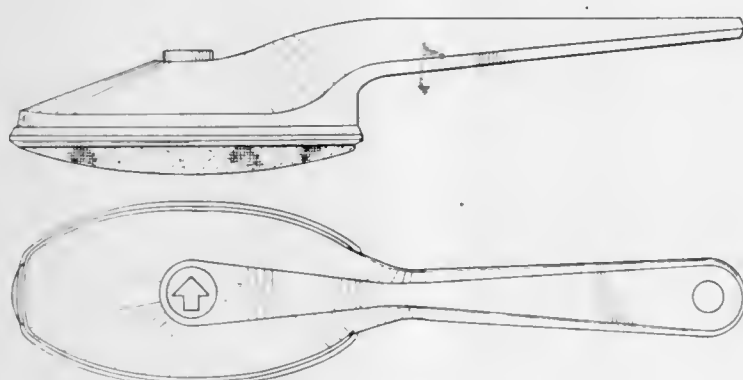
222,792

**FABRIC BRUSH**

Kurt Krusche, Frankfurt, and Hubert Zimmermann, Mannheim, Germany, assignors to Allstar Verbrauchsgüter GmbH & Co. KG, (Allstar Consumer Products Co.), Frankfurt, Germany

Filed Nov. 10, 1969, Ser. No. 19,996  
Claims priority, application Germany June 16, 1969  
Term of patent 14 years  
(Filed under Rule 47(b) and 35 U.S.C. 118)  
Int. Cl. D28—03

U.S. Cl. D86—13

**LIST OF PATENTEEES**

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193	: 3.630.827	175	: 3.631.522	46	: 3.630.405	225	: 3.631.256	19	: 3.630.977	256.4	: 3.631.045
162-24	: 3.630.828		: 3.631.523	219-9.5	: 3.631.524	251-6	: 3.630.481	23	: 3.630.978	5	: 3.631.046
30	: 3.630.829	202-173	: 3.630.851	366	: 3.631.525	30	: 3.630.482	27	: 3.630.979		: 3.631.170
49	: 3.630.832	229	: 3.630.852	220-3.3	: 3.630.406	174	: 3.630.483	27	: 3.630.980	268	: 3.631.171
135	: 3.630.830	248	: 3.630.853	29	: 3.630.407	208	: 3.630.484	28.5	: 3.630.981		: 3.631.172
156	: 3.630.831	203-11	: 3.630.854	54	: 3.630.408	307	: 3.630.485	29.1	: 3.630.982	281	: 3.631.173
163	: 3.630.833	63	: 3.630.855	221-18	: 3.630.409	252-1	: 3.630.896	3	: 3.631.136	283	: 3.631.174
164	: 3.630.834	204-43	: 3.630.856	125	: 3.630.410	8.7	: 3.630.894	6	: 3.630.983	287	: 3.631.175
184	: 3.630.835	49	: 3.630.857	264	: 3.630.411	75	: 3.630.895		: 3.630.984	293.54	: 3.631.051
198	: 3.630.836	59	: 3.630.858	222-1	: 3.630.412	33.6	: 3.630.897		: 3.630.985	58	: 3.631.052
361	: 3.630.837	70	: 3.630.859	5	: 3.630.413	34.7	: 3.630.898	30.4	: 3.631.137	62	: 3.631.053
371	: 3.630.838	73	: 3.630.860	55	: 3.630.414	37	: 3.630.899	8	: 3.630.986	295	: 3.631.054
164-73	: 3.630.266		: 3.630.861	129	: 3.630.415	47.5	: 3.630.900	32.6	: 3.630.987	296	: 3.631.055
82	: 3.630.267	83	: 3.630.862	220	: 3.630.416	51	: 3.630.901		: 3.631.138	304	: 3.631.172
181	: 3.630.268	98	: 3.630.863	333	: 3.630.417	5	: 3.630.902	8	: 3.631.139	305	: 3.631.173
263	: 3.630.269	140.5	: 3.630.864	464	: 3.630.418	33.4	: 3.630.903	307	: 3.631.057	307	: 3.631.174
283	: 3.630.270	143	: 3.630.865	478	: 3.630.419		: 3.630.904		: 3.631.174		: 3.631.175
165-22	: 3.630.271	157.1	: 3.630.866	224-2	: 3.630.420	59	: 3.630.905	6	: 3.630.989	309	: 3.631.058
44	: 3.630.272	158	: 3.630.867	225-21	: 3.630.421	62.3	: 3.630.906		: 3.631.142		: 3.631.059
111	: 3.630.273	159.22	: 3.630.868	226-51	: 3.630.422	54	: 3.630.910	37	: 3.630.988		: 3.631.060
135	: 3.630.274	181	: 3.630.869	62	: 3.630.423	59	: 3.630.911	38	: 3.631.143		: 3.631.176
154	: 3.630.275		: 3.630.870	95	: 3.630.424		: 3.630.912	40	: 3.630.990	2	: 3.631.177
158	: 3.630.276	192	: 3.630.871	108	: 3.630.425	9	: 3.630.907		: 3.631.144	7	: 3.631.061
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259	: 3.630.278		: 3.630.873	227-59	: 3.630.427		: 3.630.909		: 3.630.992	325	: 3.631.177
281	: 3.630.279	195	: 3.630.874	128	: 3.630.428	70	: 3.630.913		: 3.630.993		: 3.631.178
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297	: 3.630.282	224	: 3.630.877	233-21	: 3.630.431	78	: 3.630.915	8	: 3.631.145	330.5	: 3.631.064
299	: 3.630.283	225	: 3.630.878	45	: 3.630.432		: 3.630.916	85	: 3.631.148	340.6	: 3.631.065
	: 3.630.284	248	: 3.630.879	234-15	: 3.630.433		: 3.630.917	47	: 3.630.994	343	: 3.631.066
300	: 3.630.285	286	: 3.630.880	116	: 3.630.434	88	: 3.630.919		: 3.630.995	2	: 3.631.067
309	: 3.630.286	298	: 3.630.881	90	: 3.630.920		: 3.630.996		: 3.631.179		: 3.631.180
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	: 3.630.288		: 3.630.884	164	: 3.631.230		: 3.630.923		: 3.631.150		: 3.631.181
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581	: 3.630.291	45.14	: 3.630.344	185	: 3.631.232	107	: 3.630.925	51	: 3.631.151		: 3.631.072
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117	: 3.630.293	56	: 3.630.346	193	: 3.631.234	135	: 3.630.928	67.6	: 3.630.998		: 3.631.183
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175-73	: 3.630.295		: 3.630.350	238-10	: 3.630.439	146	: 3.630.932	77.5	: 3.630.999	396	: 3.631.185
77	: 3.630.296	208-59	: 3.630.885	14	: 3.630.440	148	: 3.630.933		: 3.631.000	397.3	: 3.631.077
220	: 3.630.297	96	: 3.630.886	239-15	: 3.630.441	153	: 3.630.935		: 3.631.155		: 3.631.186
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177-46	: 3.630.298	109	: 3.630.888		: 3.630.443	171	: 3.630.926		: 3.631.003	45	: 3.631.076
145	: 3.630.299	114	: 3.630.889	17	: 3.630.444	181	: 3.630.927		: 3.631.004		: 3.631.187
196	: 3.630.300	208	: 3.630.890		: 3.630.445		: 3.630.928		: 3.631.005	404	: 3.631.187
229	: Re.27.263	209-5	: 3.630.351	60	: 3.630.446	182	: 3.630.940	4	: 3.631.156	410	: 3.631.079
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3,629,994	3,630,212	3,630,740	3,631,313	3,630,710	3,631,351
3,630,076	3,630,226	3,630,750	3,631,331	3,631,000	3,631,382
3,630,259	3,630,241	3,630,753	3,631,335	3,631,145	3,629,882
3,630,545	3,630,249	3,630,779	3,631,342	3,631,523	3,629,898
3,630,672	3,630,252	3,630,795	3,631,343	3,629,905	3,629,921
2 : 3,630,066	3,630,253	3,630,816	3,631,355	3,629,916	3,630,370
4 : 3,630,119	3,630,280	3,630,820	3,631,357	3,630,089	3,630,479
3,630,156	3,630,304	3,630,833	3,631,377	3,630,138	3,630,632
3,630,511	3,630,307	3,630,875	3,631,380	3,630,228	3,630,696
3,630,589	3,630,312	3,630,885	3,631,383	3,630,343	3,630,781
3,630,721	3,630,313	3,630,900	3,631,388	3,630,373	3,630,782
3,630,722	3,630,319	3,630,906	3,631,394	3,630,375	3,630,801
3,630,972	3,630,325	3,630,912	3,631,403	3,630,380	3,630,871
3,631,309	3,630,333	3,630,917	3,631,410	3,630,382	3,631,324
3,631,352	3,630,334	3,630,918	3,631,412	3,630,492	3,631,333
3,631,404	3,630,335	3,630,939	3,631,419	3,630,530	3,631,450
3,631,476	3,630,341	3,630,949	3,631,422	3,630,562	3,629,902
5 : 3,630,363	3,630,360	3,630,953	3,631,423	3,630,584	3,629,990
3,631,323	3,630,364	3,630,960	3,631,425	3,630,699	3,630,199
6 : Re.27.258	3,630,377	3,631,006	3,631,428	3,630,822	3,630,383
3,629,876	3,630,379	3,631,018	3,631,429	3,630,837	3,630,385
3,629,900	3,630,396	3,631,024	3,631,431	3,630,973	3,630,605
3,629,915	3,630,402	3,631,032	3,631,437	3,630,698	3,630,725
3,629,927	3,630,412	3,631,080	3,631,440	3,631,109	3,631,367
3,629,937	3,630,420	3,631,084	3,631,441	3,631,201	3,631,257
3,629,944	3,630,435	3,631,098	3,631,443	3,631,257	3,631,390
3,629,958	3,630,443	3,631,144	3,631,445	3,631,390	3,629,864
3,629,967	3,630,445	3,631,150	3,631,448	3,631,395	3,631,434
3,629,969	3,630,449	3,631,170	3,631,452	3,631,434	3,629,874
3,629,970	3,630,453	3,631,215	3,631,455	3,631,519	3,629,896
3,629,971	3,630,475	3,631,218	3,631,464	3,630,736	3,629,910
3,629,981	3,630,516	3,631,230	3,631,478	3,630,823	3,629,968
3,629,996	3,630,521	3,631,238	3,631,488	3,630,839	3,629,972
3,630,011	3,630,526	3,631,239	3,631,489	3,630,858	3,629,987
3,630,033	3,630,529	3,631,245	3,631,491	3,630,894	3,630,004
3,630,059	3,630,532	3,631,246	3,631,501	3,630,954	3,630,025
3,630,074	3,630,547	3,631,250	3,631,503	3,630,988	3,630,112
3,630,075	3,630,554	3,631,261	3,631,507	3,631,054	3,630,120
3,630,091	3,630,555	3,631,263	3,631,509	3,631,071	3,630,124
3,630,095	3,630,571	3,631,267	3,631,510	3,631,083	3,630,172
3,630,106	3,630,585	3,631,270	3,631,515	3,631,176	3,630,189
3,630,107	3,630,592	3,631,280	3,631,536	3,631,182	3,630,235
3,630,111	3,630,599	3,631,290	3,631,002	3,631,183	3,630,262
3,630,139	3,630,604	3,631,297	3,629,875	3,631,191	3,630,291
3,630,195	3,630,619	3,631,298	3,629,884	3,631,210	3,630,301
3,630,196	3,630,627	3,631,300	3,630,308	3,631,235	3,630,332
3,630,198	3,630,638	3,631,303	3,630,419	3,631,508	3,630,350
3,630,202	3,630,639	3,631,306	3,630,549	3,630,361	3,630,361
3,630,204	3,630,670	3,631,307	3,630,651	3,630,369	3,630,372

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3,630,407	3,630,277	3,630,674	3,631,345	3,631,484	3,630,926
3,630,422	3,630,314	3,630,689	3,629,992	3,631,494	3,630,941
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3,630,485	3,630,798	3,630,790	3,630,219	3,629,999	3,630,991
3,630,517	3,630,863	3,630,811	3,630,733	3,630,713	3,630,992
3,630,527	3,630,889	3,630,821	3,631,285	3,630,713	3,630,995
3,630,534	3,630,965	3,630,825	3,629,866	3,629,866	3,631,008
3,630,538	3,631,059	3,630,827	3,629,871	3,629,893	3,631,027
3,630,556	3,631,065	3,630,834	3,629,891	3,629,922	3,631,057
3,630,560	3,631,120	3,630,855	3,629,894	3,629,943	3,631,062
3,630,580	3,631,213	3,630,870	3,629,914	3,629,945	3,631,068
3,630,630	3,630,273	3,630,892	3,629,930	3,629,955	3,631,070
3,630,729	3,630,838	3,630,914	3,629,933	3,629,957	3,631,097
3,630,747	3,629,917	3,630,952	3,629,980	3,629,961	3,631,110
3,630,757	3,629,976	3,630,984	3,630,005	3,629,965	3,631,130
3,630,773	3,630,293	3,630,996	3,630,028	3,629,997	3,631,135
3,630,775	3,630,471	3,631,021	3,630,040	3,630,024	3,631,166
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3,630,844	3,631,320	3,631,085	3,630,150	3,630,055	3,631,174
3,630,898	3,631,378	3,631,087	3,630,151	3,630,065	3,631,181
3,630,916	3,631,483	3,631,088	3,630,159	3,630,072	3,631,203
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3,630,961	3,631,496	3,631,104	3,630,171	3,630,081	3,631,227
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3,631,019	3,629,977	3,631,192	3,630,194	3,630,123	3,631,229
3,631,075	3,629,978	3,631,194	3,630,203	3,630,131	3,631,232
3,631,113	3,630,015	3,631,195	3,630,205	3,630,132	3,631,264
3,631,122	3,630,071	3,631,196	3,630,217	3,630,137	3,631,273
3,631,152	3,630,084	3,631,197	3,630,261	3,630,143	3,631,278
3,631,179	3,630,086	3,631,202	3,630,271	3,630,146	3,631,291
3,631,186	3,630,130	3,631,207	3,630,295	3,630,149	3,631,301
3,631,211	3,630,275	3,631,220	3,630,367	3,630,190	3,631,304
3,631,212	3,630,344	3,631,226	3,630,416	3,630,211	3,631,305
3,631,244	3,630,348	3,631,268	3,630,466	3,630,213	3,631,308
3,631,256	3,630,423	3,631,277	3,630,525	3,630,232	3,631,349
3,631,289	3,630,464	3,631,319	3,630,558	3,630,257	3,631,361
3,631,296	3,630,488	3,631,359	3,630,593	3,630,264	3,631,362
3,631,318	3,630,522	3,631,389	3,630,594	3,630,266	3,631,374
3,631,328	3,630,531	3,631,398	3,630,596	3,630,272	3,631,400
3,631,337	3,630,552	3,631,421	3,630,621	3,630,294	3,631,414
3,631,364	3,630,601	3,631,421	3,630,629	3,630,299	3,631,418
3,631,387	3,630,612	3,631,454	3,630,654	3,630,300	3,631,462
3,631,396	3,630,615	27 : 3,629,907	3,630,687	3,630,306	3,631,490
3,631,427	3,630,648	3,629,913	3,630,694	3,630,311	3,631,516
3,631,433	3,630,691	3,629,954	3,630,719	3,630,368	3,629,899
3,631,465	3,630,743	3,629,991	3,630,787	3,630,389	3,629,966
3,631,474	3,630,778	3,630,023	3,630,799	3,630,411	3,630,051
3,631,506	3,630,883	3,630,030	3,630,800	3,630,418	3,630,657
3,631,511	3,631,128	3,630,083	3,630,815	3,630,428	3,630,660
18 : 3,629,869	3,631,251	3,630,192	3,630,828	3,630,438	3,630,711
3,629,882	3,631,253	3,630,248	3,630,866	3,630,440	3,630,818
3,629,898	3,631,269	3,630,309	3,630,886	3,630,448	3,631,023
3,629,921	3,631,288	3,630,322	3,630,887	3,630,462	3,631,225
3,629,925	3,631,302	3,630,419	3,630,888	3,630,473	3,631,336
3,629,956	3,631,315	3,630,451	3,630,919	3,630,487	3,631,407
3,629,960	3,631,322	3,630,468	3,630,924	3,630,491	3,629,867
3,629,983	3,631,360	3,630,469	3,630,925	3,630,510	3,629,873
3,630,020	3,631,370	3,630,609	3,630,928	3,630,514	3,629,887
3,630,154	3,631,401	3,630,614	3,630,932	3,630,515	3,629,912
3,630,155	3,631,405	3,630,675	3,630,946	3,630,519	3,629,918
3,630,171	3,631,409	3,630,739	3,630,966	3,630,520	3,629,951
3,630,183	3,631,417	3,630,891	3,630,974	3,630,524	3,629,973
3,630,240	3,631,424	3,630,951	3,630,979	3,630,524	3,629,982
3,630,284	3,631,472	3,630,970	3,630,980	3,630,550	3,630,046
3,630,346	3,631,472	3,630,970	3,631,005	3,630,567	3,630,069
3,630,403	Re.27.257	3,630,994	3,631,039	3,630,591	3,630,093
3,630,413	Re.27.263	3,631,050	3,631,046	3,630,598	3,630,094
3,630,442	3,629,868	3,631,090	3,631,052	3,630,603	3,630,108
3,630,508	3,629,883	3,631,199	3,631,060	3,630,606	3,630,118
3,630,541	3,629,888	3,631,222	3,631,066	3,630,607	3,630,142
3,630,598	3,629,899	3,631,286	3,631,073	3,630,608	3,630,163
3,630,761	3,629,919	3,631,325	3,631,076	3,630,611	3,630,167
3,630,958	3,629,938	3,631,415	3,631,081	3,630,610	3,630,175
3,631,093	3,629,979	3,631,460	3,631,089	3,630,617	3,630,191
3,631,126	3,630,021	3,631,538	3,631,101	3,630,635	3,630,234
3,631,131	3,630,100	28 : 3,629,931	3,631,102	3,630,653	3,630,242
3,631,136	3,630,141	3,630,010	3,631,112	3,630,665	3,630,268
3,631,284	3,630,168	3,630,712	3,631,125	3,630,682	3,630,298
3,631,347	3,630,179	29 : 3,629,879	3,631,138	3,630,690	3,630,331
3,631,348	3,630,214	3,629,903	3,631,147	3,630,704	3,630,351
3,631,435	3,630,218	3,629,940	3,631,155	3,630,708	3,630,352
3,631,485	3,630,220	3,629,962	3,631,155	3,630,717	3,630,356
19 : 3,630,290	3,630,221	3,629,984	3,631,160	3,630,730	3,630,357
3,630,544	3,630,224	3,629,986	3,631,161	3,630,731	3,630,408
3,630,845	3,630,250	3,629,995	3,631,167	3,630,742	3,630,430
3,631,265	3,630,260	3,630,006	3,631,177	3,630,745	3,630,480
3,631,275	3,630,323	3,630,096	3,631,178	3,630,755	3,630,489
3,631,487	3,630,324	3,630,236	3,631,185	3,630,766	3,630,494
20 : 3,630,027	3,630,378	3,630,387	3,631,187	3,630,775	3,630,495
3,630,160	3,630,421	3,630,406	3,631,205	3,630,785	3,630,507
3,630,200	3,630,465	3,630,458	3,631,223	3,630,801	3,630,533
3,630,486	3,630,504	3,630,499	3,631,233	3,630,815	3,630,578
21 : 3,629,872	3,630,542	3,630,676	3,631,243	3,630,817	3,630,646
3,629,885	3,630,543	3,630,716	3,631,292	3,630,830	3,630,677
3,630,008	3,630,546	3,630,809	3,631,316	3,630,836	3,630,678
3,630,318	3,630,548	3,630,915	3,631,344	3,630,849	3,630,679
3,630,336	3,630,557	3,630,927	3,631,353	3,630,865	3,630,693
3,630,444	3,630,564	3,631,214	3,631,381	3,630,879	3,630,706
3,630,455	3,630,566	3,631,234	3,631,391	3,630,881	3,630,709
3,630,476	3,630,568	3,631,255	3,631,411	3,630,884	3,630,762
3,630,620	3,630,572	3,631,376	3,631,413		
3,630,982	3,630,576	3,631,525	3,631,447		
3,631,117	3,630,631	30 : 3,630,358	3,631,466		



39 : 3.630.764	40 : 3.630.193	42 : 3.630.068	42 : 3.631.036	48 : Re. 27.261	51 : 3.630.031
3.630.776	3.630.278	3.630.085	3.631.040	3.629.890	3.630.032
3.630.797	3.630.279	3.630.105	3.631.044	3.629.908	3.630.101
3.630.802	3.630.281	3.630.109	3.631.045	3.629.909	3.630.182
3.630.819	3.630.285	3.630.117	3.631.047	3.630.044	3.630.229
3.630.857	3.630.292	3.630.125	3.631.061	3.630.079	3.630.255
3.630.878	3.630.481	3.630.188	3.631.072	3.630.153	3.630.474
3.630.904	3.630.484	3.630.206	3.631.100	3.630.216	3.630.642
3.630.922	3.630.573	3.630.222	3.631.105	3.630.237	3.630.913
3.630.923	3.630.588	3.630.245	3.631.111	3.630.244	3.630.983
3.630.930	3.630.666	3.630.267	3.631.123	3.630.251	3.631.037
3.630.934	3.630.860	3.630.286	3.631.129	3.630.258	3.631.346
3.630.935	3.630.880	3.630.287	3.631.140	3.630.282	53 : 3.629.950
3.630.940	3.630.892	3.630.342	3.631.141	3.630.302	3.629.964
3.630.945	3.630.905	3.630.374	3.631.165	3.630.327	3.630.034
3.630.955	3.630.963	3.630.391	3.631.216	3.630.328	3.630.169
3.630.959	3.631.015	3.630.424	3.631.217	3.630.329	3.630.398
3.630.969	3.631.094	3.630.490	3.631.224	3.630.386	3.630.513
3.631.007	3.631.095	3.630.501	3.631.241	3.630.401	3.630.758
3.631.009	3.631.096	3.630.540	3.631.332	3.630.434	3.631.338
3.631.025	3.631.118	3.630.559	3.631.368	3.630.483	54 : 3.630.052
3.631.099	3.631.119	3.630.602	3.631.369	3.630.503	3.631.206
3.631.137	3.631.121	3.630.613	3.631.373	3.630.551	55 : 3.629.865
3.631.143	3.631.142	3.630.658	3.631.392	3.630.636	3.629.952
3.631.148	3.631.163	3.630.667	3.631.439	3.630.640	3.630.001
3.631.159	3.631.219	3.630.695	3.631.463	3.630.754	3.630.045
3.631.198	3.631.247	3.630.697	3.631.517	3.630.829	3.630.201
3.631.209	3.631.274	3.630.700	3.631.530	3.631.156	3.630.208
3.631.242	3.631.385	3.630.789	3.631.532	3.631.157	3.630.227
3.631.258	3.631.442	3.630.793	3.631.533	3.631.162	3.630.321
3.631.279	3.631.446	3.630.794	3.631.535	3.631.189	3.630.359
3.631.287	41 : 3.630.060	3.630.804	43 : 3.631.133	3.631.190	3.630.366
3.631.321	3.630.397	3.630.869	45 : 3.629.904	3.631.248	3.630.394
3.631.329	3.630.439	3.630.873	3.629.935	3.631.254	3.630.399
3.631.340	3.630.618	3.630.890	3.630.166	3.631.350	3.630.447
3.631.402	3.630.637	3.630.901	3.630.239	3.631.384	3.630.463
3.631.468	3.631.330	3.630.920	47 : 3.629.906	3.631.426	3.630.498
3.631.499	3.631.453	3.630.933	3.629.924	3.631.444	3.630.570
3.631.502	3.631.479	3.630.937	3.630.058	3.631.459	3.630.652
3.631.505	42 : 3.629.878	3.630.943	3.630.763	49 : 3.630.505	3.630.788
3.631.512	3.629.953	3.630.947	3.630.882	3.630.859	3.630.835
3.631.526	3.629.975	3.630.956	3.630.936	3.631.493	3.631.282
3.631.527	3.629.993	3.630.962	3.630.942	3.631.528	3.631.299
40 : 3.629.881	3.630.000	3.630.981	3.630.990	50 : 3.630.707	3.631.498
3.630.002	3.630.042	3.630.993	3.631.020	3.630.752	3.631.537
3.630.037	3.630.050	3.630.999	3.631.049	3.631.262	56 : 3.630.296
3.630.080	3.630.064	3.631.014	3.631.204		

## Design Patents

6 : 222.777	17 : 222.770	27 : 222.779	36 : 222.767	36 : 222.775	36 : 222.783
222.791	222.778	222.780	222.773	222.776	39 : 222.788
9 : 222.768	18 : 222.772	31 : 222.781	222.774	222.782	48 : 222.769
17 : 222.766	222.790	36 : 222.765			

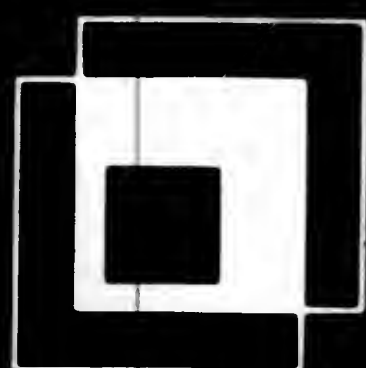


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**MICRO PHOTO DIVISION**



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